August 8, 2014

Mr. Steve Morgan
Florida Department of Environmental Protection
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

RE: Angelo's Aggregate Materials, Ltd.
Enterprise Road Class III Recycling & Disposal Facility, Pasco County
Operations Permit 177982-020-SO/T3 and
Construction Permit No.: 177982-019-SC/T3 Modifications Application
WACS Facility ID: 87895
WACS No.: SWD/29/41084

Dear Mr. Morgan,

On behalf of Angelo's Aggregate Materials, Ltd., we are submitting four copies of Florida Department of Environmental Protection (Department) form 62-701.900(1) *Application to Construct, Operate, Modify, or Close a Solid Waste Management Facility* along with supporting documents to modify the existing operations and construction permits for the Enterprise Road Class III Landfill in Dade City, Florida.

The application includes the following proposed changes to the current operations and construction permits on the 160-acre site originally permitted by the Department on October 5, 2001:

- Modifications to the fill sequence plan;
- Modifications to the closure and reclamation plan;
- Modifications to the site stormwater management system;
- Modifications to the landfill footprint;
- Modifications to the landfill gas monitoring network;
- A change in the permit duration from 5 to 20 years.

Angelo's Aggregate Materials, Ltd., checks for operations ($4,000) and construction ($6,000) are enclosed. The fees are in accordance with the fee schedule in Rules 62-701.320(4)(b), F.A.C. and 62-4.050(4)(s)5, F.A.C. Additional fees will be paid as allowed by Rule 62-701.315(13), F.A.C. at five year intervals thereafter until the time of permit renewal.

A Notice of Application for a permit to modify operations of a solid waste management facility will be published in a local newspaper of general circulation, upon receipt of notification from the Department to publish the notification. We will mail the published

Notice of Application to the Chair of the Pasco County Board of County Commissioners, and each State Senator and Representative serving the jurisdiction in which the project is located. Proof of notification will be provided to the Department under separate cover.

Please contact me at (352) 672-6867 if any questions or comments regarding this submittal.

Sincerely,

John Locklear, P.G.
President
Locklear & Associates, Inc.

Enclosures

Xc: John Arnold, Angelo's Aggregate Materials, Ltd.

PERMIT MODIFICATION APPLICATION
FOR THE
ENTERPRISE ROAD CLASS III RECYCLING AND DISPOSAL FACILITY

WACS Facility ID: 87895
WACS No.: SWD/29/41084
Construction Permit No.: 177982-019-SC/T3
Operation Permit No.: 177982-020-SO/T3

Prepared for:

ANGELO'S AGGREGATE MATERIALS, LTD.
855 28th Street South
St. Petersburg, Florida 33712

Presented to:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOLID WASTE SECTION
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

Prepared by:

LOCKLEAR AND ASSOCIATES, INC.
4140 NW 37 Place, Suite A
Gainesville, Florida 32606
Certificate of Authorization #30066

Project No.: 02000-144-14

August 2014

Performed Under the
Supervision of

____

Lisa J. Baker, P.E.
Florida PE #74652

TABLE OF CONTENTS

SECTION 1

INTRODUCTION

INTRODUCTION

Locklear & Associates, Inc. (L&A) is submitting four copies of the completed Form 62-701.900(1), F.A.C. and all supporting documentation for the modification of Solid Waste Construction Permit 177982-019-SC/T3 and Solid Waste Operations Permit 177982-020-SO/T3 on behalf of Angelo's Aggregate Materials, LTD (Applicant) for the Enterprise Road Class III Recycling and Disposal Facility (Facility) located in Pasco County, Florida. Proof of ownership is provided in Attachment 1. L&A has been authorized by the Applicant to act on its behalf in the preparation and submittal of this document. A letter of authorization is provided in Attachment 2.

In accordance with Rule 62-701.320, F.A.C., facility information that was submitted to the Department to support the current permits, and which is still valid, has not been re-submitted for permit modification. As discussed at the pre-application meeting with the Department held on May 15, 2014, this permit modification application lists and reaffirms the information that was previously provided to the Department that is still valid. Information related to the specific modification requests has been revised/consolidated/updated and is being resubmitted as discussed herein.

Construction Permit

The Enterprise Road Class III Recycling and Disposal Facility solid waste Construction Permit 177982-019-SC/T3 currently authorizes construction of Cells 6B (completed) and 7 of the Class III Landfill. Cells 1, 2, 3, 4, 5 and 15 have already been built and remain in operation. Cells 9, 10, 11, and 12 remain designated as "future" cells. A summary of the changes and updates requested for solid waste Construction Permit (177982-019-SC) is provided as follows:

- Section 1.C – The applicant proposes revisions to Section 1.C to authorize construction of Cells 7, 13A, 13B, 14 and 16.
- Section 2.B.1 - The applicant proposes revisions to Section 2.B.1 to authorize construction of Cells 7, 13A, 13B, 14 and 16.
- Section 2.B.3.c – The applicant proposes revisions to Section 2.B.3.c to include Cells 13A, 13B, 14 and 16 in the requirement for submittal of revised closing and long-term care estimates as part of the certification of construction completion.
- Section 2.B.5 – The applicant proposes revisions to Section 2.B.5 to add reference to Cells 13A, 13B, 14 and 16.
- Specific Condition 5 of Appendix 3 – The applicant proposes revisions to Specific Condition 5 of Appendix 3 of the current permit such that references to leachate discharging to Cells 14 and 16 are eliminated and replaced with text indicating that leachate will be directed to Pond 3. This modification will allow the solid waste construction permit language to match the language provided in the Environmental Resource Permit (ERP) application submitted to the Department in July 2014. This change was made in accordance with information discussed with the Department's ERP staff on May 15, 2014 and confirmed via email on May 23, 2014.
- Appendix 4 – The applicant proposes the following revisions to General Information Table included as Appendix 4:

- Revise *Disposal acres* and revise associated cell reference to include Cells 13A, 13B, 14 and 16.
- Revise *Side slopes max*. to 3H:1V from toe of slope to elevation +170 ft NGVD; 30H:1V above elevation +170 ft NGVD.
- Revise *Liner system* to include Cells 13A, 13B, 14 and 16 in the category of cells with 3-foot thick clay on bottom and sides.
- Revise *Design Life* for Cells 1-5, 7, and 13-16.
- Revise Closure slopes to 3H:1V from toe of slope to elevation +170 ft NGVD; 20H:1V above elevation +170 ft NGVD.

Operations Permit

The Enterprise Road Class III Recycling and Disposal Facility solid waste Operations Permit 177982-020-SO/T3 currently authorizes operations in Cells 1 – 5, 7 and 15. A summary of the changes and updates requested for Solid Waste Operations Permit (177982-020-SO)/T3 is provided as follows:

- Update to Permit Duration – This application requests a change in permit duration from 5 years to 20 years.

- Updates to Site Plan – The Site Plan has been updated to remove previous setbacks for two water wells located to the north of the disposal footprint. The well within 500 ft of the landfill footprint has been abandoned and the setbacks are no longer warranted. The Site Plan has also been updated to reflect proposed changes to the site stormwater management system. The updated Site Plan is provided on Sheet C-0.03 of the 2014 Plan Set provided in Appendix A of the Engineering Report in Section 3.

- Update Fill Sequencing Plan - The Phasing Sequencing Plan for the Class III Landfill has been updated such that filling will progress sequentially to Cells 13A, 14 and 16, and then 13B and finally 7 following completion of filling in Cells 6A and 6B. The revised Phasing Sequencing Plan is discussed in Section 8.0 of the Operations Plan (Appendix H of the Engineering Report) and is represented on Sheets C-1.10 through C-1.21 of the 2014 Plan Set provided in Appendix A of the Engineering Report in Section 3.

- Updates to Engineering Report – The applicant requests the following general updates to the Engineering Report:
  - Addition of design details for Cells 13 (A and B), 14 and 16.
  - Modifications to the site landfill gas monitoring network. Specifically, the relocation of existing gas probes GP-8 through GP-14 to their respective property boundary is proposed.

  The revised Engineering Report is provided in Section 3.

- Updates to Closure and Reclamation Plan – The applicant requests the following general updates to the Closure and Reclamation Plan

- Revised conceptual stormwater control design for final cover system, including removal of benches.
- Revised final side slopes to 3:1.

The revised Closure and Reclamation Plan is provided in Appendix F of the Engineering Report provided in Section 3.

- Design Capacity and Lifespan Estimates – The design capacity and lifespan of the facility have been updated based on modifications proposed herein. The revised calculations are provided on page 10 of the Engineering Report in Section 3.

- Financial Assurance Cost Estimates – The closure and long-term care cost estimates have been updated in accordance with 62-701.630(4)(b). Closure and long-term care estimates have been provided for Cells 1 – 7, and 13 - 16. The revised cost estimates are provided in Appendix F-1 of the Engineering Report in Section 3.

SECTION 2

APPLICATION FOR PERMIT TO CONSTRUCT, OPERATE, MODIFY, OR CLOSE A SOLID WASTE MANAGEMENT FACILITY

DEP FORM 62-701.900(1)

Florida Department of
Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

DEP Form #: 62-701.900(1), F.A.C.

Form Title: Application to Construct, Operate, Modify, or Close a Solid Waste Management Facility

Effective Date: August 12, 2012

Incorporated in Rule: 62-701.330(3), F.A.C.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

APPLICATION TO CONSTRUCT, OPERATE, MODIFY, OR CLOSE A SOLID WASTE MANAGEMENT FACILITY

APPLICATION INSTRUCTIONS AND FORMS

INSTRUCTIONS TO APPLY FOR A SOLID WASTE MANAGEMENT FACILITY PERMIT

I. General

Solid Waste Management Facilities shall be permitted pursuant to Section 403.707, Florida Statutes (FS) and in accordance with Florida Administrative Code (FAC) Chapter 62-701. A minimum of four copies of the application shall be submitted to the appropriate Department office having jurisdiction over the facility. The appropriate fee in accordance with Rule 62-701.315, FAC, shall be submitted with the application by check made payable to the Department of Environmental Protection (DEP).

Complete appropriate sections for the type of facility for which application is made. Entries shall be typed or printed in ink. All blanks shall be filled in or marked "Not Applicable" or "No Substantial Change". Information provided in support of the application shall be marked "Submitted" and the location of this information in the application package indicated. The application shall include all information, drawings, and reports necessary to evaluate the facility. Information required to complete the application is listed on the attached pages of this form.

II. Application Parts Required for Construction and Operation Permits

A. Landfills and Ash Monofills - Submit Parts A through S
B. Asbestos Monofills - Submit Parts A, B, C, D, E, F, I, K, M, O through S
C. Industrial Solid Waste Disposal Facilities - Submit Parts A through S

NOTE: Portions of some Parts may not be applicable.

NOTE: For facilities that have been satisfactorily constructed in accordance with their construction permit, the information required for A, B and C type facilities does not have to be resubmitted for an operation permit if the information has not substantially changed during the construction period. The appropriate portion of the form should be marked "no substantial change".

III. Application Parts Required for Closure Permits

A. Landfills and Ash Monofills - Submit Parts A, B, L, N through S
B. Asbestos Monofills - Submit Parts A, B, M, O through S
C. Industrial Solid Waste Disposal Facilities - Submit Parts A, B, L through S

NOTE: Portions of some Parts may not be applicable.

IV. Permit Renewals

The above information shall be submitted at time of permit renewal in support of the new permit. However, facility information that was submitted to the Department to support the expiring permit, and which is still valid, does not need to be re-submitted for permit renewal. Portions of the application not re-submitted shall be marked "no substantial change" on the application form.

V. Application Codes

S	-	Submitted
LOCATION	-	Physical location of information in application
N/A	-	Not Applicable
N/C	-	No Substantial Change

VI. Listing of Application Parts

PART A: GENERAL INFORMATION

PART B: DISPOSAL FACILITY GENERAL INFORMATION

PART C: PROHIBITIONS

PART D: SOLID WASTE MANAGEMENT FACILITY PERMIT REQUIREMENTS, GENERAL

PART E: LANDFILL PERMIT REQUIREMENTS

PART F: GENERAL CRITERIA FOR LANDFILLS

PART G: LANDFILL CONSTRUCTION REQUIREMENTS

PART H: HYDROGEOLOGICAL INVESTIGATION REQUIREMENTS

PART I: GEOTECHNICAL INVESTIGATION REQUIREMENTS

PART J: VERTICAL EXPANSION OF LANDFILLS

PART K: LANDFILL OPERATION REQUIREMENTS

PART L: WATER QUALITY AND LEACHATE MONITORING REQUIREMENTS

PART M: SPECIAL WASTE HANDLING REQUIREMENTS

PART N: GAS MANAGEMENT SYSTEM REQUIREMENTS

PART O: LANDFILL CLOSURE REQUIREMENTS

PART P: OTHER CLOSURE PROCEDURES

PART Q: LONG-TERM CARE

PART R: FINANCIAL ASSURANCE

PART S: CERTIFICATION BY APPLICANT AND ENGINEER OR PUBLIC OFFICER

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
APPLICATION FOR A PERMIT TO CONSTRUCT, OPERATE, MODIFY OR CLOSE A SOLID WASTE MANAGEMENT FACILITY

Please Type or Print

PART A. GENERAL INFORMATION

1. Type of disposal facility (check all that apply):
   - ☐ Class I Landfill
   - ☑ Class III Landfill
   - ☐ Industrial Solid Waste
   - ☐ Other (describe):
   - ☐ Ash Monofill
   - ☐ Asbestos Monofill

____

____

____

NOTE: Waste Processing Facilities should apply on Form 62-701.900(4), FAC;
Yard Trash Disposal Facilities should notify on Form 62-701.900(3), FAC;
Compost Facilities should apply on Form 62-709.901(1), FAC; and
C&D Disposal Facilities should apply on Form 62-701.900(6), FAC

2. Type of application:
   - ☐ Construction
   - ☐ Operation
   - ☑ Construction/Operation
   - ☐ Closure
   - ☐ Long-term Care Only

3. Classification of application:
   - ☐ New
   - ☐ Renewal
   - ☑ Substantial Modification
   - ☐ Intermediate Modification
   - ☐ Minor Modification

4. Facility name: Enterprise Road Class III Recycling and Disposal Facility

5. DEP ID number: SWD/51/87895 County: Pasco

6. Facility location (main entrance):
   The main entrance gate is on the north side of Enterprise Road, 1.5 miles east
   C.R. 35 Alt. The address is 41111 Enterprise Road in Dade City, Florida 33525.

7. Location coordinates:
   Section: 5 and 8 Township: 25 S Range: 22 E
   Latitude: 28 ° 19 ' 53 " Longitude: 82 ° 08 ' 06 "
   Datum: NGVD 29 Coordinate method: State Plane West
   Collected by: Professional Land Surveyor Company/Affiliation: Picket Surveying and Photogrammetry

8. Applicant name (operating authority): Angelo's Aggregate Materials, Ltd.

Mailing address: 855 28th St. South | St. Petersburg | FL | 33712
Street or P.O. Box | City | State | Zip

Contact person: John Arnold, P.E. Telephone: (813) 477-1719

Title: Director of Engineering & Facilities

john.phillip.arnold@gmail.com
E-Mail address (if available)

9. Authorized agent/Consultant: Locklear & Associates, Inc.

Mailing address: 4140 NW 37th Place, Suite A | Gainesville | FL | 32606
Street or P.O. Box | City | State | Zip

Contact person: Lisa Baker, P.E. Telephone: (352) 672-6867

Title: Engineering Division Director

lisa@locklearconsulting.com
E-Mail address (if available)

10. Landowner (if different than applicant): Same as Applicant

Mailing address: ____________________
Street or P.O. Box | City | State | Zip

Contact person: ____________________ Telephone: (_____) ____________________

____
E-Mail address (if available)

11. Cities, towns, and areas to be served:
Pasco County and surrounding areas

12. Population to be served:
Current: 464,697 (Pasco County 2010 Census) Five-Year Projection: 514,300 (Pasco County 2015)

13. Date site will be ready to be inspected for completion: N/A

14. Expected life of the facility: 10+ years

15. Estimated costs:
Total Construction: $ N/A Closing Costs: $ ____________

16. Anticipated construction starting and completion dates:
From: Ongoing To: Ongoing

17. Expected volume or weight of waste to be received:
____________ yds^3/day 550 +/- tons/day ____________ gallons/day

PART B. DISPOSAL FACILITY GENERAL INFORMATION

1. Provide brief description of disposal facility design and operations planned under this application:
This application is submitted as a modification of construction and operations for an existing, permitted Class III landfill. Please refer to the introduction for details on changes and updates submitted as part of this application.

2. Facility site supervisor: Alfredo "Freddie" Martinez
Title: Landfill Manager Telephone: (352) 567-7676
N/A
E-Mail address (if available)

3. Disposal area: Total acres: 82.7 Used acres: 51.2 Available acres: 31.5

4. Weighing scales used: ☑ Yes ☐ No

5. Security to prevent unauthorized use: ☑ Yes ☐ No

6. Charge for waste received: +/- $9.00 $/yds^3 ______ $/ton

7. Surrounding land use, zoning:
   - ☐ Residential
   - ☑ Agricultural
   - ☐ Commercial
   - ☐ Industrial
   - ☐ None
   - ☐ Other (describe):

Surrounding zoning is AC (Agricultural Commercial) and AR (Agricultural Residential).

8. Types of waste received:
   - ☐ Household
   - ☐ Commercial
   - ☐ Incinerator/WTE ash
   - ☐ Treated biomedical
   - ☐ Water treatment sludge
   - ☐ Air treatment sludge
   - ☐ Agricultural
   - ☑ Asbestos
   - ☑ C & D debris
   - ☑ Shredded/cut tires
   - ☑ Yard trash
   - ☐ Septic tank
   - ☐ Industrial
   - ☐ Industrial sludge
   - ☐ Domestic sludge
   - ☑ Other (describe):

Class III waste

9. Salvaging permitted: ☐ Yes ☑ No

10. Attendant: ☑ Yes ☐ No   Trained operator: ☑ Yes ☐ No

11. Trained spotters: ☑ Yes ☐ No   Number of spotters used: 1 - 2

12. Site located in: ☐ Floodplain   ☐ Wetlands   ☑ Other (describe):
Orange groves

13. Days of operation: Monday through Friday, Saturday

14. Hours of operation: 7 am to 6 pm (M-F); 7 am - 2 pm (Sat)

15. Days working face covered: Once per week

16. Elevation of water table: 55 - 70 ft. Datum Used: NGVD 29

17. Number of monitoring wells: 21

18. Number of surface monitoring points: 0

19. Gas controls used: ☑ Yes ☐ No   Type controls: ☐ Active ☑ Passive

Gas flaring: ☐ Yes ☑ No   Gas recovery: ☐ Yes ☑ No

20. Landfill unit liner type:

☐ Natural soils   ☐ Double geomembrane
☑ Single clay liner   ☐ Geomembrane & composite
☐ Single geomembrane   ☐ Double composite
☐ Single composite   ☐ None
☐ Slurry wall   ☐ Other (describe):

21. Leachate collection method:

☐ Collection pipes   ☐ Double geomembrane
☐ Geonets   ☐ Gravel layer
☐ Well points   ☐ Interceptor trench
☐ Perimeter ditch   ☐ None
☑ Other (describe):
Gravity drainage to stormwater Pond 3

22. Leachate storage method:

☐ Tanks ☐ Surface impoundments

☐ Other (describe):

None

23. Leachate treatment method:

☐ Oxidation ☐ Chemical treatment

☐ Secondary ☐ Settling

☐ Advanced ☑ None

☐ Other (describe):

24. Leachate disposal method:

☐ Recirculated ☐ Pumped to WWTP

☐ Transported to WWTP ☐ Discharged to surface water/wetland

☐ Injection well ☐ Percolation ponds

☐ Evaporation ☐ Spray irrigation

☐ Other (describe):

N/A

25. For leachate discharged to surface waters:

Name and Class of receiving water:

N/A

26. Storm Water:

Collected: ☑ Yes ☐ No

Type of treatment:

100 year, 24-hour storm event retained on-site without discharge.

Name and Class of receiving water:

None

27. Environmental Resources Permit (ERP) number or status:

ERP application submitted to DEP SW District July 2014 - status pending

PART C. PROHIBITIONS (62-701.300, FAC)

LOCATION

S ☐ ____________ N/A ☐ N/C ☑ 1. Provide documentation that each of the siting criteria will be satisfied for the facility; (62-701.300(2), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 2. If the facility qualifies for any of the exemptions contained in Rules 62-701.300(12) through (18), FAC, then document this qualification(s);

S ☐ ____________ N/A ☐ N/C ☑ 3. Provide documentation that the facility will be in compliance with the burning restrictions; (62-701.300(3), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 4. Provide documentation that the facility will be in compliance with the hazardous waste restrictions; (62-701.300(4), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 5. Provide documentation that the facility will be in compliance with the PCB disposal restrictions; (62-701.300(5), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 6. Provide documentation that the facility will be in compliance with the biomedical waste restrictions; (62-701.300(6), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 7. Provide documentation that the facility will be in compliance with the Class I surface water restrictions; (62-701.300(7), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 8. Provide documentation that the facility will be in compliance with the special waste for landfills restrictions; (62-701.300(8), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 9. Provide documentation that the facility will be in compliance with the liquid restrictions; (62-701.300(10), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 10. Provide documentation that the facility will be in compliance with the used oil and oily waste restrictions; (62-701.300(11), FAC)

PART D. SOLID WASTE MANAGEMENT FACILITY PERMIT REQUIREMENTS, GENERAL (62-701.320, FAC)

LOCATION

S ☑ Section 2 N/A ☐ N/C ☐ 1. Four copies, at minimum, of the completed application form, all supporting data and reports; (62-701.320(5)(a), FAC)

S ☑ Sections 2 & 3 N/A ☐ N/C ☐ 2. Engineering and/or professional certification (signature, date, and seal) provided on the applications and all engineering plans, reports, and supporting information for the application; (62-701.320(6), FAC)

S ☑ Cover letter N/A ☐ N/C ☐ 3. A letter of transmittal to the Department; (62-701.320(7)(a), FAC)

LOCATION				PART D CONTINUED
Section 2	S ☑	N/A ☐	N/C ☐	4. A completed application form dated and signed by the applicant; (62-701.320(7)(b), FAC)
Cover letter	S ☑	N/A ☐	N/C ☐	5. Permit fee specified in Rule 62-701.315, FAC in check or money order, payable to the Department; (62-701.320(7)(c), FAC)
Section 3	S ☑	N/A ☐	N/C ☐	6. An engineering report addressing the requirements of this rule and with the following format: a cover sheet, text printed on 8 ½ inch by 11 inch consecutively numbered pages, a table of contents or index, the body of the report and all appendices including an operation plan, contingency plan, illustrative charts and graphs, records or logs of tests and investigations, engineering calculations; (62-701.320(7)(d), FAC)
Sect. 3, App H & F	S ☑	N/A ☐	N/C ☐	7. Operation Plan and Closure Plan; (62-701.320(7)(e)1, FAC)
Sect. 3, App I	S ☑	N/A ☐	N/C ☐	8. Contingency Plan; (62-701.320(7)(e)2, FAC)
Sect. 3, App A	S ☑	N/A ☐	N/C ☐	9. Plans or drawings for the solid waste management facilities in appropriate format (including sheet size restrictions, cover sheet, legends, north arrow, horizontal and vertical scales, elevations referenced to NGVD 1929) showing: (62-701.320(7)(f), FAC)
	S ☐	N/A ☐	N/C ☑	a. A regional map or plan with the project location in relation to major roadways and population centers;
Sect. 3, App A	S ☑	N/A ☐	N/C ☐	b. A vicinity map or aerial photograph no more than one year old showing the facility site and relevant surface features located within 1000 feet of the facility;
	S ☐	N/A ☐	N/C ☑	c. A site plan showing all property boundaries certified by a Florida Licensed Professional Surveyor and Mapper;
Sect., App A	S ☑	N/A ☐	N/C ☐	d. Other necessary details to support the engineering report, including referencing elevations to a consistent, nationally recognized datum, and identifying the method used for collecting latitude and longitude data;
Attachment 1	S ☑	N/A ☐	N/C ☐	10. Documentation that the applicant either owns the property or has legal authority from the property owner to use the site; (62-701.320(7)(g), FAC)
	S ☐	N/A ☑	N/C ☐	11. For facilities owned or operated by a county, provide a description of how, if any, the facilities covered in this application will contribute to the county's achievement of the waste reduction and recycling goals contained in Section 403.706, FS; (62-701.320(7)(h), FAC)

LOCATION **PART D CONTINUED**

S ☐		N/A ☐	N/C ☑	12. Provide a history and description of any enforcement actions taken by the Department against the applicant for violations of applicable statutes, rules, orders, or permit conditions relating to the operation of any solid waste management facility in the state; (62-701.320(7)(i), FAC)
S ☑	Attachment 3	N/A ☐	N/C ☐	13. Proof of publication in a newspaper of general circulation of notice of application for a permit to construct or substantially modify a solid waste management facility; (62-701.320(8), FAC)
S ☐		N/A ☐	N/C ☑	14. Provide a description of how the requirements for airport safety will be achieved, including proof of required notices if applicable. If exempt, explain how the exemption applies; (62-701.320(13), FAC)
S ☐		N/A ☐	N/C ☑	15. Explain how the operator and spotter training requirements and special criteria will be satisfied for the facility; (62-701.320(15), FAC)

PART E. LANDFILL PERMIT REQUIREMENTS (62-701.330, FAC)

LOCATION

S ☐	Sect. 3, App B	N/A ☐	N/C ☑	1. Regional map or aerial photograph no more than five years old showing all airports that are located within five miles of the proposed landfill; (62-701.330(3)(a), FAC)
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	2. Plot plan with a scale not greater than 200 feet to the inch showing: (62-701.330(3)(b), FAC)
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	a. Dimensions;
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	b. Locations of proposed and existing water quality monitoring wells;
S ☐		N/A ☐	N/C ☑	c. Locations of soil borings;
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	d. Proposed plan of trenching or disposal areas;
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	e. Cross sections showing original elevations and proposed final contours which shall be included either on the plot plan or on separate sheets;
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	f. Any previously filled waste disposal areas;
S ☐		N/A ☐	N/C ☑	g. Fencing or other measures to restrict access;

LOCATION				PART E CONTINUED
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	3. Topographic maps with a scale not greater than 200 feet to the inch with five foot contour intervals showing: (62-701.330(3)(c), FAC)
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	a. Proposed fill areas;
S ☐		N/A ☐	N/C ☑	b. Borrow areas;
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	c. Access roads;
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	d. Grades required for proper drainage;
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	e. Cross sections of lifts;
S ☐		N/A ☑	N/C ☐	f. Special drainage devices if necessary;
S ☐		N/A ☐	N/C ☑	g. Fencing;
S ☐		N/A ☐	N/C ☑	h. Equipment facilities;
S ☐		N/A ☐	N/C ☑	4. A report on the landfill describing the following: (62-701.330(3)(d), FAC)
S ☐		N/A ☐	N/C ☑	a. The current and projected population and area to be served by the proposed site;
S ☐		N/A ☐	N/C ☑	b. The anticipated type, annual quantity, and source of solid waste expressed in tons;
S ☐		N/A ☐	N/C ☑	c. Planned active life of the facility, the final design height of the facility, and the maximum height of the facility during its operation;
S ☐		N/A ☐	N/C ☑	d. The source and type of cover material used for the landfill;
S ☐		N/A ☐	N/C ☑	5. Provide evidence that an approved laboratory shall conduct water quality monitoring for the facility in accordance with Chapter 62-160, FAC; (62-701.330(3)(g), FAC
S ☐		N/A ☐	N/C ☑	6. Provide a statement of how the applicant will demonstrate financial responsibility for the closing and long-term care of the landfill; (62-701.330(3)(h), FAC)

PART F. GENERAL CRITERIA FOR LANDFILLS (62-701.340, FAC)

LOCATION

S ☐ _____________ N/A ☐ N/C ☑ 1. Describe (and show on a Federal Insurance Administration flood map, if available) how the landfill or solid waste disposal unit shall not be located in the 100 year floodplain where it will restrict the flow of the 100 year flood, reduce the temporary water storage capacity of the floodplain unless compensating storage is provided, or result in a washout of solid waste; (62-701.340(3)(b), FAC)

S ☐ _____________ N/A ☐ N/C ☑ 2. Describe how the minimum horizontal separation between waste deposits in the landfill and the landfill property boundary shall be 100 feet, measured from the toe of the proposed final cover slope; (62-701.340(3)(c), FAC)

PART G. LANDFILL CONSTRUCTION REQUIREMENTS (62-701.400, FAC)

LOCATION

S ☑ Section 3 N/A ☐ N/C ☐ 1. Describe how the landfill shall be designed so the solid waste disposal units will be constructed and closed at planned intervals throughout the design period of the landfill, and shall be designed to achieve a minimum factor of safety of 1.5 using peak strength values to prevent failures of side slopes and deep-seated failures; (62-701.400(2), FAC)

S ☑ Sect. 3, App C N/A ☐ N/C ☐ 2. Landfill liner requirements; (62-701.400(3), FAC)

S ☐ _____________ N/A ☑ N/C ☐ a. General construction requirements; (62-701.400(3)(a), FAC)

S ☐ _____________ N/A ☑ N/C ☐ (1) Provide test information and documentation to ensure the liner will be constructed of materials that have appropriate physical, chemical, and mechanical properties to prevent failure;

S ☐ _____________ N/A ☑ N/C ☐ (2) Document foundation is adequate to prevent liner failure;

S ☐ _____________ N/A ☑ N/C ☐ (3) Constructed so bottom liner will not be adversely impacted by fluctuations of the ground water;

S ☐ _____________ N/A ☑ N/C ☐ (4) Designed to resist hydrostatic uplift if bottom liner located below seasonal high ground water table;

S ☐ _____________ N/A ☑ N/C ☐ (5) Installed to cover all surrounding earth which could come into contact with the waste or leachate;

LOCATION	PART G CONTINUED
S ☐ ____________ N/A ☑ N/C ☐	b. Composite liners; (62-701.400(3)(b), FAC)
S ☐ ____________ N/A ☑ N/C ☐	(1) Upper geomembrane thickness and properties;
S ☐ ____________ N/A ☑ N/C ☐	(2) Design leachate head for primary leachate collection and removal system (LCRS) including leachate recirculation if appropriate;
S ☐ ____________ N/A ☑ N/C ☐	(3) Design thickness in accordance with Table A and number of lifts planned for lower soil component;
S ☐ ____________ N/A ☑ N/C ☐	c. Double liners; (62-701.400(3)(c), FAC)
S ☐ ____________ N/A ☑ N/C ☐	(1) Upper and lower geomembrane thickness and properties;
S ☐ ____________ N/A ☑ N/C ☐	(2) Design leachate head for primary LCRS to limit the head to one foot above the liner;
S ☐ ____________ N/A ☑ N/C ☐	(3) Lower geomembrane sub-base design;
S ☐ ____________ N/A ☑ N/C ☐	(4) Leak detection and secondary leachate collection system minimum design criteria (k ≥ 10 cm/sec, head on lower liner ≤ 1 inch, head not to exceed thickness of drainage layer);
S ☐ ____________ N/A ☑ N/C ☐	d. Standards for geosynthetic components; (62-701.400(3)(d), FAC)
S ☐ ____________ N/A ☑ N/C ☐	(1) Factory and field seam test methods to ensure all geomembrane seams achieve the minimum specifications;
S ☐ ____________ N/A ☑ N/C ☐	(2) Geomembranes to be used shall pass a continuous spark test by the manufacturer;
S ☐ ____________ N/A ☑ N/C ☐	(3) Design of 24-inch-thick protective layer above upper geomembrane liner;
S ☐ ____________ N/A ☑ N/C ☐	(4) Describe operational plans to protect the liner and leachate collection system when placing the first layer of waste above a 24-inch-thick protective layer;
S ☐ ____________ N/A ☑ N/C ☐	(5) HDPE geomembranes, if used, meet the specifications in GRI GM13, and LLDPE geomembranes, if used, meet the specifications in GRI GM17;
S ☐ ____________ N/A ☑ N/C ☐	(6) PVC geomembranes, if used, meet the specifications in PGI 1104;

LOCATION **PART G CONTINUED**

S ☐ ____________ N/A ☑ N/C ☐ (7) Interface shear strength testing results of the actual components which will be used in the liner system;

S ☐ ____________ N/A ☑ N/C ☐ (8) Transmissivity testing results of geonets if they are used in the liner system;

S ☐ ____________ N/A ☑ N/C ☐ (9) Hydraulic conductivity testing results of geosynthetic clay liners if they are used in the liner system;

S ☐ ____________ N/A ☑ N/C ☐ e. Geosynthetic specification requirements; (62-701.400(3)(e), FAC)

S ☐ ____________ N/A ☑ N/C ☐ (1) Definition and qualifications of the designer, manufacturer, installer, QA consultant and laboratory, and QA program;

S ☐ ____________ N/A ☑ N/C ☐ (2) Material specifications for geomembranes, geocomposites, geotextiles, geogrids, and geonets;

S ☐ ____________ N/A ☑ N/C ☐ (3) Manufacturing and fabrication specifications including geomembrane raw material and roll QA, fabrication personnel qualifications, seaming equipment and procedures, overlaps, trial seams, destructive and non-destructive seam testing, seam testing location, frequency, procedure, sample size, and geomembrane repairs;

S ☐ ____________ N/A ☑ N/C ☐ (4) Geomembrane installation specifications including earthwork, conformance testing, geomembrane placement, installation personnel qualifications, field seaming and testing, overlapping and repairs, materials in contact with geomembranes, and procedures for lining system acceptance;

S ☐ ____________ N/A ☑ N/C ☐ (5) Geotextile and geogrids specifications including handling and placement, conformance testing, seams and overlaps, repair, and placement of soil materials and any overlying materials;

S ☐ ____________ N/A ☑ N/C ☐ (6) Geonet and geocomposites specifications including handling and placement, conformance testing, stacking and joining, repair, and placement of soil materials and any overlying materials;

S ☐ ____________ N/A ☑ N/C ☐ (7) Geosynthetic clay liner specifications including handling and placement, conformance testing, seams and overlaps, repair, and placement of soil materials and any overlying materials;

LOCATION	PART G CONTINUED
S ☐ ____________ N/A ☑ N/C ☐	f. Standards for soil liner components; (62-701.400(3)(f), FAC)
S ☐ ____________ N/A ☑ N/C ☐	(1) Description of construction procedures including over-excavation and backfilling to preclude structural inconsistencies and procedures for placing and compacting soil components in layers;
S ☐ ____________ N/A ☑ N/C ☐	(2) Demonstration of compatibility of the soil component with actual or simulated leachate in accordance with EPA Test Method 9100, or an equivalent test method;
S ☐ ____________ N/A ☑ N/C ☐	(3) Procedures for testing in situ soils to demonstrate they meet the specifications for soil liners;
S ☐ ____________ N/A ☑ N/C ☐	(4) Specifications for soil component of liner including at a minimum:
S ☐ ____________ N/A ☑ N/C ☐	(a) Allowable particle size distribution, and Atterberg limits including shrinkage limit;
S ☐ ____________ N/A ☑ N/C ☐	(b) Placement moisture and dry density criteria;
S ☐ ____________ N/A ☑ N/C ☐	(c) Maximum laboratory-determined saturated hydraulic conductivity using simulated leachate;
S ☐ ____________ N/A ☑ N/C ☐	(d) Minimum thickness of soil liner;
S ☐ ____________ N/A ☑ N/C ☐	(e) Lift thickness;
S ☐ ____________ N/A ☑ N/C ☐	(f) Surface preparation (scarification);
S ☐ ____________ N/A ☑ N/C ☐	(g) Type and percentage of clay mineral within the soil component;
S ☐ ____________ N/A ☑ N/C ☐	(5) Procedures for constructing and using a field test section to document the desired saturated hydraulic conductivity and thickness can be achieved in the field;
S ☐ ____________ N/A ☑ N/C ☐	g. If a Class III landfill is to be constructed with a bottom liner system, provide a description of how the minimum requirements for the liner will be achieved;

LOCATION **PART G CONTINUED**

S ☐ ____________ N/A ☑ N/C ☐ 3. Leachate collection and removal system (LCRS); (62-701.400(4), FAC)

S ☐ ____________ N/A ☑ N/C ☐ a. The primary and secondary LCRS requirements; (62-701.400(4)(a), FAC)

S ☐ ____________ N/A ☑ N/C ☐ (1) Constructed of materials chemically resistant to the waste and leachate;

S ☐ ____________ N/A ☑ N/C ☐ (2) Have sufficient mechanical properties to prevent collapse under pressure;

S ☐ ____________ N/A ☑ N/C ☐ (3) Have granular material or synthetic geotextile to prevent clogging;

S ☐ ____________ N/A ☑ N/C ☐ (4) Have a method for testing and cleaning clogged pipes or contingent designs for reducing leachate around failed areas;

S ☐ ____________ N/A ☑ N/C ☐ b. Other LCRS requirements; (62-701.400(4)(b) and (c), FAC

S ☐ ____________ N/A ☑ N/C ☐ (1) Bottom 12 inches having hydraulic conductivity≥ 1 x 10^{3} cm/sec;

S ☐ ____________ N/A ☑ N/C ☐ (2) Total thickness of 24 inches of material chemically resistant to the waste and leachate;

S ☐ ____________ N/A ☑ N/C ☐ (3) Bottom slope design to accommodate for predicted settlement and still meet minimum slope requirements;

S ☐ ____________ N/A ☑ N/C ☐ (4) Demonstration that synthetic drainage material, if used, is equivalent or better than granular material in chemical compatibility, flow under load, and protection of geomembranes liner;

S ☐ ____________ N/A ☑ N/C ☐ 4. Leachate recirculation; (62-701.400(5), FAC)

S ☐ ____________ N/A ☑ N/C ☐ a. Describe general procedures for recirculating leachate;

S ☐ ____________ N/A ☑ N/C ☐ b. Describe procedures for controlling leachate runoff and minimizing mixing of leachate runoff with storm water;

S ☐ ____________ N/A ☑ N/C ☐ c. Describe procedures for preventing perched water conditions and gas buildup;

LOCATION **PART G CONTINUED**

S ☐ _____________ N/A ☑ N/C ☐ d. Describe alternate methods for leachate management when it cannot be recirculated due to weather or runoff conditions, surface seeps, wind-blown spray, or elevated levels of leachate head on the liner;

S ☐ _____________ N/A ☑ N/C ☐ e. Describe methods of gas management in accordance with Rule 62-701.530, FAC;

S ☐ _____________ N/A ☑ N/C ☐ f. If leachate irrigation is proposed, describe treatment methods and standards for leachate treatment prior to irrigation over final cover, and provide documentation that irrigation does not contribute significantly to leachate generation;

S ☐ _____________ N/A ☑ N/C ☐ 5. Leachate storage tanks and leachate surface impoundments; (62-701.400(6), FAC)

S ☐ _____________ N/A ☑ N/C ☐ a. Surface impoundment requirements; (62-701.400(6)(b), FAC)

S ☐ _____________ N/A ☑ N/C ☐ (1) Documentation that the design of the bottom liner will not be adversely impacted by fluctuations of the ground water;

S ☐ _____________ N/A ☑ N/C ☐ (2) Designed in segments to allow for inspection and repair, as needed, without interruption of service;

S ☐ _____________ N/A ☑ N/C ☐ (3) General design requirements;

S ☐ _____________ N/A ☑ N/C ☐ (a) Double liner system consisting of an upper and lower 60-mil minimum thickness geomembrane;

S ☐ _____________ N/A ☑ N/C ☐ (b) Leak detection and collection system with hydraulic conductivity ≥ 1 cm/sec;

S ☐ _____________ N/A ☑ N/C ☐ (c) Lower geomembrane place on subbase ≥ 6 inches thick with $k \leq 1 \times 10^{-5}$ cm/sec or on an approved geosynthetic clay liner with $k \leq 1 \times 10^{-7}$ cm/sec;

S ☐ _____________ N/A ☑ N/C ☐ (d) Design calculation to predict potential leakage through the upper liner;

S ☐ _____________ N/A ☑ N/C ☐ (e) Daily inspection requirements, and notification and corrective action requirements if leakage rates exceed that predicted by design calculations;

S ☐ _____________ N/A ☑ N/C ☐ (4) Description of procedures to prevent uplift, if applicable;

LOCATION	PART G CONTINUED
S ☐ ____________ N/A ☑ N/C ☐	(5) Design calculations to demonstrate minimum two feet of freeboard will be maintained;
S ☐ ____________ N/A ☑ N/C ☐	(6) Procedures for controlling vectors and off-site odors;
S ☐ ____________ N/A ☑ N/C ☐	b. Above-ground leachate storage tanks; (62-701.400(6)(c), FAC)
S ☐ ____________ N/A ☑ N/C ☐	(1) Describe tank materials of construction and ensure foundation is sufficient to support tank;
S ☐ ____________ N/A ☑ N/C ☐	(2) Describe procedures for cathodic protection for the tank, if needed;
S ☐ ____________ N/A ☑ N/C ☐	(3) Describe exterior painting and interior lining of the tank to protect it from the weather and the leachate stored;
S ☐ ____________ N/A ☑ N/C ☐	(4) Describe secondary containment design to ensure adequate capacity will be provided and compatibility of materials of construction;
S ☐ ____________ N/A ☑ N/C ☐	(5) Describe design to remove and dispose of stormwater from the secondary containment system;
S ☐ ____________ N/A ☑ N/C ☐	(6) Describe an overfill prevention system, such as level sensors, gauges, alarms, and shutoff controls to prevent overfilling;
S ☐ ____________ N/A ☑ N/C ☐	(7) Inspections, corrective action, and reporting requirements;
S ☐ ____________ N/A ☑ N/C ☐	(a) Weekly inspection of overfill prevention system;
S ☐ ____________ N/A ☑ N/C ☐	(b) Weekly inspection of exposed tank exteriors;
S ☐ ____________ N/A ☑ N/C ☐	(c) Inspection of tank interiors when tank is drained, or at least every three years;
S ☐ ____________ N/A ☑ N/C ☐	(d) Procedures for immediate corrective action if failures detected;
S ☐ ____________ N/A ☑ N/C ☐	(e) Inspection reports available for Department review;
S ☐ ____________ N/A ☑ N/C ☐	c. Underground leachate storage tanks; (62-701.400(6)(d), FAC)

LOCATION **PART G CONTINUED**

S ☐ _____________ N/A ☑ N/C ☐ (1) Describe materials of construction;

S ☐ _____________ N/A ☑ N/C ☐ (2) A double-walled tank design system to be used with the following requirements:

S ☐ _____________ N/A ☑ N/C ☐ (a) Interstitial space monitoring at least weekly;

S ☐ _____________ N/A ☑ N/C ☐ (b) Corrosion protection provided for primary tank interior and external surface of outer shell;

S ☐ _____________ N/A ☑ N/C ☐ (c) Interior tank coatings compatible with stored leachate;

S ☐ _____________ N/A ☑ N/C ☐ (d) Cathodic protection inspected weekly and repaired as needed;

S ☐ _____________ N/A ☑ N/C ☐ (3) Describe an overfill prevention system, such as level sensors, gauges, alarms, and shutoff controls to prevent overfilling, and provide for weekly inspections;

S ☐ _____________ N/A ☑ N/C ☐ (4) Inspection reports available for Department review;

S ☐ _____________ N/A ☑ N/C ☐ d. Schedule provided for routine maintenance of LCRS; (62-701.400(6)(e), FAC)

S ☐ _____________ N/A ☑ N/C ☐ 6. Liner systems construction quality assurance (CQA); (62-701.400(7), FAC)

S ☐ _____________ N/A ☑ N/C ☐ a. Provide CQA Plan including:

S ☐ _____________ N/A ☑ N/C ☐ (1) Specifications and construction requirements for liner system;

S ☐ _____________ N/A ☑ N/C ☐ (2) Detailed description of quality control testing procedures and frequencies;

S ☐ _____________ N/A ☑ N/C ☐ (3) Identification of supervising professional engineer;

S ☐ _____________ N/A ☑ N/C ☐ (4) Identify responsibility and authority of all appropriate organizations and key personnel involved in the construction project;

S ☐ _____________ N/A ☑ N/C ☐ (5) State qualifications of CQA professional engineer and support personnel;

LOCATION **PART G CONTINUED**

S ☐ ____________ N/A ☑ N/C ☐ (6) Description of CQA reporting forms and documents;

S ☐ ____________ N/A ☑ N/C ☐ b. An independent laboratory experienced in the testing of geosynthetics to perform required testing;

S ☐ ____________ N/A ☑ N/C ☐ 7. Soil liner CQA; (62-701.400(8), FAC)

S ☐ ____________ N/A ☑ N/C ☐ a. Documentation that an adequate borrow source has been located with test results, or description of the field exploration and laboratory testing program to define a suitable borrow source;

S ☐ ____________ N/A ☑ N/C ☐ b. Description of field test section construction and test methods to be implemented prior to liner installation;

S ☐ ____________ N/A ☑ N/C ☐ c. Description of field test methods, including rejection criteria and corrective measures to insure proper liner installation;

S ☐ ____________ N/A ☑ N/C ☐ 8. For surface water management systems at aboveground disposal units, provide documentation showing the design of any features intended to convey stormwater to a permitted or exempted treatment system; (62-701.400(9), FAC)

S ☐ ____________ N/A ☑ N/C ☐ 9. Gas control systems; (62-701.400(10), FAC)

S ☐ ____________ N/A ☑ N/C ☐ a. Provide documentation that if the landfill is receiving degradable wastes, it will have a gas control system complying with the requirements of Rule 62-701.530, FAC;

S ☐ ____________ N/A ☑ N/C ☐ 10. For landfills designed in ground water, provide documentation that the landfill will provide a degree of protection equivalent to landfills designed with bottom liners not in contact with ground water; (62-701.400(11), FAC)

PART H. HYDROGEOLOGICAL INVESTIGATION REQUIREMENTS (62-701.410(1), FAC)

LOCATION

S ☑ Sect. 3, App C N/A ☐ N/C ☐ 1. Submit a hydrogeological investigation and site report including at least the following information:

S ☑ Sect. 3, App C N/A ☐ N/C ☐ a. Regional and site specific geology and hydrology;

S ☑ Sect. 3, App C N/A ☐ N/C ☐ b. Direction and rate of ground water and surface water flow including seasonal variations;

LOCATION				PART H CONTINUED
S ☑	Sect. 3, App C	N/A ☐	N/C ☐	c. Background quality of ground water and surface water;
S ☐		N/A ☐	N/C ☑	d. Any on-site hydraulic connections between aquifers;
S ☐		N/A ☐	N/C ☑	e. Site stratigraphy and aquifer characteristics for confining layers, semi-confining layers, and all aquifers below the landfill site that may be affected by the landfill;
S ☐		N/A ☐	N/C ☑	f. Description of topography, soil types, and surface water drainage systems;
S ☐		N/A ☐	N/C ☑	g. Inventory of all public and private water wells within a one mile radius of the landfill including, where available, well top of casing and bottom elevations, name of owner, age and usage of each well, stratigraphic unit screened, well construction technique, and static water level;
S ☐		N/A ☐	N/C ☑	h. Identify and locate any existing contaminated areas on the site;
S ☑	Sect. 3, App B	N/A ☐	N/C ☐	i. Include a map showing the locations of all potable wells within 500 feet of the waste storage and disposal areas;
S ☑	Sect. 3, App C	N/A ☐	N/C ☐	2. Report signed, sealed, and dated by P.E. and/or P.G.;

PART I. **GEOTECHNICAL INVESTIGATION REQUIREMENTS** (62-701.410(2), FAC)

LOCATION				
S ☑	Sect. 3, App D	N/A ☐	N/C ☐	1. Submit a geotechnical site investigation report defining the engineering properties of the site including at least the following:
S ☐		N/A ☐	N/C ☑	a. Description of subsurface conditions including soil stratigraphy and ground water table conditions;
S ☐		N/A ☐	N/C ☑	b. Investigate for the presence of muck, previously filled areas, soft ground, lineaments, and sink holes;
S ☐		N/A ☐	N/C ☑	c. Estimates of average and maximum high water table across the site;
S ☑	Sect. 3, App D & E	N/A ☐	N/C ☐	d. Foundation analysis including:
S ☑	Sect. 3, App D & E	N/A ☐	N/C ☐	(1) Foundation bearing capacity analysis;

LOCATION **PART I CONTINUED**

S ☑ Sect. 3, App D & E N/A ☐ N/C ☐ (2) Total and differential subgrade settlement analysis;

S ☑ Sect. 3, App E N/A ☐ N/C ☐ (3) Slope stability analysis;

S ☑ Sect. 3, App E N/A ☐ N/C ☐ e. Description of methods used in the investigation, and includes soil boring logs, laboratory results, analytical calculations, cross sections, interpretations, and conclusions;

S ☐ ____________ N/A ☐ N/C ☑ f. An evaluation of fault areas, seismic impact zones, and unstable areas as described in 40 CFR 258.13, 40 CFR 258.14, and 40 CFR 258.15;

S ☑ Sect. 3, App D & E N/A ☐ N/C ☐ 2. Report signed, sealed, and dated by P.E. and/or P.G.;

PART J. VERTICAL EXPANSION OF LANDFILLS (62-701.430, FAC)

LOCATION

S ☐ ____________ N/A ☑ N/C ☐ 1. Describe how the vertical expansion shall not cause or contribute to leachate leakage from the existing landfill, shall not cause objectionable odors, or adversely affect the closure design of the existing landfill;

S ☐ ____________ N/A ☑ N/C ☐ 2. Describe how the vertical expansion over unlined landfills will meet the requirements of Rule 62-701.400, FAC with the exceptions of Rule 62-701.430(1)(c), FAC;

S ☐ ____________ N/A ☑ N/C ☐ 3. Provide foundation and settlement analysis for the vertical expansion;

S ☐ ____________ N/A ☑ N/C ☐ 4. Provide total settlement calculations demonstrating that the final elevations of the lining system, gravity drainage, and no other component of the design will be adversely affected;

S ☐ ____________ N/A ☑ N/C ☐ 5. Minimum stability factor of safety of 1.5 for the lining system component interface stability and for deep stability;

S ☐ ____________ N/A ☑ N/C ☐ 6. Provide documentation to show the surface water management system will not be adversely affected by the vertical expansion;

S ☐ ____________ N/A ☑ N/C ☐ 7. Provide gas control designs to prevent accumulation of gas under the new liner for the vertical expansion;

PART K. LANDFILL OPERATION REQUIREMENTS (62-701.500, FAC)

LOCATION

S ☐ _____________ N/A ☐ N/C ☑ 1. Provide documentation that the landfill will have at least one trained operator during operation and at least one trained spotter at each working face; (62-701.500(1), FAC)

S ☑ Sect. 3, App H N/A ☐ N/C ☐ 2. Provide a landfill operation plan including procedures for: (62-701.500(2), FAC)

S ☐ _____________ N/A ☐ N/C ☑ a. Designating responsible operating and maintenance personnel;

S ☐ _____________ N/A ☐ N/C ☑ b. Emergency preparedness and response, as required in subsection 62-701.320(16), FAC;

S ☐ _____________ N/A ☐ N/C ☑ c. Controlling types of waste received at the landfill;

S ☐ _____________ N/A ☐ N/C ☑ d. Weighing incoming waste;

S ☐ _____________ N/A ☐ N/C ☑ e. Vehicle traffic control and unloading;

S ☑ Sect. 3, App H N/A ☐ N/C ☐ f. Method and sequence of filling waste;

S ☐ _____________ N/A ☐ N/C ☑ g. Waste compaction and application of cover;

S ☐ _____________ N/A ☐ N/C ☑ h. Operations of gas, leachate, and stormwater controls;

S ☐ _____________ N/A ☐ N/C ☑ i. Water quality monitoring;

S ☐ _____________ N/A ☑ N/C ☐ j. Maintaining and cleaning the leachate collection system;

S ☐ _____________ N/A ☐ N/C ☑ 3. Provide a description of the landfill operation record to be used at the landfill, details as to location of where various operational records will be kept (i.e. DEP permit, engineering drawings, water quality records, etc.); (62-701.500(3), FAC)

S ☐ _____________ N/A ☐ N/C ☑ 4. Describe the waste records that will be compiled monthly and provided to the Department annually; (62-701.500(4), FAC)

S ☐ _____________ N/A ☐ N/C ☑ 5. Describe methods of access control; (62-701.500(5), FAC)

S ☐ _____________ N/A ☐ N/C ☑ 6. Describe load checking program to be implemented at the landfill to discourage disposal of unauthorized waste at the landfill; (62-701.500(6), FAC)

LOCATION			PART K CONTINUED
S ☐ ____________	N/A ☐	N/C ☑	7. Describe procedures for spreading and compacting waste at the landfill that include: (62-701.500(7), FAC)
S ☐ ____________	N/A ☐	N/C ☑	a. Waste layer thickness and compaction frequencies;
S ☐ ____________	N/A ☑	N/C ☐	b. Special considerations for first layer of waste placed above the liner and leachate collection system;
S ☐ ____________	N/A ☐	N/C ☑	c. Slopes of cell working face and side grades above land surface, and planned lift depths during operation;
S ☐ ____________	N/A ☐	N/C ☑	d. Maximum width of working face;
S ☐ ____________	N/A ☐	N/C ☑	e. Description of type of initial cover to be used at the facility that controls:
S ☐ ____________	N/A ☐	N/C ☑	(1) Vector breeding/animal attraction;
S ☐ ____________	N/A ☐	N/C ☑	(2) Fires;
S ☐ ____________	N/A ☐	N/C ☑	(3) Odors;
S ☐ ____________	N/A ☐	N/C ☑	(4) Blowing litter;
S ☐ ____________	N/A ☐	N/C ☑	(5) Moisture infiltration;
S ☐ ____________	N/A ☐	N/C ☑	f. Procedures for applying initial cover, including minimum cover frequencies;
S ☐ ____________	N/A ☐	N/C ☑	g. Procedures for applying intermediate cover;
S ☐ ____________	N/A ☐	N/C ☑	h. Time frames for applying final cover;
S ☐ ____________	N/A ☐	N/C ☑	i. Procedures for controlling scavenging and salvaging;
S ☐ ____________	N/A ☐	N/C ☑	j. Description of litter policing methods;
S ☐ ____________	N/A ☐	N/C ☑	k. Erosion control procedures;

LOCATION				PART K CONTINUED
S ☐	____________	N/A ☑	N/C ☐	8. Describe operational procedures for leachate management including: (62-701.500(8), FAC)
S ☐	____________	N/A ☑	N/C ☐	a. Leachate level monitoring;
S ☐	____________	N/A ☑	N/C ☐	b. Operation and maintenance of leachate collection and removal system, and treatment as required;
S ☐	____________	N/A ☑	N/C ☐	c. Procedures for managing leachate if it becomes regulated as a hazardous waste;
S ☐	____________	N/A ☑	N/C ☐	d. Identification of treatment or disposal facilities that may be used for off-site discharge and treatment of leachate;
S ☐	____________	N/A ☑	N/C ☐	e. Contingency plan for managing leachate during emergencies or equipment problems;
S ☐	____________	N/A ☑	N/C ☐	f. Procedures for recording quantities of leachate generated in gal/day and including this in the operating record;
S ☐	____________	N/A ☑	N/C ☐	g. Procedures for comparing precipitation experienced at the landfill with leachate generation rates and including this information in the operating record;
S ☐	____________	N/A ☑	N/C ☐	h. Procedures for water pressure cleaning or video inspecting leachate collection systems;
S ☐	____________	N/A ☑	N/C ☐	9. Describe how the landfill receiving degradable wastes shall implement a gas management system meeting the requirements of Rule 62-701.530, FAC; (62-701.500(9), FAC)
S ☑	Section 3	N/A ☐	N/C ☐	10. Describe procedures for operating and maintaining the landfill stormwater management system to comply with the requirements of Rule 62-701.400(9), FAC; (62-701.500(10), FAC)
S ☐	____________	N/A ☐	N/C ☑	11. Equipment and operation feature requirements; (62-701.500(11), FAC)
S ☐	____________	N/A ☐	N/C ☑	a. Sufficient equipment for excavating, spreading, compacting, and covering waste;
S ☐	____________	N/A ☐	N/C ☑	b. Reserve equipment or arrangements to obtain additional equipment within 24 hours of breakdown;
S ☐	____________	N/A ☐	N/C ☑	c. Communications equipment;

LOCATION **PART K CONTINUED**

S ☐ ____________ N/A ☐ N/C ☑ d. Dust control methods;

S ☐ ____________ N/A ☐ N/C ☑ e. Fire protection capabilities and procedures for notifying local fire department authorities in emergencies;

S ☐ ____________ N/A ☐ N/C ☑ f. Litter control devices;

S ☐ ____________ N/A ☐ N/C ☑ g. Signs indicating operating authority, traffic flow, hours of operation, and disposal restrictions;

S ☑ Section 3 N/A ☐ N/C ☐ 12. Provide a description of all-weather access road, inside perimeter road, and other on-site roads necessary for access at the landfill; (62-701.500(12), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 13. Additional record keeping and reporting requirements; (62-701.500(13), FAC)

S ☐ ____________ N/A ☐ N/C ☑ a. Records used for developing permit applications and supplemental information maintained for the design period of the landfill;

S ☐ ____________ N/A ☐ N/C ☑ b. Monitoring information, calibration and maintenance records, and copies of reports required by permit maintained for at least 10 years;

S ☐ ____________ N/A ☐ N/C ☑ c. Maintain annual estimates of the remaining life of constructed landfills, and of other permitted areas not yet constructed, and submit this estimate annually to the Department;

S ☐ ____________ N/A ☐ N/C ☑ d. Procedures for archiving and retrieving records which are more than five years old;

PART L. WATER QUALITY MONITORING REQUIREMENTS (62-701.510, FAC)

LOCATION

S ☐ ____________ N/A ☐ N/C ☑ 1. A water quality monitoring plan shall be submitted describing the proposed ground water and surface water monitoring systems, and shall meet at least the following requirements:

S ☐ ____________ N/A ☐ N/C ☑ a. Based on the information obtained in the hydrogeological investigation and signed, dated, and sealed by the P.G. or P.E. who prepared it; (62-701.510(2)(a), FAC)

LOCATION	PART L CONTINUED
S ☐ ____________ N/A ☐ N/C ☑	b. All sampling and analysis performed in accordance with Chapter 62-160, FAC; (62-701.510(2)(b), FAC)
S ☐ ____________ N/A ☐ N/C ☑	c. Ground water monitoring requirements; (62-701.510(3), FAC)
S ☐ ____________ N/A ☐ N/C ☑	(1) Detection wells located downgradient from and within 50 feet of disposal units;
S ☐ ____________ N/A ☐ N/C ☑	(2) Downgradient compliance wells as required;
S ☐ ____________ N/A ☐ N/C ☑	(3) Background wells screened in all aquifers below the landfill that may be affected by the landfill;
S ☐ ____________ N/A ☐ N/C ☑	(4) Location information for each monitoring well;
S ☐ ____________ N/A ☐ N/C ☑	(5) Well spacing no greater than 500 feet apart for downgradient wells and no greater than 1500 feet apart for upgradient wells, unless site specific conditions justify alternate well spacings;
S ☐ ____________ N/A ☐ N/C ☑	(6) Properly selected well screen locations;
S ☐ ____________ N/A ☐ N/C ☑	(7) Monitoring wells constructed to provide representative ground water samples;
S ☐ ____________ N/A ☐ N/C ☑	(8) Procedures for properly abandoning monitoring wells;
S ☐ ____________ N/A ☑ N/C ☐	(9) Detailed description of detection sensors, if proposed;
S ☐ ____________ N/A ☐ N/C ☑	d. Surface water monitoring requirements; (62-701.510(4), FAC)
S ☐ ____________ N/A ☐ N/C ☑	(1) Location of and justification for all proposed surface water monitoring points;
S ☐ ____________ N/A ☐ N/C ☑	(2) Each monitoring location to be marked and its position determined by a registered Florida land surveyor;
S ☐ ____________ N/A ☐ N/C ☑	e. Initial and routine sampling frequency and requirements; (62-701.510(5), FAC)
S ☐ ____________ N/A ☐ N/C ☑	(1) Initial background ground water and surface water sampling and analysis requirements;

LOCATION **PART L CONTINUED**

S ☐ ____________ N/A ☐ N/C ☑ (2) Routine monitoring well sampling and analysis requirements;

S ☐ ____________ N/A ☐ N/C ☑ (3) Routine surface water sampling and analysis requirements;

S ☐ ____________ N/A ☐ N/C ☑ f. Describe procedures for implementing evaluation monitoring, prevention measures, and corrective action as required; (62-701.510(6), FAC)

S ☐ ____________ N/A ☐ N/C ☑ g. Water quality monitoring report requirements; (62-701.510(8), FAC)

S ☐ ____________ N/A ☐ N/C ☑ (1) Semi-annual report requirements; (see paragraphs 62-701.510(5)(c) and (d), FAC for sampling frequencies)

S ☐ ____________ N/A ☐ N/C ☑ (2) Documentation that the water quality data shall be provided to the Department in an electronic format consistent with requirements for importing into Department databases, unless an alternate form of submittal is specified in the permit;

S ☐ ____________ N/A ☐ N/C ☑ (3) Two and one-half year report requirements, or every five years if in long-term care, signed dated, and sealed by P.G. or P.E.;

PART M. SPECIAL WASTE HANDLING REQUIREMENTS (62-701.520, FAC)

LOCATION

S ☐ ____________ N/A ☑ N/C ☐ 1. Describe procedures for managing motor vehicles; (62-701.520(1), FAC)

S ☐ ____________ N/A ☑ N/C ☐ 2. Describe procedures for landfilling shredded waste; (62-701.520(2), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 3. Describe procedures for asbestos waste disposal; (62-701.520(3), FAC)

S ☐ ____________ N/A ☑ N/C ☐ 4. Describe procedures for disposal or management of contaminated soil; (62-701.520(4), FAC)

S ☐ ____________ N/A ☑ N/C ☐ 5. Describe procedures for disposal of biological wastes; (62-701.520(5), FAC)

PART N. GAS MANAGEMENT SYSTEM REQUIREMENTS (62-701.530, FAC)

LOCATION

S ☐ ____________ N/A ☐ N/C ☑ 1. Provide documentation for a gas management system that will: (62-701.530(1), FAC)

S ☐ ____________ N/A ☐ N/C ☑ a. Be designed to prevent concentrations of combustible gases from exceeding 25% the LEL in structures and 100% the LEL at the property boundary;

S ☐ ____________ N/A ☐ N/C ☑ b. Be designed for site specific conditions;

S ☐ ____________ N/A ☐ N/C ☑ c. Be designed to reduce gas pressure in the interior of the landfill;

S ☐ ____________ N/A ☐ N/C ☑ d. Be designed to not interfere with the liner, leachate control system, or final cover;

S ☑ Section 3 N/A ☐ N/C ☐ 2. Provide documentation that will describe locations, construction details, and procedures for monitoring gas at ambient monitoring points and with soil monitoring probes; (62-701.530(2), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 3. Provide documentation describing how the gas remediation plan and odor remediation plan will be implemented; (62-701.530(3), FAC)

S ☐ ____________ N/A ☑ N/C ☐ 4. Landfill gas recovery facilities; (62-701.530(5), FAC)

S ☐ ____________ N/A ☑ N/C ☐ a. Provide information required in Rules 62-701.320(7) and 62-701.330(3), FAC;

S ☐ ____________ N/A ☑ N/C ☐ b. Provide information required in Rule 62-701.600(4), FAC, where relevant and practical;

S ☐ ____________ N/A ☑ N/C ☐ c. Provide estimates of current and expected gas generation rates and description of condensate disposal methods;

S ☐ ____________ N/A ☑ N/C ☐ d. Provide description of procedures for condensate sampling, analyzing, and data reporting;

S ☐ ____________ N/A ☑ N/C ☐ e. Provide closure plan describing methods to control gas after recovery facility ceases operation, and any other requirements contained in Rule 62-701.400(10), FAC;

PART O. LANDFILL FINAL CLOSURE REQUIREMENTS (62-701.600, FAC)

LOCATION

S	Location	N/A	N/C	Requirement
☑	Sect. 3, App F	☐	☐	1. Closure permit requirements; (62-701.600(2), FAC)
☑	Sect. 3, App F	☐	☐	a. Application submitted to the Department at least 90 days prior to final receipt of wastes;
☑	Sect. 3, App F	☐	☐	b. Closure plan shall include the following:
☑	Sect. 3, App F	☐	☐	(1) Closure design plan;
☐	Sect. 3, App F	☐	☑	(2) Closure operation plan;
☐	Sect. 3, App F	☐	☑	(3) Plan for long-term care;
☑	Sect. 3, App F	☐	☐	(4) A demonstration that proof of financial assurance for long-term care will be provided;
☑	Sect. 3, App A	☐	☐	2. Closure design plan including the following requirements: (62-701.600(3), FAC)
☑	Sect. 3, App A	☐	☐	a. Plan sheet showing phases of site closing;
☑	Sect. 3, App A	☐	☐	b. Drawings showing existing topography and proposed final grades;
☑	Sect. 3, App A	☐	☐	c. Provisions to close units when they reach approved design dimensions;
☑	Sect. 3, App A	☐	☐	d. Final elevations before settlement;
☑	Sect. 3, App A	☐	☐	e. Side slope design including benches, terraces, down slope drainage ways, energy dissipaters, and description of expected precipitation effects;
☐		☐	☑	f. Final cover installation plans including:
☐		☐	☑	(1) CQA plan for installing and testing final cover;
☐		☐	☑	(2) Schedule for installing final cover after final receipt of waste;
☐		☐	☑	(3) Description of drought resistant species to be used in the vegetative cover;

LOCATION				PART O CONTINUED
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	(4) Top gradient design to maximize runoff and minimize erosion;
S ☐		N/A ☐	N/C ☑	(5) Provisions for cover material to be used for final cover maintenance;
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	g. Final cover design requirements;
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	(1) Protective soil layer design;
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	(2) Barrier soil layer design;
S ☑	Sect. 3, App A	N/A ☐	N/C ☐	(3) Erosion control vegetation;
S ☐		N/A ☑	N/C ☐	(4) Geomembrane barrier layer design;
S ☐		N/A ☑	N/C ☐	(5) Geosynthetic clay liner design, if used;
S ☑	Sect. 3, App E	N/A ☐	N/C ☐	(6) Stability analysis of the cover system and the disposed waste;
S ☑	Sect. 3, App G	N/A ☐	N/C ☐	h. Proposed method of stormwater control;
S ☐		N/A ☐	N/C ☑	i. Proposed method of access control;
S ☐		N/A ☐	N/C ☑	j. Description of the proposed or existing gas management system which complies with Rule 62-701.530, FAC;
S ☐		N/A ☐	N/C ☑	3. Closure operation plan shall include: (62-701.600(4), FAC)
S ☐		N/A ☐	N/C ☑	a. Detailed description of actions which will be taken to close the landfill;
S ☐		N/A ☐	N/C ☑	b. Time schedule for completion of closing and long-term care;
S ☐		N/A ☐	N/C ☑	c. Describe proposed method for demonstrating financial assurance for long-term care;
S ☐		N/A ☐	N/C ☑	d. Operation of the water quality monitoring plan required in Rule 62-701.510, FAC;
S ☐		N/A ☐	N/C ☑	e. Development and implementation of gas management system required in Rule 62-701.530, FAC;

LOCATION **PART O CONTINUED**

S ☐ _____________ N/A ☐ N/C ☑ 4. Certification of closure construction completion including: (62-701.600(6), FAC)

S ☐ _____________ N/A ☐ N/C ☑ a. Survey monuments; (62-701.600(6)(a), FAC)

S ☐ _____________ N/A ☐ N/C ☑ b. Final survey report; (62-701.600(6)(b), FAC)

S ☐ _____________ N/A ☐ N/C ☑ 5. Declaration to the public; (62-701.600(7), FAC)

S ☐ _____________ N/A ☐ N/C ☑ 6. Official date of closing; (62-701.600(8), FAC)

S ☐ _____________ N/A ☐ N/C ☑ 7. Justification for and detailed description of procedures to be followed for temporary closure of the landfill, if desired; (62-701.600(9), FAC)

PART P. OTHER CLOSURE PROCEDURES (62-701.610, FAC)

LOCATION

S ☐ _____________ N/A ☐ N/C ☑ 1. Describe how the requirements for use of closed solid waste disposal areas will be achieved; (62-701.610(1), FAC)

S ☐ _____________ N/A ☐ N/C ☑ 2. Describe how the requirements for relocation of wastes will be achieved; (62-701.610(2), FAC)

PART Q. LONG-TERM CARE (62-701.620, FAC)

LOCATION

S ☐ _____________ N/A ☐ N/C ☑ 1. Maintaining the gas collection and monitoring system; (62-701.620(5), FAC)

S ☐ _____________ N/A ☐ N/C ☑ 2. Stabilization report requirements; (62-701.620(6), FAC)

S ☐ _____________ N/A ☐ N/C ☑ 3. Right of access; (62-701.620(7), FAC)

S ☐ _____________ N/A ☐ N/C ☑ 4. Requirements for replacement of monitoring devices; (62-701.620(8), FAC)

S ☐ _____________ N/A ☐ N/C ☑ 5. Completion of long-term care signed and sealed by professional engineer; (62-701.620(9), FAC)

PART R. FINANCIAL ASSURANCE (62-701.630, FAC)

LOCATION

S ☑ Sect. 3, App F-1 N/A ☐ N/C ☐ 1. Provide cost estimates for closing, long-term care, and corrective action costs estimated by a P.E. for a third party performing the work, on a per unit basis, with the source of estimates indicated; (62-701.630(3) & (7), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 2. Describe procedures for providing annual cost adjustments to the Department based on inflation and changes in the closing, long-term care, and corrective action plans; (62-701.630(4) & (8), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 3. Describe funding mechanisms for providing proof of financial assurance and include appropriate financial assurance forms. (62-701.630(5), (6), & (9), FAC)

PART S. CERTIFICATION BY APPLICANT AND ENGINEER OR PUBLIC OFFICER

1. Applicant:

The undersigned applicant or authorized representative of Angelos Aggregate Materials, Ltd. is aware that statements made in this form and attached information are an application for a modification permit from the Florida Department of Environmental Protection, and certifies that the information in this application is true, correct, and complete to the best of his/her knowledge and belief. Further, the undersigned agrees to comply with the provisions of Chapter 403, Florida Statutes, and all rules and regulations of the Department. It is understood that the Permit is not transferable, and the Department will be notified prior to the sale or legal transfer of the permitted facility.

Signature of Applicant or Agent	855 28th Street South Mailing Address
John Arnold, P.E., Director of Engineering & Facilities Name and Title (please type)	St. Petersburg, FL 33712 City, State, Zip Code
John.Phillip.Arnold@gmail.com E-Mail Address (if available)	(813) 477-1719 Telephone Number
	Date:

Attach letter of authorization if agent is not a government official, owner, or corporate officer.

2. Professional Engineer registered in Florida (or Public Officer if authorized under Sections 403.707 and 403.7075, Florida Statutes):

This is to certify that the engineering features of this solid waste management facility have been designed/examined by me and found to conform to engineering principles applicable to such facilities. In my professional judgment, this facility, when properly maintained and operated, will comply with all applicable statutes of the State of Florida and rules of the Department. It is agreed that the undersigned will provide the applicant with a set of instructions of proper maintenance and operation of the facility.

Signature	4140 NW 37th Place, Suite A Mailing Address
Lisa Baker, P.E., Engineering Division Director Name and Title (please type)	Gainesville, FL 32606 City, State, Zip Code
	lisa@locklearconsulting.com E-Mail Address (if available)
74652 Florida Registration Number (please affix seal)	(352) 672-6867 Telephone Number
	Date:

SECTION 3

ENGINEERING REPORT

ENTERPRISE ROAD CLASS III RECYCLING AND DISPOSAL FACILITY
PERMIT MODIFICATION
ENGINEERING REPORT

Prepared for:

ANGELO'S AGGREGATE MATERIALS, LTD
855 28th Street South
St. Petersburg, Florida 33712

Prepared by:

LOCKLEAR & ASSOCIATES, INC.
4140 NW 37th Place, Suite a
Gainesville, Florida 32606

August 2014

Performed Under the
Supervision of

____
Lisa J. Baker, P.E.
Florida PE #74652

TABLE OF CONTENTS

APPENDICES

3.1 GENERAL

This Engineering Report is part of a comprehensive Florida Department of Environmental Protection (FDEP or Department) permit modification application for the Enterprise Road Class III Recycling and Disposal Facility (Facility) submitted by Locklear & Associates, Inc. (L&A) in July 2014 on behalf of Angelo's Aggregate Materials, Ltd. (Applicant). The Engineering Report is designed to meet the requirements of Rule 62-701, F.A.C. and Pasco County's Land Development Code (LDC) and includes the following major components (and their respective location within this Engineering Report):

- Plan Set dated July 2014, titled 2014 Plan Set, by Locklear & Associates, Inc. (Appendix A);
- Figures (Appendix B);
- An evaluation of the applicability of bottom liner and leachate collection system requirements (Appendix C);
- Updated report evaluating geotechnical site conditions (Appendix D);
- An analysis of slope stability which takes into account proposed changes in the conceptual final closure design (Appendix E);
- Updated Closure and Reclamation Plan (Appendix F);
- Updated financial assurance cost estimates (Appendix F-1);
- Stormwater Management Plan that addresses changes to the Facility stormwater management system proposed in a separate Environmental Resource Permit application (Appendix G);
- Updated Operations Plan that includes proposed changes to the fill sequence (Appendix H);
- Updated Contingency Plan (Appendix I).

3.2 SITE LOCATION AND DESCRIPTION

The facility receives approximately 550 tons per day of Class III waste, which includes Construction and Demolition debris, from Pasco County and other surrounding Counties (including Pinellas, Hernando, Hillsborough and Polk). The Facility was originally permitted by the Department on October 5, 2001.

The subject site is located in Sections 5 and 8, Township 25 South, Range 22 East, in Pasco County, Florida, as shown on the United States Geological Survey (USGS) quadrangle map presented in Figure 1 of Appendix B. More specifically, the Facility is located at the northwest corner of the intersection of Enterprise Road and Auton Road, southeast of Dade City, Florida (see Figures 2, 3 of Appendix B). The site occupies approximately 160 acres of land on the north side of Enterprise Road. The square property is approximately 2,640 feet on a side and is located in the southwest quarter of Section 5 and the northwest quarter of Section 8.

There are no airports within 5 miles of the site, see Figure 4 (Appendix B).

3.2.1 Prohibition Compliance

In order to comply with Rule 62-701.300, F.A.C., the Facility will abide by the following:

- The Facility will not dispose of solid waste at the proposed site until proper permitting is obtained.

- Disposal of solid waste will not occur in areas that are: unable to provide support for the waste; geological formation or subsurface features that would allow unimpeded discharge to surface water on groundwater; are within 500 feet of an existing potable water well (Figure 5 in Appendix B); are within a dewatered pit; are in a frequently flooded area; are in a body of water; are within 200 feet of a surface water body that discharges offsite (Figure 6 in Appendix B); are on a right of way; are within 1,000 feet of an existing community potable water; or are within 3,000 ft. of Class I surface waters (Figures 5, 6 in Appendix B).

- Open burning will not occur on the site unless the burning takes place in a permitted air curtain incinerator.

- Hazardous wastes, PCB's, biohazardous wastes, special wastes, liquids, and oily wastes will not be disposed of at the Facility. Random load checks and the use of spotters at the working face will ensure that these wastes are not placed for disposal at the Facility.

3.3 SURROUNDING LAND USES AND ZONING

Figure 7 (Appendix B) presents an aerial photograph map depicting the surrounding land uses and designated FDOT FLUCCS codes in the site vicinity. Open land, pastureland, row crop, tree crop, and upland hardwood forest land uses surround the site. A few scattered residences also surround the site. All adjoining properties are zoned AC. To the north is the East Pasco County Class I Sanitary Landfill, which is closed. To the east is an old borrow pit and agricultural land. South of the site is agricultural land and orange groves, and to the west are orange groves. Figure 8 (Appendix B) presents an aerial photograph map with future land use classifications.

Current site zoning designation, AC with a conditional use, is consistent with the Class III Landfill use. Figure 5 depicts the locations of two (2) water wells proximate to the landfill limit.

The 500-foot setback from the approved landfill footprint to potable wells complies with the setback requirements of Rule 62-701.300(2)(C), F.A.C.

3.4 TOPOGRAPHY

The USGS 7.5 minute quadrangle map shown in Figure 1 (Appendix B) shows the land surface of the subject site has elevations ranging from 85 feet to 175 feet National Geodetic Vertical Datum (NGVD). Natural land surface generally slopes to the northeast on the northern half of the property and southeast on the southern half of the site. A 2013 site-specific topographic survey is shown on Sheets 1 and 2 of the 2014 Plan Set provided in Appendix A.

3.4.1 100-Year Flood Prone Areas

Figure 9 depicts a 100-year flood prone area map from the U.S. Federal Emergency Management Administration for the subject vicinity. As shown, the site is not within and would not be impacted by an estimated 100-year storm flood.

3.5 SOILS

According to the Soil Survey of Pasco County, Florida, published by the U.S. Department of Agriculture Soil Conservation Services (USDA-SCS), the majority of the subject site and surrounding areas are covered by fine sands. A copy of the USDA-SCS Soils Survey Map showing the mapped areas of the major soil types at the subject site and its vicinity is presented in Figure 10.

USDA-SCS soil type 12- Astatula fine sands encompass a small portion in the northeast portion of the site. Astatula sands are nearly level to gently sloping, and excessively drained mainly in the sandhills. Seasonal high water table (SHWT) is typically at a depth of 72 inches in Astatula soil. The permeability is very rapid throughout the soil. Both the available water capacity and natural fertility of the Astatula soil are low.

USDA soil type 32 - Lake fine sands comprise the majority of the soils found on the property. These soils are nearly level to gently sloping and excessively well drained. They occur along ridgetops and on low hillsides in the uplands. Permeability is rapid throughout the soil and the water table is below a depth of 120 inches. The available water capacity is very low in all layers and the natural fertility and organic matter content are both low.

USDA soil type 72 - Orlando fine sands are found in a small area in the northeast portion of the property. These soils are nearly level to gently sloping and well drained. The water table is typically at a depth greater than 72 inches with permeability of the soil rapid throughout. The available water capacity is low in the surface layer and very low in the other layers.

3.6 LANDFILL SITE IMPROVEMENTS

Portions of the 160-acre landfill site are also currently being operated as orange groves. The following site improvements have been installed to meet landfill operational requirements.

3.6.1 Entrance Facilities

An office trailer (gatehouse) is located onsite for the gate attendant. This trailer has hand washing and toilet facilities. Potable bottled water is supplied to the trailer. Electric and telephone services are available to the trailer office. Site entrance improvements also include an all-weather entrance roadway, scales and perimeter road as shown in Sheet C-0.02 of the 2014 Plan Set provided in Appendix A.

3.6.2 Roads

The primary haul route servicing the Facility is Enterprise Road. Enterprise Road is serviced by Clinton Avenue and C.R. 35A.

Enterprise Road has been improved to an all-weather access roadway from C.R. 35A to the entrance of the Facility. All on-site roads are maintained by the Applicant to allow for all weather access. Access roads to the working face are constructed from on-site soils and/or recovered materials such as concrete and asphalt. This is done on an as needed basis

3.6.3 Effective Barrier

A 6-foot high security fence has been constructed along the south and east boundaries. The security fence consists of a 6-foot high-galvanized chain link fence, hereafter referred to as the "security fence." A five-foot wire fence runs along the north and west property boundaries. The chain link fence has been installed in accordance with the permit issued October 2001. Three (3) foot square "NO TRESPASSING" signs with 5-inch letters have been installed at no less than 500-feet spacing and at all corners to notice unauthorized access. The only point of access into the facility will be through the gate at the entrance. This gate will be locked during closed hours.

An 8-foot high landscape berm has been constructed along the site's frontage to Enterprise and Auton Roads, see Sheet C0.02 of the 2014 Plan Set provided in Appendix A.

3.6.4 Weighing or Measuring Incoming Waste

A scale system is used to keep records of materials received at the Facility. The scales are calibrated every six (6) months. Vehicles are weighed when they enter the Facility, and based upon the tare weight of the vehicle, the waste tonnage will be determined. Prior to unloading debris, the tonnage or volume of waste materials received will be determined and the appropriate fee assessed.

3.6.5 Vehicle Traffic Control and Unloading

Generally, truck traffic will be controlled on a first-in, first-out basis, as directed by the spotter at the working face. There is adequate space for truck staging at the site's entrance gate (7-8 trucks) to mitigate any queuing onto Enterprise Road. The Facility will discourage any truck staging prior to landfill opening. Signs will be posted at the entrance gate and on interior roads to guide truck traffic.

3.7 EXCAVATION OPERATIONS AND CELL CONSTRUCTION

On-site soils will be excavated according to the Pasco County Class I Mining Permit. The soils will be excavated and removed for various uses, including construction, roadways, and in landfilling operations. The County permit allows an excavation up to within a 200-foot setback from the property boundary and an excavation slope of 6H:1V. The Class I Mine will be "reclaimed" as a Class III landfill. The 6H:1V excavation slopes are associated with the mining of the existing soil. Once the landfill is ready to accept waste, the mine side slopes will be excavated to 2H:1V side slopes (cell slopes). Waste will be placed against this excavated slope and then built above existing grade. Drawing sheets C1.10 through C1.21 of the 2014 Plan Set (Appendix A) show the phasing of the cell construction and filling operation at the Facility.

Excavation slopes will not exceed 6H:1V pursuant to the Pasco County permit; however, once an excavation phase is complete and construction commences on a new cell, the slopes will be excavated to 2H:1V. A portion of the excavated soils from the mining operation will be used as landfill construction material. Excavated soils will be reserved to provide adequate cover material for the landfill operation. Cell construction will follow the sequence described in Section 3.8.

As new cells are excavated and constructed, the cells will be overexcavated to approximately three-feet below the approved excavation base grade to allow for the construction of a 3' clay liner. If limerock is encountered during construction, the following actions will be taken:

Where limerock is encountered at or below the elevation of the cell clay layer:

- In the event that limerock is encountered during clay layer excavation or construction activities, the excavation / construction activities shall cease and the Department shall be notified by email within 24 hours of discovery.
- Excavation / construction activities related to determining location, elevation, and extent of limestone or to remediation in accordance with these procedures will resume no sooner than 24 hours after notice, unless otherwise directed by the Department
- Written notification will be submitted within 7 days of discovery.
- The written notification shall include the location, elevation, and extent of limestone noted on a plan sheet, a description of the materials encountered, and a description of the completion of excavation / clay backfill in the identified area or the anticipated timeframe for completion of these activities.
- The limerock will be over-excavated (5-feet laterally beyond limerock boundary and 3-feet vertically below the bottom of the compacted clay layer) and the area backfilled with clay meeting the specifications in the FDEP Operation/Construct permit and Engineering Report.
- Excavation / construction activities will resume no sooner than 24 hours after notice, unless otherwise directed by the Department

Where limerock is encountered during mining operations at elevations above the elevation of the cell clay layer and do not extend into the clay layer:

- Document on the limerock observation log the location, elevation, and extent of limestone noted on a plan sheet, and a description of the materials encountered
- Submit limerock observation log to FDEP within 7 days of discovery
- Where limerock is encountered within 10-feet of the design elevation of the top of compacted clay layer, in addition to the procedures noted above, overexcavate 1-foot vertically and laterally around the exposed limerock and backfill with compacted clay to temporarily prevent infiltration during mining operations.

If limerock encountered during mining operations at elevations above the cell clay layer extends to or below the elevation of the cell clay layer, the procedures identified above under the heading *"Where limerock is encountered at or below the elevation of the cell clay layer"* shall be followed.

Stockpiled clay, obtained from on-site excavation, will be sampled for laboratory proctor testing for use as cell floor and cell side slope material to construct a three-foot thick clay barrier layer. Material with acceptable permeability and proctor test results will be placed onto the constructed cell floor in lifts, and compacted by multiple passes with a 40,000 lb, D-6 Dozer, or equivalent.

A three-foot thick clay layer will also be placed on the 2H:1V side slopes of the exterior excavation side slopes of the perimeter cells to complete the continuous clay barrier layer. Due to the steepness of the slope, clay placement and compaction will require an iterative process consisting of several horizontal lifts, stepped up progressively until the base elevation of the landfill is reached. In order to achieve the required compaction and hydraulic conductivity, as well as to achieve a constant three feet of clay along the slope, each lift along the cell wall will need to exceed three feet wide and be wide enough for the compacting equipment. Construction of the clay side slopes is shown on Drawing C1.40 of the 2014 Plan Set provided in Appendix A. Soil in excess of three feet wide on the slopes may be removed after compaction and compliance testing have been approved. Acceptable test results means the results of the laboratory proctor and permeability tests indicate that the permeability of the material meets the requirements of the construction permit. Optimum moisture content for the on-site stockpiles has been approximately 13 to 20 percent.

The dozer will compact the material in the bottom of the excavation and up the side slopes into the dozer track marks. After each lift is compacted with the dozer, a 12-ton, 84-inch vibratory sheeps-foot roller, or equivalent, will be used to roll the material. The daily activities will be recorded, including any tie-in locations, thickness of each compacted lift, verification of the compaction and moisture content testing, verification of equipment used for compaction, and verification of dozer tracks at the tie-in surfaces (no smooth surfaces). Field logs and photographs documenting the field work will be provided to the Department. A topographic survey will confirm the top of excavation and top of clay grades.

Excavation will be such that 2H:1V slopes will only be encountered on the outer edge boundaries of the cells. A 3H:1V working face slope, beginning at the 2H:1V slope face, will be used for landfilling the waste.

3.8 METHOD OF CELL SEQUENCE

Filling activities are currently (as of July 2014) occurring in Cells 6A and 6B of the Class III Landfill. The cell construction and filling sequence operations will be as follows (see Drawing Sheets C-1.10 through C-1.21 of the 2014 Plan Set provided in Appendix A):

Phasing Sequence 1	Fill Cell 6 (A&B) in 10 – 12 foot lifts from base grade to cover elevation 175’, including filling over Cells 1 – 5, and 15. Maximum slope is 3H:1V from base grade to cover elevation 170’; and 20H:1V from cover elevation 170’ to 175’.

Cover elevations noted include 18” intermediate cover and 18” top soil layer.

Construction of Cells 13A, 14 and 16 will be ongoing during Phasing Sequence 1.

Phasing Sequence 2

Complete construction of Cells 13A, 14 and 16 per Sheet C1.00 of the 2014 Plan Set provided in Appendix A.

Fill Cells 13A, 14 and 15 in 10 – 12 foot lifts from base grade to final cover grade (elevation 175’), including filling over Cells 5, 6 and 15. Filling will begin in the east in Cell 16 and move west to Cell 13A.

Maximum slope is 3H:1V from base grade to cover elevation 170’; and 20H:1V from cover elevation 170’ to 175’.

Cover elevations noted include 18” intermediate cover and 18” top soil layer.

Construction of Cells 7 and 13B will be ongoing during Phasing Sequence 2.

Phasing Sequence 3

Complete construction of Cells 7 and 13B per Sheet C1.00 of the 2014 Plan Set provided in Appendix A.

Fill Cells 7 and 13B in 10 – 12 foot lifts from base grade to final cover grade (elevation 175), including filling over Cells 6 and 13A.

Maximum slope is 3H:1V from base grade to cover elevation 170’; and 20H:1V from cover elevation 170’ to 175’.

Cover elevations noted include 18” intermediate cover and 18” top soil layer.

Lift height includes cover material. Due to the landfill bottom elevation, some lifts may not be a full 10 feet in height.

As each sequence is active, the following procedures will be followed.

- The access road to the working face will be constructed and graded as necessary.
- Waste will be compacted as it is placed. General lift height will be 10 feet and will come within three (3) feet of the final elevation to provide for final cover.
- Avoid channelizing stormwater flows

- Use mulch, grass, and maintain intermediate covers

- Use culverts, berms, or the best management practices based on actual weather and site conditions.

- The working face will remain approximately 100 feet in length.

- Weekly cover of six (6) inches of soil will be placed on the working face.

- Intermediate cover of 12 inches of soil will be placed in areas that will not receive waste within 180 days. The cover may be removed immediately prior to placement of new waste.

- Stormwater runoff from the interior of the filling area will be diverted to Pond 3 using a temporary interior swale and/or berms. Perimeter berms will direct stormwater away from excavation and filling areas.

3.8.1 Vertical Expansion / Conceptual Closure

The landfill is permitted to be completed to a maximum height of 175 feet, NGVD. The final grading plan is shown on Drawing C-1.00 of the 2014 Plan Set provided in Appendix A. The Conceptual Closure Plan (Drawing Sheets C1.30 and C1.40 of the 2014 Plan Set provided in Appendix A). The facility's overall stormwater management system is governed by the ERP Permit. A detailed design that will tie the conceptual closure plan into the facility's stormwater management system will be submitted at the time of closure with the FDEP Closure Application submittal.

The top (20H:1V) and side slope (3H:1V) designs provide for proper drainage and minimize rainfall infiltration into the landfill surface.

3.8.2 Erosion Control

The following engineering controls will be used to minimize erosion at the working face:

- Regrade a maximum of 100 linear feet of the outer edge slopes at a time to 2H:1V. The purpose of this recommendation is that a relatively small area will be subjected to surface erosion at any given time.

- Construct a berm along the top of the slope during the regrading to redirect any rainfall runoff away from the face of the slope. The area along the berm should be graded so as to allow rapid runoff along the top of the slope. Ponding of water near the top of the slope should not be allowed, since seepage through the slope may initiate slope erosion.

- As soon as possible following the construction of the clay liner, begin to fill against the 2H:1V slope with the landfill material.

- Avoid channelizing stormwater flows

- Use mulch, cover soils, and maintain intermediate covers

- Use berms or the best management practices based on actual weather and site conditions.

3.8.3 Life Expectancy

The cell capacity and lifespan estimates for Cells 1 – 5, 7, 13 (A&B), 14, 15 and 16 have been estimated using the November 2013 topographic survey performed by Pickett and Associates (Sheets 1 and 2 of Appendix A); and recent and projected tonnages.

Using the November 2013 topographic survey as a base, a three-dimensional AutoCAD model of Cells 1 – 5, 7, 13 (A&B), 14, 15 and 16 at closure was generated, using the following assumptions:

- 3H:1V sideslopes between elevation 85’ and elevation 170’; 20H:1V sideslopes between elevation 170’ and 175’.
- 36 inches of cover over the 60.9 acre 2D surface was subtracted from the maximum volume

The airspace volume remaining as of June 2014 was calculated to be approximately 2,787,532 yd^3 after accounting for the final cover volume of 404,458 yd^3.

The following design parameters were used to compute landfill design life remaining:

- **Density:** An in-place density of 1,350 lb/yd^3 (0.675 tons/ yd^3) was used for the design life estimate and is a typical density for Class III waste.

- **Waste acceptance rate:** a waste acceptance rate of 550 tons per day was used based on facility records.

The remaining life in Cells 1 – 5, 7, 13 (A&B), 14, 15 and 16 was calculated to be 13 years from the survey date, or 2025.

3.9 WASTE COMPACTION AND APPLICATION OF COVER

Waste received will be segregated based on compactibility. Bulky, incompressible items, such as concrete, asphalt, and tree debris, will be separated and stockpiled for future processing. Tree debris may be separated from the waste and periodically mulched on-site. The remaining debris is disposed of in designated cells using onsite equipment to place the debris and a Caterpillar 826 Compactor, or equivalent, to weekly compact the waste. Initial cover material is planned to be excavated from onsite areas and placed weekly in approximately 6-inch layers on the compacted lifts to control vectors, reduce rain infiltration and provide a more stable working face area. An intermediate cover of one (1) foot of compacted soil will be applied if final cover or an additional lift is not to be applied within 180 days of cell completion. Cell closure will occur when all permitted cells are filled. For final buildout grade and closure detail, see Drawing Sheets C1.30 and C1.40 of the 2014 Plan Set provided in Appendix A, respectively. Final cover grades are shown on Drawing Sheet C1.40 of the 2014 Plan Set provided in Appendix A. Fill grades shall be such that final cover elevations are not exceeded on all slopes.

Final cover consisting of 18 inches of compacted soil barrier layer and 18 inches of soil that will sustain vegetative growth, as specified in the Closure and Reclamation Plan provided in Appendix F. Cell closure shall generally conform to the lines and maximum grades specified on Drawing Sheet C1.40 (2014 Plan Set provided in Appendix A) and the requirements of Rule 62-701.600 F.A.C., Rule 62-701.400 (7), F.A.C., and Rule 62-701.400(8),F.A.C.. Pesticides when deemed necessary to control rodents, insects and other vectors shall be used as specified by the Florida Department of Agriculture and Consumer Services. Uncontrolled and unauthorized scavenging shall not be permitted at the landfill site. Controlled recycling may be permitted by the Landfill Manager. Temporary storage of soil fill or recycling materials may occur within the inactive, or closed cell areas.

3.10 DESIGN OF GAS, LEACHATE AND STORMWATER CONTROLS

3.10.1 Gas Monitoring and Control

The type of materials to be disposed of in the Class III Landfill are not expected to generate significant amounts of methane or other gases since the landfill's design prevents groundwater contact. Therefore, no active gas control systems or venting is proposed. However, because some biodegradable waste may be accepted, a passive gas control system is proposed, see Section 3.10.1.5. The Landfill Manager will conduct daily and weekly inspections of the landfill and will check for objectionable odors or gas around the perimeter of the site. The Manager will notify the FDEP of any exceedances and immediately take corrective actions. Corrective actions will include placement of additional cover material or mulch, or lime containing materials such as crushed concrete that is documented to abate the odors. Quarterly gas point monitoring is currently conducted. The facility only accepts Class III debris for disposal and accepts no putrescible household wastes. Surface water and groundwater contact with the Class III wastes will be prevented by the approved facility design. Other best management practices to prevent odors include: 1) closure of each cell as it is completed; 2) weekly soil cover application; and, 3) immediate corrective actions to abate any detected onsite odors.

3.10.1.1 Gas Probe Locations

Gas monitoring points are spaced approximately 600 linear feet apart surrounding the landfill. Sheet C-0.03 of the 2014 Plan Set provided in Appendix A presents these locations of the gas probes surrounding the landfill. Gas Probes (GP) 6 through 15 are existing, GP 1 through 5 and 16 are proposed and will be installed as part of future cell construction completion certification at closure. The remaining gas probes are to be installed in accordance with the following schedule in Table 3.10:

Table 3.10 Gas Probe Installation Schedule

Gas Probe	**Cell Construction Completion**
GP-1	Future Cell 10 or closure
GP-2	Future Cell 11 or closure
GP-3	Future Cell 12 or closure
GP-4	Proposed Cell 13
GP-5	Proposed Cell 14
GP-16	Future Cell 9 or closure

Several existing gas probes on the southern and eastern portion of the property are currently located immediately adjacent to the disposal area rather than at the property boundary as required by Rule. Probes GP-7, 8, 11, 12, 13, and 14 will be relocated to the property boundary as part of the construction activities for Cell 16.

3.10.1.2 Gas Probe Design

Figure 3-14 provided in Appendix B presents the gas probe design for the subject landfill site. These gas probes are designed to be surface sealed and to provide a greater permeability than the surrounding sediments to act as collector points for any methane gas, if present. Based on the landfill design, all of the gas probes are designed to be approximately 20-foot in depth with an 18-foot open screen for the monitoring point. This depth will allow the screened interval to intercept the full cross-section of the landfilled waste that could potentially generate methane.

The groundwater table may be encountered at depths of approximately 50-foot, or more below land surface (bls) across most of the site. Accordingly, gas probes are not designed to intercept the groundwater table. The gas probes are constructed of Schedule-40 polyvinyl chloride plastic pipe (PVC). The PVC casing and screen will be flush-threaded and have a screen slot size large enough to accommodate easy methane extraction from the monitoring point. The sand/bentonite slurry proposed for a surface seal will be a blend of 4 parts of sand to one part of granular bentonite. The sand and the bentonite will be mixed dry and hydrated immediately prior to placing it in the annular space of the borehole. The gas probe points are proposed to be installed by hollow-stem auger to construct an eight-inch borehole to be filled with pea gravel. The pea gravel will meet the requirements of FDOT standard size No. 10 aggregate washed pea gravel. Each gas probe will be protected by a surface mounted well protector and locked for security purposes. Each gas probe will terminate at the surface with a PVC ball valve to accommodate easy monitoring of methane levels, with a portable meter. The ball valve will remain closed between monitoring events and pre-purge measurements will be recorded. In the event of a positive gas measurement, the post-purge measurement will also be recorded.

3.10.1.3 Methane Gas Measurement

In accordance with the requirements of the current FDEP permits, methane gas levels are monitored at each of the active gas monitoring points quarterly, with results submitted to the FDEP. A lower explosive limit (LEL) meter will be used to measure methane levels from each of the gas probes. LEL meters, such as the MSA Model 260 or GEM 500 or equivalent, will be used to conduct this monitoring. These meters are capable of measuring percent volume of methane in air and the percent LEL level of the methane by volume. The meter will be calibrated in accordance with manufacturer's specifications prior to each methane monitoring event. Attachment 4 of the Operations Plan provided in Appendix H presents the proposed gas monitoring probe survey form to be used to conduct the quarterly monitoring at the subject site. This form will document at the time of each gas probe reading, air temperature in degrees Fahrenheit, methane levels in percent volume in air and percent LEL. The reporting action level for methane in air will be considered 5 percent by volume in air as measured by the lower explosive limit. The reporting action limit for methane in structures is 25% of the LEL, or 1.25% methane by volume. The results of each quarterly gas probe survey will be submitted to the Department on the presented form within two weeks of each monitoring event. These events are planned to be coordinated with the semi-annual groundwater monitoring at the subject site.

3.10.1.4 Gas Contingency Plan

The following Contingency Plan will be implemented if any of the measured gas monitoring points methane levels are detected above the 100% LEL of greater than 5 percent methane in air, or if 25% of the LEL or higher is measured in a structure. If this level of methane or greater is detected in any of the probes, the Facility operator will institute measurement of methane in nearby, at, or below grade structures, i.e., stormwater collection points, or any maintenance or office buildings within 100 feet of the subject gas probe on a weekly basis until these levels go below the 100% LEL at the subject probe. If methane levels measured in any on-site building exceed 25% of the LEL, building windows and/or doors will be opened for ventilation and all personnel evacuated until methane readings are maintained below 25% of the LEL for methane. The monitoring report for any event that detects methane above the LEL will also report methane levels from nearby structures, as indicated above, until the levels go below the methane LEL level or until corrective actions are conducted to reduce methane levels. The FDEP will be notified within seven days of any gas monitoring levels that exceed the reporting action levels.

3.10.1.5 <u>Passive Gas Vents</u>

Within 90 days of closure of each landfill cell, a passive landfill gas vent will be installed at the highest point of the cell to prevent explosions, fires and damages to vegetation from methane gas buildup. Sheet C1.30 shows the location of the 9 gas vents and Figure 3-16 (Appendix B) presents the design of a typical vent. The facility's gas emissions are expected to be far below the threshold of a Title V or an NSPS permit.

3.10.2 <u>Leachate Control</u>

Any leachate that may be produced at the landfill will be controlled with the use of a continuous 3-foot thick clay layer that will be placed on the bottom of the cells. The clay layer beneath each individual cell will form a continuous barrier layer that will be graded to direct leachate to stormwater Pond 3. The controlled method of screening waste also supplements the leachate control. Because the Applicant privately owns the Enterprise Class III Landfill facility, most of the haulers, waste generators, and sources of waste are known to Angelo's and the scale house attendants. For those haulers that are unfamiliar to the Applicant, the scale house attendants question the haulers more intensely to determine the contents of their loads. The spotters and operators add additional monitoring at the active disposal location. The addition of video surveillance to the monitoring process of incoming wastes helps to identify fires or smoking loads. Combined methods of screening waste is an effective method to reduce any possible threat to public health or the environment.

3.10.3 <u>Stormwater Controls</u>

The Stormwater Management Plan (Appendix G) for the landfill consists of berms, swales, and ponds constructed within the 200-foot landscape buffer zone to divert, collect and contain stormwater runoff from the completed site. The stormwater facilities are designated to retain the

100-year, 24-hour storm volume completely without off-site discharge. During excavation, construction and waste disposal, stormwater will be controlled by a series of berms and/or swale that direct stormwater to stormwater Pond 3 located along the northern landfill boundary. A 6-foot berm adjacent to active and filled cells retains stormwater from the filling area and diverts stormwater from the excavation area to stormwater Pond 3. Additional details concerning the stormwater management system are provided in the Stormwater Management Plan in Appendix G and the July 2014 Environmental Resource Permit Application submitted under separate cover to the Department.

3.11 EROSION CONTROL

The perimeter swales and ponds surrounding the landfill prevent stormwater from leaving the property. The series of berms described in Section 3.10.3 above will help prevent erosion.

Additionally, landfill side slopes will be constructed at 3H:1V and will receive intermediate cover to be maintained until final landfill closure that will occur when all existing and proposed cells are filled. See the Reclamation and Closure Plan provided in Appendix F for further details.

3.12 FINAL GRADE PLAN

The filling sequence of the landfill is shown on Sheets C1.10 and C1.20 of the 2014 Plan Set provided in Appendix A. The excavated areas will be certified to the approved bottom grades prior to accepting any waste material. The finished elevation after all fill material has been placed and final cover provided is designed to reclaim excavated areas.

3.13 SETBACKS AND VISUAL BUFFERS

The following setbacks (buffers) shall be used:

1. Minimum of 200 feet from the property boundary to landfill footprint.

2. Minimum of 500 feet setback from surrounding potable residential wells to landfill footprint.

Buffer areas maintain visual screening of the landfill by the following methods.

1. 8-foot high berms along the frontage of Enterprise and Auton roads.

2. Landscaping and trees to provide visual buffers within setback areas

3. Existing trees within the setbacks will be maintained.

3.14 FOUNDATION ANALYSIS

A Geotechnical analysis was conducted on the landfill site to evaluate if the base and geologic setting are capable of providing structural support. Universal Engineering Sciences, Inc. completed the Geotechnical Report included as Section 4 to the August 2005 Enterprise Recycling and Disposal Facility Class III Landfill Permit Renewal Application, prepared by TetraTech HAI, and updated as the January 25, 2006. Universal Engineering Sciences *Geotechnical Exploration – Update,* provided as an appendix to the February 2006 letter from Jennifer Diehl, P.E. to Mr. Steve Morgan Subject: Angelo's Aggregate Materials, Ltd. Enterprise Recycling and Disposal Class III Landfill Pending Permit Nos.: 177982-007-SC and 177982-008-SO Pasco County. The report concludes that the landfill base will adequately support the Class III landfill wastes without excessive settlement. It also states that the potential for sinkhole development on the site is low. In the event a sinkhole is discovered on-site, or within 500-feet of the site, the Department will be notified within 24 hours. A reclamation plan of action will be submitted to the Department within seven days. Please see Appendix D for Universal Engineering Sciences' Geotechnical Services / Documentation Review dated August 5, 2014 for a signed and sealed review and evaluation of historical site related geotechnical records which includes a recent site reconnaissance visit.

An updated foundation bearing capacity analysis was performed by Civil Design Services, Inc. and is provided in Appendix E. The analysis demonstrates that the proposed Cells 7, 13 (A&B), 14 and 16 have sufficient additional bearing capacity to accommodate the proposed design.

3.15 CERTIFICATION

Laboratory testing and observation of cell floor conditions during cell construction completion shall consist of the following:

- In-place density testing for each 12-inch thick soil lift, based on laboratory proctor test results for the construction material, will be recorded by a properly trained technician. These are to be conducted at the location of each permeability test.

- Thickness testing of each lift will be recorded at a minimum frequency of two tests per acre, per lift.

- Confirmation hydraulic conductivity testing of Shelby tube or drive cylinder samples of the compacted cell floor material will be performed at a minimum frequency of one test per lift, per acre.

- Observance for unstable areas such as limestone, sink holes and soft ground will be performed for each cell.

If the test data from a cell floor section does not meet the requirements of the anticipated conditions of the hydrologeological and geotechnical reports and the requirements of the facility construction permit, additional random samples may be tested from that cell section. If the additional testing demonstrates that the hydraulic conductivity meets the requirements, the cell will be considered acceptable. If not, that cell will be reworked or reconstructed so that it will meet these requirements.

Upon completion of construction of any cell within the disposal facility, the certification of construction completion will be provided to the FDEP on form 62-701.900(2), F.A.C.. The applicant will provide the completed form to the FDEP, along with the quality assurance test results described above, and arrange for an inspection prior to acceptance of Class III wastes into the constructed disposal area.

3.16 OPERATIONS PLAN

The Landfill's Operations Plan is included as Appendix H.

3.17 CONTINGENCY PLAN

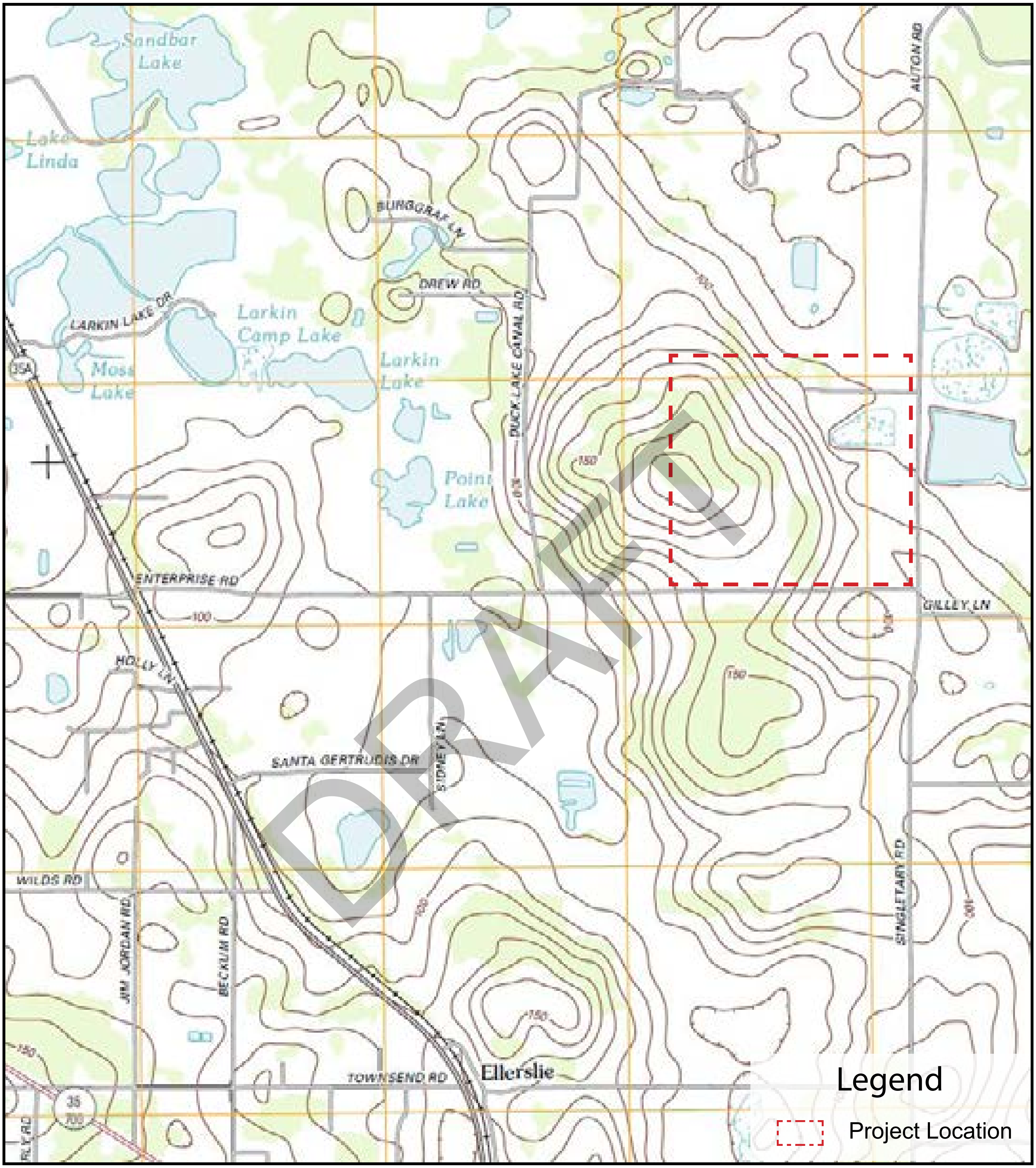
The Landfill's Contingency Plan is included as Appendix I.

ENGINEERING REPORT
APPENDIX A

2014 PLAN SET

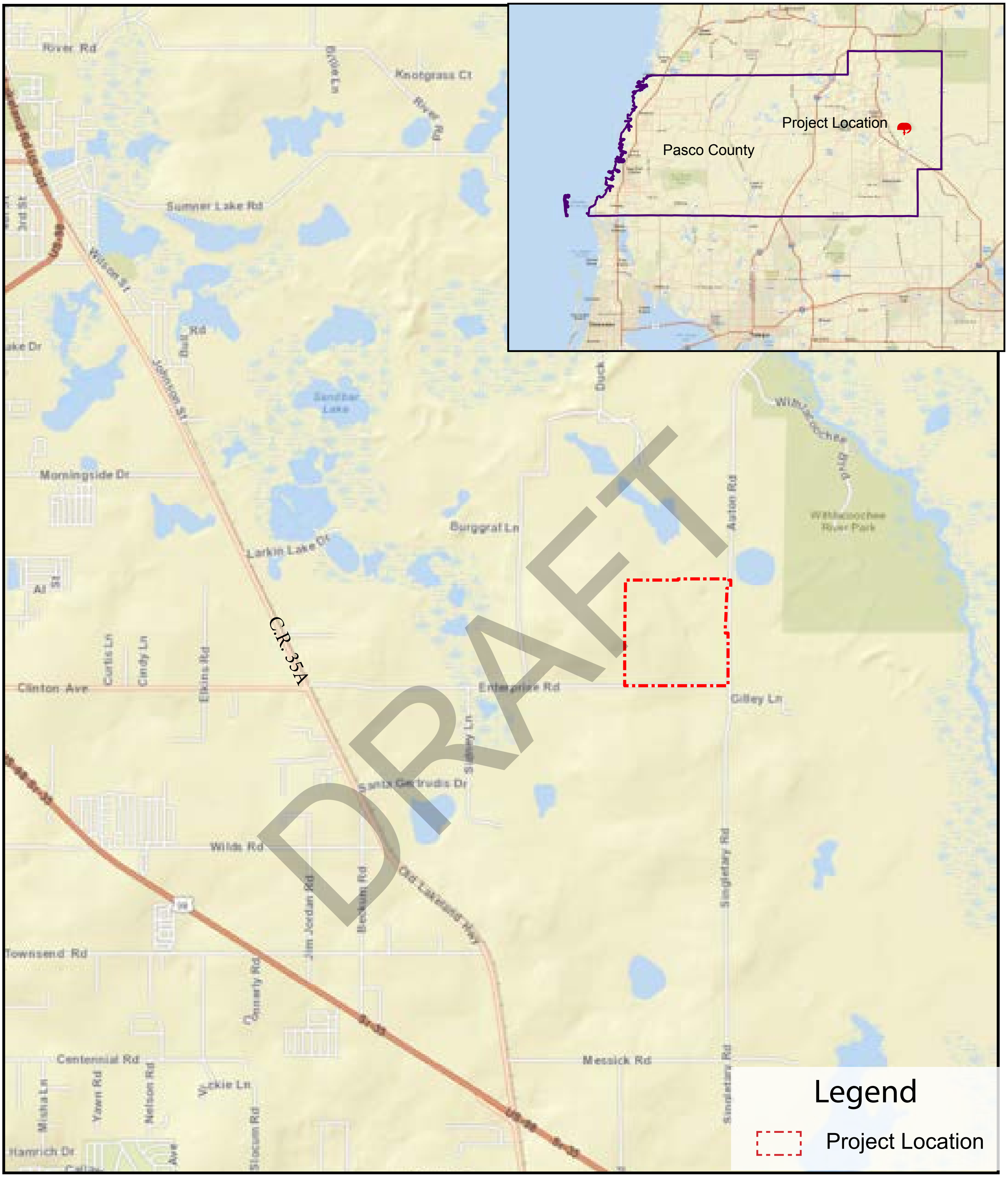
ENGINEERING REPORT
APPENDIX B

FIGURES



Locklear & Associates Engineering & Environmental Consulting	USGS Quadrangle Map Enterprise Road Class III Recyling and Disposal Facility Permit Modification Dade City, Pasco County, Florida	FIGURE 1 N SCALE: 1"=8,400'

SOURCE: USGS



Site Location Map

Enterprise Road Class III Recyling and Disposal Facility Permit Modification

Dade City, Pasco County, Florida

Locklear & Associates
Engineering & Environmental Consulting

FIGURE 2

N

SCALE: 1”=3,200’

SOURCE: Esri Maps

Aerial Map

Enterprise Road Class III Recyling and Disposal Facility Permit Modification

Dade City, Pasco County, Florida

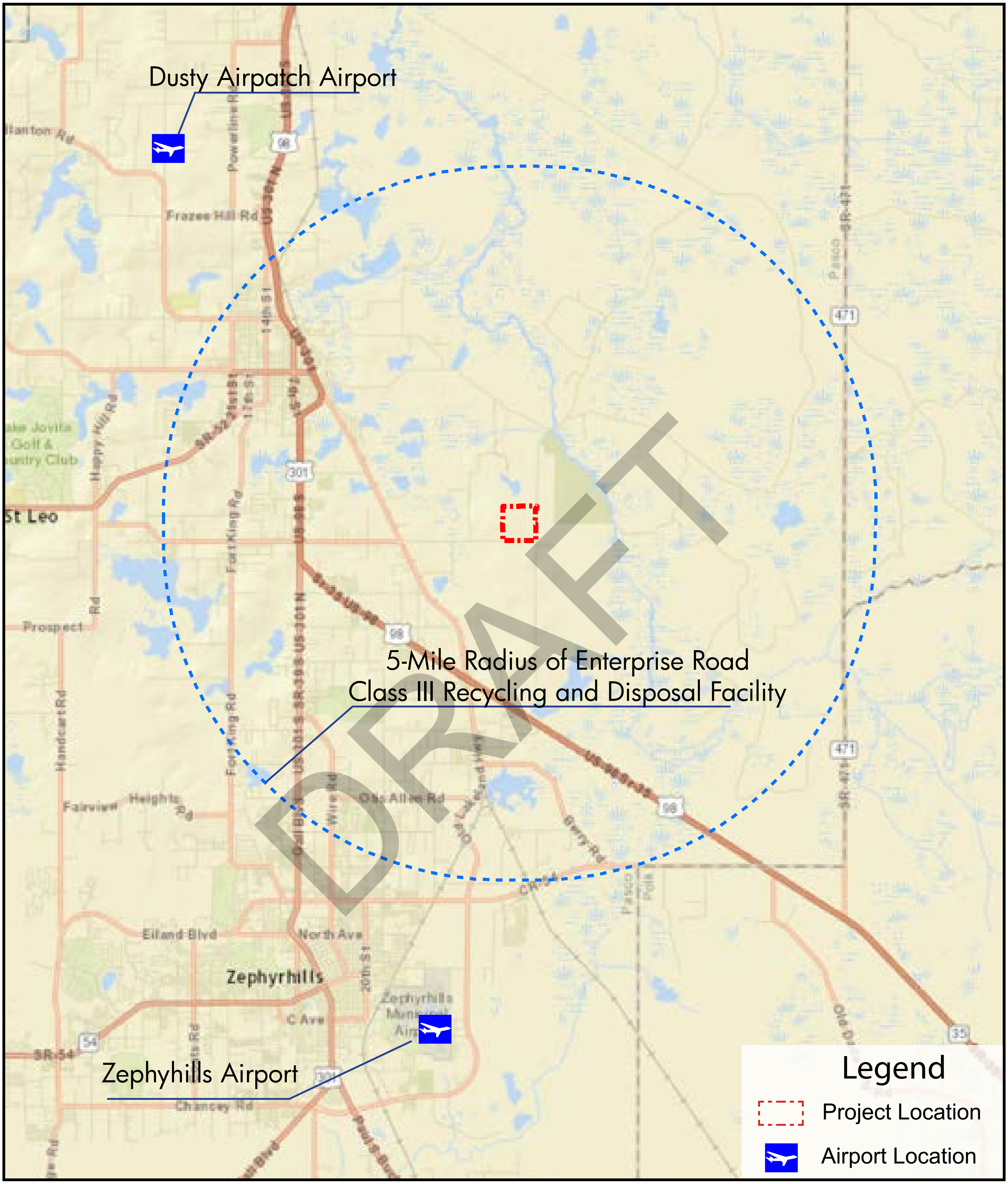
Locklear & Associates
Engineering & Environmental Consulting

FIGURE 3

N

SCALE: 1"=800'

SOURCE: Esri Maps



Locklear & Associates
Engineering & Environmental Consulting

Airport Location Map

Enterprise Road Class III Recyling and Disposal Facility Permit Modification

Dade City, Pasco County, Florida

FIGURE 4

N

SCALE: 1" = 10,000'

SOURCE: Florida Geographic Data Library & Esri

Potable Well Location Map

Enterprise Road Class III Recyling and Disposal Facility Permit Modification

Dade City, Pasco County, Florida

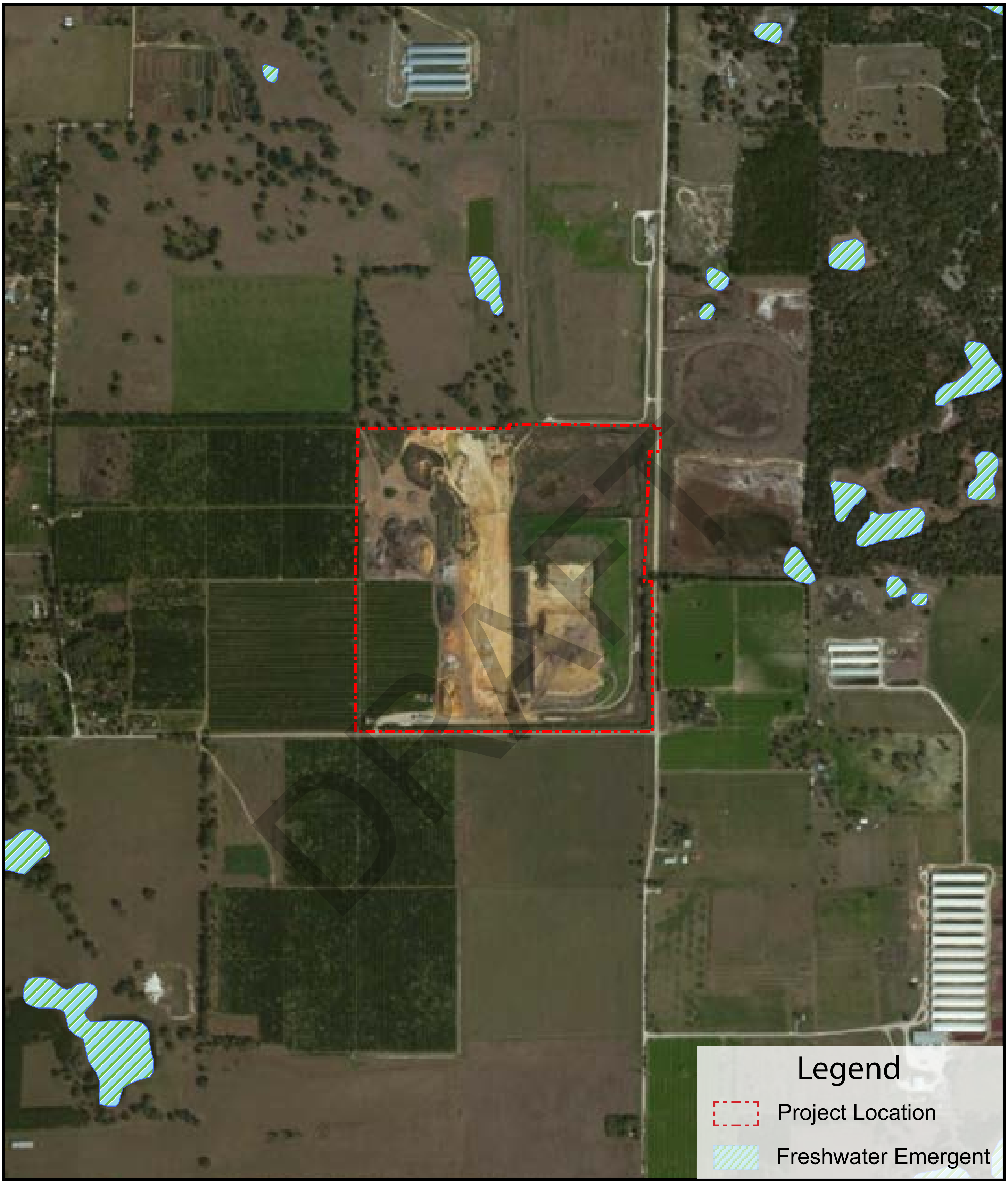
Locklear & Associates
Engineering & Environmental Consulting

FIGURE 5

N

SCALE: 1” = 800’

SOURCE: Florida Geographic Data Library & Esri



Locklear & Associates
Engineering & Environmental Consulting

Wetlands Map

Enterprise Road Class III Recyling and Disposal Facility Permit Modification

Dade City, Pasco County, Florida

FIGURE 6

N

SCALE: 1" = 1150'

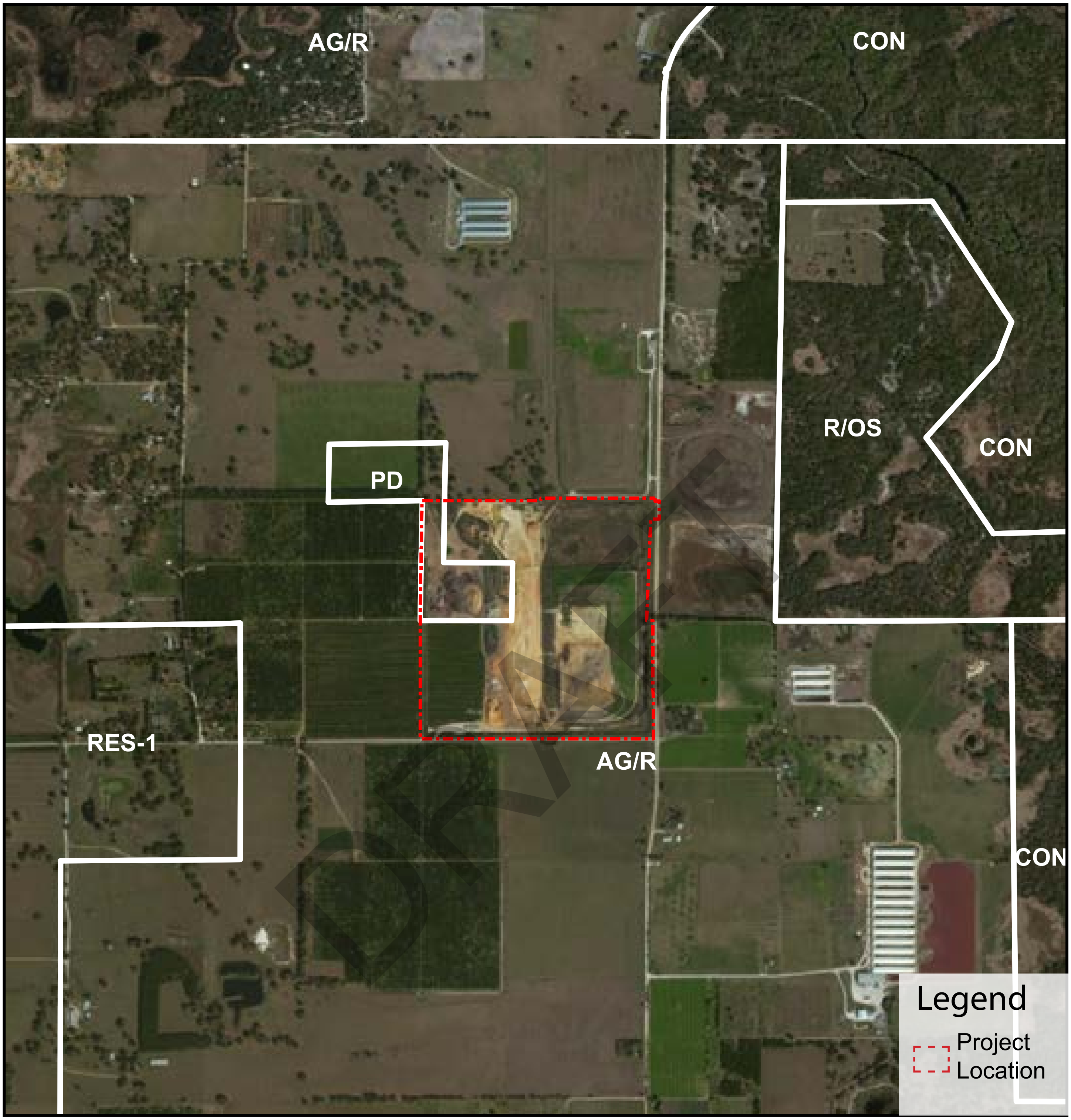
SOURCE: Florida Geographic Data Library & Esri

<u>FLUCCS Codes (published 2009):</u>

1100	Residential Low Density	2100	Cropland and Pastureland	4200	Upland Hardwood Forest
1500	Industrial	2140	Row Crops	6410	Freshwater Marshes
1600	Extractive	2200	Tree Crops	6530	Intermittent Ponds
1900	Open Land	2600	Other Open Land (rural)	8300	Utilities

Locklear & Associates Engineering & Environmental Consulting	Existing Zoning Map Enterprise Road Class III Recyling and Disposal Facility Permit Modification Dade City, Pasco County, Florida	FIGURE 7 N SCALE: 1" = 650'

SOURCE: Florida Geographic Data Library & Esri



Future Land Use 2025 Classifications:

AG/R Agricultural / Rural - 0.2 du / ga*
CON Conservation Lands
PD Planned Development
R/OS Major Recreation / Open Space
RES-1 Residential - 1 du / ga*

*du / ga = dwelling units per gross acre

Locklear & Associates Engineering & Environmental Consulting	Future Land Use Map Enterprise Road Class III Recyling and Disposal Facility Permit Modification Dade City, Pasco County, Florida	FIGURE 8 N SCALE: 1" = 1500'

SOURCE: Pasco County & Esri

Locklear & Associates
Engineering & Environmental Consulting

Flood Zone Map

Enterprise Road Class III Recyling and Disposal Facility Permit Modification

Dade City, Pasco County, Florida

FIGURE 9

N

SCALE: 1”=1150’

SOURCE: Florida Geographic Data Library & Esri

SOIL MAP UNIT LEGEND		
Map Unit Symbol	Map Unit Name	Hydrologic Soil Group
12	ASTATULA FINE SAND, 0 TO 5 PERCENT SLOPES	A
32	LAKE FINE SAND, 0 TO 5 PERCENT SLOPES	A
72	ORLANDO FINE SAND, 0 TO 5 PERCENT SLOPES	A

Locklear & Associates
Engineering & Environmental Consulting

Soil Map

Enterprise Road Class III Recyling and Disposal Facility Permit Modification

Dade City, Pasco County, Florida

FIGURE 10

N

SCALE: 1"=800'

SOURCE: Florida Geographic Data Library & Esri

ENGINEERING REPORT
APPENDIX C

LINER SYSTEM REQUIREMENTS EVALUATION

ENTERPRISE ROAD CLASS III RECYCLING AND DISPOSAL FACILITY LINER SYSTEM REQUIREMENTS STUDY REPORT

Prepared for:

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855 28th Street South
St. Petersburg, Florida 33712

Presented to:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHWEST DISTRICT – SOLID WASTE DIVISION
13051 N. Telecom Parkway
Temple Terrace, Florida 33637

Prepared by:

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Project No.: 02000-144-14

August 2014

John D. Locklear, P.G.
Florida License Number 2467

TABLE OF CONTENTS

1.0 INTRODUCTION

Angelo's Aggregate Materials, LTD (Applicant) owns and operates the Enterprise Road Class III Recycling and Disposal Facility (WACS No.: SWD/29/41084) under Florida Department of Environmental Protection (FDEP or Department) permits 177982-020-SO/T3 and 177982-019-SC/T3. The current facility is comprised of approximately 60.90 acres of constructed Class III disposal cells. The next authorized landfill cell to be built is cell 7, which is west of the current landfill area. The Applicant is seeking a permit modification to change the fill sequence and cell construction sequence to use the land north of the current landfill area next. This area is currently being used as the Temporary Stormwater Pond and was previouly authorized by the Department (October 2001 permit application) for Class III landfill construction and operations.

The original Department permits for the site included all of the cells necessary for the complete build-out of the site. It is our understanding that during the subsequent permit renewal(s), the Department would not re-issue the construction permits for cells that would not be built during the 5 year term of the operations permit. As such, many of the previously approved cells are now shown as "future" cells. The existing, proposed, and future cells of the Class III landfill were designed to have a three (3) foot thick clay barrier layer. The existing Temporary Stormwater Pond was also built with a 3 foot thick clay barrier layer. The clay barrier layer is constructed by over-excavating 3' of the landfill subgrade and then backfilling with clay (using compaction) in three 12-inch lifts. Field quality assurance testing is performed and certification reports, including in-place permeability of the clay lifts, are submitted to the Department for approval prior to use of the cell. The Applicant proposes to construct cells 13 (A and B), 14, and 16 (cell 7 is allowed in the existing Department permit) in accordance with the original site design criteria, which includes the 3' thick compacted clay barrier layer. As allowed by Rule 62-701.340(2)(b), F.A.C., the Applicant is seeking an exemption that would allow them to continue using a single 3-foot thick clay barrier layer for cells 13A, 13B, 14, and 16.

This Study Report demonstrates that no significant threat to the environment has occurred from the existing operations, nor is any such threat expected with the continued use of a 3 foot thick clay barrier layer (liner). The report is structured as follows:

- Regional and site geology data provided in previous Facility permit applications are summarized in Sections 2.1 and 2.2;
- The results of geotechnical investigations as required by Rule 62-701.410, F.A.C. are provided in Section 2.3;
- An evaluation of historical groundwater quality as required by Rule 62-701.510, F.A.C. is provided in Section 3.0;
- A discussion of the types and nature of the wastes received is provided in Section 4.1;
- A discussion of the operational procedures in place to control disposal of prohibited waste is provided in Section 4.2;
- A CCA Treated Wood Management Plan as required by Rule 62-701.730(20), F.A.C. is provided in Section 5.9 of the Operations Plan (Appendix H of the Engineering Report);
- Conclusions and recommendations are provided in Section 5.0

2.0 HYDROGEOLOGY

2.1 Regional Geology

The property is located on the eastern edge of the Brooksville Ridge physiographic province near the Western Valley. This ridge is wide with an irregular surface and extends through the north-central portion of Pasco County. The Brooksville Ridge is characterized by a thin layer of sand and clayey sand underlain by a clayey unit that varies from 10 to 30 feet in thickness of Pliocene to recent age. This clayey unit ranges in thickness from about 0 to 50 feet in Pasco County. The thickness of the clay unit in the area of the proposed site is estimated to be approximately 25 feet. Below the sands and clays which comprise the surficial aquifer system is a thick sequence of sedimentary rock comprised mainly of limestone and dolomite, which comprise the Floridan aquifer system. From youngest to oldest, the sedimentary units include the Oligocene age Suwannee Limestone, the Eocene age Ocala Limestone, and the Eocene age Avon Park Formation. The Suwannee Limestone generally thins to the east and is thin or absent beneath the Brooksville Ridge. The limestone surface in the ridge area is irregular and may vary more than 100 feet in elevation over a short distance. The limestone surface elevation varies from –10 feet NGVD near the coast to around 140 feet NGVD on the crest of the Brooksville Ridge (SWFWMD, 1988). In the vicinity of the subject site, the top of the limestone layer is at approximately 40 feet NGVD.

2.2 Site Geology

A discussion of site geology was provided in the March 2013 Water Quality Monitoring Plan Evaluation Report prepared by Locklear and Associates, Inc. (L&A). Conclusions from the March 2013 report are summarized below.

- The site geology is comprised of unconsolidated surficial deposits consisting of a mixture of sand, clay and silt of various compositions and multiple colors overlying limestone. Occasionally interbedded layers of rock and clay were encountered in the higher topographic areas and siltier strata discovered in the lower topographic areas. Limestone was encountered between 18 feet NGVD, in the low area in the northeast portion of the site at boring location B-5, and 109 feet NGVD at boring location B-1, atop the ridge along the western boundary of the site.
- The site geology includes complex interbedded sands and clays in the upper strata which appear to create opportunities for perched water conditions in small localized areas of the site as discussed in Section 2.4.
- Laterally discontinuous water bearing sand units exist beneath the site, particularly east to west.
- The elevation of the limestone surface is highly variable across the site. Generally, the limestone surface slopes from a high of 100 feet, NGVD in the western portion of the site to 10 feet, NGVD in the eastern portion.

2.3 GEOTECHNICAL EVALUATION

The original geotechnical investigation of the entire 160-acre site was performed by Universal Engineering Sciences, Inc. (UES) as part of the initial solid waste permitting application in 2000/2001. Additional geotechnical investigation activities have been performed at various intervals since the initial investigative report. UES was asked to evaluate all site data and information and to update their geotechnical opinion of the site. A copy of the updated UES report is provided in Appendix D. The UES report provides confirmation of conclusions drawn in previous geotechnical site investigations and that the site meets the geotechnical requirements of Rule 62-701.410, F.A.C.. The UES conclusions indicate that the site geotechnical conditions are adequate to support construction of Cells 7, 13, 14, and 16 using a clay liner.

2.4 GROUNDWATER FLOW

Groundwater flow characteristics were provided in the March 2013 Water Quality Monitoring Plan Evaluation Report prepared by L&A. Conclusions from the March 2013 report are summarized below.

- Historically, the site hydrogeologic regime was interpreted to include a surficial aquifer and the semi-confined Floridan aquifer. As a result, the site monitoring network includes groundwater monitoring well clusters with shallow wells screened within unconsolidated sands and clays and deeper wells screened within the limestone of the upper Floridan aquifer.
- Prior to 2007, contour interpretations of the surficial aquifer varied in both directions and the aerial extent of the water bearing unit itself. Contour maps prepared in 2001 through 2005 show a surficial aquifer of limited extent primarily on the eastern portion of the site. This interpretation is consistent with the limited lateral continuity of the fine sand unit discussed in Section 2.2.
- Water levels show a seasonal fluctuation with highs observed during the second semiannual events.
- Water is consistently observed in the monitoring wells in the northeastern portion of the site (e.g. MW-4, MW-5, MW-6 and MW-7A). However, wells located in the east-central and southeastern portions of the site (e.g., MW-8, MW-9 and MW-10) consistently lacked water (or contained water within the well sump only). This data appears to contradict the presence of a laterally continuous surficial aquifer even in the eastern portion of the site.
- Regional Floridan aquifer potentiometric contour maps prepared by the Southwest Florida Water Management District show that the site is located in an area of relatively low hydraulic gradient. The flow direction indicated by the SWFWMD maps is to the north-northwest.
- Floridan aquifer water levels show a seasonal fluctuation with highs observed during the second semiannual events.
- Floridan aquifer flow beneath the site during is consistently to the west-northwest, with the highest elevations located in the southeastern corner of the site. A north-northeasterly flow component is also consistently observed in the northeastern corner of the site.

- Groundwater flow velocities calculated for the Floridan aquifer vary from a minimum of 0.4 to a maximum of 18 feet per year.
- Vertical hydraulic gradients and groundwater velocities were calculated by Jones Edmunds in the Response to Comment 6.f in the July 5, 2006 Response to 2nd Request for Additional Information and Section 5.2.3 of the revised Hydrogeologic Investigation. The maximum vertical groundwater velocity was calculated to be 1.06 feet per year with a median of 0.007 feet per year (both with positive values indicating a downward flow direction). The median vertical groundwater velocity (0.007 ft/year) was compared to the median horizontal groundwater velocity (3.7 ft/year) which indicated that leakage through the confining unit was unlikely. At the median vertical groundwater velocity it would take any leakage over 700 years to penetrate 5 feet of the confining unit.
- Groundwater elevations for paired surficial and Floridan aquifer wells were reviewed to provide an evaluation of the continuity of the confining layer overlying the Floridan aquifer beneath the site. The differential in water levels between paired wells is much more significant in the MW-4, 5 and 7 well clusters than in the MW-11 and 12 well clusters. The vertical gradient was consistently downward in well clusters MW-4, 5 and 11. The vertical gradient was consistently upward in well cluster MW-7 and variable in well cluster MW-12. The very minor differential in water levels in the MW-11 and 12 well clusters and the fluctuating direction of the vertical gradient in the MW-12 well cluster appears to indicate that the continuity of the confining layer is limited in the southeastern portion of the site. However, the consistent and more substantial differential in well clusters MW-4, 5 and 7 appears to indicate that continuity of the confining layer is consistent in the west-northwestern portion of the site.

3.0 Groundwater Quality

Groundwater quality at the site is monitored by a network of wells screened in the Floridan aquifer system and in the water bearing units above the Floridan, historically referred to as the surficial aquifer system. It should be noted that several monitoring wells historically categorized as surficial aquifer wells are more likely screened within perched zones above the surficial aquifer. These include MW-3A, MW-4, and MW-5A. For the purposes of this evaluation, these wells are grouped with the surficial aquifer wells. The site monitoring network is summarized in Table 3.0 and shown in Figure 3.2.1.

TABLE 3.0

Well	Top of Casing Elevation (ft, NGVD)	Total Well Depth (ft below top of casing)*	Sump Length (ft)**	Screen Length (ft)***	Bottom of Screen Interval Elevation (ft, NGVD)****	Top of Screen Interval Elevation (ft, NGVD)*****	Aquifer Monitored
MW-1A	173.77	67.05	3	20	109.72	129.72	Surficial
MW-1B	174.11	117.00	3	10	60.11	70.11	Floridan
MW-3A	85.39	14.47	3	20	73.92	93.92	Surficial
MW-3B	84.80	43.90	3	10	43.90	53.90	Floridan
MW-4	100.59	26.40	3	20	77.19	97.19	Surficial
MW-4B	100.87	59.52	3	10	44.35	54.35	Floridan
MW-5A	86.74	30.50	3	20	59.24	79.24	Surficial
MW-5B	85.70	47.58	3	10	41.12	51.12	Floridan
MW-6	88.65	30.00	3	20	61.65	81.65	Surficial
MW-7A	101.16	45.85	3	20	57.87	77.87	Surficial
MW-7BR	103.27	61.20	3	10	45.07	55.07	Floridan
MW-8	100.10	35.90	3	20	67.20	87.20	Surficial
MW-8B	108.52	57.55	3	15	53.97	68.97	Floridan
MW-9	108.00	29.75	3	15	81.25	96.25	Surficial
MW-9B	109.75	48.80	3	15	63.95	78.95	Floridan
MW-10	111.62	37.66	3	15	76.96	91.96	Surficial
MW-10B	110.00	61.80	3	15	51.20	66.20	Floridan
MW-11	104.45	42.50	3	20	64.95	84.95	Surficial
MW-11B	106.11	84.90	3	15	24.21	39.21	Floridan
MW-12A	121.43	62.20	3	20	62.23	82.23	Surficial
MW-12B	121.84	90.20	3	15	34.64	49.64	Floridan
MW-15B	147.87	103.4	1	20	45.47	65.47	Floridan
MW-16B	138.01	103.2	1	20	35.81	55.81	Floridan
MW-17B	87.21	81.1	1	20	7.11	27.11	Floridan

Groundwater data for the site were compiled from the semi-annual groundwater monitoring reports submitted to the Department between July 2003 and March 2014 to assess the change in water quality over time with respect to different chemical parameters monitored for the site. The parameter concentrations were compared to the respective GCTL. The GCTLs are tabulated in Rule 62-777, F.A.C., and were established to identify individual chemical concentration limits above which aesthetics or human health may be negatively impacted.

3.1 Groundwater Quality Evaluation Methodology

Florida solid waste rules require groundwater monitoring systems to consist of background and detection wells so that site-specific comparisons in groundwater quality can be made for the aquifers monitored. As discussed in the March 2012 Water Quality Monitoring Plan Evaluation Report (and subsequent addenda), the hydrogeology at the Facility includes a laterally discontinuous water bearing strata above the Floridan aquifer in certain portions of the site. The discontinuous nature of these sediments prohibits consistent collection of samples from upgradient or "background" monitoring wells in this upper unit. As a result, the appropriate methodologies for evaluating downgradient water quality within this unit include: (1) comparison of values to regional published data; (2) evaluation of concentrations over time to determine if site activities have caused a change in groundwater quality. Throughout this report the concentration of groundwater constituents are compared to water quality measurements conducted in a study published by the Florida Geological Survey corresponding to background water quality in Florida's major aquifers (FGS 1992). Approximately 80 wells in the surficial aquifer and 150 wells in the Floridan aquifer throughout the Southwest Florida Water Management District (SWFWMD) were sampled to establish the background water quality of these aquifers. Table 3.1 presents background concentrations as listed in FGS (1992) for the constituents of interest in surficial and Floridan aquifer monitoring wells in SWFWMD.

Table 3.1 Background concentrations of relevant constituents in Southwest Florida Water Management District evaluation in surficial and Floridan aquifers

Constituents of Interest	Surficial Aquifer		Floridan Aquifer	
	Number of Samples*	Concentration Range	Number of Samples	Concentration Range
Mercury (µg/L)	67 (3)	<0.1-3.1	154 (0)	<0.1-1.3
TDS (mg/L)	83 (11)	1-1,77,000	161 (47)	55-5,990
Iron (µg/L)	39 (30)	<100-43,900	70 (21)	10-55,700
Nitrate-N (mg/L)	84 (1)	<0.01-52.52	153 (0)	<0.01-4.64
Chloride (mg/L)	86 (3)	0.6-8,520	169 (24)	1.7-20,500
Sodium (mg/L)	85 (2)	0.7-3,730	165 (18)	1.8-1,450
pH (SU)	97 (52)	3.9-8.6	172 (16)	6.0-10.7
Conductivity (µS/cm)	100	30-24,000	194	100-46,000
Temperature (°C)	99	21.0-31.5	191	21.5-30.5

* Values in parenthesis are number of samples that exceeded the current GCTLs

In addition to comparing site monitoring data to published regional data, trend analyses were performed to further evaluate changes in water quality over time which could be reasonably attributable to Class III landfilling activities.

3.2 Groundwater Quality of Surficial Aquifer Wells

3.2.1 Overview

Box-and-whisker plots were developed for various parameters of surficial and Floridan aquifers and other monitoring locations to compare measured concentrations to the corresponding GCTL for each aquifer monitored. These plots provide a visual portrayal of the statistical distribution of the data. Figure 3.2.1 presents a definition sketch of the box-and-whisker plot. The line inside the box represents the median. The top of the box represents the 75^{th} percentile and the bottom of the box represents the 25^{th} percentile. The lines that extend upward and downward (whiskers) from the box represent the 90^{th} and 10^{th} percentiles, respectively. The outliers (data points that lie outside the 90^{th} and 10^{th} percentiles) are presented individually outside the whiskers-note that outliers are only visible when a minimum of 9 data points are used to construct the box and whisker plot. For the sample constituents that were detected below the respective detection limit, the detection limit was used as the concentration for plotting the box-and-whisker plots.

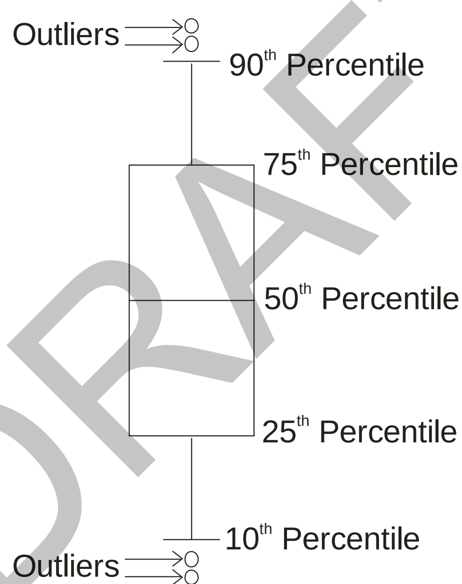

Figure 3.2.1 Box-and-whisker plot definition sketch

3.2.2 pH

The pH is a measure of strength of acid or base in a solution, and its value ranges between 0 to 14. A solution with pH of 7 is neutral solution. A solution with pH below 7 is considered as acidic solution, and solutions with pH greater than 7 are considered basic. pH reflects the potential for acid-base reactions in water. As such, it is often treated as a variable that determines the reactions in the aquifer system, rather than as the product of those reactions. The box-and-whisker plots of pH for surficial aquifer monitoring well are shown in Figure 3.2.2-1

The pH values in the surficial aquifer wells were found below the lower GCTL limit of 6.5 standard unit (SU). The SWFWMD background pH values of the surficial aquifer ranged from 3.9 to 8.6 (Table 3.1) and more than 50% samples collected from the surficial aquifer had a pH less than 6.5. The pH of the surficial aquifer monitoring wells at the site was within the range of the background surficial aquifer pH values measured previously as reported by the SWFWMD study.

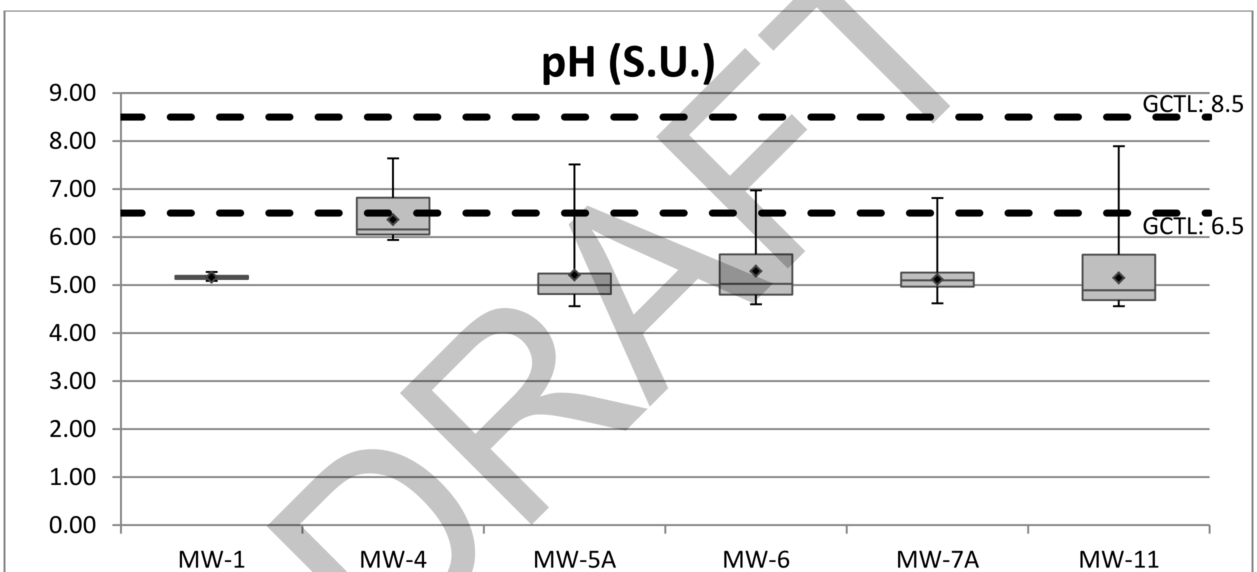

Figure 3.2.2-1

The temporal plots of pH for each surficial aquifer monitoring well (shown in Figure 3.2.2-2 to Figure 3.2.2-7) were analyzed to identify trends in pH variation. In general, pH values remained constant or varied within a limited range for each well from the start of monitoring at the site. No increasing or decreasing trends were apparent in the data.

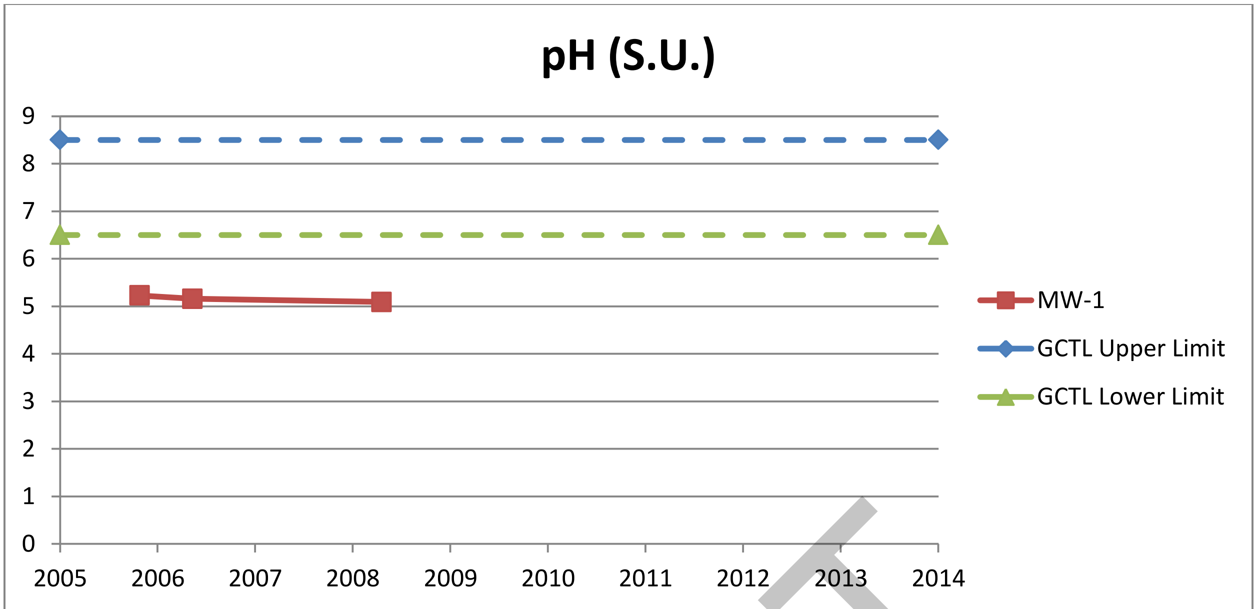

Figure 3.2.2-2

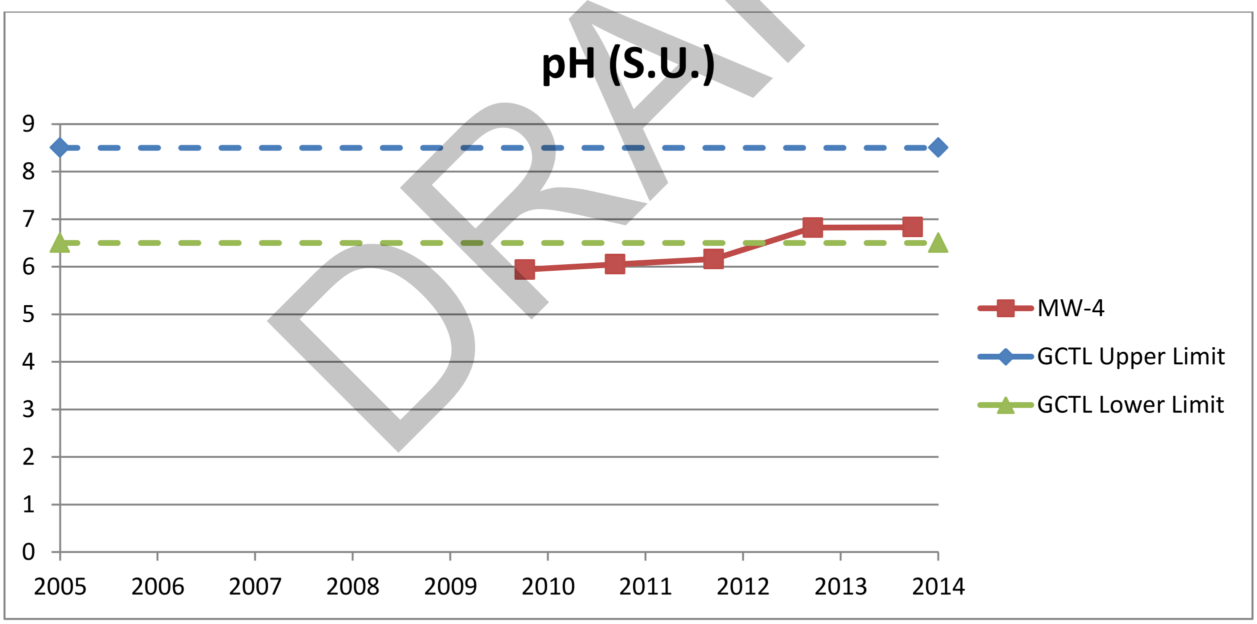

Figure 3.2.2-3

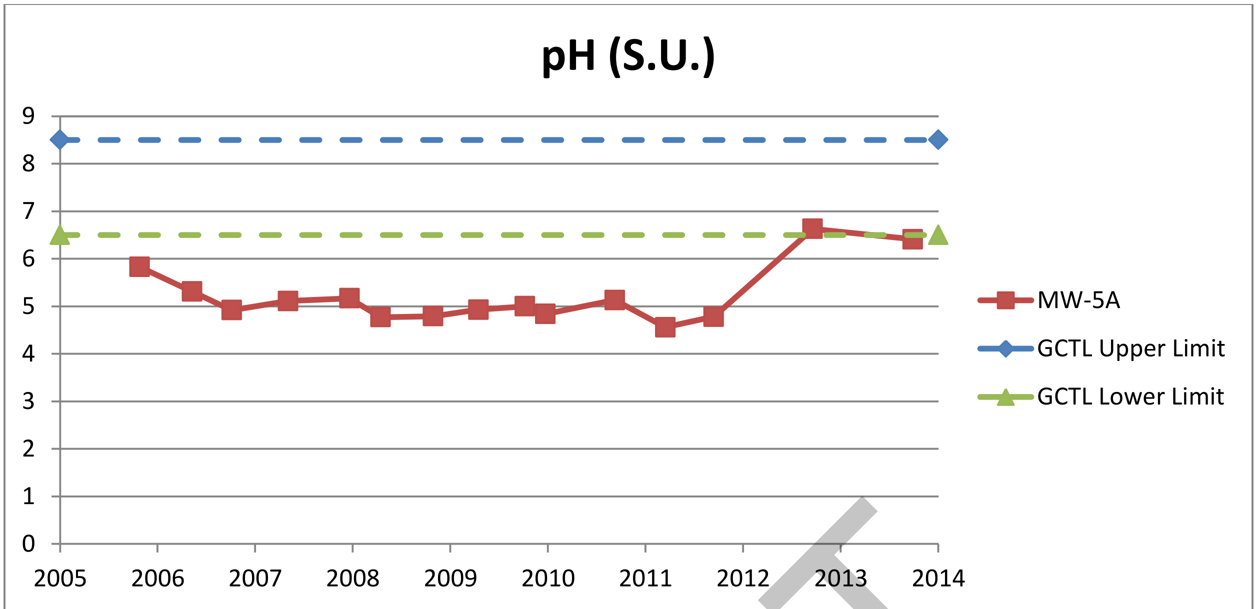

Figure 3.2.2-4

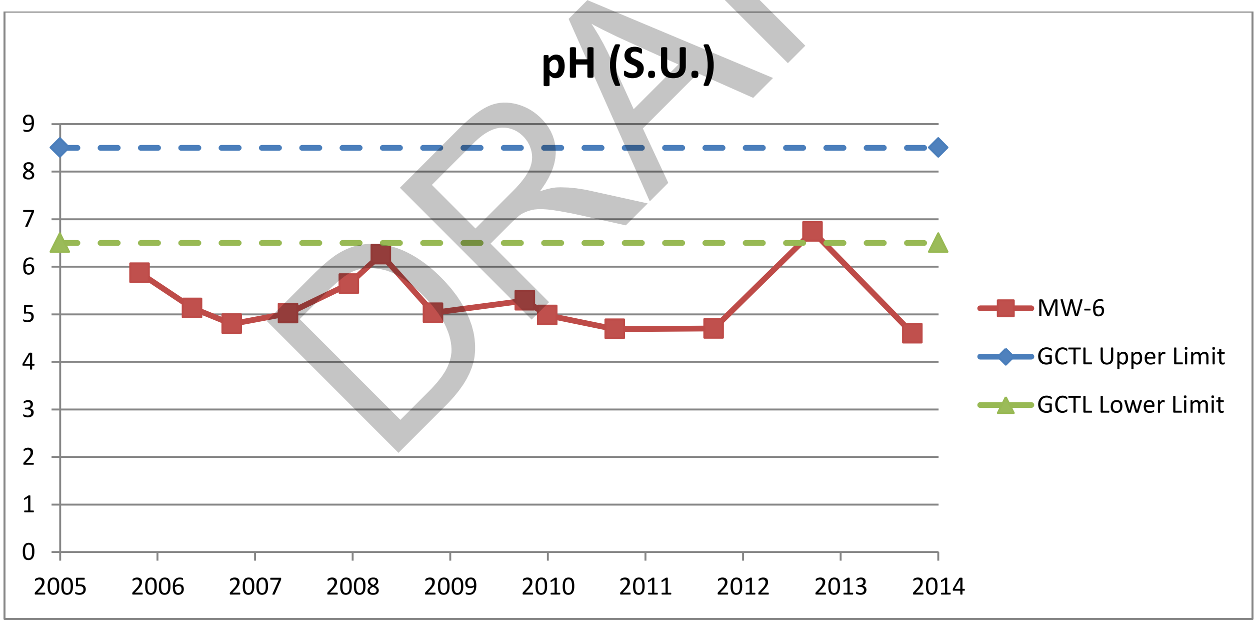

Figure 3.2.2-5

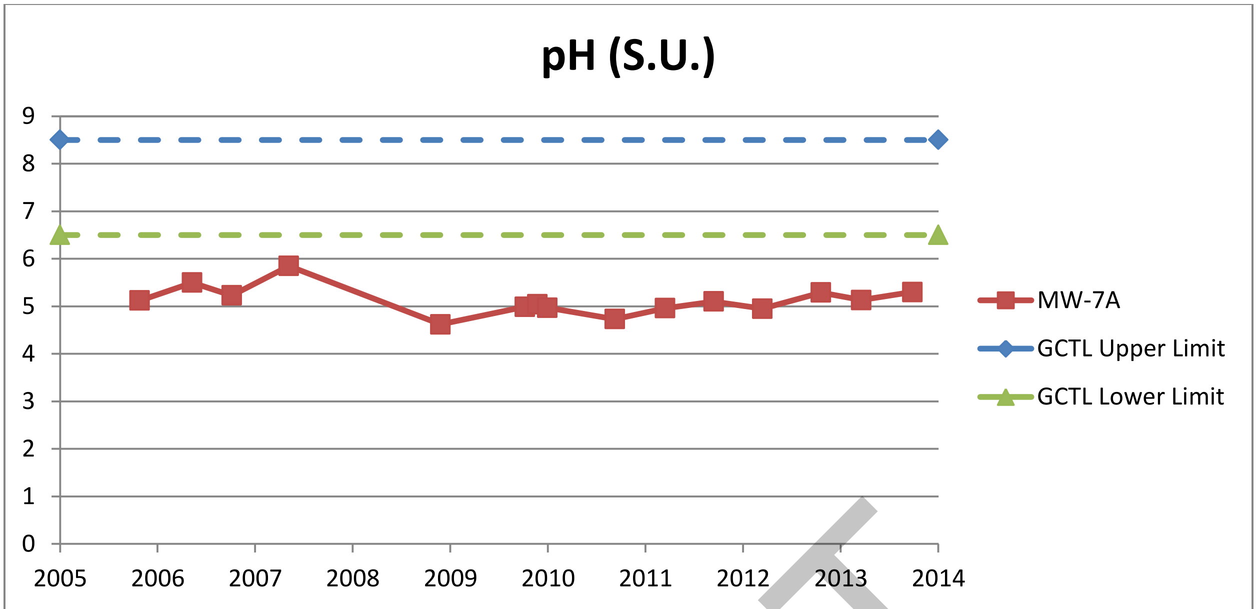

Figure 3.2.2-6

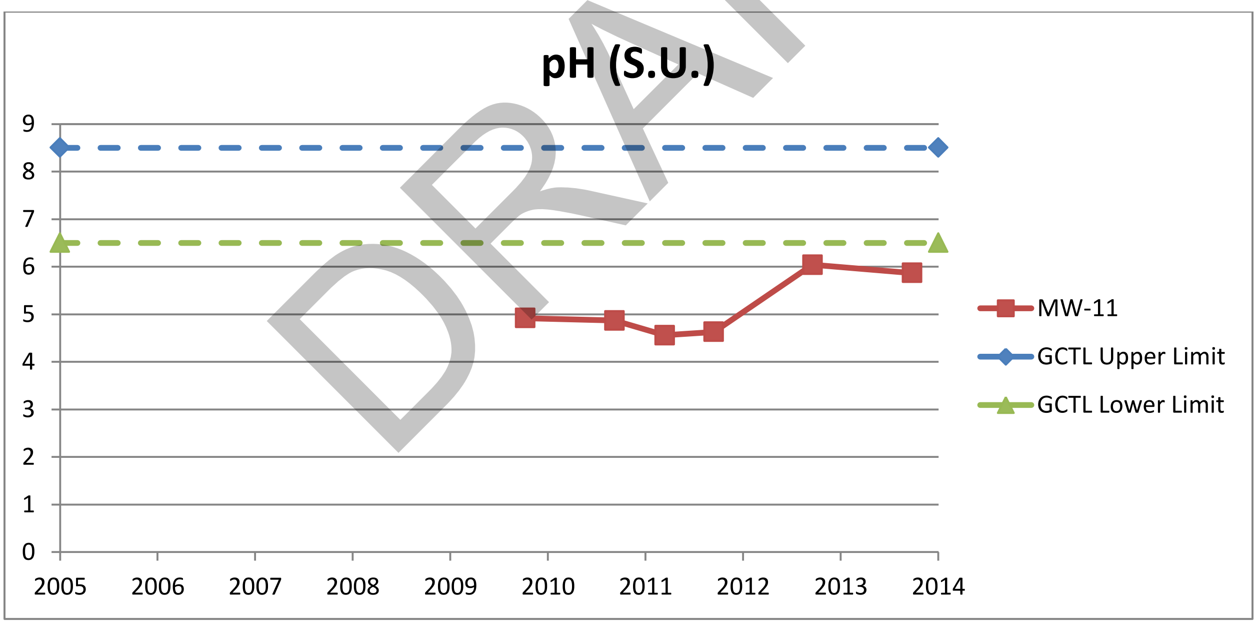

Figure 3.2.2-7

3.2.3 *Conductivity*

Conductivity is a measurement of the ability of water to pass electrical current and is affected by the presence of dissolved solids such as anions and cations in the water. The box-and-whisker plots of conductivity for the surficial aquifer monitoring wells are shown in Figure 3.2.3-1. Conductivity was observed to be less than 200 μS/cm for each well except for the well MW-4 (622 to 1,007 μS/cm). SWFWMD background levels were reported to range from 30 to 24,000 μS/cm (FGS 1992).

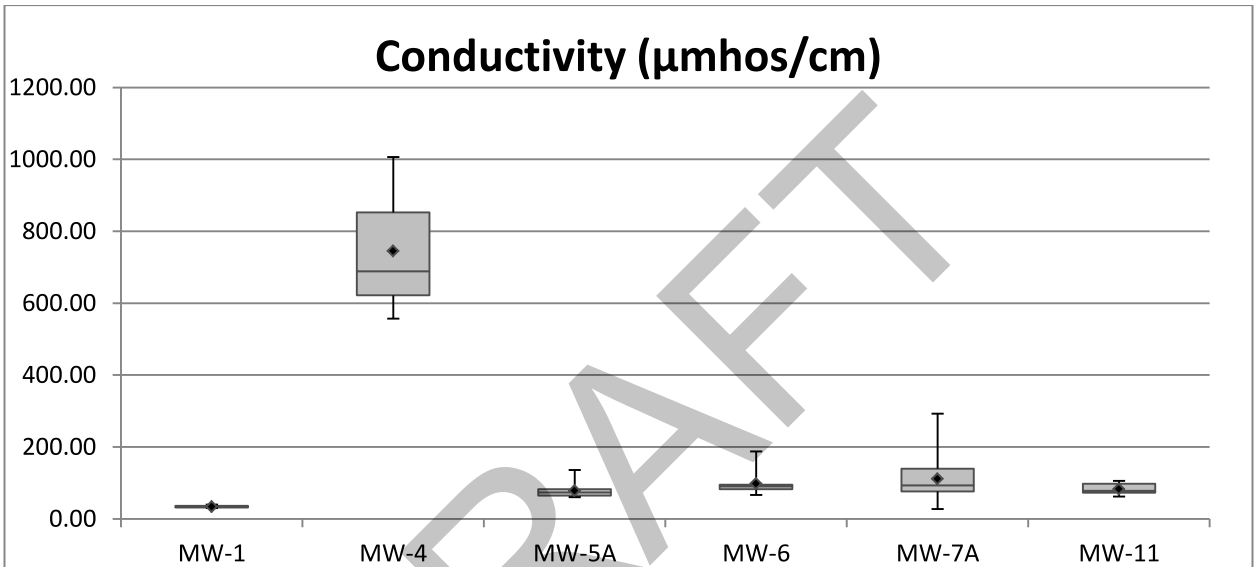

Figure 3.2.3-1

The temporal plots of conductivity for each surficial aquifer monitoring well (shown in Figure 3.2.3-2 to Figure 3.2.3-7) were analyzed to identify trends in conductivity variation. No increasing or decreasing trends were evident from measured data with conductivity values generally remaining constant or varied within a limited range for each well from the start of monitoring.

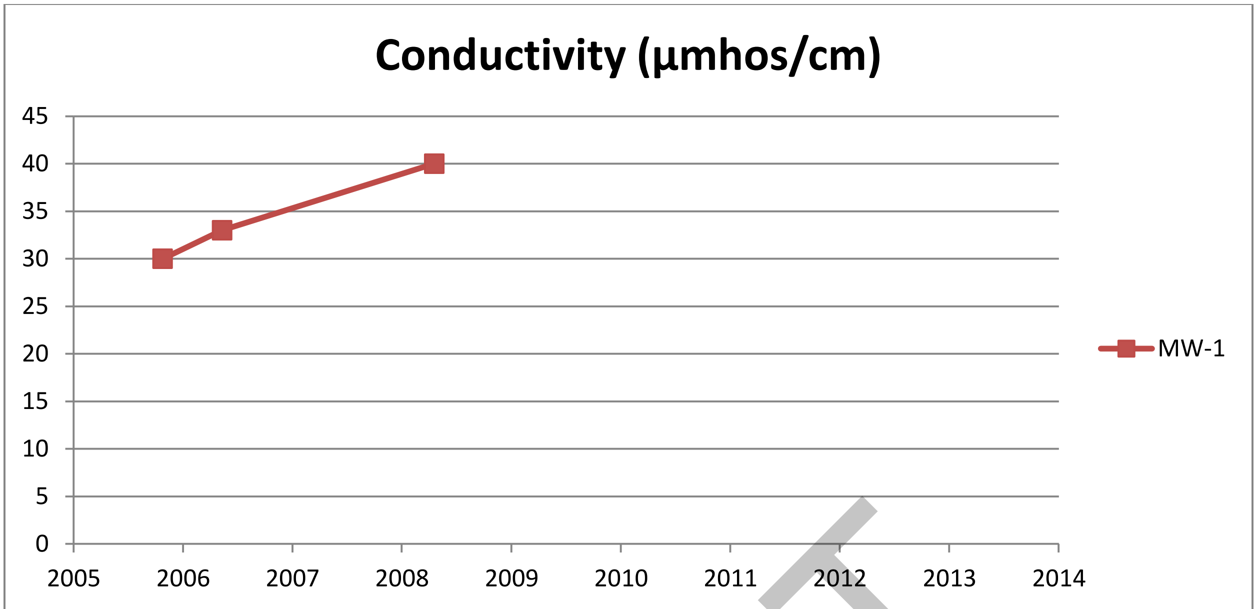

Figure 3.2.3-2

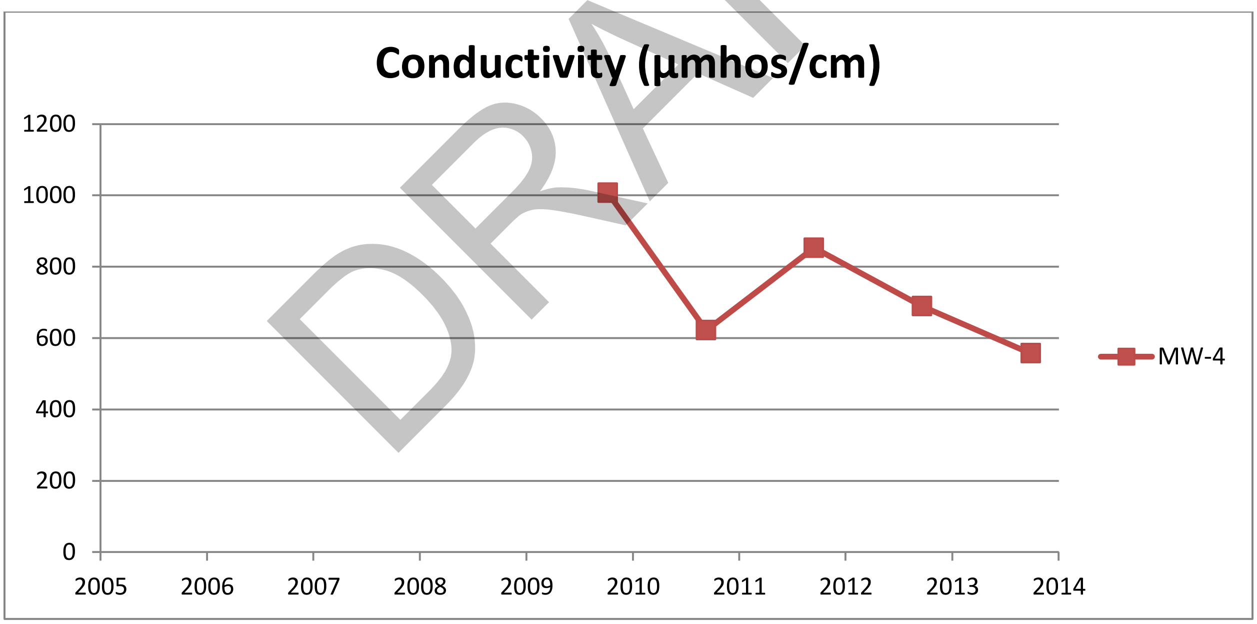

Figure 3.2.3-3

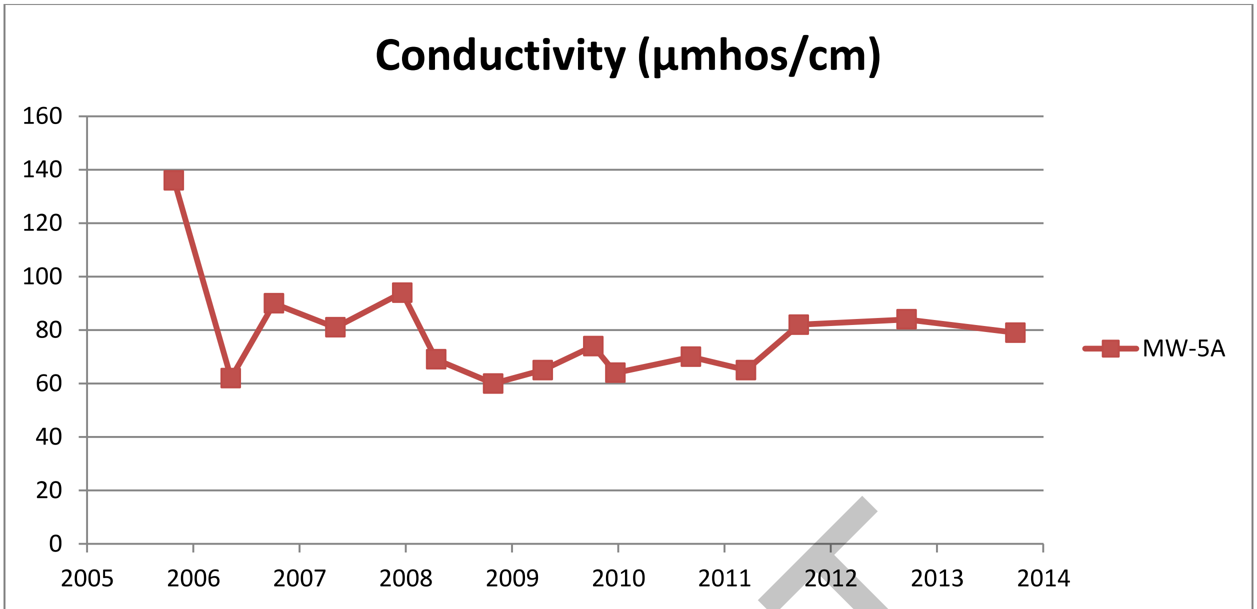

Figure 3.2.3-4

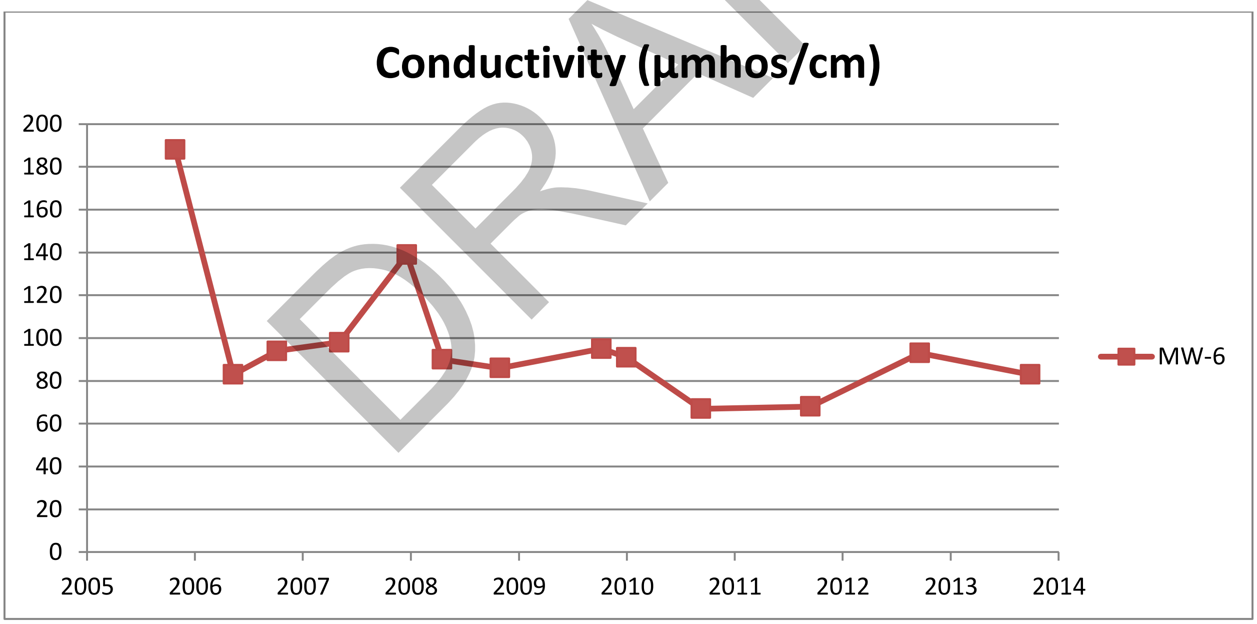

Figure 3.2.3-5

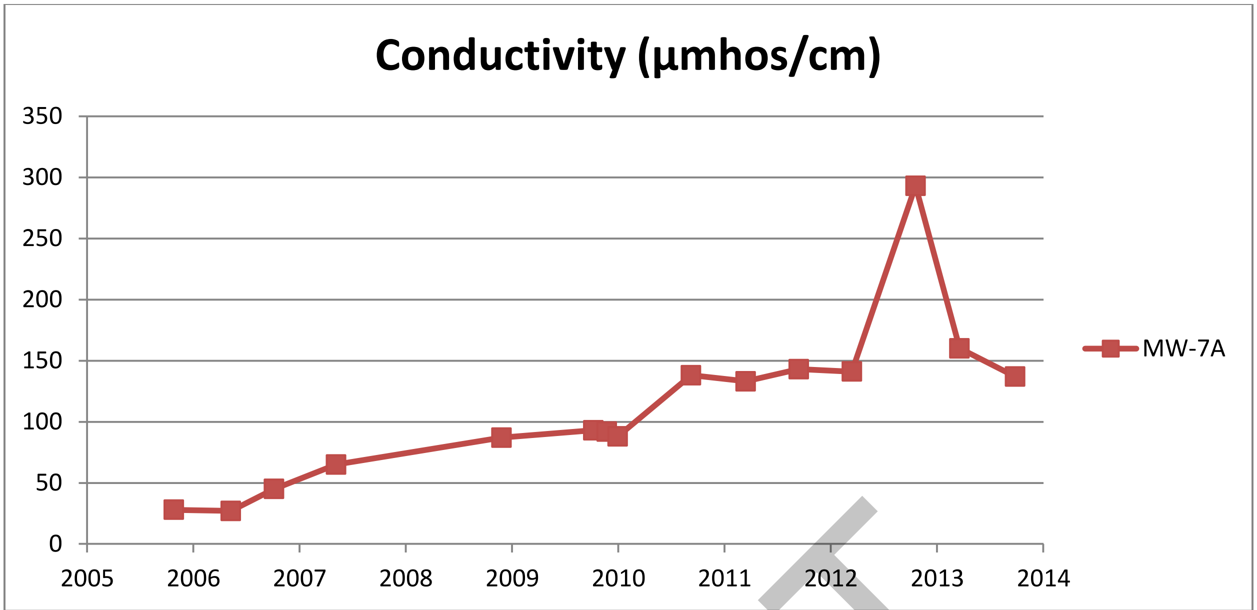

Figure 3.2.3-6

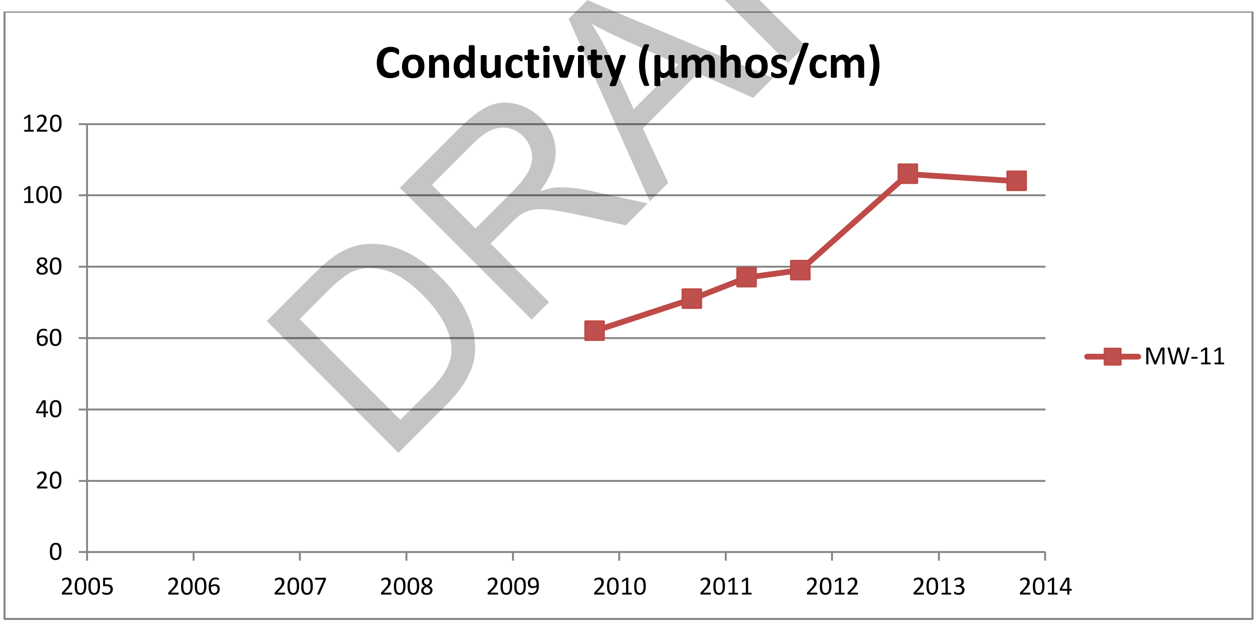

Figure 3.2.3-7

3.2.4 Turbidity

Turbidity is a measure of the dispersing effect that suspended solids and colloidal matter have on the transmission of light through water. The presence of clay, silt, organic and inorganic matter, and microbes among other substances impacts the measured turbidity for a given water sample. High turbidity can result in an increase of water temperature and subsequently can lead to reduced dissolved oxygen (DO) levels in water. The box-and-whisker plots of turbidity for the surficial aquifer monitoring wells are shown in Figure 3.2.4-1.

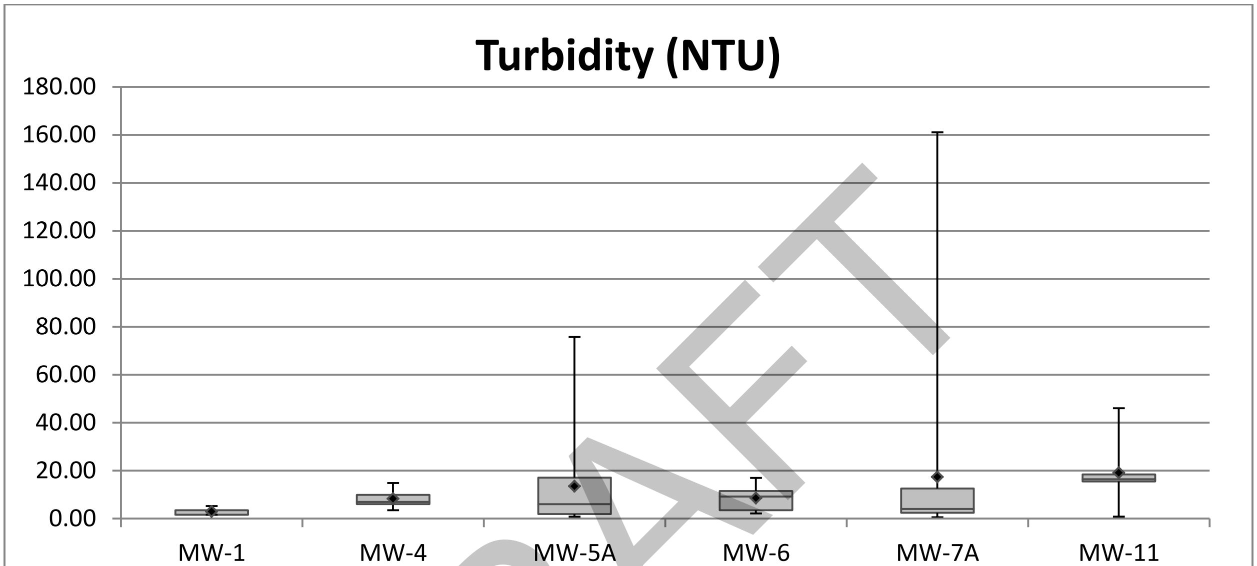

Figure 3.2.4-1

The temporal plots of turbidity for each surficial aquifer monitoring well (shown in Figure 3.2.4-2 to Figure 3.2.4-7) were analyzed to identify trends in turbidity variation. Turbidity generally remained constant or varied within a limited range for each well from the start of monitoring and no increasing or decreasing trends were apparent in the data.

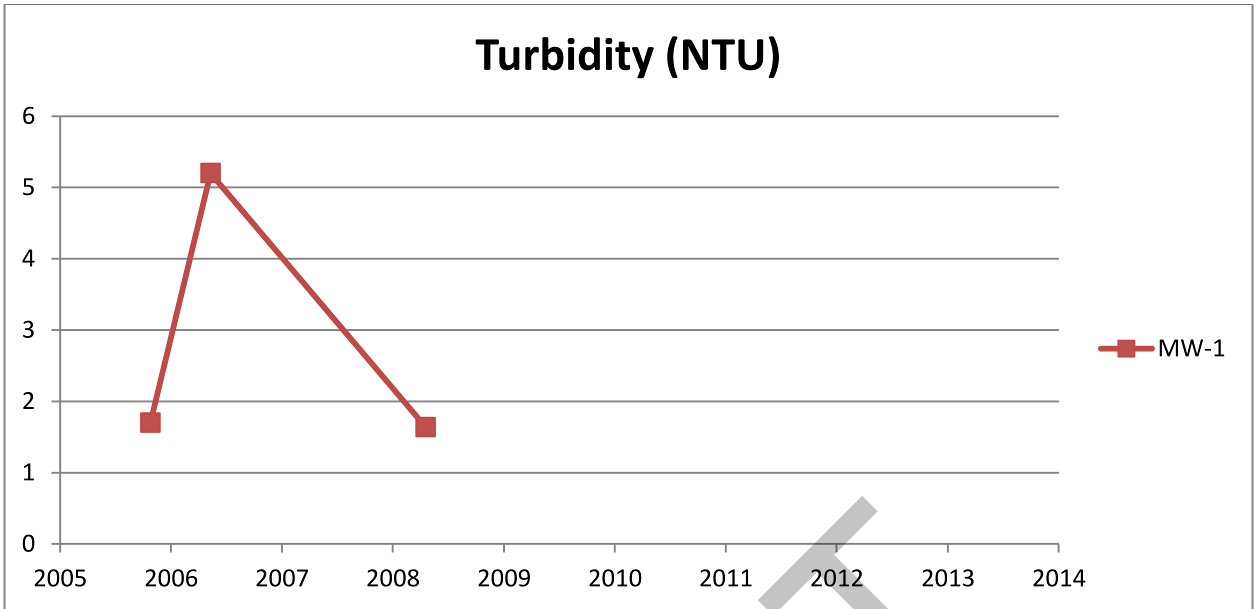

Figure 3.2.4-2

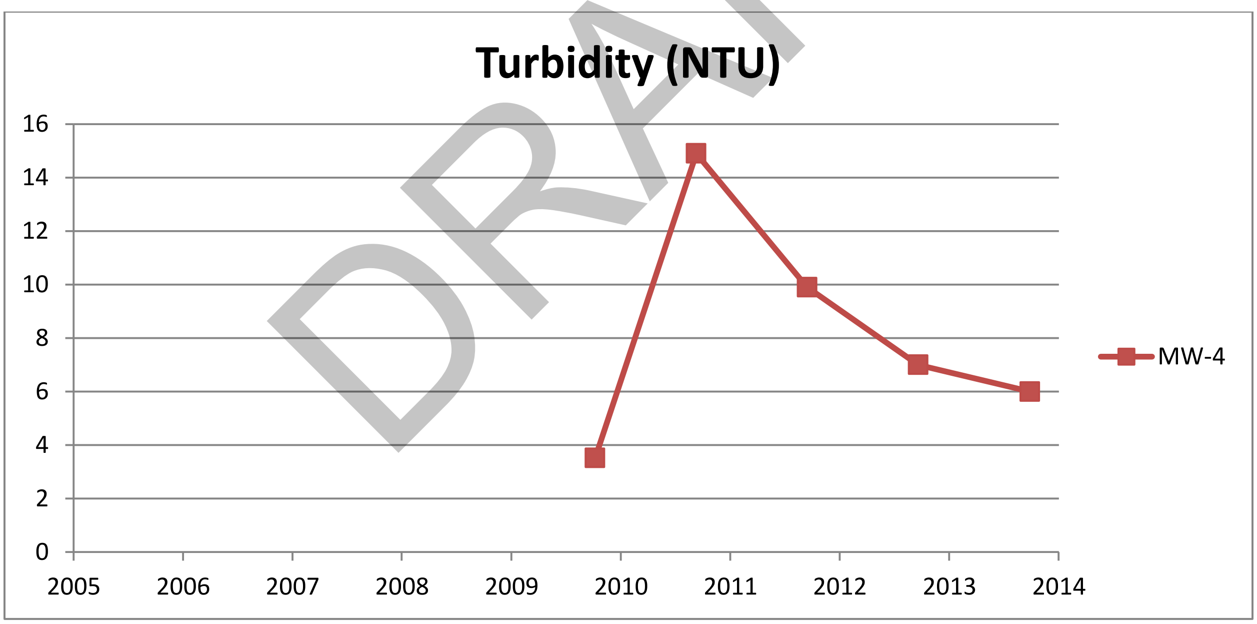

Figure 3.2.4-3

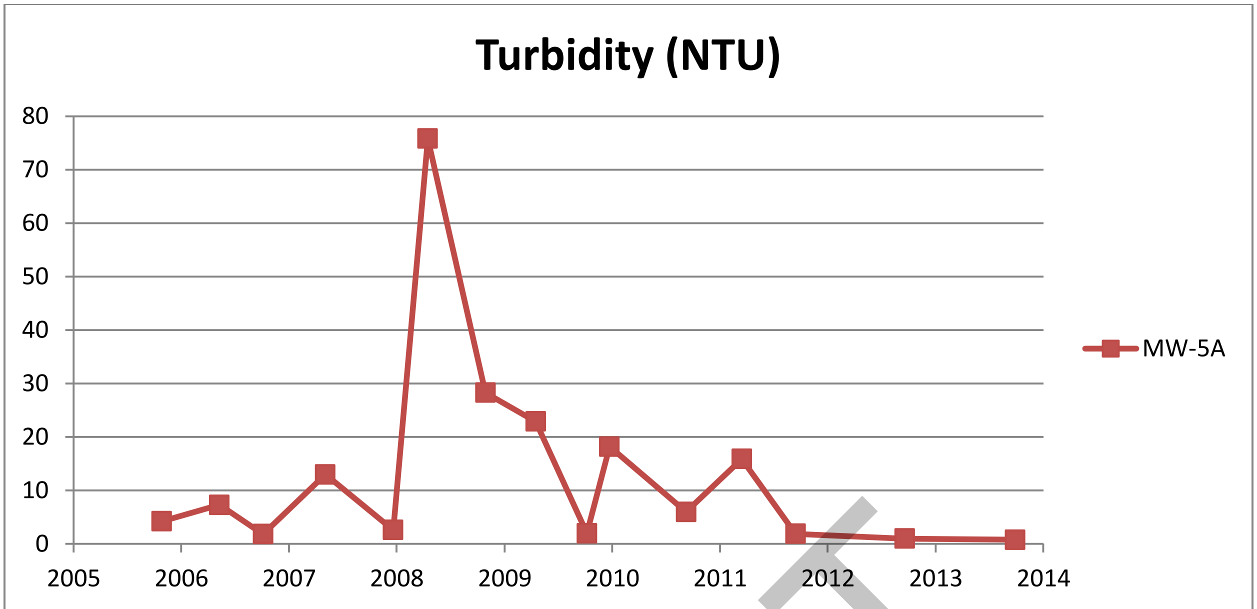

Figure 3.2.4-4

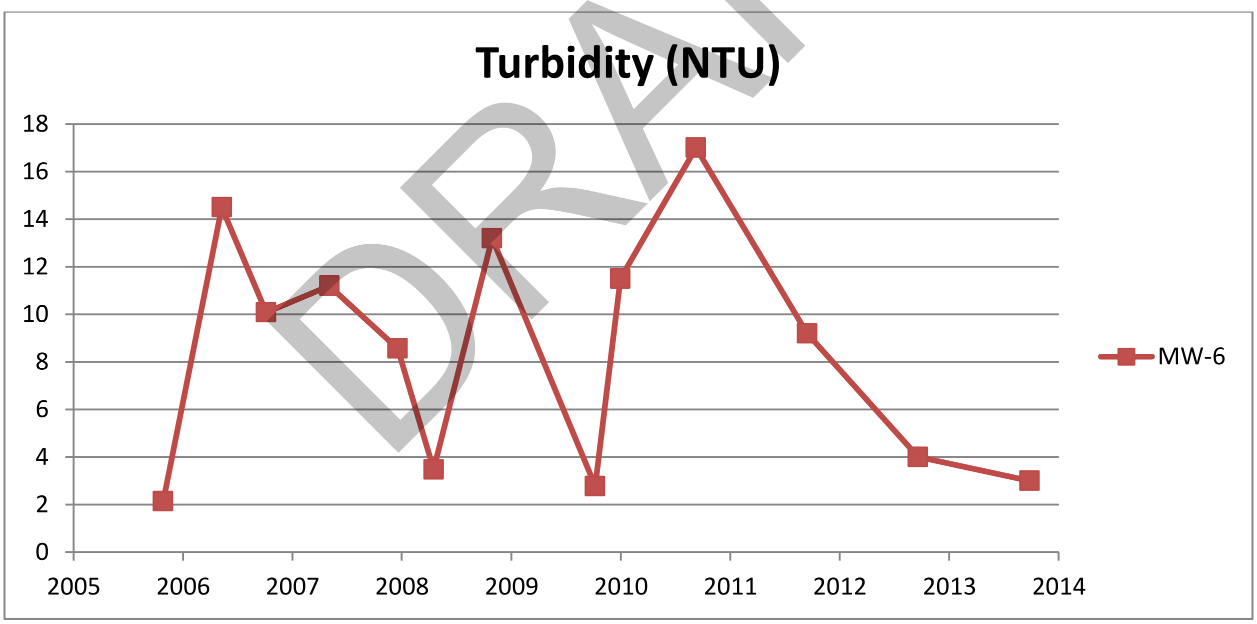

Figure 3.2.4-5

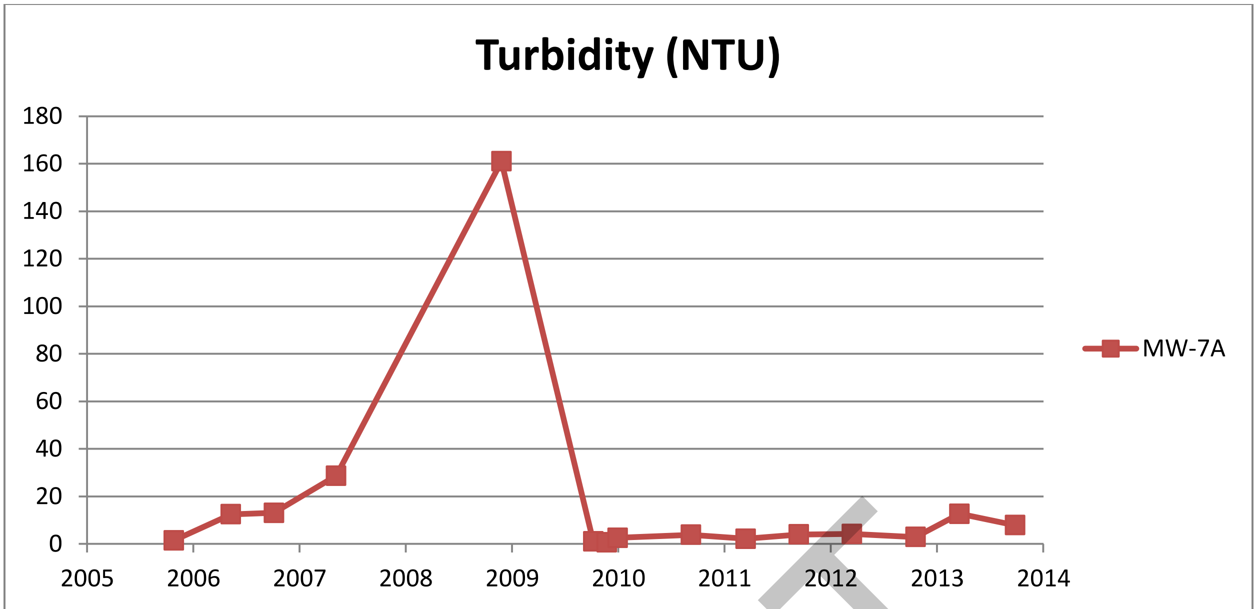

Figure 3.2.4-6

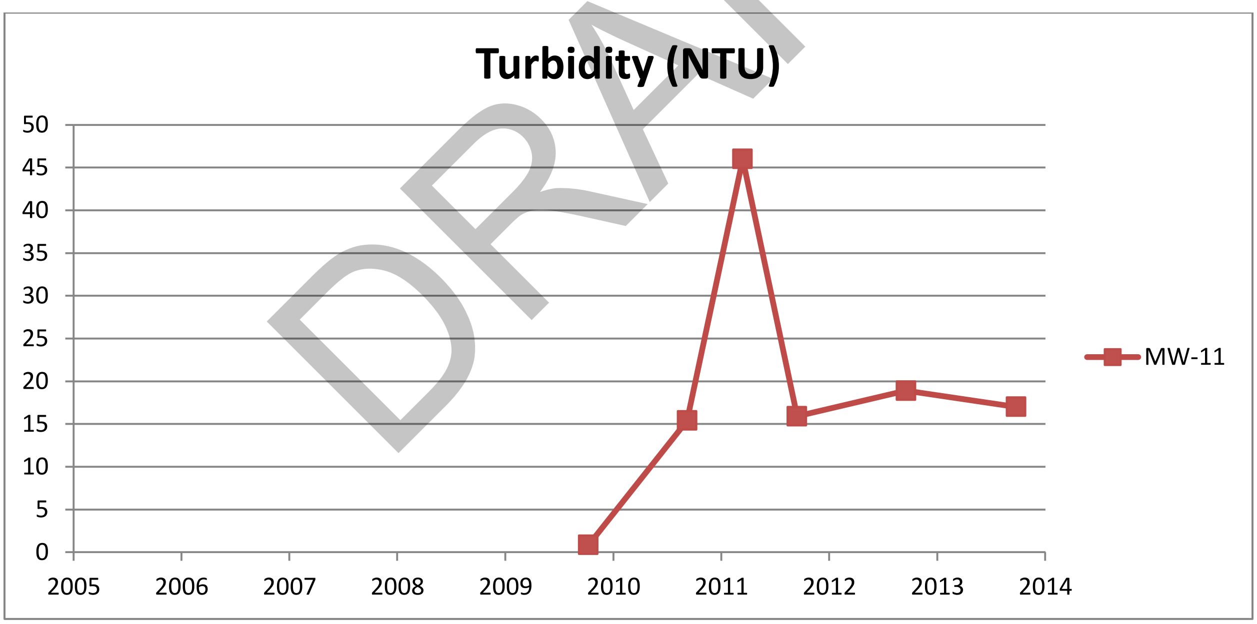

Figure 3.2.4-7

3.2.5 Dissolved Oxygen

The box-and-whisker plots of dissolved oxygen (DO) for the surficial aquifer monitoring wells are shown in Figure 3.2.5-1. The temporal plots of DO for each monitoring well of the surficial aquifer (shown in Figure 3.2.5-2 to Figure 3.2.5-7) were analyzed to identify trends in DO variation. The trend in measured DO was variable. MW-7A showed a generally decreasing trend, while MW-4 and MW-5A were variable, and MW-6 was slightly increasing.

The variation in DO values may be attributed to the on-going excavation and cell construction activities at the site. A combination of materials excavation (which could result in a temporary re-oxygenation of lower portions of the surficial aquifer) and cell construction and waste placement activities (which involves the placement of compacted clay prior to waste placement) would ultimately be expected to cut off the ability for atmospheric oxygen to reach the surficial aquifer compared to the pre-construction case.

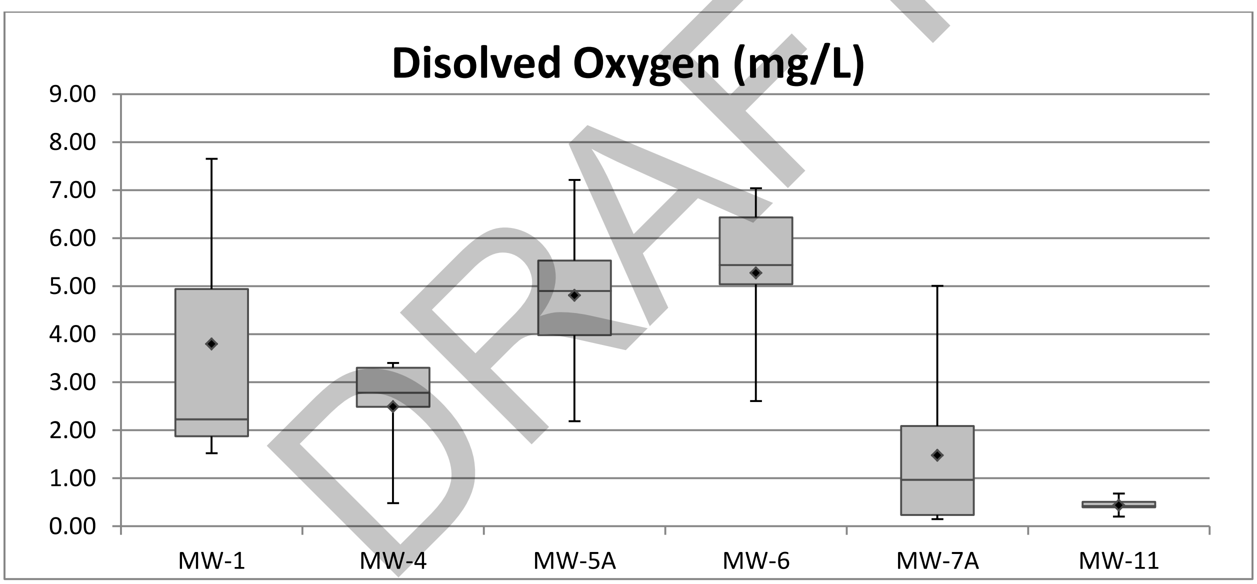

Figure 3.2.5-1

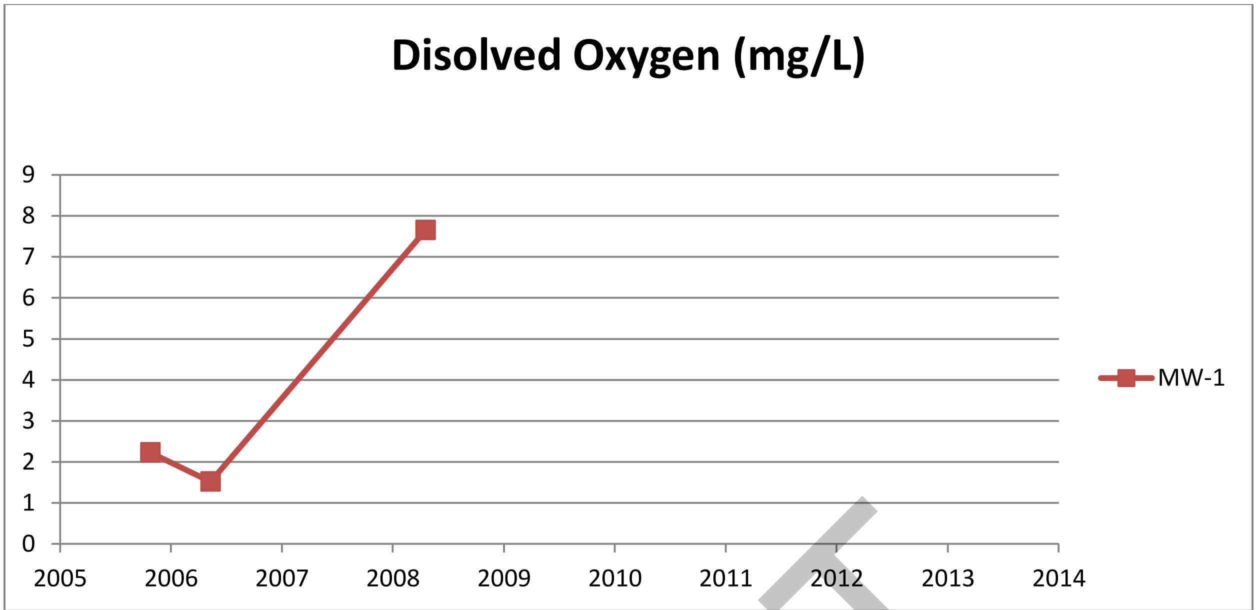

Figure 3.2.5-2

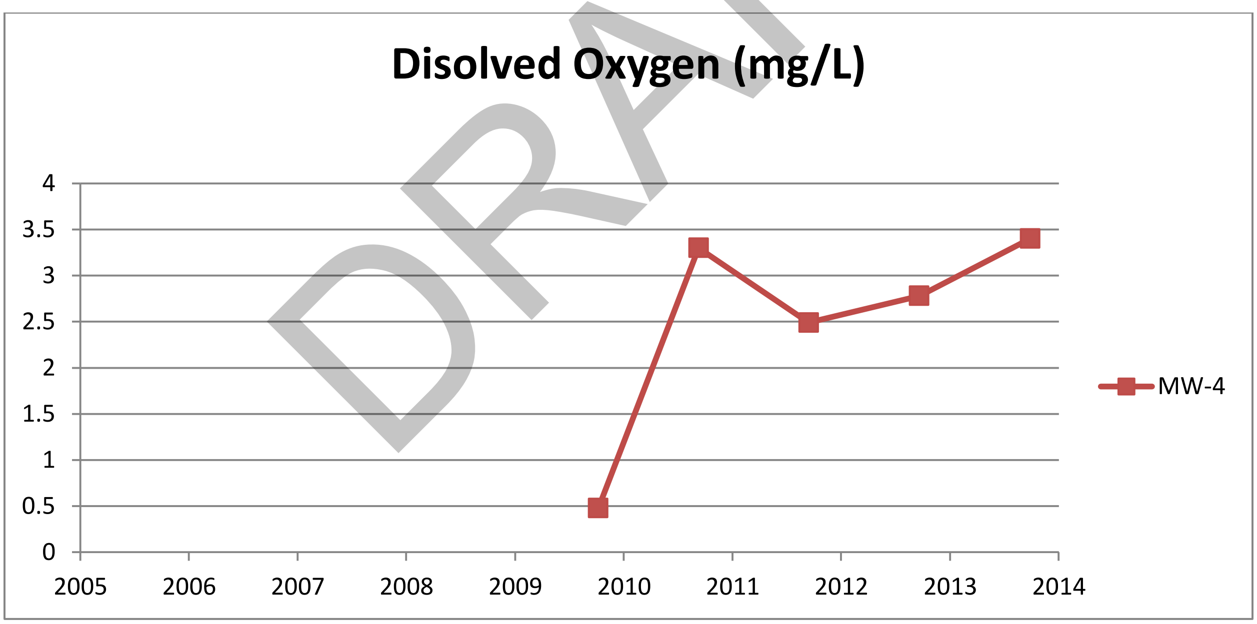

Figure 3.2.5-3

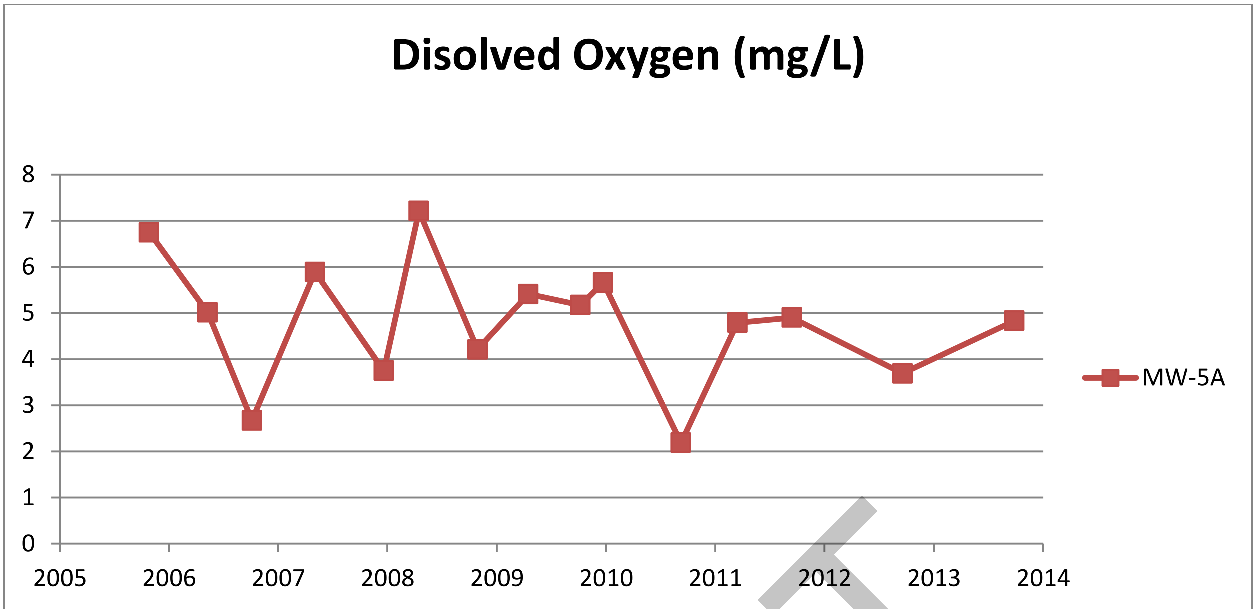

Figure 3.2.5-4

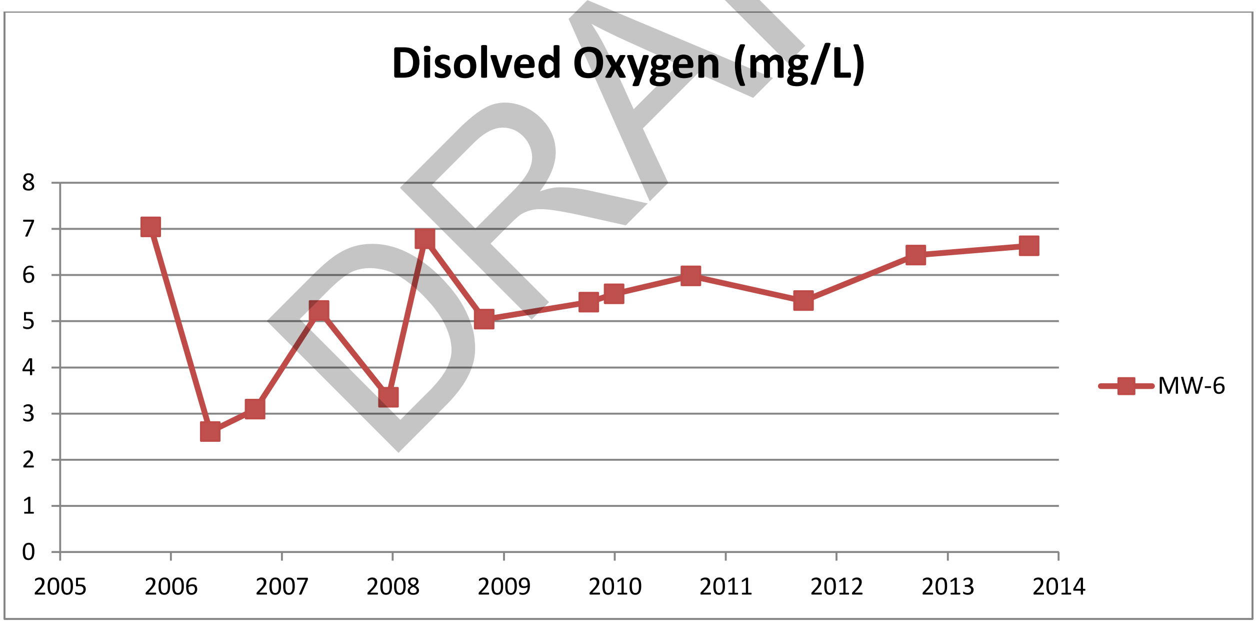

Figure 3.2.5-5

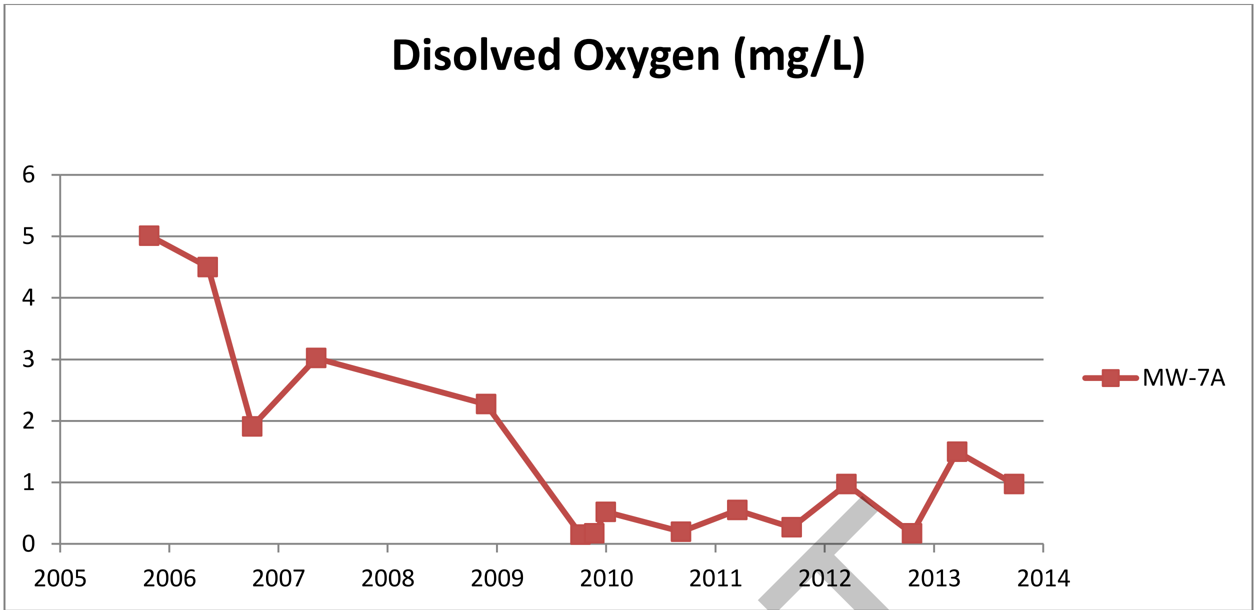

Figure 3.2.5-6

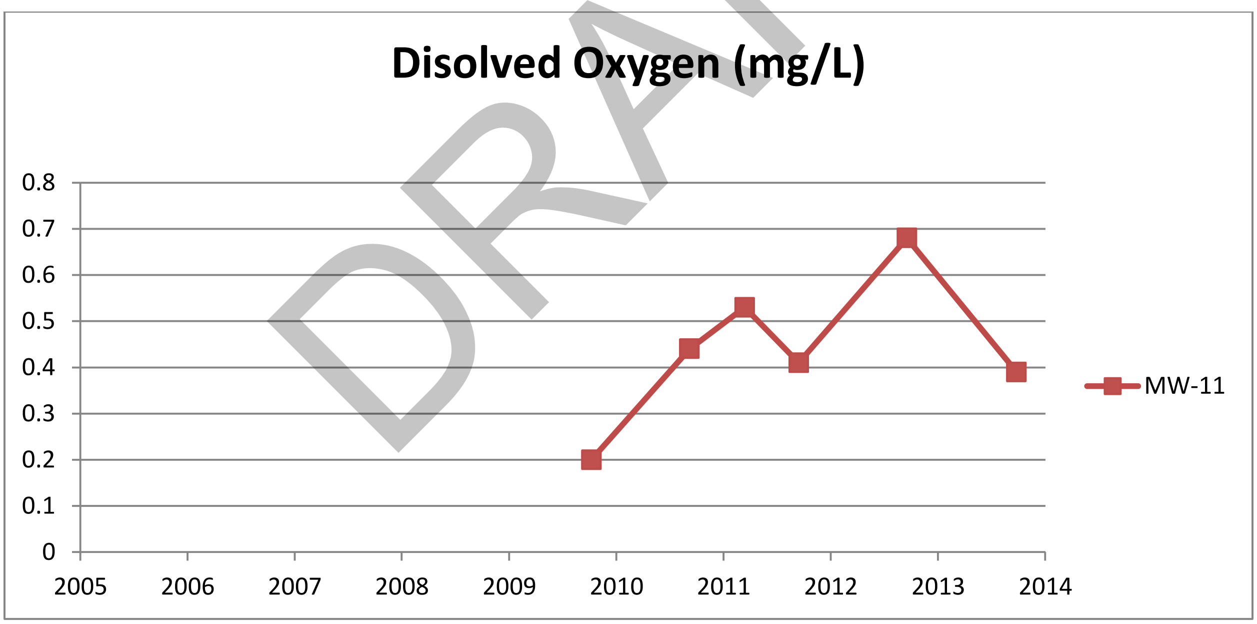

Figure 3.2.5-7

3.2.6 Oxidation Reduction Potential

In oxidation reduction chemistry, certain chemical reactions result in the loss of electrons (reduction reactions) while others result in the acquisition of electrons (oxidation reactions). Oxidation Reduction Potential (ORP) is a measure of the relative strength of oxidizing and reducing agents in relation to their respective concentrations and is measured in terms of voltage. A positive voltage reading indicates an oxidizing solution (attracting electrons) while a negative voltage reading indicates a reducing solution (losing electrons). ORP can also be indicative of bacterial activity in a body of water (Suslow, 2004).

The box and whisker plot for ORP is shown in Figure 3.2.6-1. The temporal plots of ORP for each surficial aquifer monitoring well (shown in Figure 3.2.6-2 to Figure 3.2.6-7) were analyzed to identify trends in ORP variation. Several wells had sporadic data points with no real trends. However, overall ORP values were consistently positive. Similar to the trend seen for DO, the variation in ORP values is likely attributed to the on-going excavation and cell construction activities at the site.

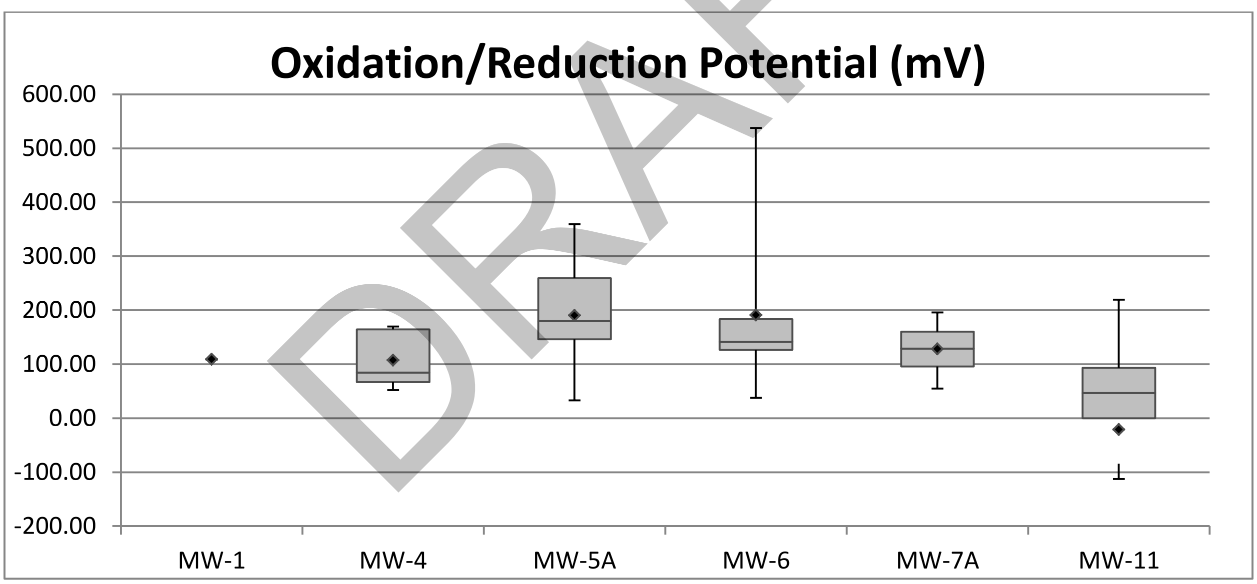

Figure 3.2.6-1

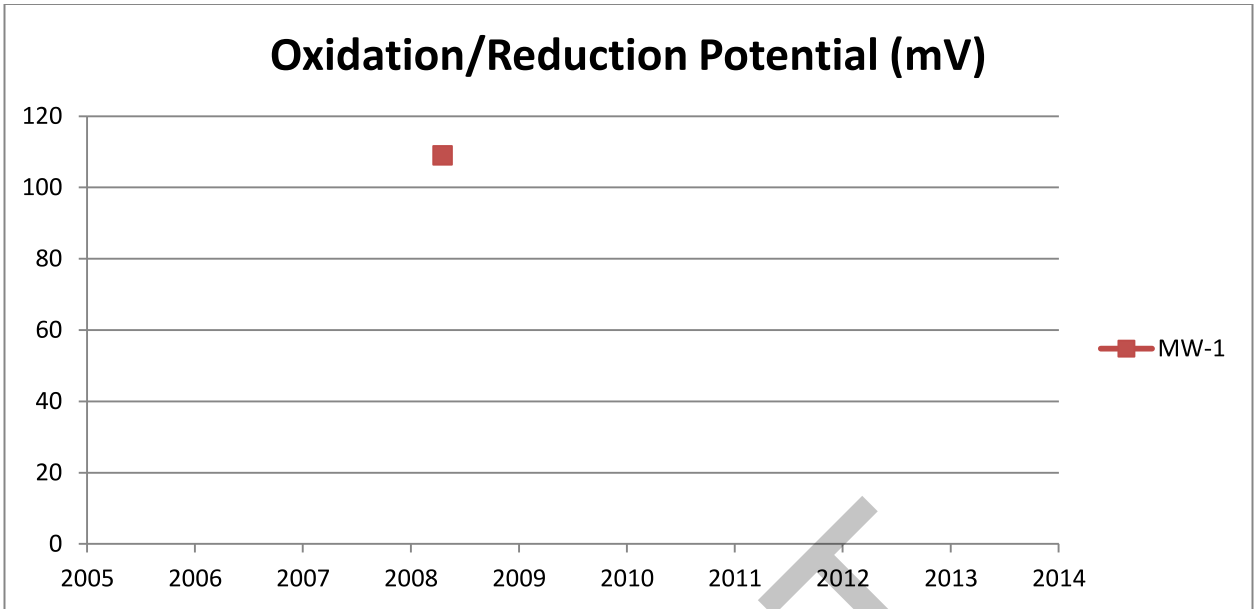

Figure 3.2.6-2

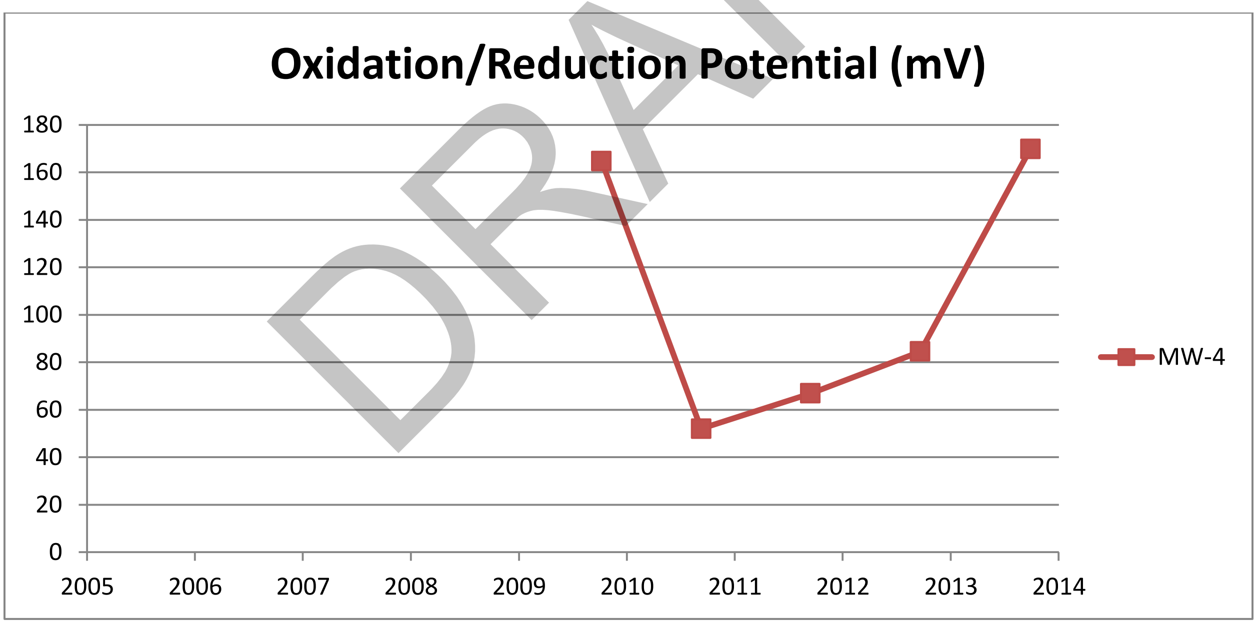

Figure 3.2.6-3

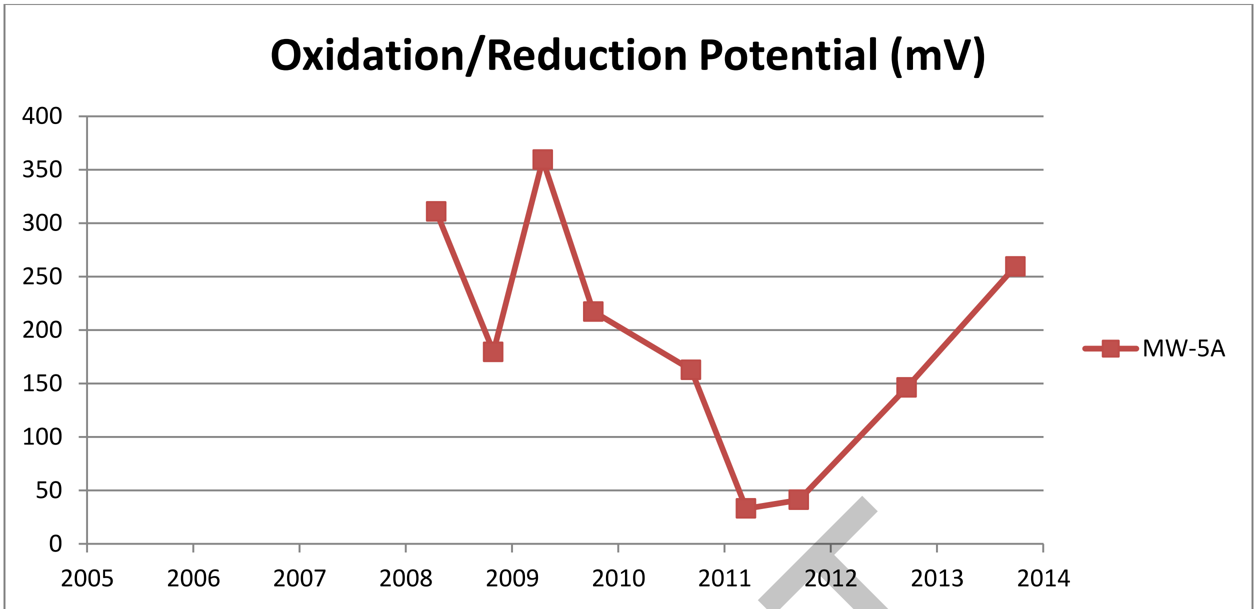

Figure 3.2.6-4

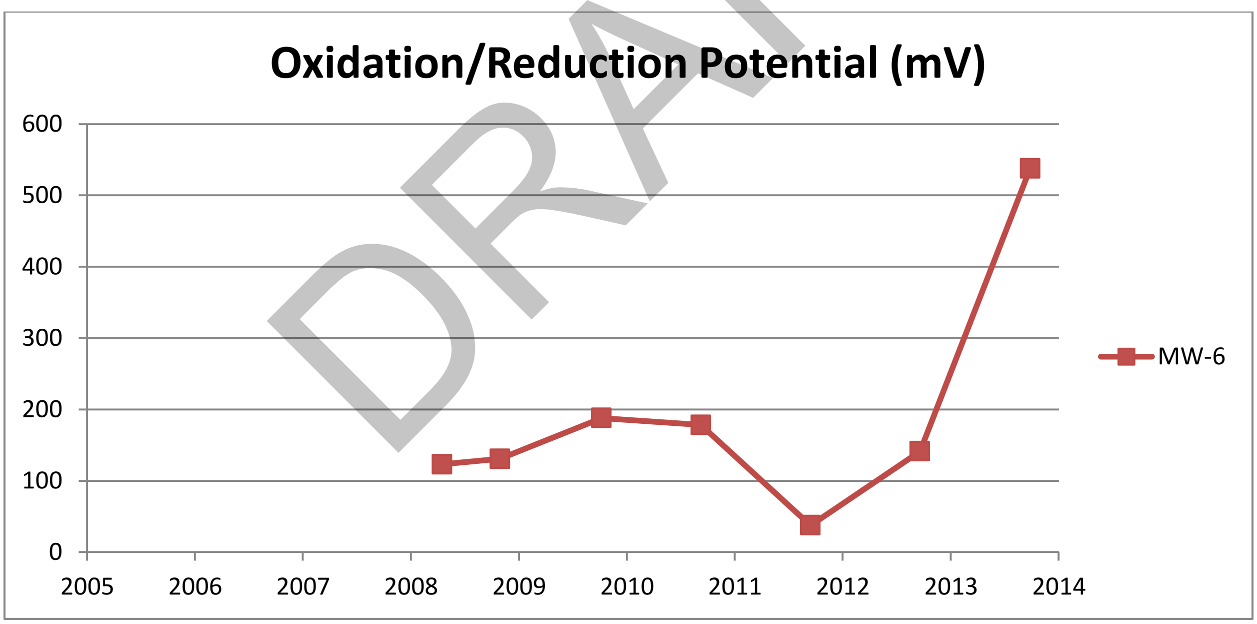

Figure 3.2.6-5

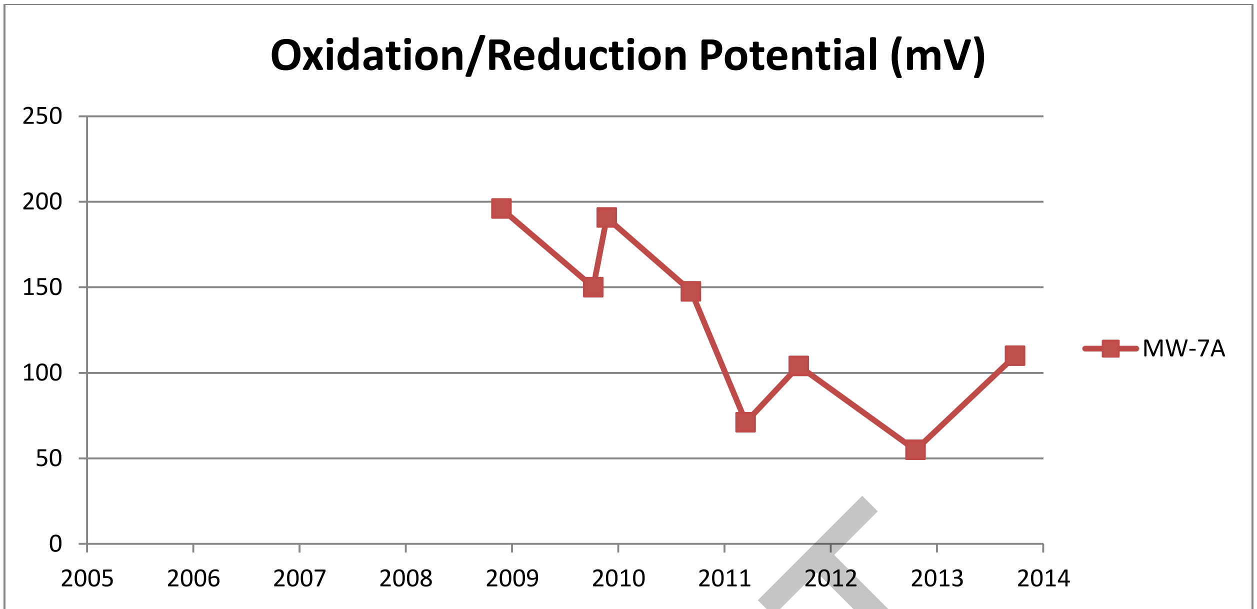

Figure 3.2.6-6

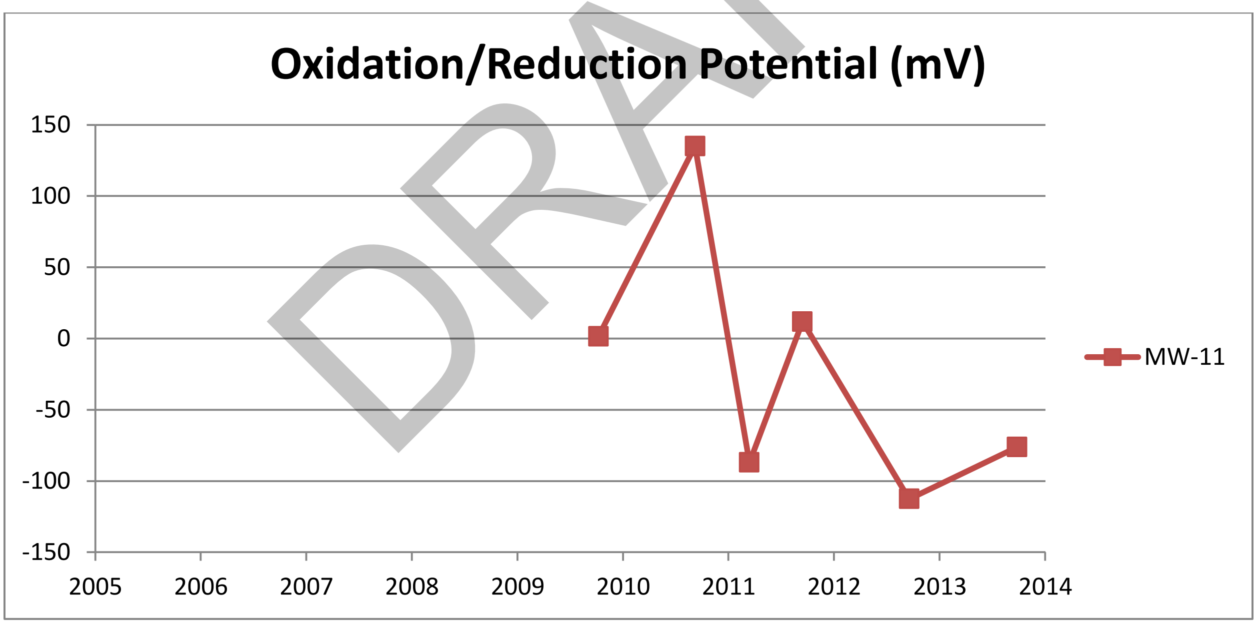

Figure 3.2.6-7

3.2.7 Total Dissolved Solids

TDS in groundwater mainly consists of carbonates, bicarbonates, chlorides, sulfates, phosphates, nitrates, calcium, magnesium, sodium, potassium, iron, manganese, and a few others. The box-and-whisker plot (Figure 3.2.7-1) of TDS concentrations in the surficial aquifer monitoring wells shows that the concentrations were below the GCTL (500 mg/L) in each well except in monitoring well MW-4. TDS was measured to be 530 mg/L during the October 2009 sampling event (Figure 3.2.7-3). TDS levels have been historically high in MW-4 which have led to historically high conductivities, as well (conductivity is directly related to TDS as dissolved solids aid the passage of electrical current). The well MW-4 has exhibited low levels in other TDS and conductivity related parameters such as chloride and sodium. Surficial aquifer well MW-4 was installed in 2006; however, in most of the sampling events since that time, the well was found to be dry or had insufficient water to be sampled. It is likely, therefore, that the water in the well simply has a naturally high mineral content relative to other wells.

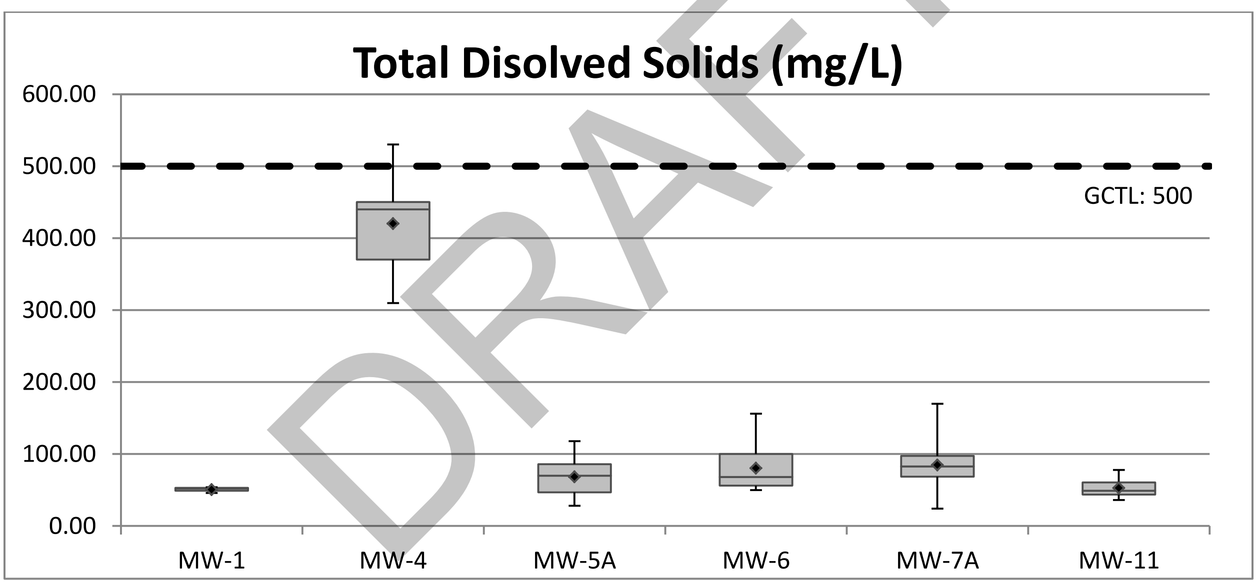

Figure 3.2.7-1

The measured TDS exceedance in October 2009 in MW-4 was within the range of SWFWMD background TDS concentrations (1-1,77,000 mg/L) of the surficial aquifer as shown in Table 3.1. The monitoring events conducted after October 2009 showed no exceedances of the GCTL for TDS.

The temporal plots of TDS for each surficial aquifer monitoring well (shown in Figure 3.2.7-2 to Figure 3.2.7-7) were analyzed to identify trends in TDS variation. The results generally show that TDS remained relatively constant or remained within a limited range.

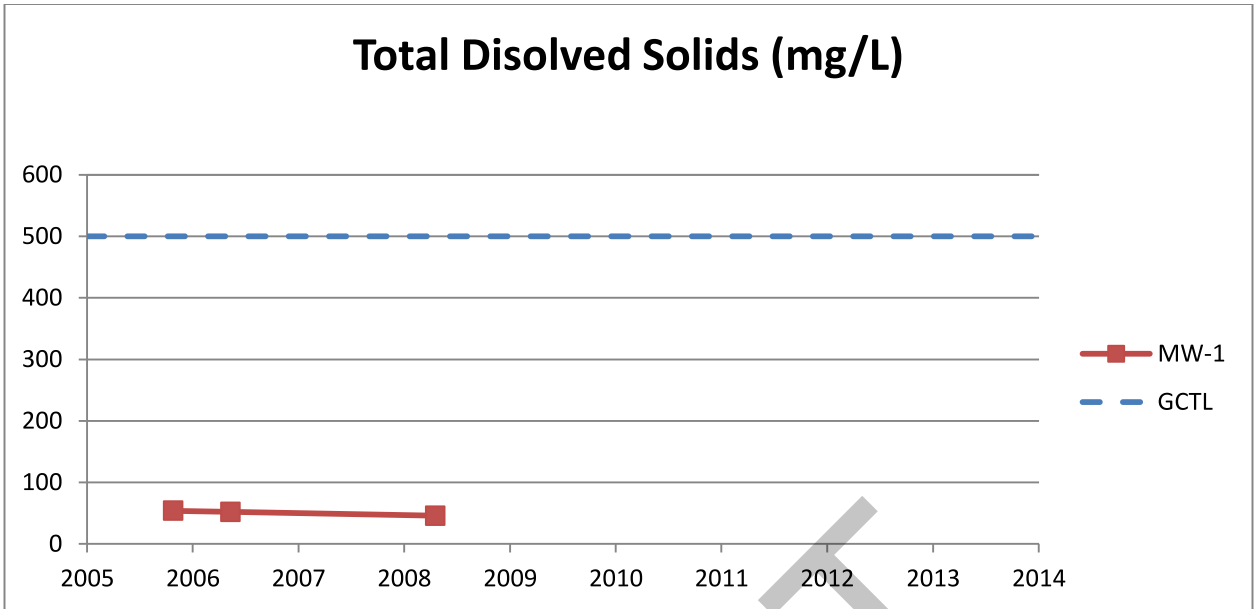

Figure 3.2.7-2

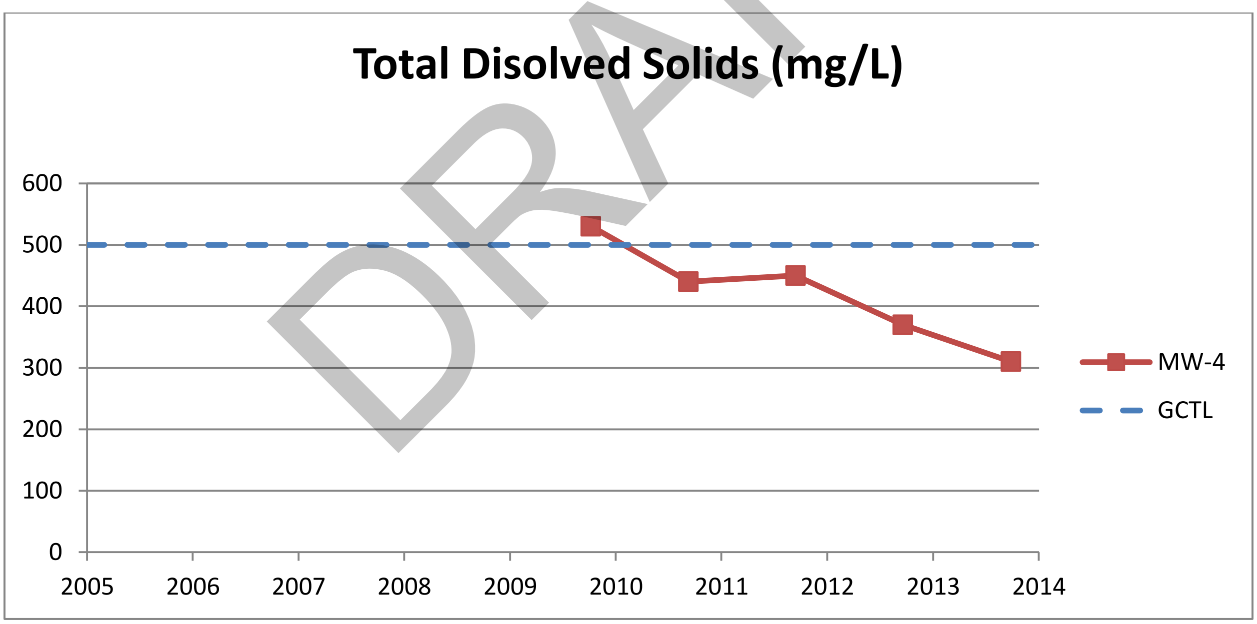

Figure 3.2.7-3

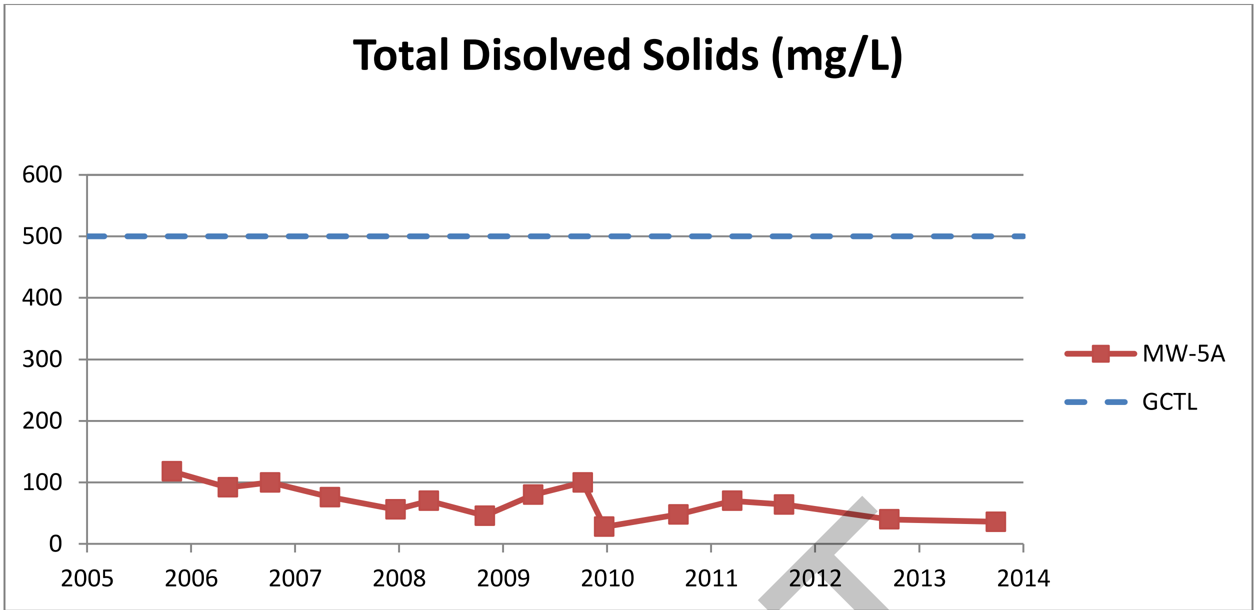

Figure 3.2.7-4

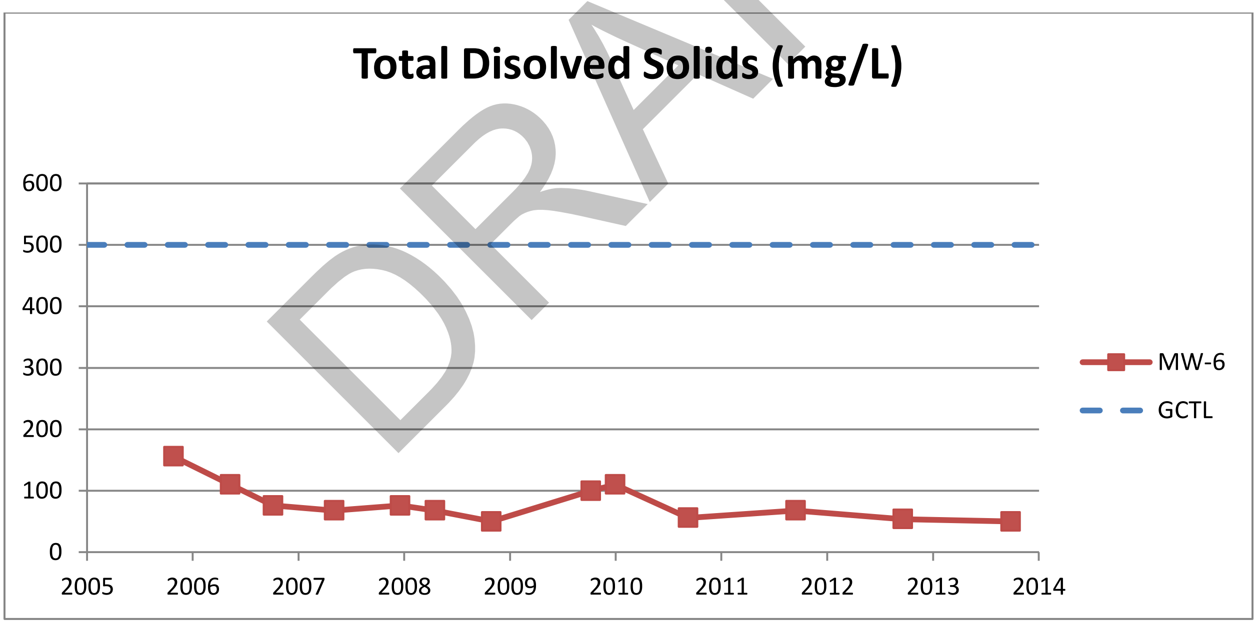

Figure 3.2.7-5

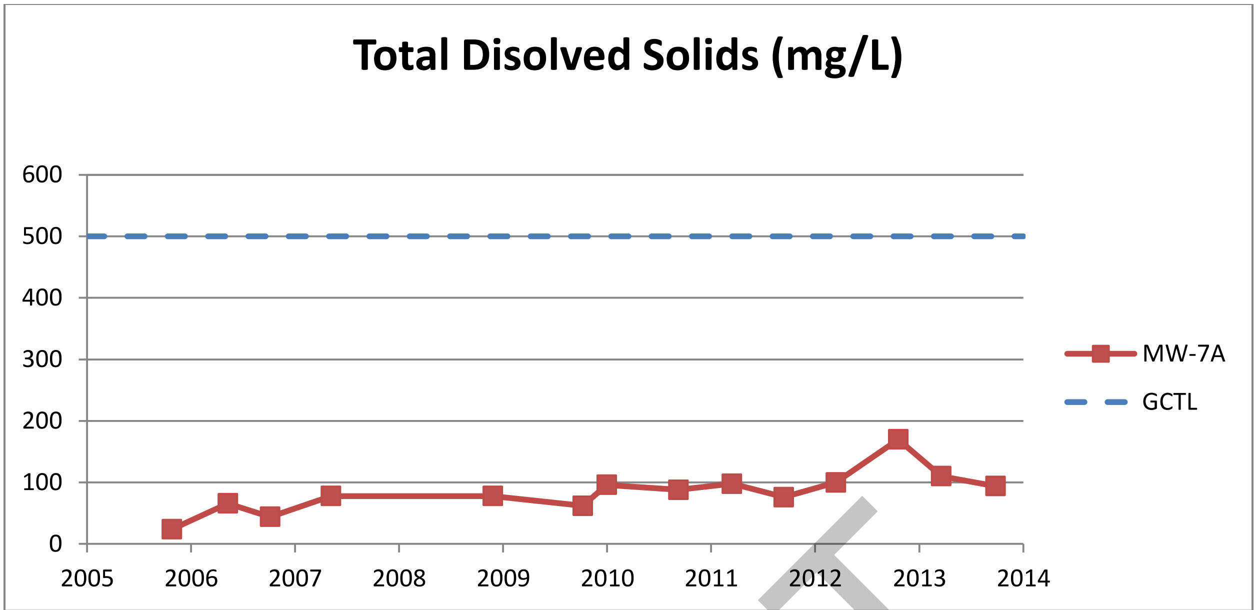

Figure 3.2.7-6

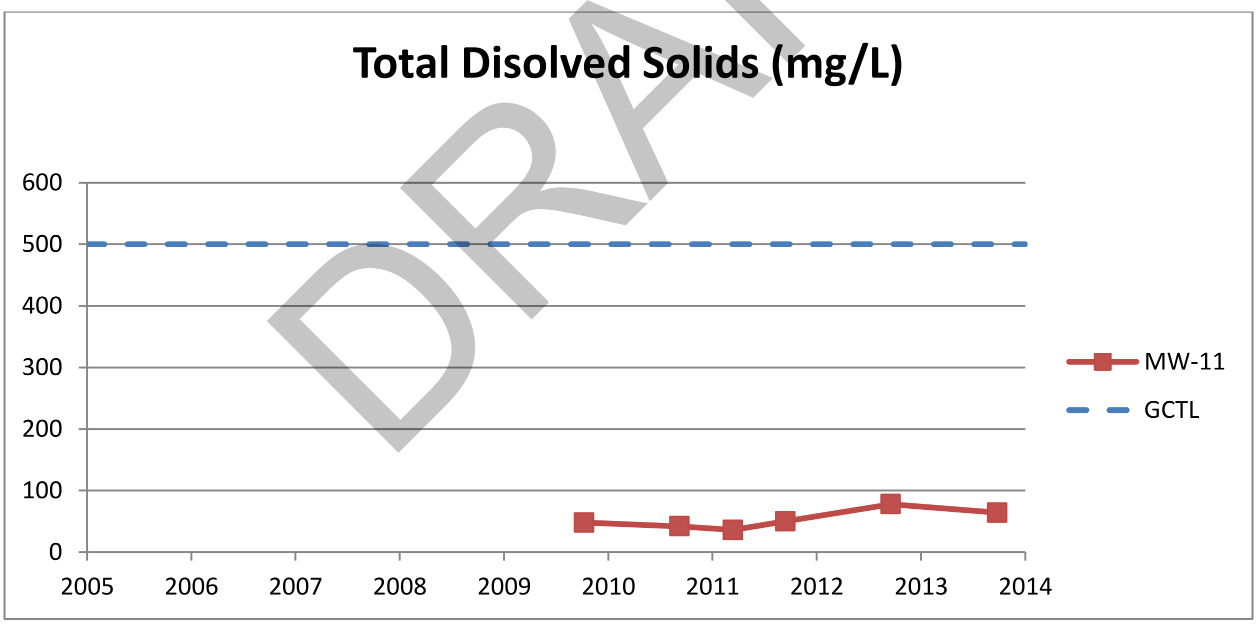

Figure 3.2.7-7

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3.2.8 1,2-Dibromoethane

A box and whisker plot of 1,2-Dibromoethane is shown in Figure 3.2.8-1. Temporal plots of 1,2-Dibromoethane are shown in Figure 3.2.8-2 to Figure 3.2.8-7. Among all the measurements conducted in the samples collected from the surficial aquifer monitoring wells, 1,2-Dibromoethane was detected in 2 of 71 (3%) samples and among all the detections, the concentration of 1,2-Dibromoethane exceeded the GCTL (0.02 µg/L) once in MW-7A. The temporal impact plot of 1,2-Dibromoethane for MW-7A (Figure 3.2.8-6) shows that 1,2-Dibromoethane concentrations were generally below the detection limit (0.02 µg/L) except in one sample collected in the monitoring event of October 2009 (0.024 µg/L). Results from equipment and trip blanks from the sampling event were analyzed to assess potential cross-contamination; however, the data from the blanks do not indicate any contamination. The concentrations of 1,2-Dibromoethane were found below the detection limit in all subsequent sampling events. The single exceedance of the 1,2-dibromoethane concentration in MW-7A can be considered an isolated event and does not reflect any significant change in water quality in well MW-7A.

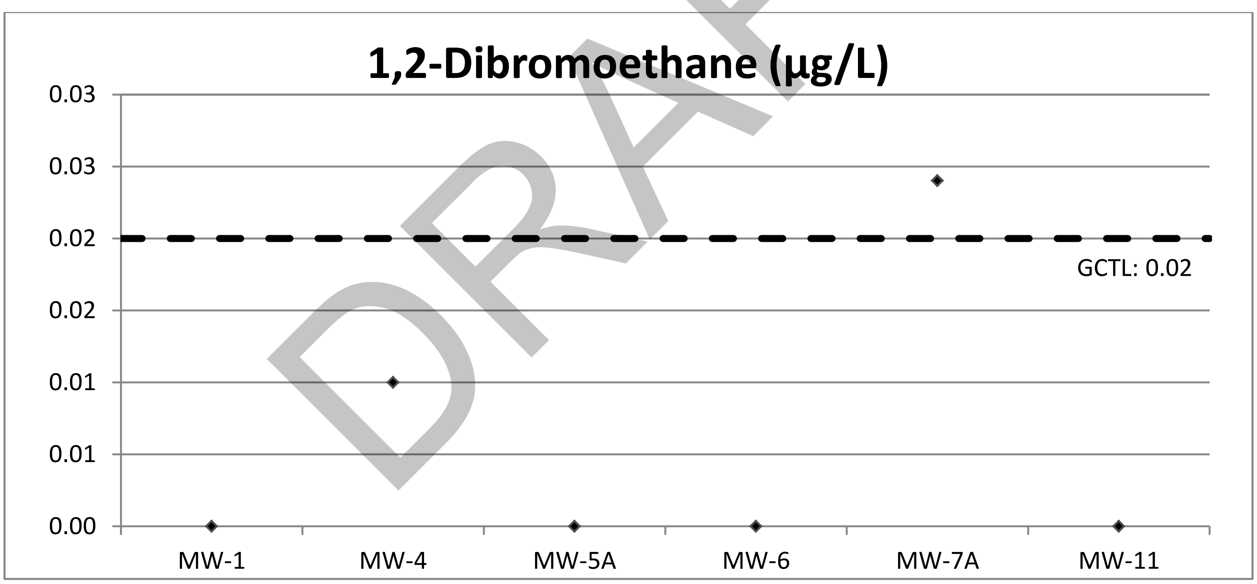


Figure 3.2.8-1

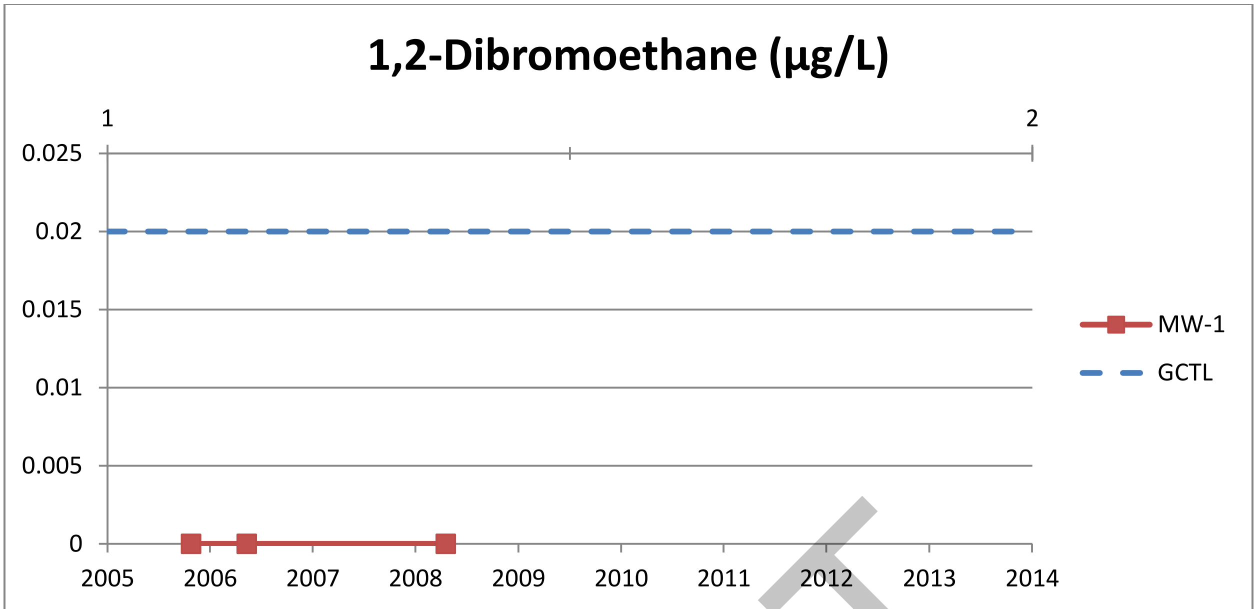


Figure 3.2.8-2

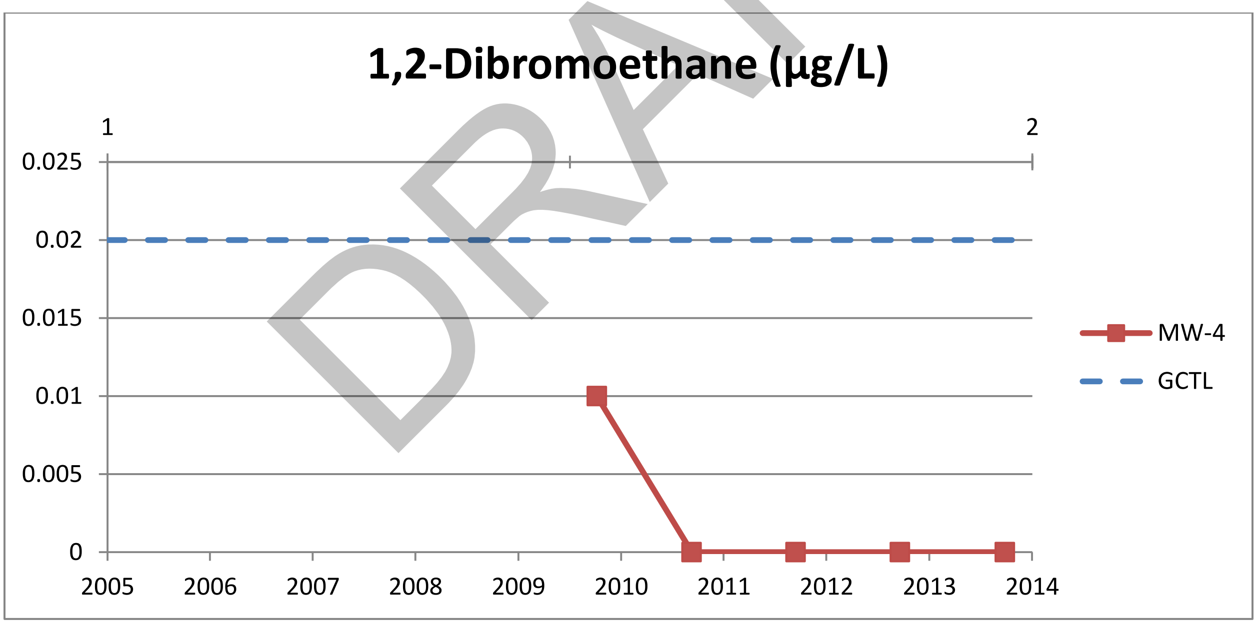


Figure 3.2.8-3

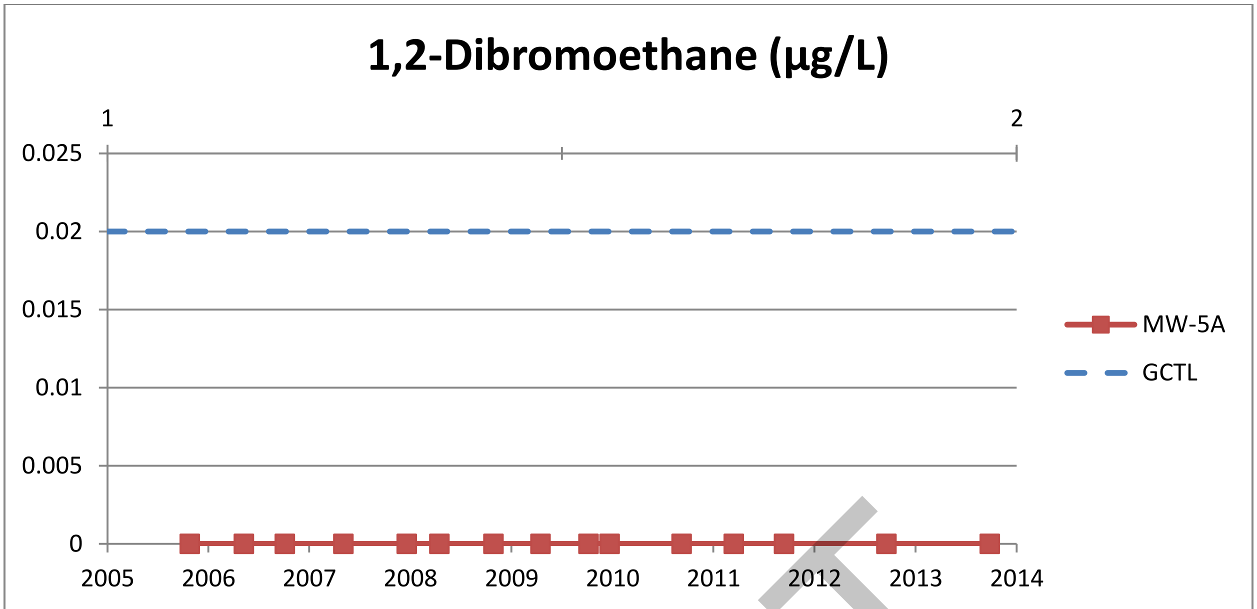


Figure 3.2.8-4

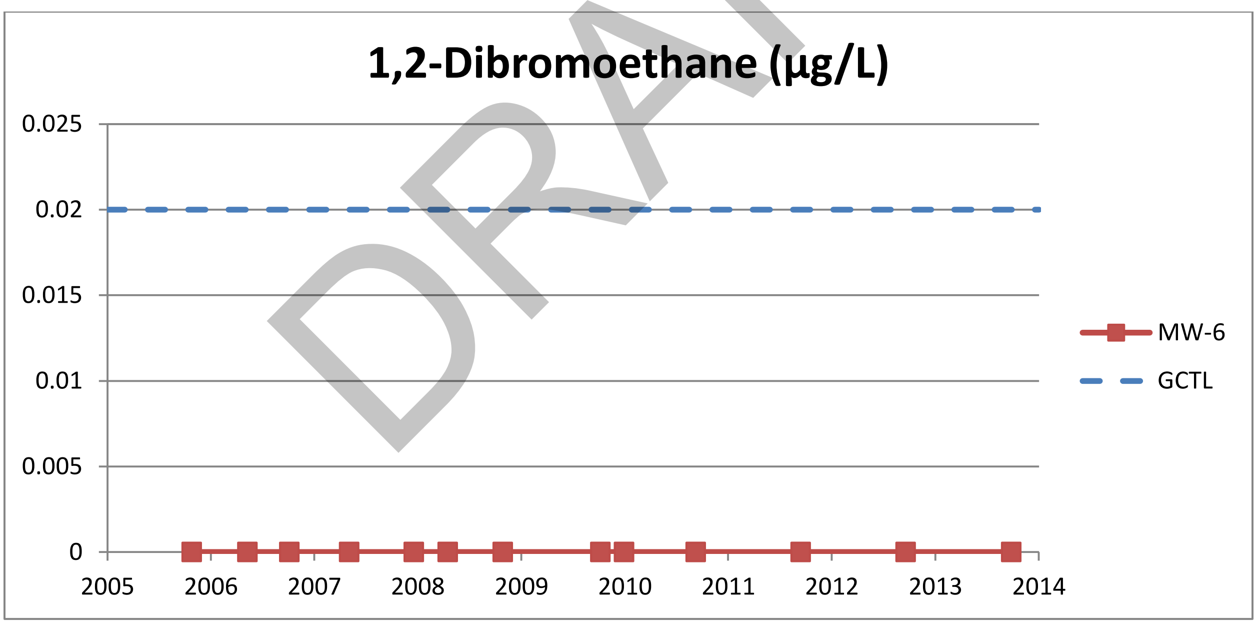


Figure 3.2.8-5

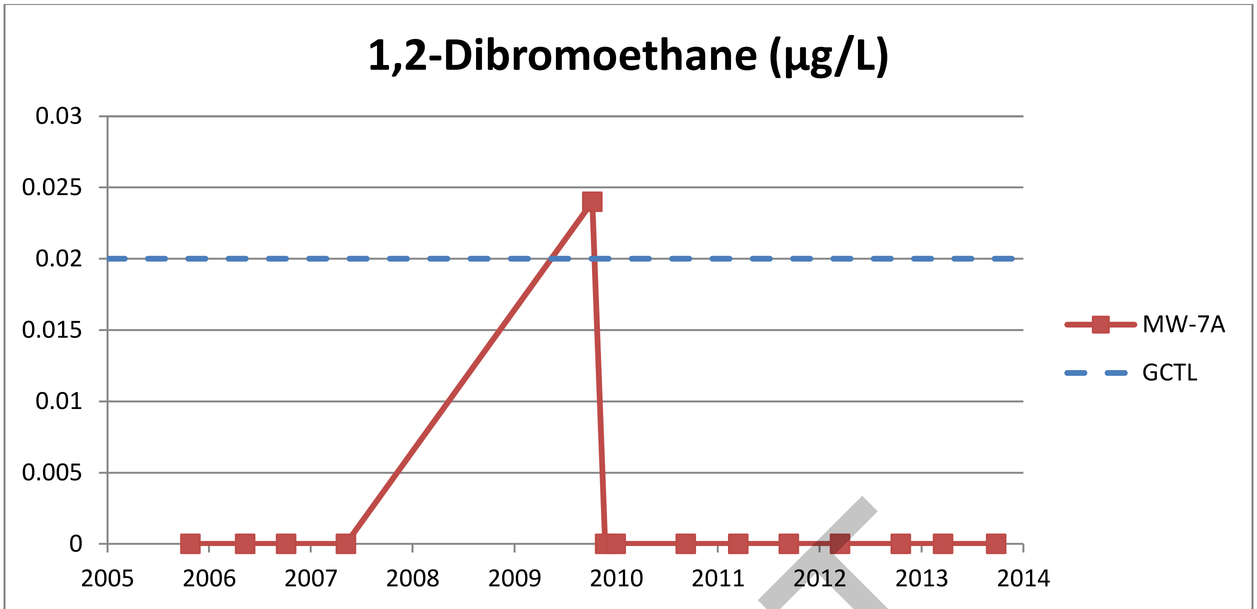


Figure 3.2.8-6

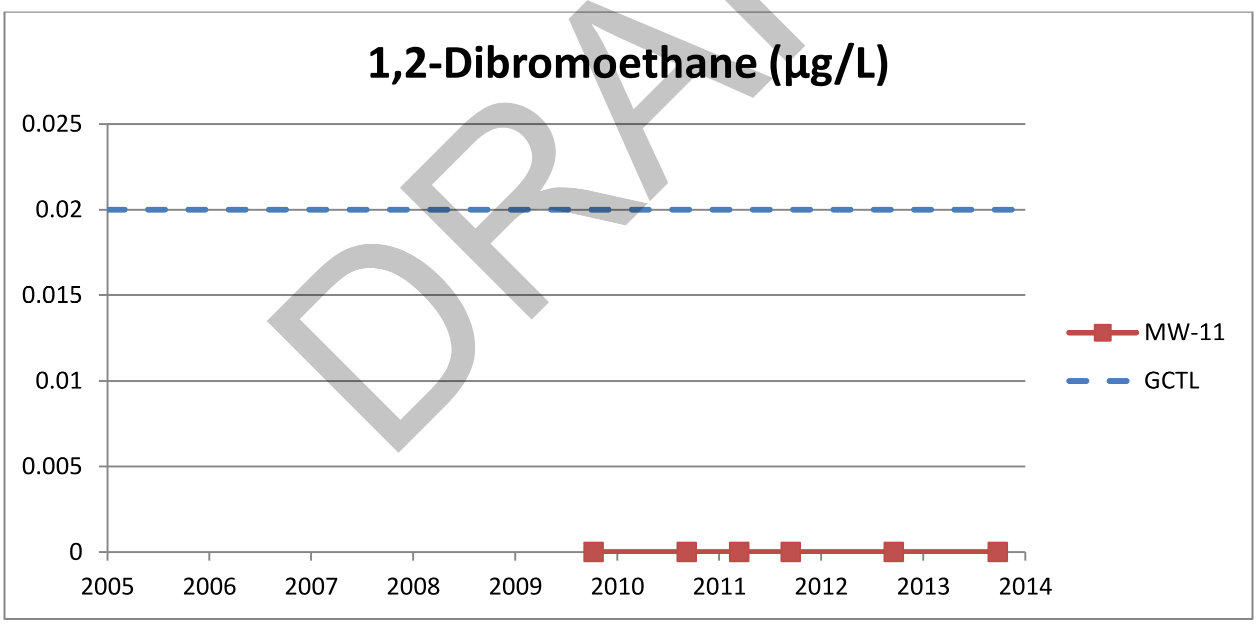


Figure 3.2.8-7

3.2.9 Ammonia

Ammonia is standard indicator of leachate impacts to groundwater. The box and whisker plot of Ammonia concentrations in the surficial aquifer monitoring wells is shown in Figure 3.2.9-1. Temporal plots of Ammonia in the surficial aquifer monitoring wells are shown in Figure 3.2.9-2 to Figure 3.2.9-7. Ammonia concentrations were all significantly below the GCTL in all surficial aquifer monitoring wells. Concentrations were consistent over time.

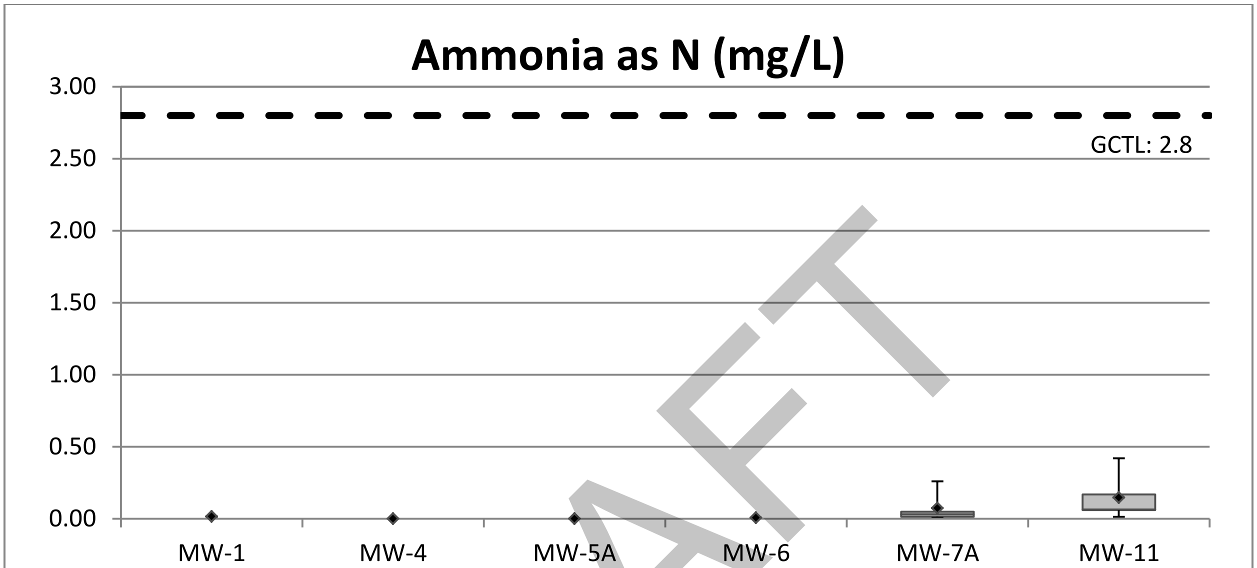


Figure 3.2.9-1

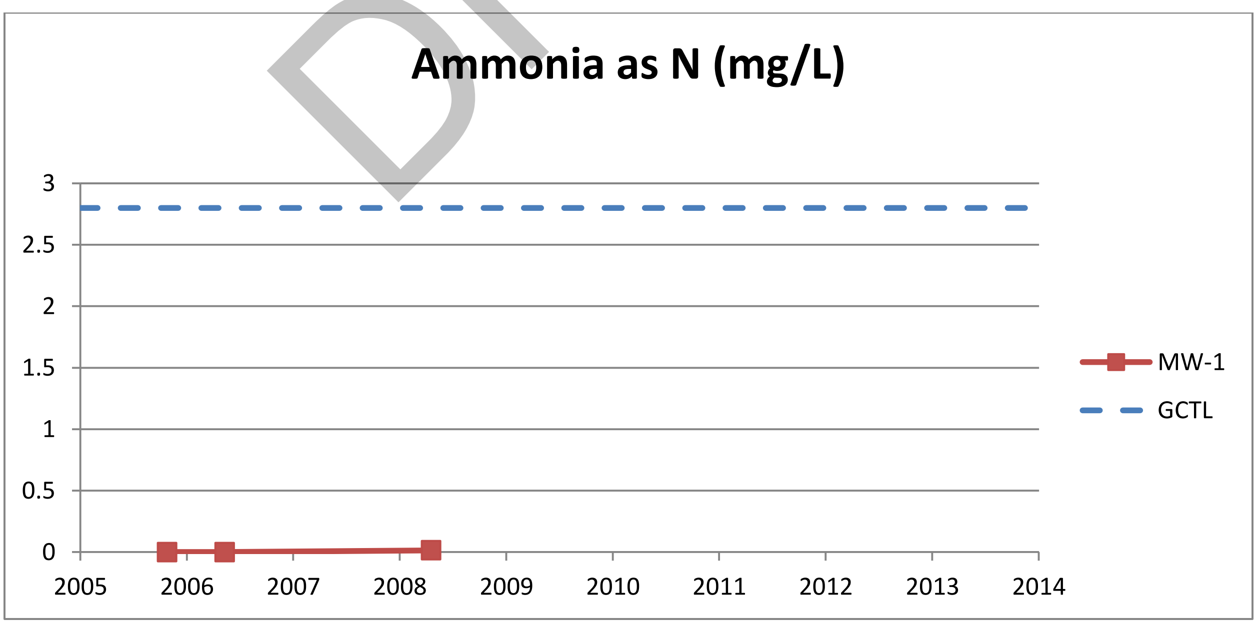


Figure 3.2.9-2

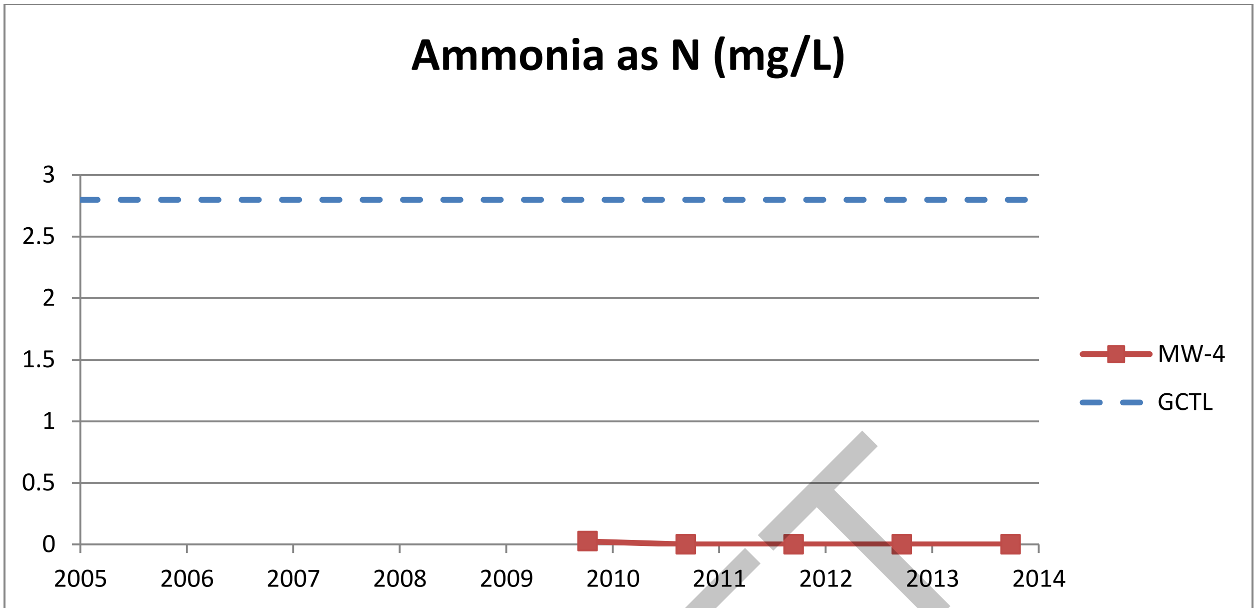


Figure 3.2.9-3

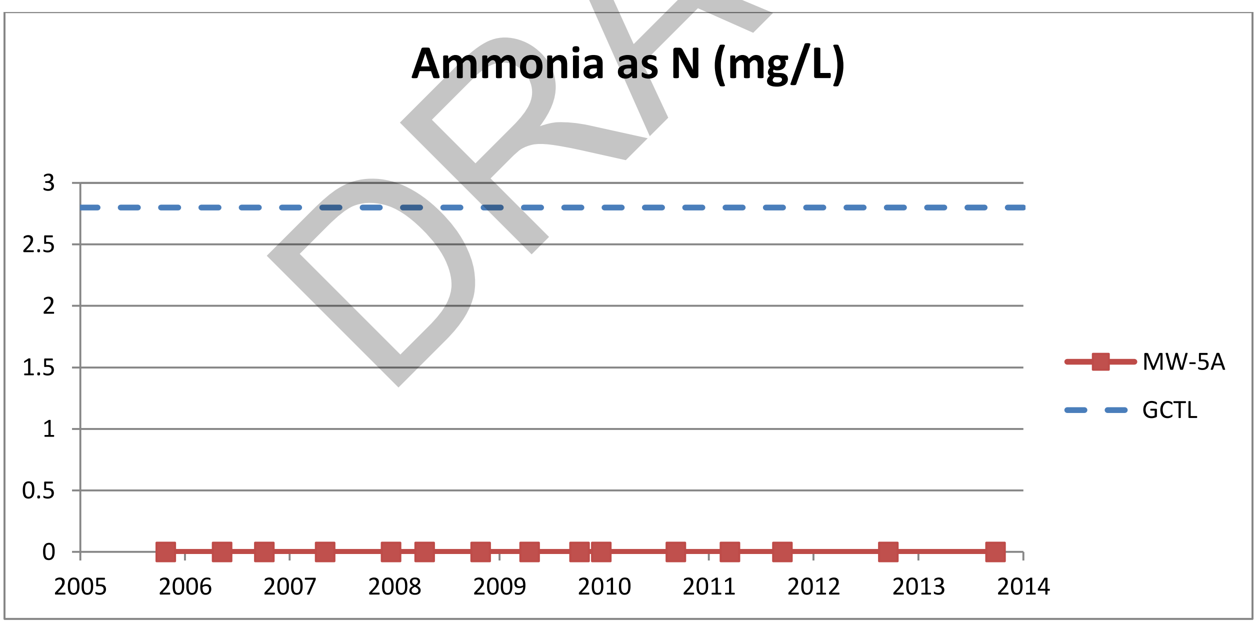


Figure 3.2.9-4

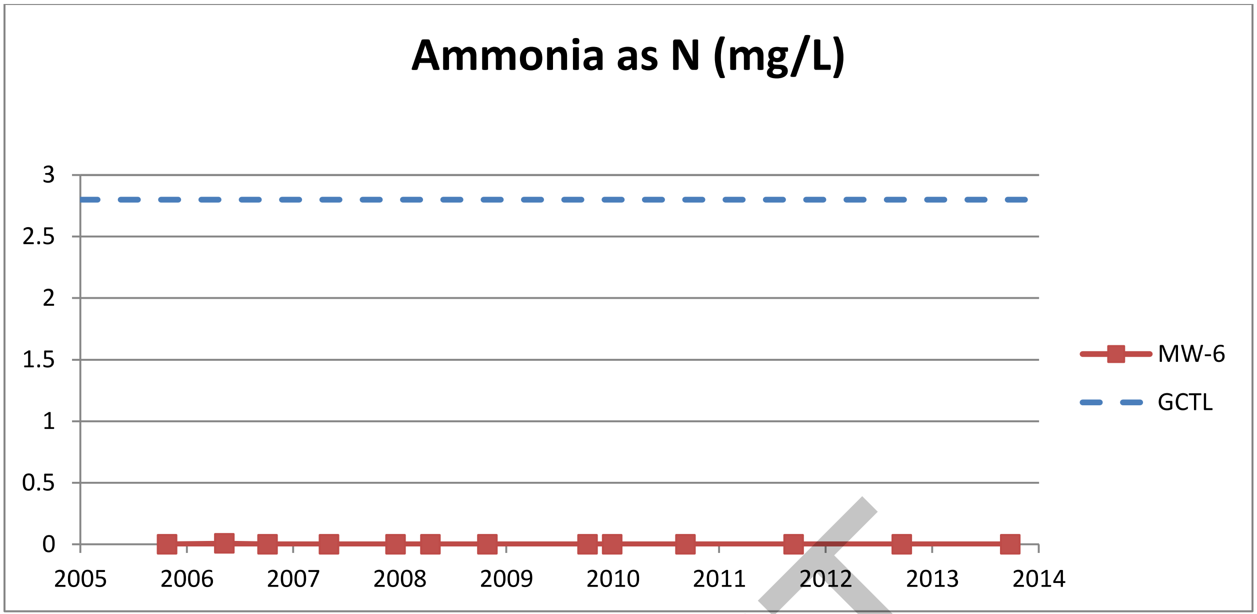


Figure 3.2.9-5

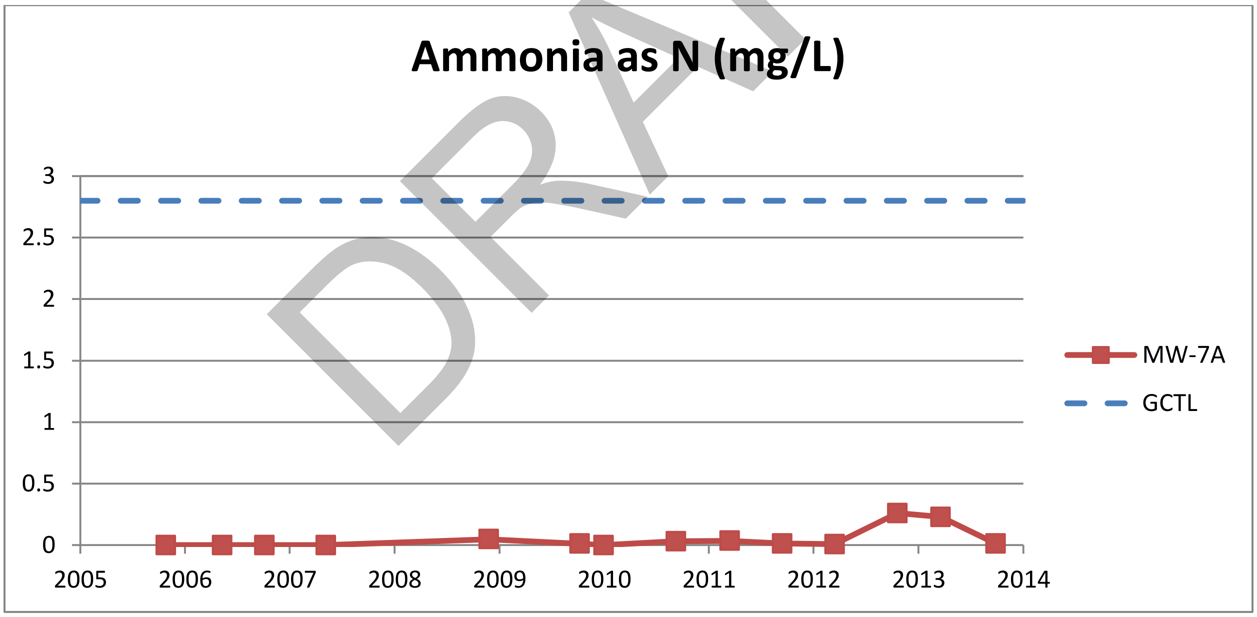


Figure 3.2.9-6

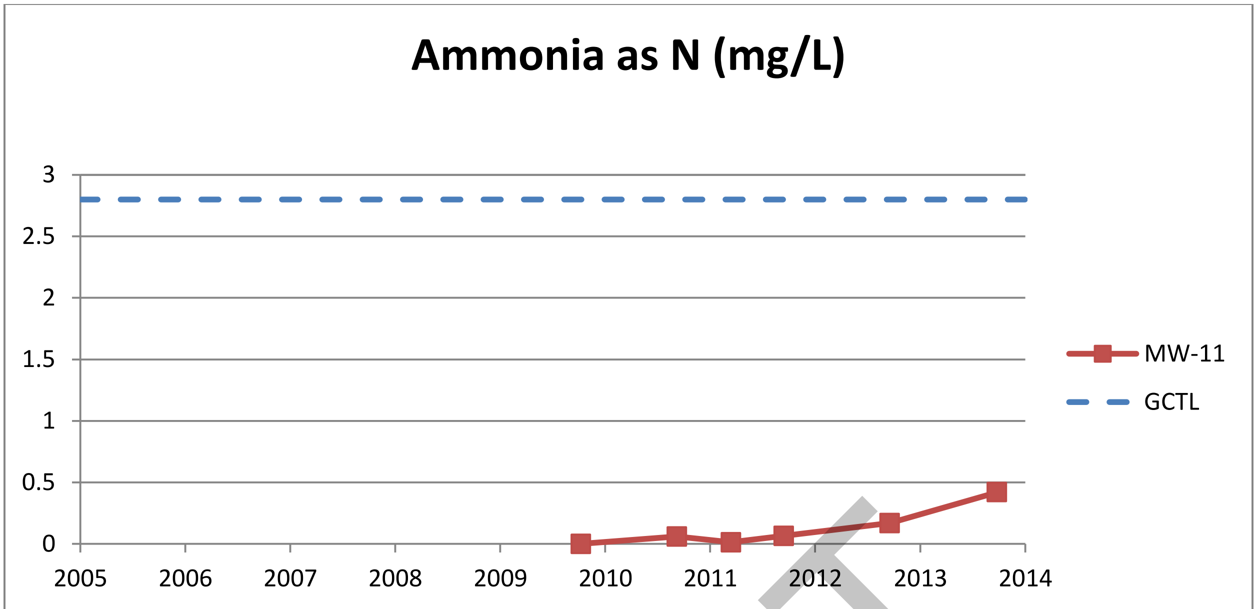

Ammonia as N (mg/L)
3
2.5
2
1.5
1
0.5
0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
MW-11
GCTL

Figure 3.2.9-7

3.2.10 Nitrate as N

Nitrate as N is another common indicator of leachate impacts to groundwater. The box and whisker plot for Nitrate concentrations in the surficial aquifer monitoring wells is shown in Figure 3.2.10-1. Temporal plots for Nitrate in the surficial aquifer monitoring wells are shown in Figure 3.2.10-2 to Figure 3.2.10-7. All Nitrate concentrations were significantly below the GCTL. Concentrations of Nitrate were consistent over time.

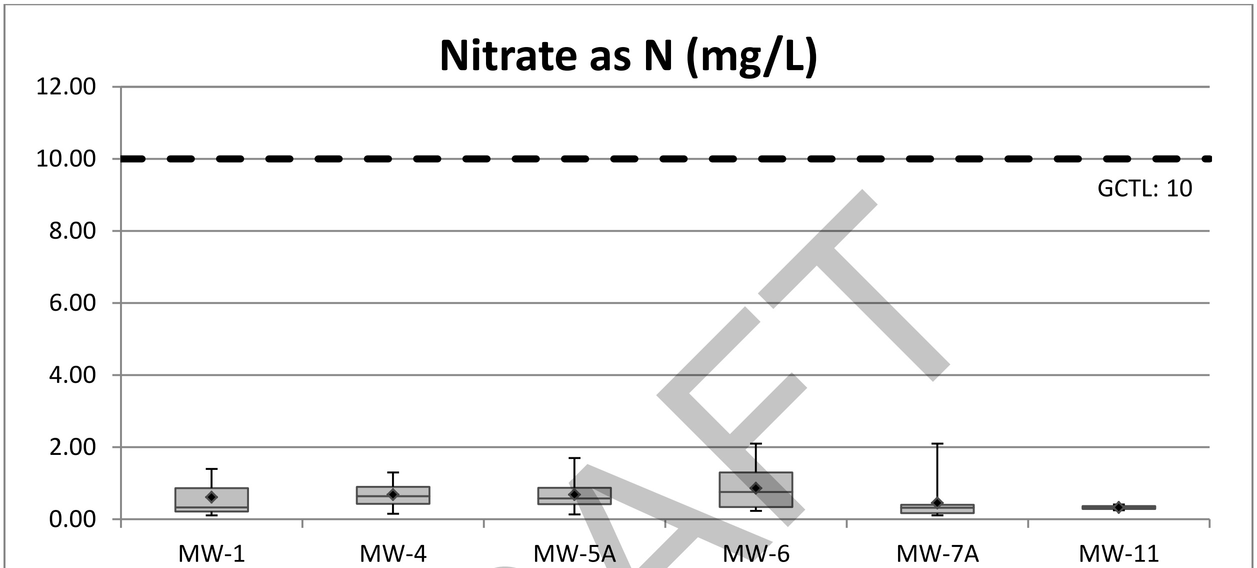


Figure 3.2.10-1

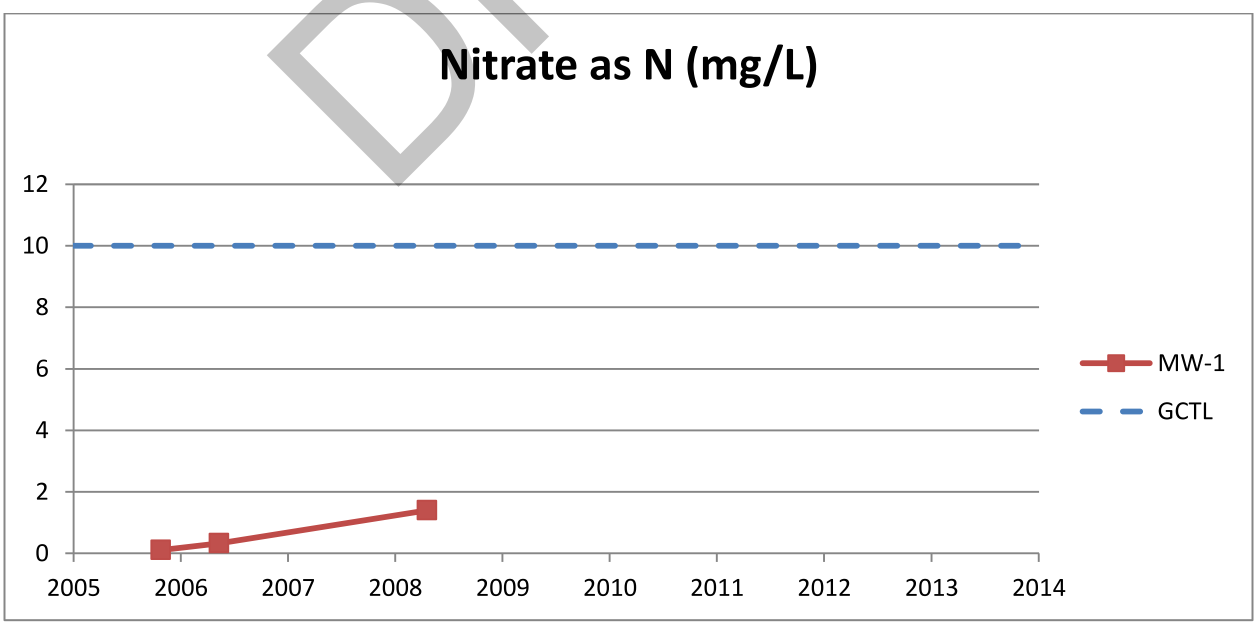


Figure 3.2.10-2

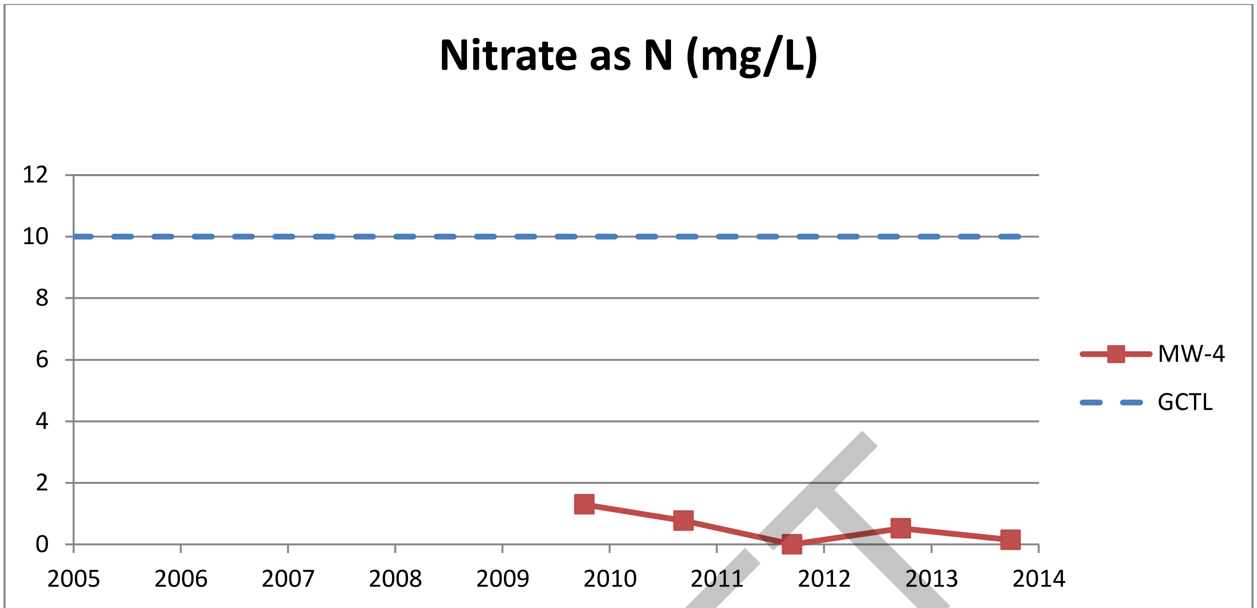


Figure 3.2.10-3

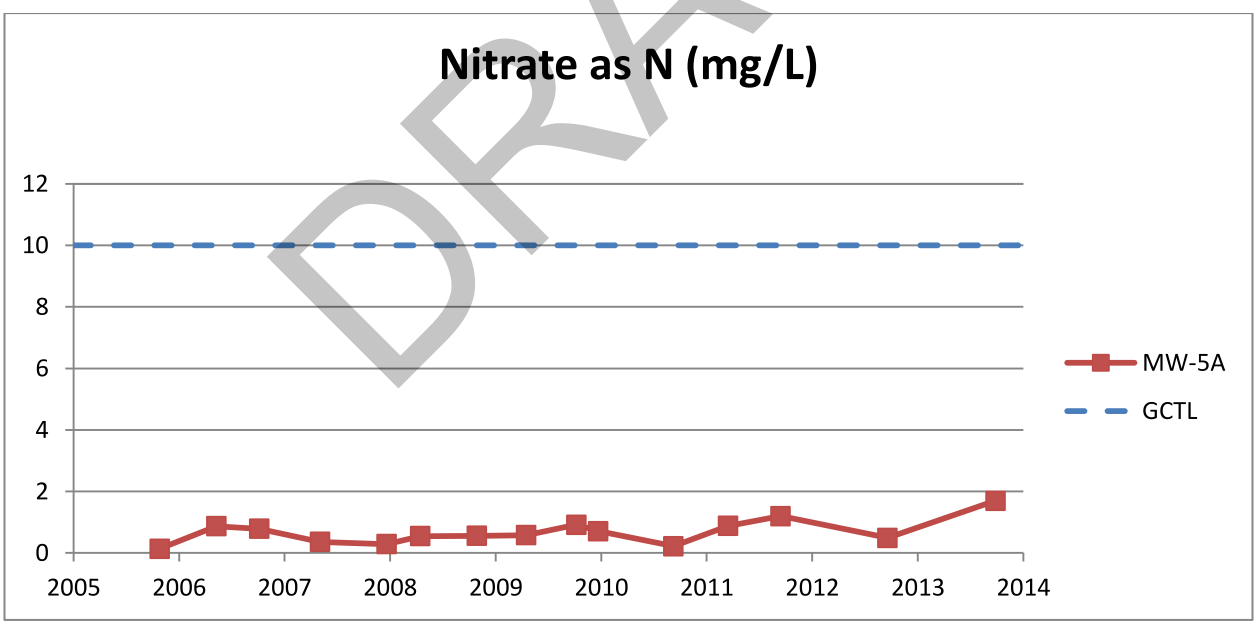
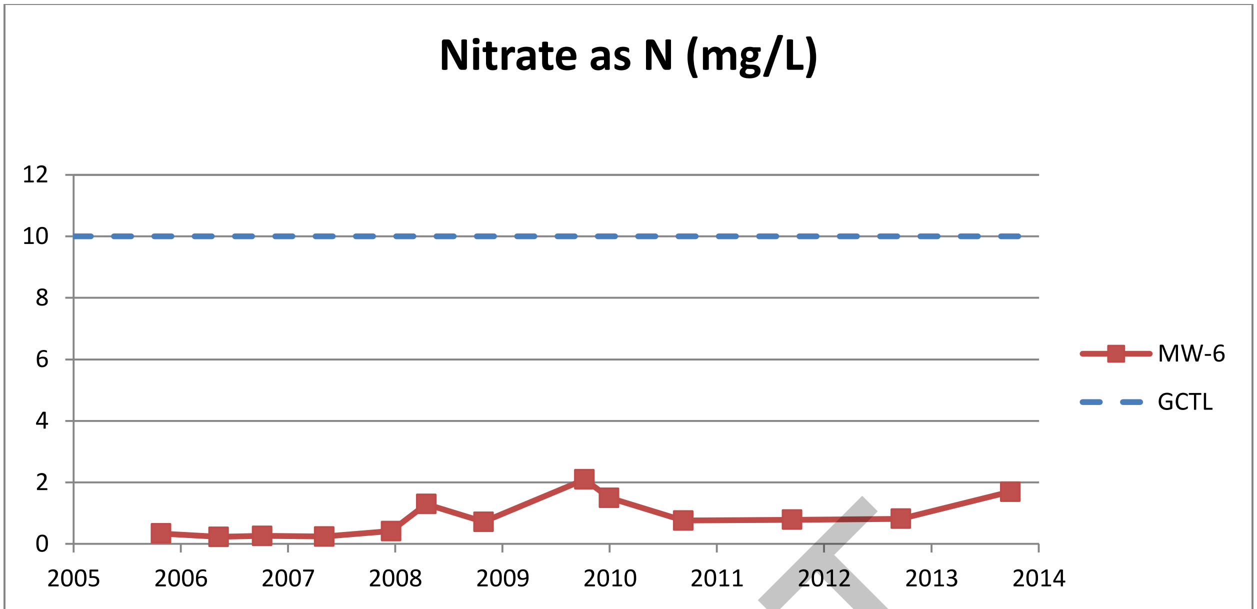


Figure 3.2.10-4



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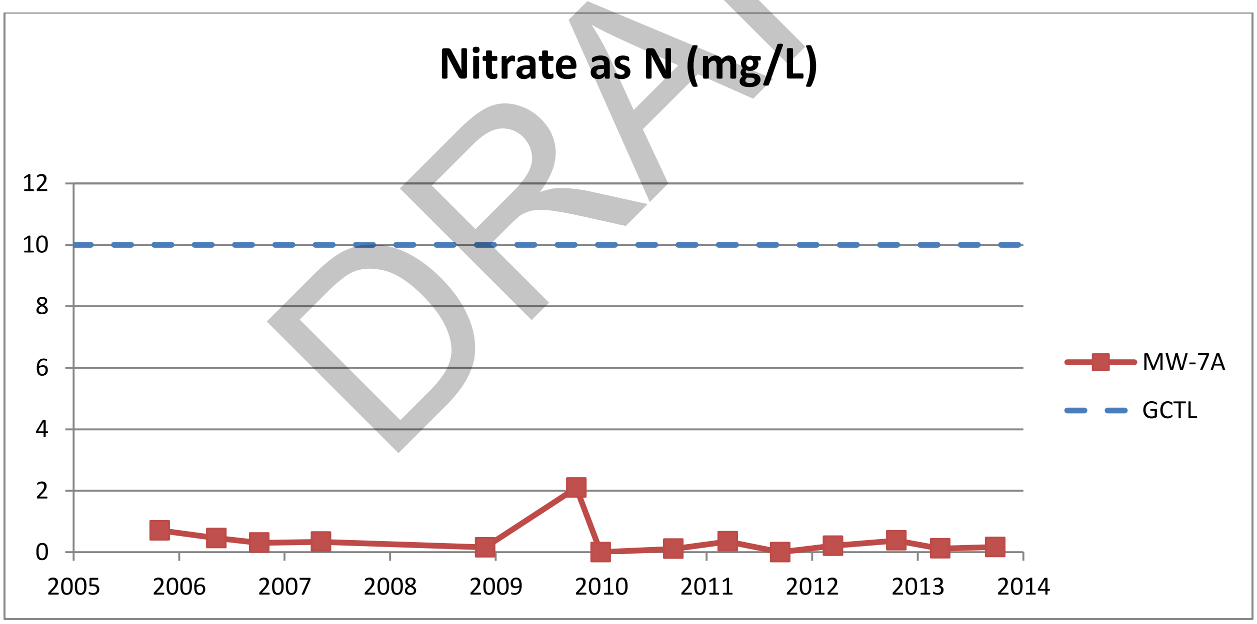


Figure 3.2.10-6

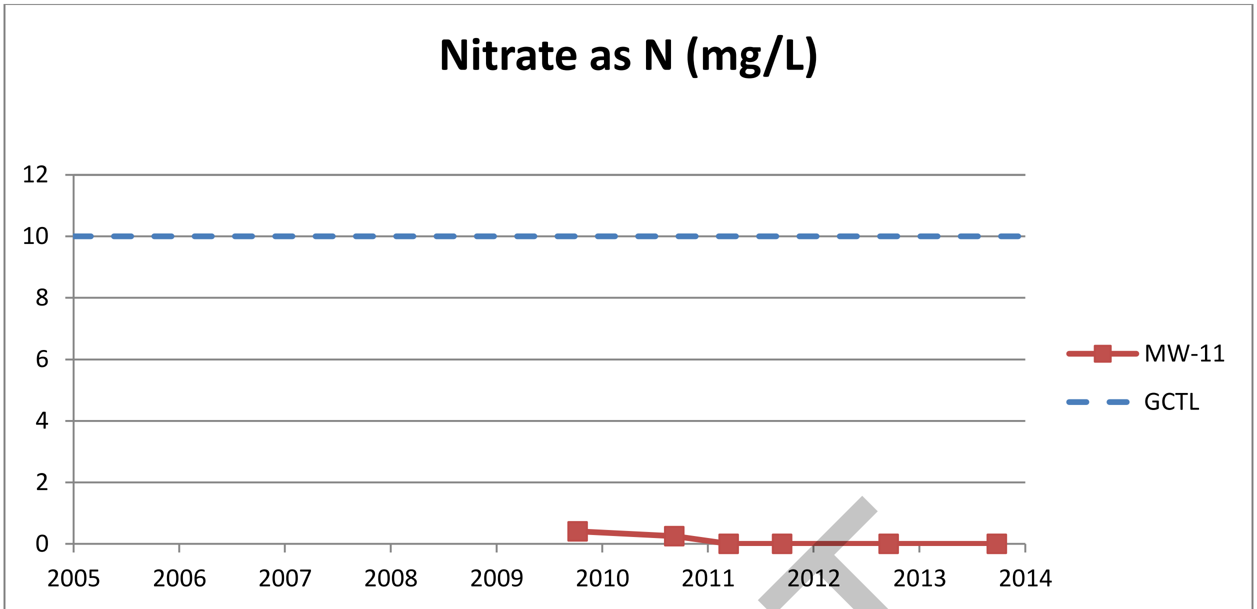


Figure 3.2.10-7

3.2.11 Nitrite as N

Nitrite as N is another common indicator of leachate impacts to groundwater. The box and whisker plot for Nitrite concentrations in the surficial aquifer monitoring wells is shown in Figure 3.2.11-1. Temporal plots for Nitrite in the surficial aquifer monitoring wells are shown in Figure 3.2.11-2 to Figure 3.2.11-7. All Nitrite concentrations were significantly below the GCTL. Evaluating trends is not possible as Nitrite was only analyzed in samples collected during the first semiannual monitoring event of 2006.

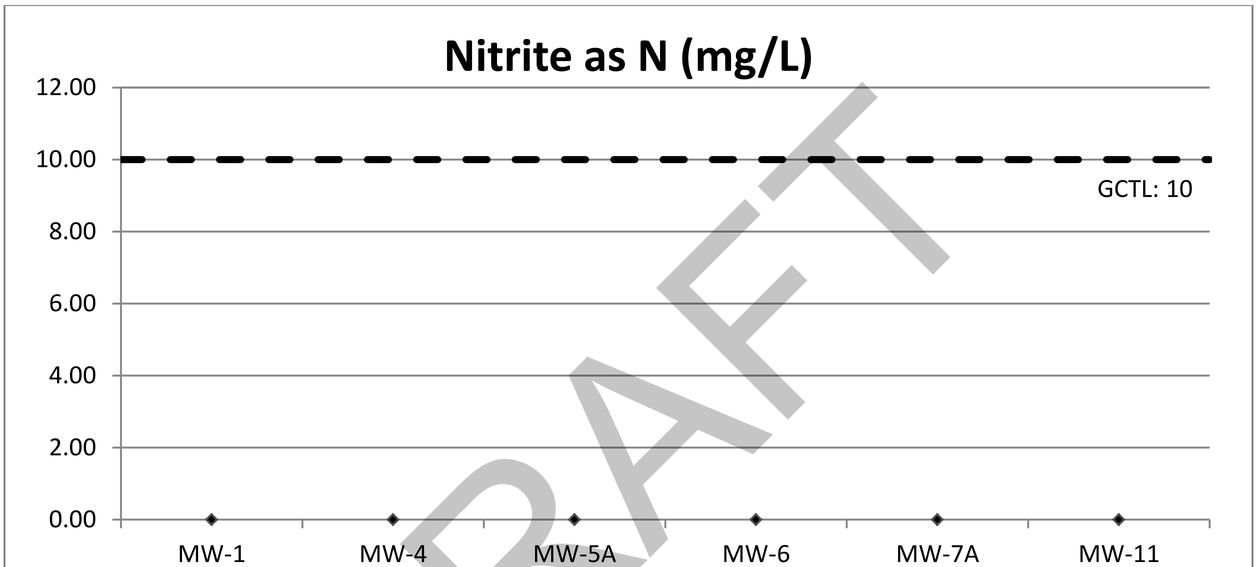


Figure 3.2.11-1

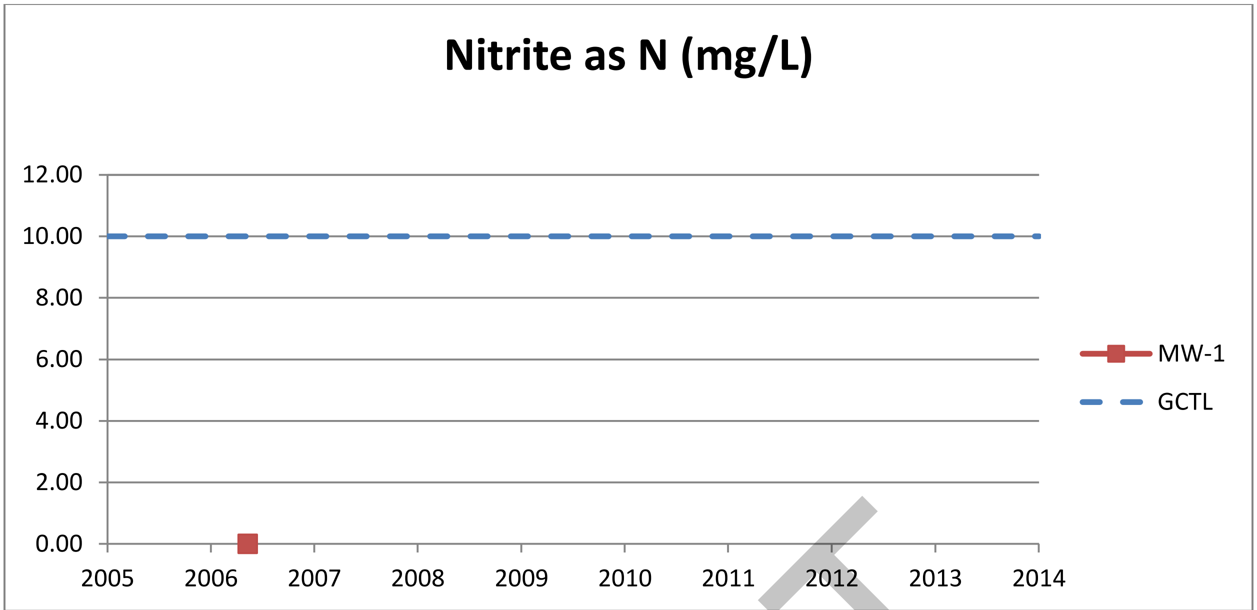


Figure 3.2.11-2

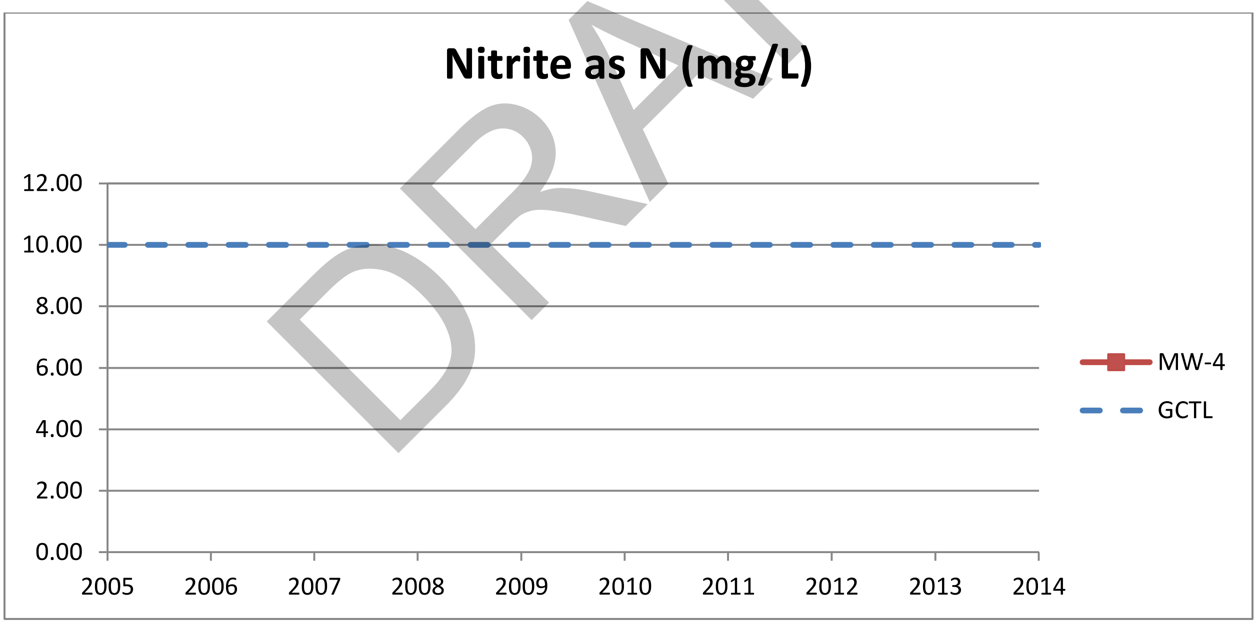


Figure 3.2.11-3

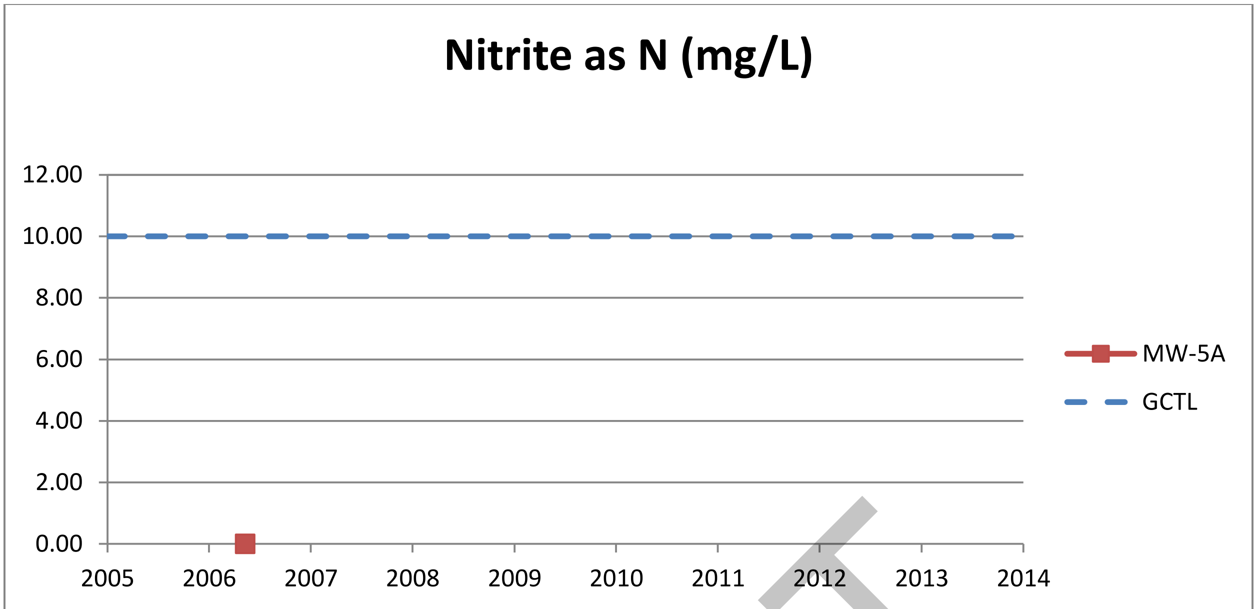
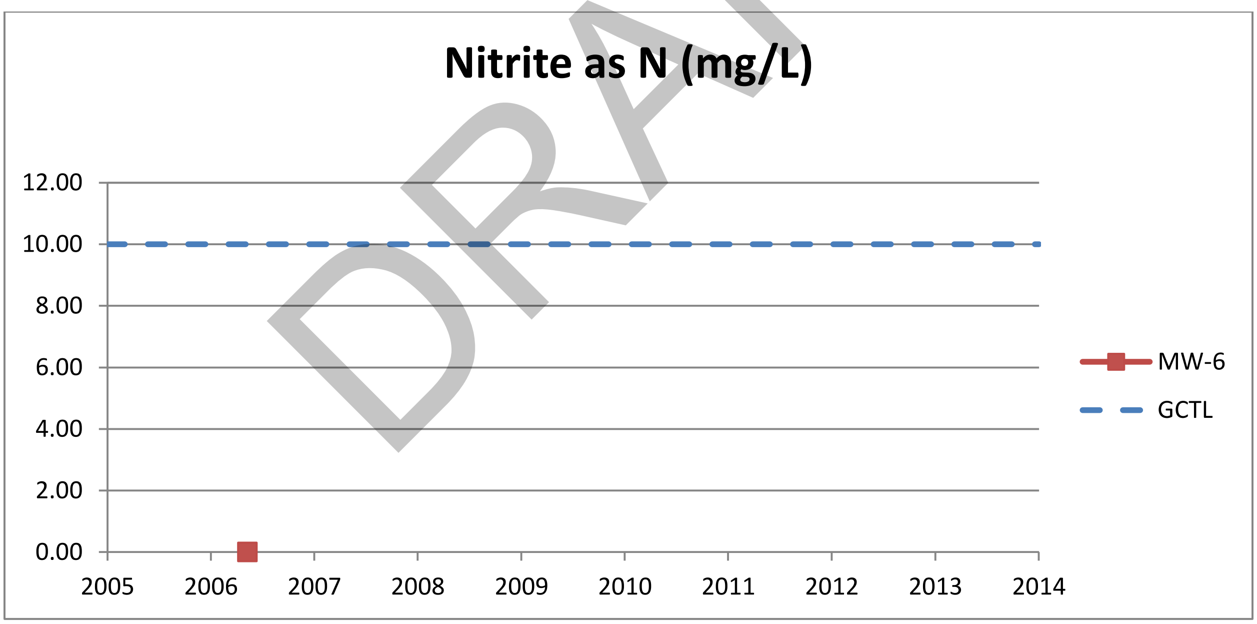


Figure 3.2.11-4



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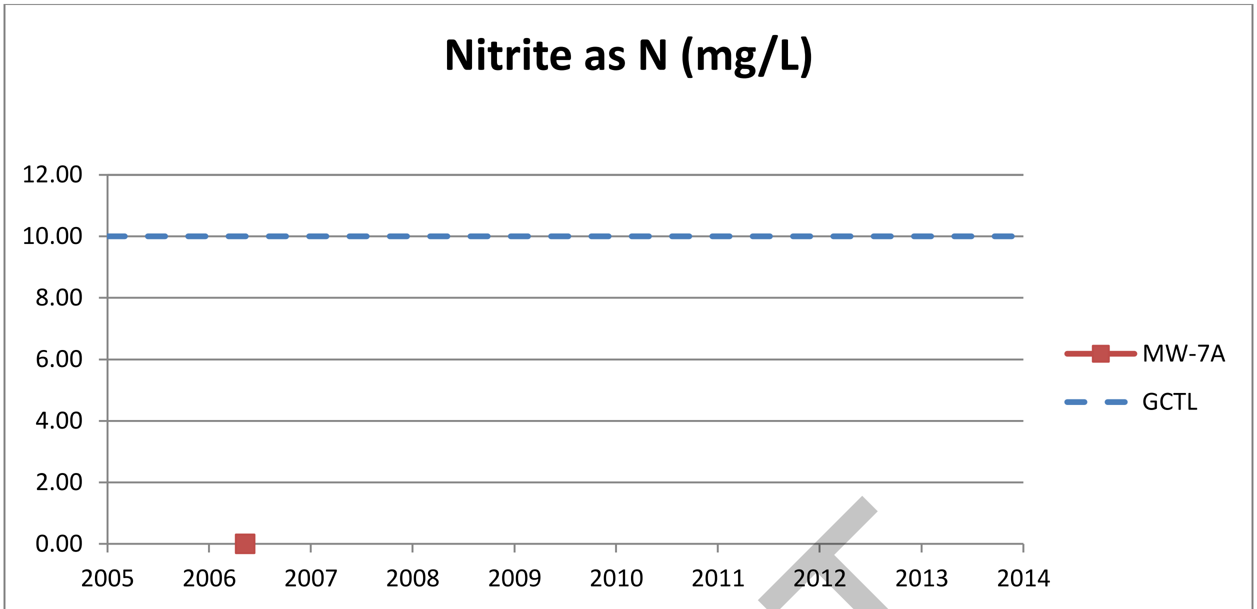

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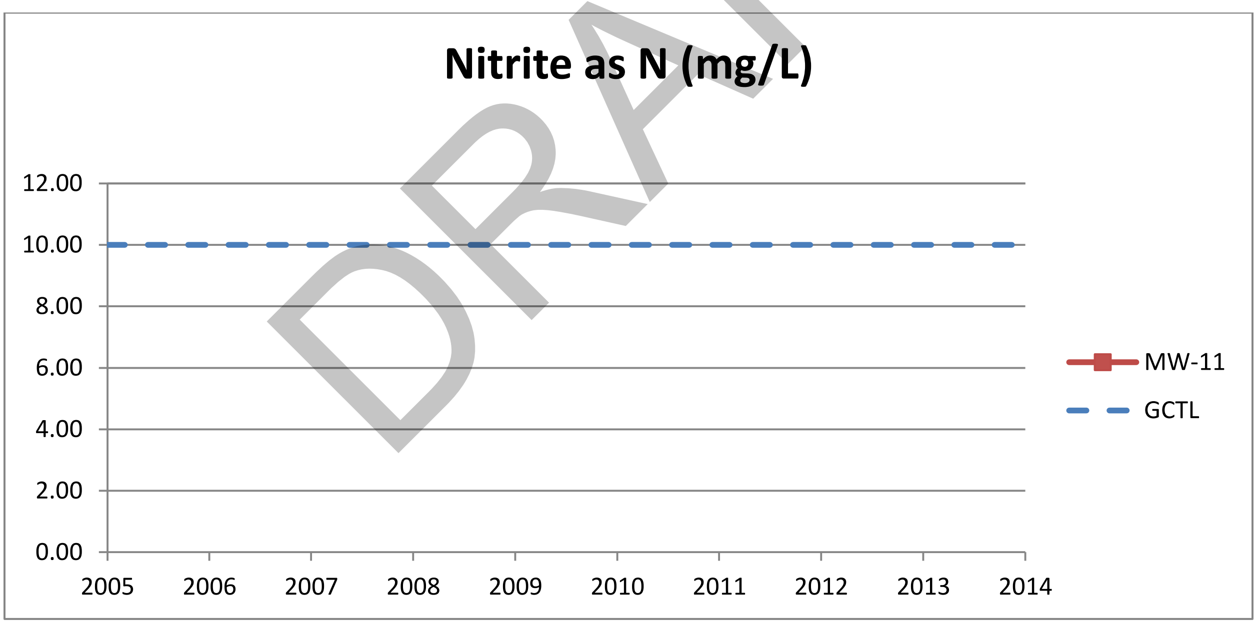


Figure 3.2.11-7

3.2.12 Chloride

Chloride is another common indicator of leachate impacts to groundwater. The box and whisker plot for Chloride concentrations in the surficial aquifer monitoring wells is shown in Figure 3.2.12-1. Temporal plots for Chloride in the surficial aquifer monitoring wells are shown in Figure 3.2.12-2 to Figure 3.2.12-7. All Chloride concentrations were significantly below the GCTL. Concentrations of Chloride were consistent over time.

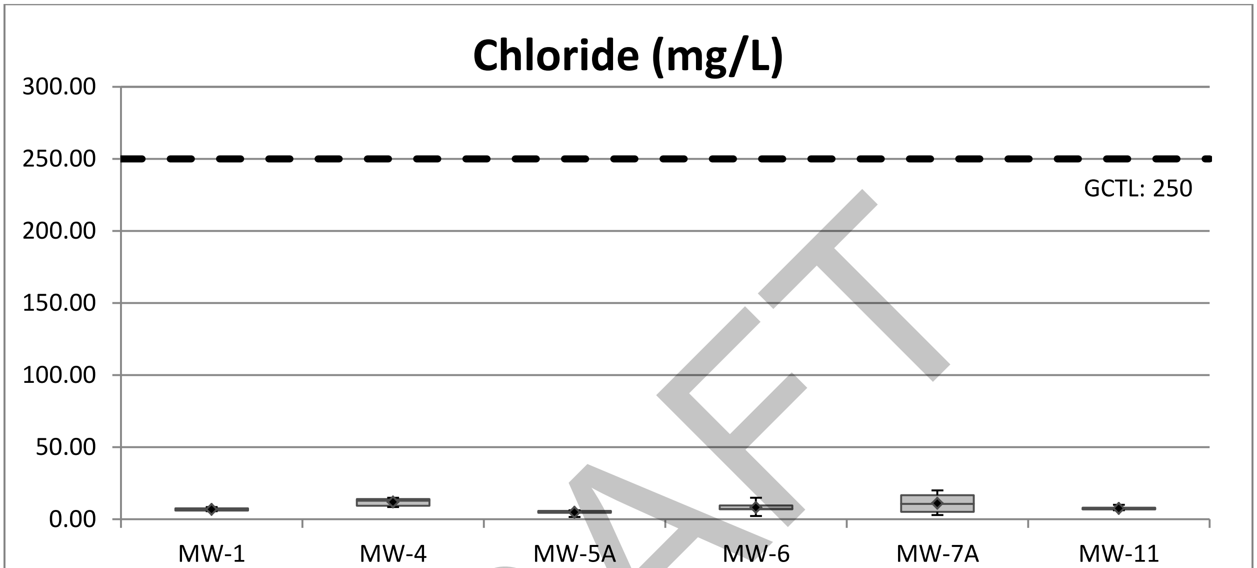


Figure 3.2.12-1

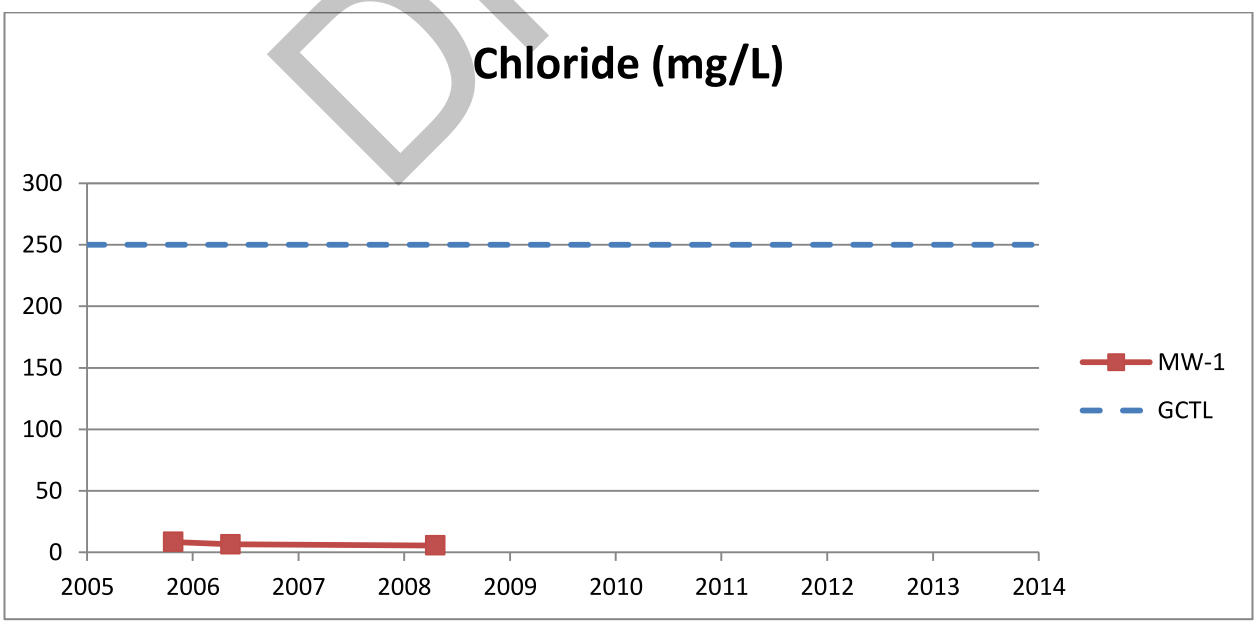
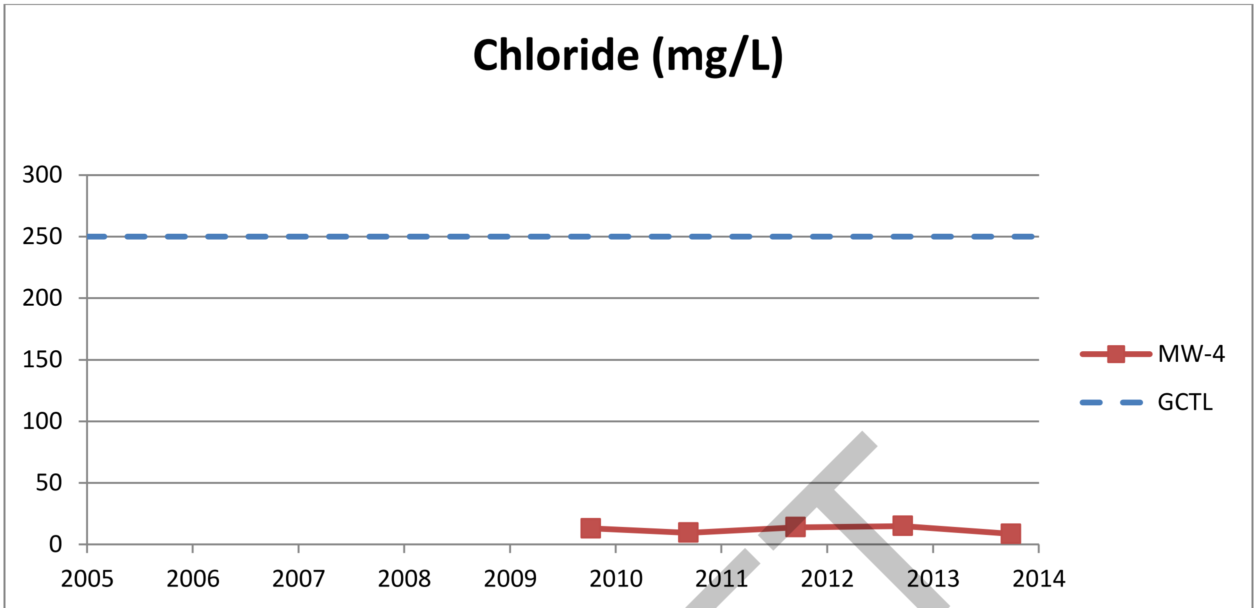


Figure 3.2.12-2



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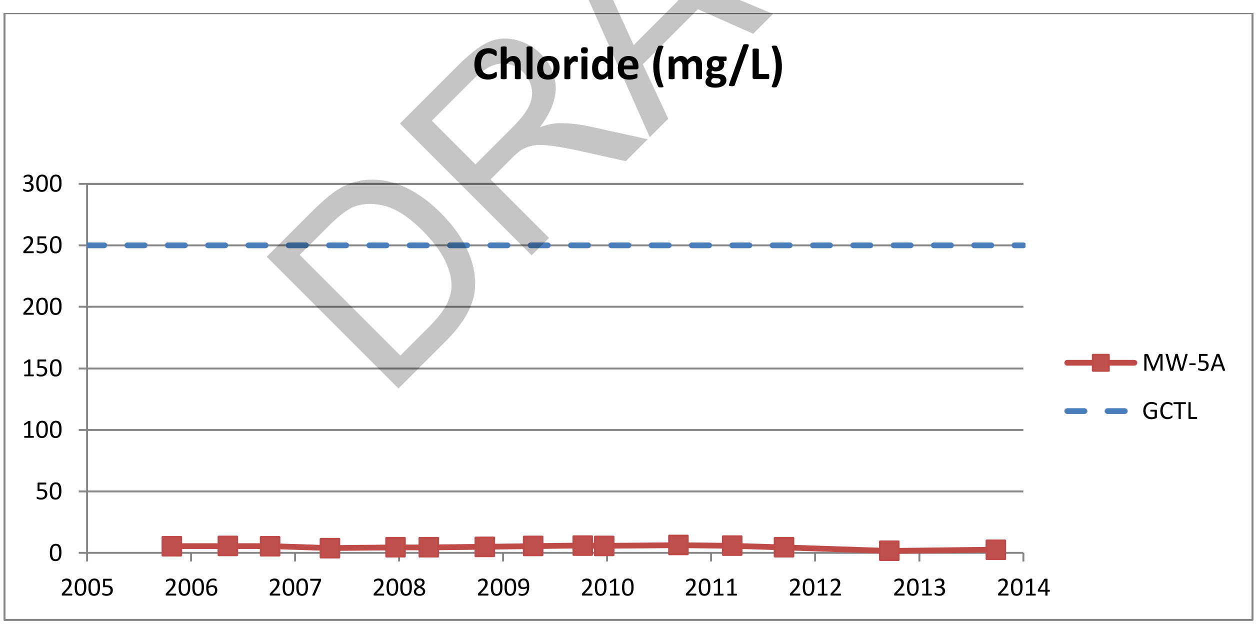

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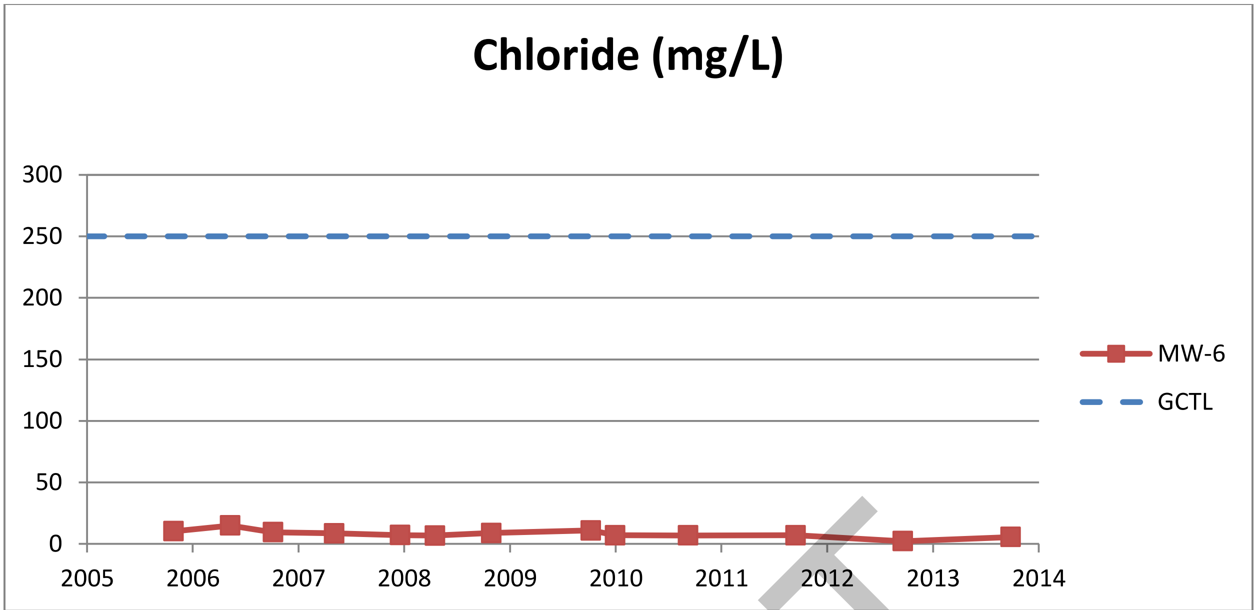

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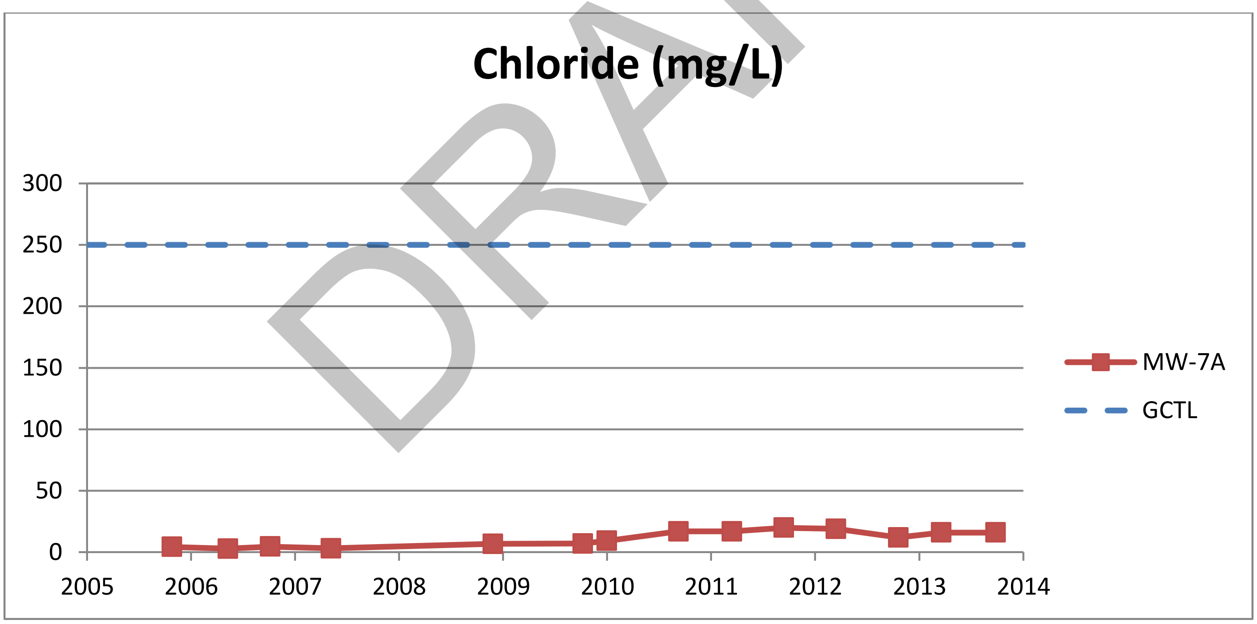


Figure 3.2.12-6

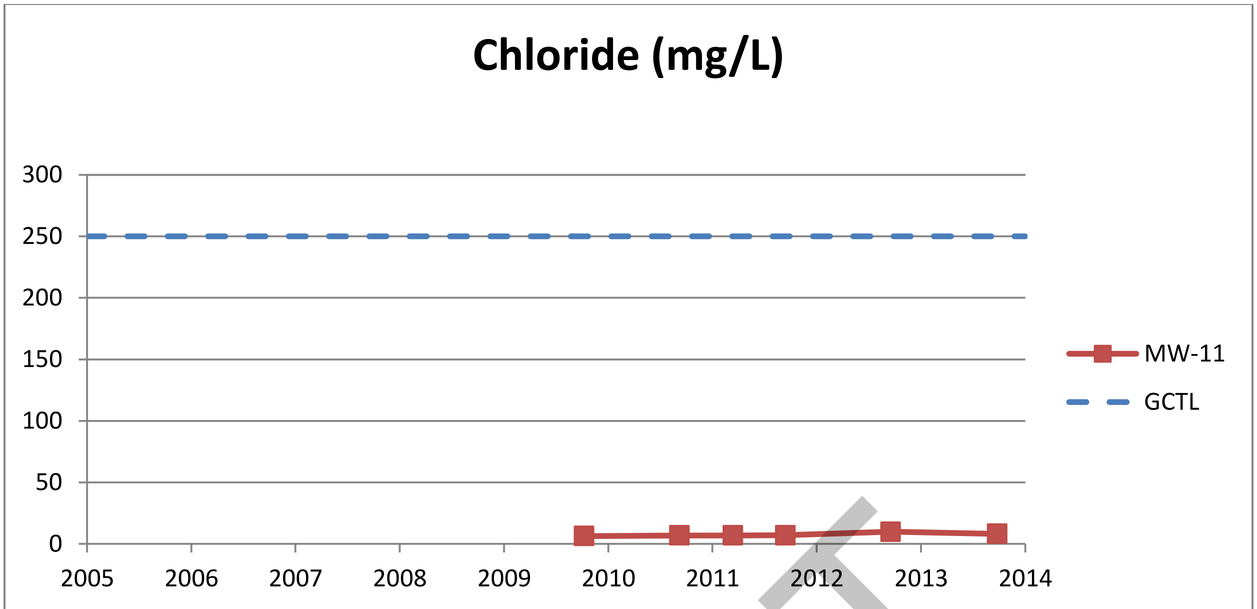


Figure 3.2.12-7

3.2.13 Sodium

Sodium is another common indicator of leachate impacts to groundwater. The box and whisker plot for Sodium concentrations in the surficial aquifer monitoring wells is shown in Figure 3.2.13-1. Temporal plots for Sodium in the surficial aquifer monitoring wells are shown in Figure 3.2.13-2 to Figure 3.2.13-7. All Sodium concentrations were significantly below the GCTL. Concentrations of Sodium were consistent over time, with the exception of values in MW-4 which show a slightly decreasing trend over time.

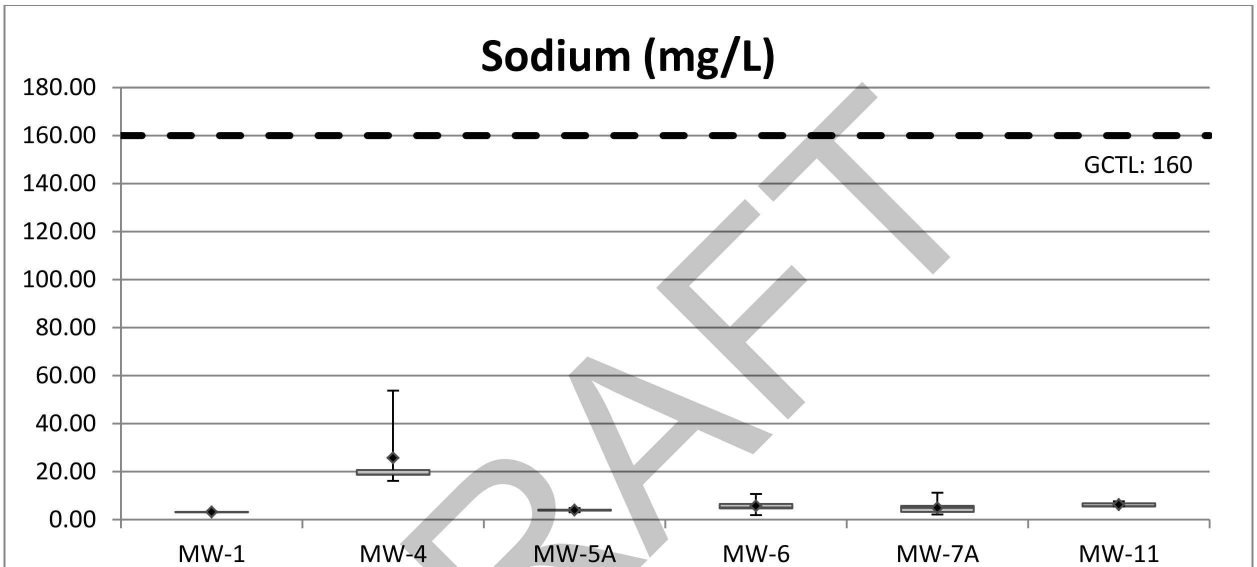


Figure 3.2.13-1

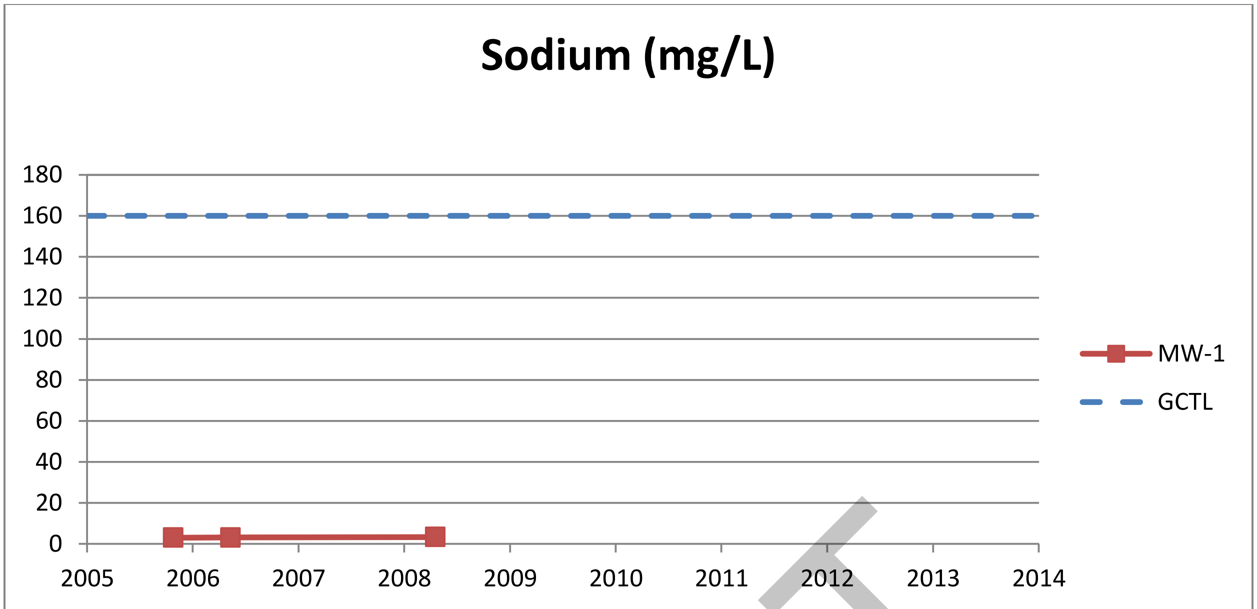
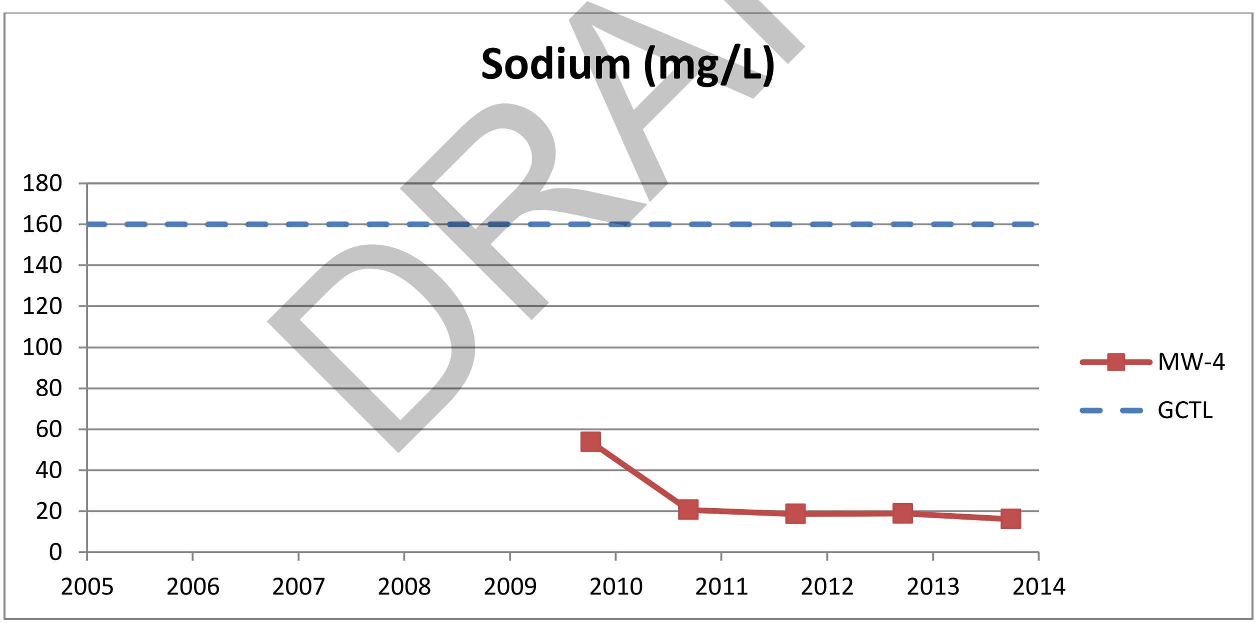


Figure 3.2.13-2



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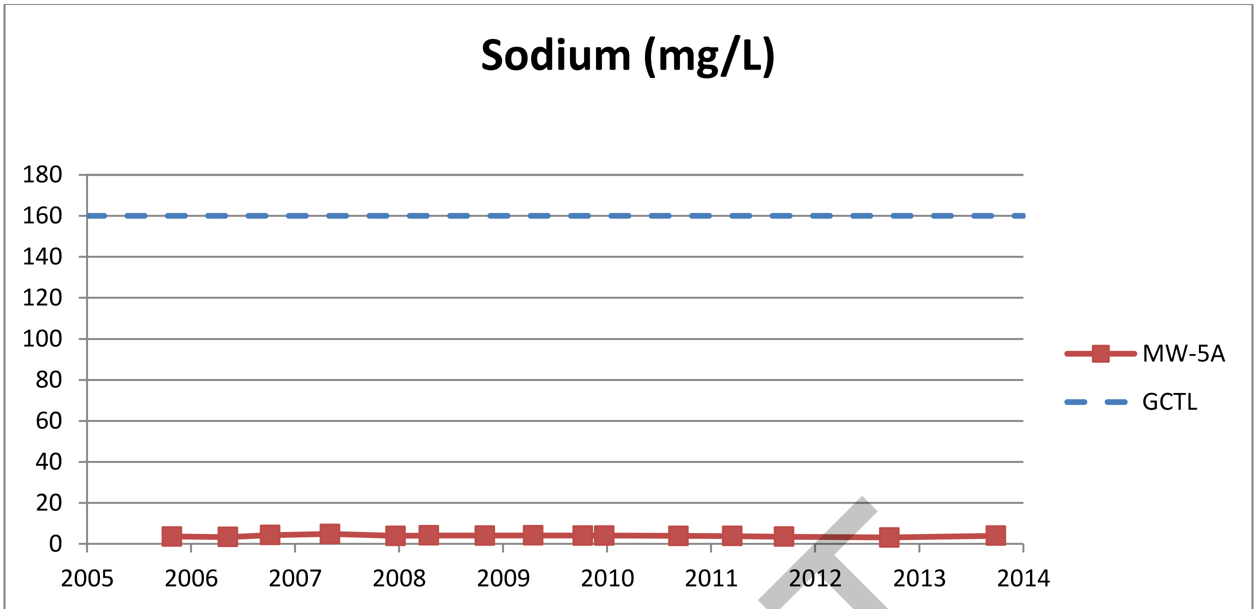
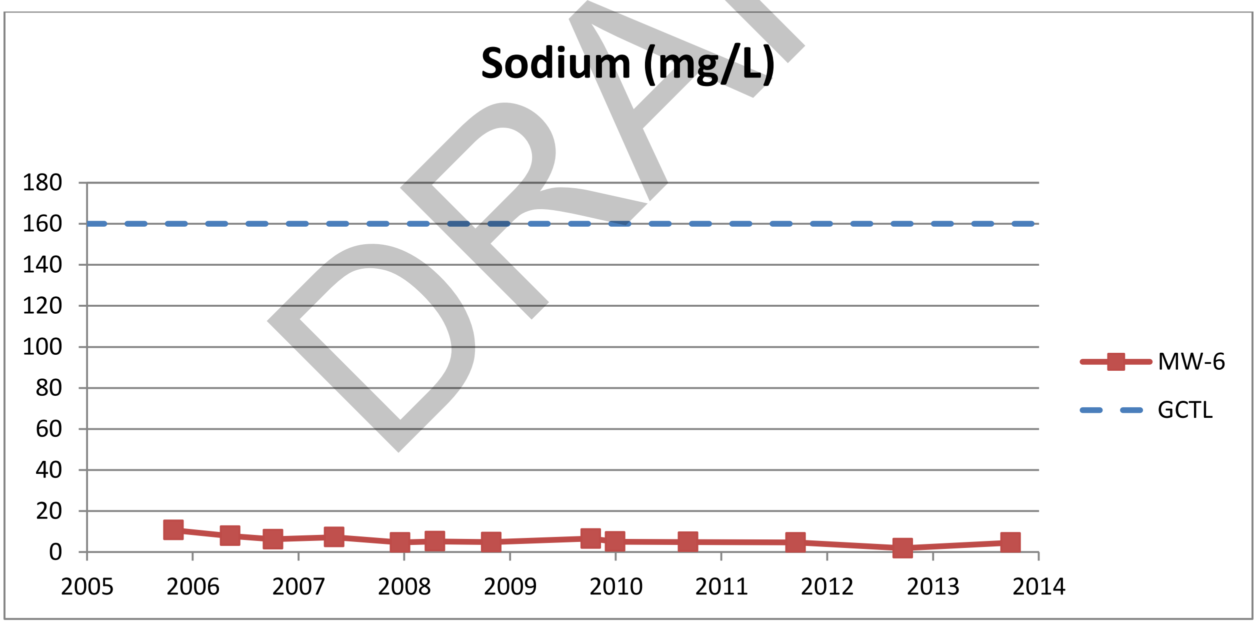


Figure 3.2.13-4



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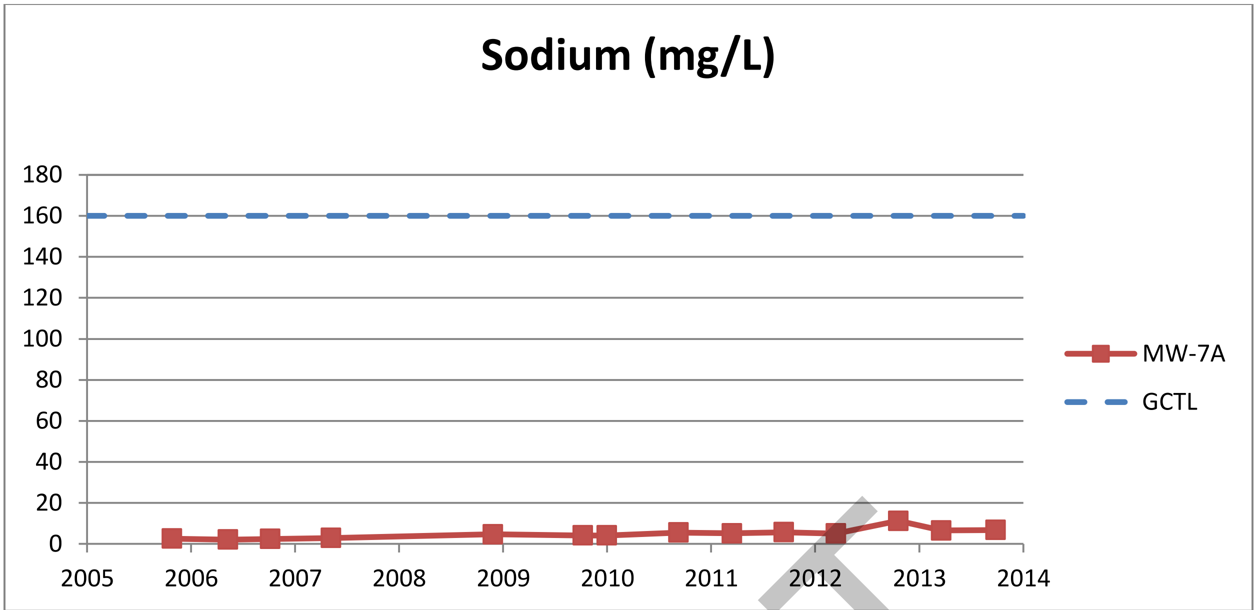


Figure 3.2.13-6

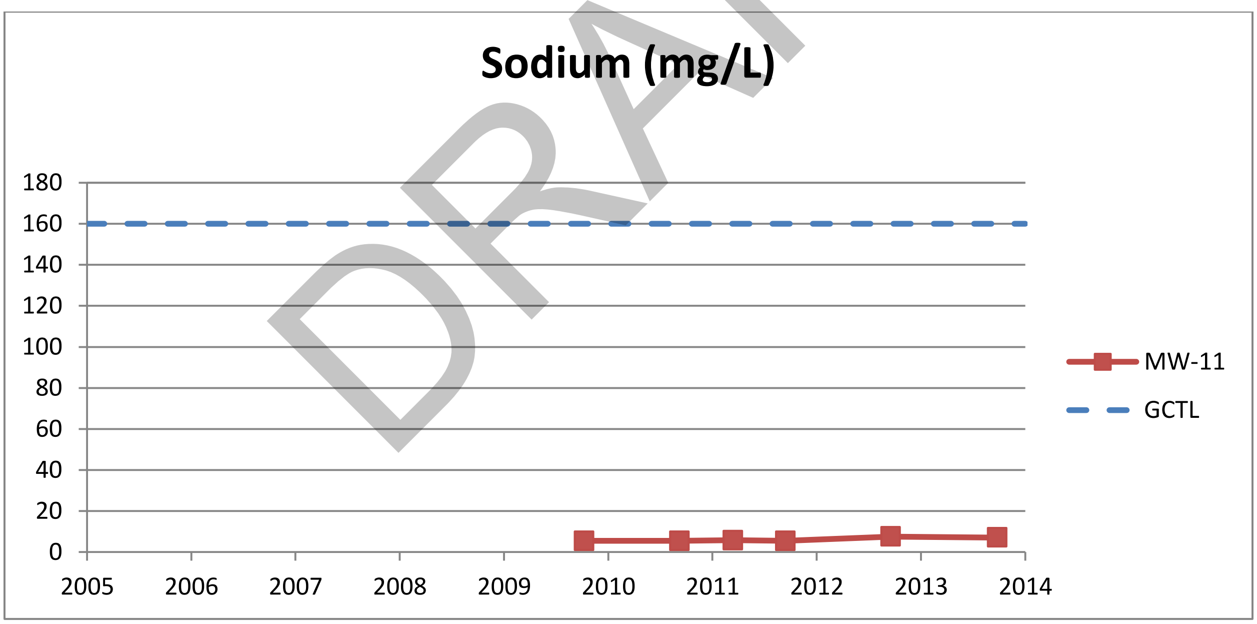


Figure 3.2.13-7

3.2.14 Chromium

The box and whisker plot for Chromium concentrations in the surficial aquifer monitoring wells is shown in Figure 3.2.14-1. Temporal plots for Chromium in the surficial aquifer monitoring wells are shown in Figure 3.2.14-2 to Figure 3.2.14-7. The GCTL of chromium (100 µg/L) was exceeded once in MW-11. The temporal impact plot of chromium for MW-11 (Figure 3.2.14-7) shows that the chromium concentration exceeded its GCTL in the March 2011 sampling event with a measured level of 696 µg/L. Results from equipment and trip blanks were assessed to evaluate potential cross-contamination; however, data from the blanks do no indicate any cross-contamination. The turbidity measured in MW-11 during the March 2011 sampling event was slightly elevated (46 NTU) which could potentially lead to elevated metals levels. Laboratory results for the subsequent sampling event conducted on September 2011 showed no exceedance of the GCTL for chromium in MW-11.

Additionally, chromium predominantly exists as trivalent chromium, hexavalent chromium, and in the metal form. In the Safe Drinking Water Act, the chromium limit is for total chromium (all species); however, US EPA established the limit based on the toxicity of hexavalent chromium only (US EPA 2010). The criteria of selecting the GCTL are also based on the US EPA-established limit. Depending on the environmental conditions (e.g. pH and ORP), trivalent and hexavalent chromium convert back and forth in water. At the measured pH (<6.8) and ORP (positive ORP) conditions of surficial aquifer, chromium generally remains in the trivalent chromium form (Beukes et al., 1999). Hence, the detected concentration of chromium as observed in March 2011 sampling event of MW-11 is possibly the trivalent form of chromium and not the chromium (hexavalent) for which the GCTL was established.

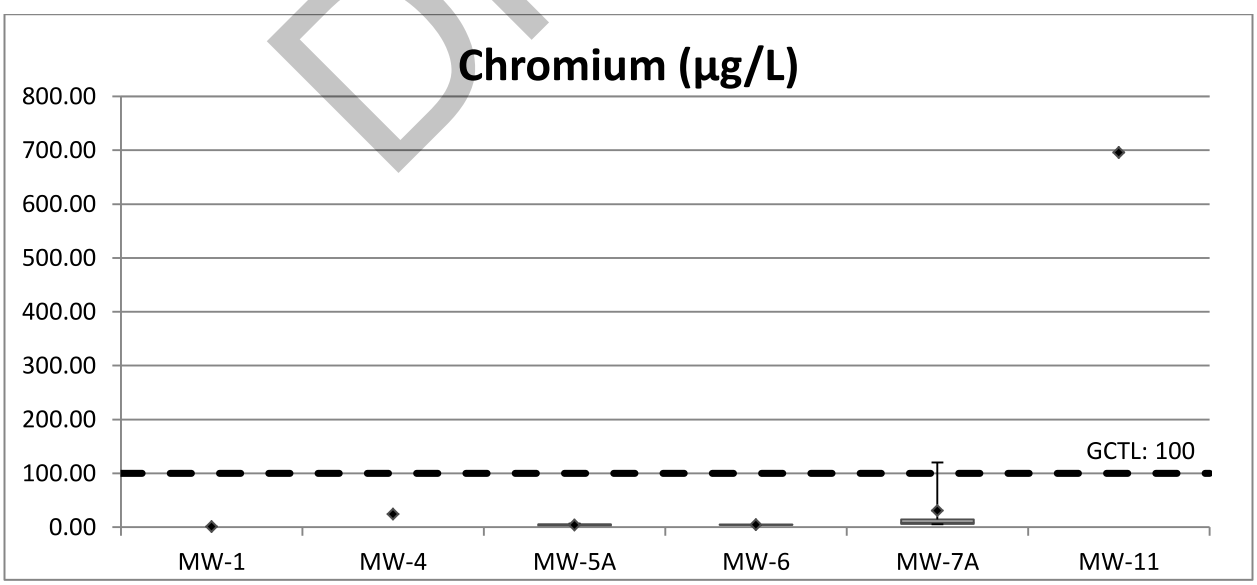


Figure 3.2.14-1

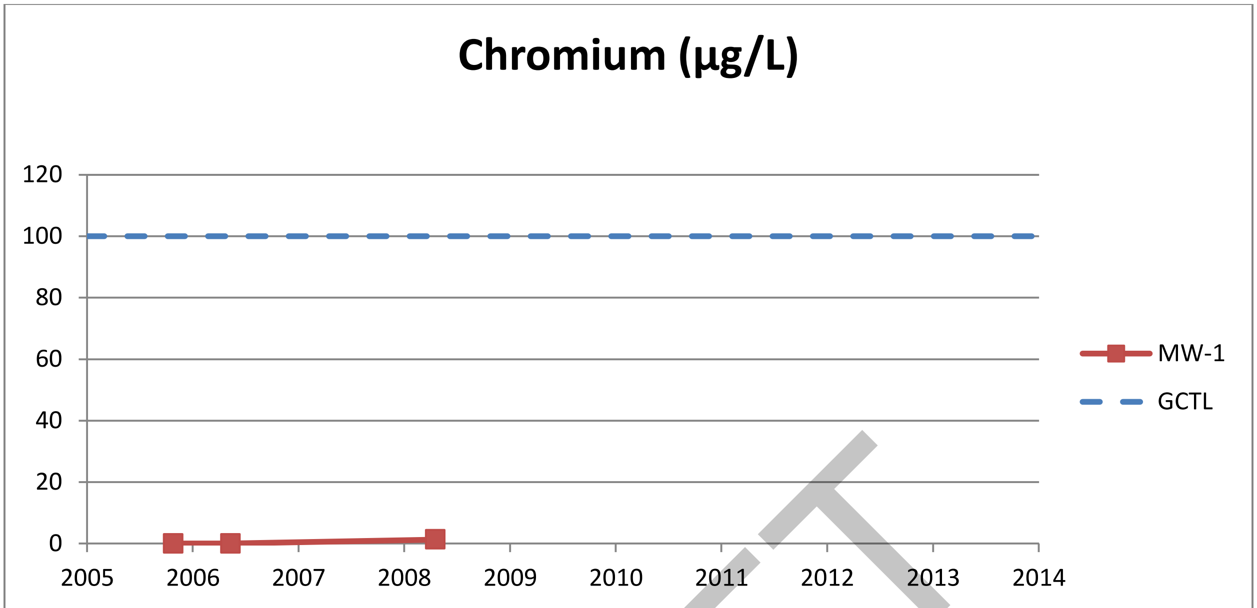
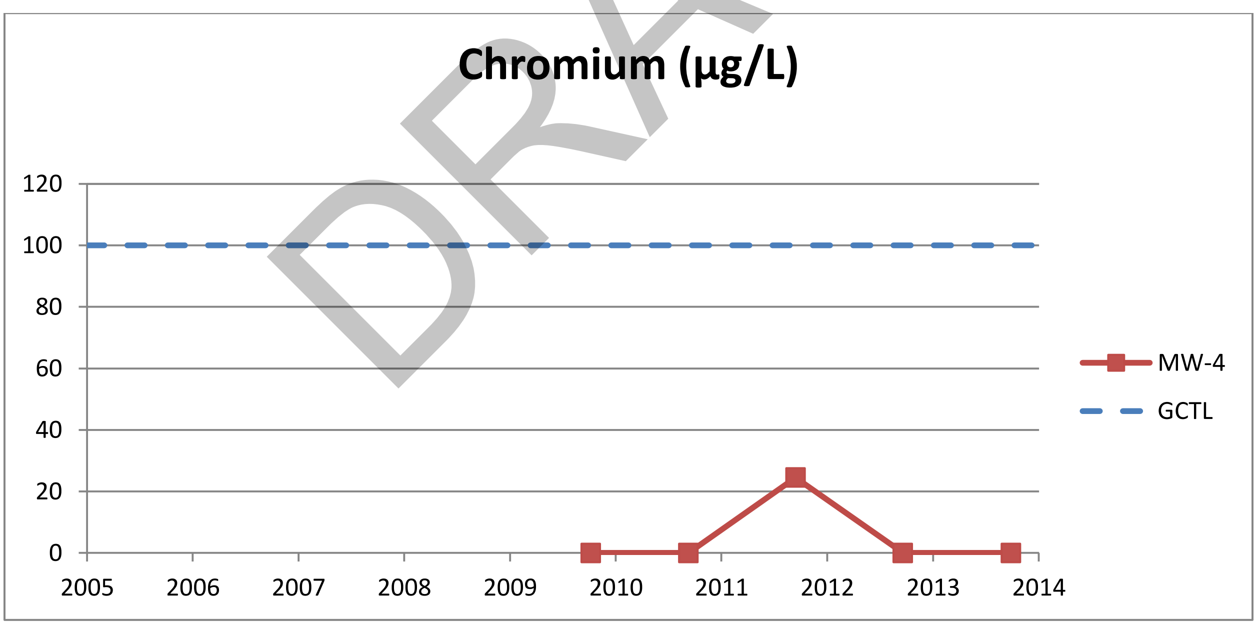


Figure 3.2.14-2



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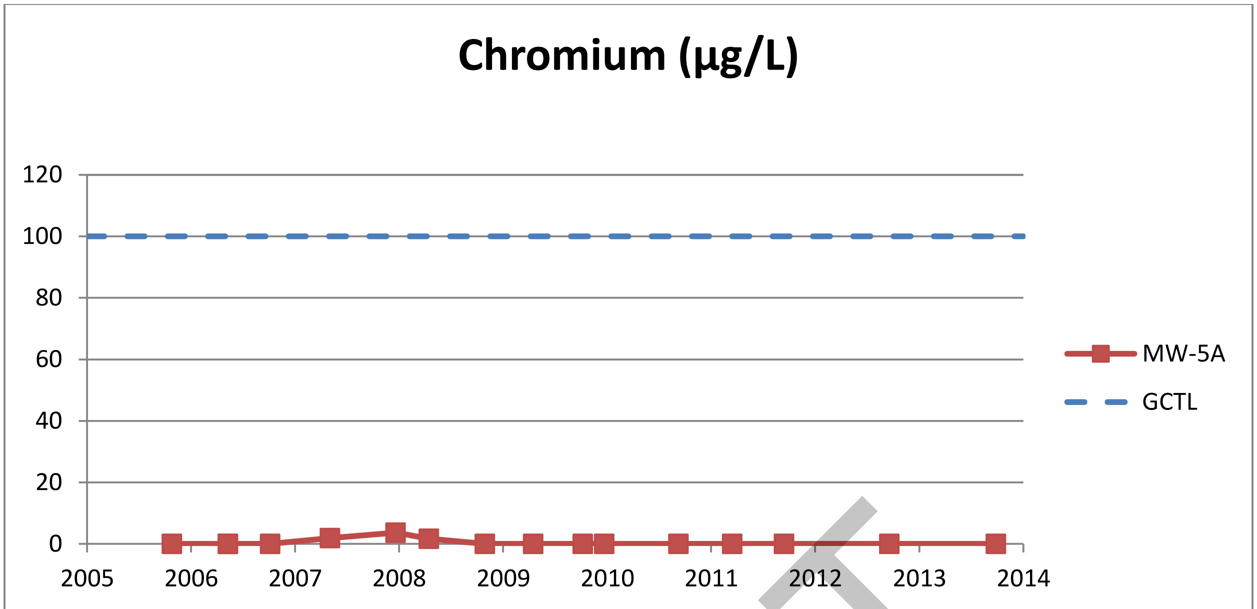
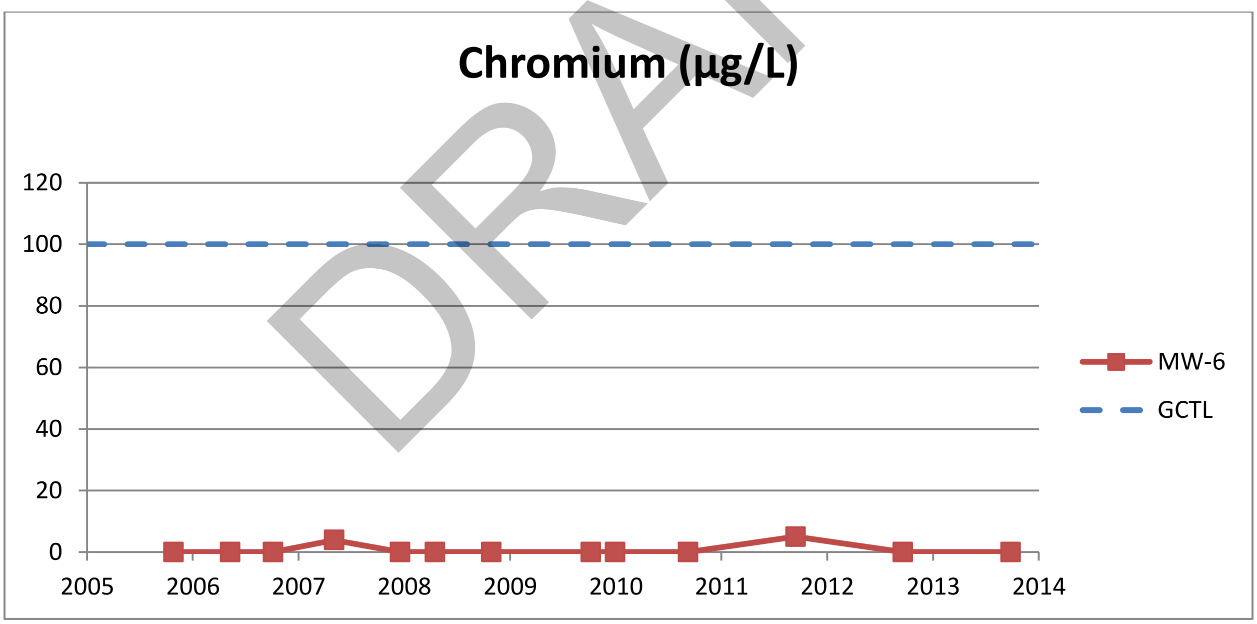


Figure 3.2.14-4



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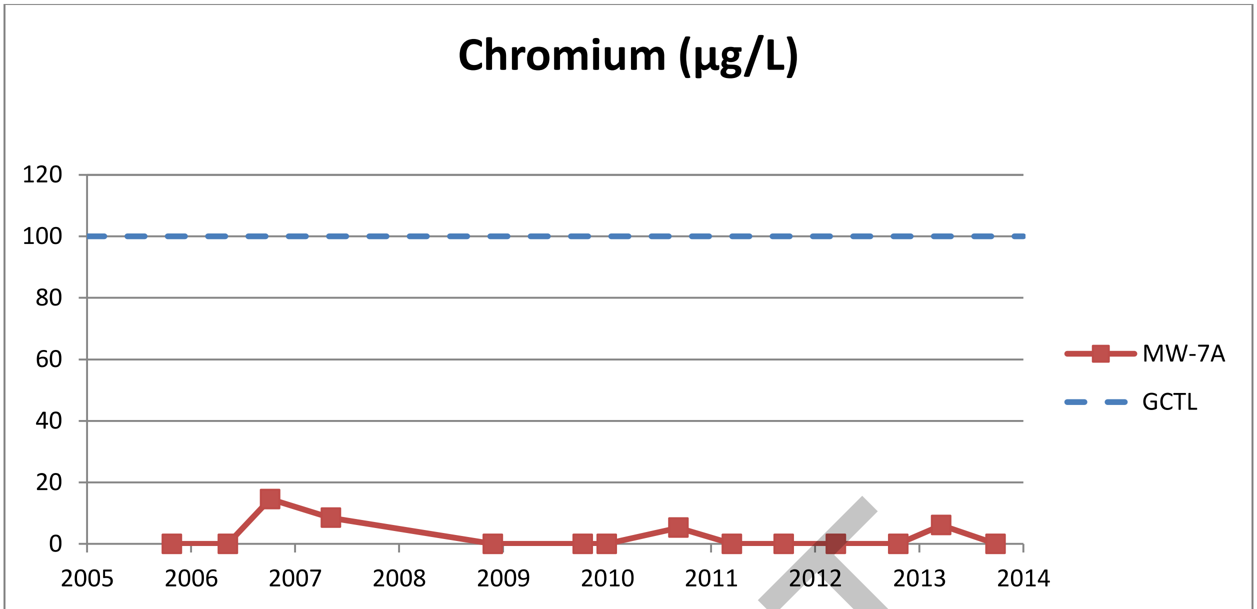


Figure 3.2.14-6

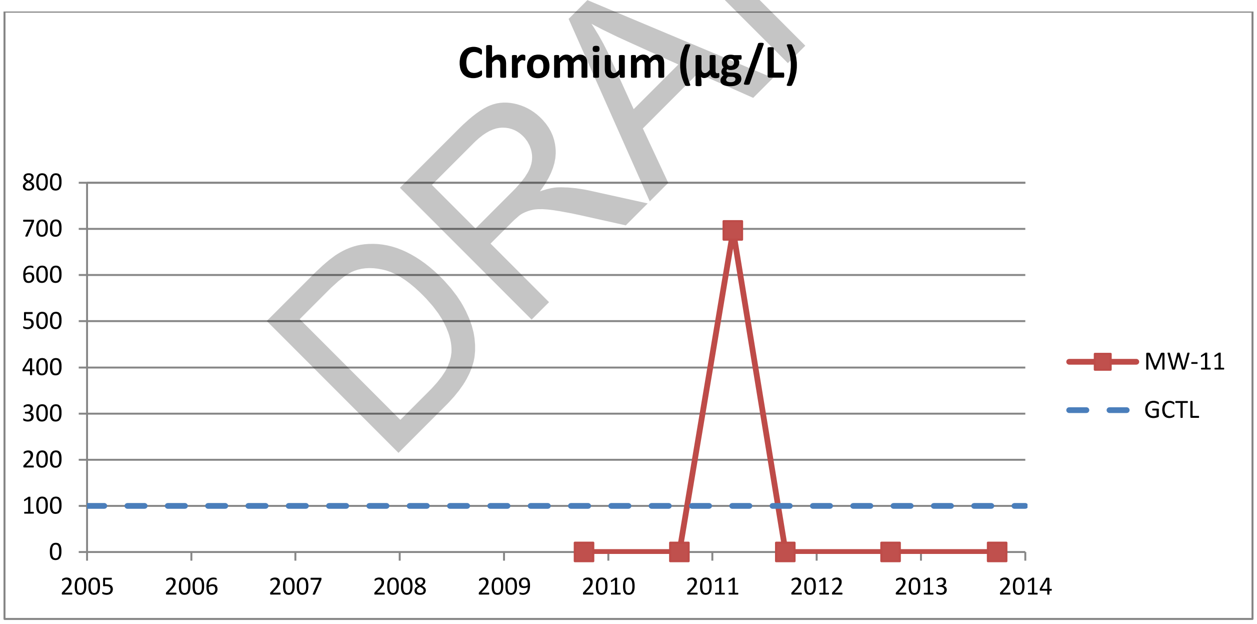


Figure 3.2.14-7

3.2.15 Iron

The box-and-whisker plots (Figure 3.2.15-1) of iron concentrations of surficial aquifer monitoring wells show that iron concentrations exceeded the GCTL (300 µg/L) in six monitoring wells at least once (MW-1, MW-4, MW-5A, MW-6, MW-7A, and MW-11). The concentrations in each well were within the SWFWMD background iron concentrations (<100-43,900 µg/L) of the surficial aquifer as shown in Table 3.1. Temporal plots of Iron concentrations in the surficial aquifer monitoring wells are shown in Figure 3.2.15-2 to Figure 3.2.15-7.

Iron is a naturally-occurring mineral in most Florida soils, and the state of iron is greatly affected by reduction/oxidation (redox) conditions within the aquifer. In the presence of oxygen (oxidizing condition), naturally-occurring iron remains in the precipitate form, while the absence of oxygen (reducing conditions) can cause the solid-phase iron to become soluble. The presence of iron at the concentrations measured at the site may be attributable to normal background concentrations or potentially due to an alteration in the redox conditions beneath the landfill in the surficial aquifer as a result of landfill construction activities. The site has implemented a cell construction sequence that includes excavation of existing soil and placement and compaction of clay prior to waste placement.

The construction of a landfill (either a lined or and unlined landfill) can disturb the natural redox conditions beneath the landfill footprint by limiting the natural transport of atmospheric oxygen into the surficial aquifer. The limited availability of oxygen can cause the aquifer to transition into reducing conditions, thus causing the iron to enter into the dissolved phase – this process is typically referred to as *reductive dissolution*. This phenomenon has been observed at several other landfills (lined and unlined) throughout the US and Florida, including two lined facilities in the FDEP's Southwest District.

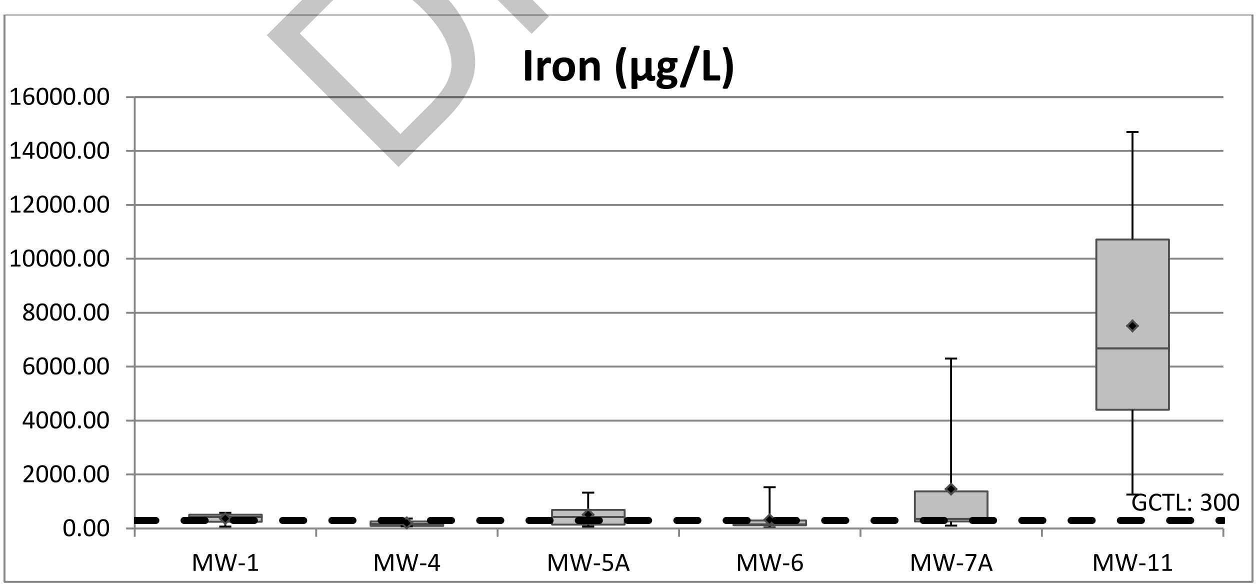


Figure 3.2.15-1

The change in DO and ORP of water directly relates to the change in redox conditions, hence, the variation in iron concentrations can be explained by its relationship with DO and ORP. Smaller DO values correspond to stronger reducing conditions, which can lead to reductive dissolution of iron. A smaller ORP represents stronger reducing conditions. The relationships of DO and ORP with iron concentrations show that the iron exceedances in monitoring wells MW-1, MW-4, MW-5A, MW-6, MW-7A, and MW-11 were possibly because of the development of reducing conditions as a result of landfill construction and site earthwork activities and not an actual release from the waste placed in the landfill itself.

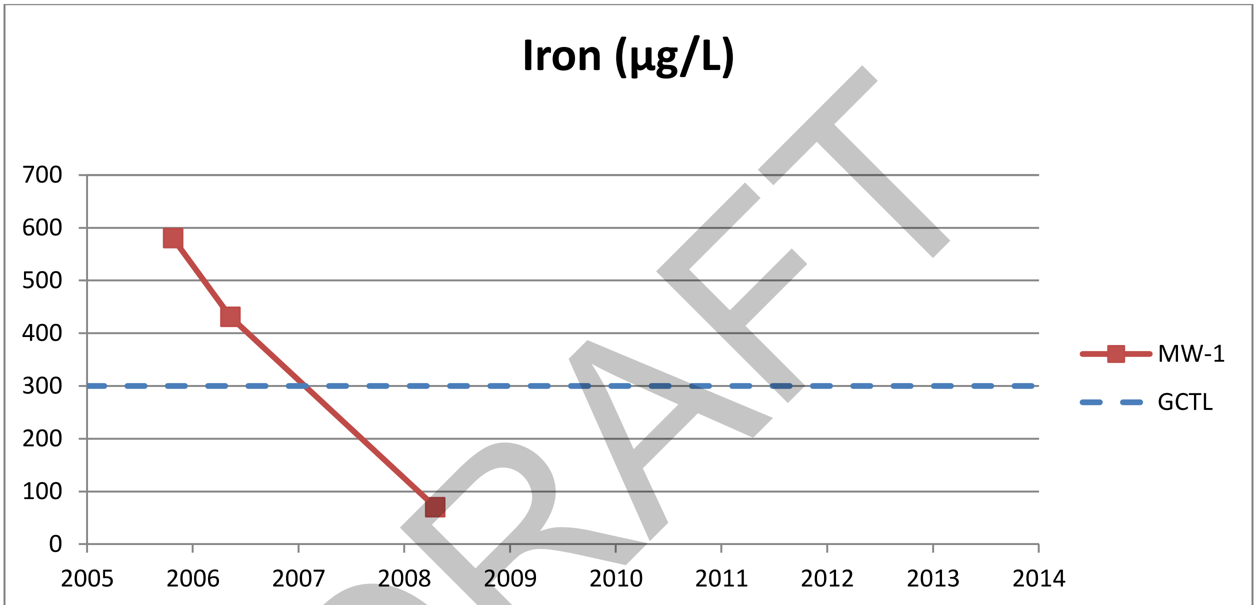


Figure 3.2.15-2

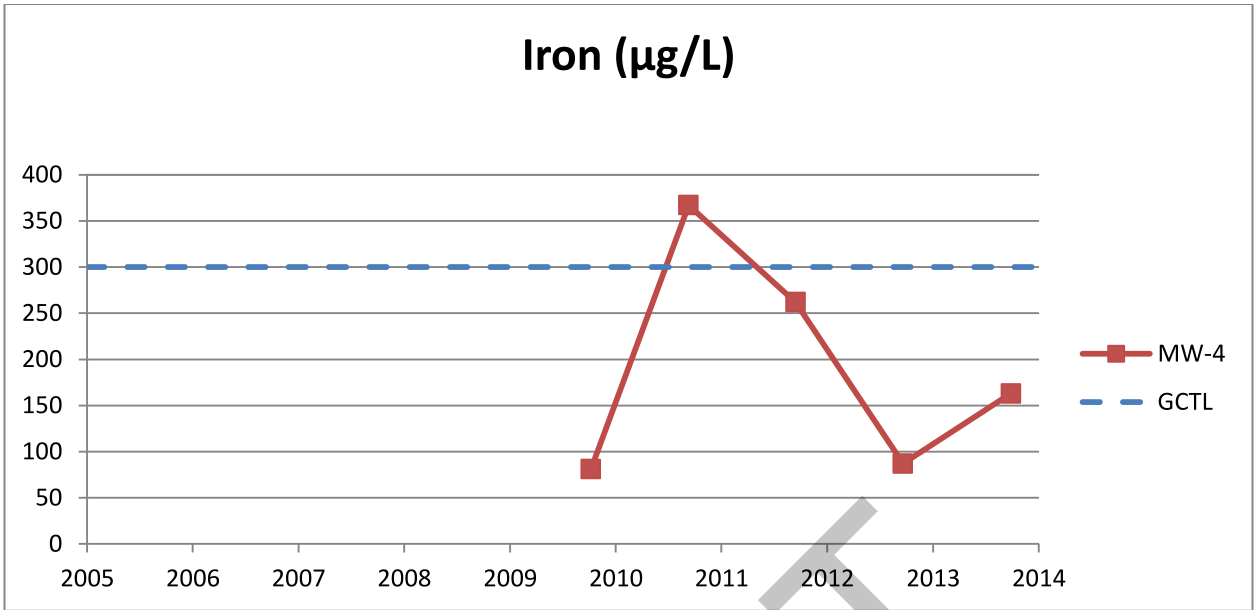


Figure 3.2.15-3

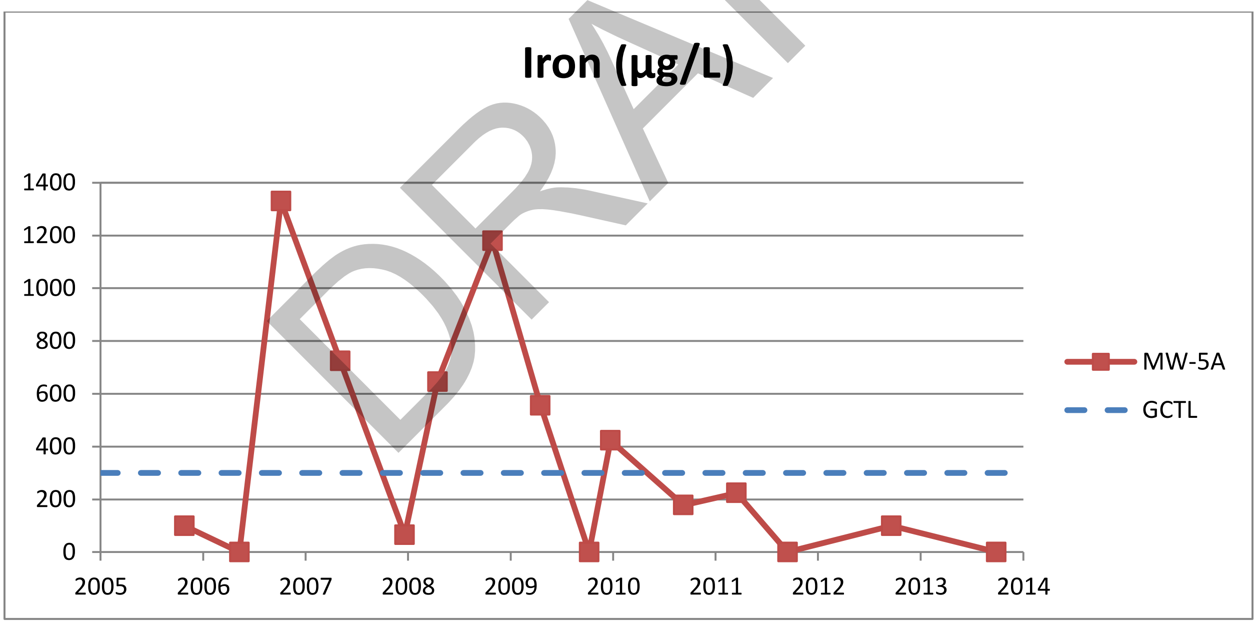


Figure 3.2.15-4

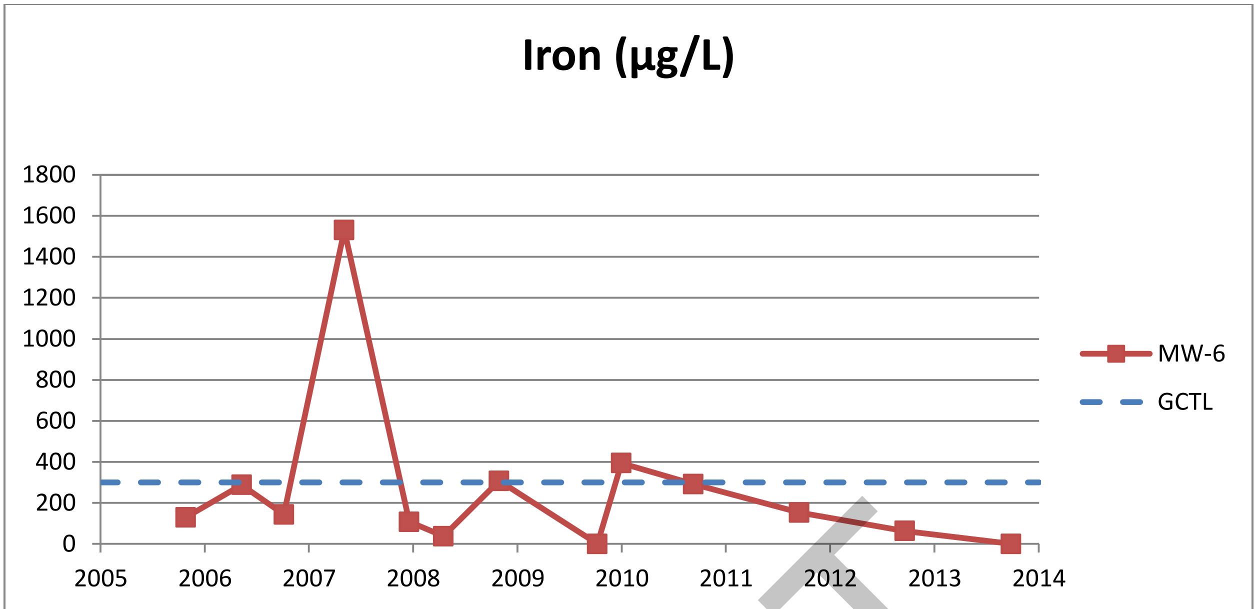


Figure 3.2.15-5

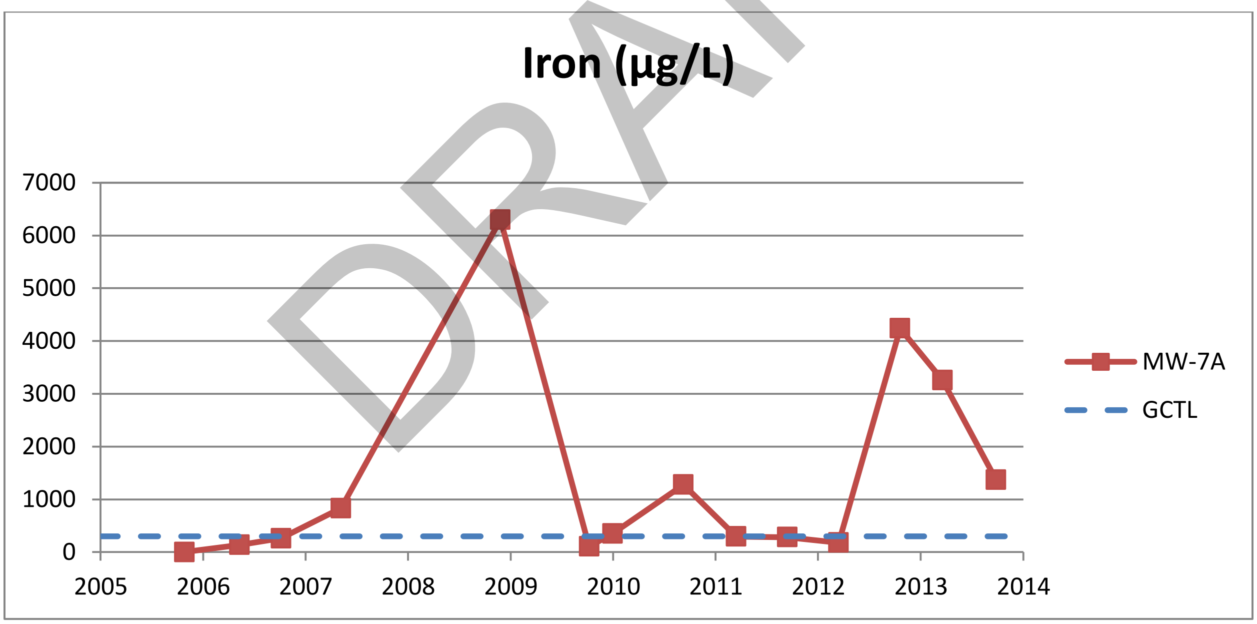


Figure 3.2.15-6

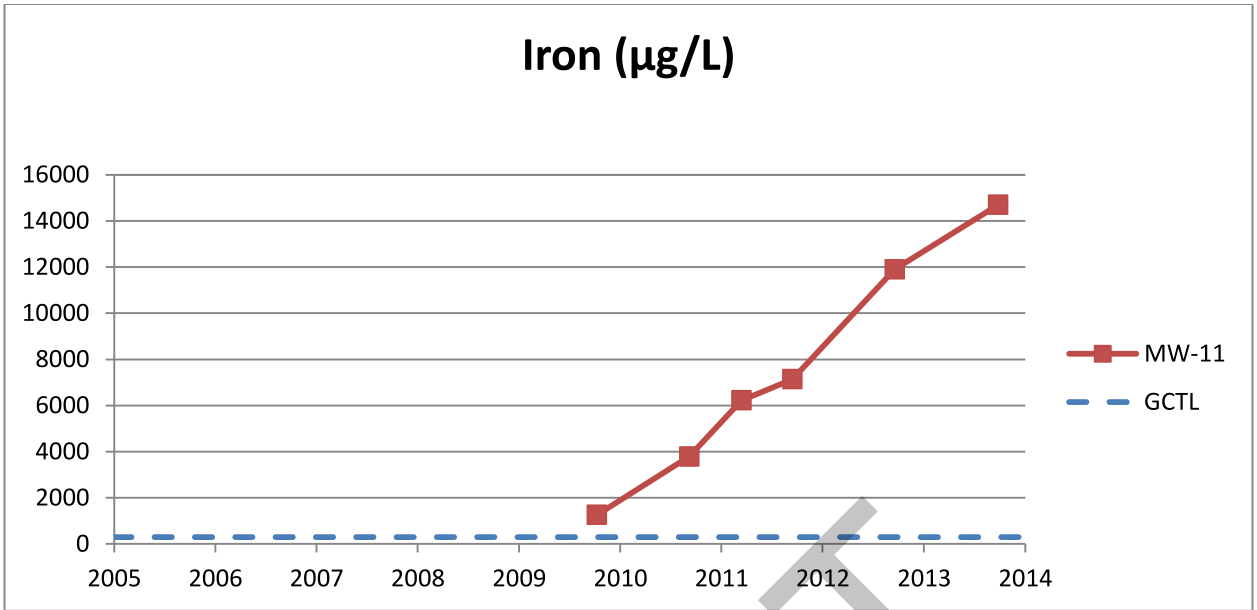


Figure 3.2.15-7

3.2.16 Mercury

The box and whisker plot for Mercury within the surficial aquifer monitoring wells is shown in Figure 3.2.16-1. Temporal plots are shown in Figure 3.2.16-2 to Figure 3.2.16-7. The temporal impact plot of mercury for MW-7A (Figure 3.2.16-6) shows that the mercury concentration exceeded its GCTL in the October 2009 (4.58 μg/L) and November 2009 (2.35 μg/L) sampling events. The SWFWMD background mercury concentration range for surficial aquifers was reported as <0.1 to 3.1 μg/L (Table 3.1). Equipment and trip blanks were evaluated to assess potential influences from contaminated laboratory equipment; however, data from blanks do no indicate any cross contamination. Turbidity levels were evaluated for each of these exceedances; however, the measured turbidity was within FDEP SOP requirements (FDEP, 2008). All samples collected after the November 2009 monitoring event did not show any exceedance of the GCTL for mercury. The exceedances of the mercury concentration in MW-7A can be considered isolated events and do not reflect any significant change in water quality in well MW-7A.

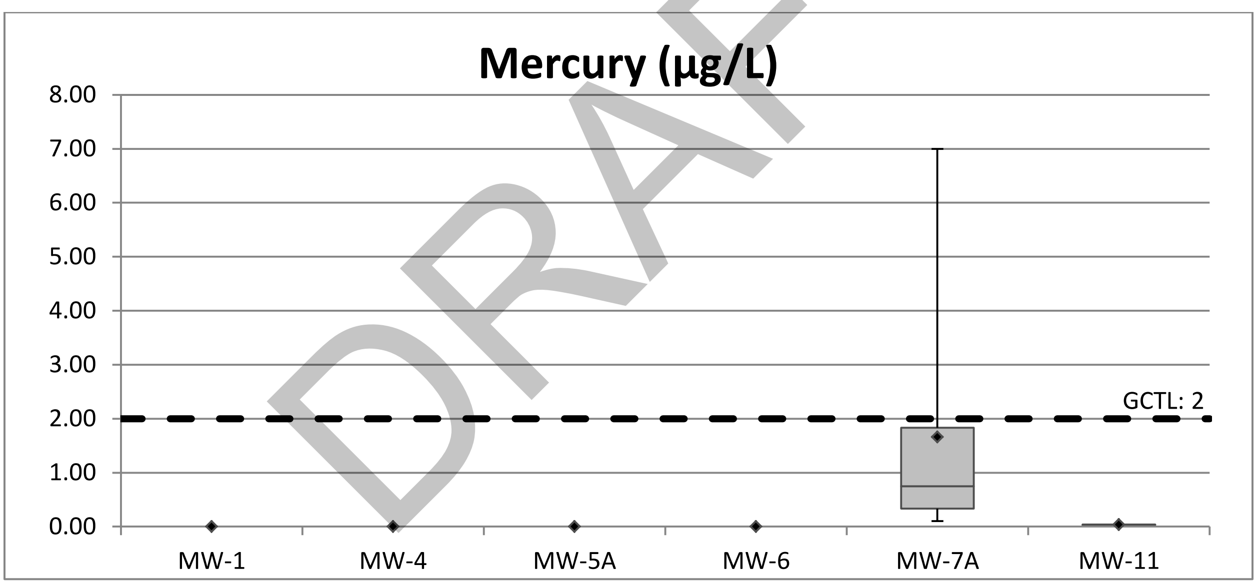


Figure 3.2.16-1

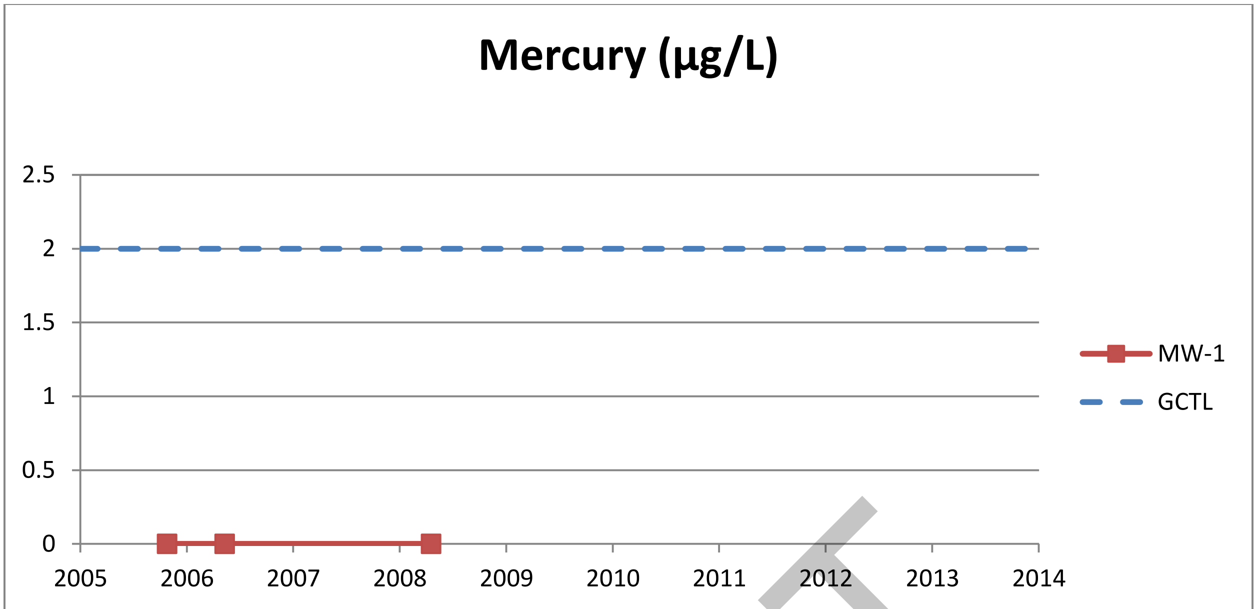


Figure 3.2.16-2

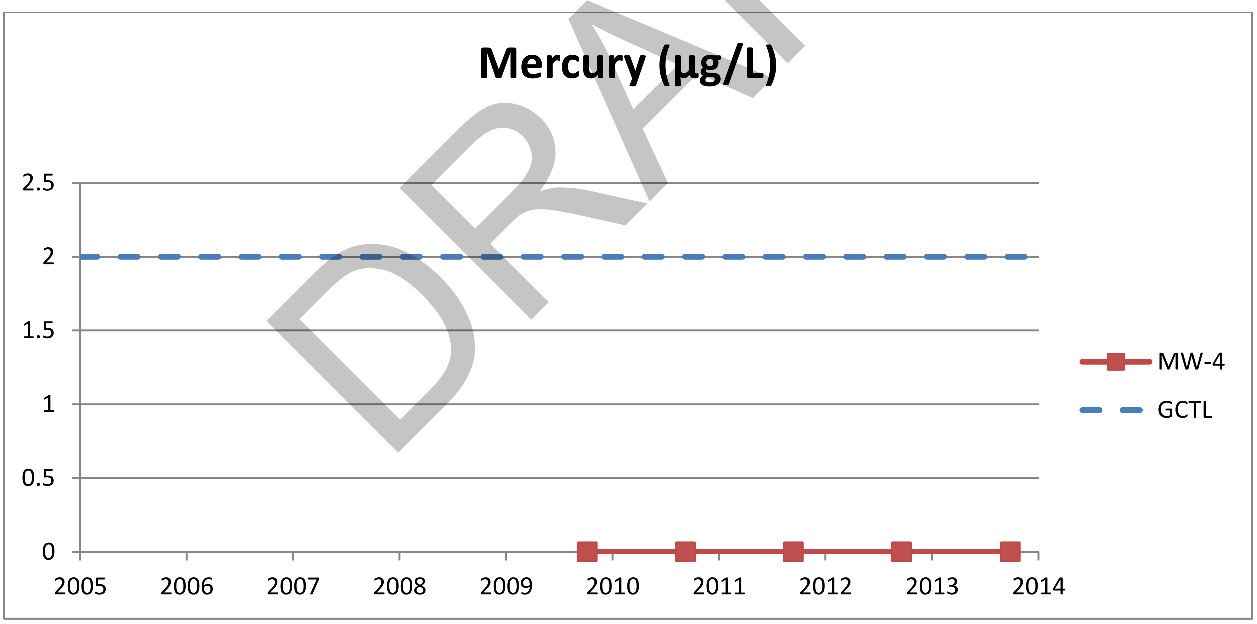


Figure 3.2.16-3

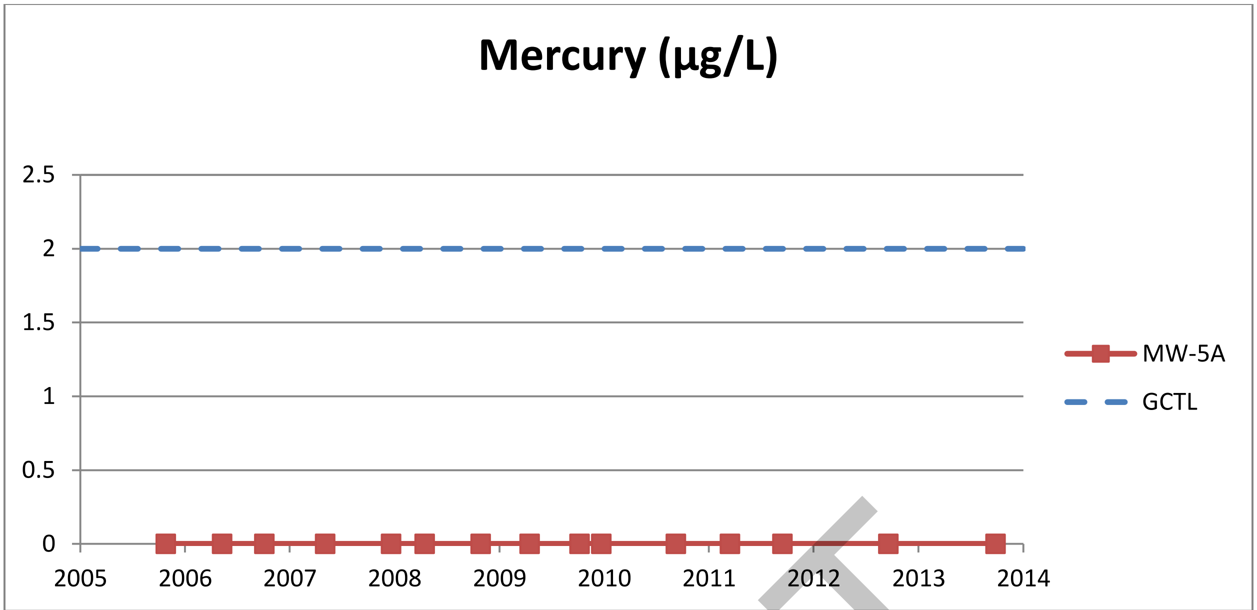


Figure 3.2.16-4

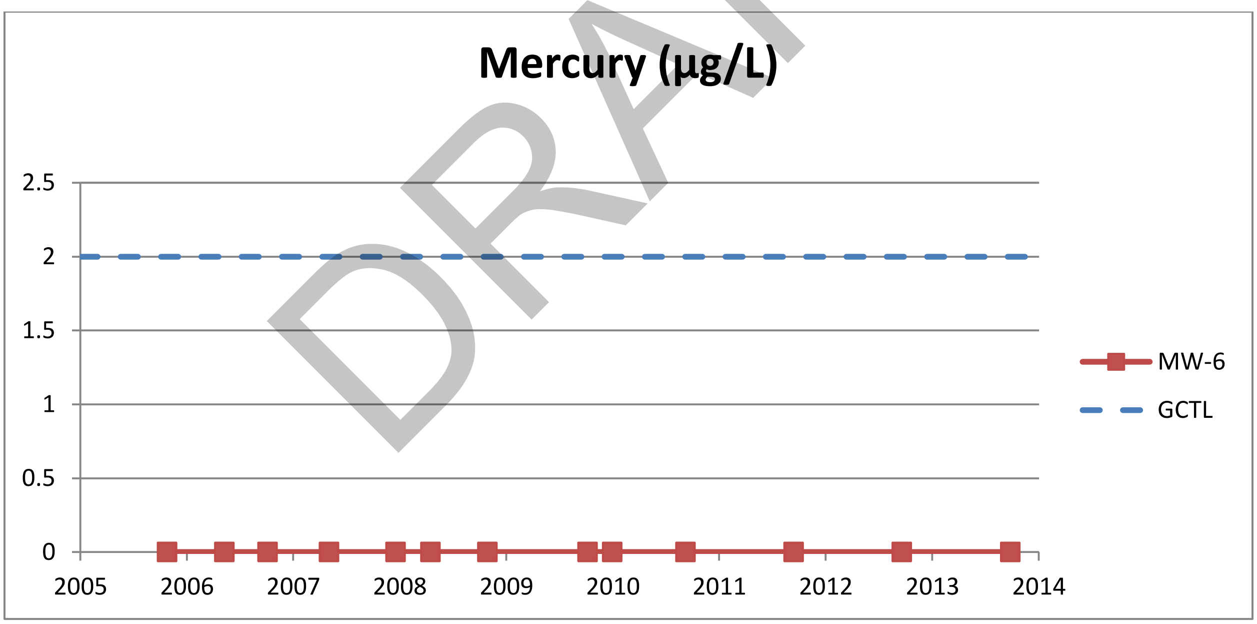


Figure 3.2.16-5

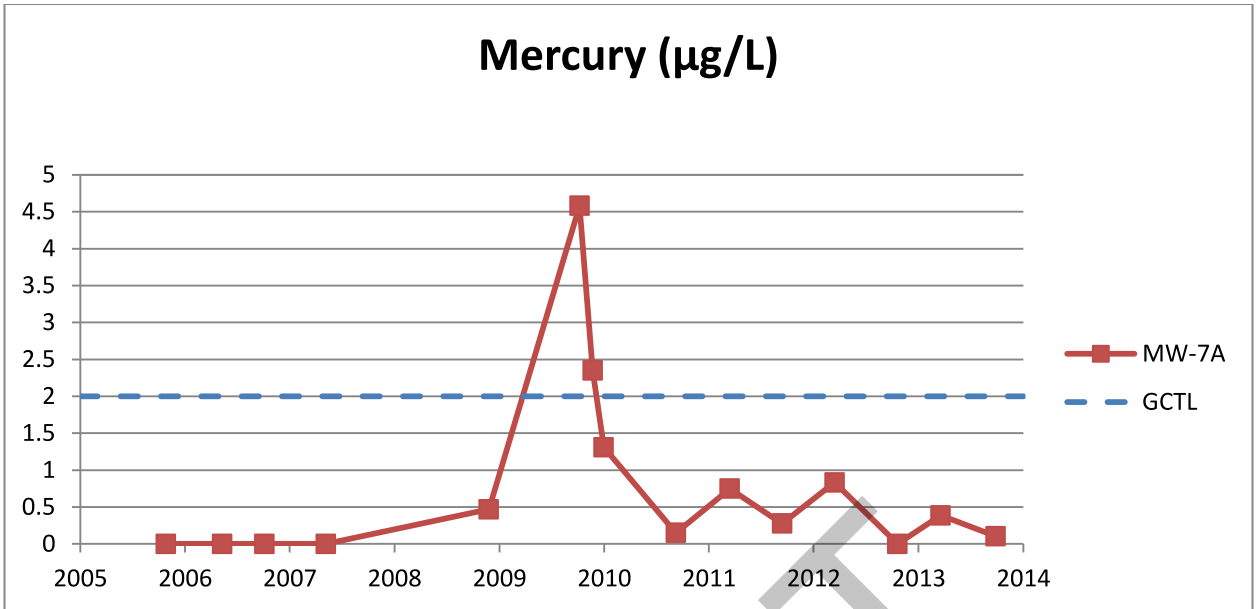


Figure 3.2.16-6

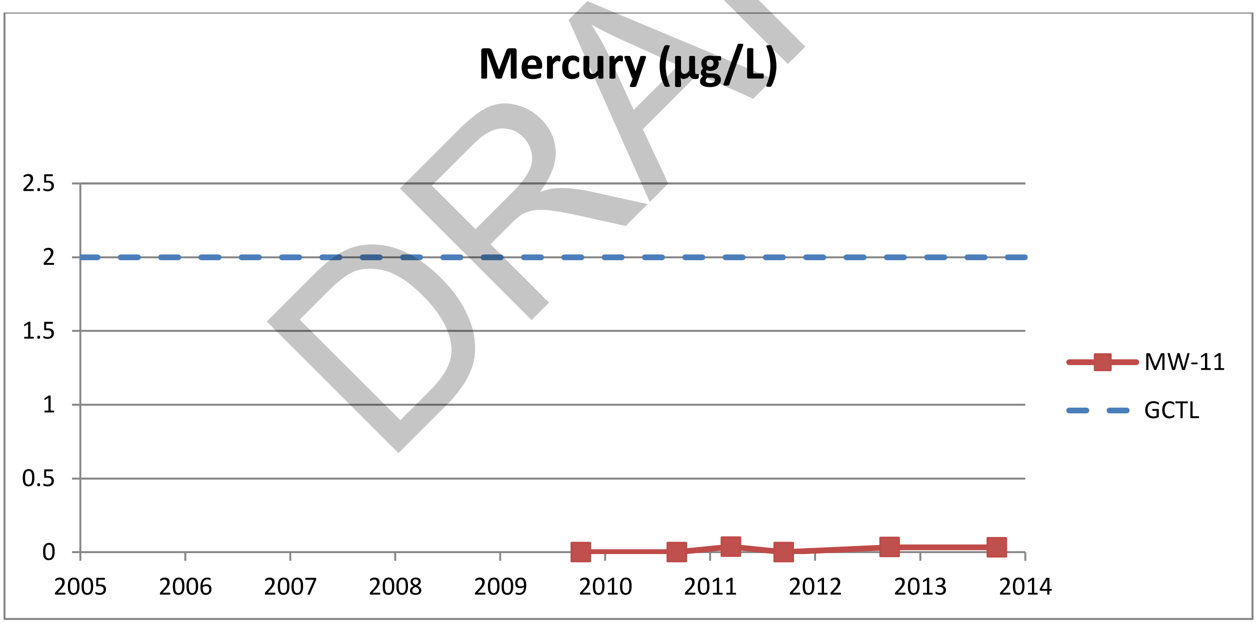


Figure 3.2.16-7

3.2.17 Nickel

The box and whisker plot for Nickel within the surficial aquifer monitoring wells is shown in Figure 3.2.17-1. Temporal plots are shown in Figure 3.2.17-2 to Figure 3.2.17-7. The concentration of nickel exceeded the GCTL (100 µg/L) once (in March 2011-MW-11- 445 µg/L) as shown in the temporal plot of nickel for MW-11 (Figure 3.2.17-7). Equipment and trip blanks were evaluated to assess potential laboratory errors; however, data from blanks do not suggest any contamination or sample carryover occurred during these measurements. Based on field sampling logs of March 2011, MW-11 had an approximate 4-ft deep water column at the time of sampling, and the sample collected for MW-11 was taken before the FDEP-specified turbidity levels (per FDEP groundwater SOPs) could be reached. The measured turbidity for the March 2011 sample of MW-11 was 46 NTU. High turbidity can be associated with elevated metals concentrations (Abbott, 2007), thus, the higher turbidity levels in MW 11 during March 2011 monitoring event likely contributed to the elevated concentration of nickel. A re-sampling of MW-11 in September 2011 showed a nickel concentration below the laboratory detection limit. The single exceedance of the nickel concentration in MW-11 can, therefore, be considered as an isolated event and does not reflect any significant change in water quality in well MW-11.

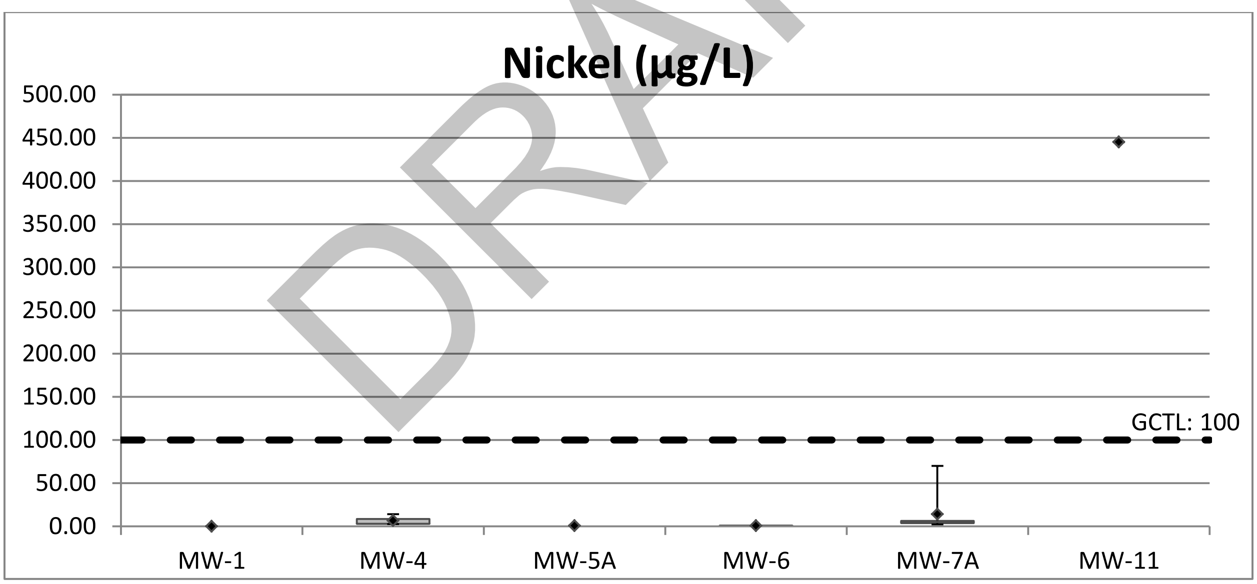


Figure 3.2.17-1

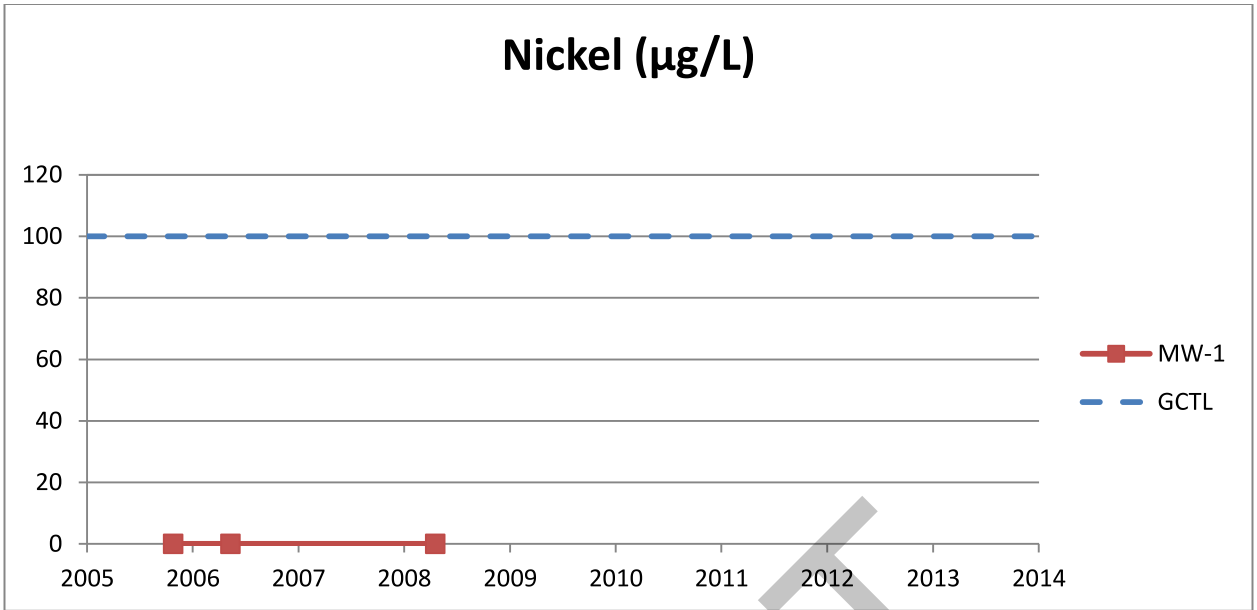


Figure 3.2.17-2

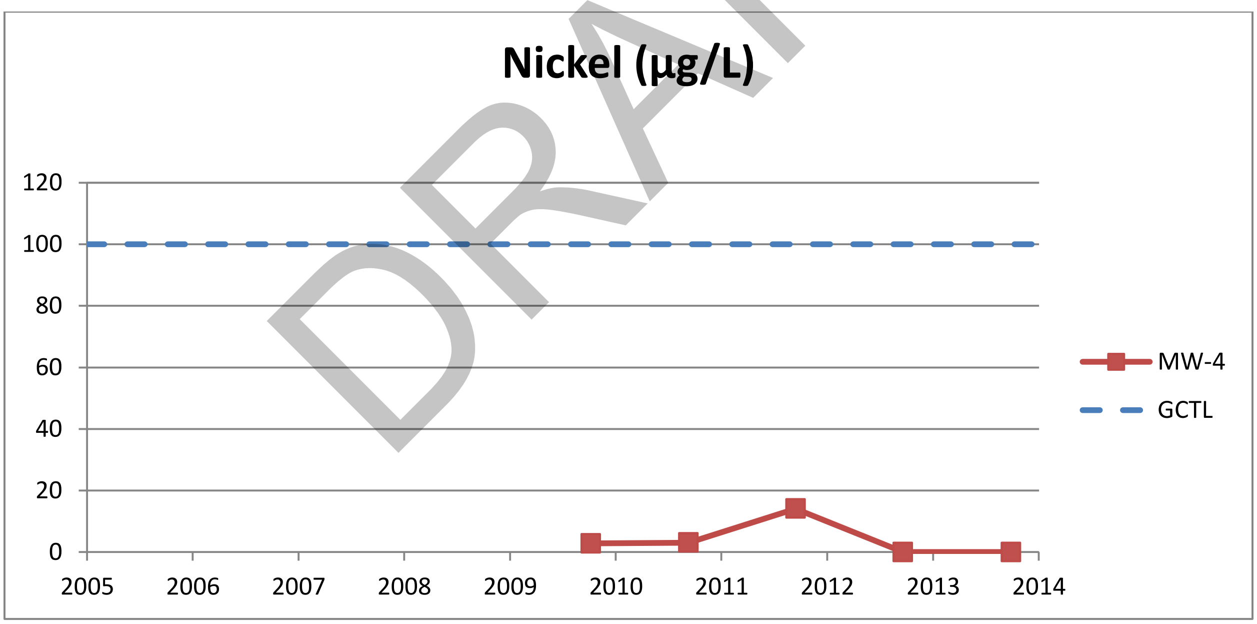


Figure 3.2.17-3

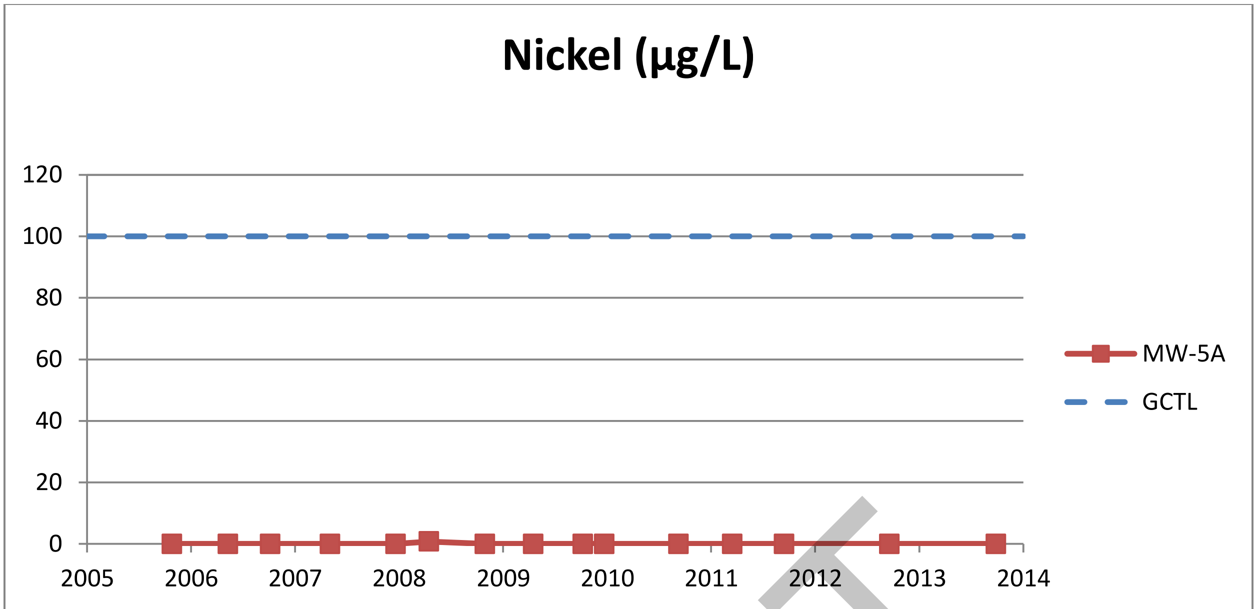
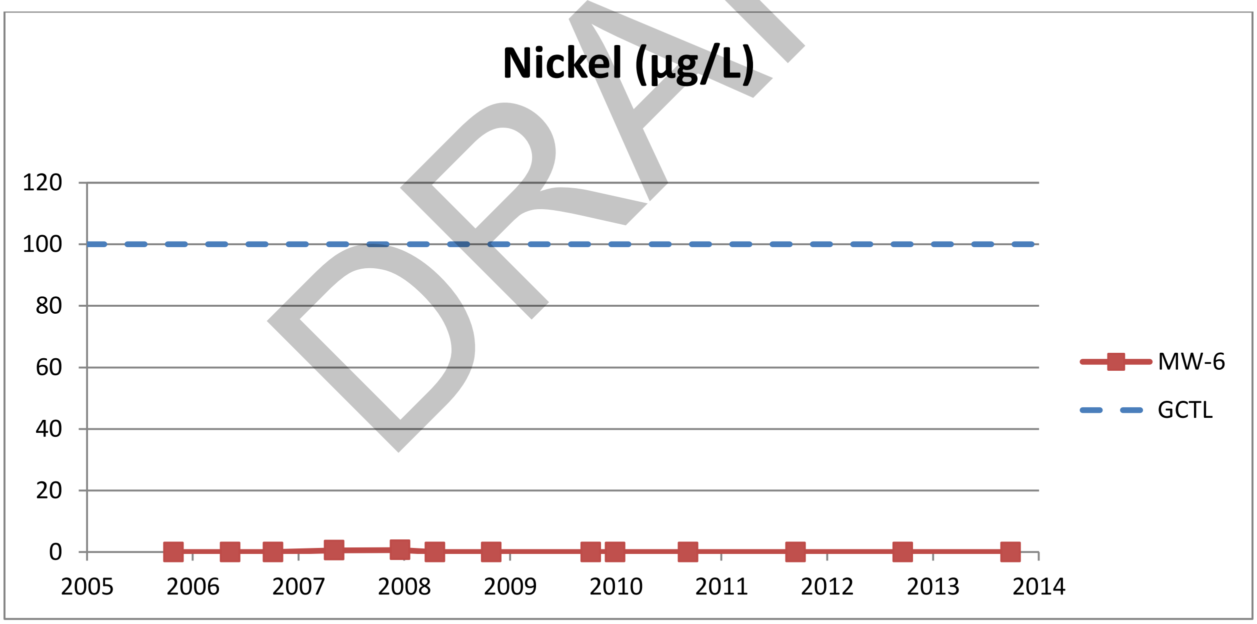


Figure 3.2.17-4



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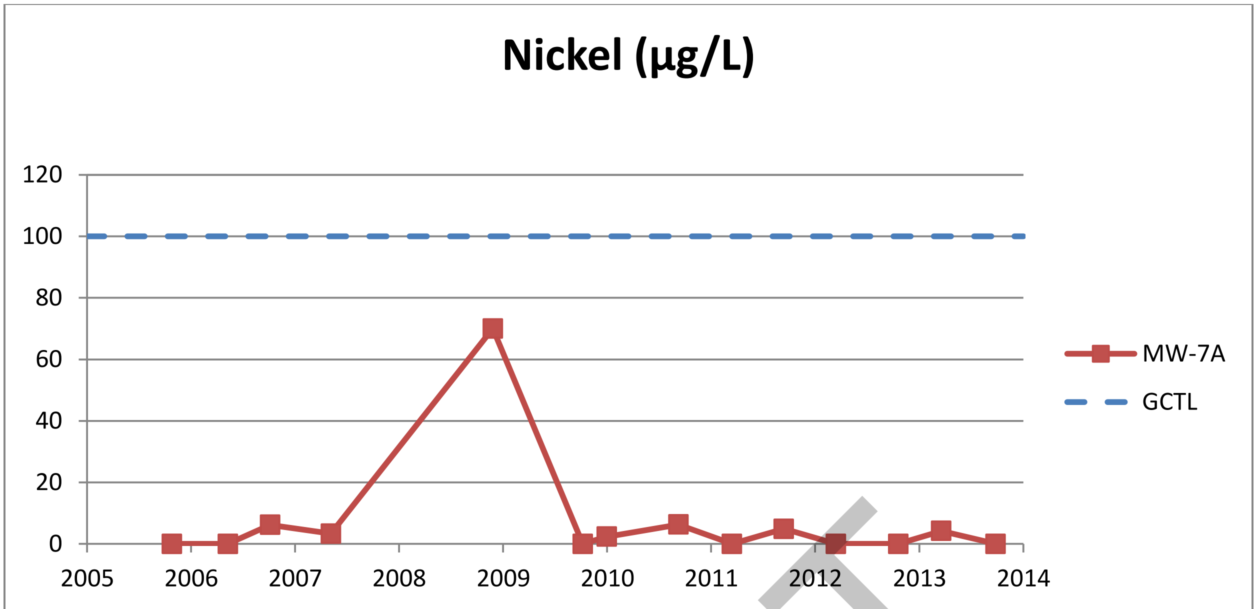


Figure 3.2.17-6

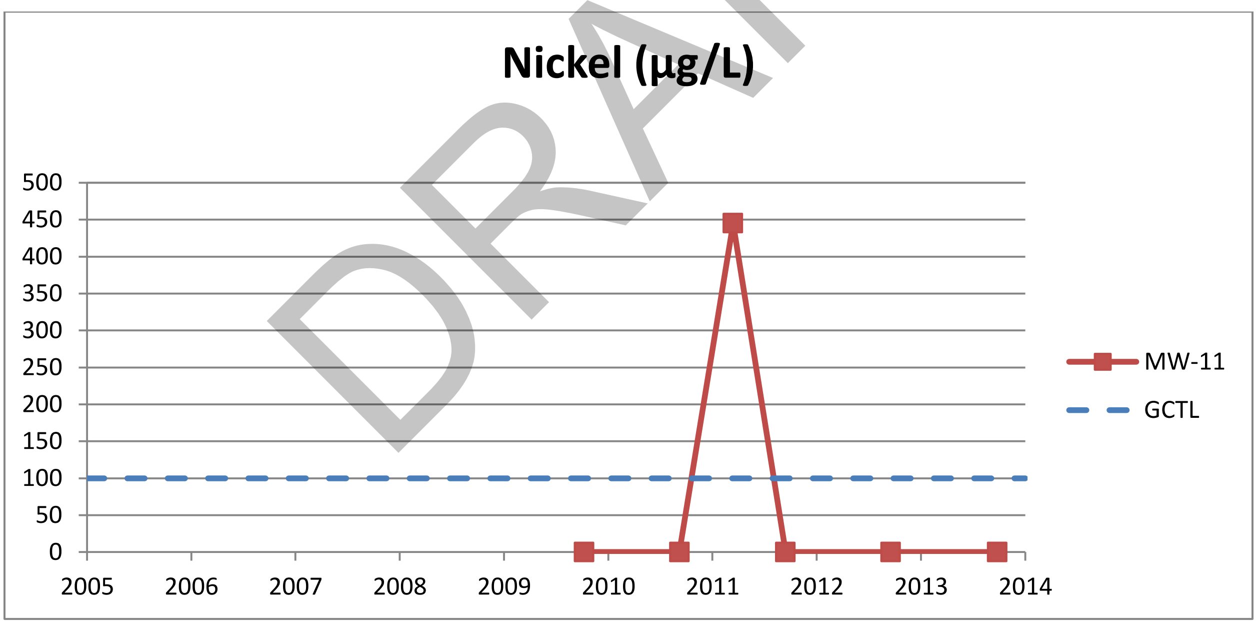


Figure 3.2.17-7

3.2.18 Vanadium

The box-and-whisker plots (Figure 3.2.18-1) of vanadium concentrations in surficial aquifer monitoring wells show that the vanadium concentrations exceeded its GCTL (49 µg/L) in four monitoring wells MW-1, MW-5A, MW-6, and MW-7A. The exceedance of MW-1 is not visible in the box-and-whisker plot of MW-1 because there was only one data point available to construct box-and-whisker plot for vanadium concentrations in MW-1. Each vanadium exceedance occurred in the May 2006 sampling event. In the July 2006 Semi-Annual Groundwater Monitoring Report, ENCO laboratories confirmed that a sample carryover had been the origin of the elevated vanadium levels. Samples were later re-analyzed, and all of the samples had detections below the MCL for vanadium. No other exceedances were observed for vanadium.

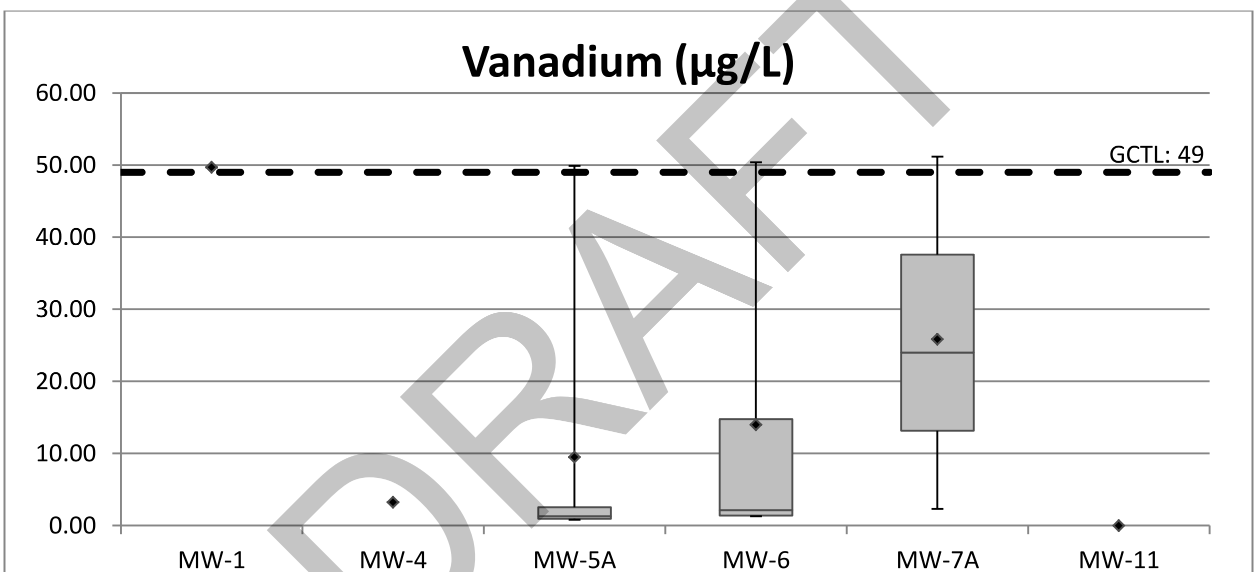


Figure 3.2.18-1

The temporal plots of vanadium for each monitoring well of the surficial aquifer (shown in Figure 3.2.18-2 to Figure 3.2.18-7) were analyzed to identify trends in vanadium variation. In general, vanadium remained constant or varied within a limited range for each well. The temporal plots of MW-1, MW-5A, MW-6, and MW-7A show the single exceedance of May 2006 sampling event, however, as previously explained, upon reanalysis these samples had vanadium concentrations below the detection limit.

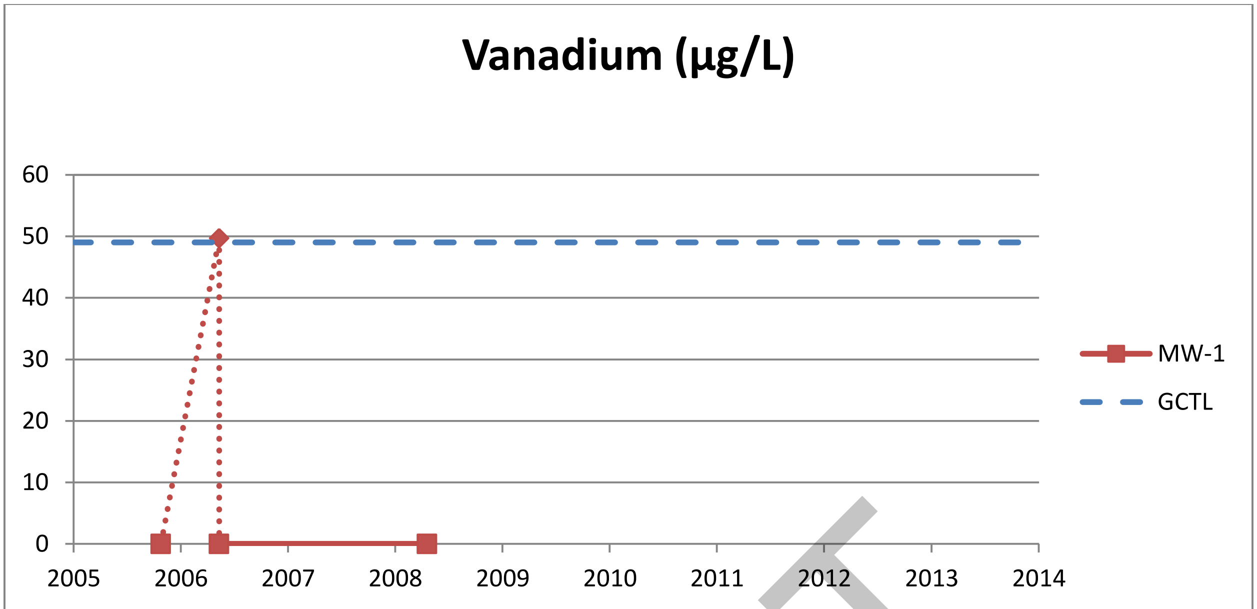


Figure 3.2.18-2

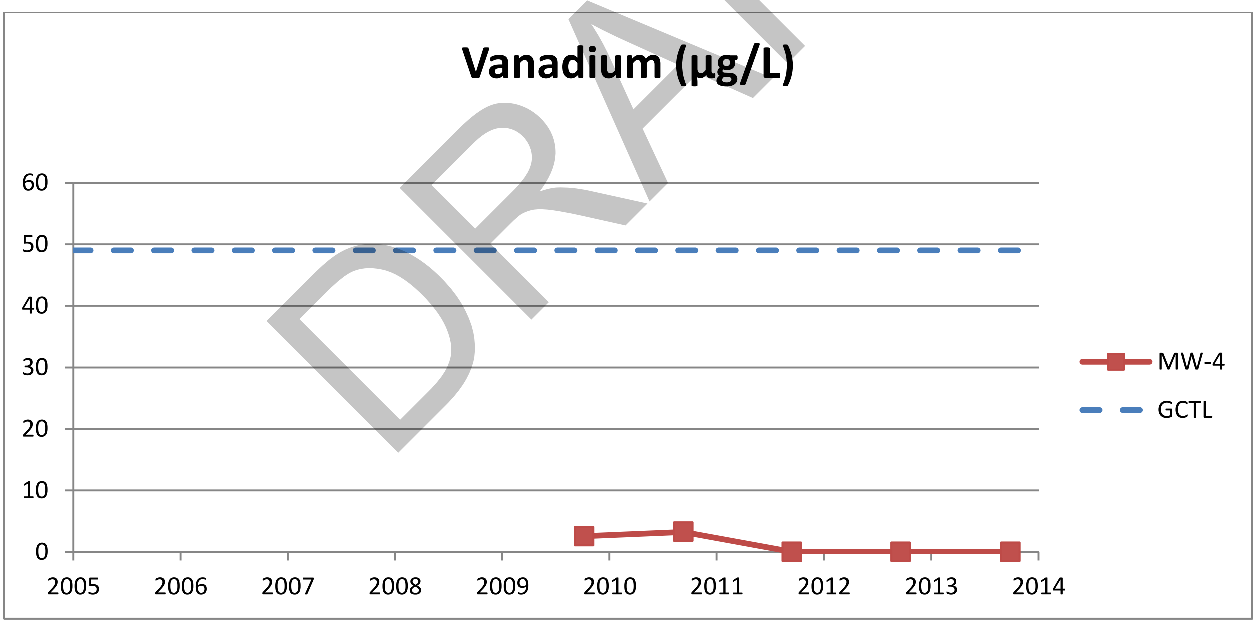


Figure 3.2.18-3

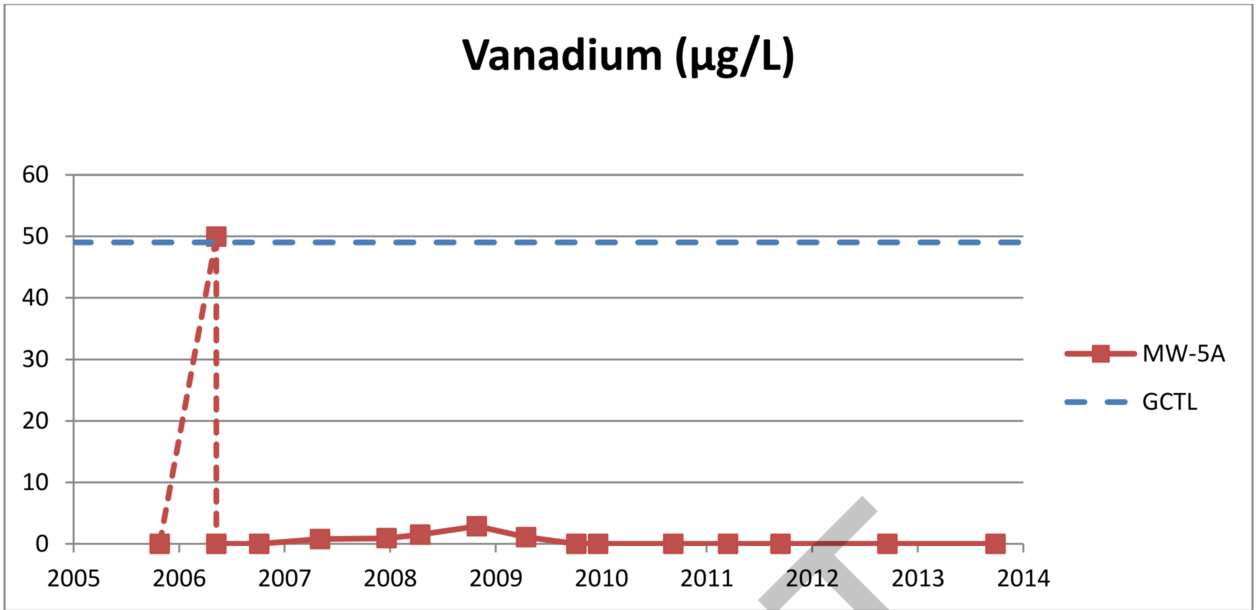
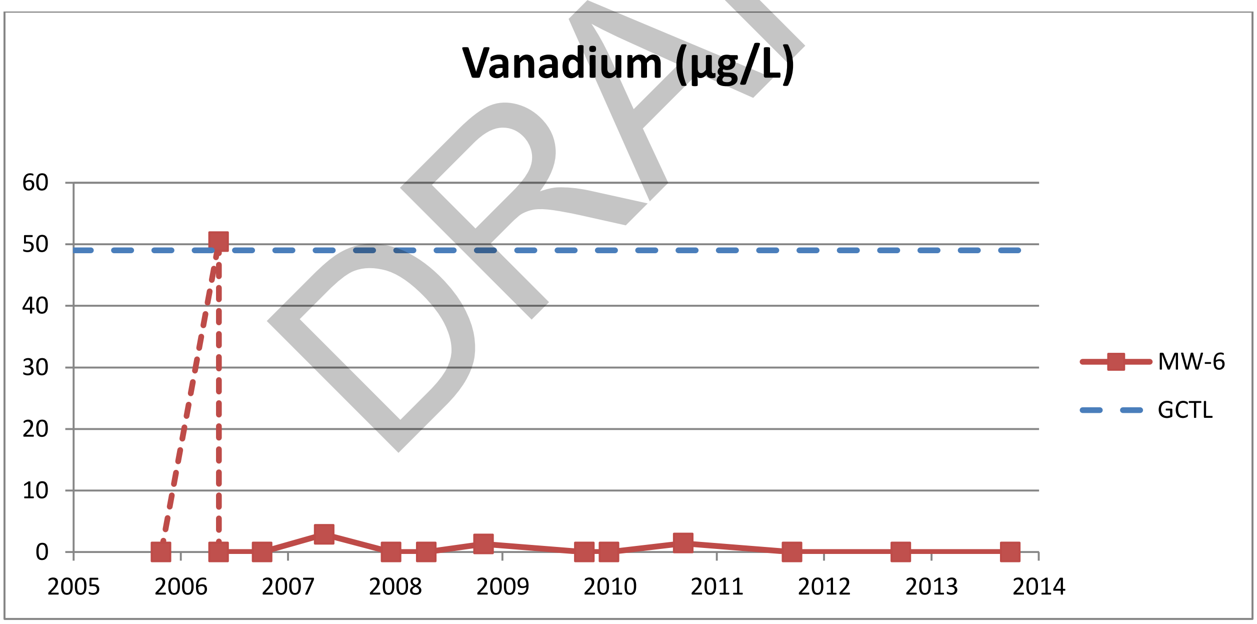


Figure 3.2.18-4



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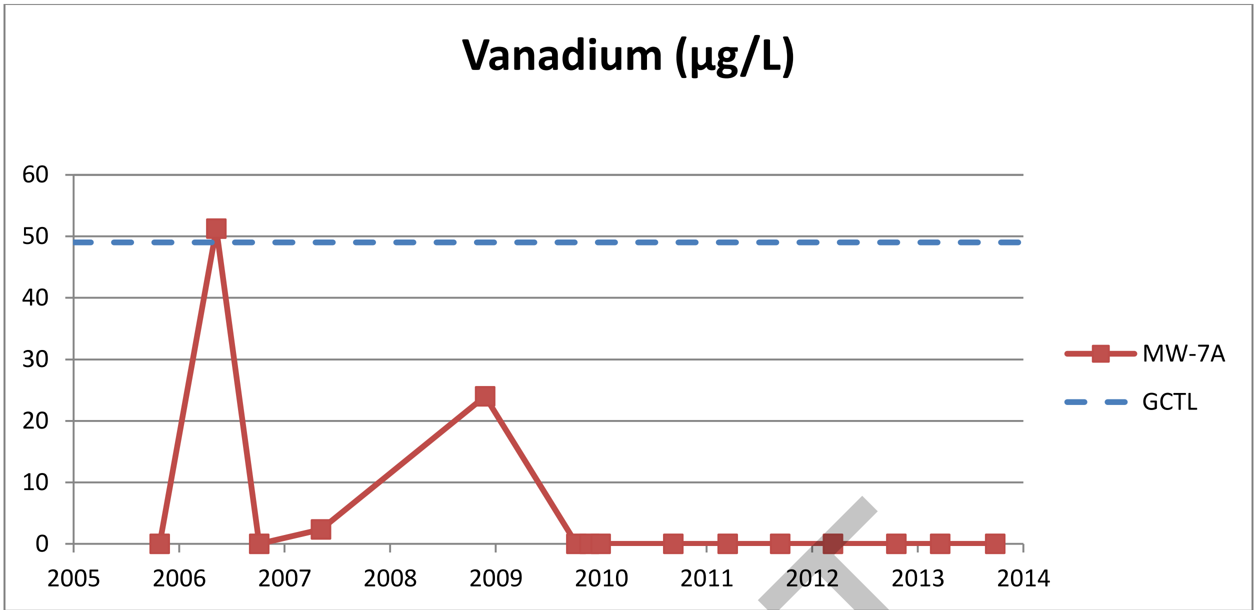


Figure 3.2.18-6

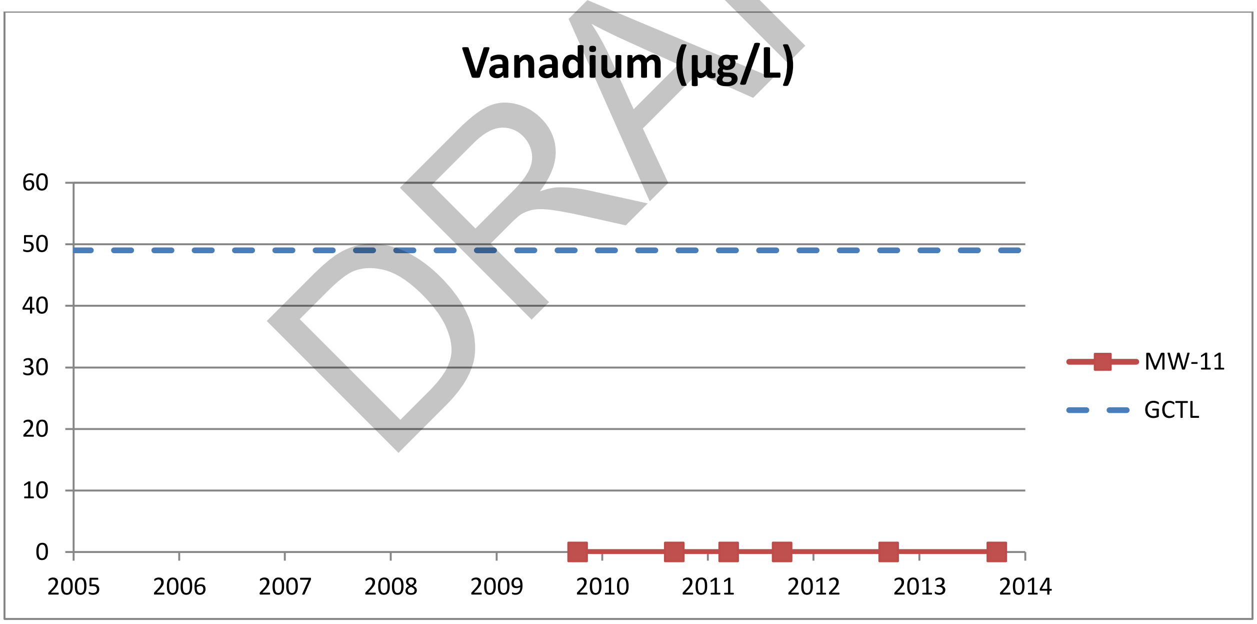


Figure 3.2.18-7

3.2.19 Zinc

The box and whisker plot for Zinc within the surficial aquifer monitoring wells is shown in Figure 3.2.19-1. Temporal plots are shown in Figure 3.2.19-2 to Figure 3.2.19-7. All concentrations of Zinc were substantially below the GCTL in all samples. Concentrations were consistent over time.

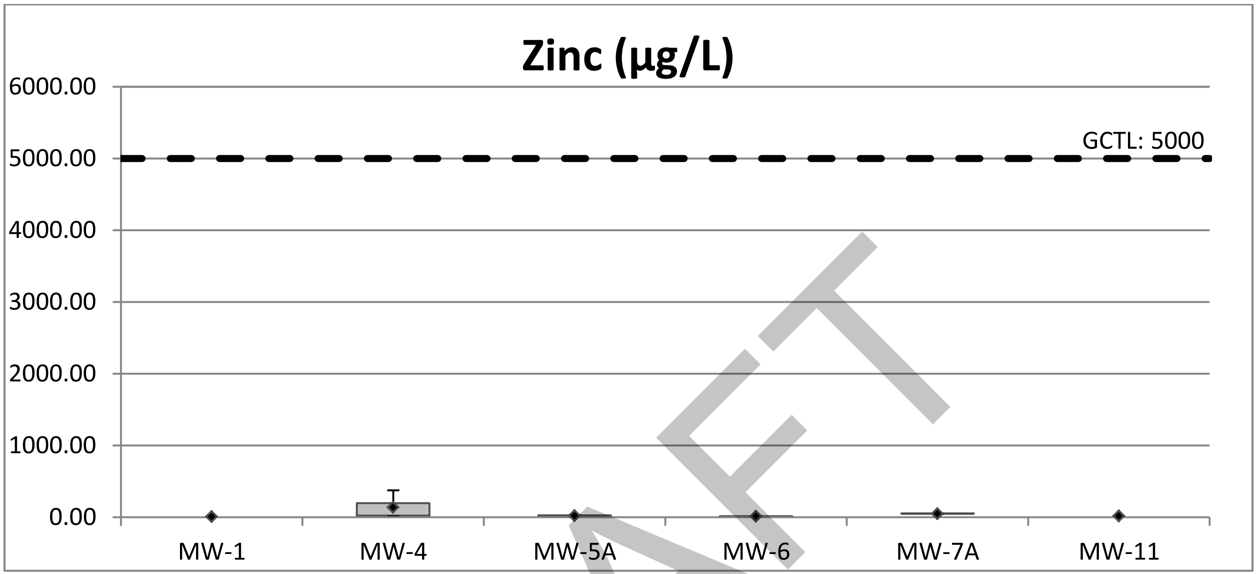


Figure 3.2.19-1

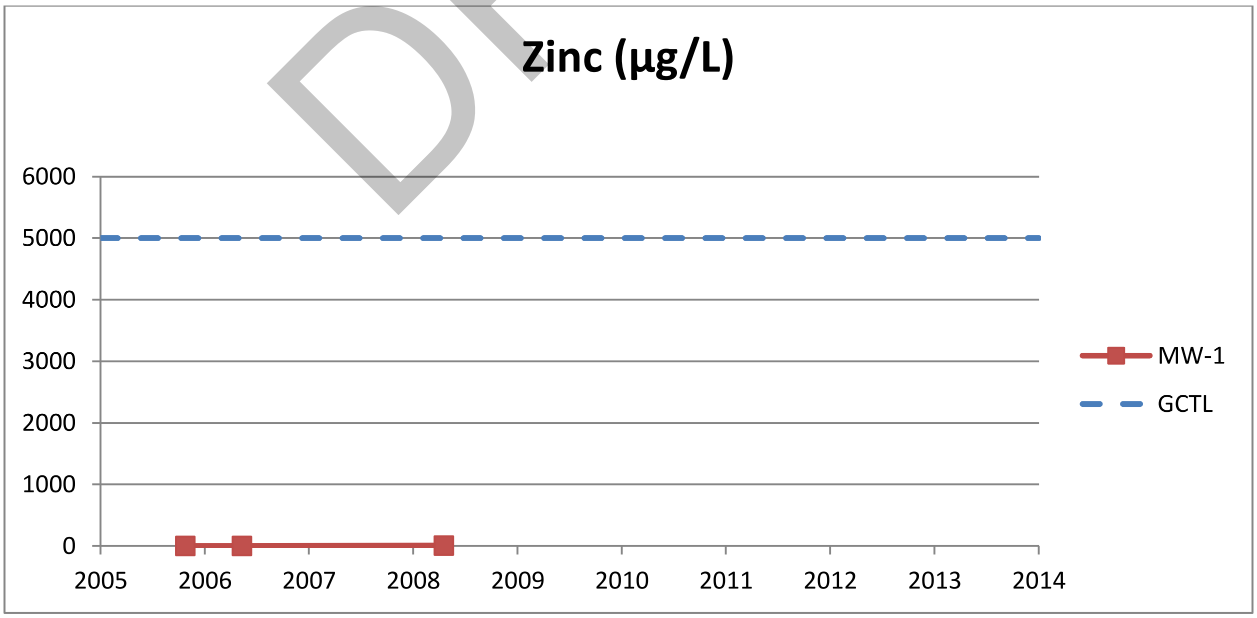


Figure 3.2.19-2

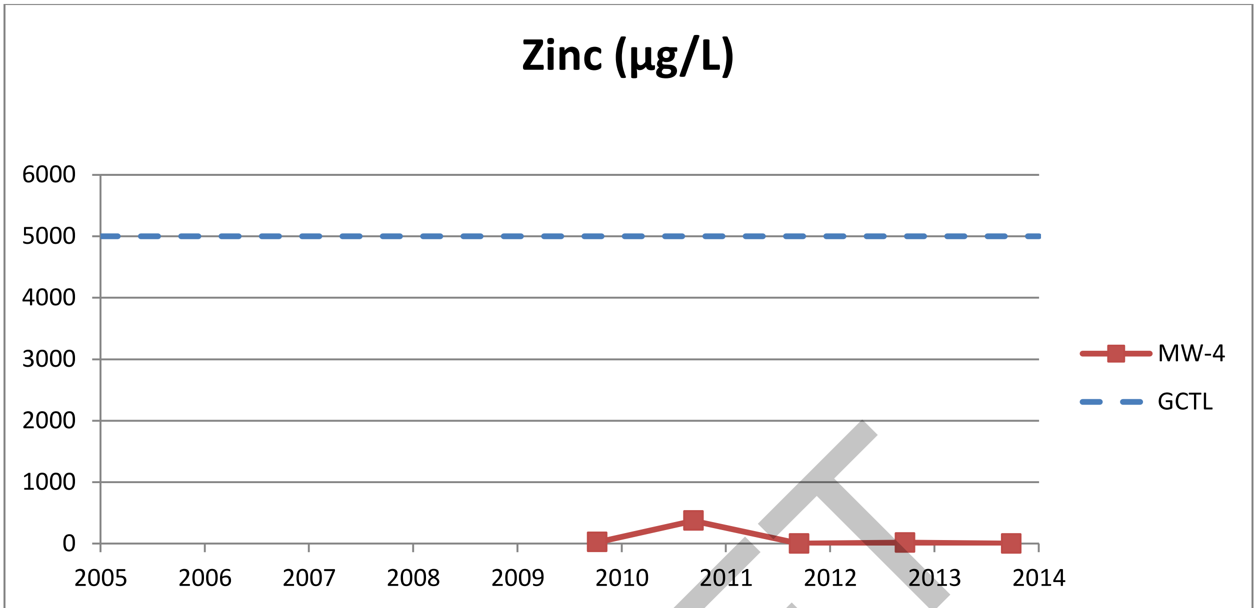
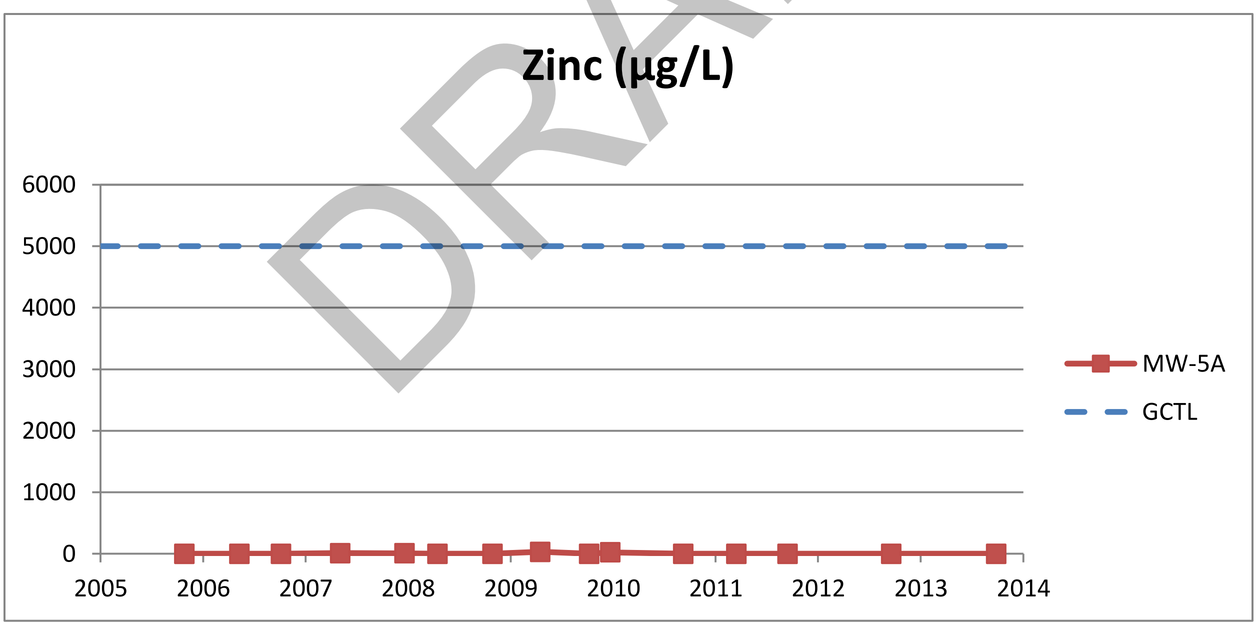


Figure 3.2.19-3



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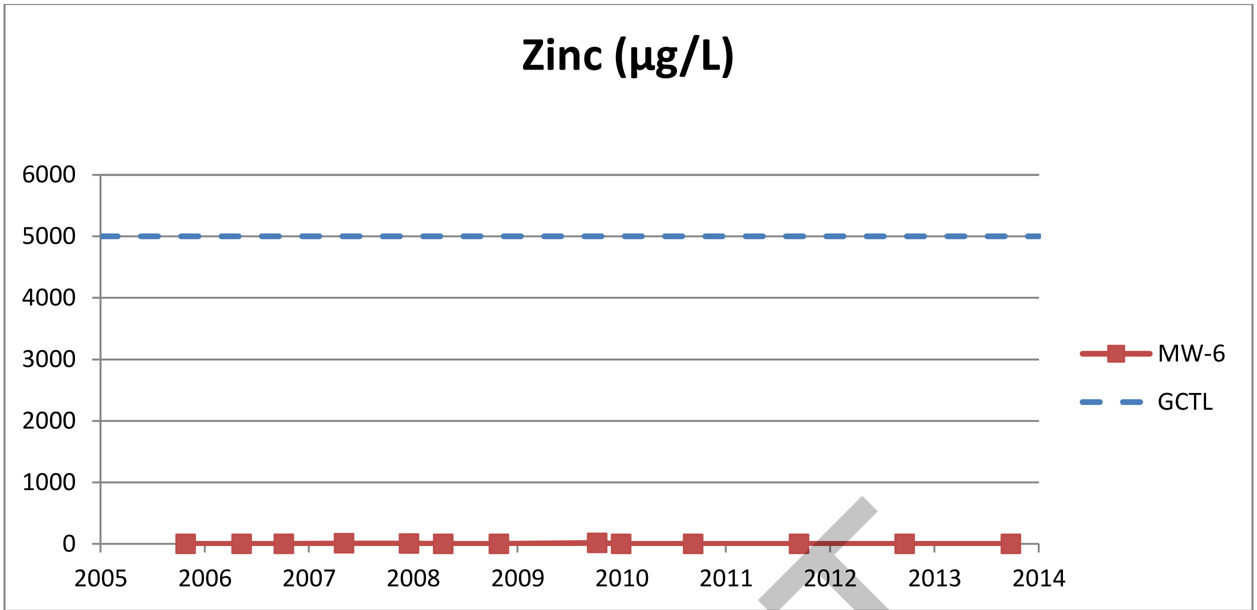

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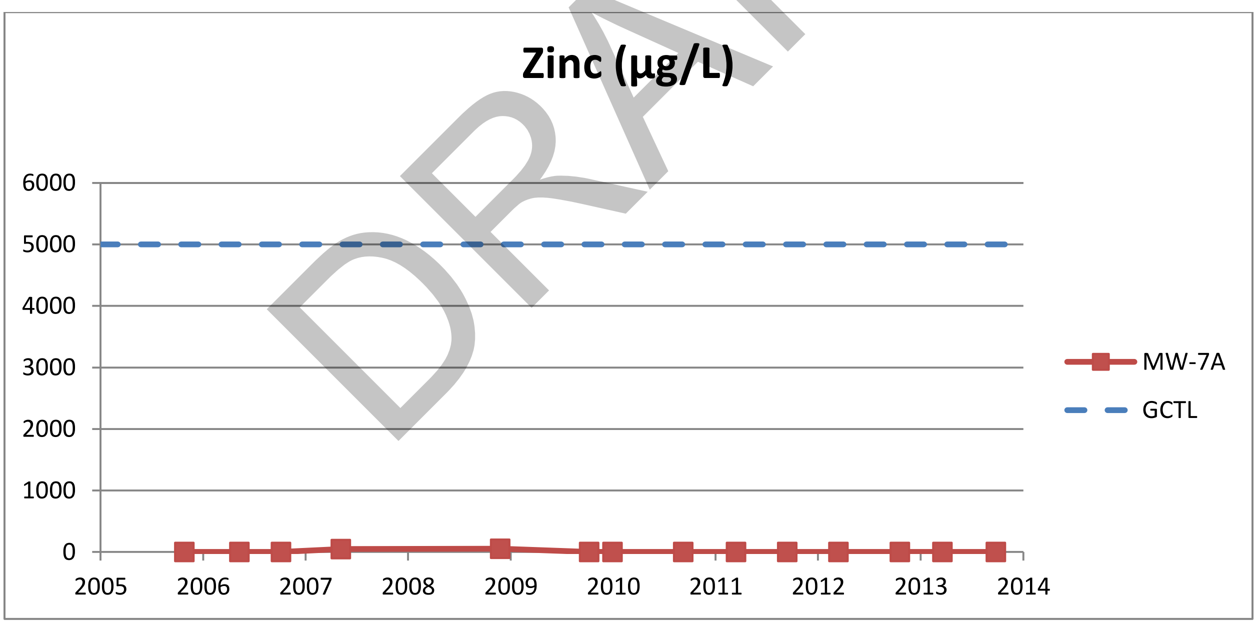

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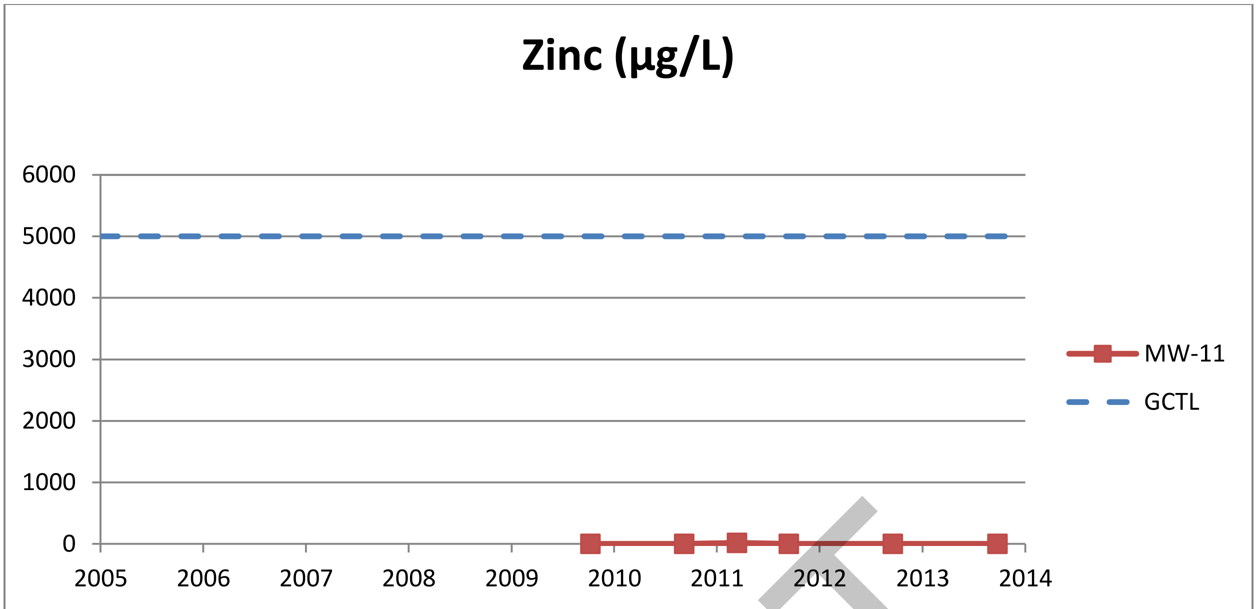


Figure 3.2.19-7

3.3 Groundwater Quality of Floridan Aquifer Wells

3.3.1 Overview

This section evaluates the water quality measured in the Floridan aquifer at the site. The Floridan aquifer original site background well was MW-1B. A re-interpretation of groundwater flow direction beneath the site resulted in the installation of MW-1B as a replacement background well. In addition to comparing site monitoring data to background data, trend analyses were performed to further evaluate changes in water quality over time which could be reasonably attributable to Class III landfilling activities.

3.3.2 pH

The box-and-whisker plots of pH measurements for the Floridan aquifer monitoring wells are shown in Figure 3.3.2-1. Temporal plots are shown in Figure 3.3.2-2 to Figure 3.3.2-15. Floridan aquifer monitoring wells generally showed pH ranging from 2.40 to 11.99 with approximately 76% of measurements falling within the GCTL range of 6.5 to 8.5. Monitoring wells MW-7B and MW-7BR exhibited higher pH levels ranging from 7.69 to 11.99 and monitoring wells MW-11B and MW-12B exhibited lower pH ranging from 5.79 to 6.97. The background pH level for Floridan aquifer in SWFWMD has been reported to range from 6.0 to 10.7 as shown in Table 3.1, which is significantly higher than the reported background pH of the surficial aquifer in the SWFWMD. The pH of Floridan aquifer at the site ranged from 7.6 to 9.6 in 2003 which is before waste placement activity began at the site. The Floridan aquifer is composed of carbonate rock and expected to have relatively higher pH as the carbonate acts as a pH buffer which counteracts acids (pH<7) as they enter the body of water.

The temporal variation of pH in monitoring wells MW-7BR (Figure 3.3.2-7) show that the pH of this well was typically greater than 8.5 from the start of monitoring. Previous reports by others (HAI; February, 2006) reported that high pH in well MW-7B was due to the residual grout in the well. The replacement well MW-7BR also showed pH higher than the upper GCTL limit of 8.5 from the start of its monitoring, however, the pH was always within the range of SWFWMD background pH of the Floridan aquifer.

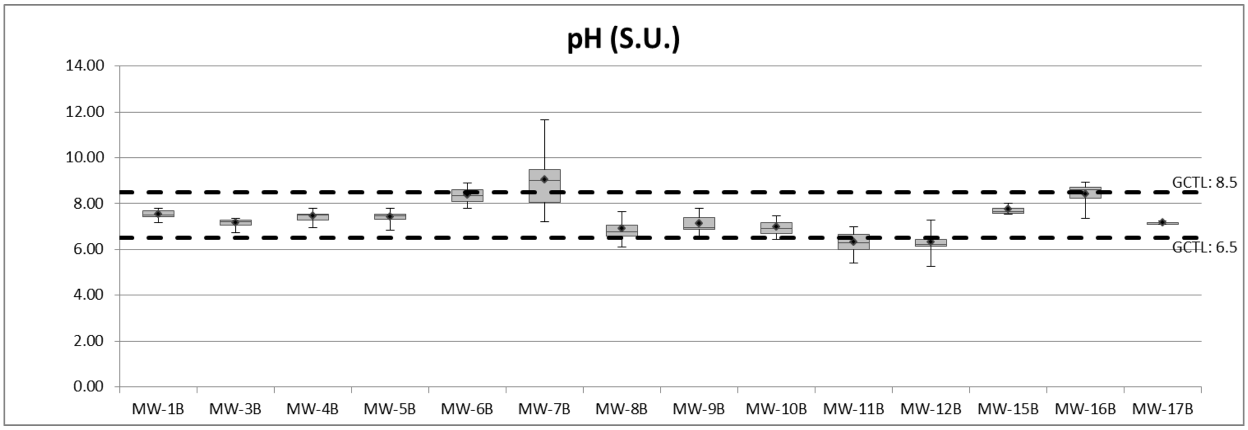


Figure 3.3.2-1

The temporal plots of pH for each Floridan aquifer monitoring well (Figure 3.3.2-2 to Figure 3.3.2-15) were analyzed to identify trends in pH variation. In general, pH values remained constant or varied within a limited range for each well from the start of monitoring with the exception of MW-7BR which shows a decreasing trend over time.

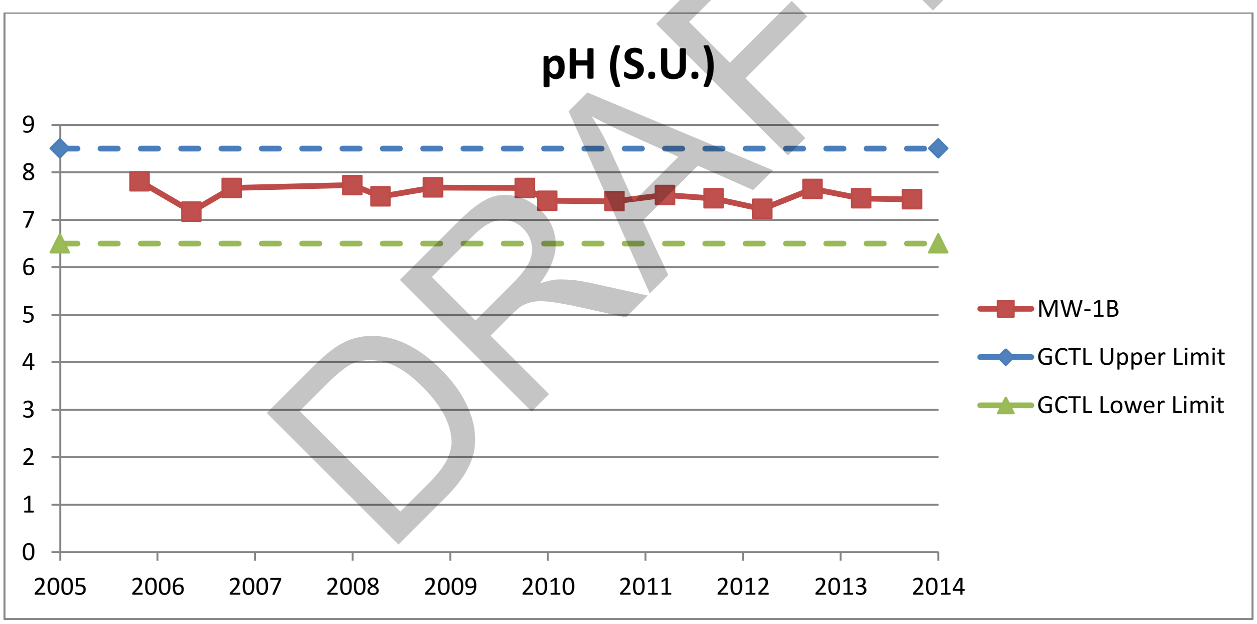
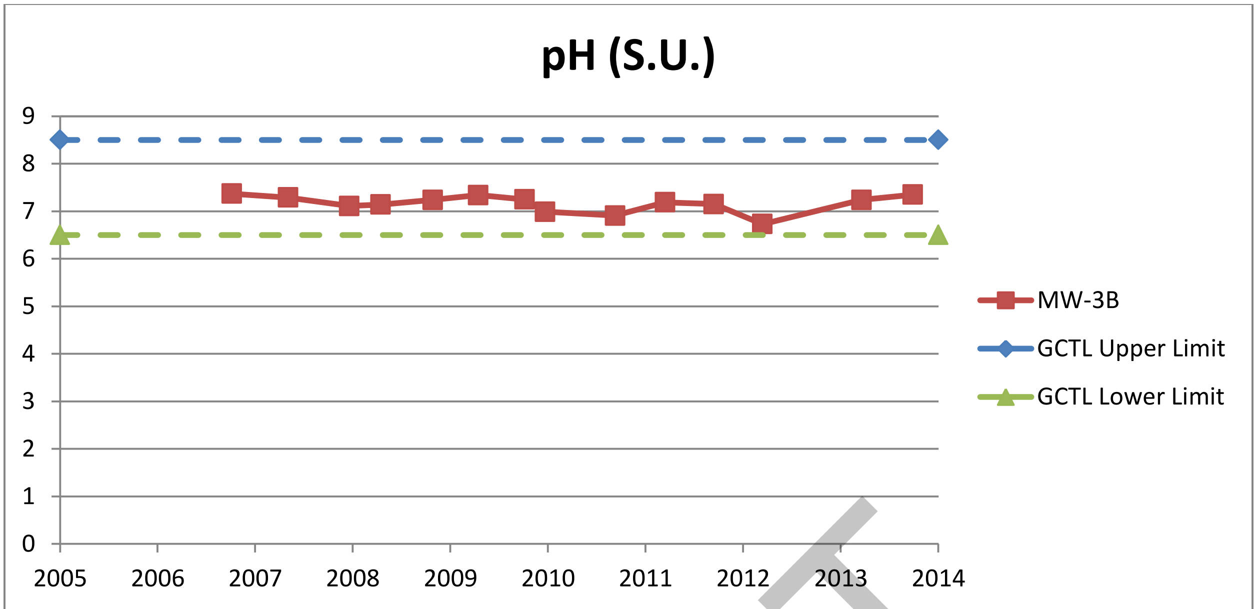


Figure 3.3.2-2



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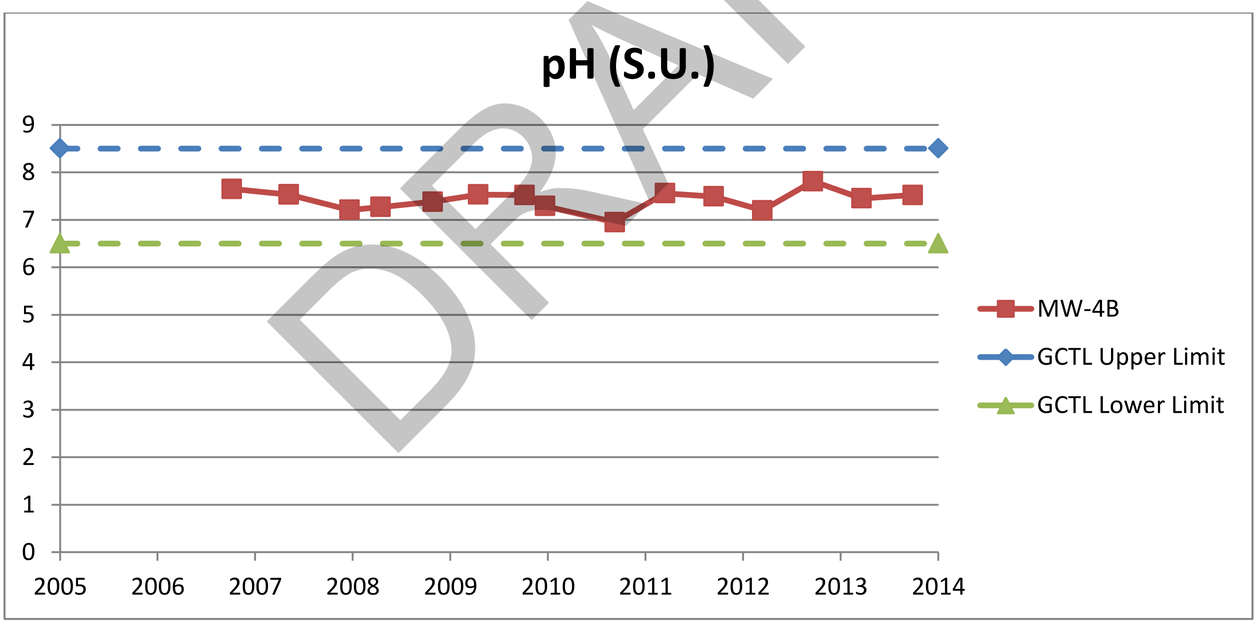


Figure 3.3.2-4

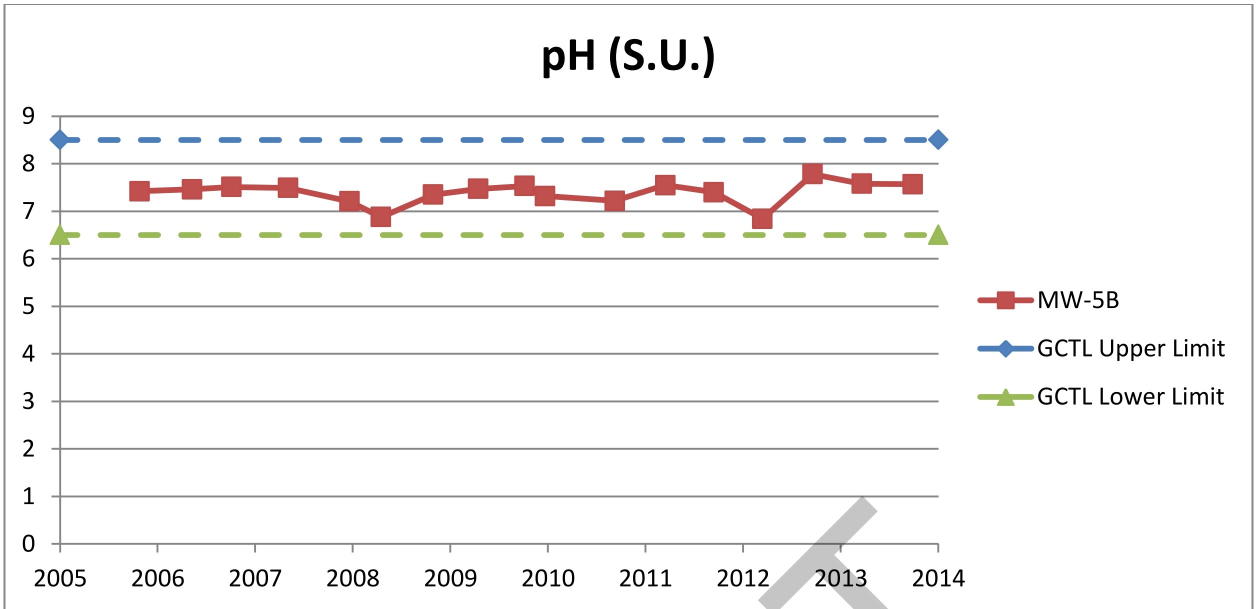


Figure 3.3.2-5

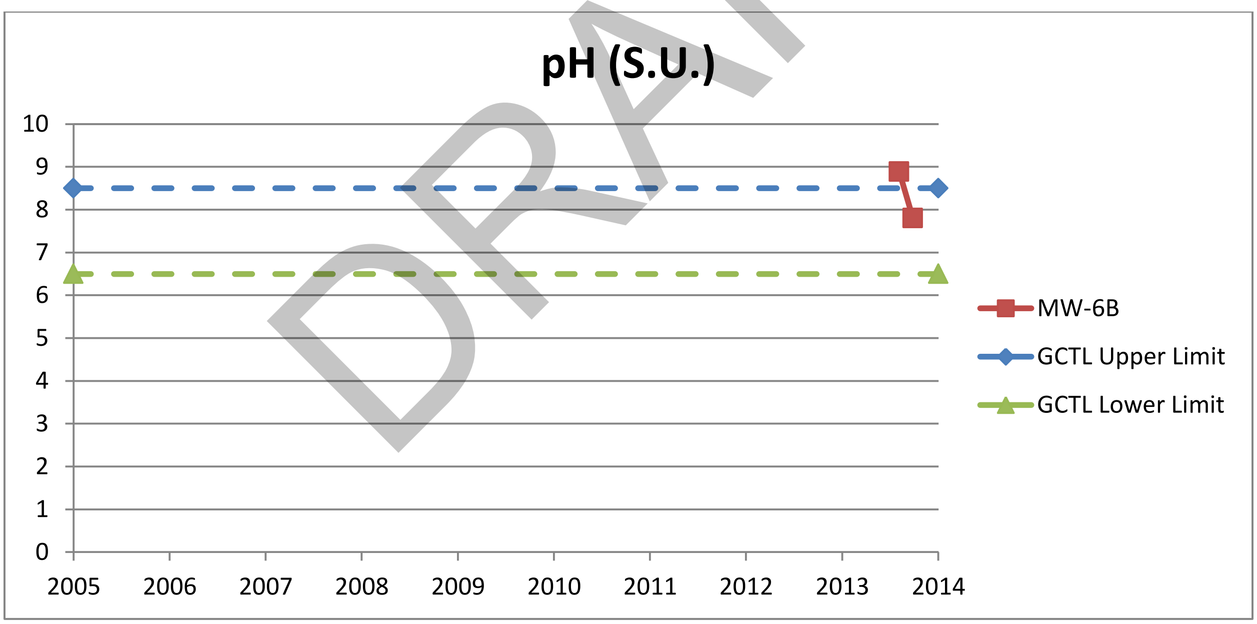


Figure 3.3.2-6

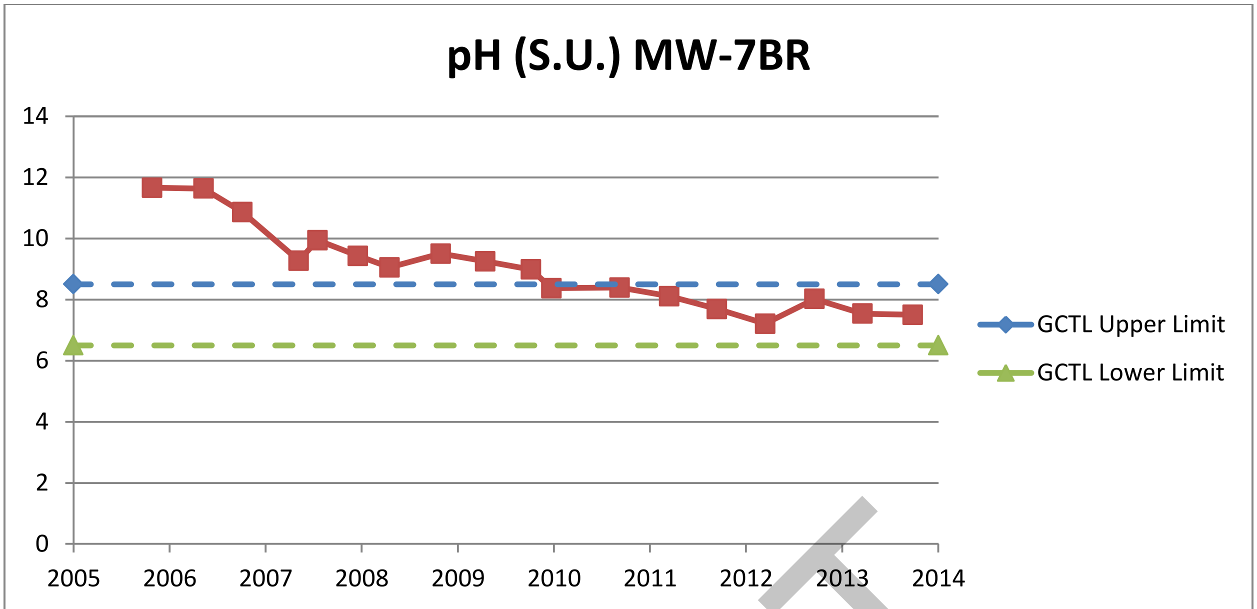
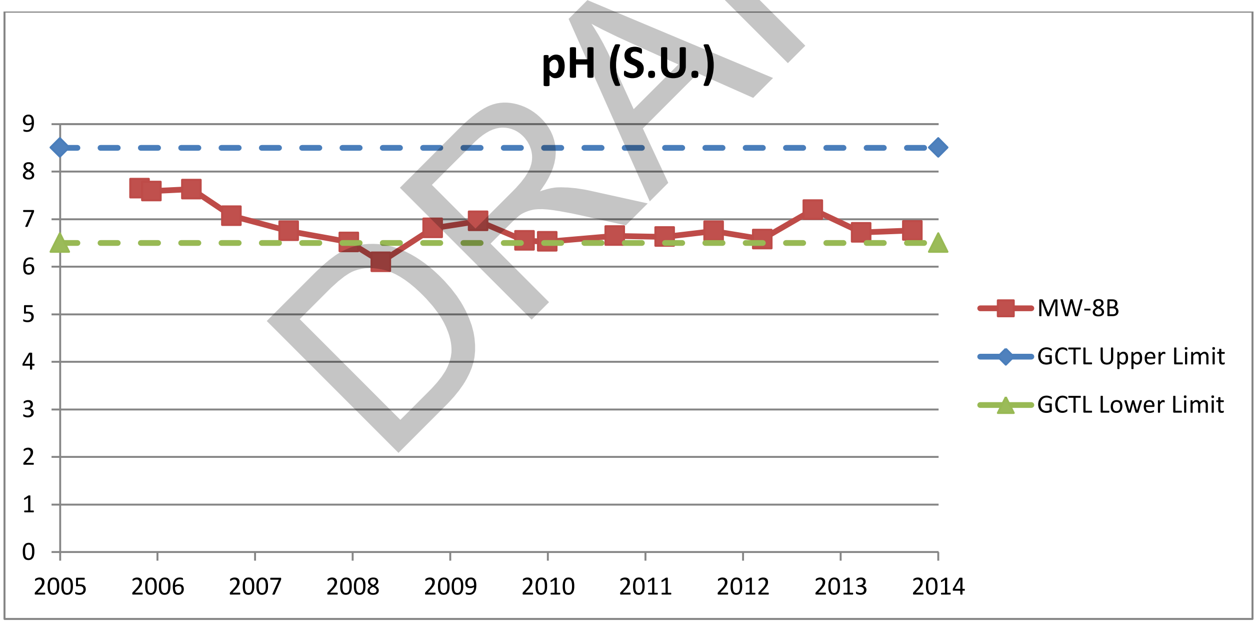


Figure 3.3.2-7



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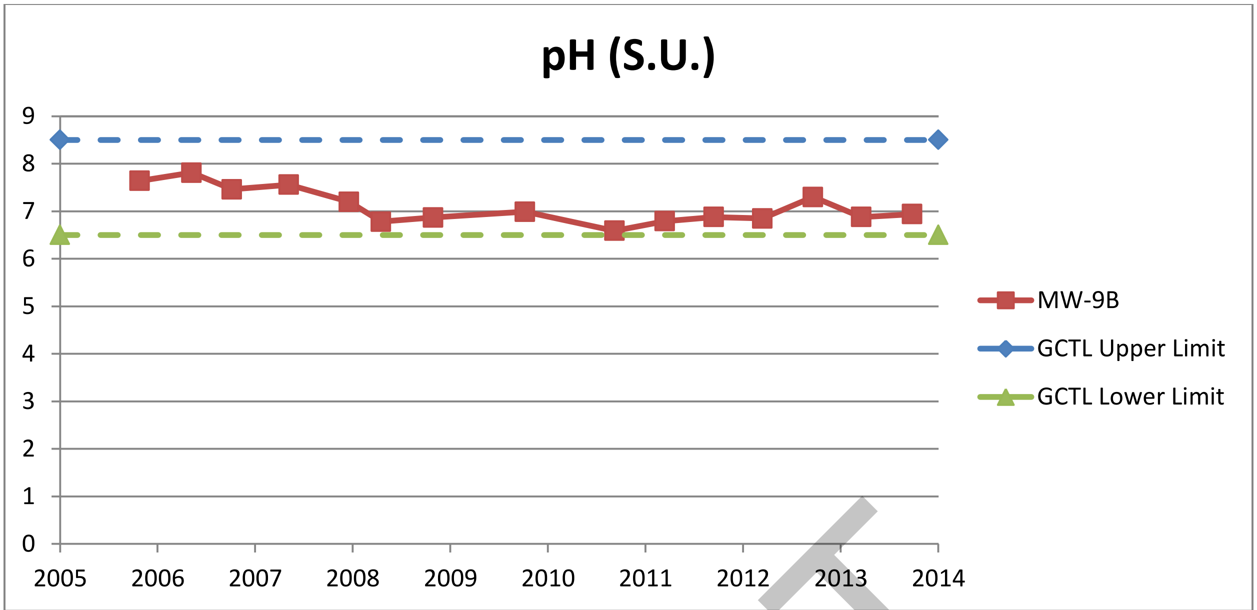

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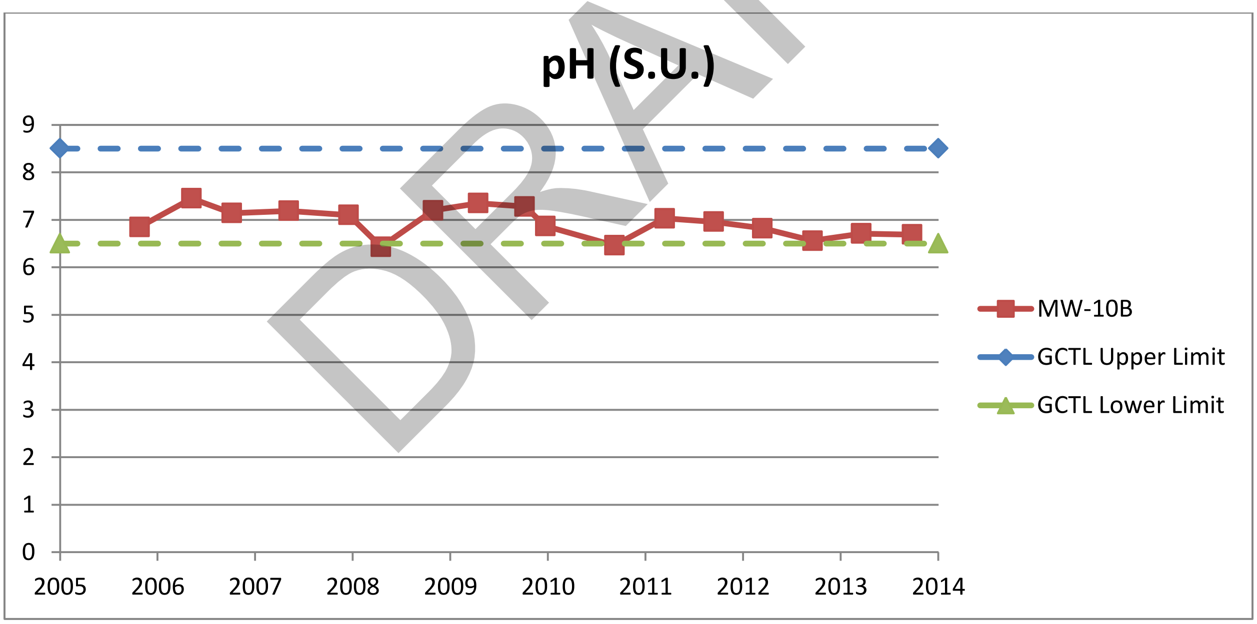

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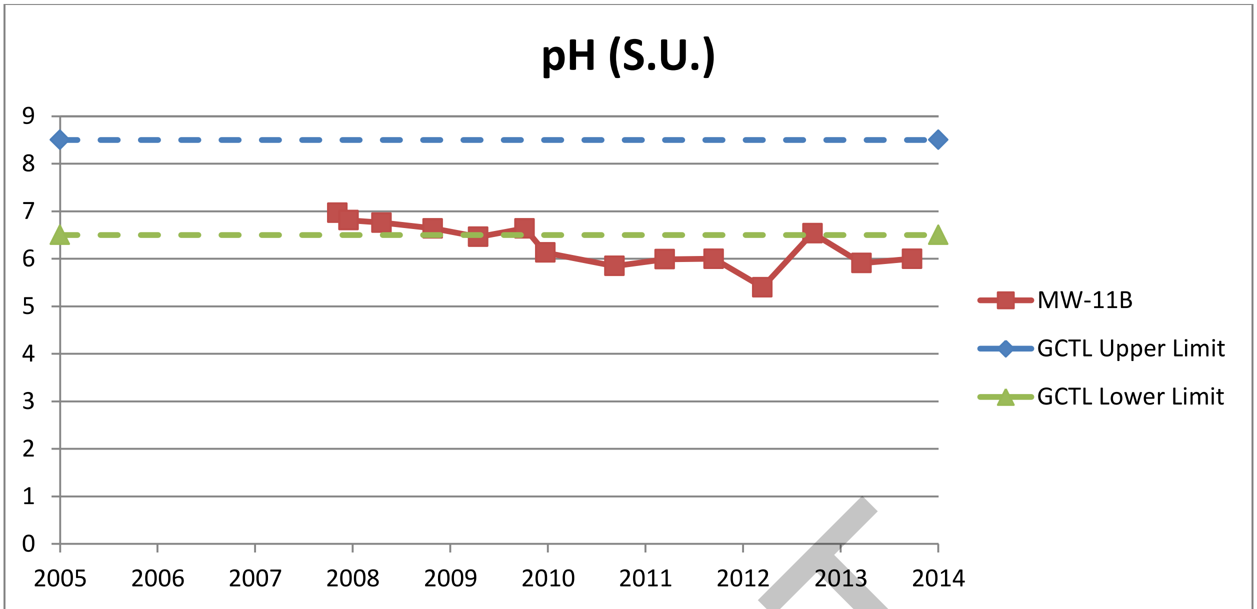


Figure 3.3.2-11

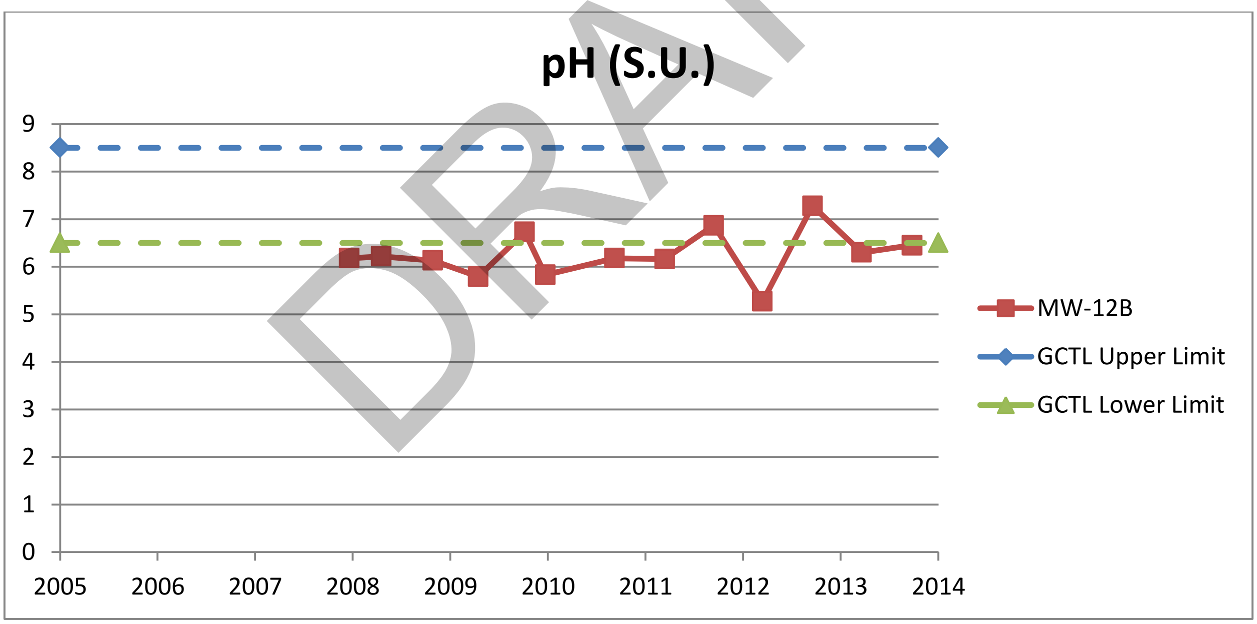


Figure 3.3.2-12

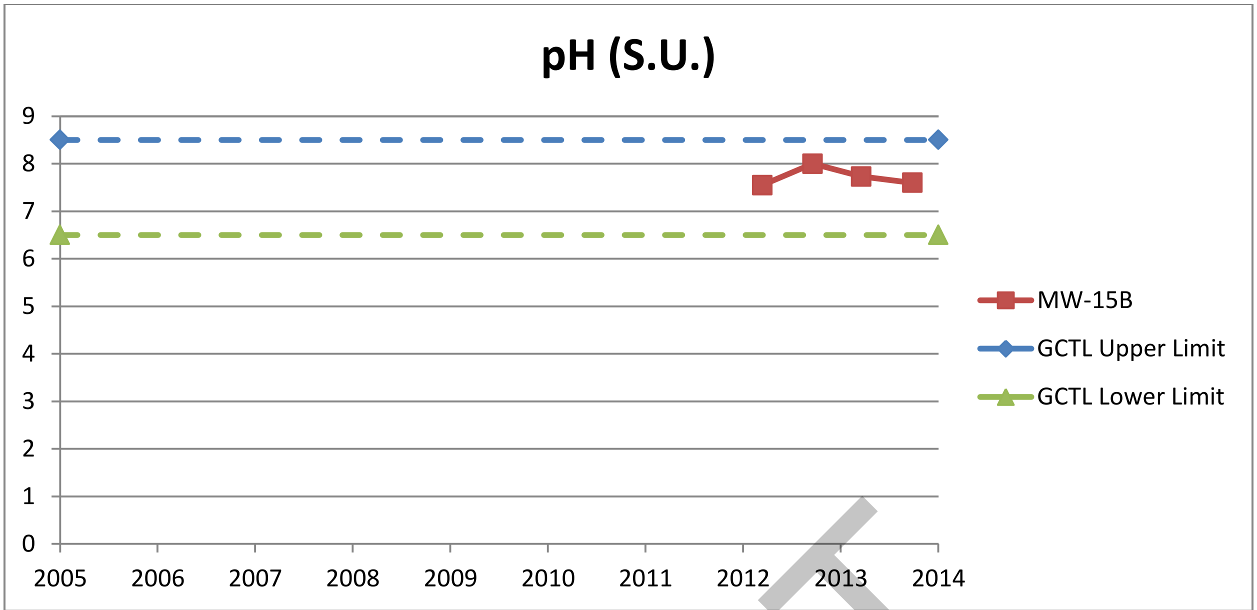


Figure 3.3.2-13

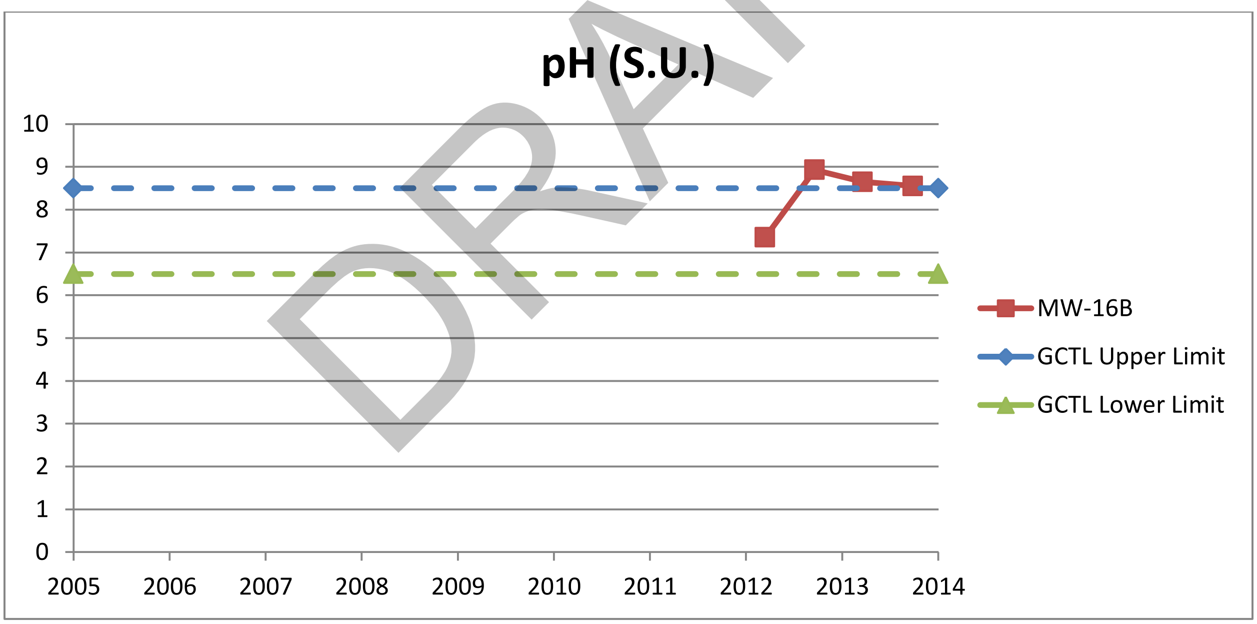


Figure 3.3.2-14

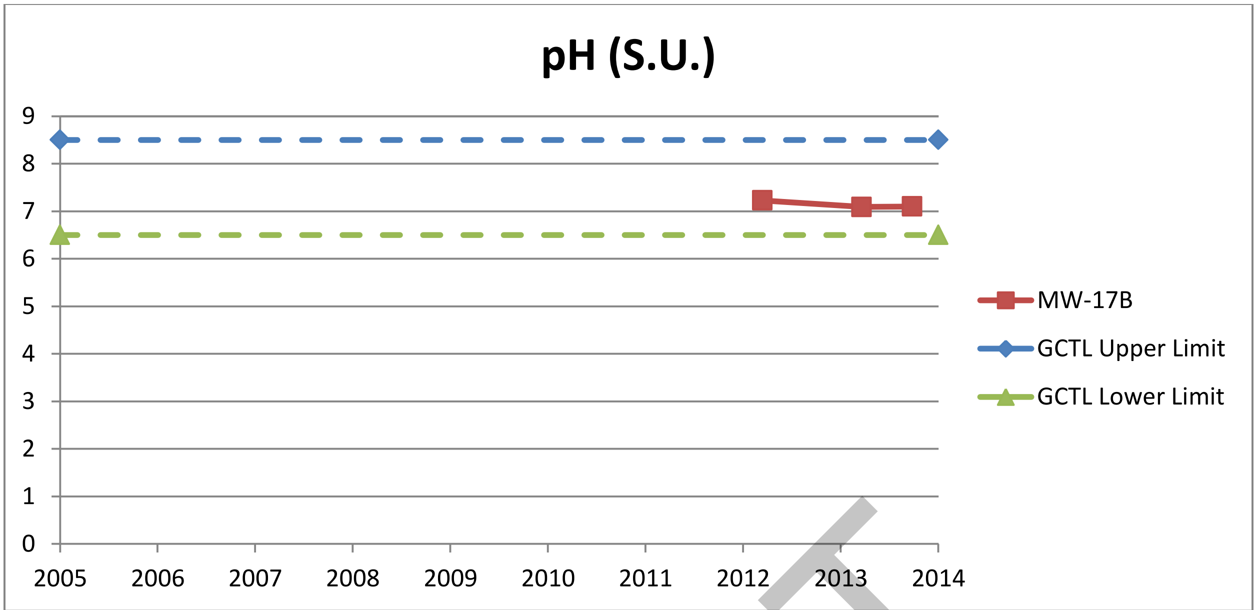


Figure 3.3.2-15

3.3.3 Conductivity

The box-and-whisker plots for conductivity for the Floridan aquifer monitoring wells are shown in Figure 3.3.3-1. Higher conductivity values of monitoring wells MW-8B (193 to 898 µS/cm) and MW-9B (194 to 575 µS/cm) were observed compared to the other Floridan aquifer monitoring wells; however, the conductivities measured in each Floridan aquifer monitoring well were within the range of SWFWMDF background conductivity (100-46,000 µS/cm) of the Floridan aquifer as shown in Table 3.1.

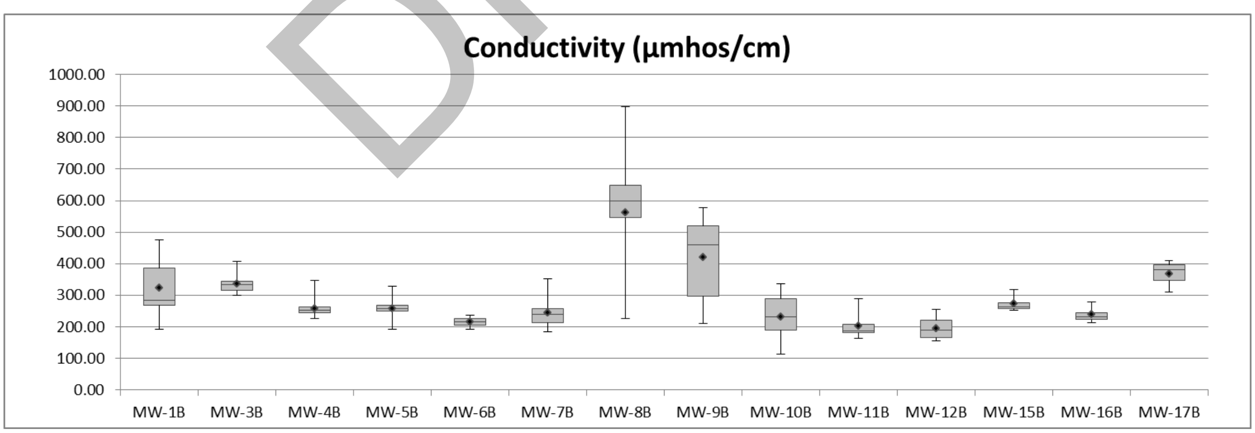
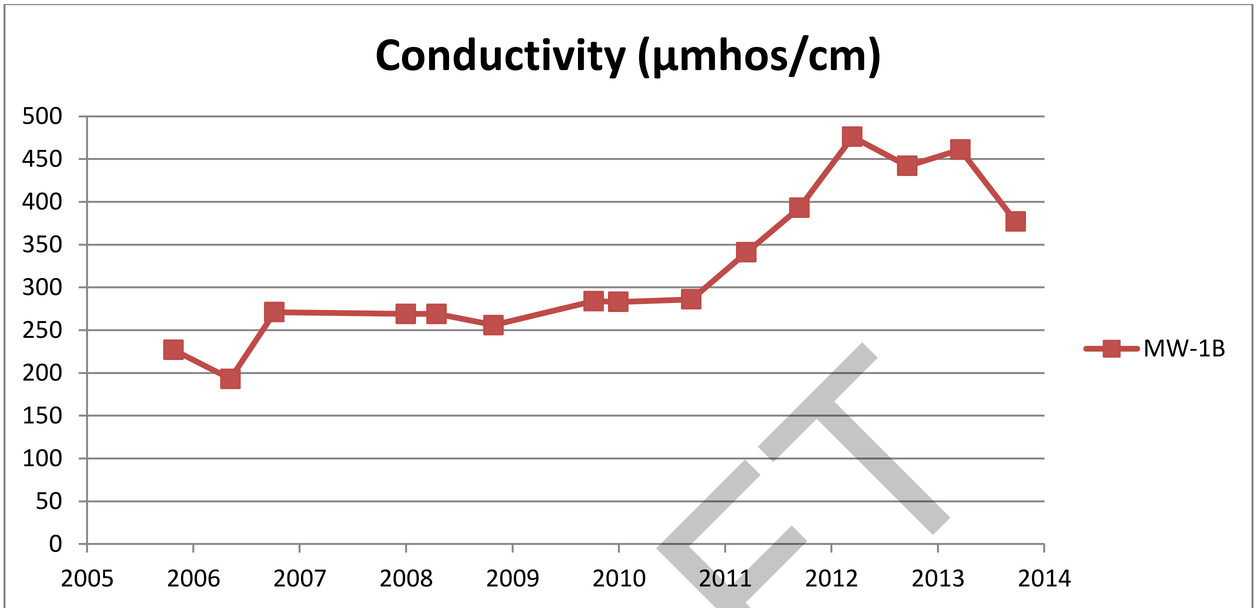


Figure 3.3.3-1

The temporal plots of conductivity for each monitoring well installed in the Floridan aquifer (shown in Figure 3.3.3-2 to Figure 3.3.3-15) were analyzed to identify trends in conductivity variation. Conductivity values generally were within a limited range for each well since the start of monitoring with the exception of wells MW-9B and MW-10B, which showed a slight increasing trend.



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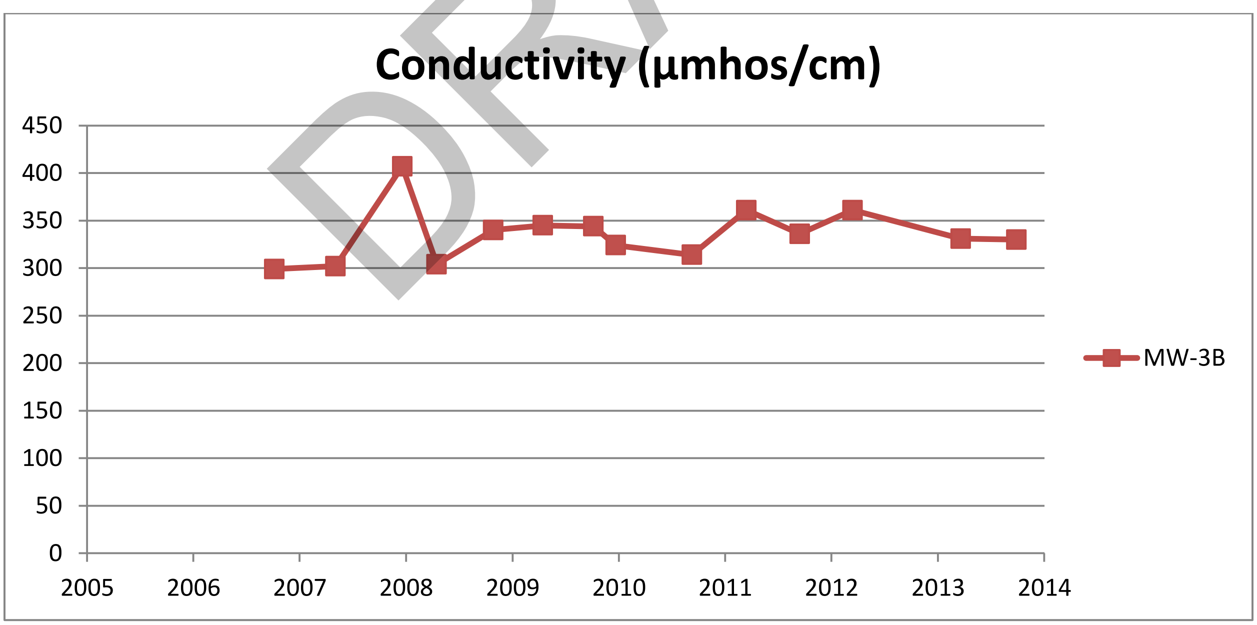


Figure 3.3.3-3

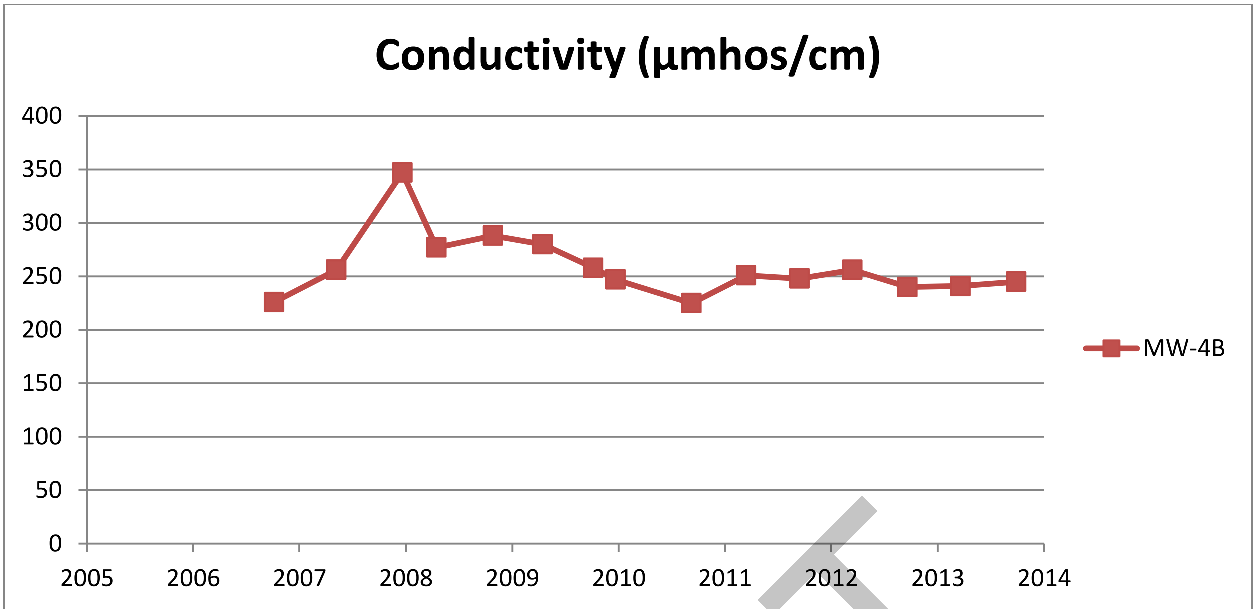
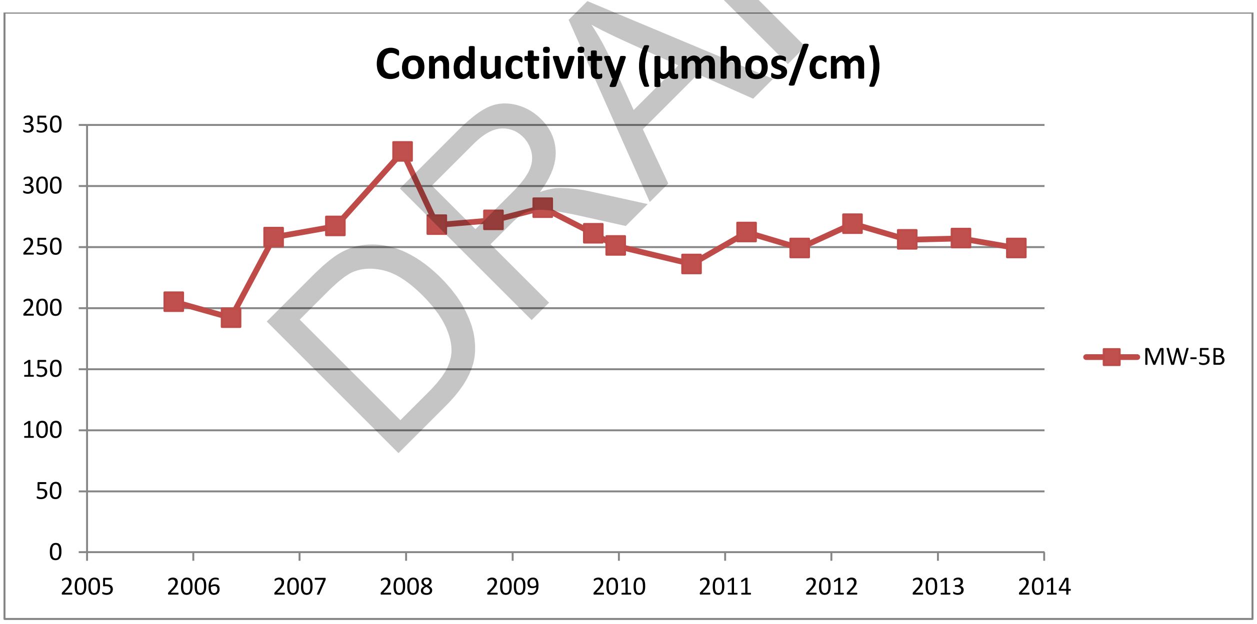


Figure 3.3.3-4



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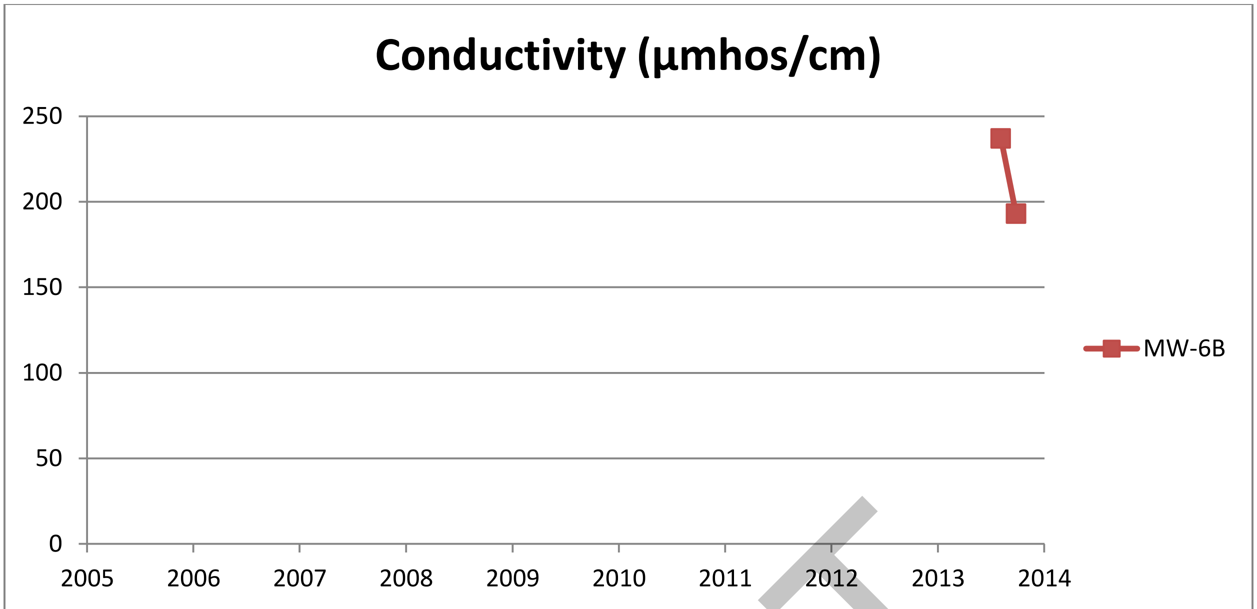

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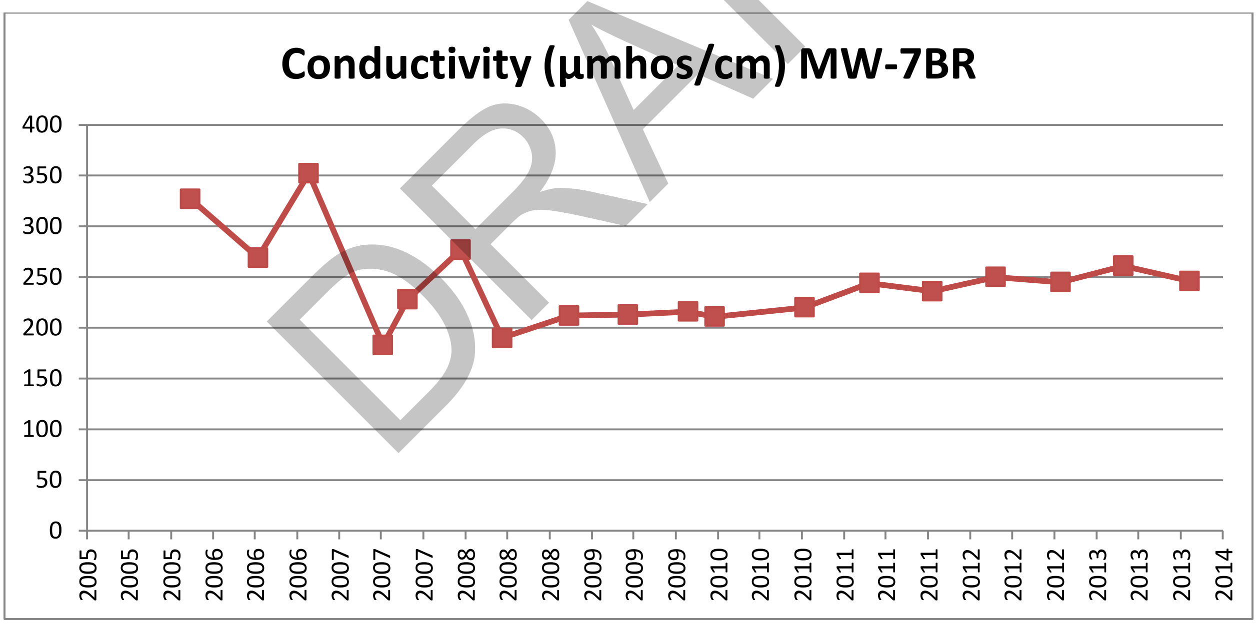

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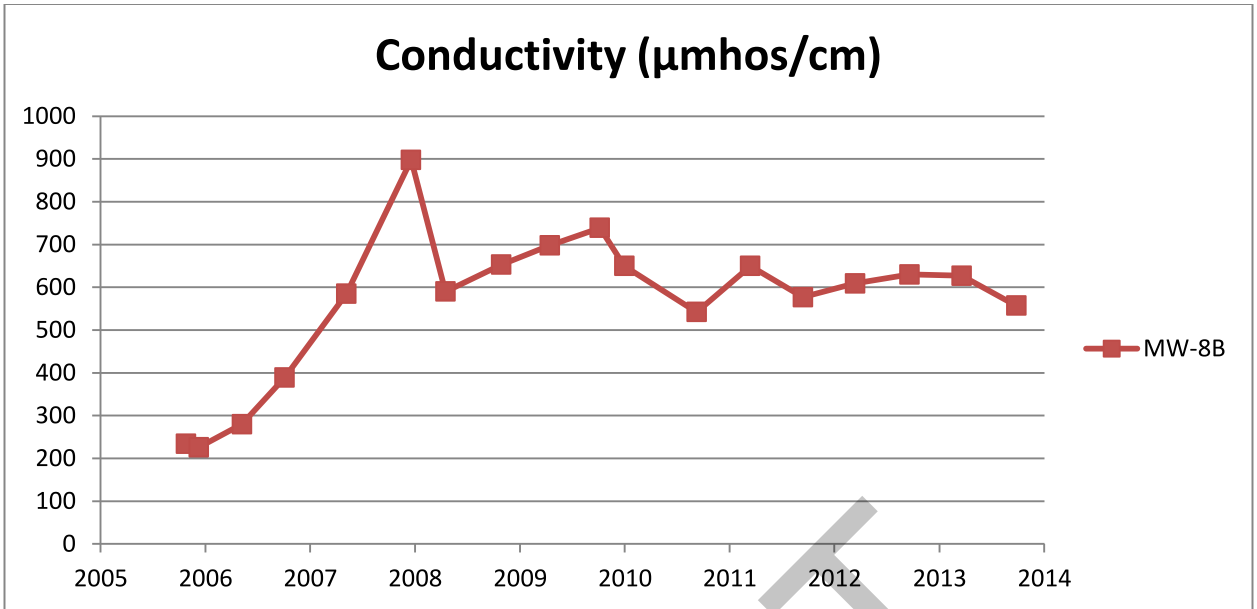

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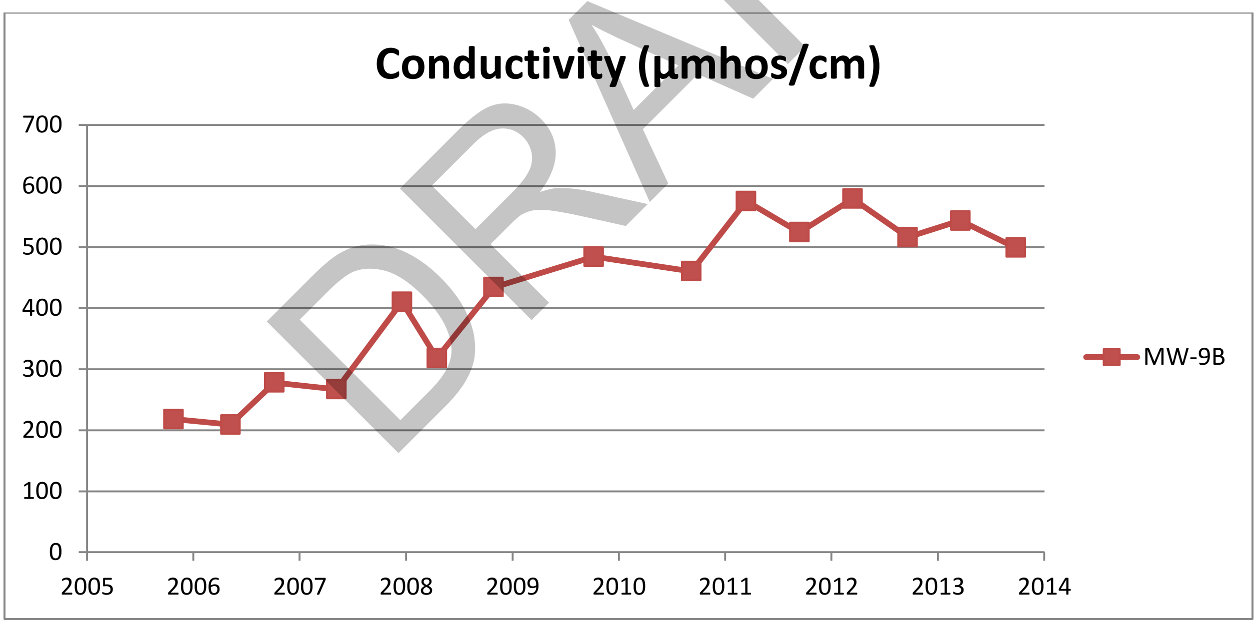

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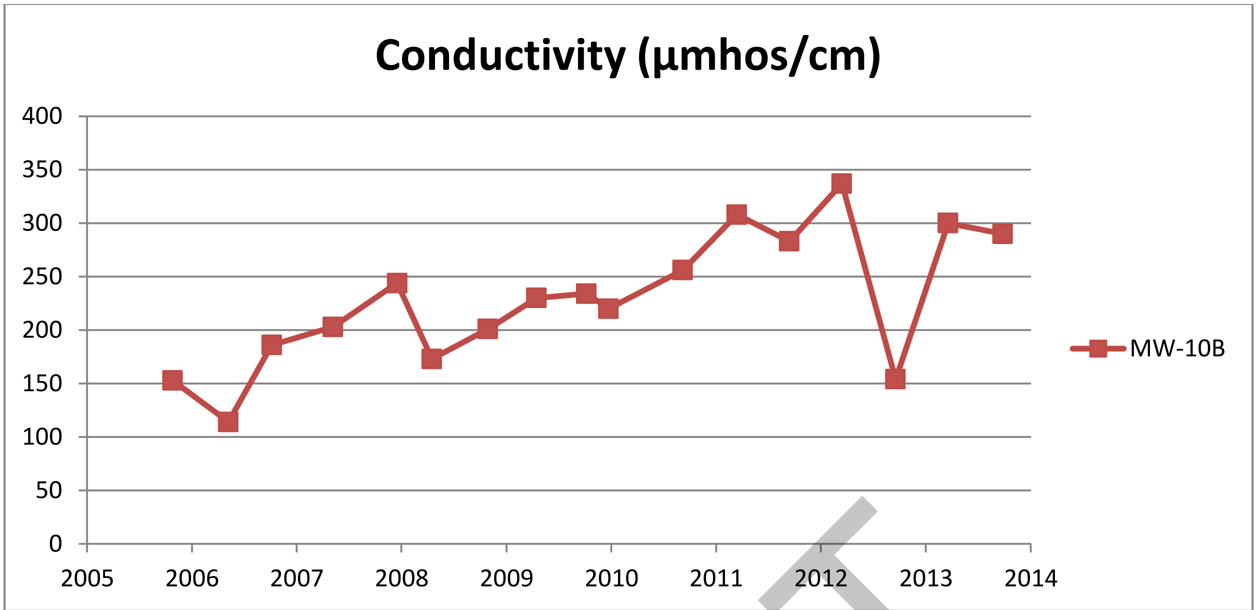

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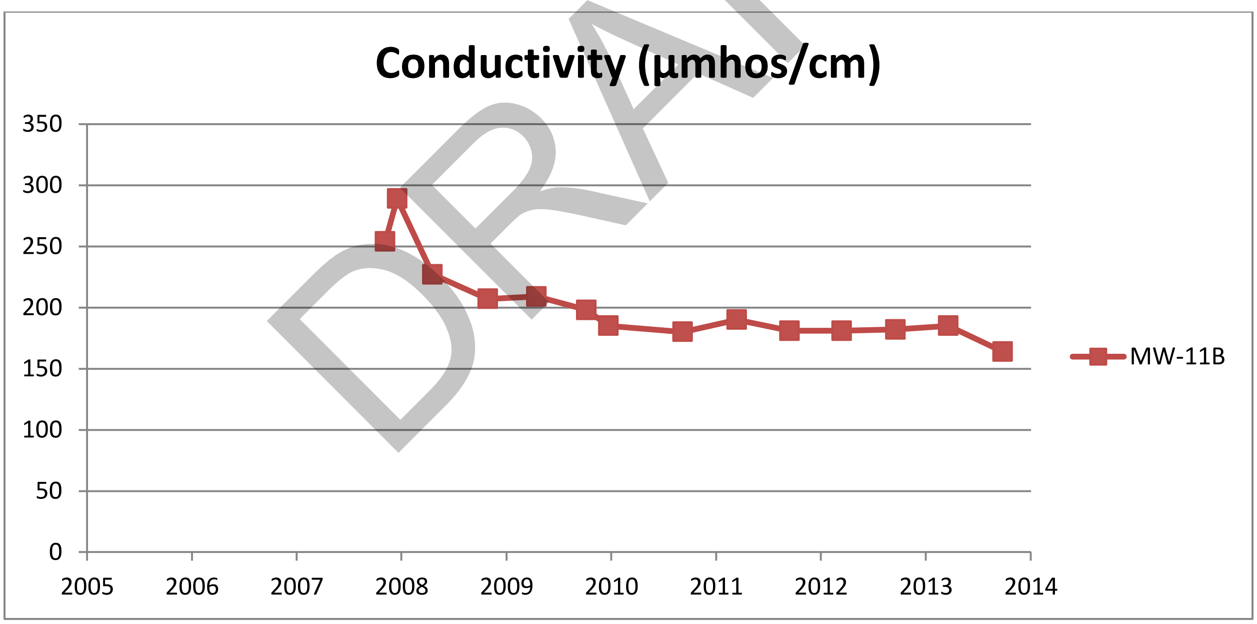

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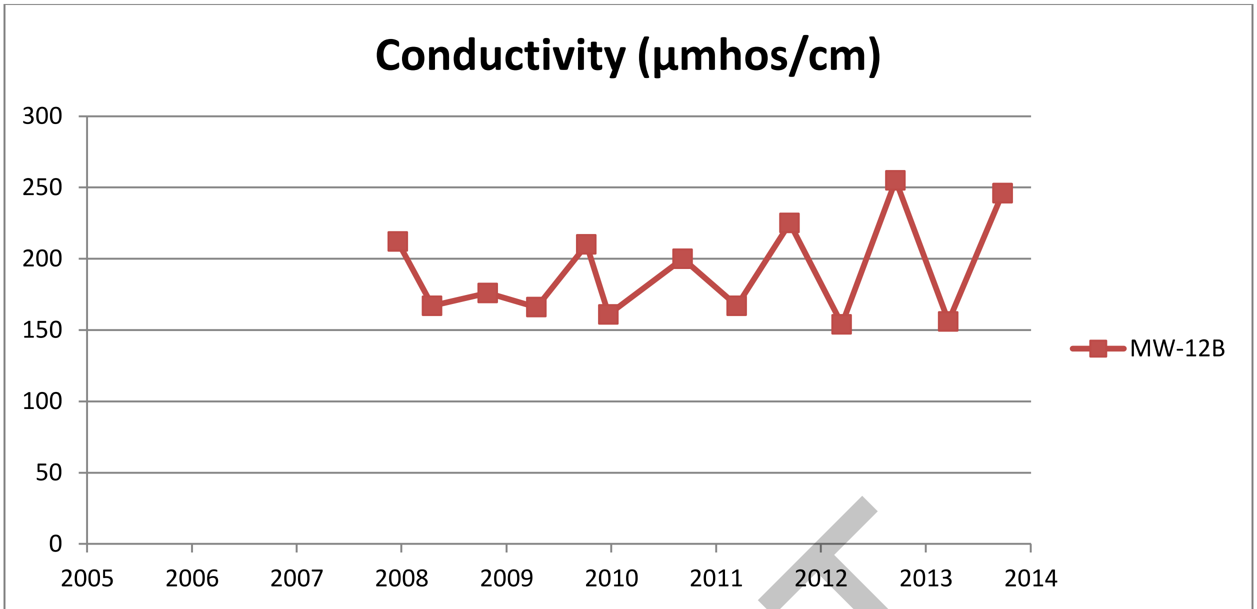

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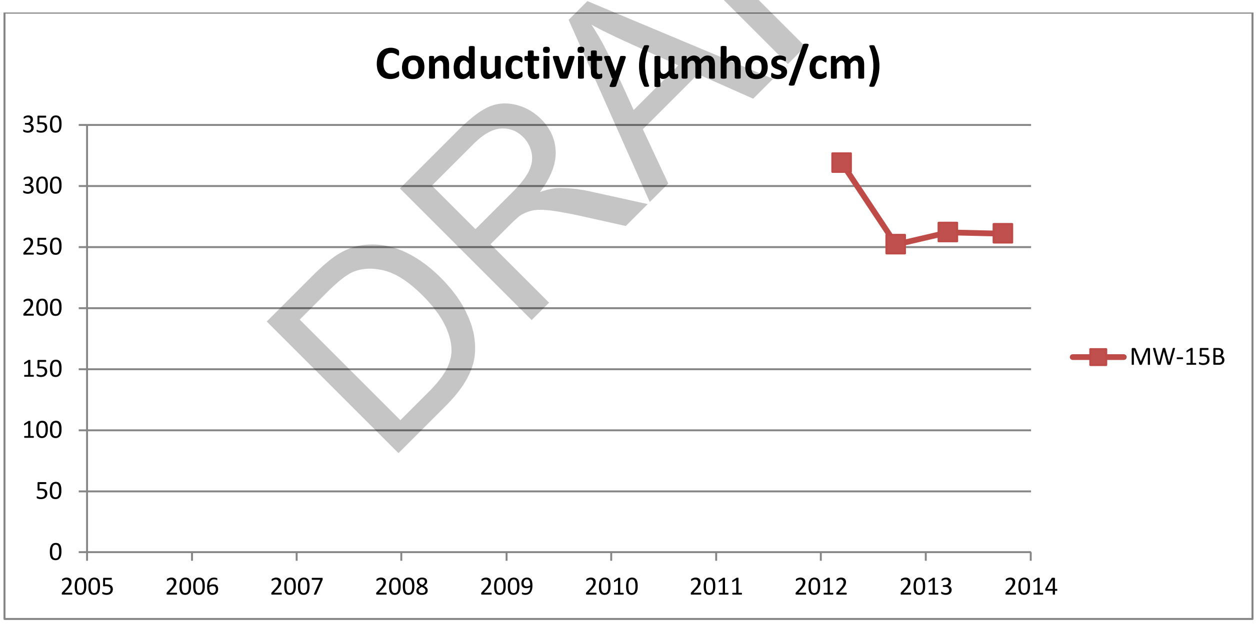

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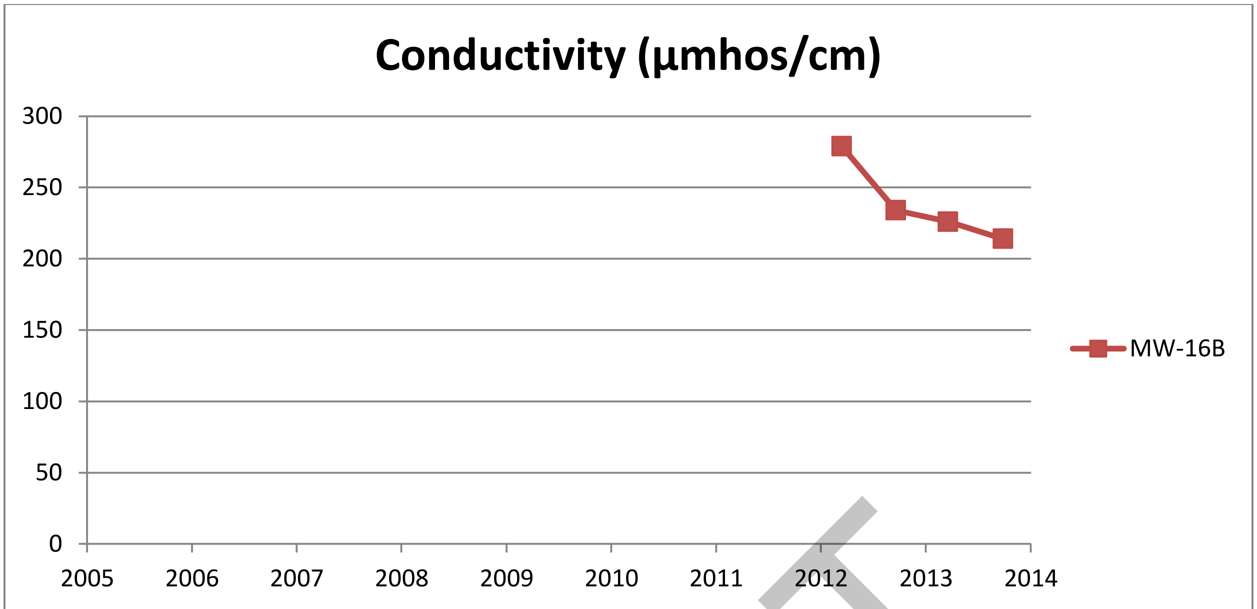

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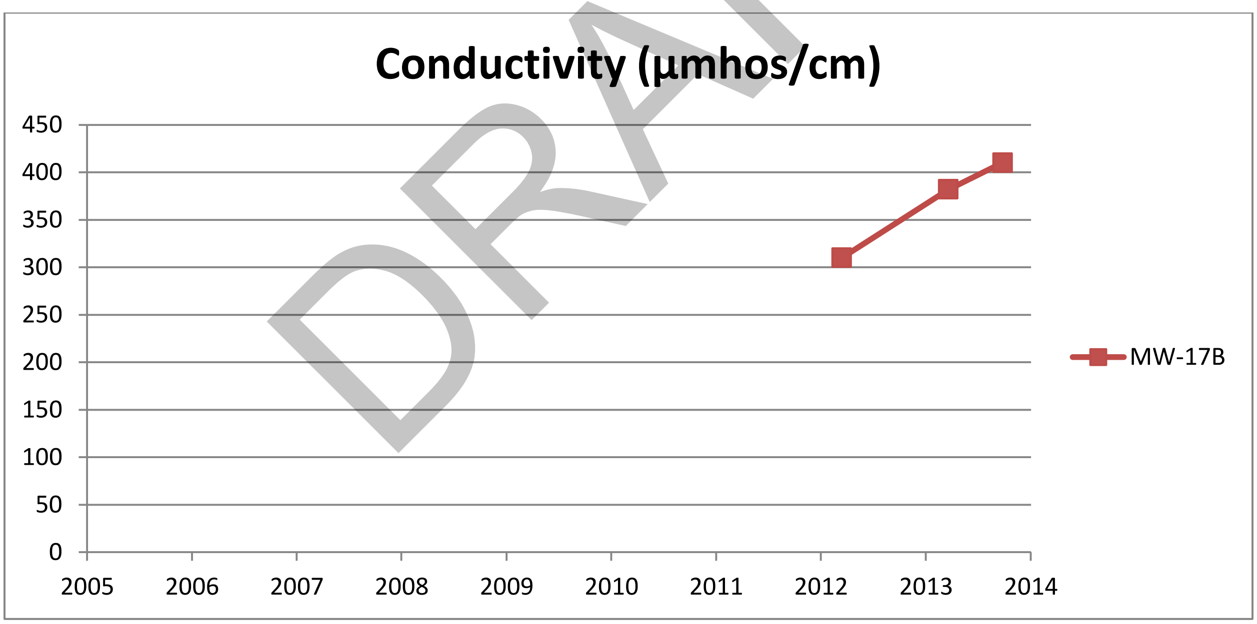


Figure 3.3.3-15

3.3.4 Turbidity

The box-and-whisker plots of turbidity for Floridan aquifer monitoring wells are shown in Figure 3.3.4-1. The turbidity of each well was generally below 20 NTU throughout the monitoring period.

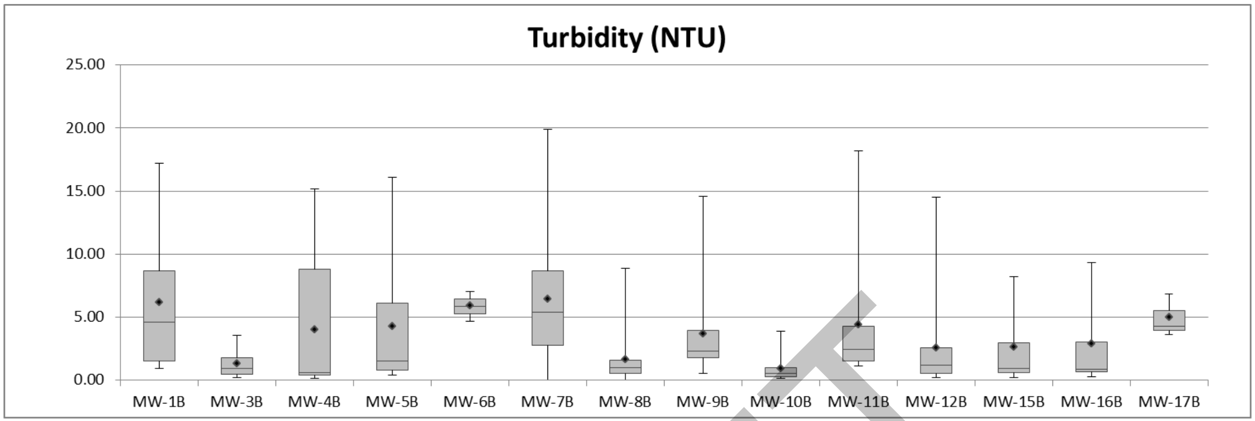


Figure 3.3.4-1

The temporal plots of turbidity for each Floridan aquifer well (shown in Figure 3.3.4-2 to Figure 3.3.4-15) were analyzed to identify trends in turbidity measurements. In general, turbidity values remained constant or varied within a limited range (0 to 23.5 NTU) for each well since the start of monitoring. No increasing or decreasing trends were apparent from evaluating the temporal plots for turbidity.

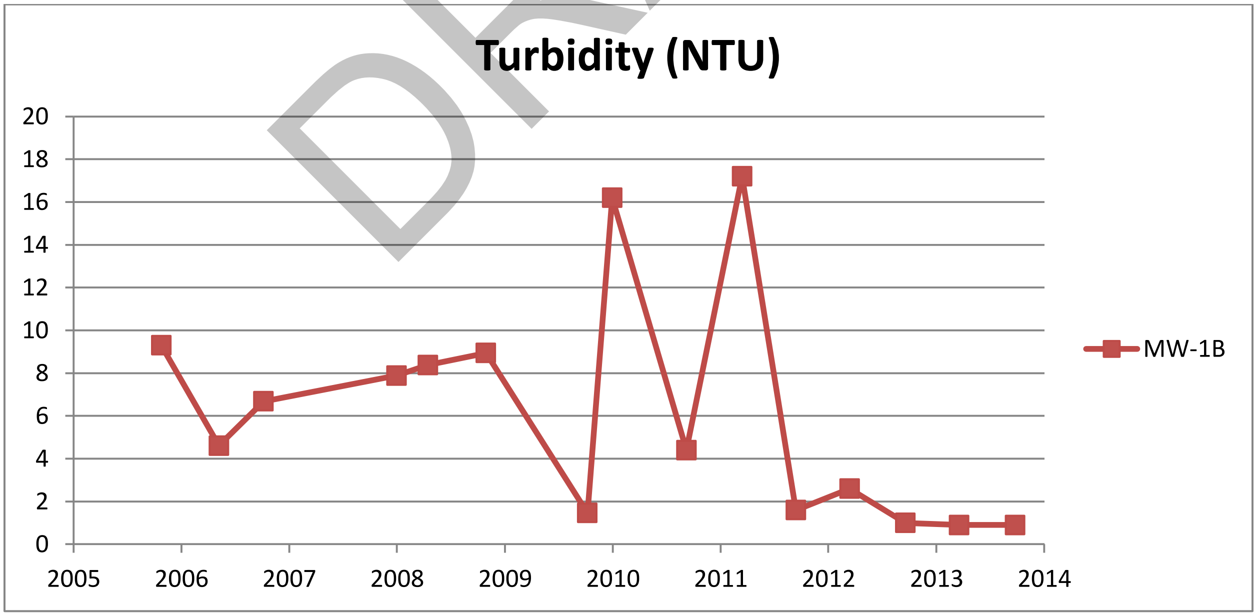


Figure 3.3.4-2

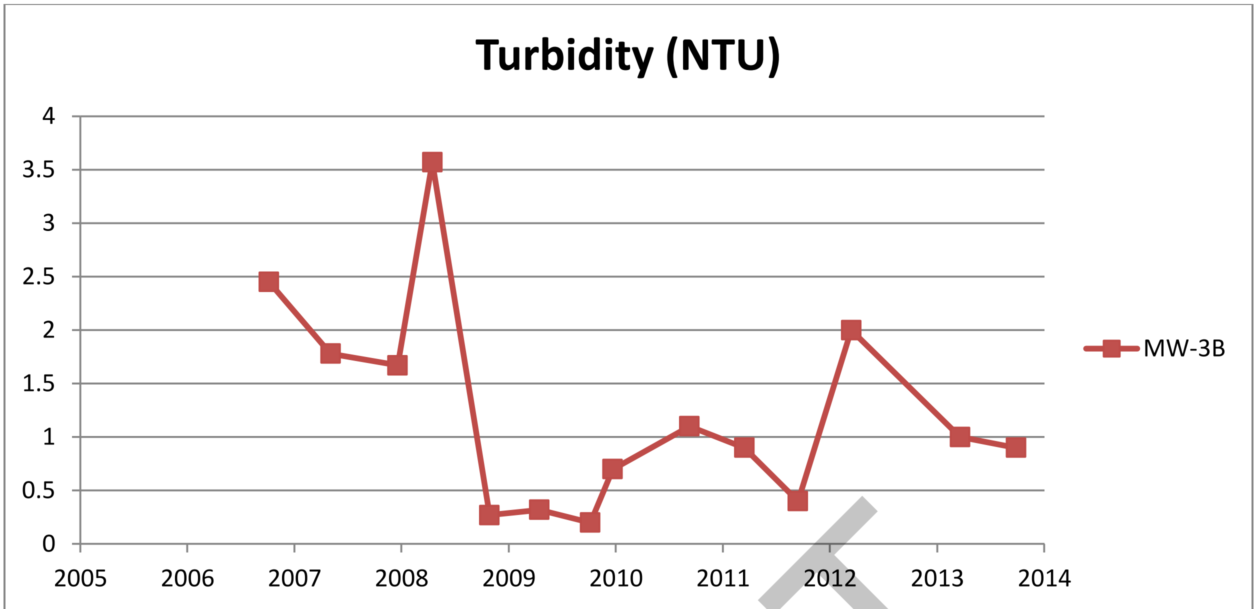


Figure 3.3.4-3

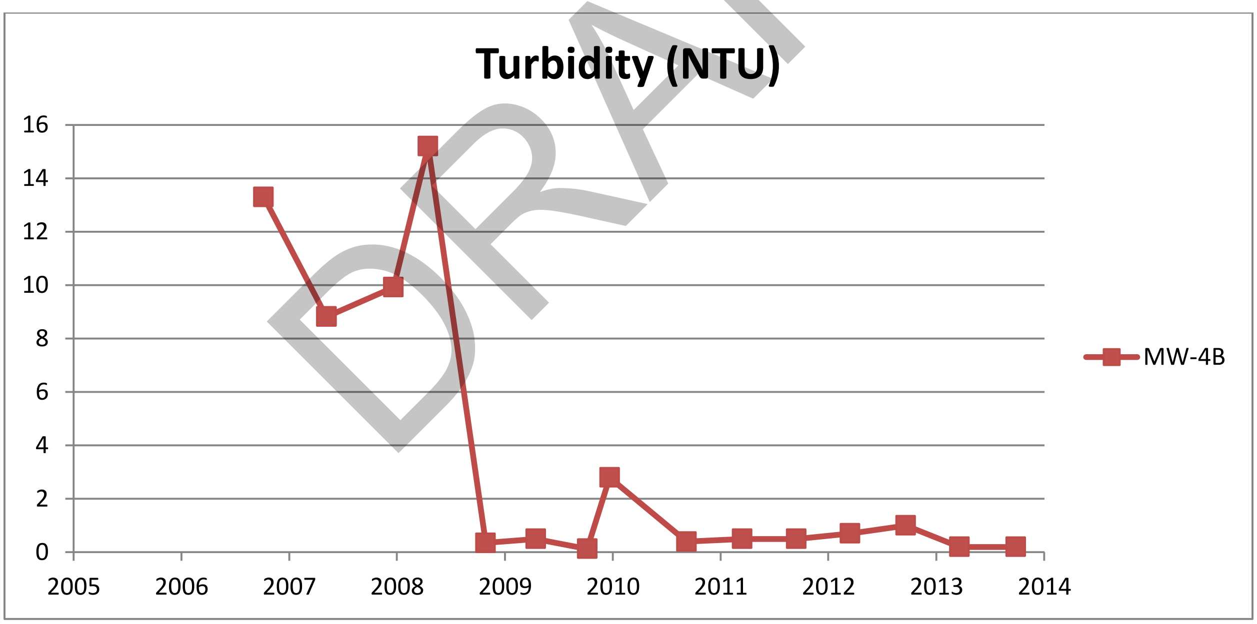
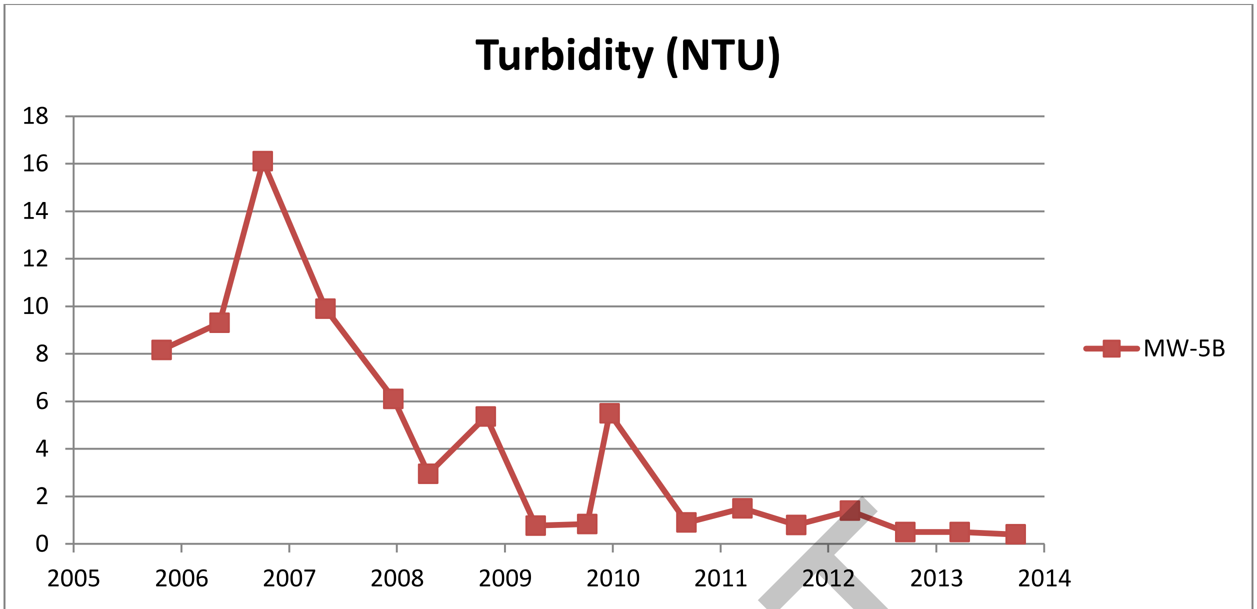


Figure 3.3.4-4



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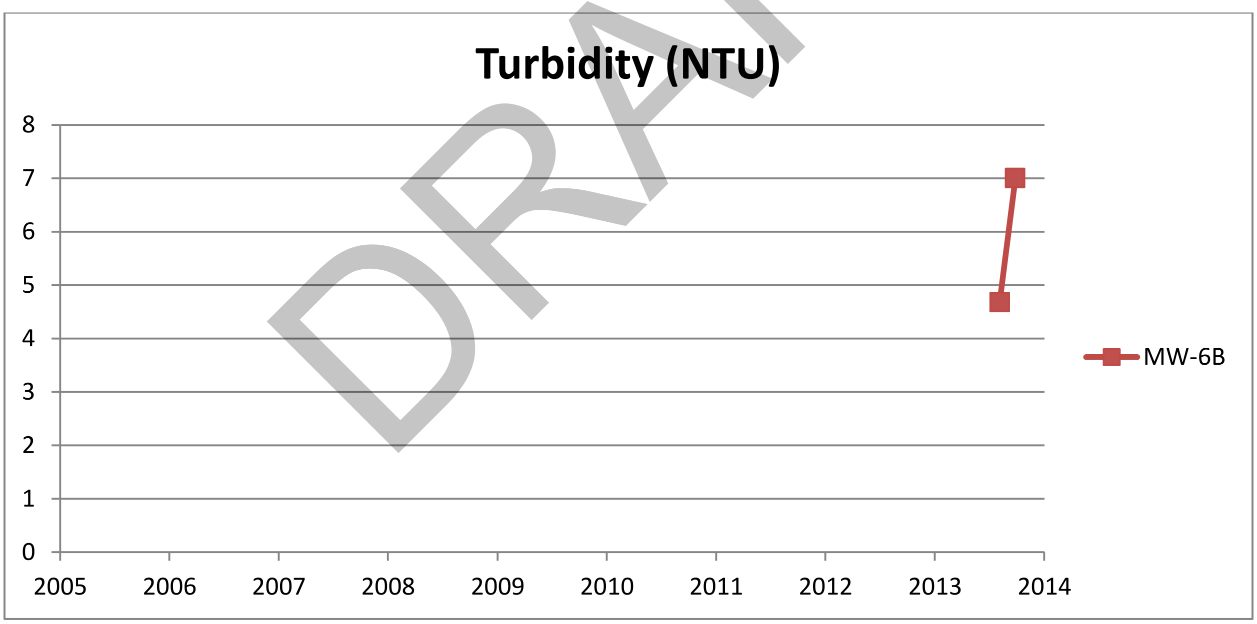

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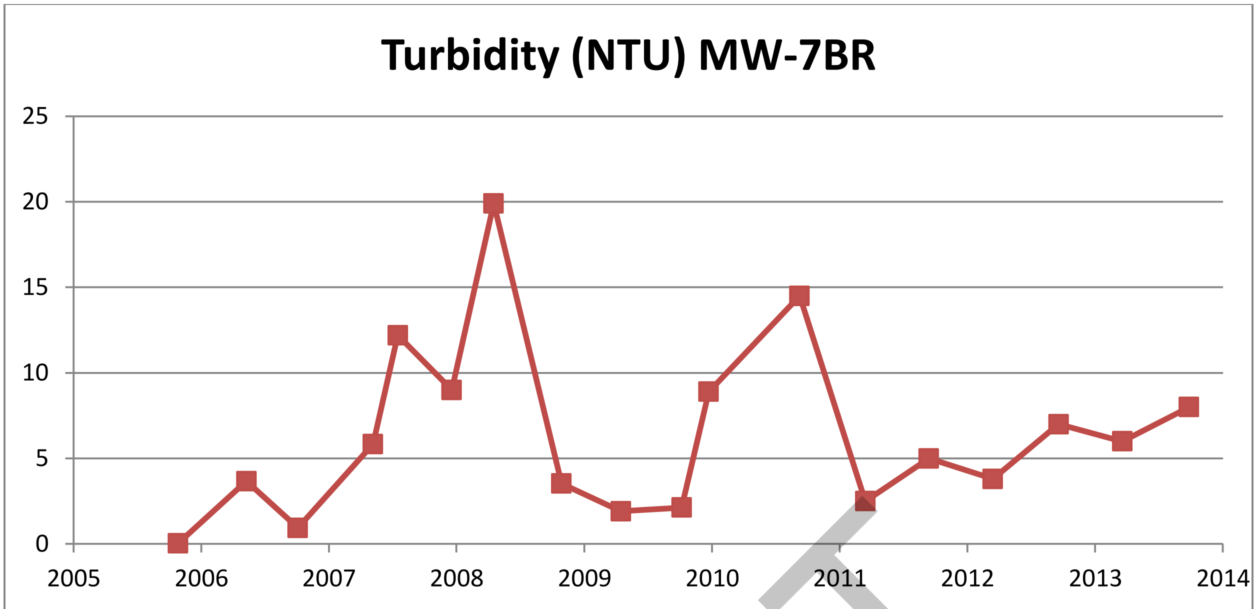
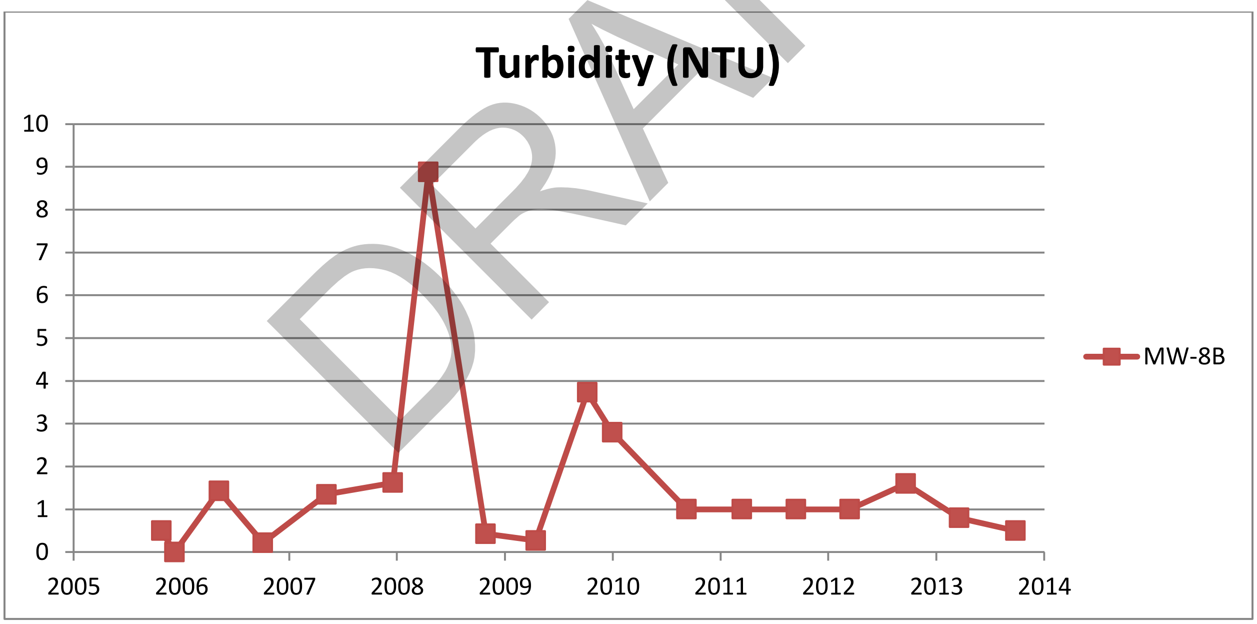


Figure 3.3.4-7



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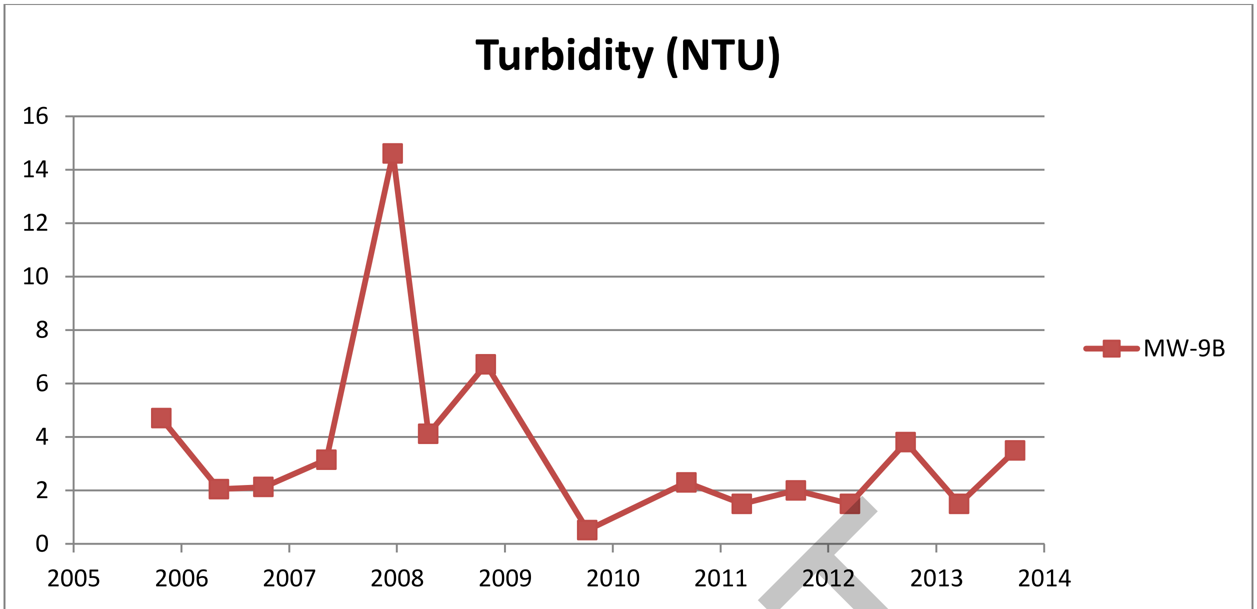
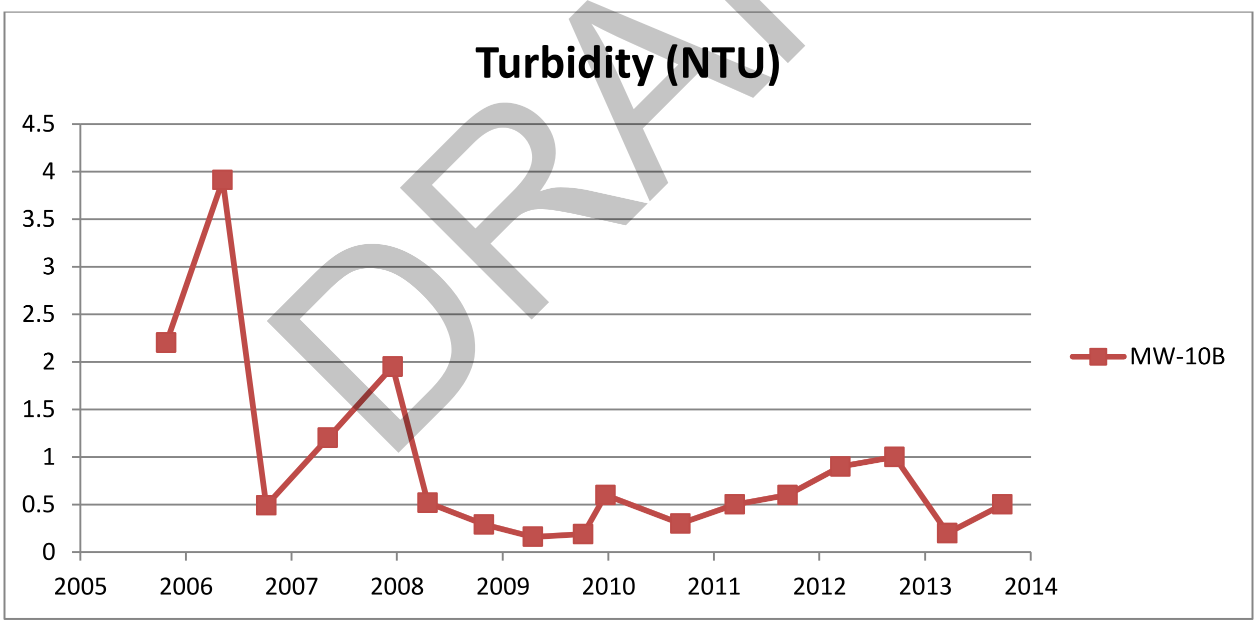


Figure 3.3.4-9



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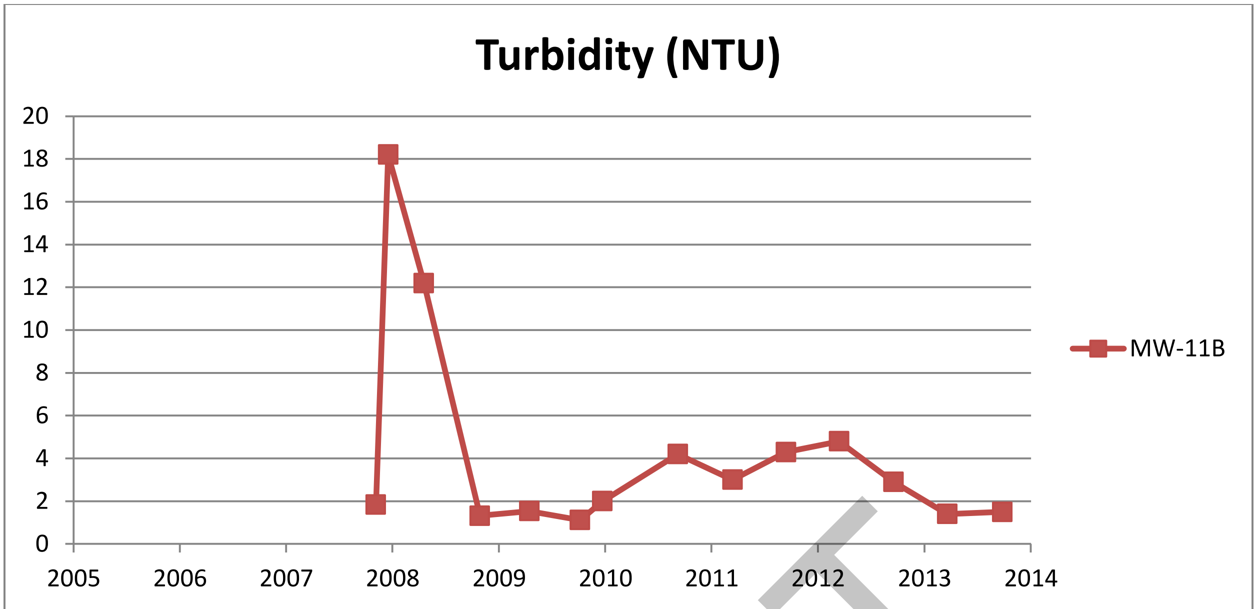

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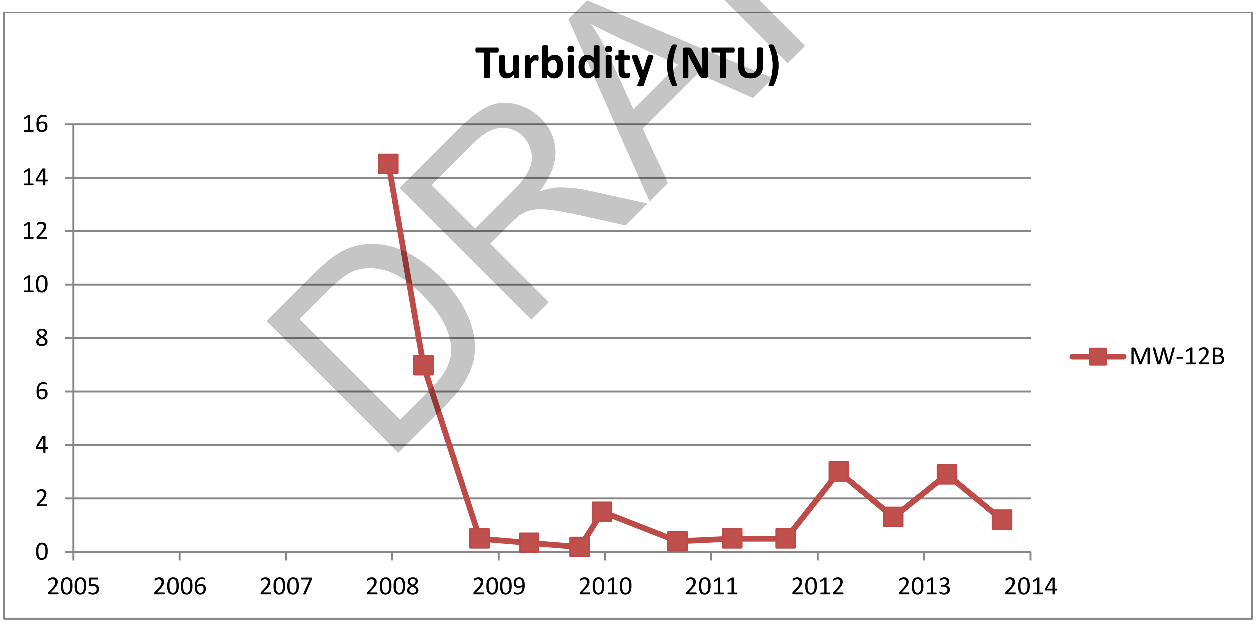

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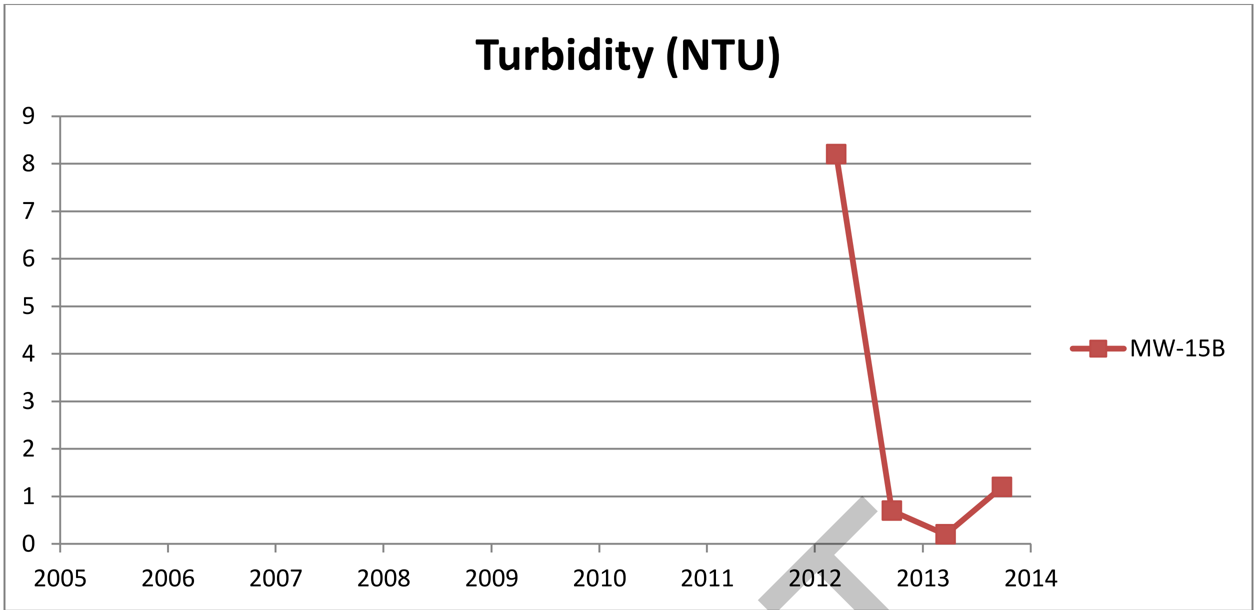

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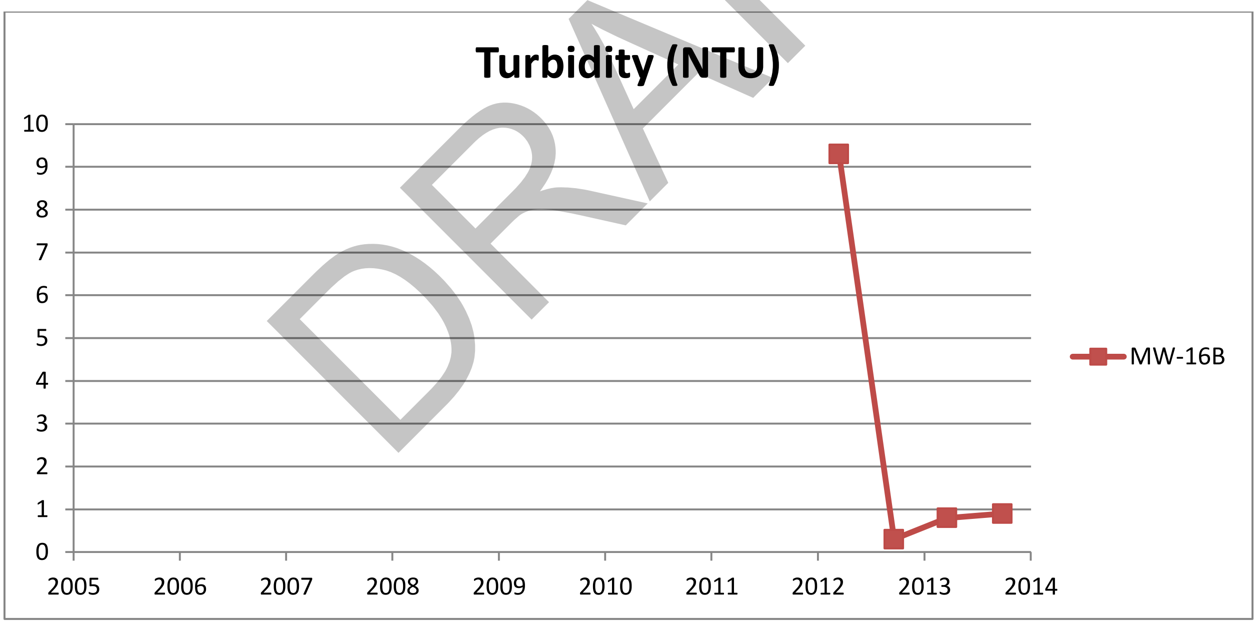

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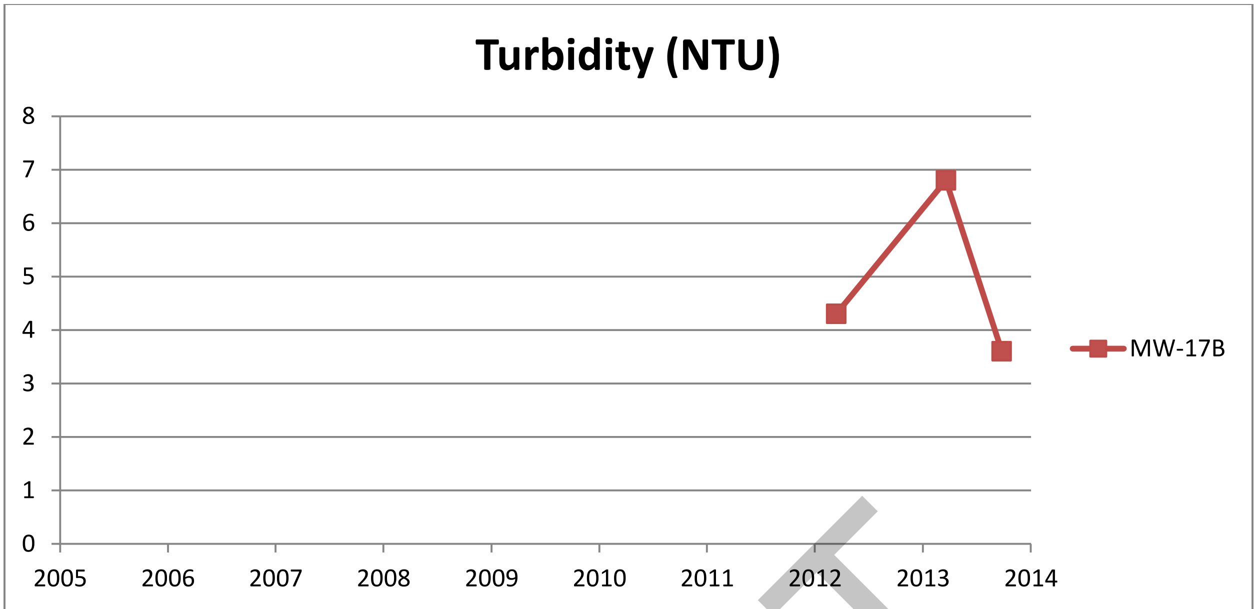


Figure 3.3.4-15

3.3.5 Dissolved Oxygen

The box and whisker plots for dissolved oxygen for the Floridan aquifer monitoring wells are provided in Figure 3.3.5-1. The temporal plots of DO for each Floridan aquifer monitoring well (shown in Figure 3.3.5-2 to Figure 3.3.5-15) were analyzed to identify trends in DO levels. DO values exhibited either a variable or slightly decreasing trend in the Floridan aquifer wells ranging from 0.11 to 8.03 mg/L.

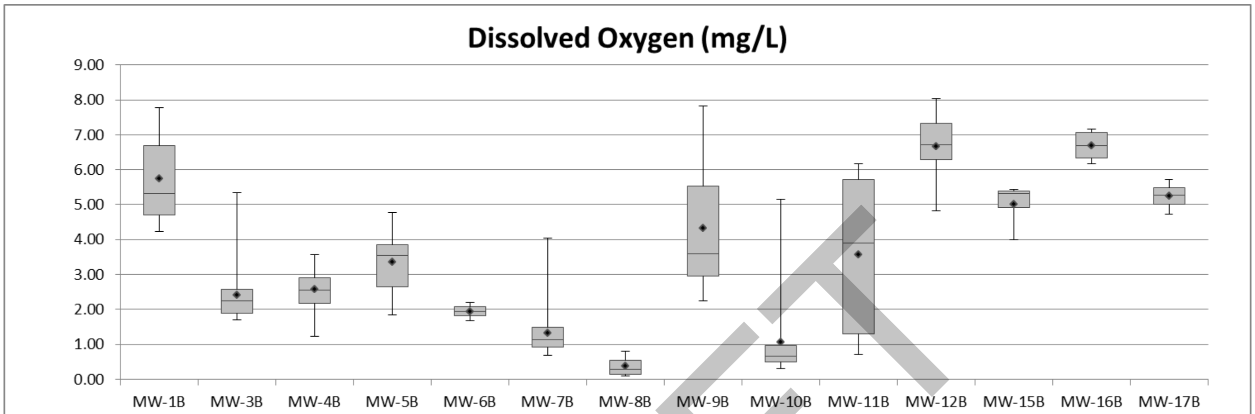


Figure 3.3.5-1

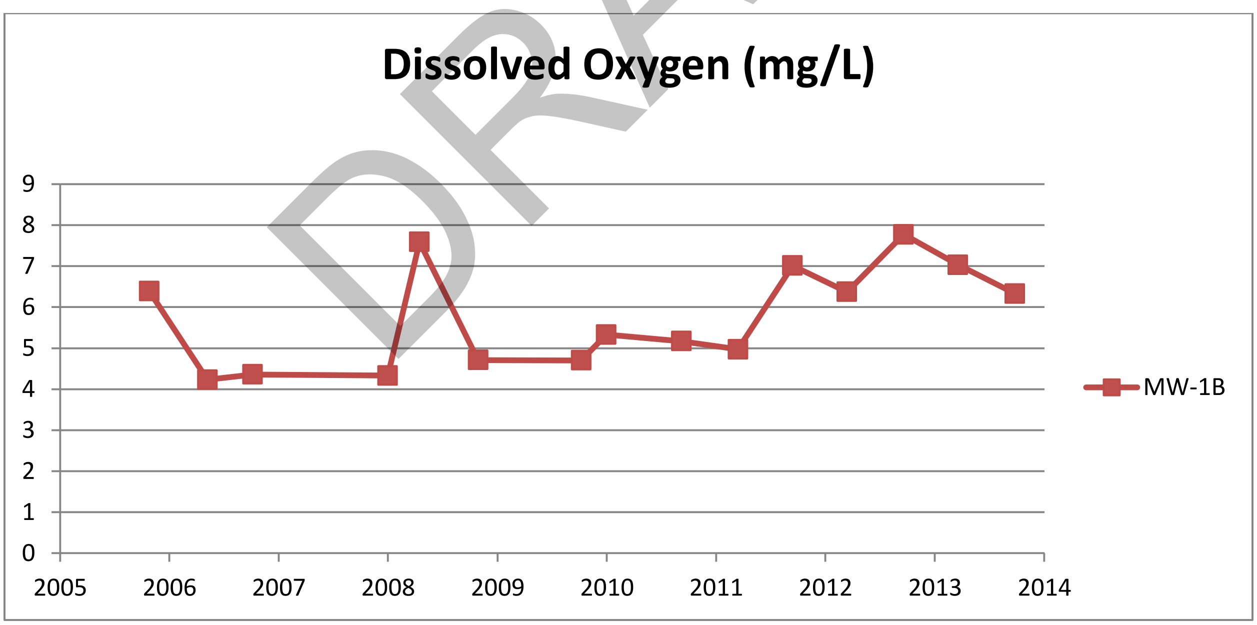
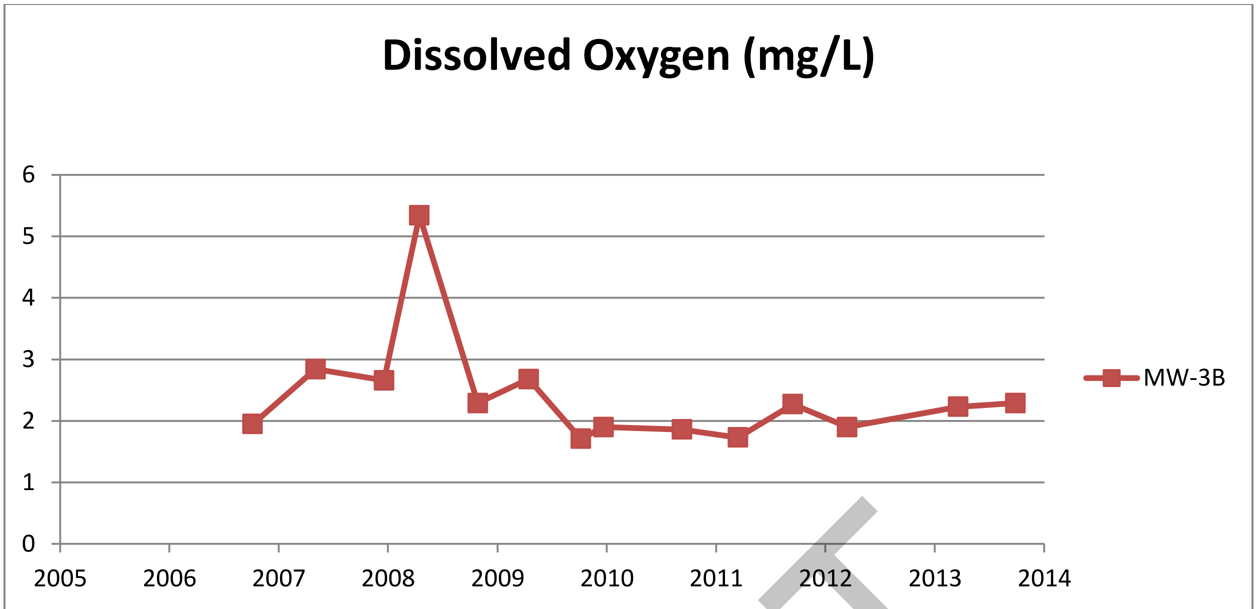


Figure 3.3.5-2



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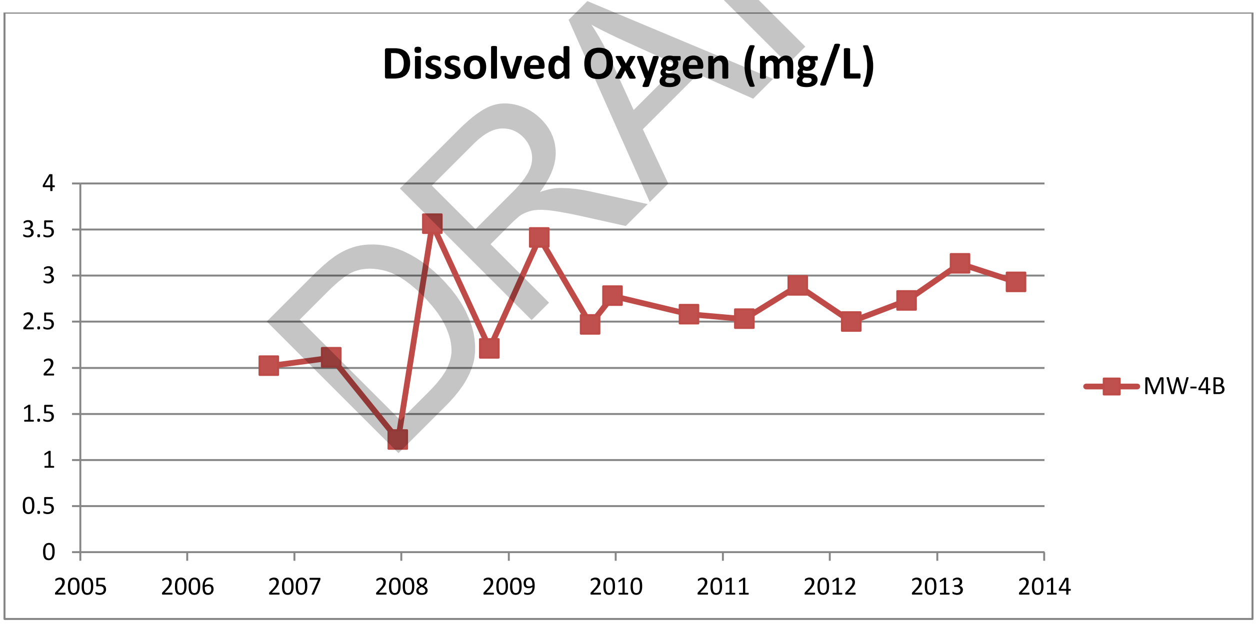

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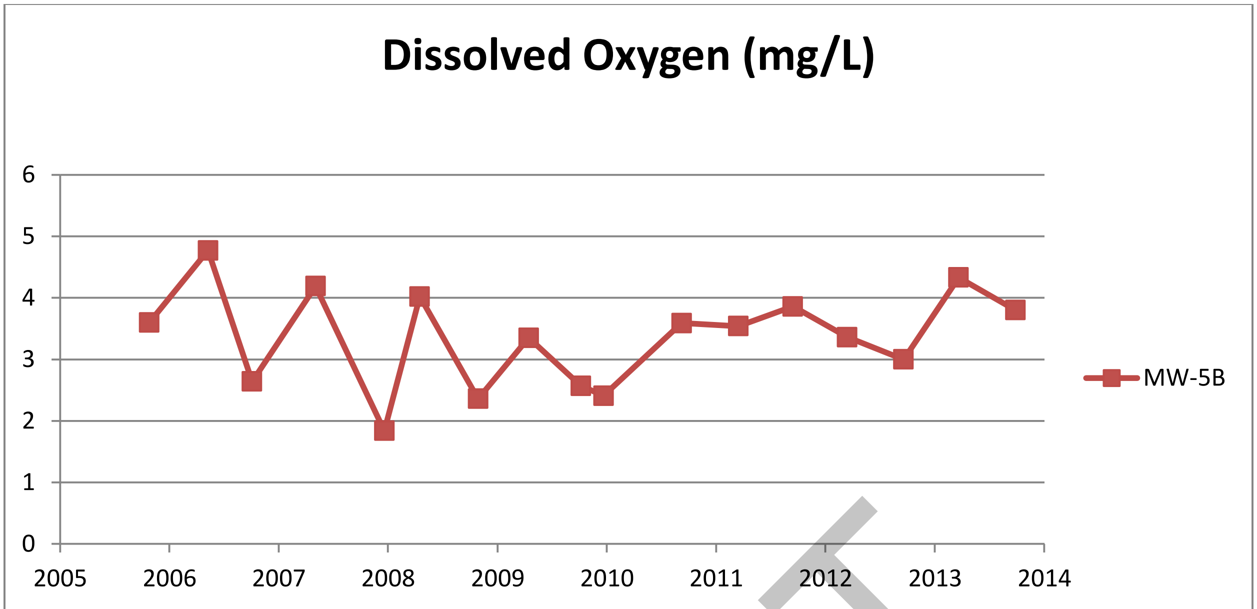


Figure 3.3.5-5

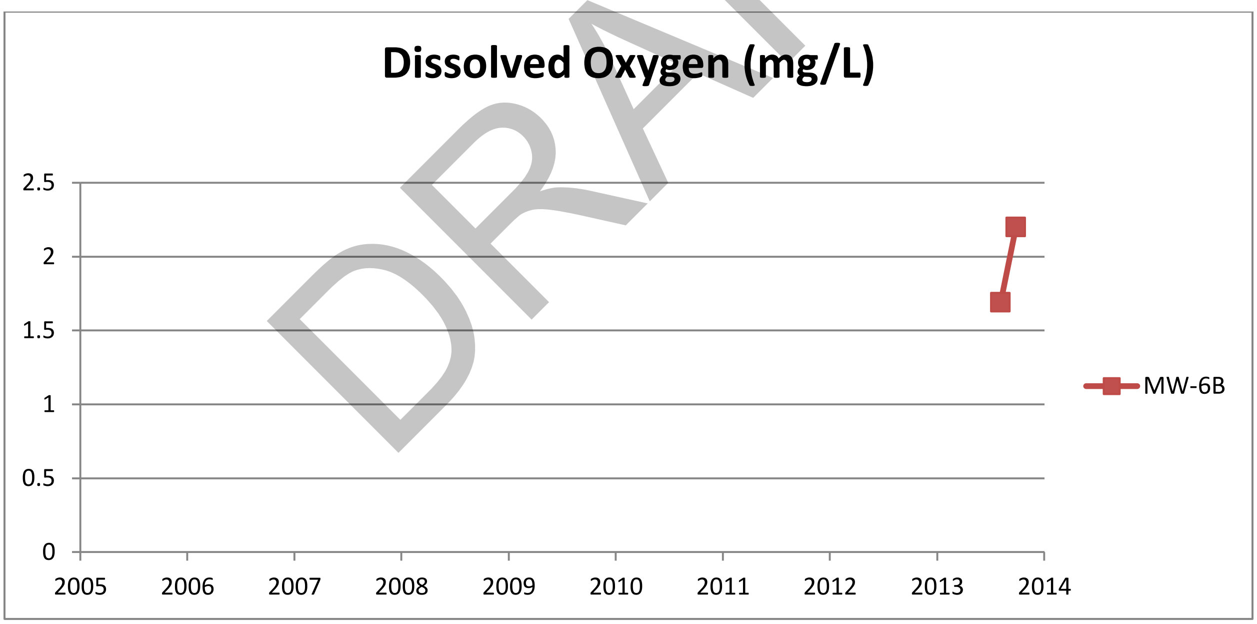


Figure 3.3.5-6

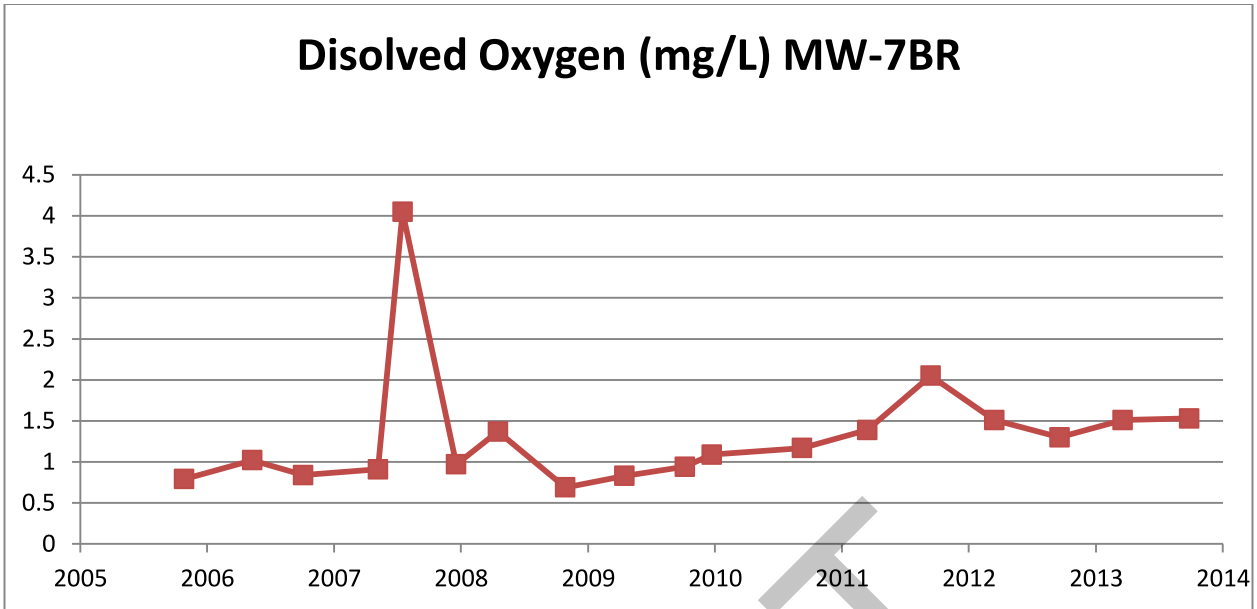


Figure 3.3.5-7

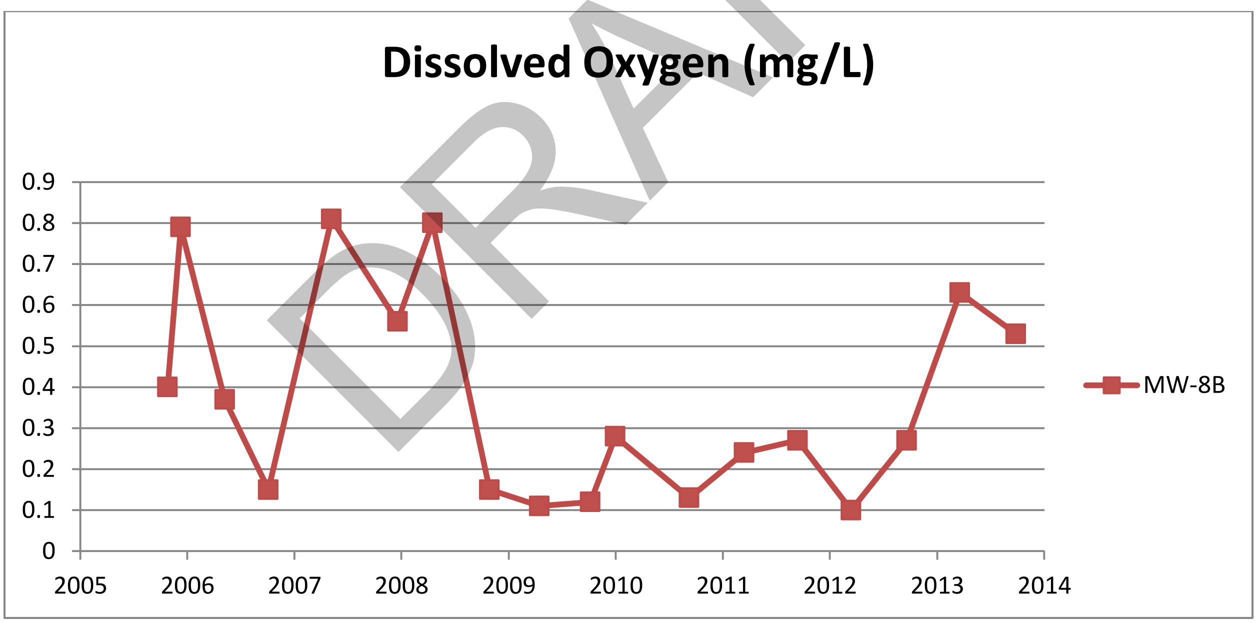
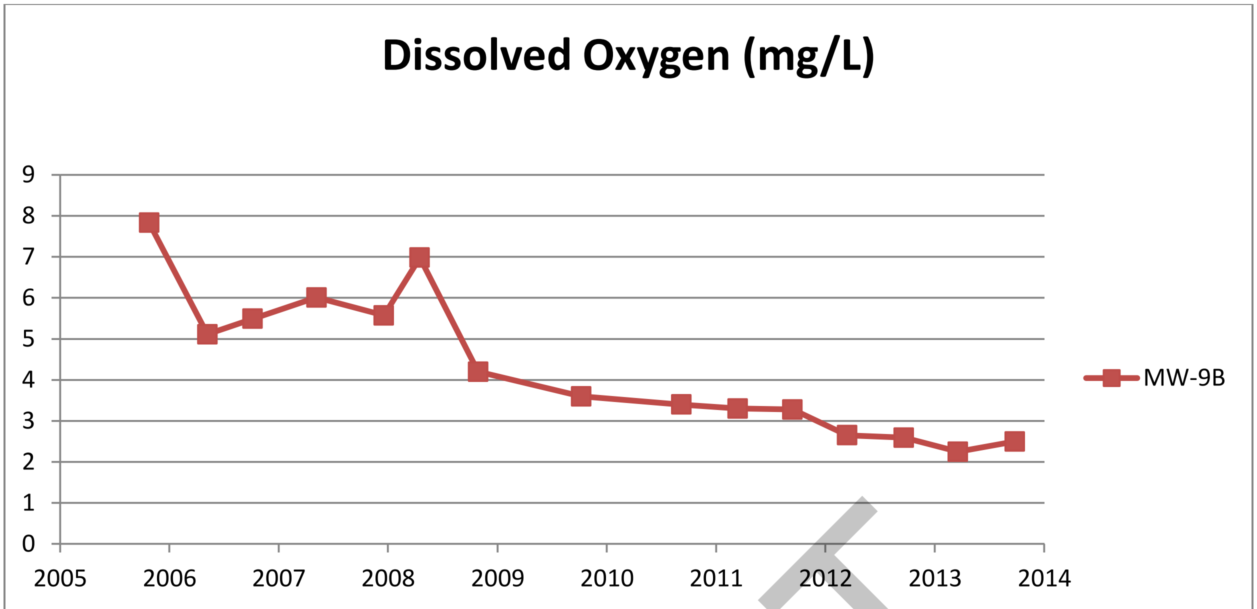


Figure 3.3.5-8



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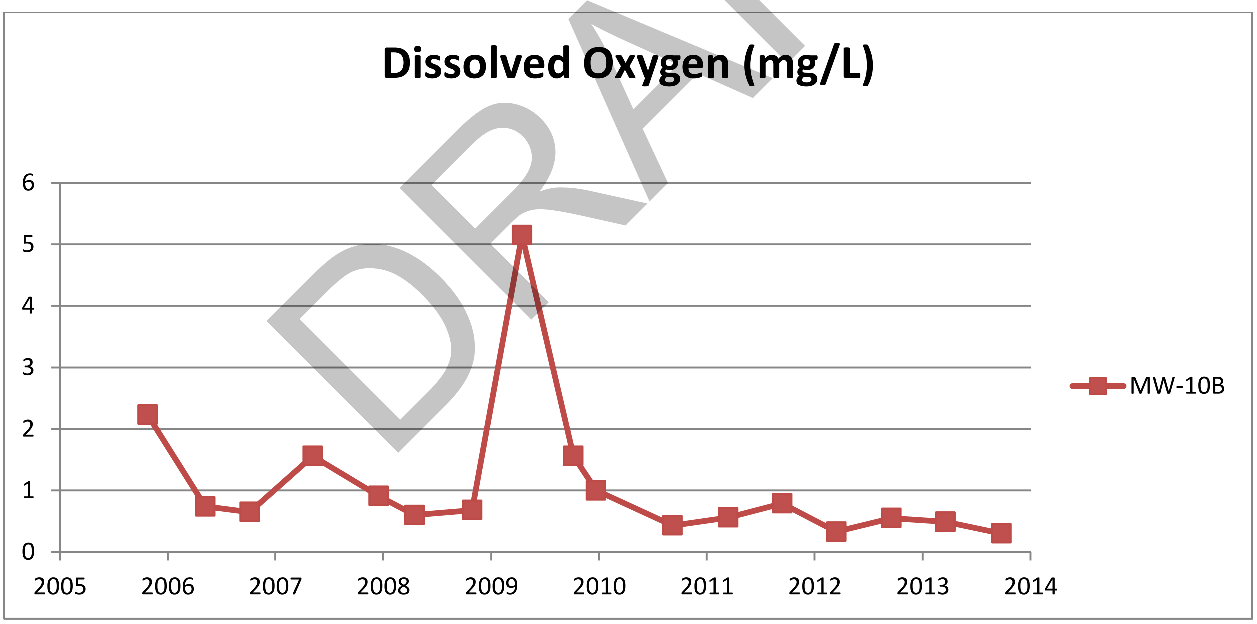

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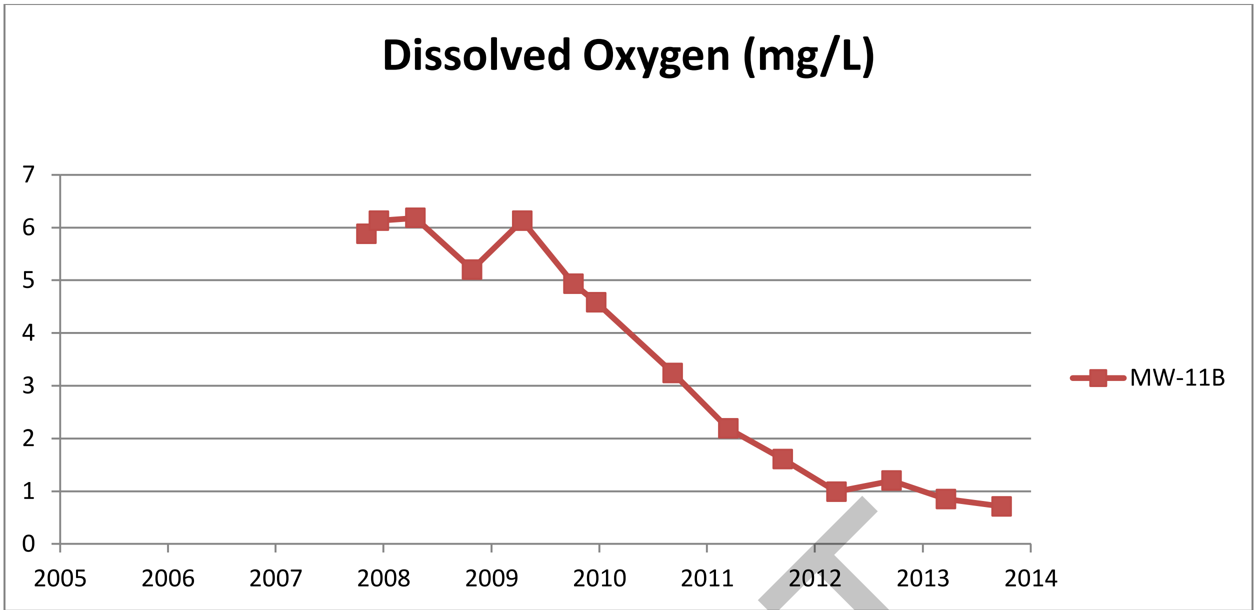


Figure 3.3.5-11

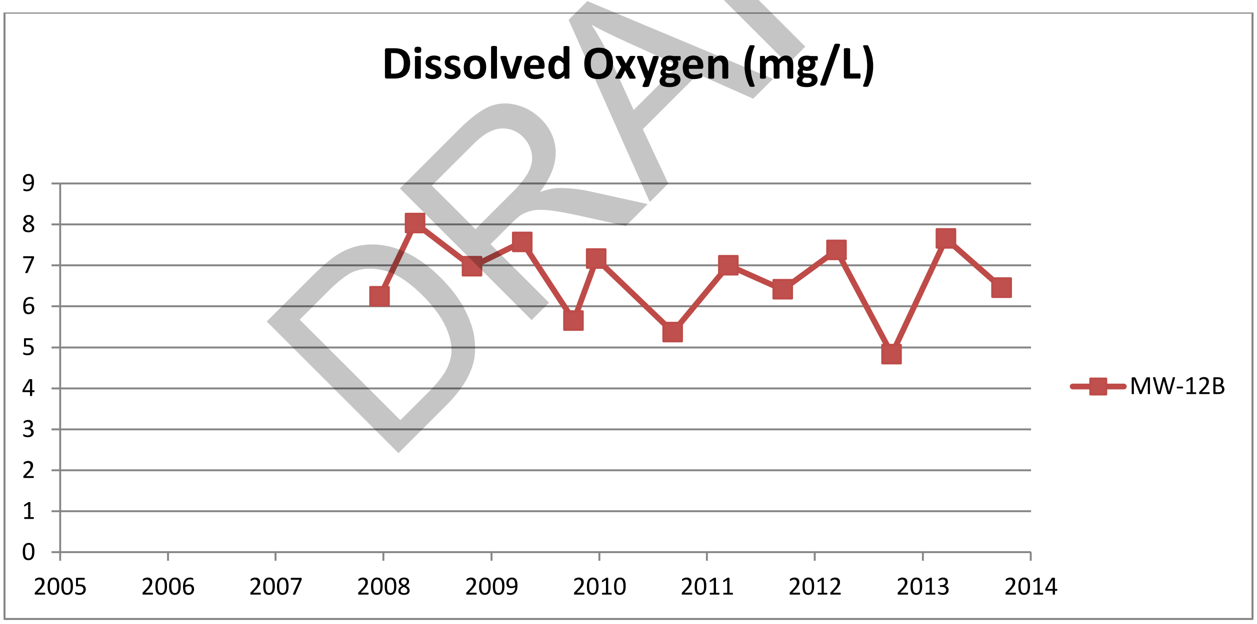


Figure 3.3.5-12

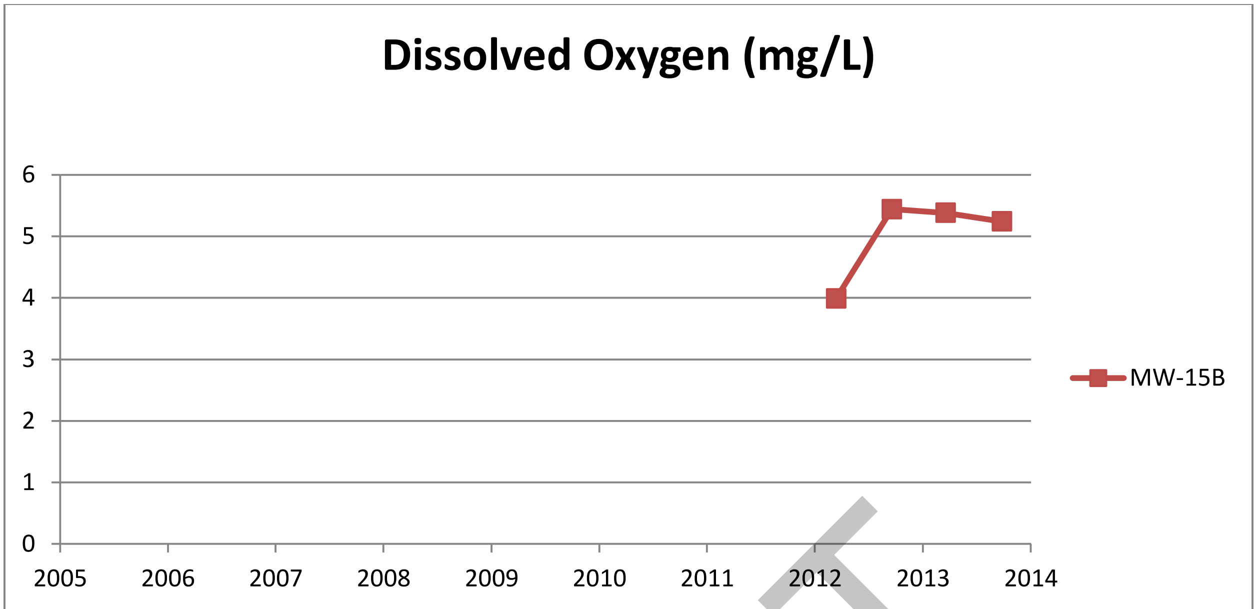


Figure 3.3.5-13

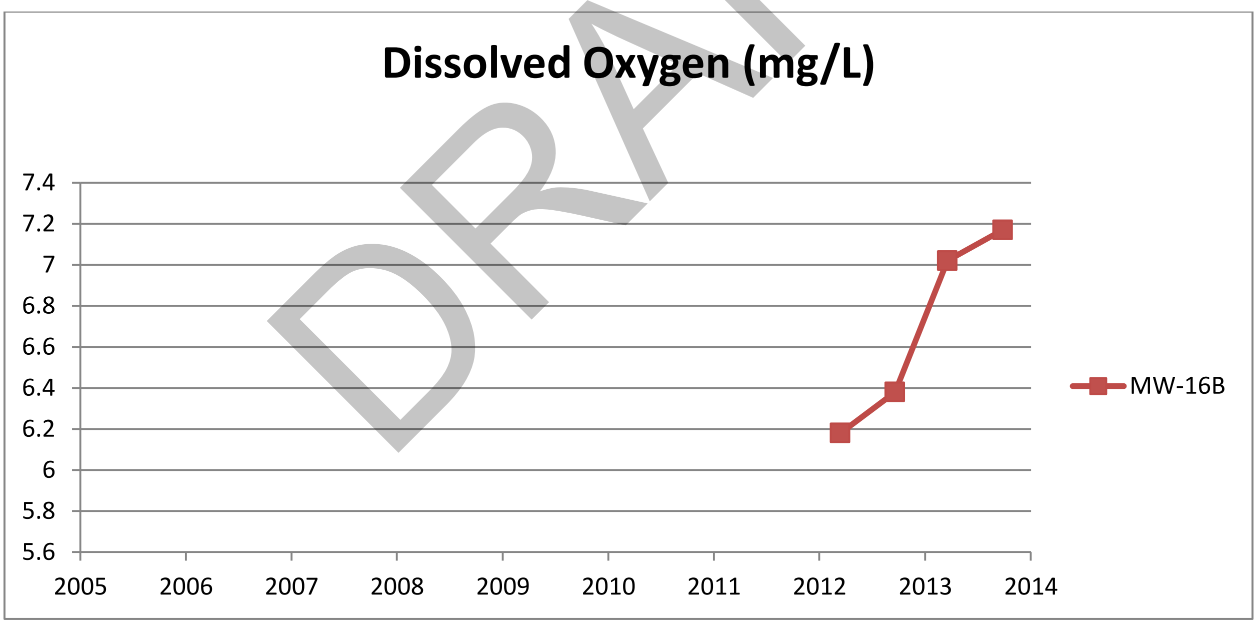


Figure 3.3.5-14

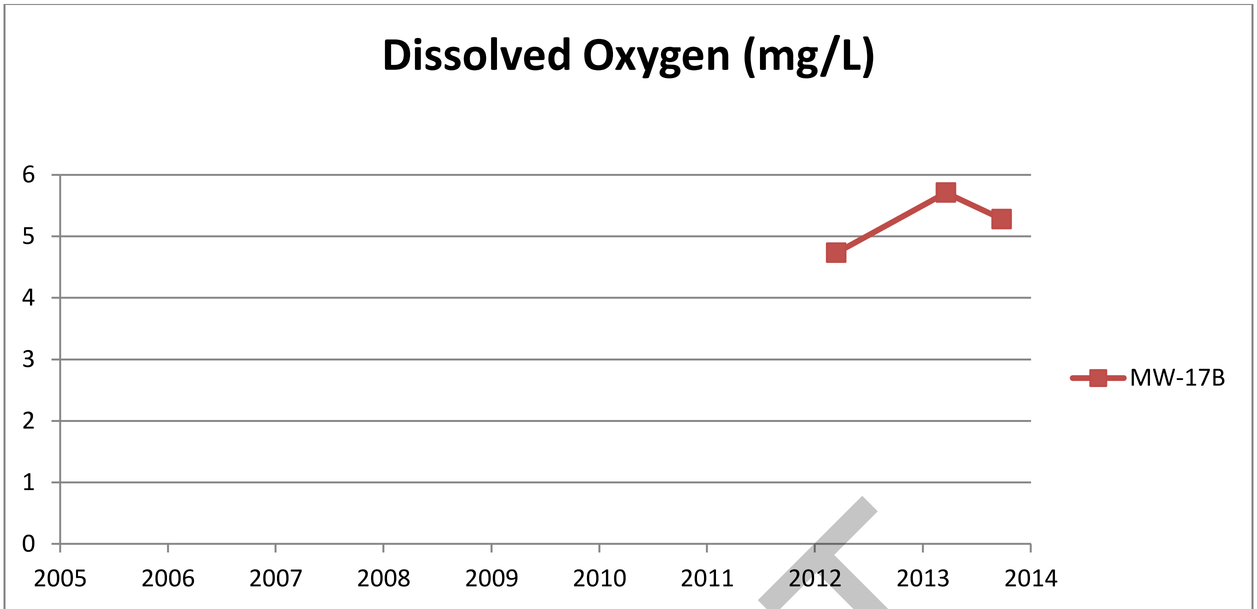


Figure 3.3.5-15

3.3.6 Oxidation Reduction Potential

The box and whisker plots for Oxidation Reduction Potential are shown in Figure 3.3.6-1. The temporal plots of ORP for each Floridan aquifer monitoring well (shown in Figure 3.3.6-2 to Figure 3.3.6-15) were analyzed to identify trends in ORP levels. ORP values were variable or slightly decreasing over time during the monitoring period analyzed ranging from -208.9 to 476 mV.

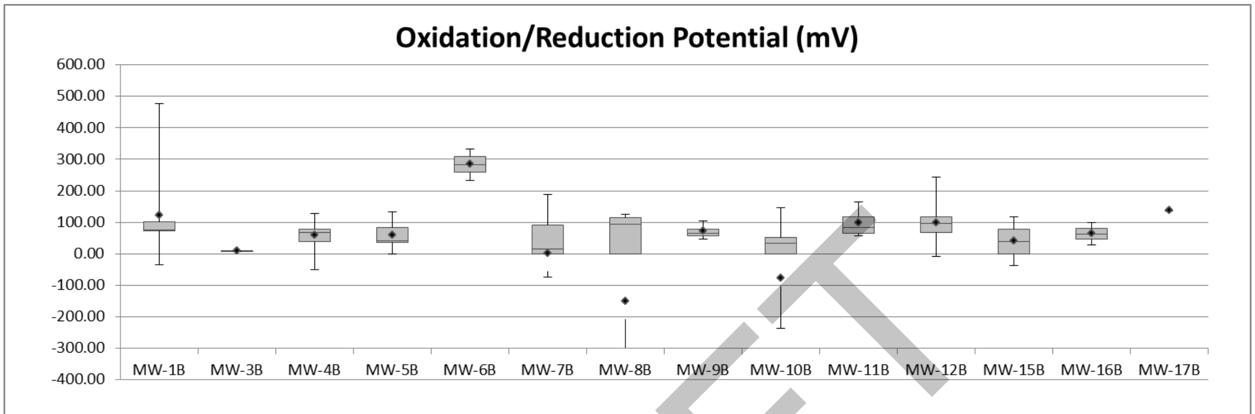


Figure 3.3.6-1

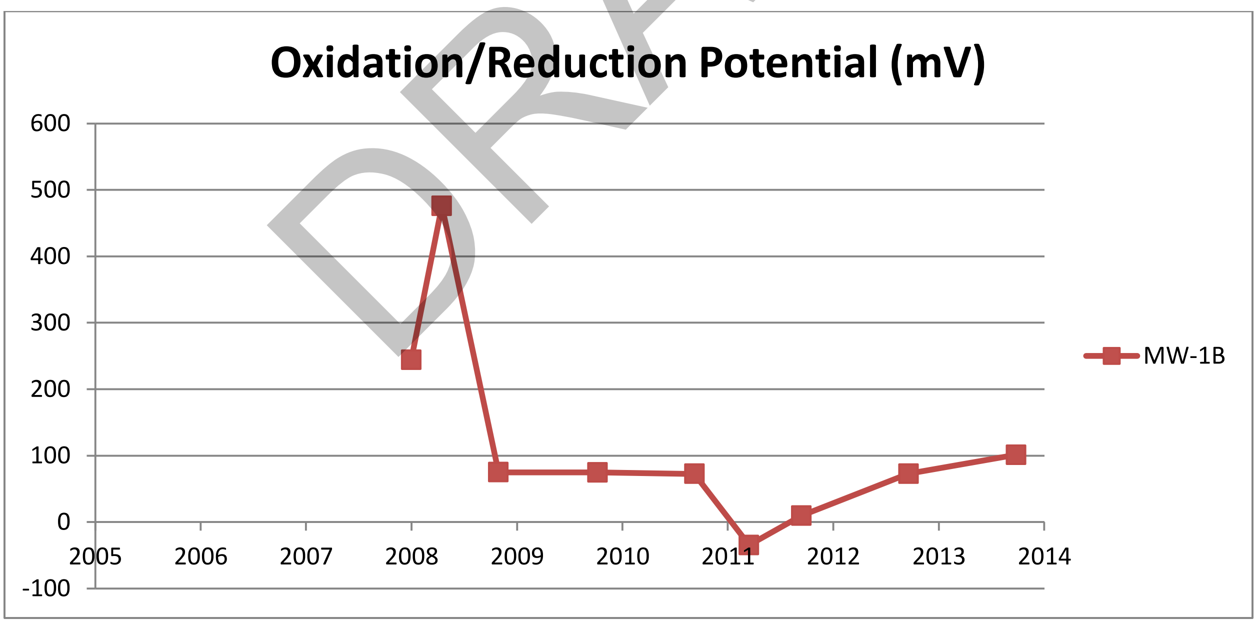
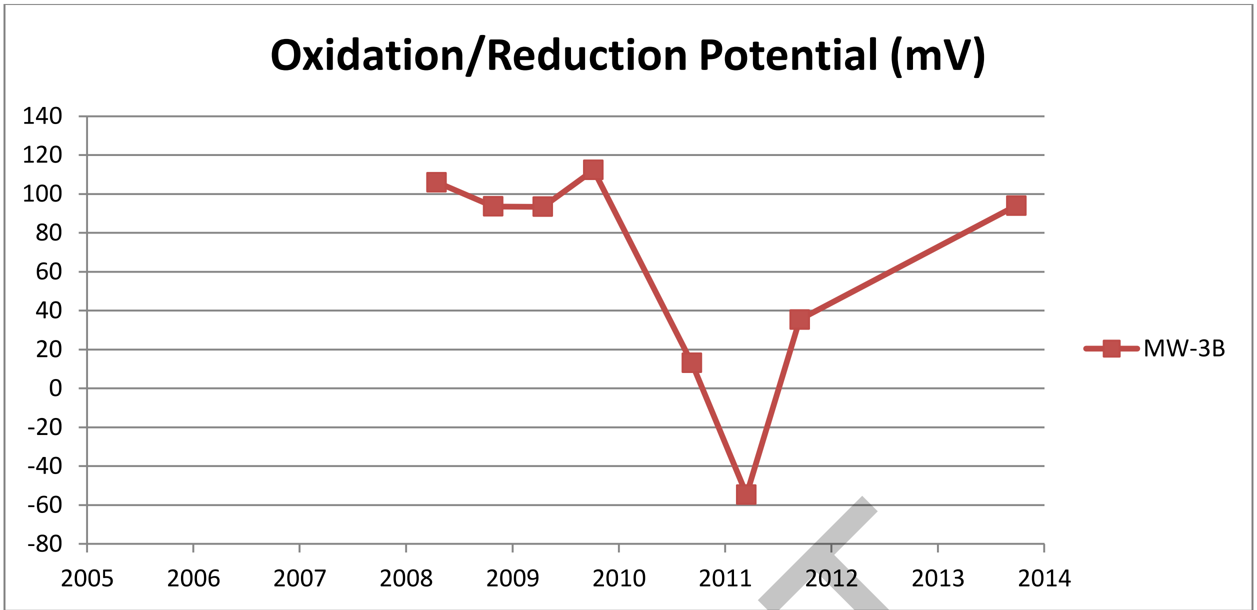


Figure 3.3.6-2



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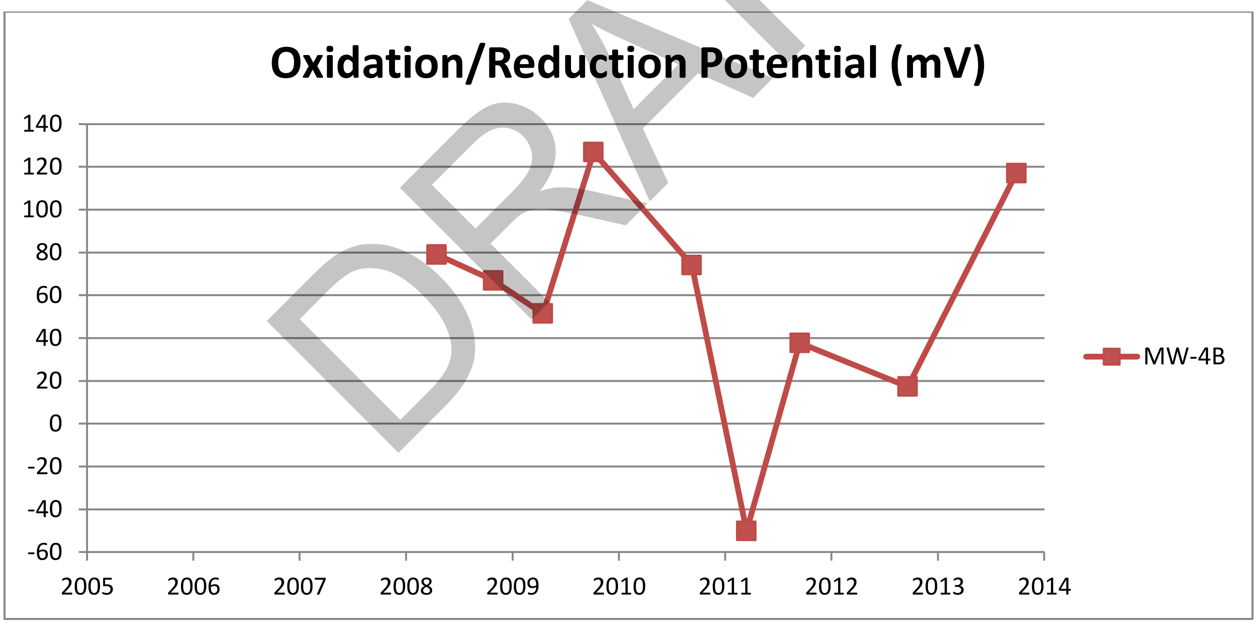

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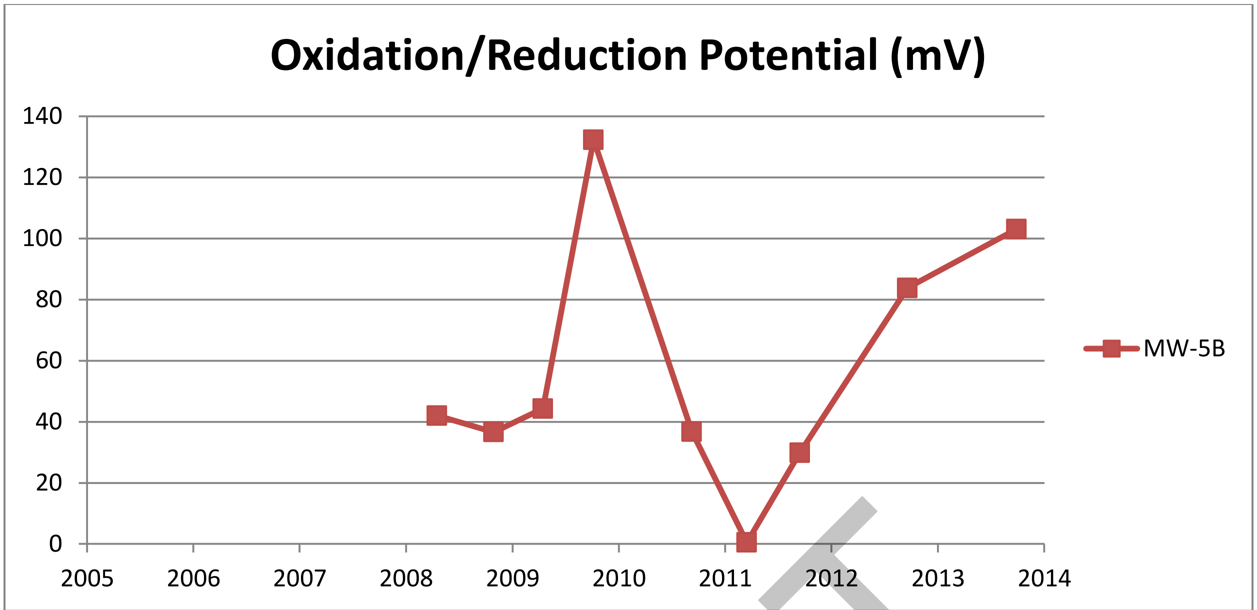

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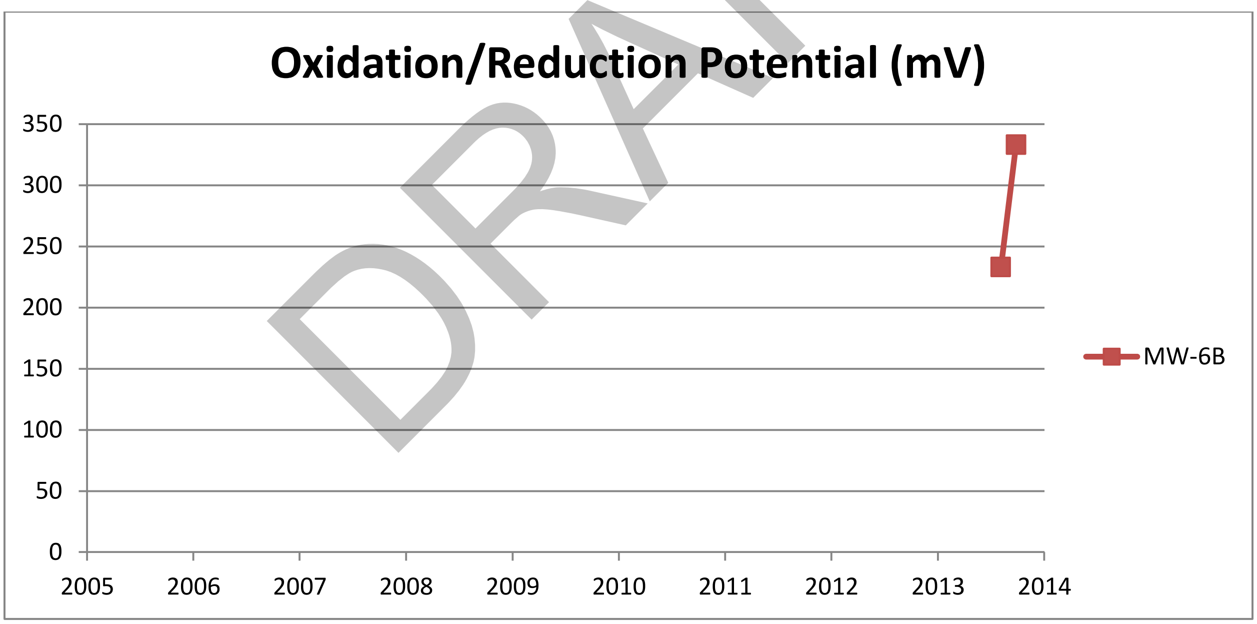

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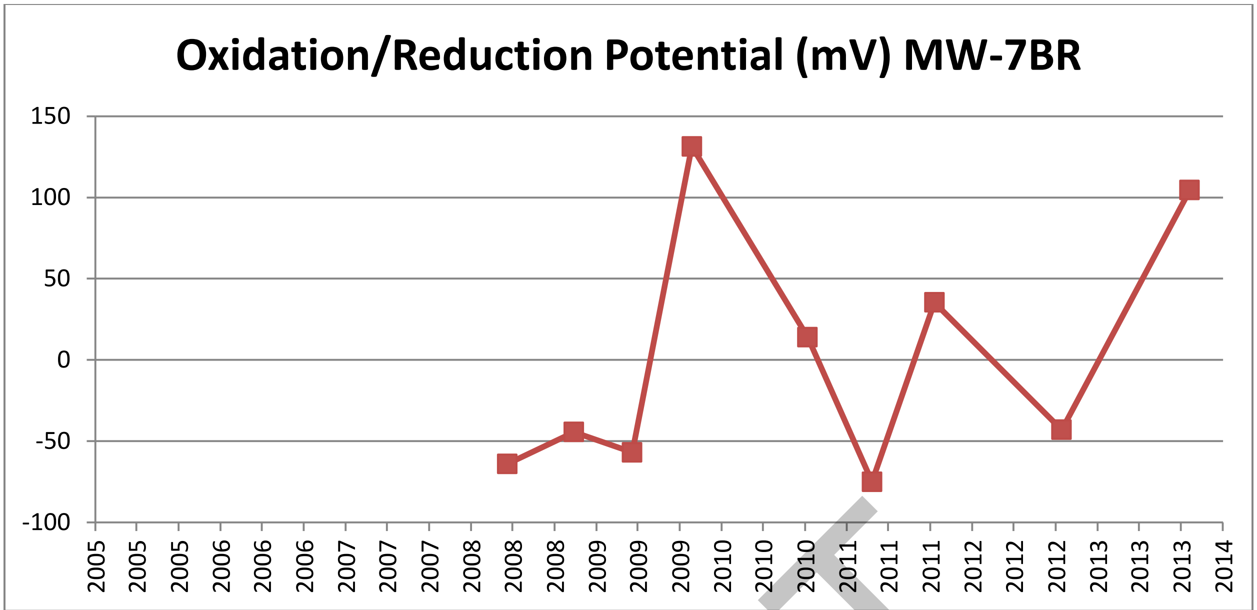
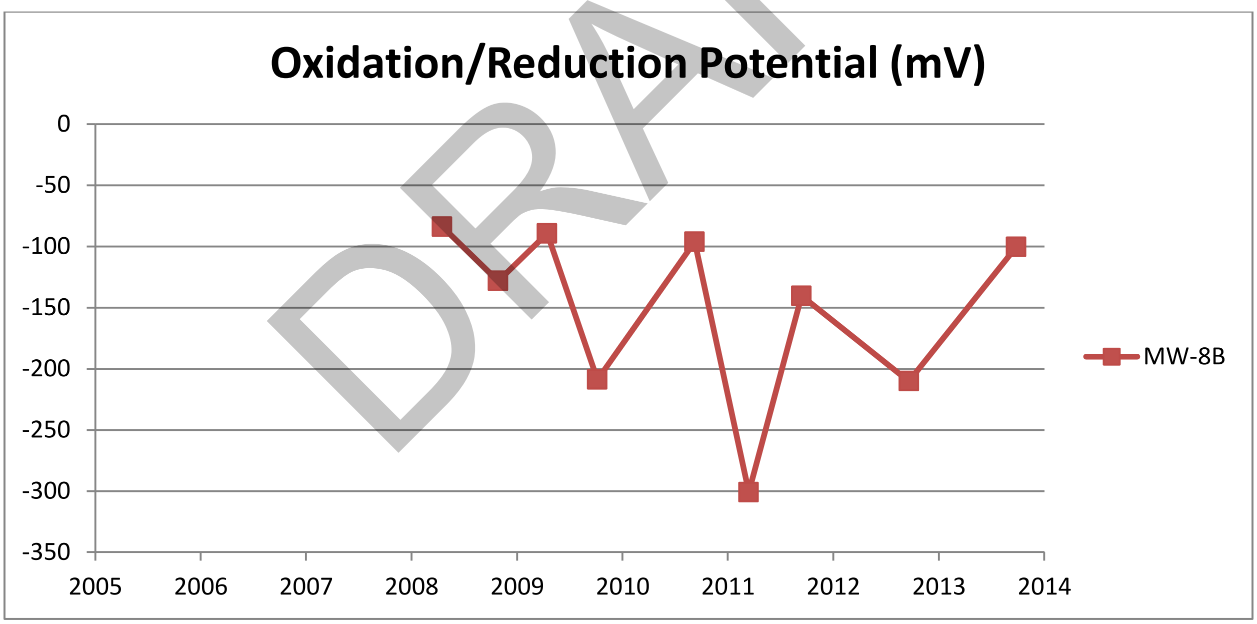


Figure 3.3.6-7



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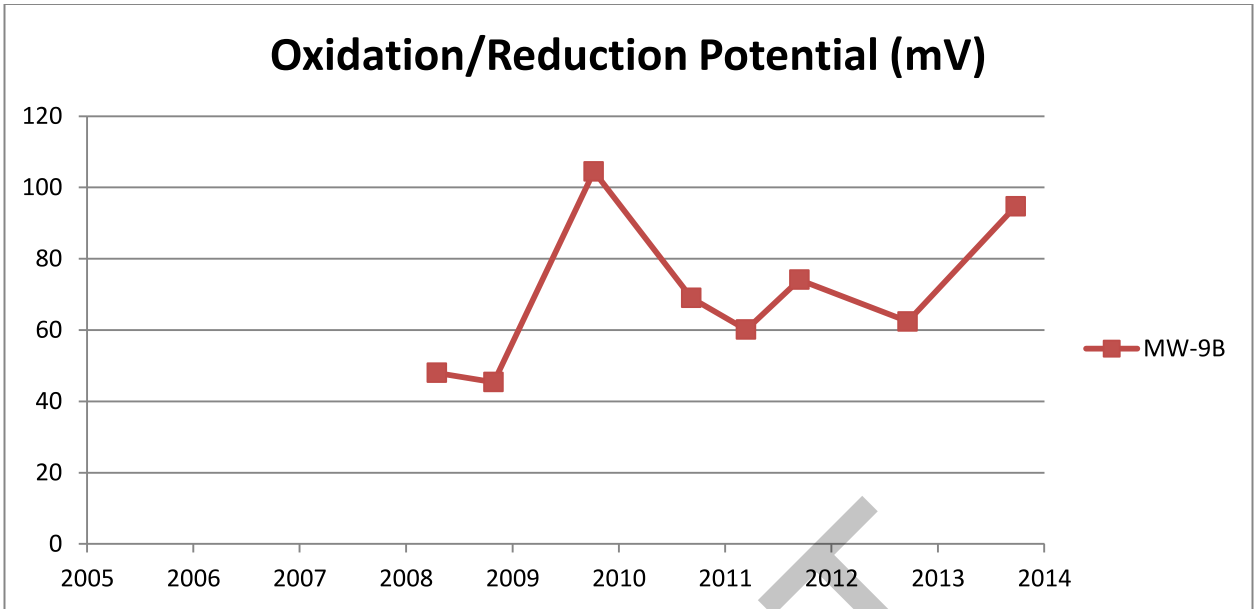

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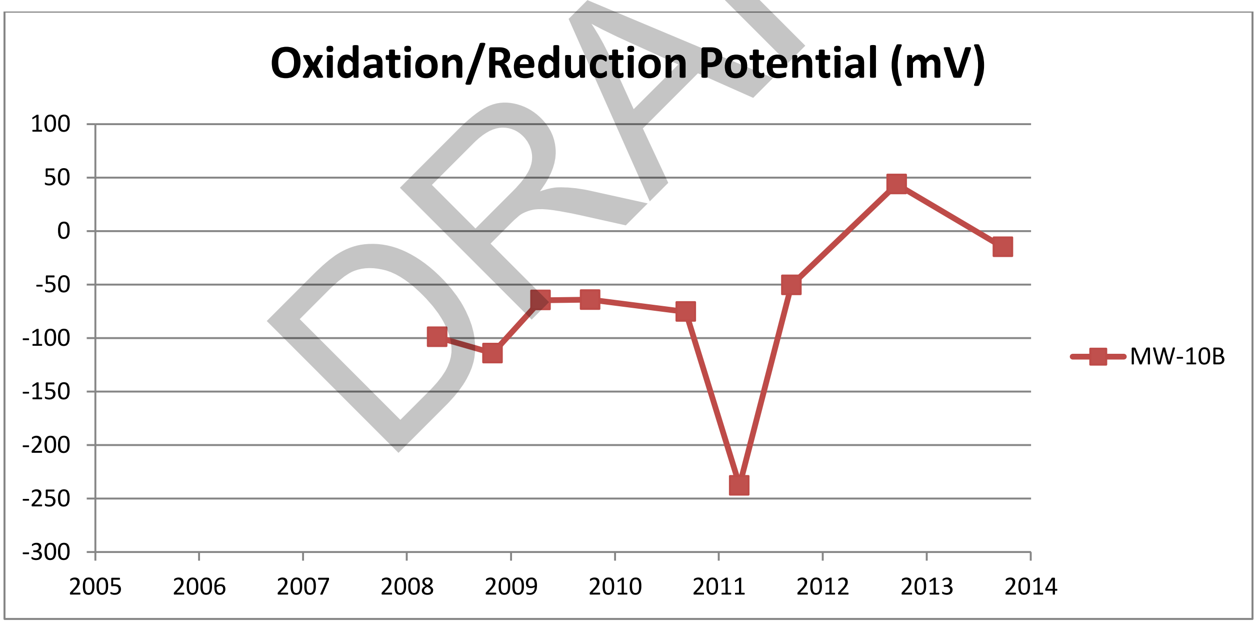


Figure 3.3.6-10

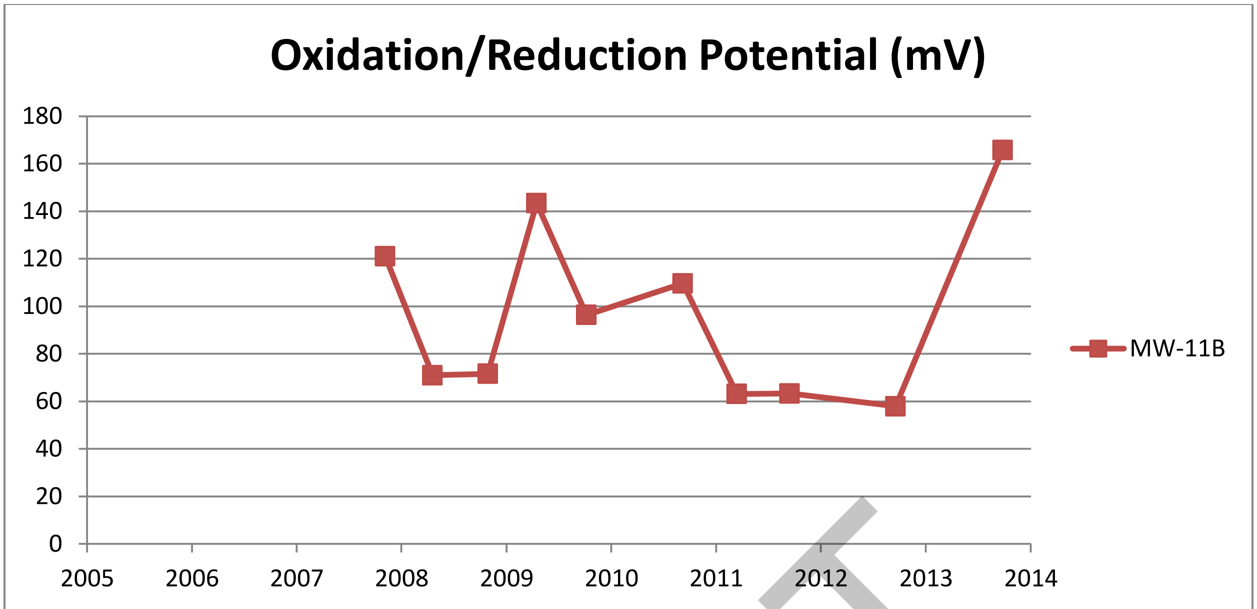
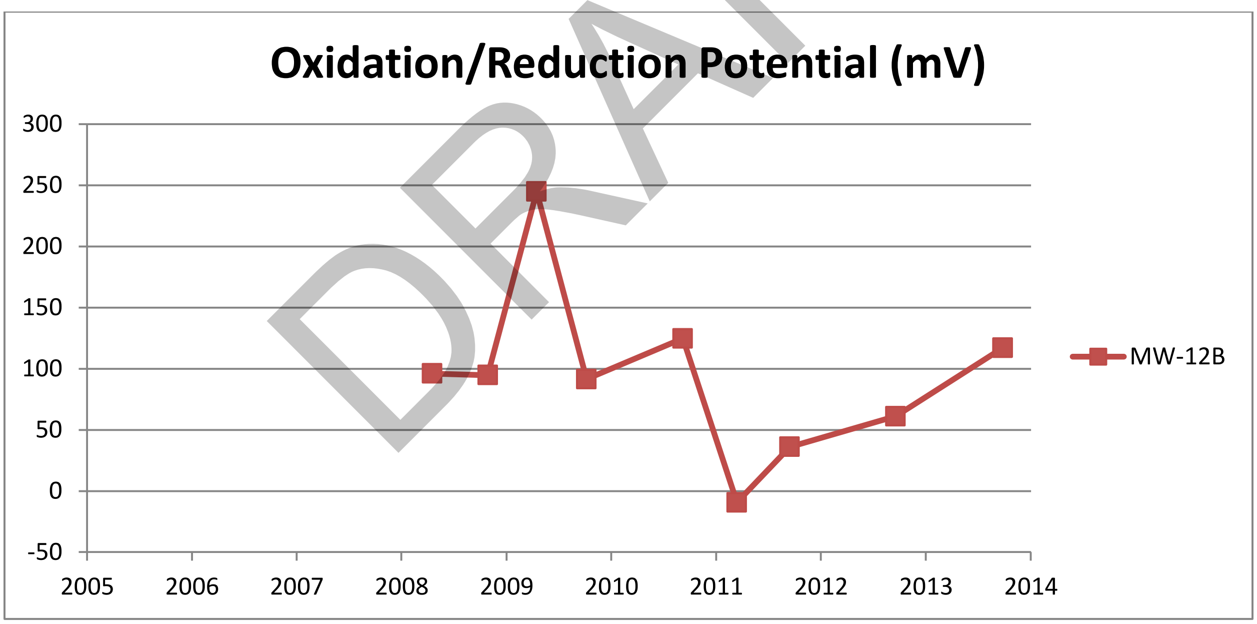


Figure 3.3.6-11



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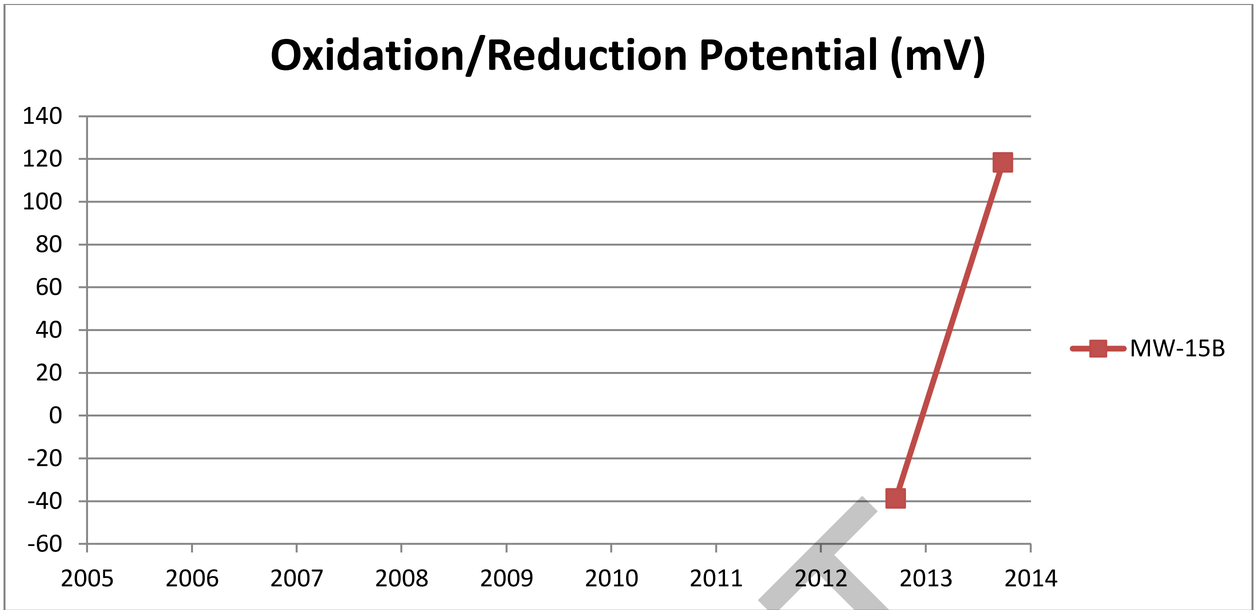

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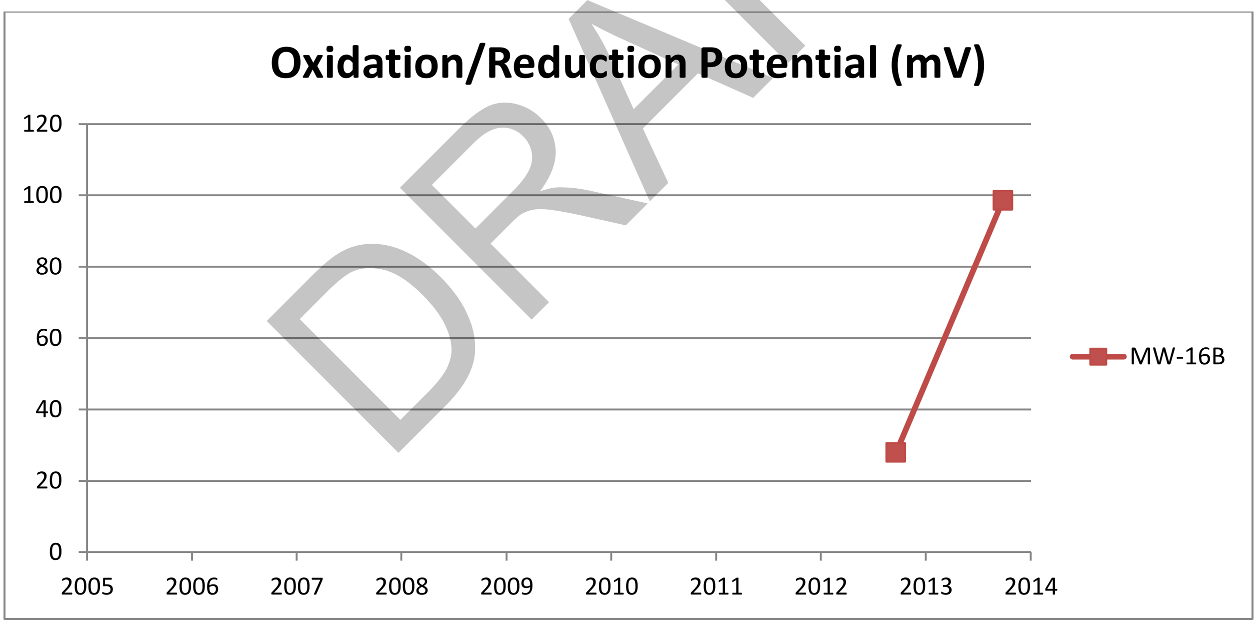


Figure 3.3.6-14

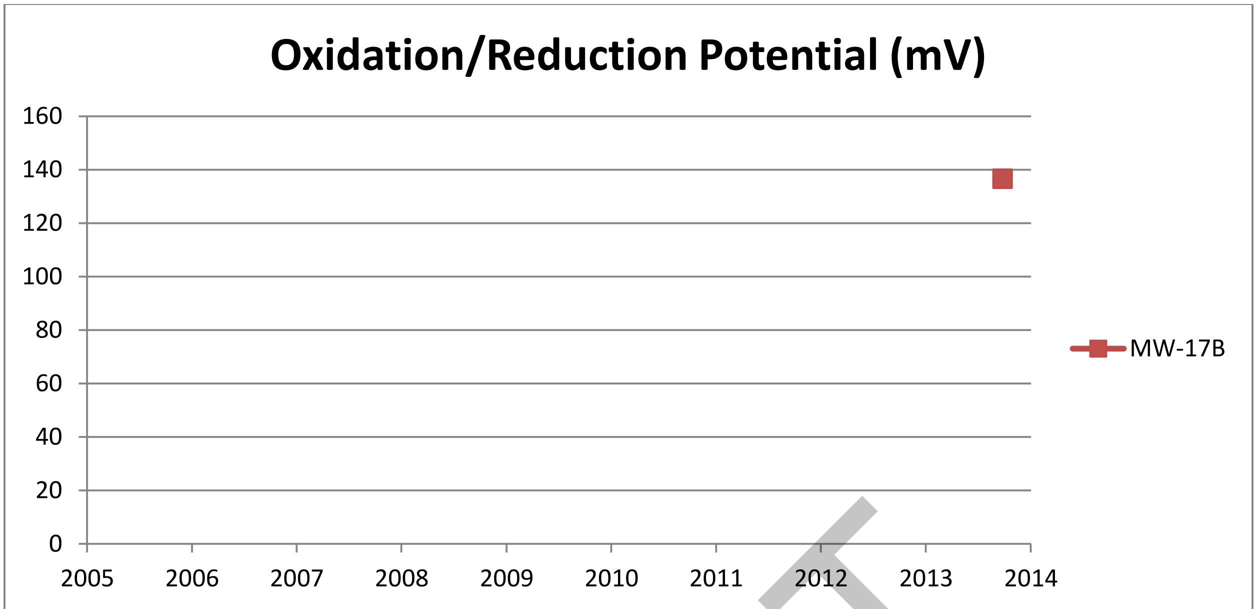


Figure 3.3.6-15

3.3.7 *Ammonia-N*

Ammonia-N (NH_3-N) is the most reduced form of nitrogen and is highly soluble in water. The box and whisker plots for Ammonia-N in the Floridan aquifer monitoring wells are shown in Figure 3.3.7-1. Temporal plots for Ammonia-N are shown in Figure 3.3.7-2 to Figure 3.3.7-15. All values were below the GCTL. Values in MW-8B increased slightly in 2009, but have been decreasing in monitoring events conducted since 2009.

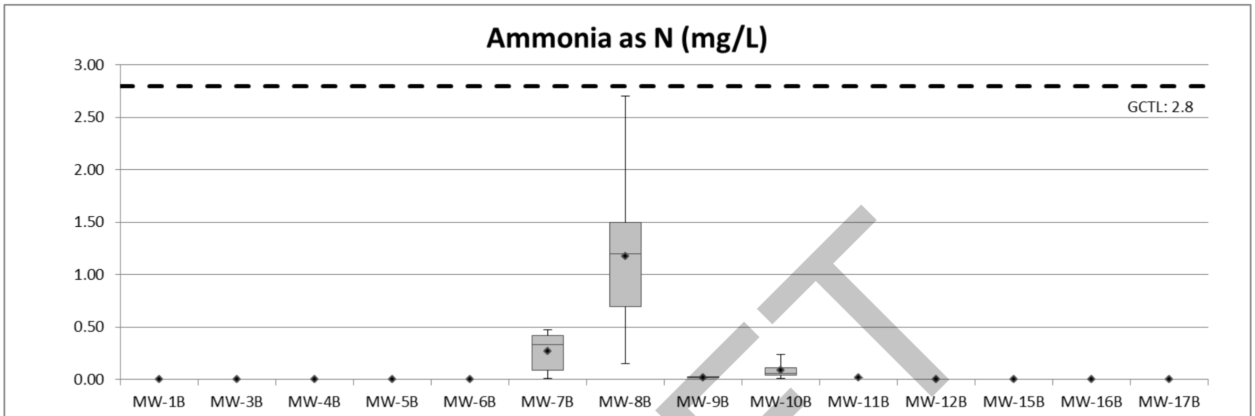


Figure 3.3.7-1

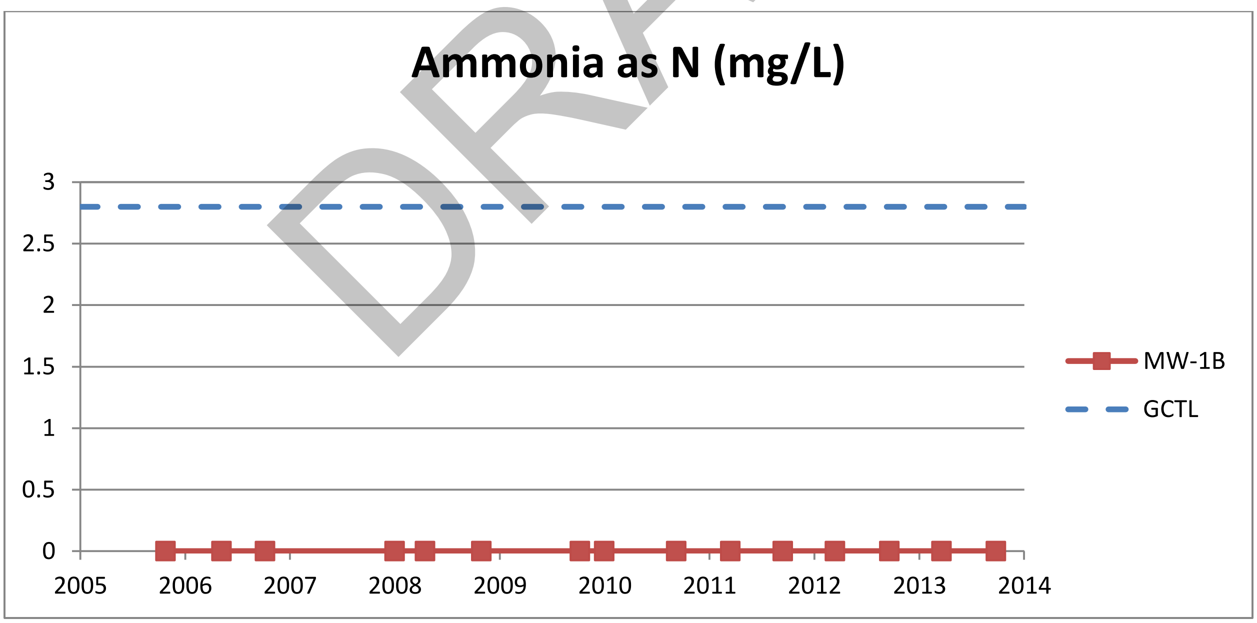


Figure 3.3.7-2

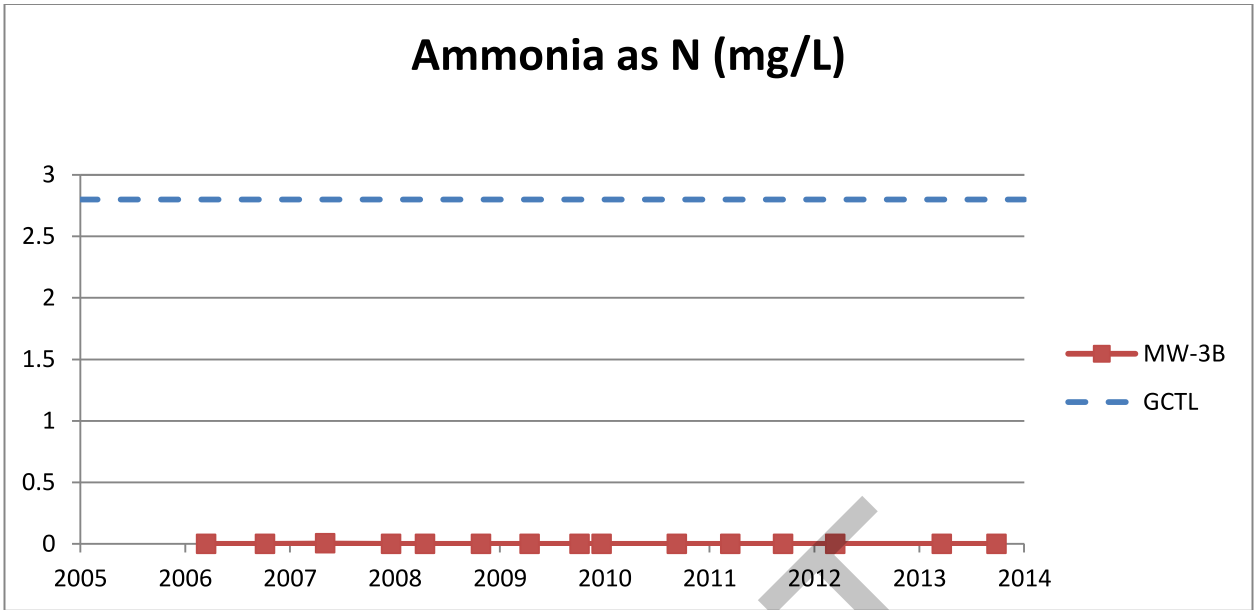
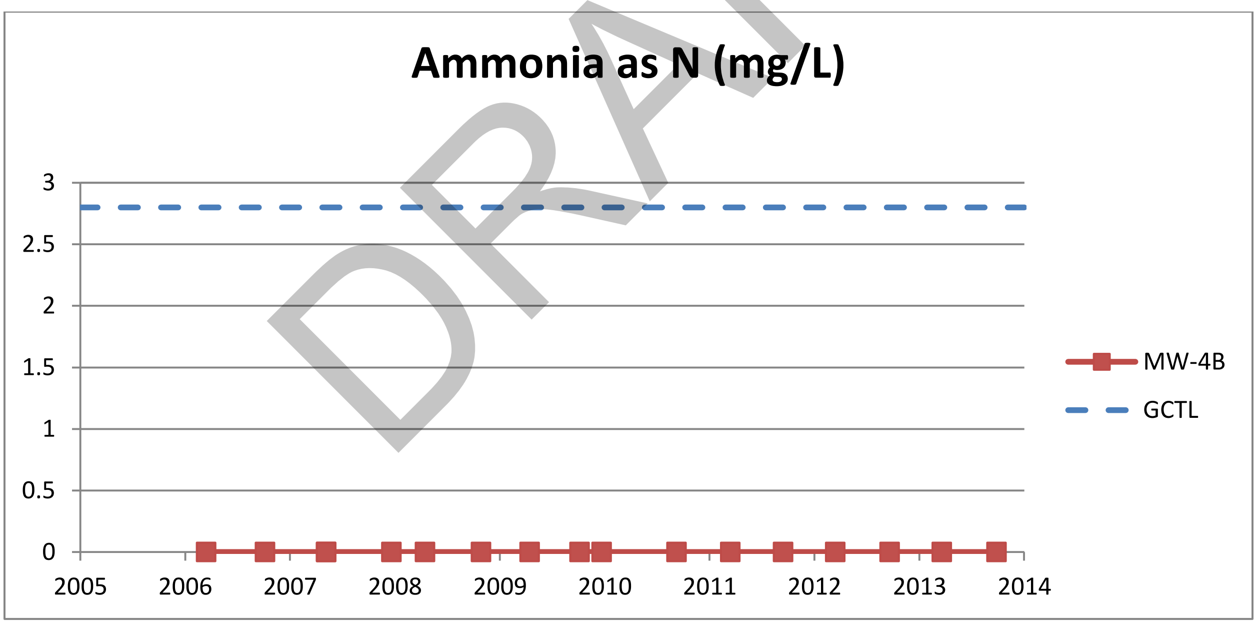


Figure 3.3.7-3



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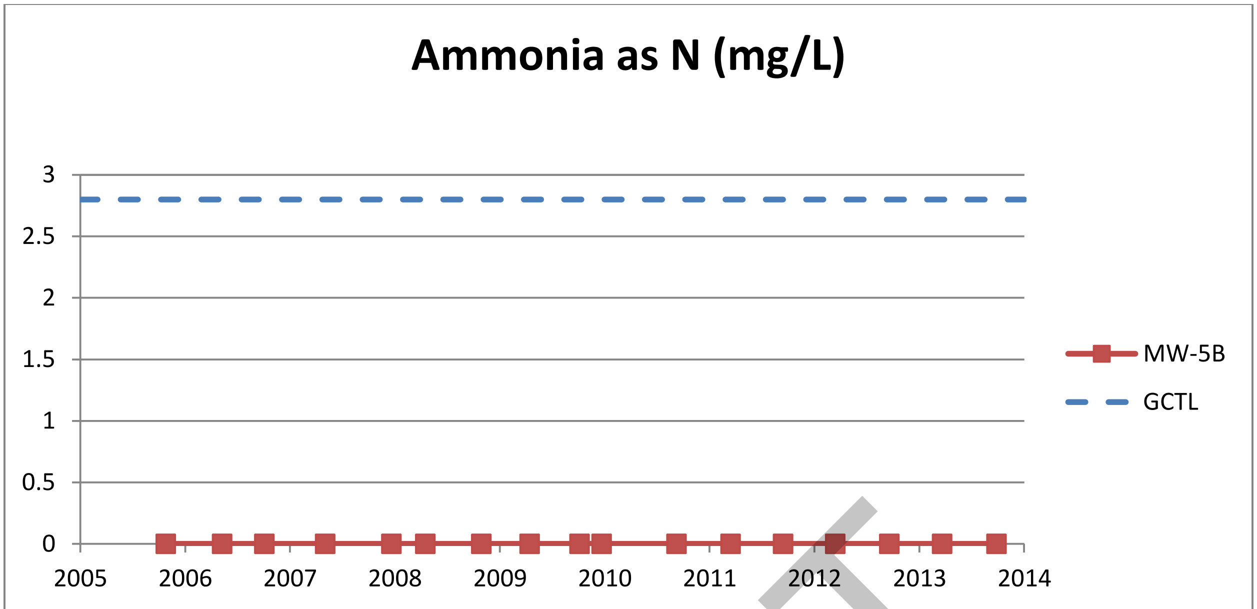


Figure 3.3.7-5

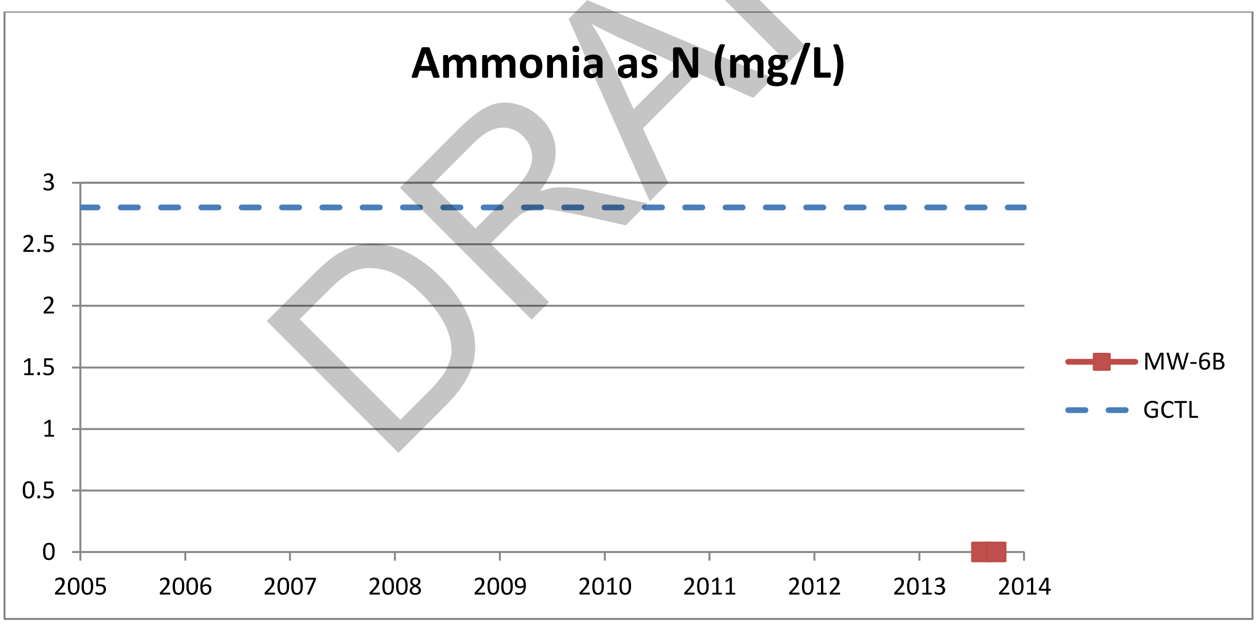


Figure 3.3.7-6

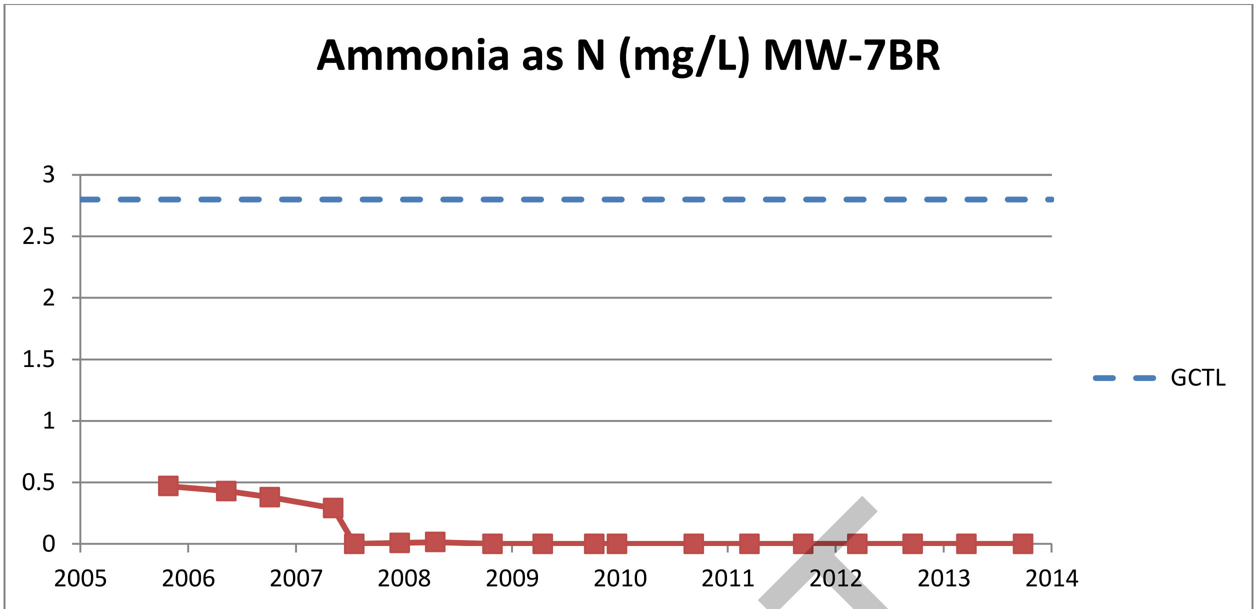


Figure 3.3.7-7

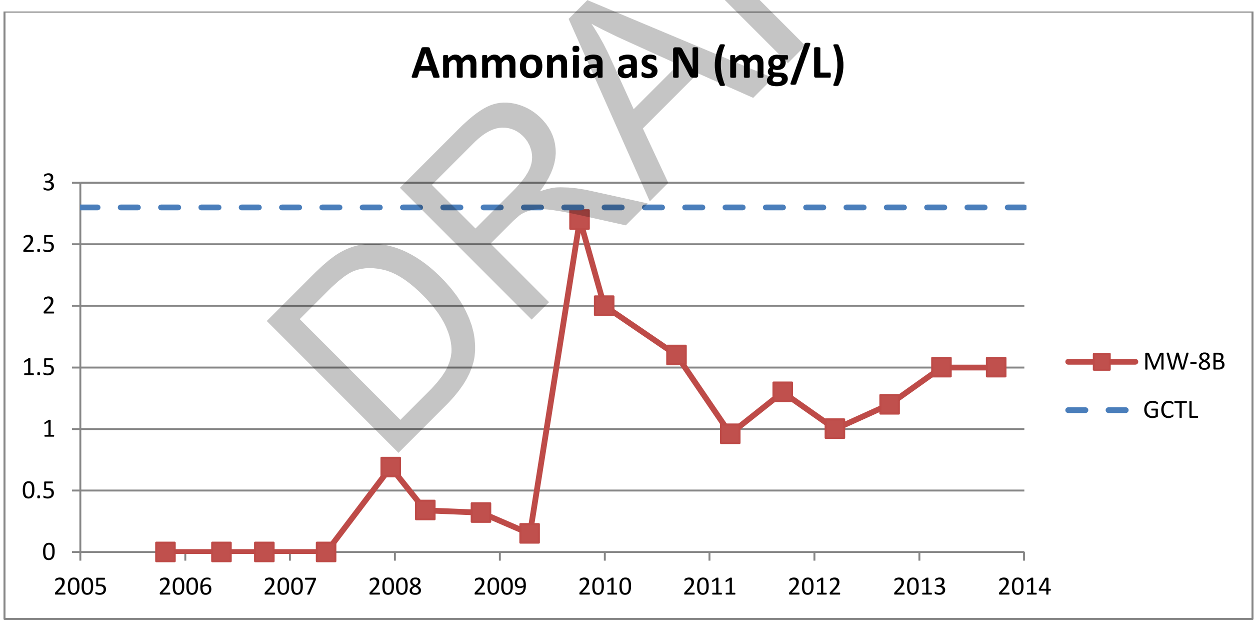
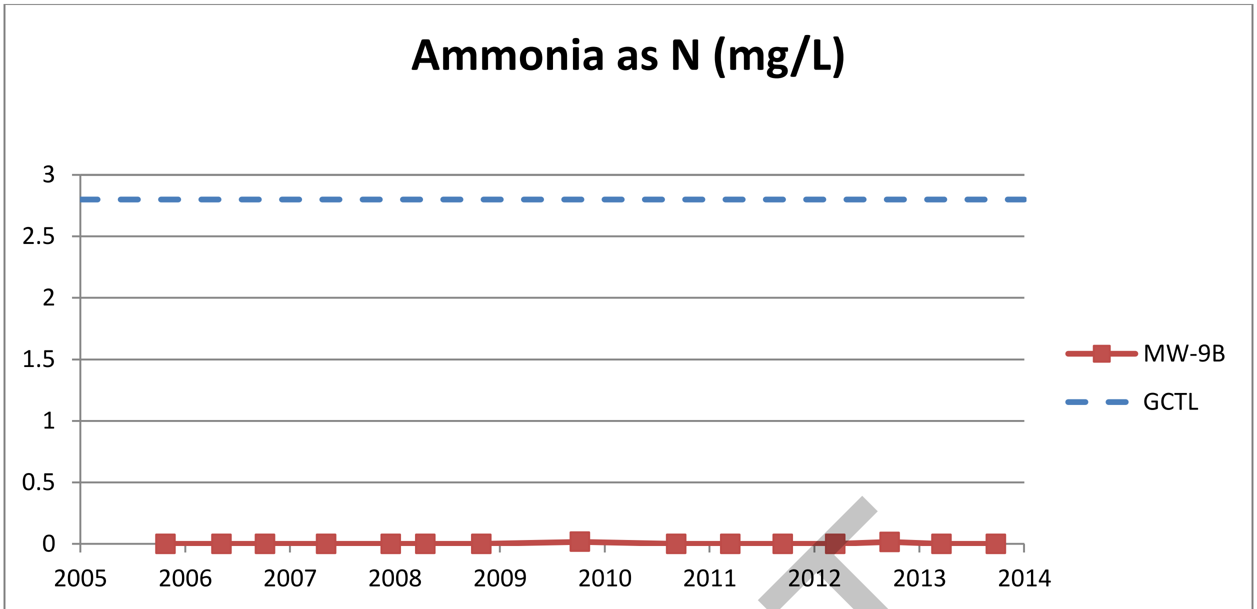


Figure 3.3.7-8



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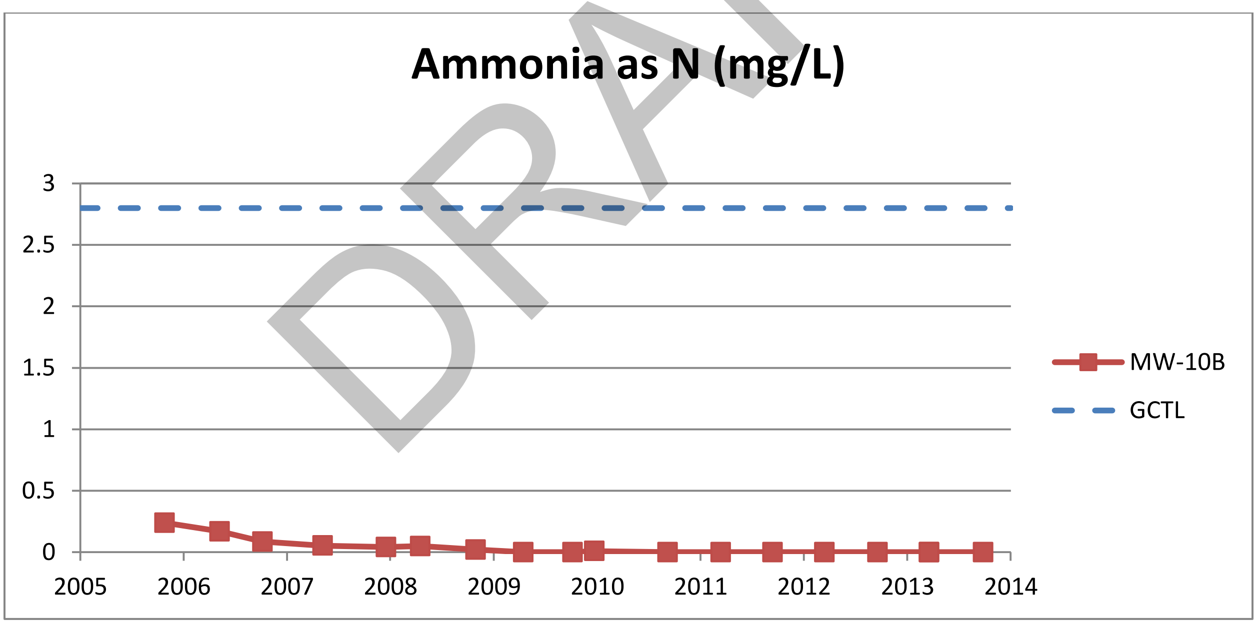
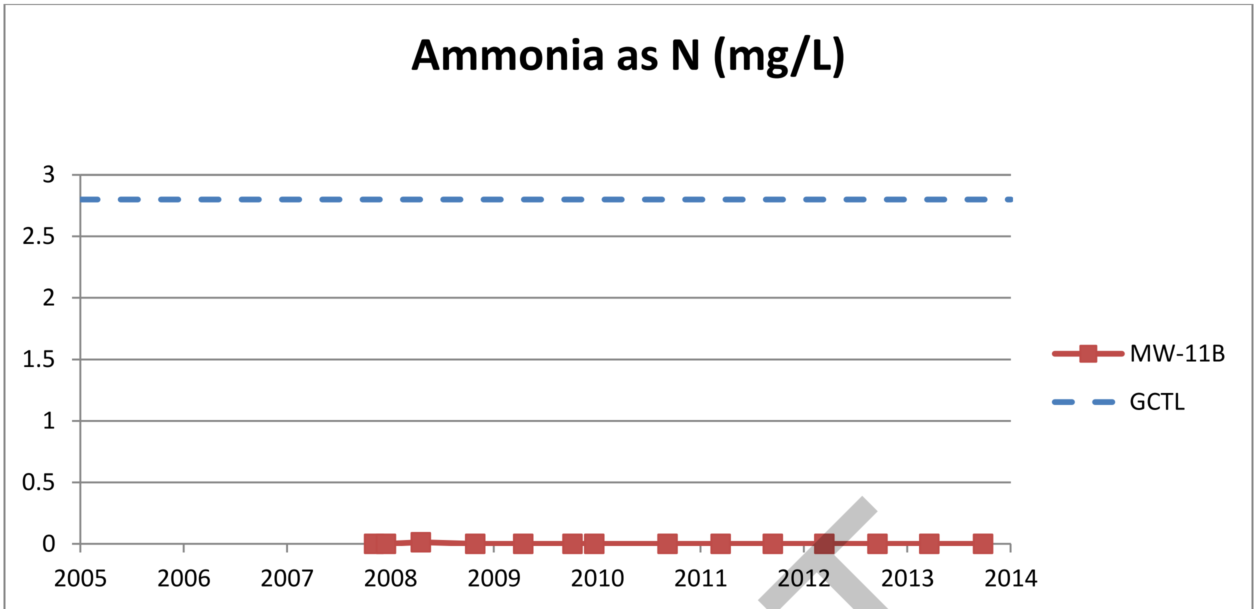


Figure 3.3.7-10



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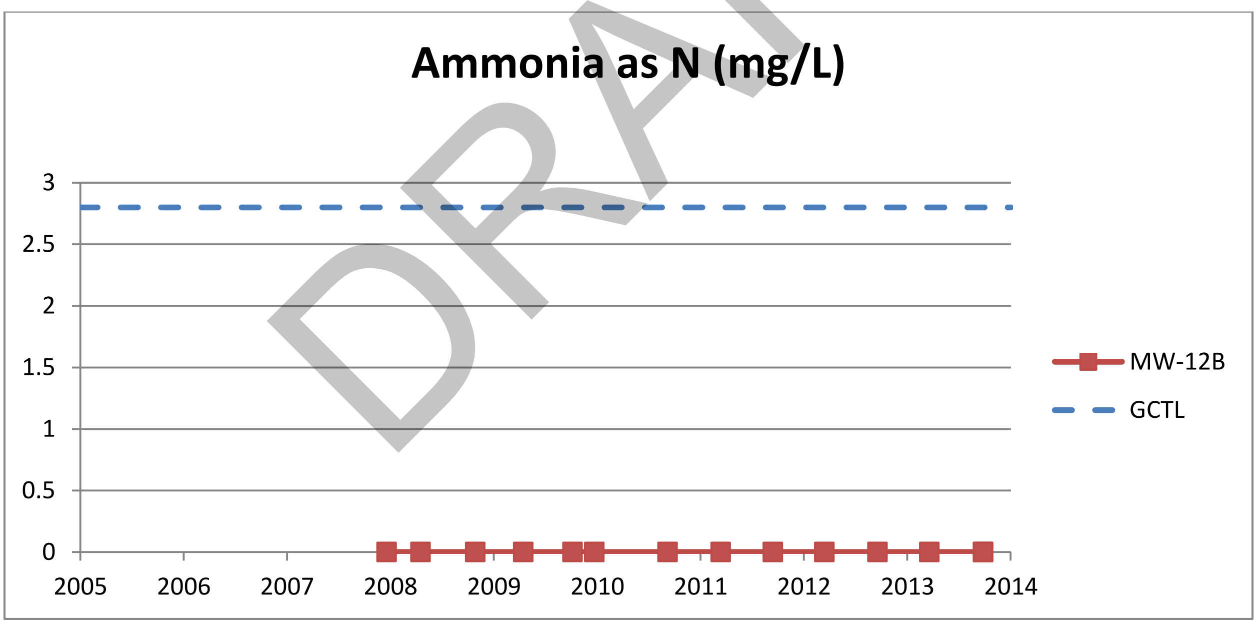


Figure 3.3.7-12

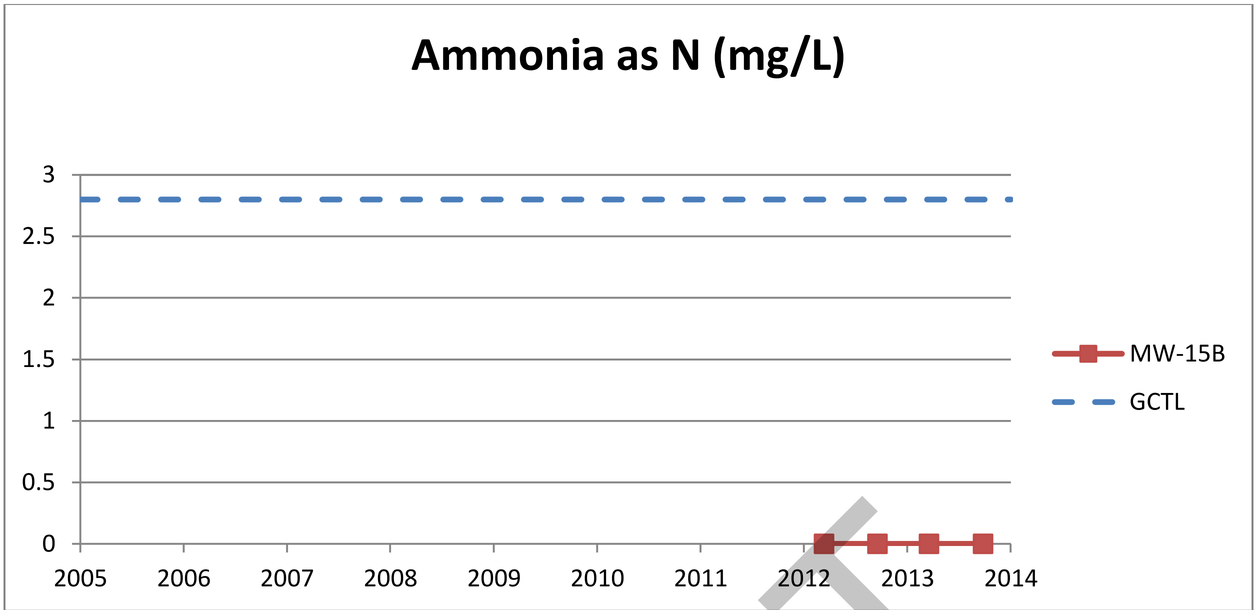
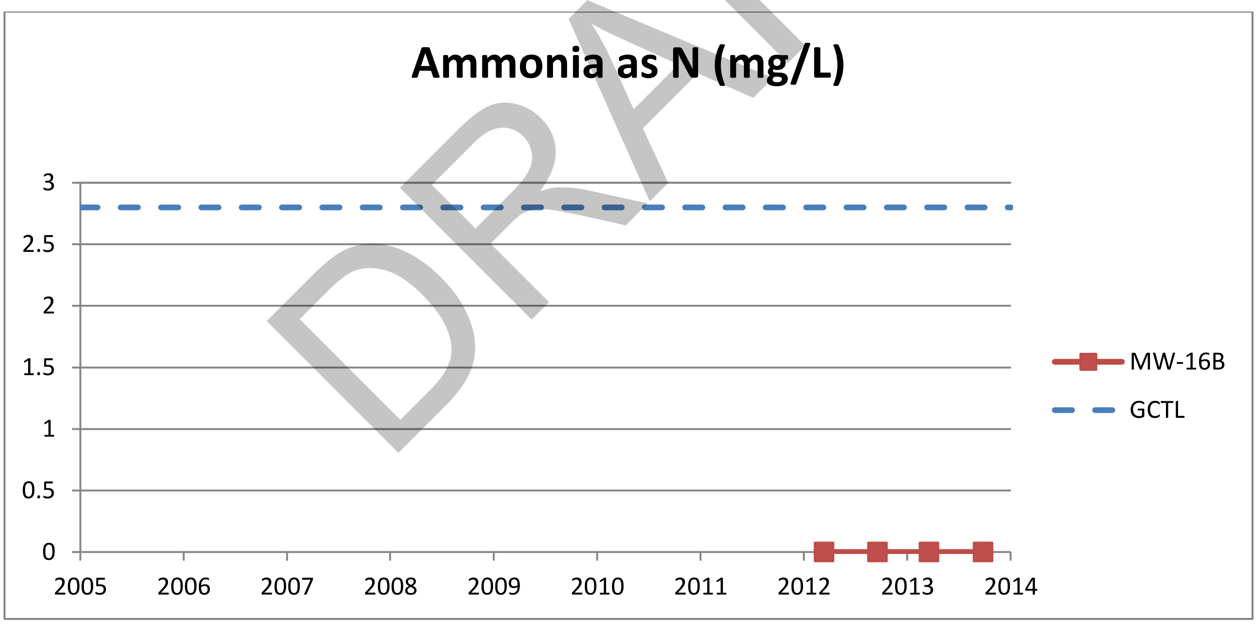


Figure 3.3.7-13



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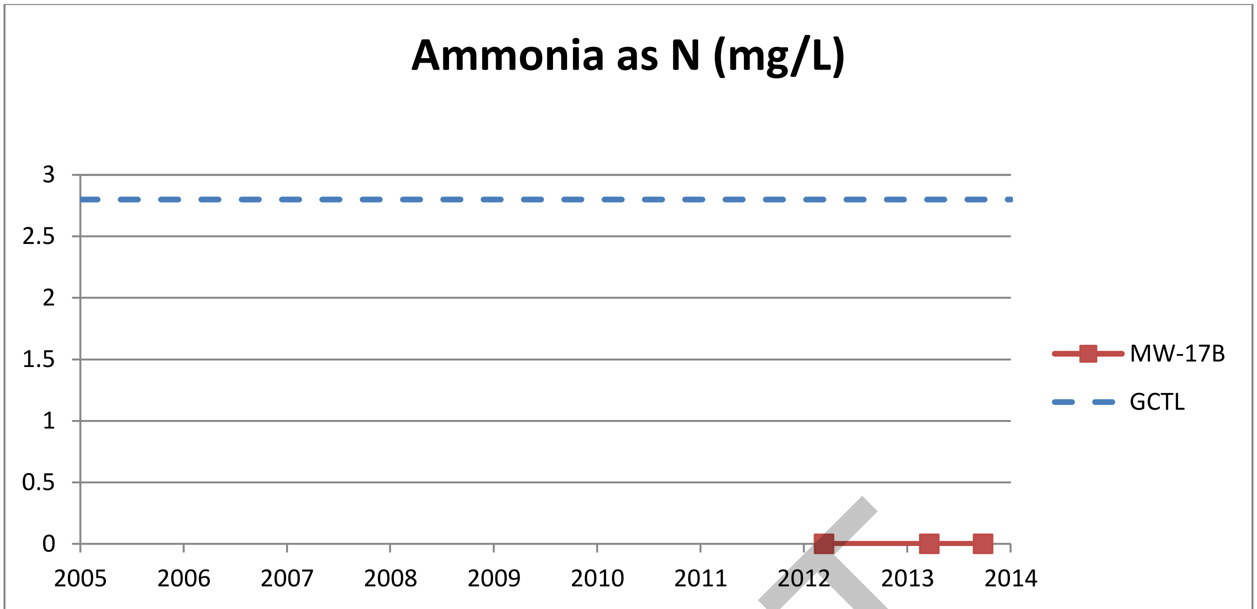


Figure 3.3.7-15

3.3.8 Nitrate-N

Nitrate-N (NO_3^--N) forms due to oxidation of ammonia-N present in water. The box-and-whisker plots (Figure 3.3.8-1) of nitrate-N concentration for each Floridan aquifer monitoring wells show that the nitrate-N concentrations exceeded its GCTL (10 mg/L) only in the original background monitoring well MW-1B. Temporal plots of Nitrate-N are shown in Figure 3.3.8-2 to Figure 3.3.8-15. Elevated Nitrate-N concentrations reported for MW-1B are attributable to off-site agricultural activities (orange groves) and are not associated with landfilling activities.

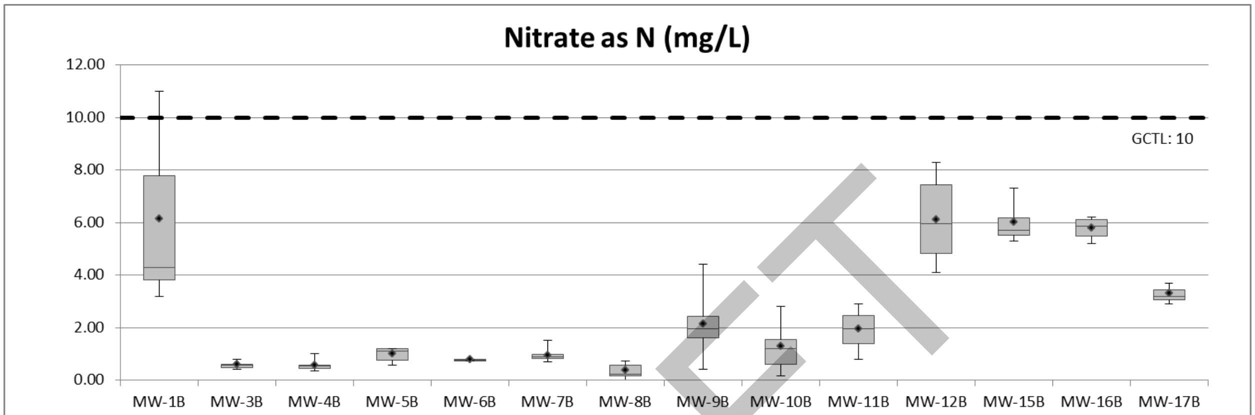


Figure 3.3.8-1

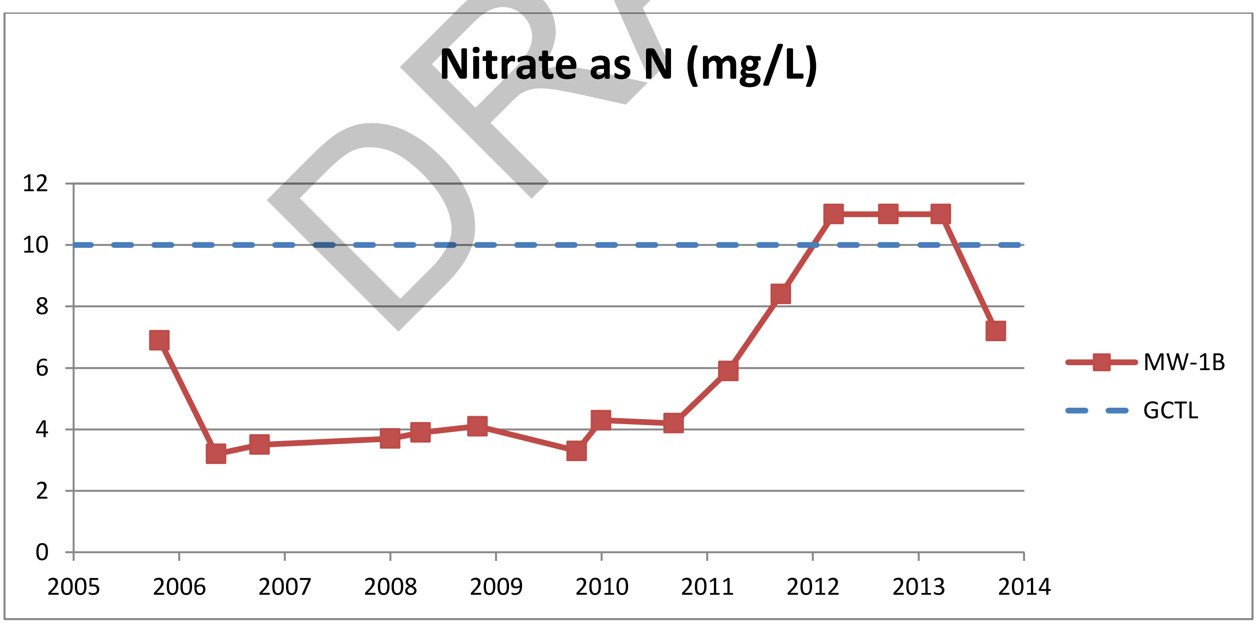


Figure 3.3.8-2

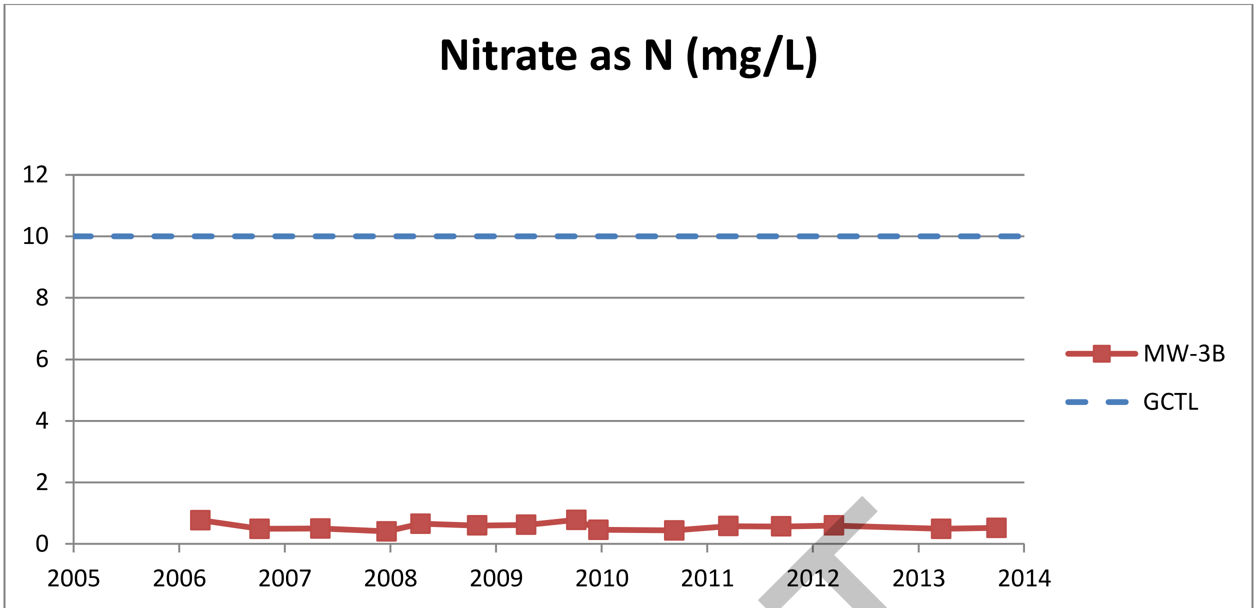


Figure 3.3.8-3

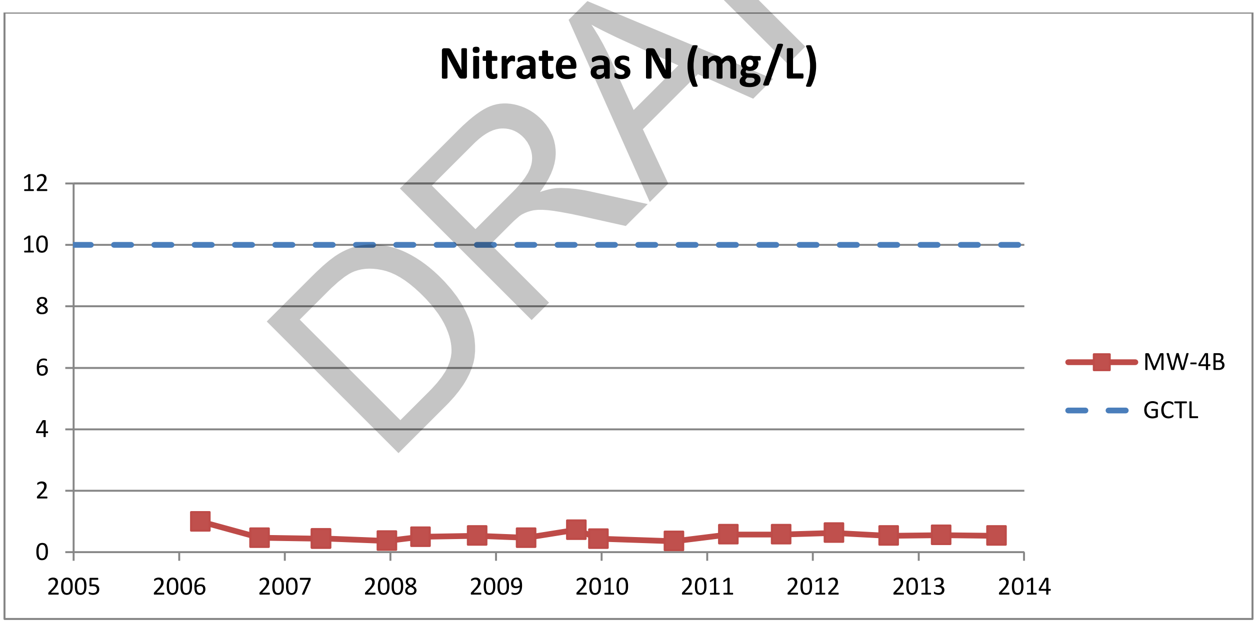


Figure 3.3.8-4

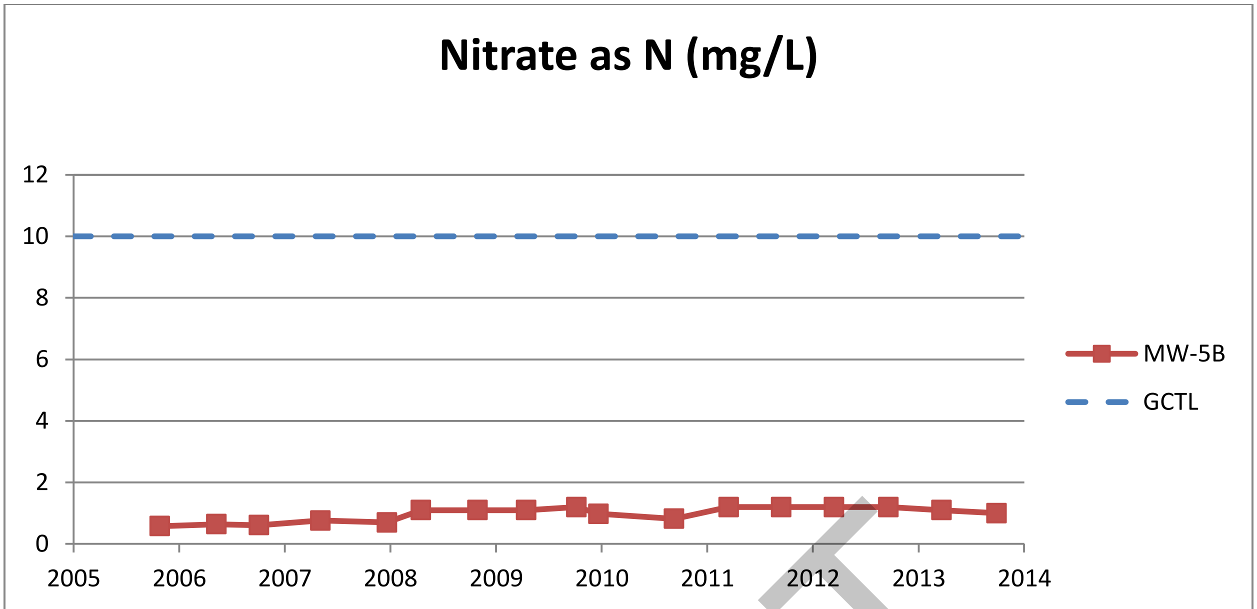


Figure 3.3.8-5

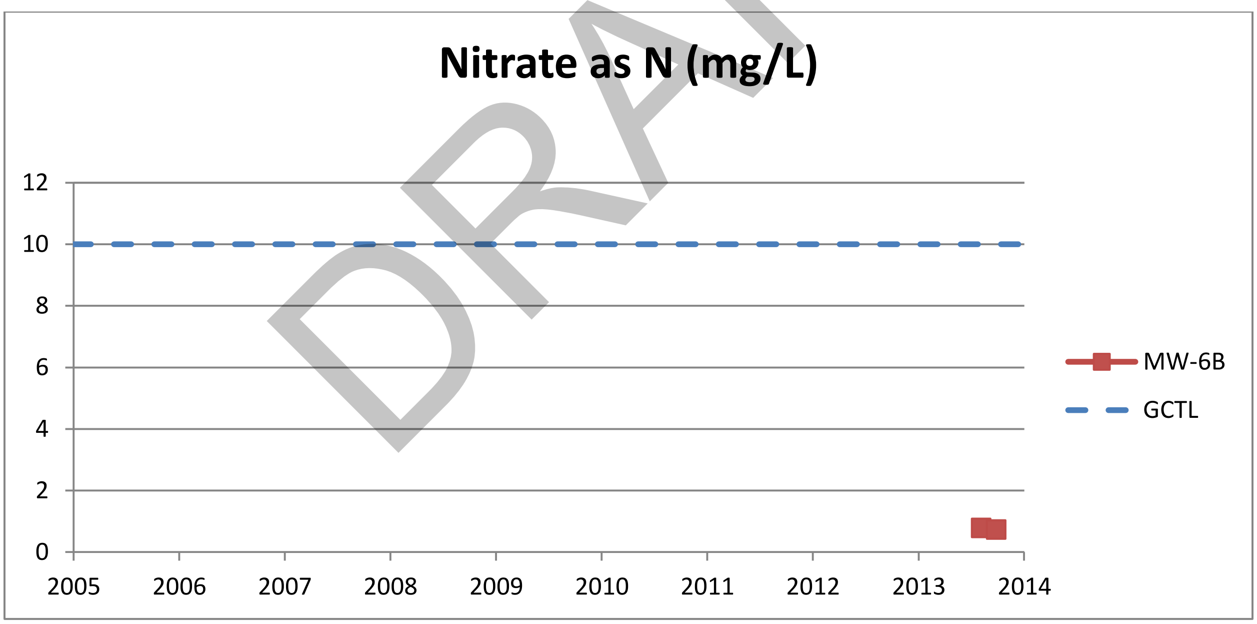


Figure 3.3.8-6

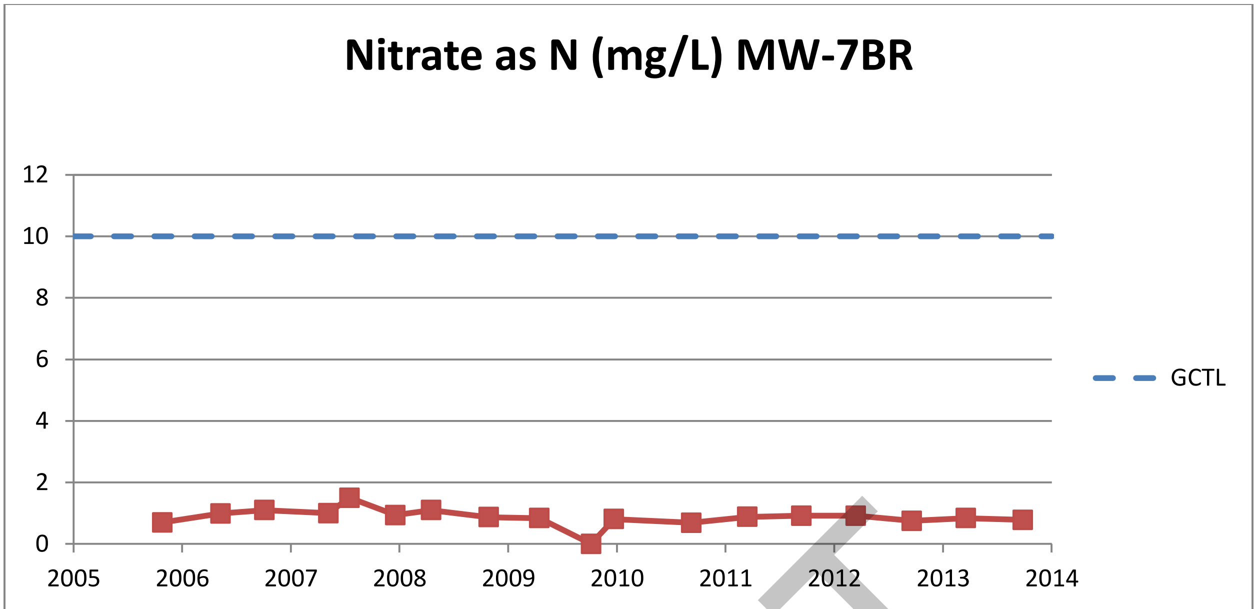


Figure 3.3.8-7

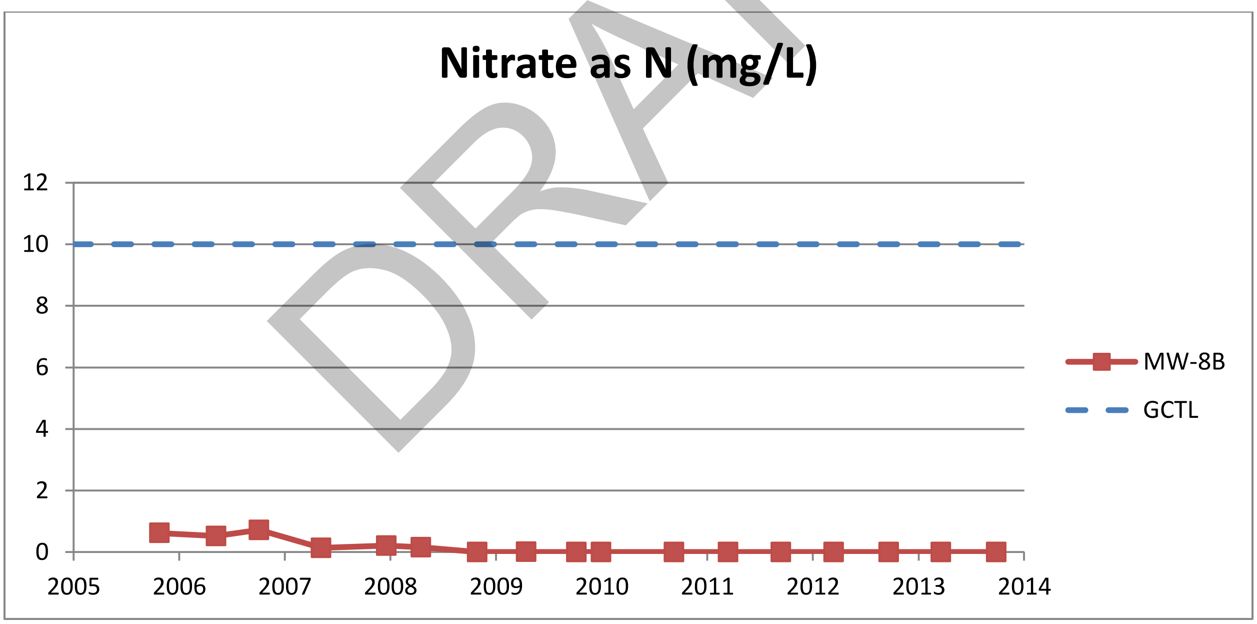


Figure 3.3.8-8

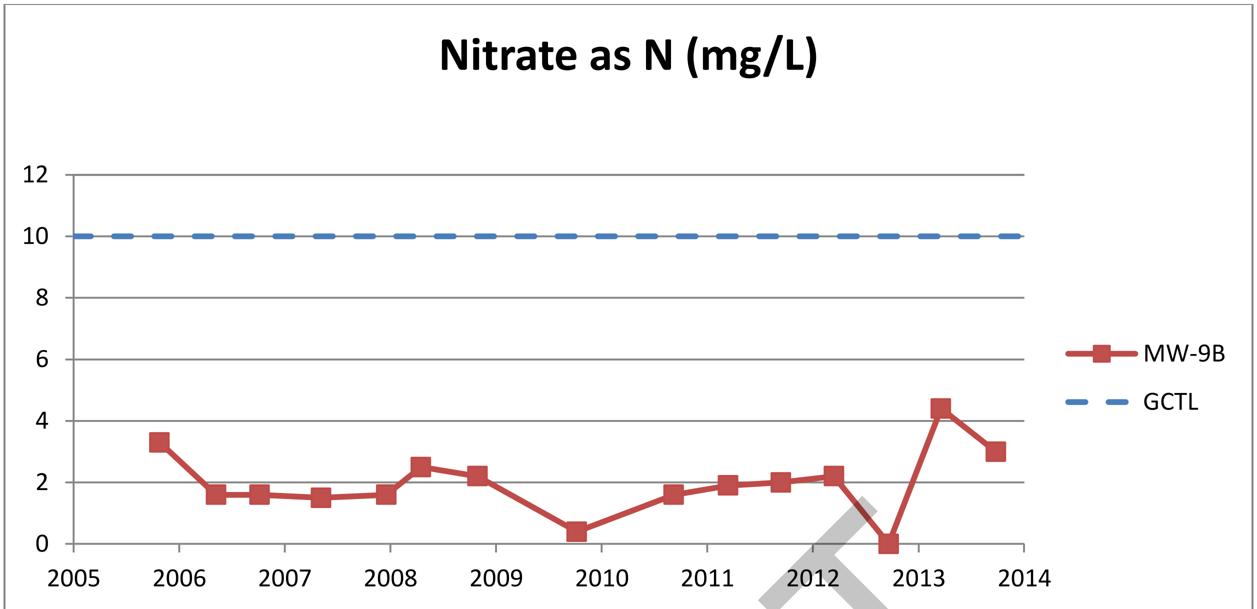


Figure 3.3.8-9

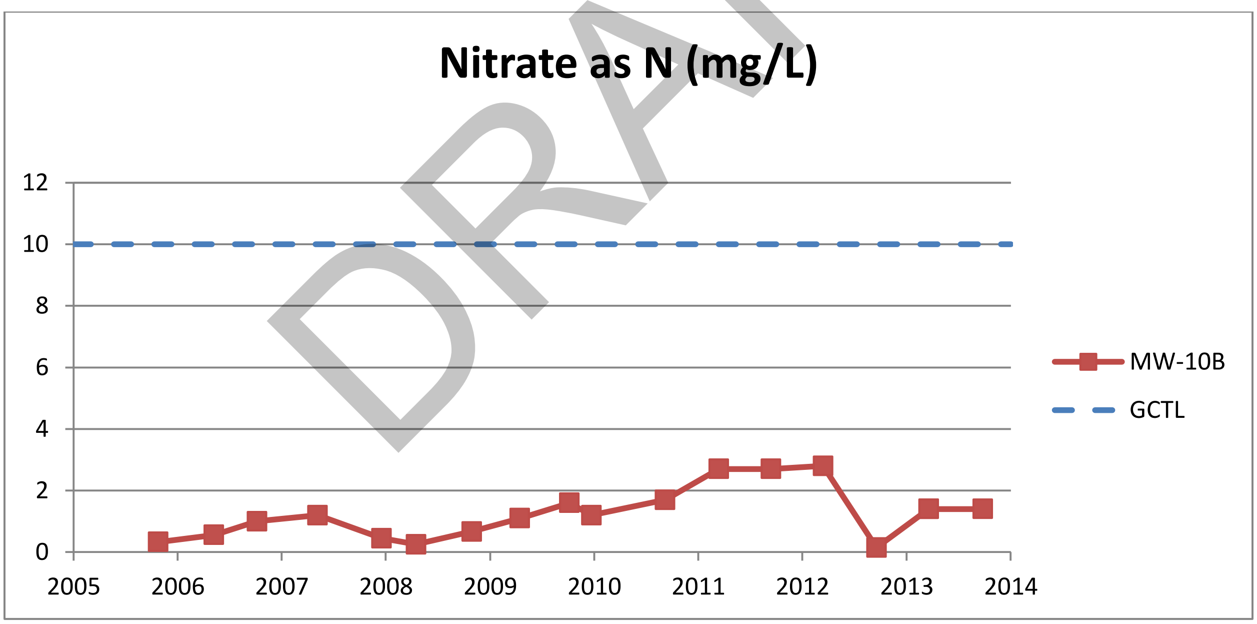


Figure 3.3.8-10

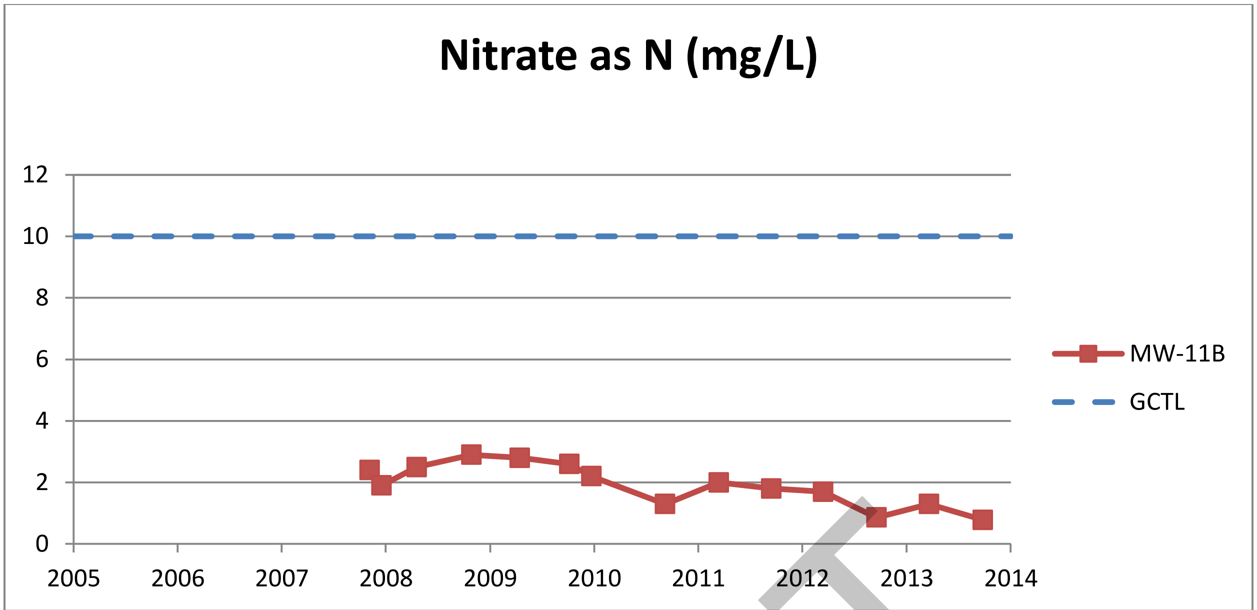


Figure 3.3.8-11

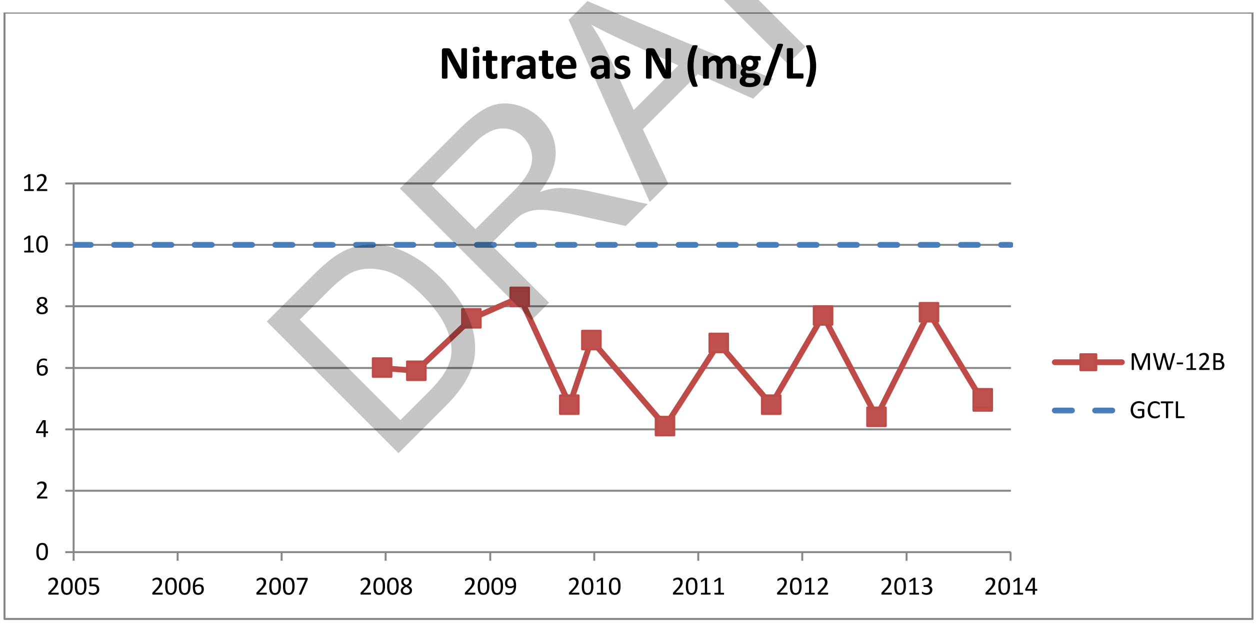


Figure 3.3.8-12

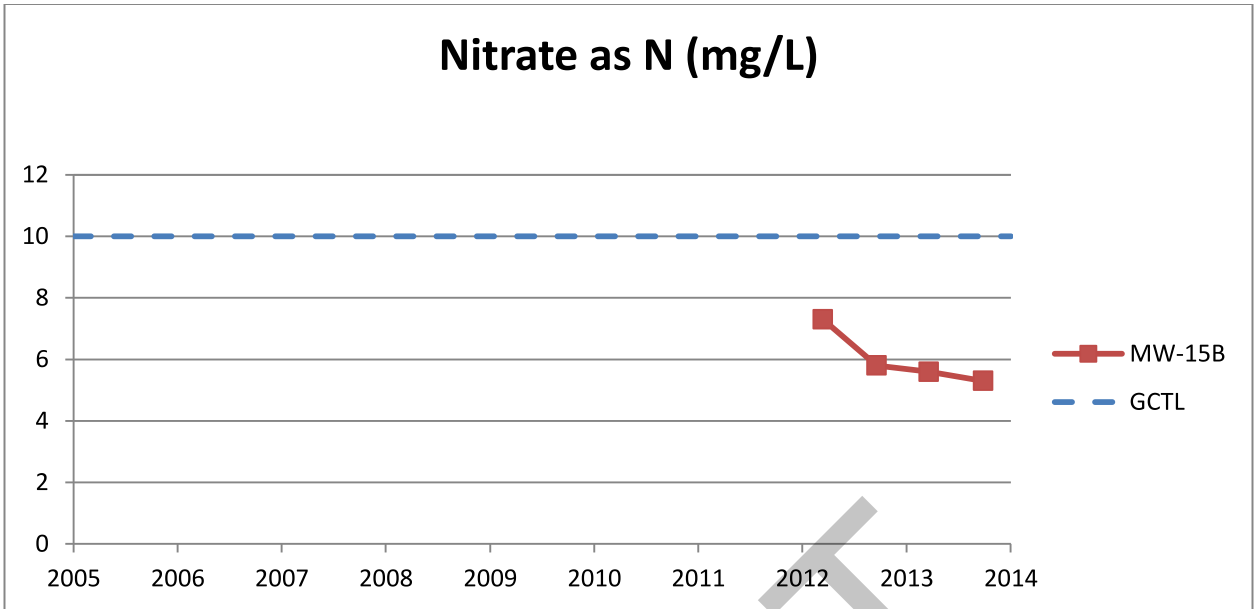


Figure 3.3.8-13

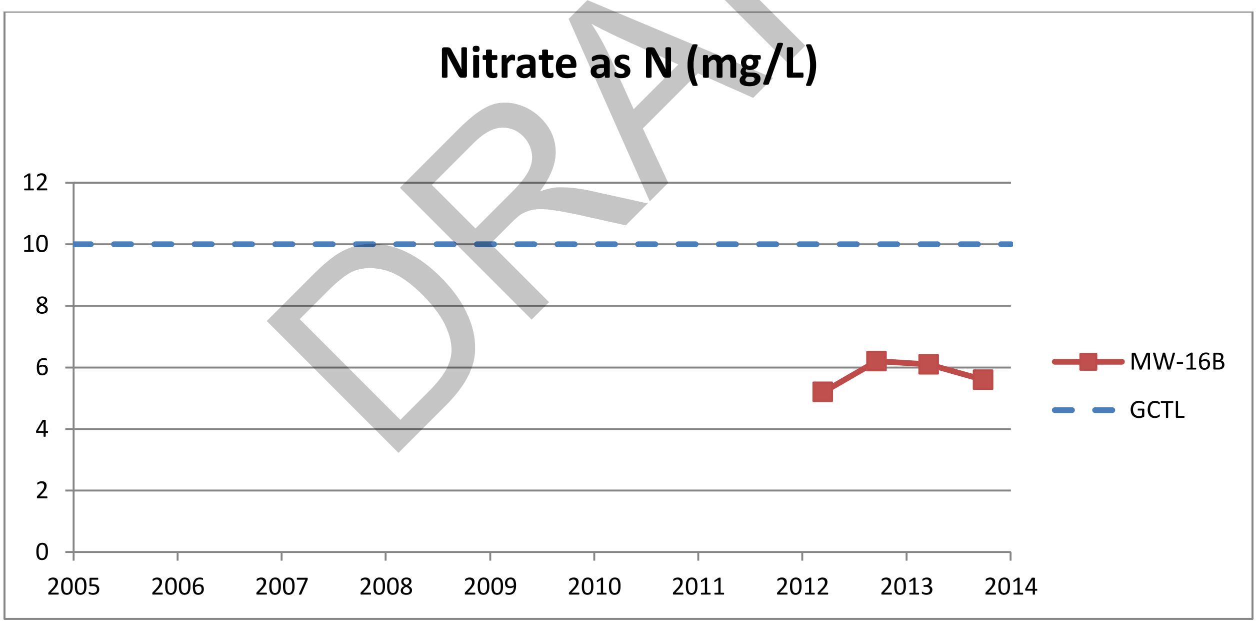


Figure 3.3.8-14

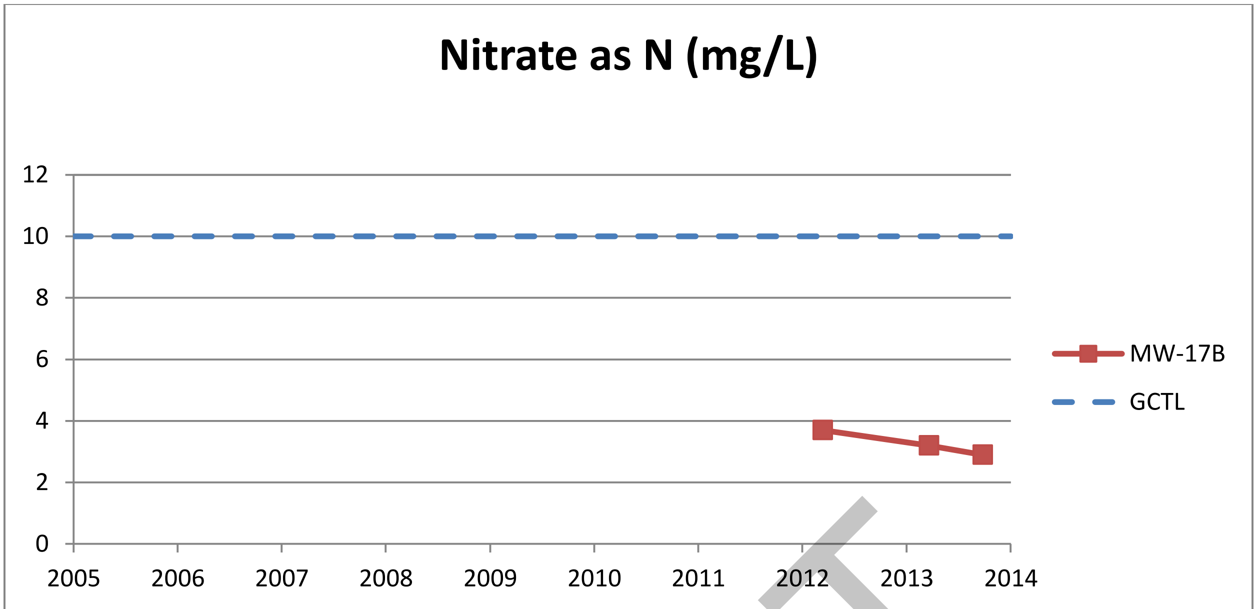


Figure 3.3.8-15

3.3.9 Nitrate-Nitrite-N

Nitrate–nitrite-N (NO_3^-—NO_2^--N) is a combined measure of the nitrate and nitrite in a water sample. Nitrite generally converts readily to nitrate in water. Measured levels should reflect those of nitrate-N as nitrite, if present, is typically found in lower concentrations that nitrate. Nitrate-nitrite-N was detected in all the samples collected from Floridan aquifer monitoring wells. The box-and-whisker plots (Figure 3.3.8-1) of nitrate-nitrite-N concentration for each Floridan aquifer monitoring well show that the nitrate-nitrite-N concentrations in each well varied in a limited range but generally were found to be less than the GCTL (10 mg/L) for each well. Temporal plots for Nitrate-Nitrite-N are shown in Figure 3.3.9-2 to Figure 3.3.9-15.

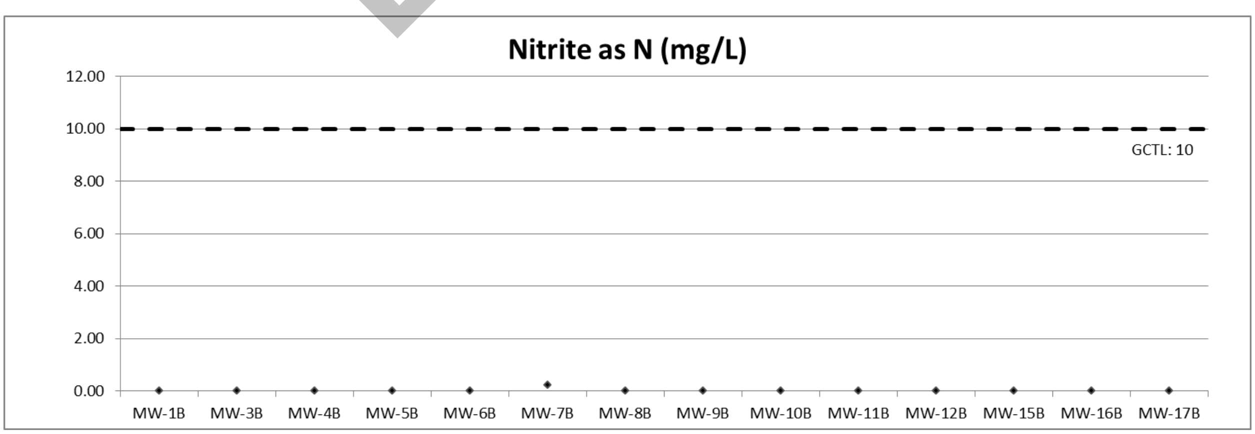


Figure 3.3.9-1

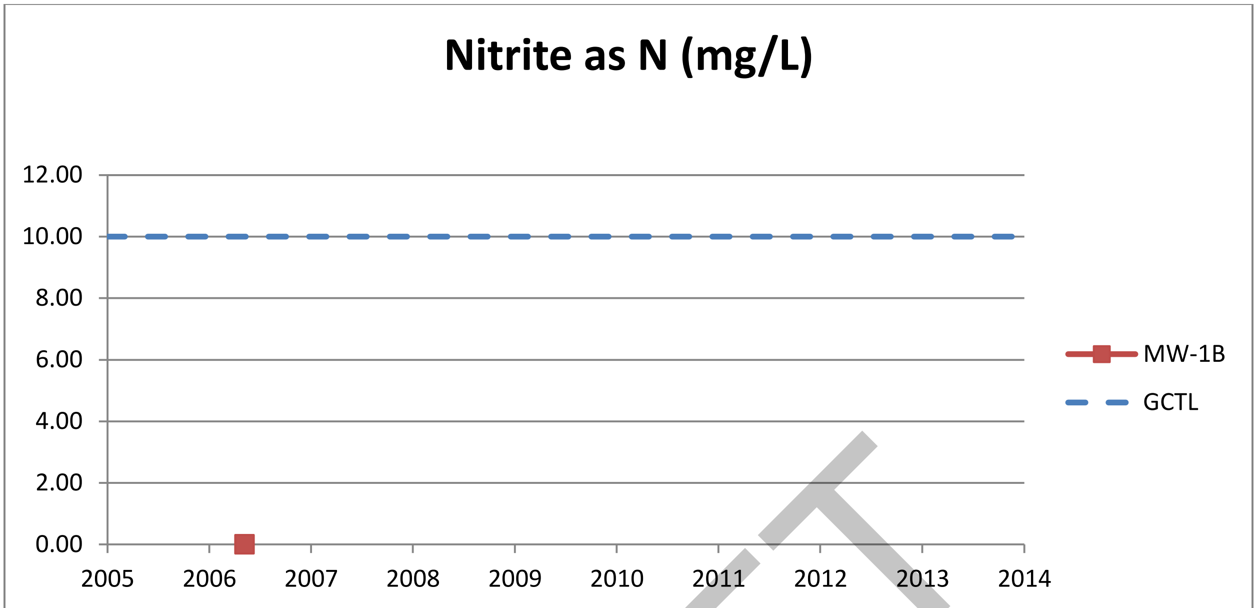


Figure 3.3.9-2

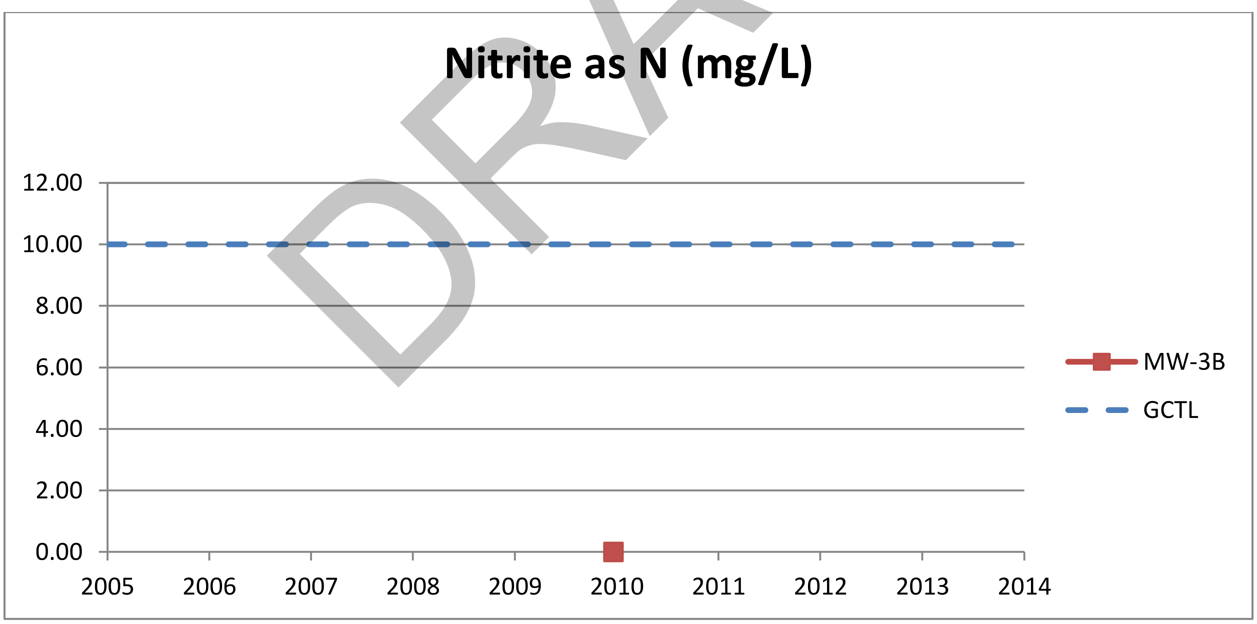


Figure 3.3.9-3

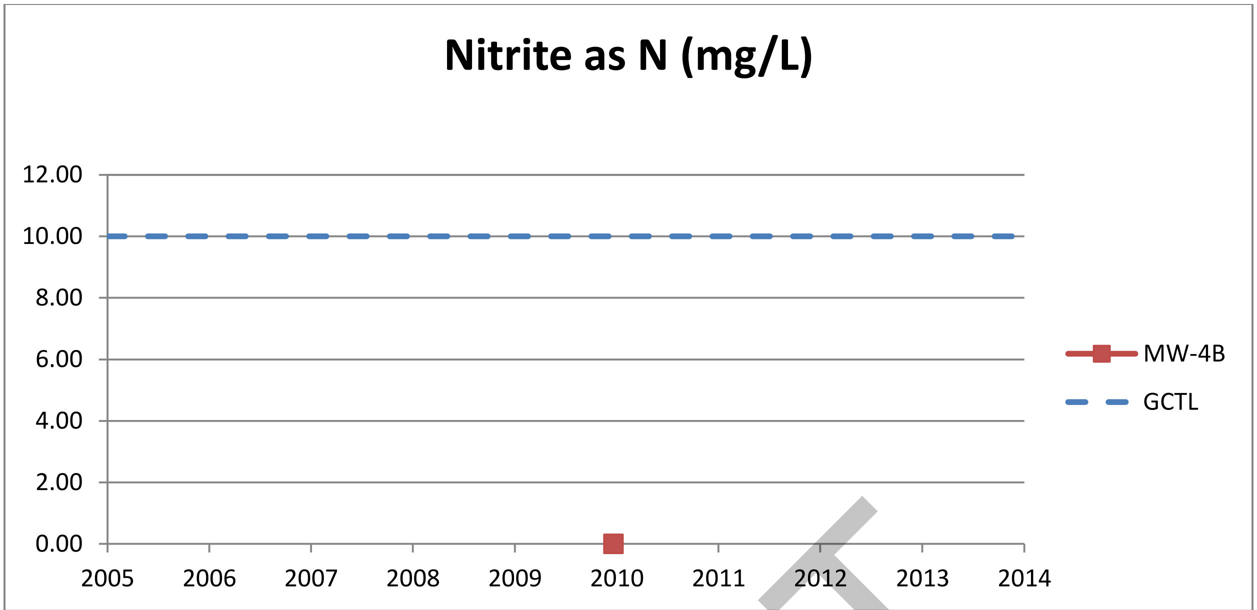


Figure 3.3.9-4

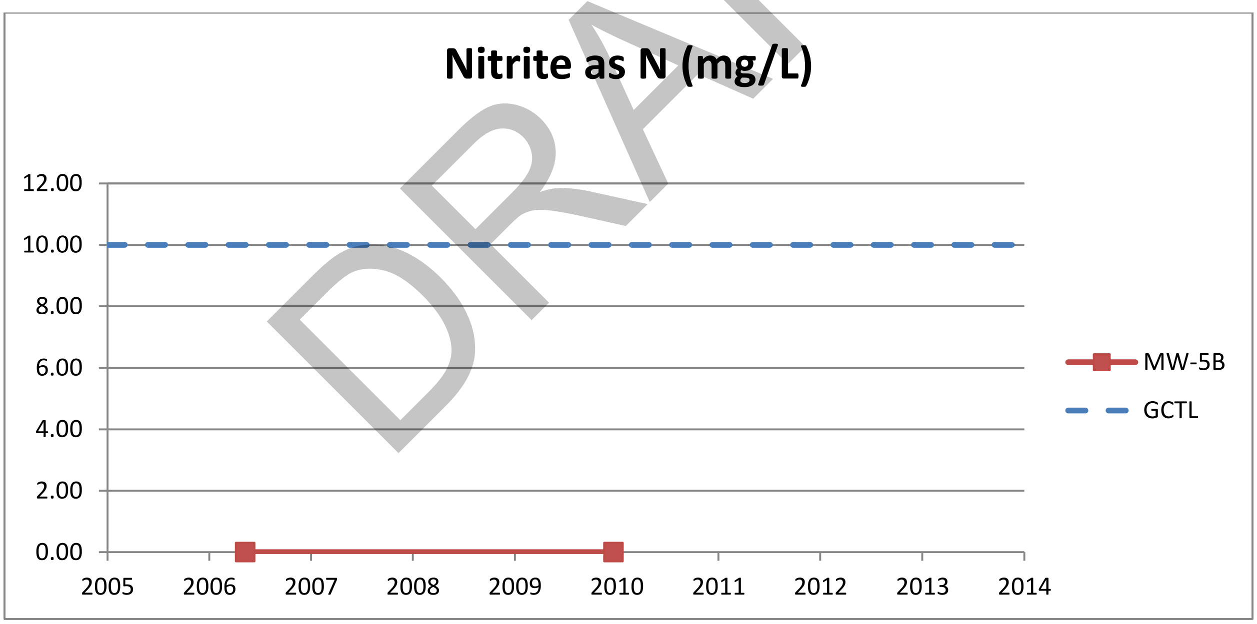


Figure 3.3.9-5

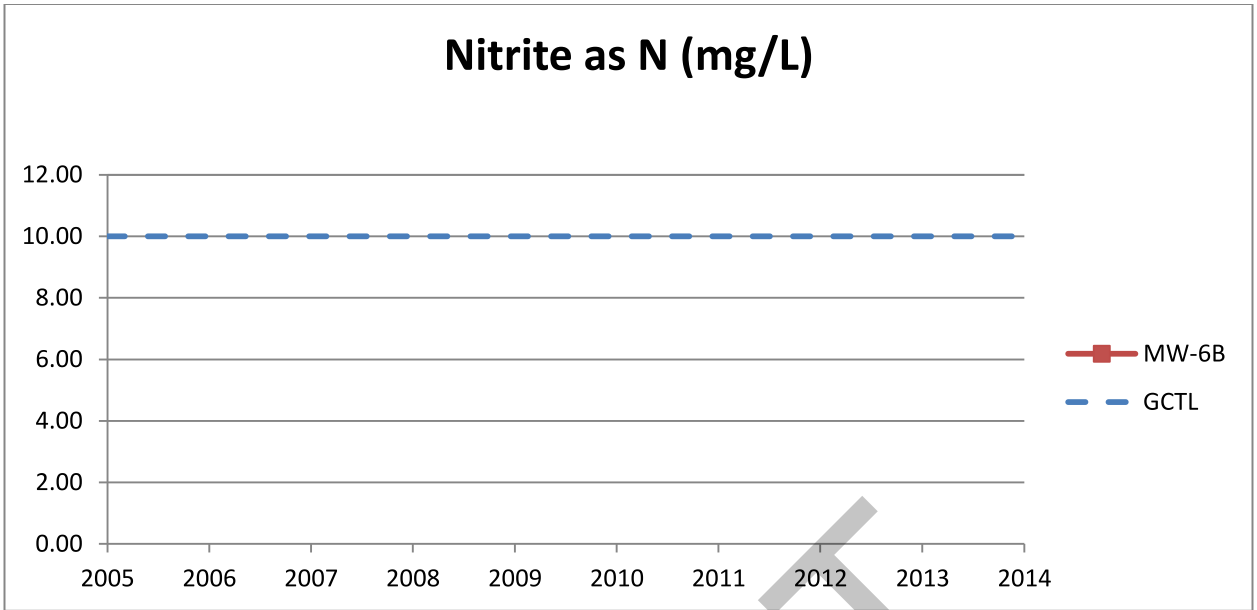


Figure 3.3.9-6

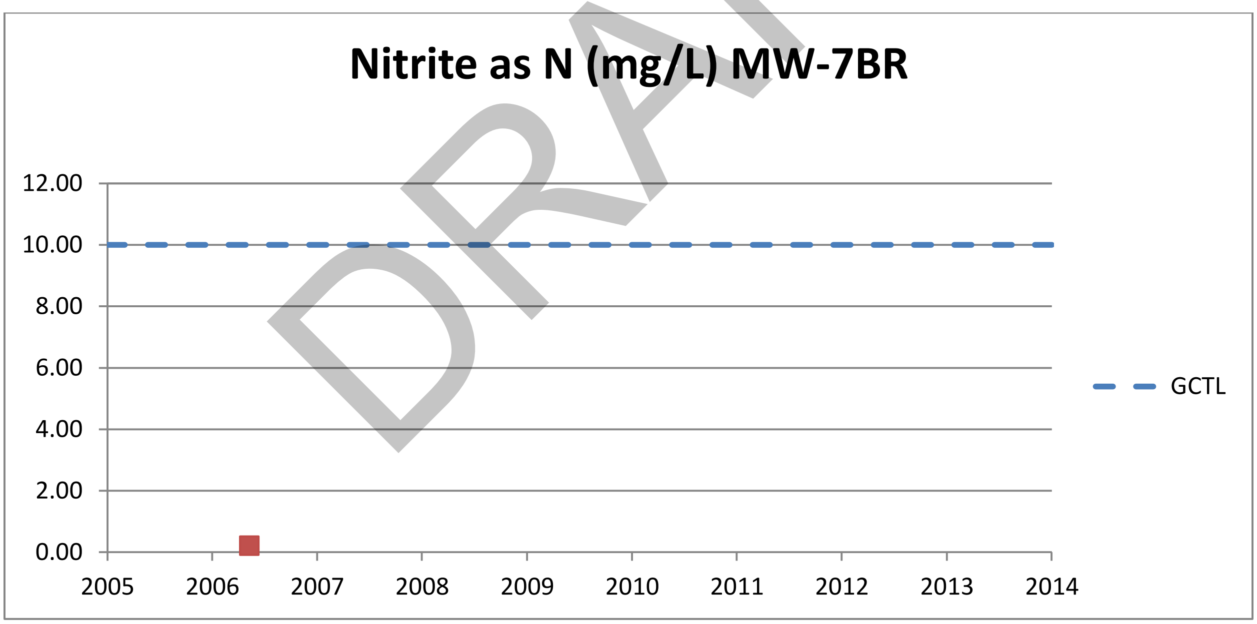
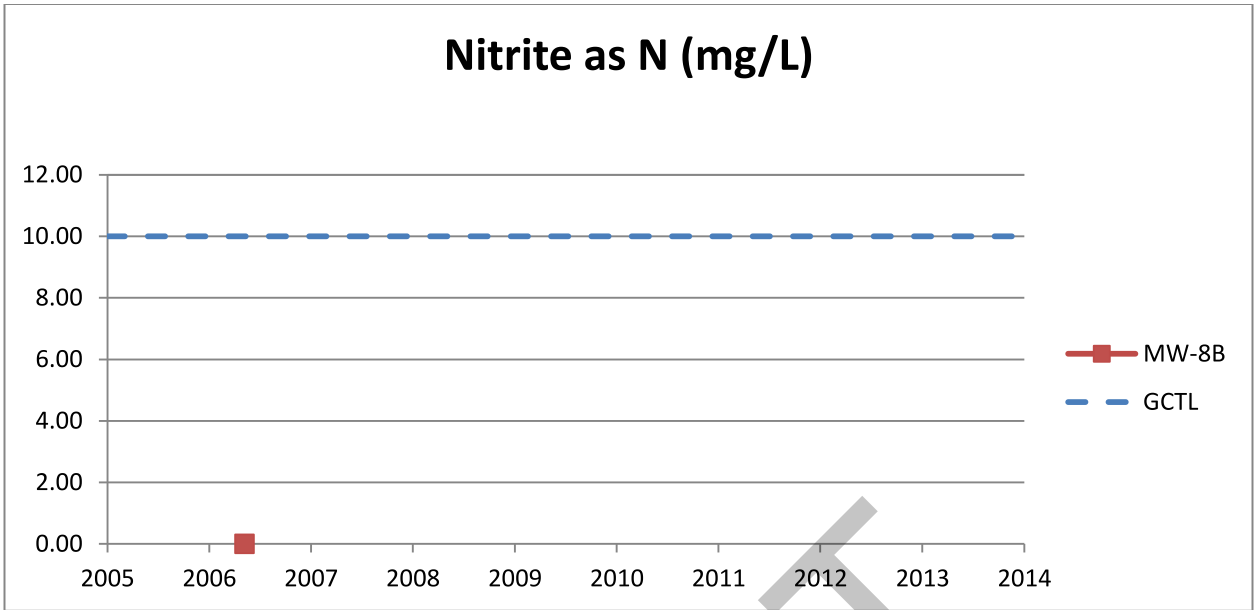


Figure 3.3.9-7



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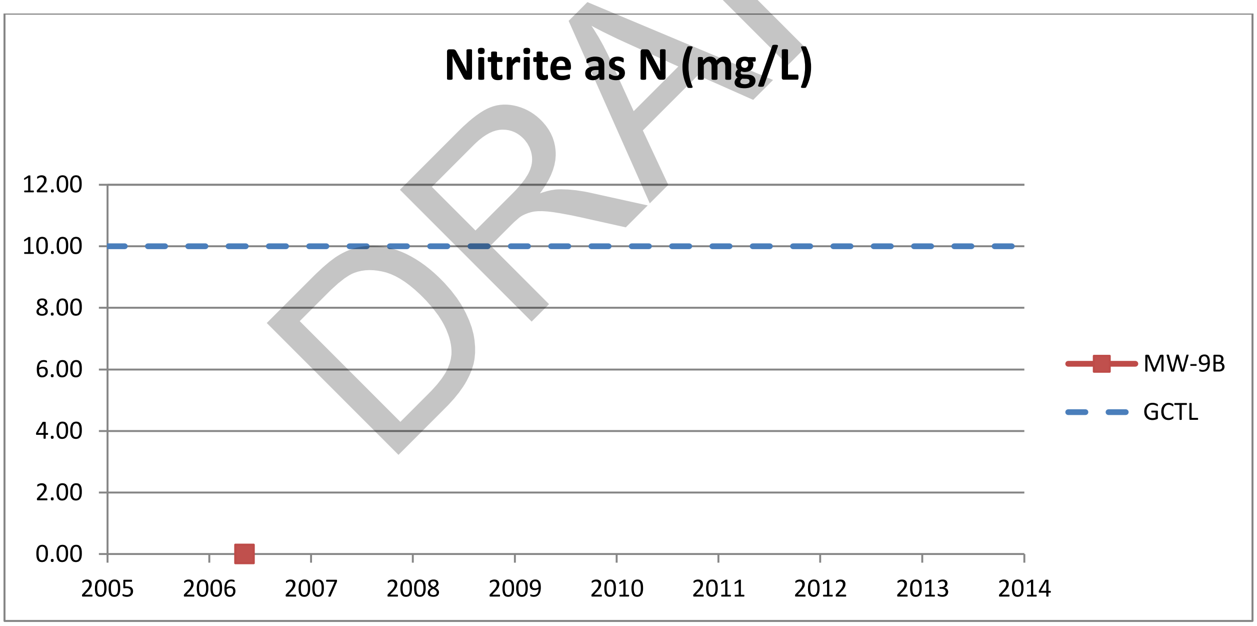


Figure 3.3.9-9

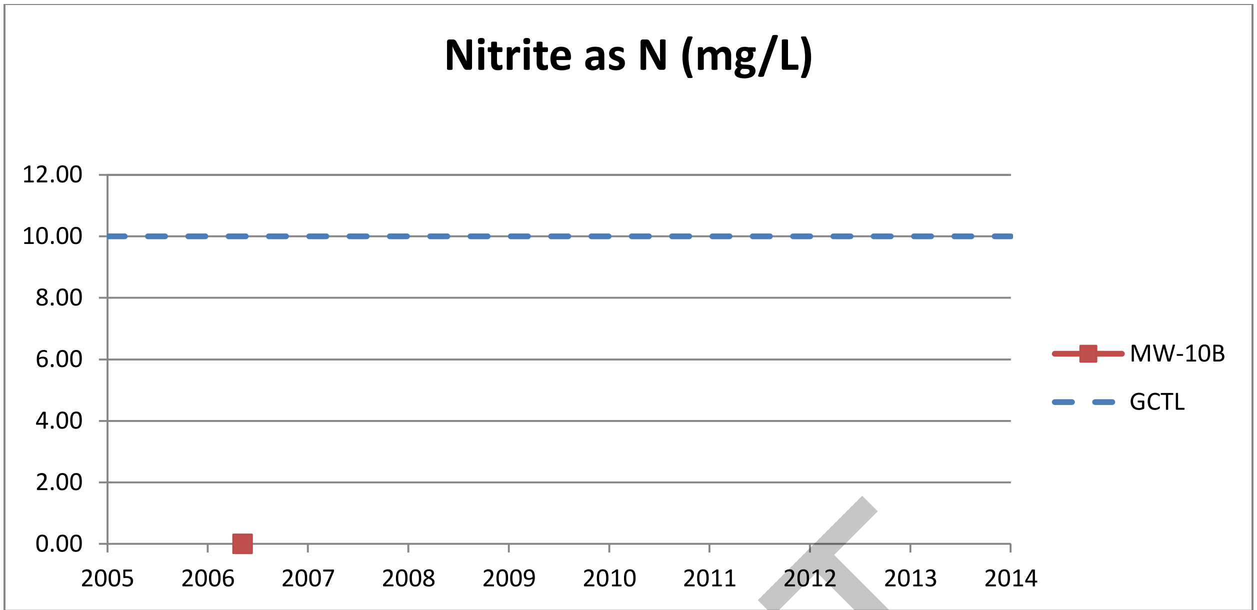


Figure 3.3.9-10

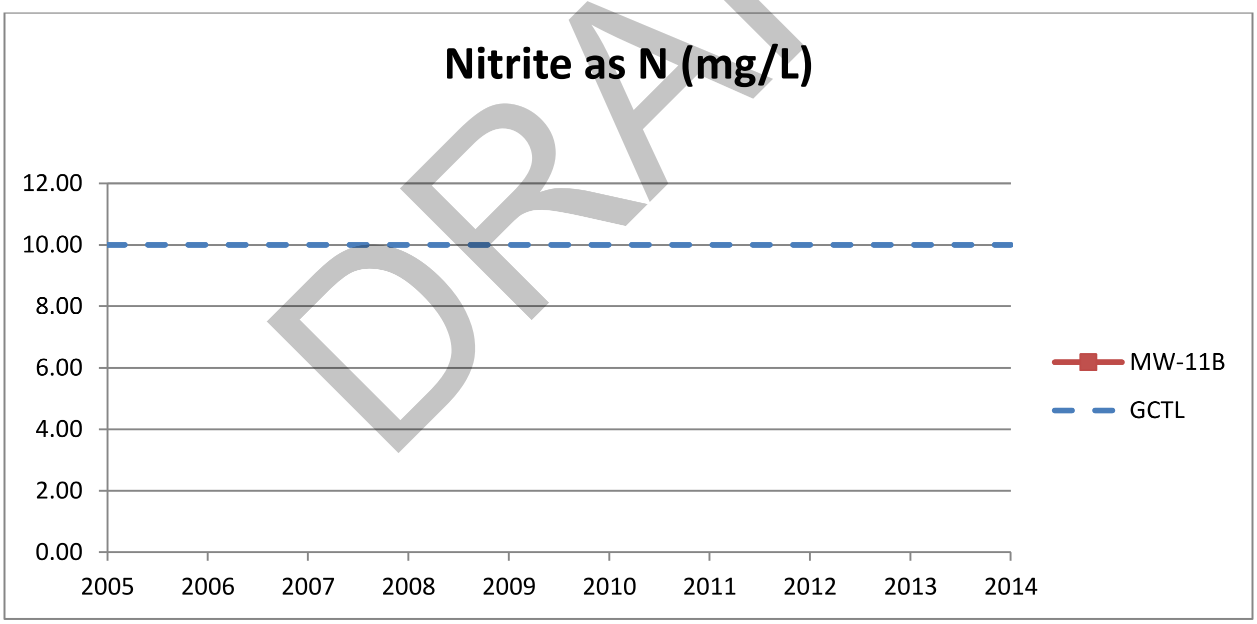


Figure 3.3.9-11

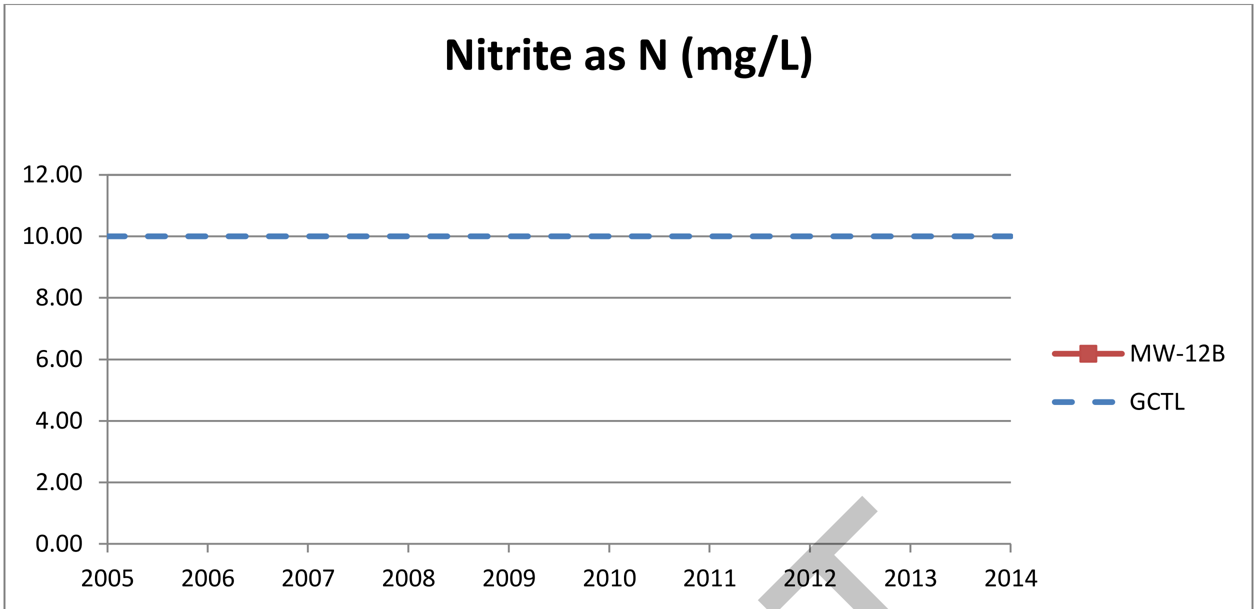
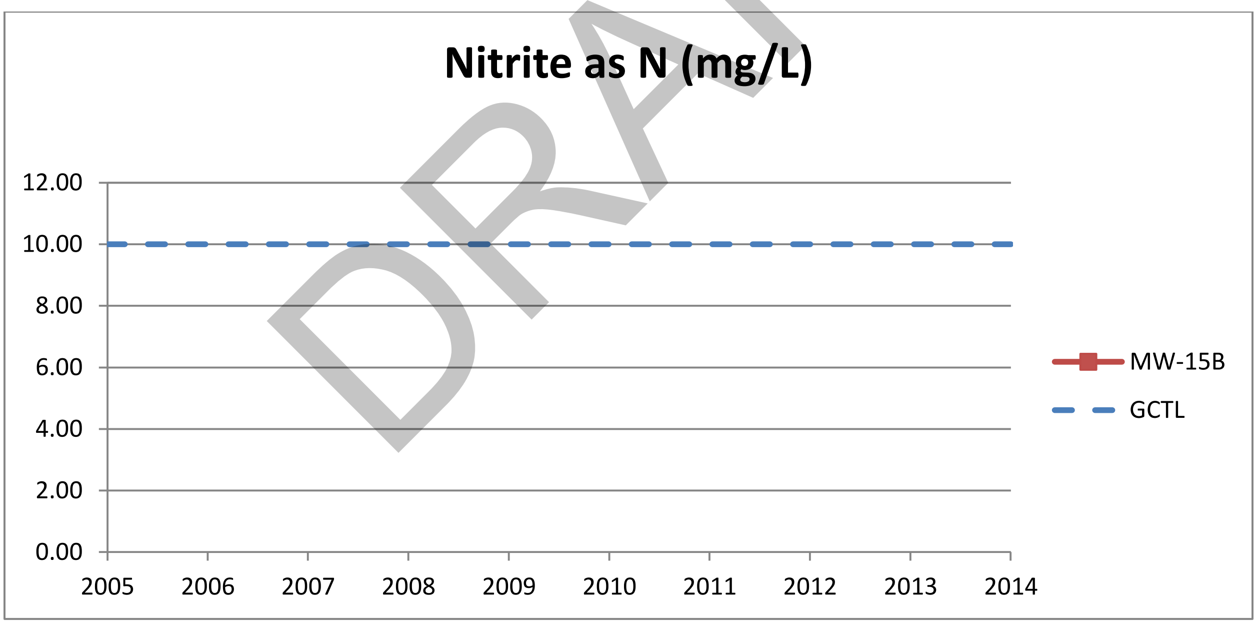


Figure 3.3.9-12



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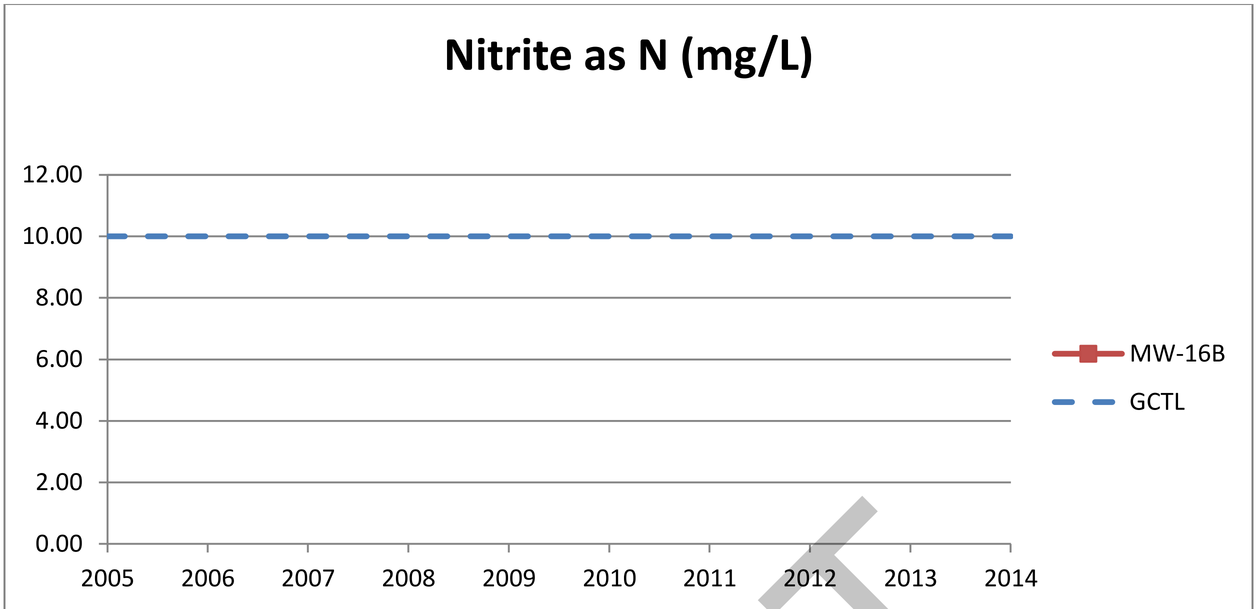


Figure 3.3.9-14

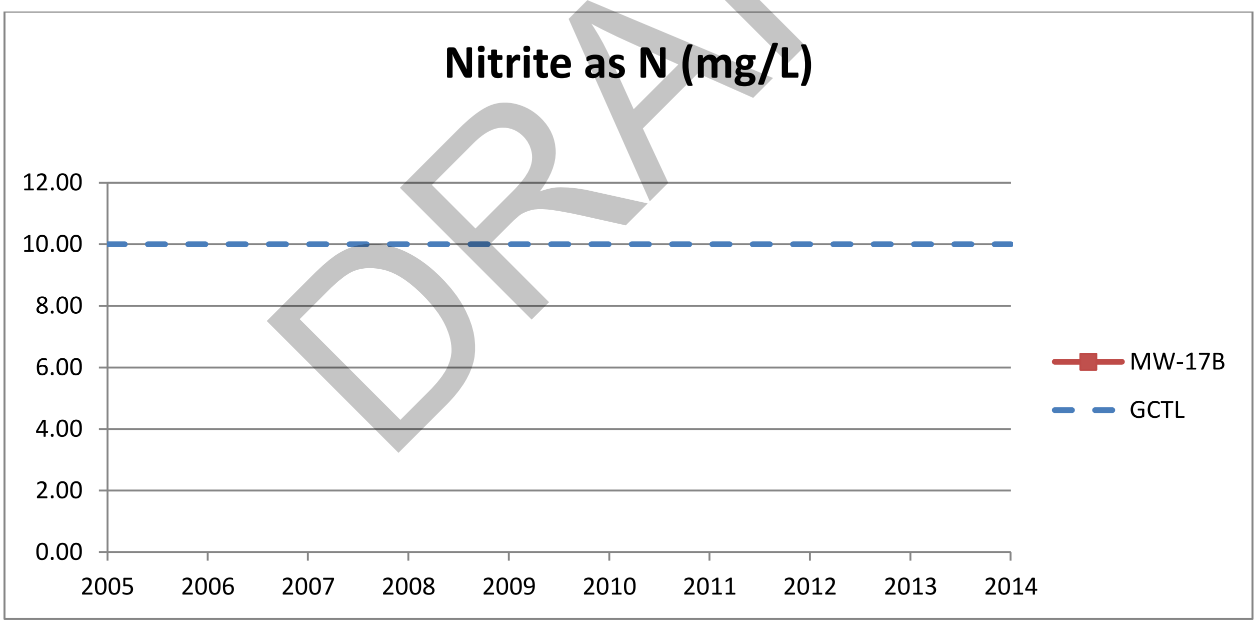


Figure 3.3.9-15

3.3.10 Chromium

The box and whisker plots for Chromium for the Floridan aquifer monitoring wells are shown in Figure 3.3.10-1. Temporal plots for Chromium are shown in Figure 3.3.10-2 to Figure 3.3.10-15. The concentration of chromium exceeded to its GCTL (100 µg/L) once in the original background well MW-1B (123 µg/L in December 2009).

The temporal impact plot of chromium for well MW-1B shows that chromium concentrations measured were fairly constant except in the monitoring event conducted in December 2009. Samples collected after December 2009 did not show any exceedances of the GCTL for chromium. Data from equipment and trip blanks do not suggest any laboratory contamination. Also, turbidity levels in MW-1B were <20 NTU per FDEP SOP requirements. Subsequent monitoring events have demonstrated that chromium levels have since been measured below the GCTL. The single exceedance of the chromium GCTL in MW-1B can, therefore, be considered as an isolated event and does not reflect any significant change in water quality in well MW-1B.

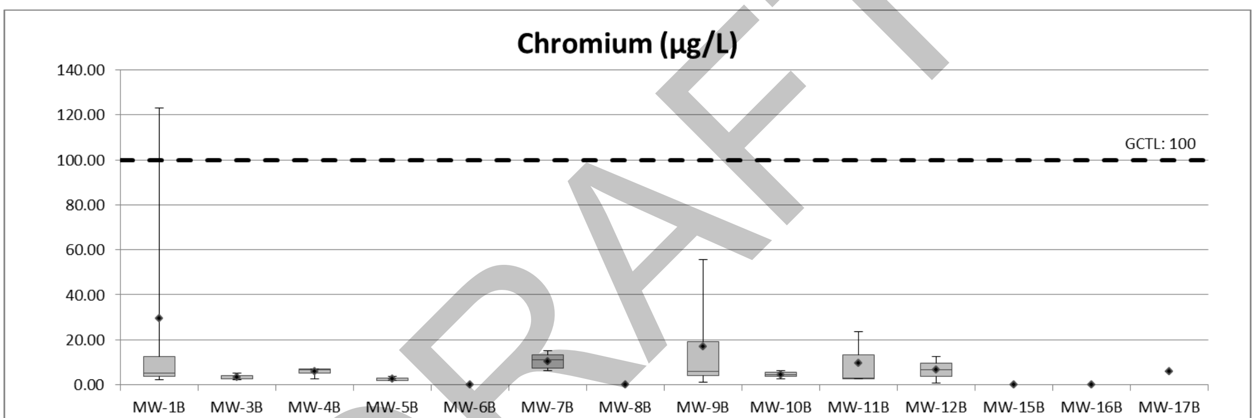
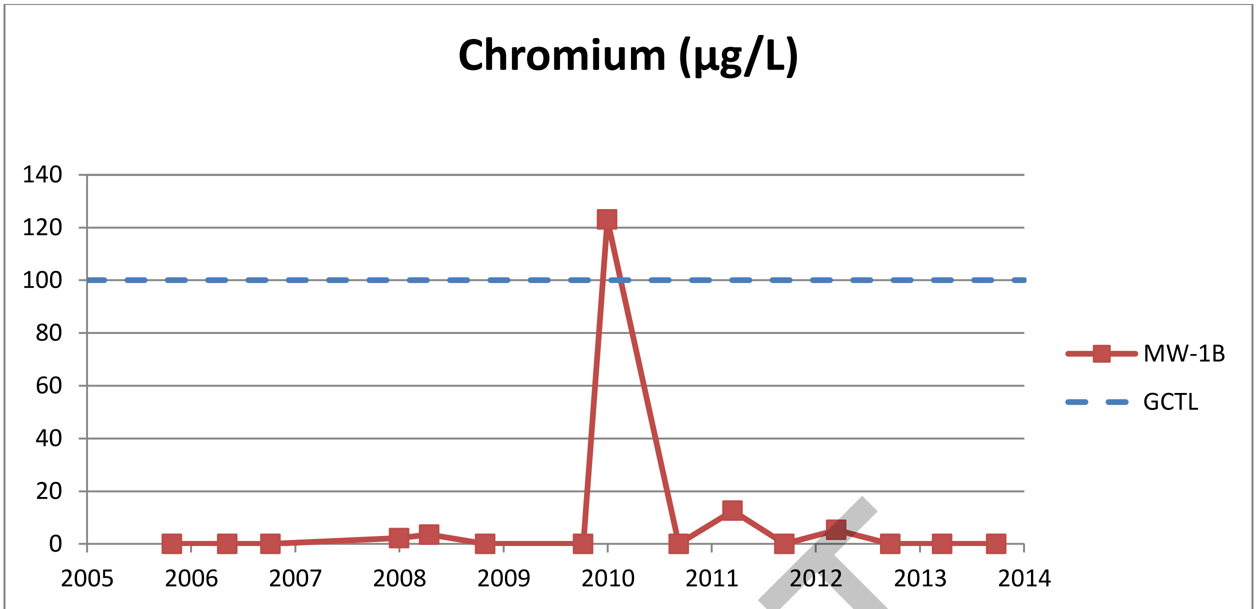


Figure 3.3.10-1



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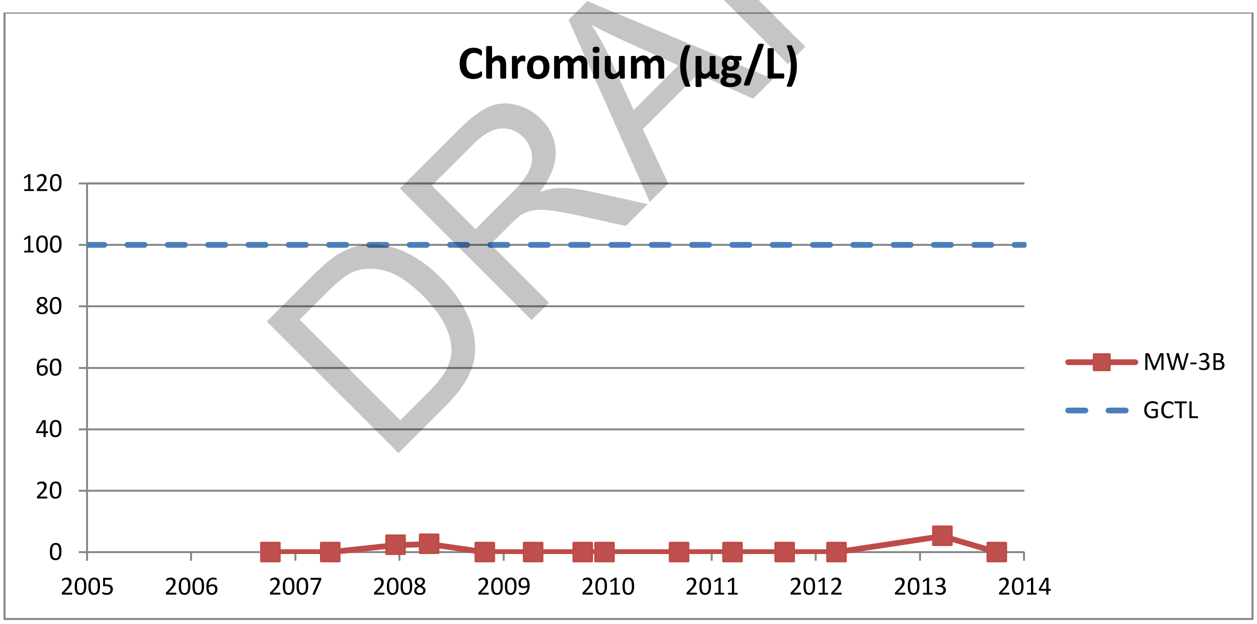

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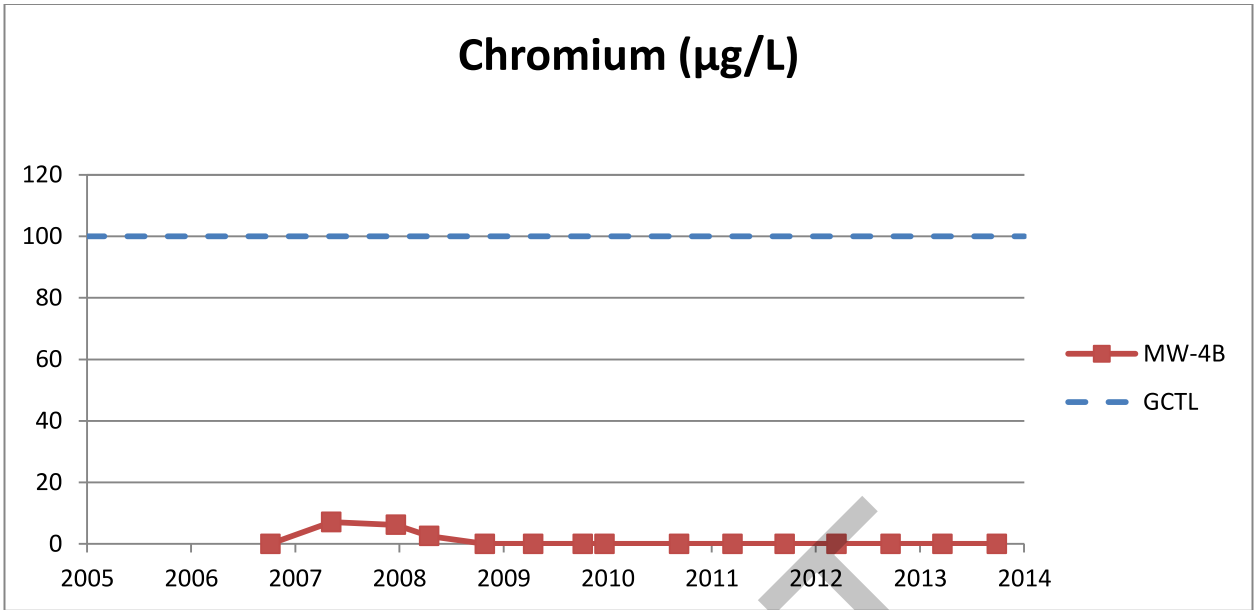

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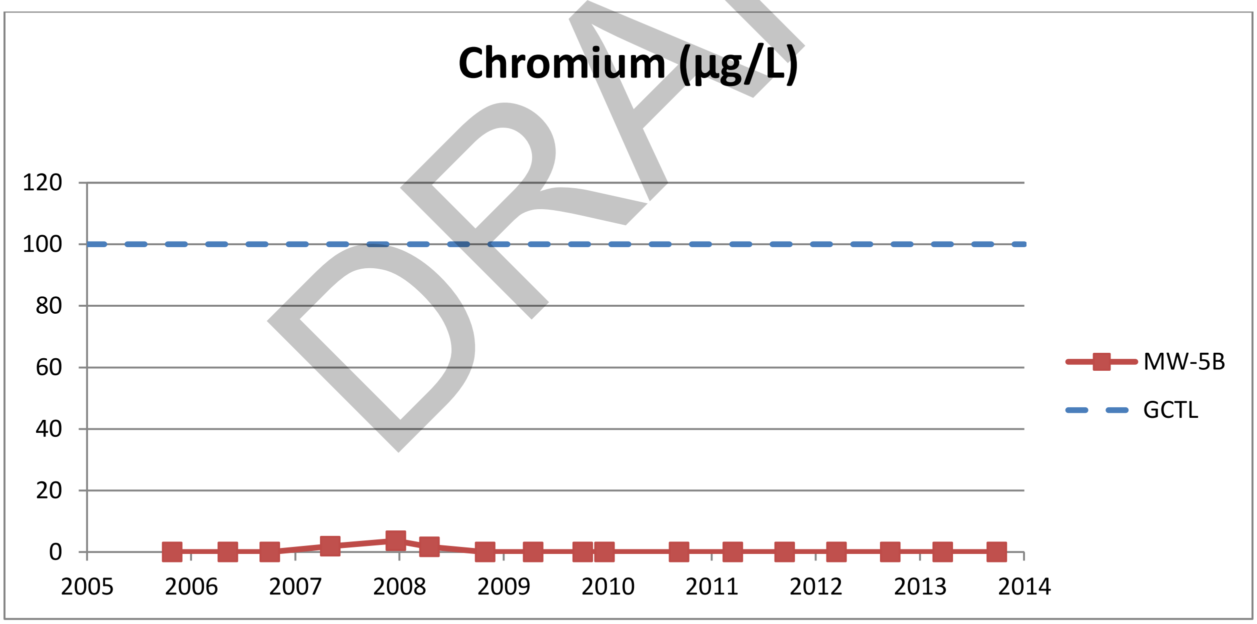

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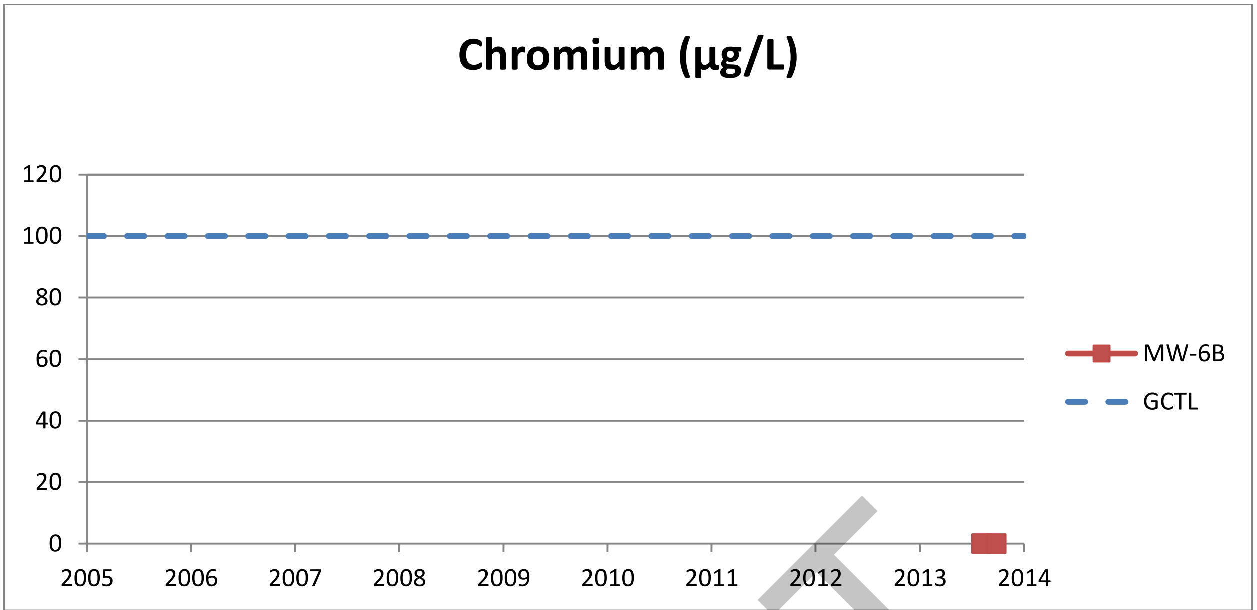

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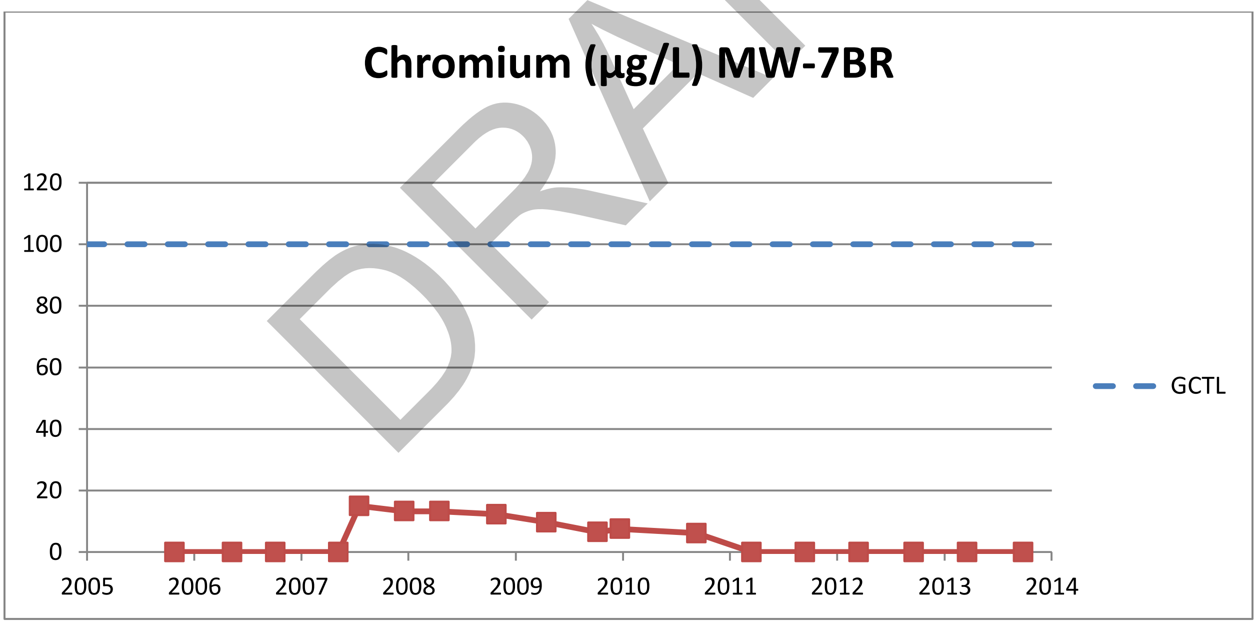
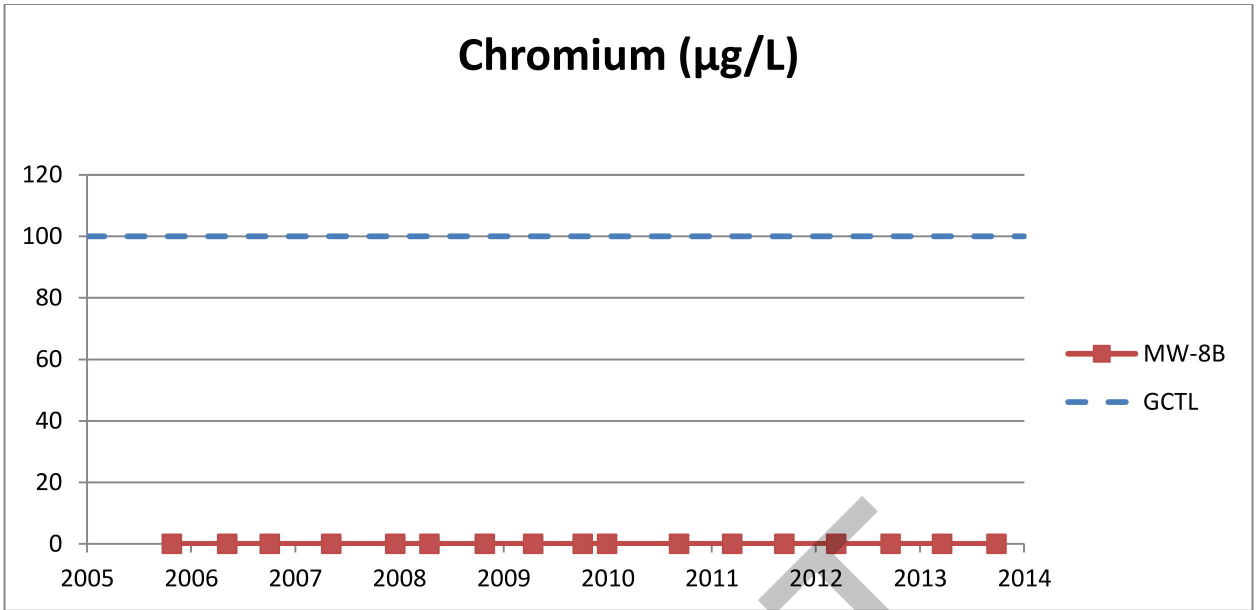


Figure 3.3.10-7



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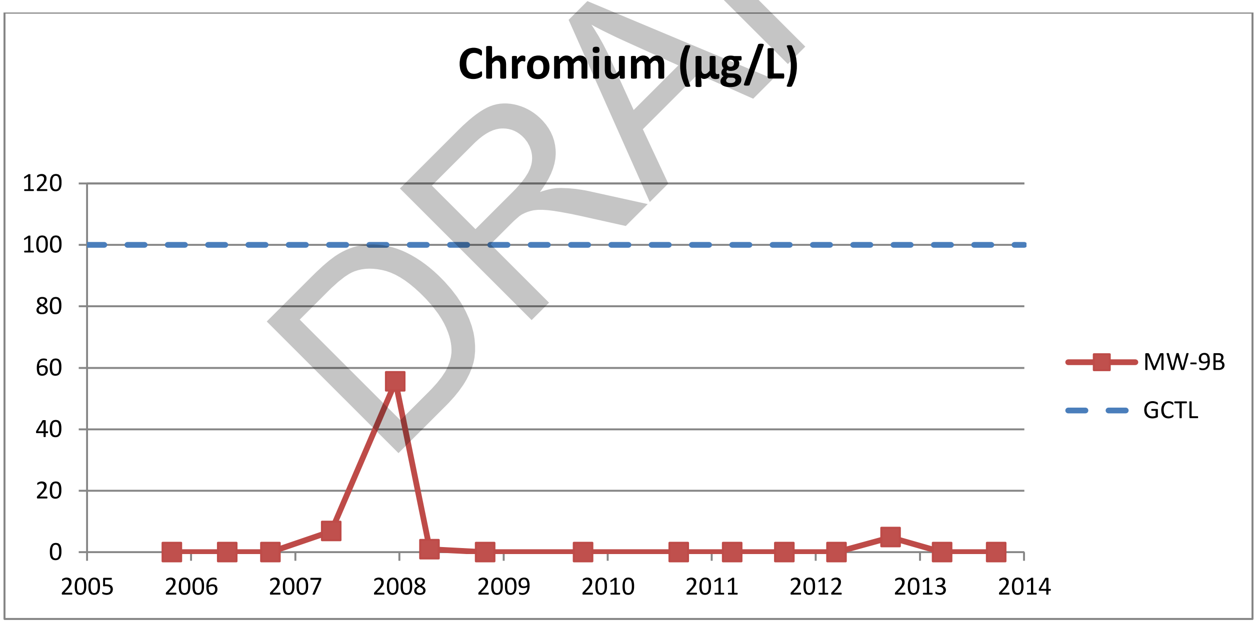

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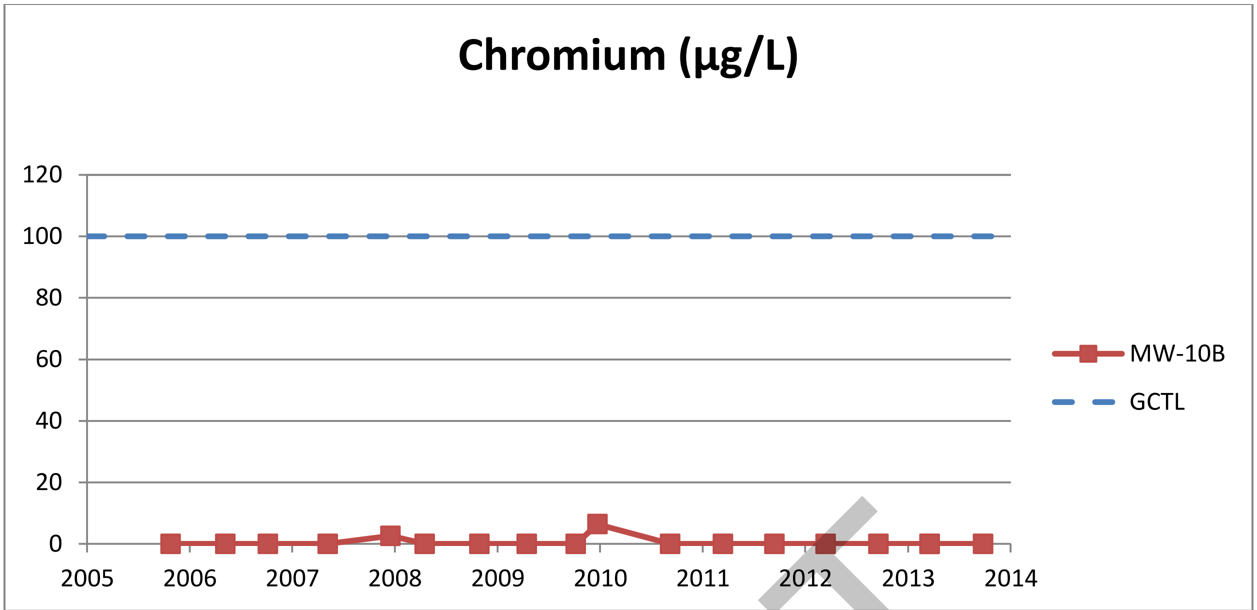


Figure 3.3.10-10

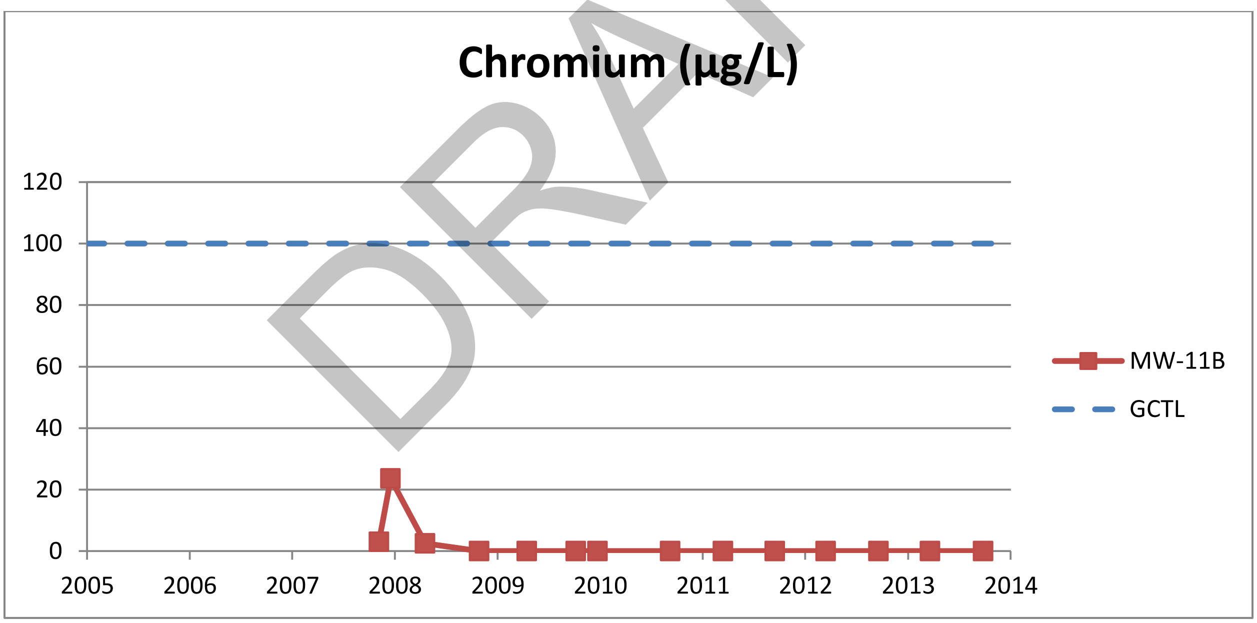


Figure 3.3.10-11

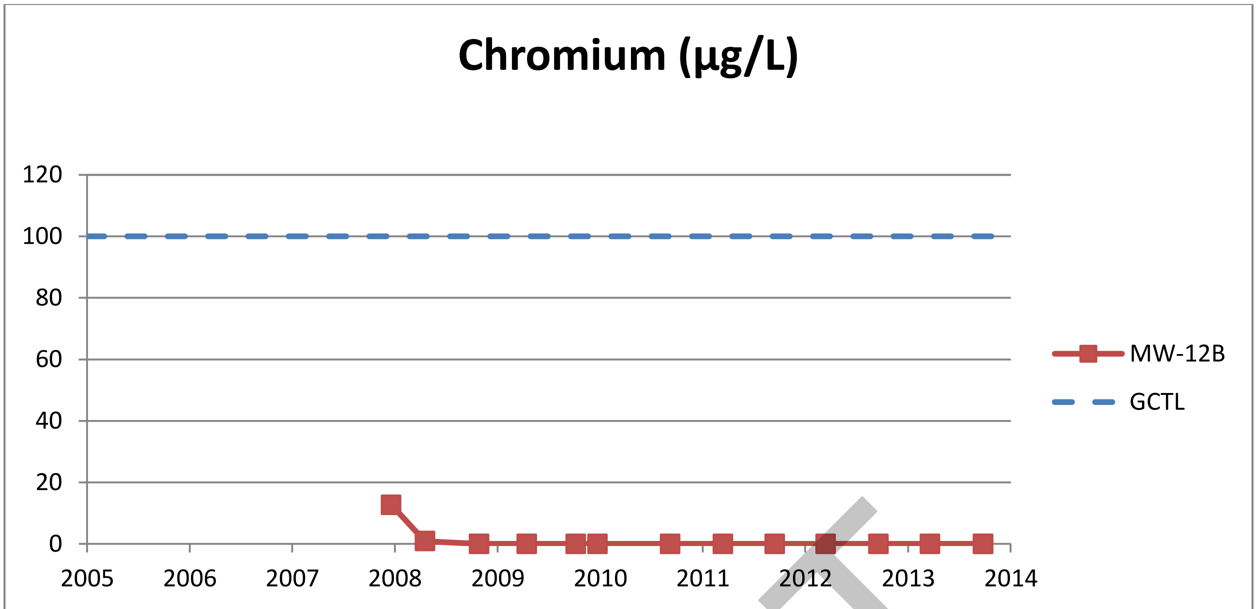
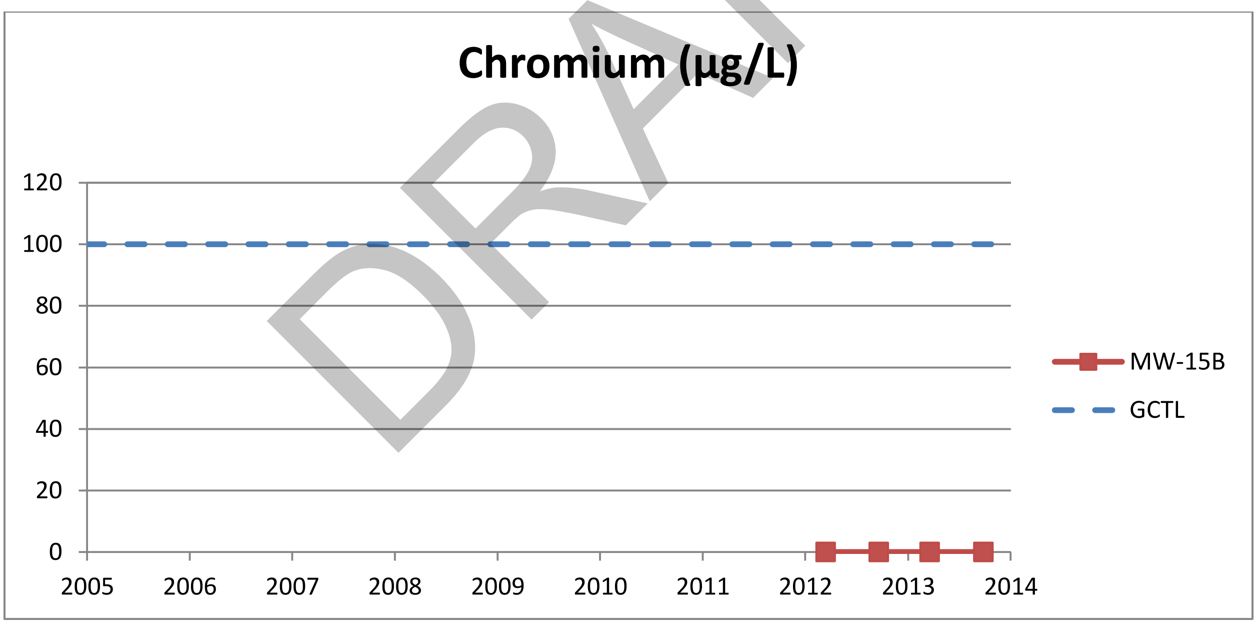


Figure 3.3.10-12



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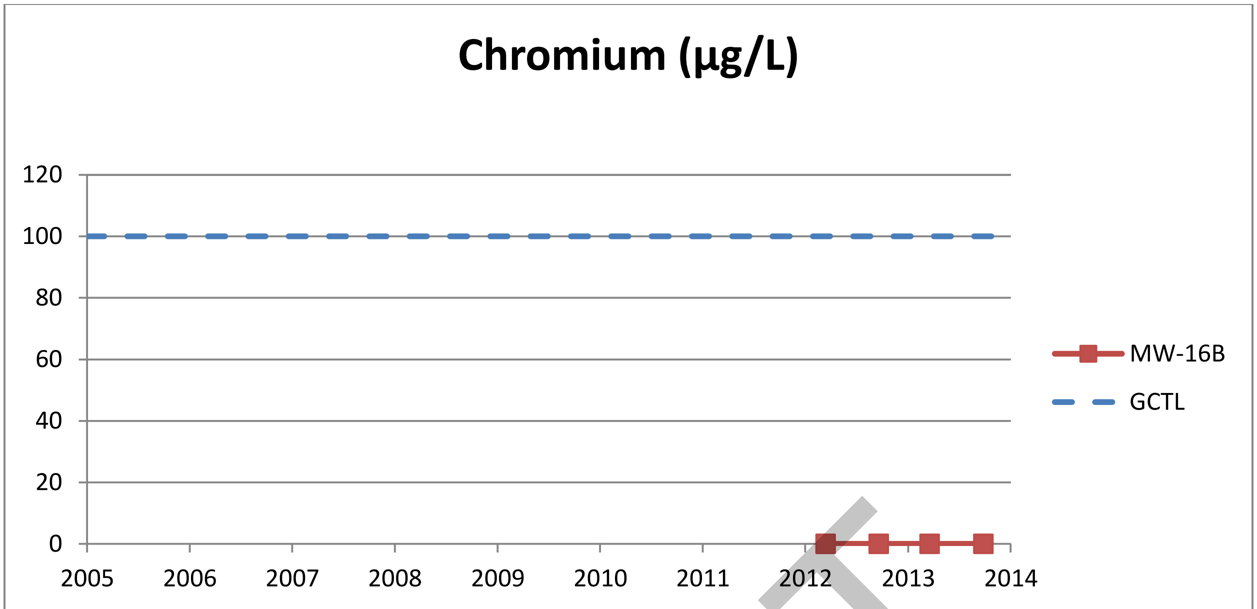


Figure 3.3.10-14

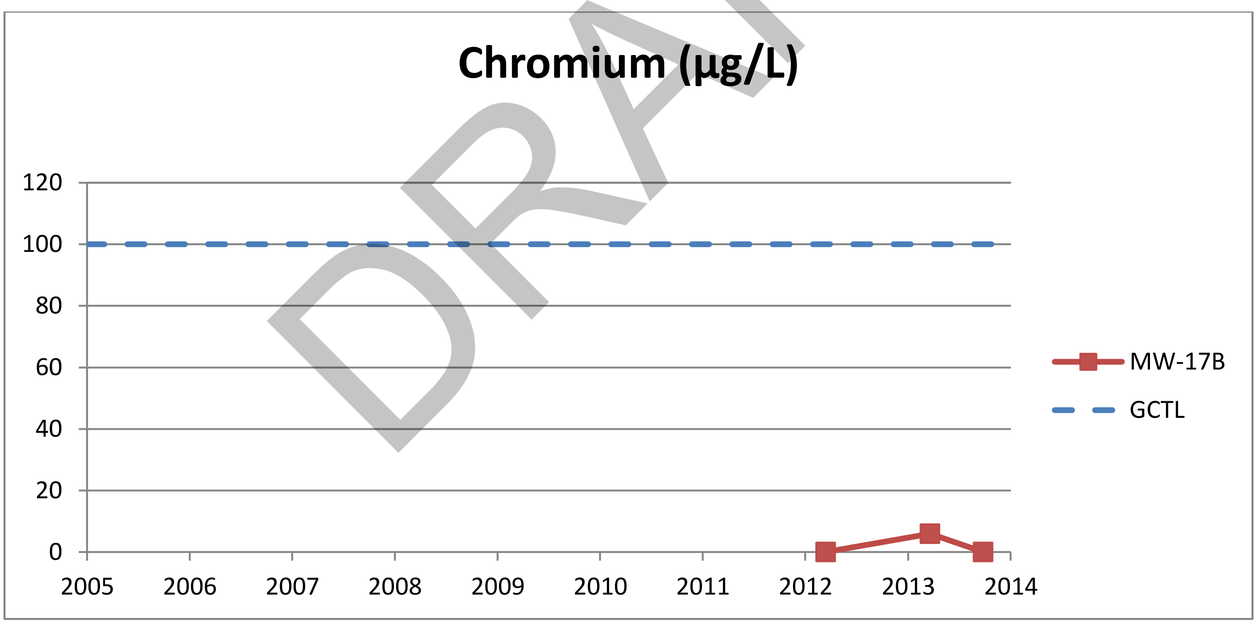
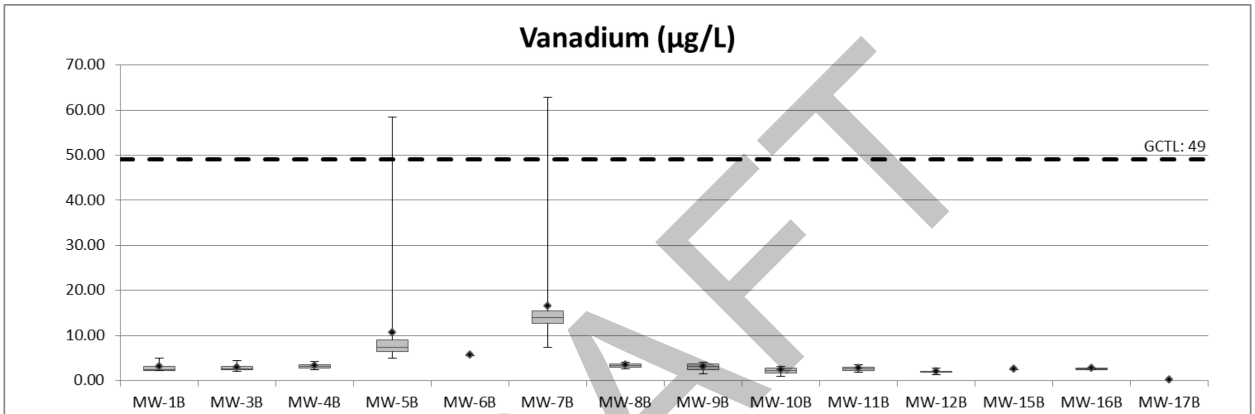


Figure 3.3.10-15

3.3.11 Vanadium

The box-and-whisker plots (Figure 3.3.11-1) of vanadium concentration for each Floridan aquifer monitoring well show that the vanadium concentrations exceeded the GCTL of 49 µg/L in two monitoring wells (MW-5B and MW-7B). Each of these exceedances occurred in the May 2006 sampling event. As discussed previously, in the July 2006 Semi-Annual Groundwater Monitoring Report, ENCO laboratories confirmed that a sample carryover had been the origin of the elevated vanadium levels in MW-5B and MW-7B, in addition to several other surficial aquifer monitoring wells. Samples were later re-analyzed, and all of the samples had detections below the GCTL for vanadium. Temporal plots of Vanadium are shown in Figure 3.3.11-2 to Figure 3.3.11-15. No other exceedances were observed for vanadium.



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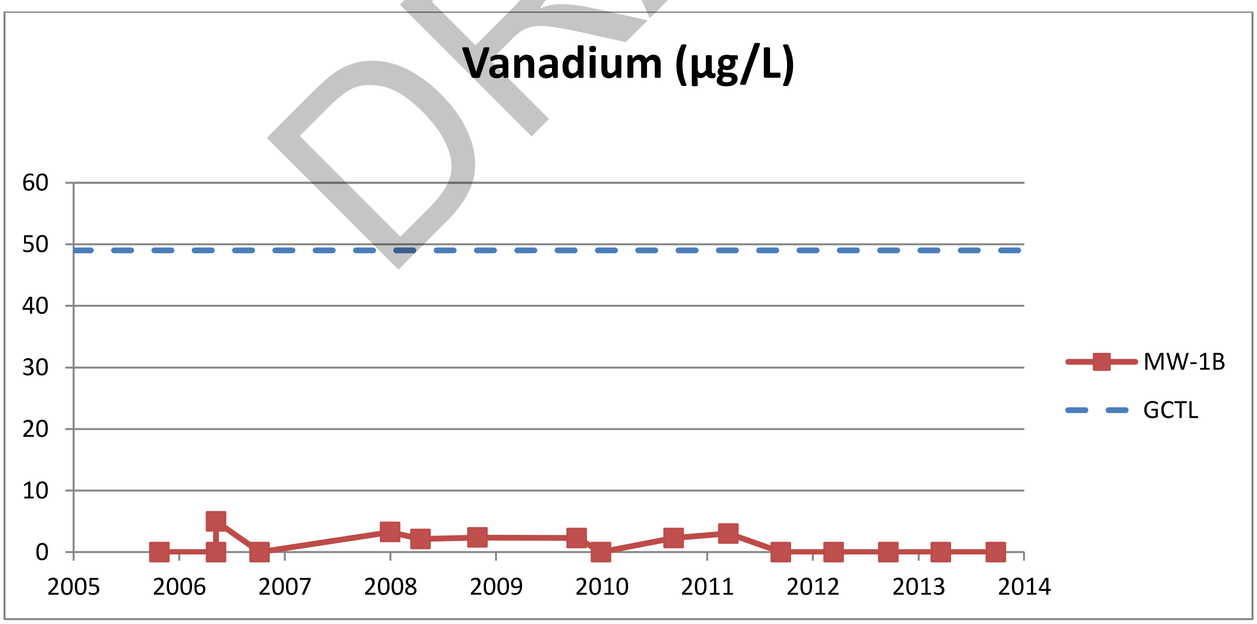

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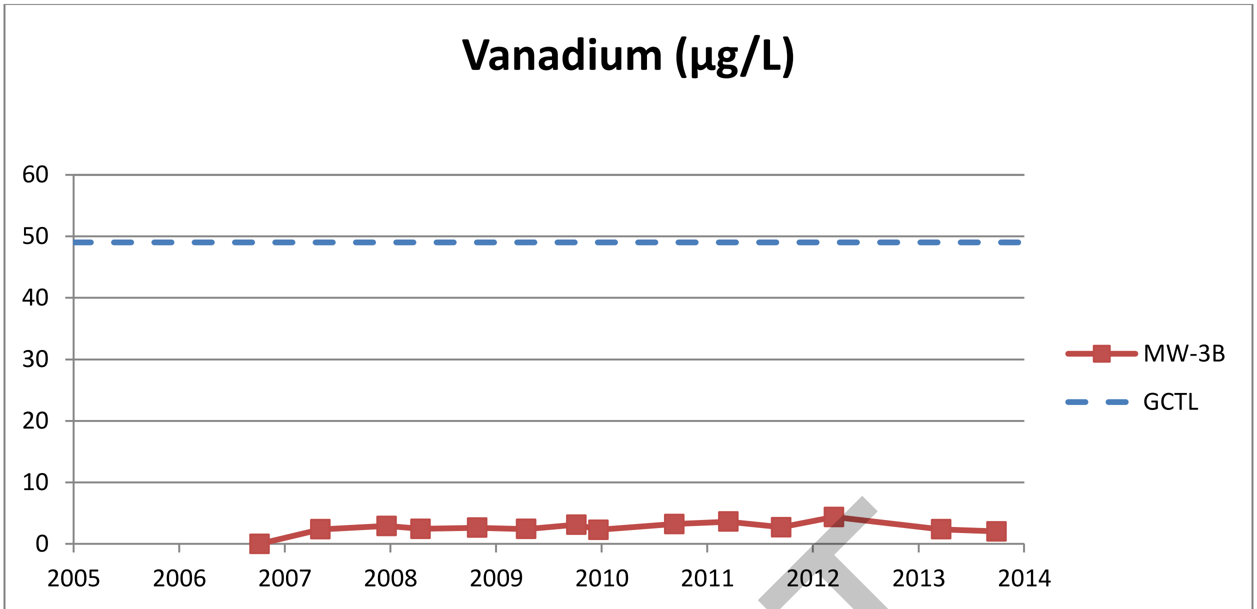
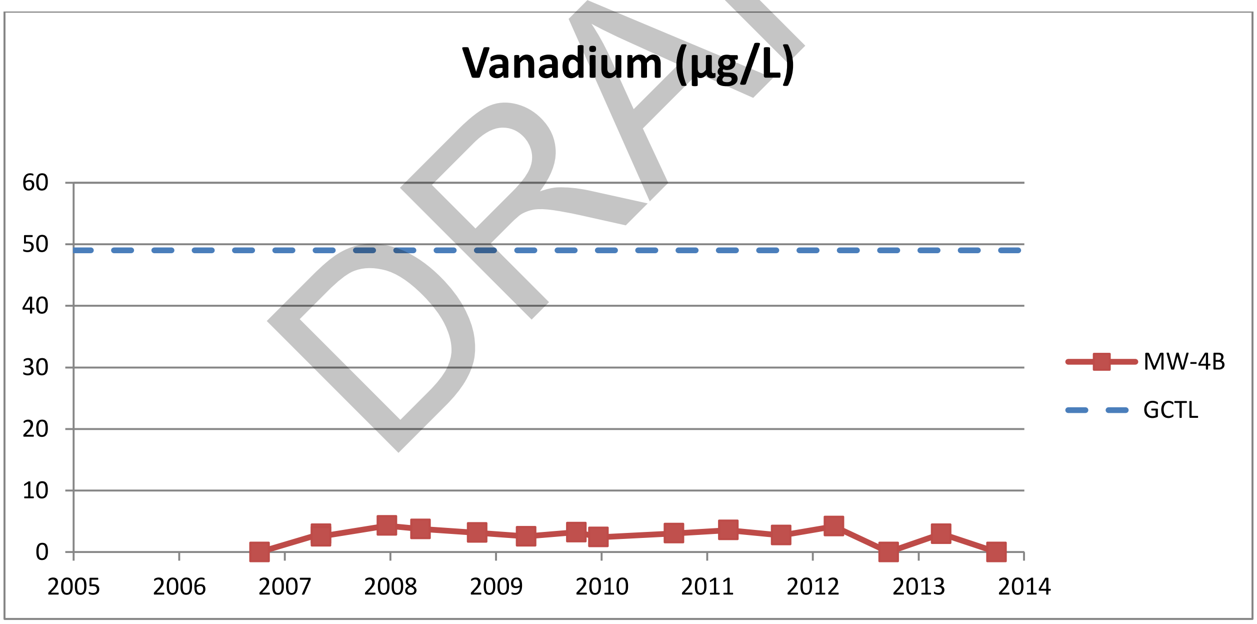


Figure 3.3.11-3



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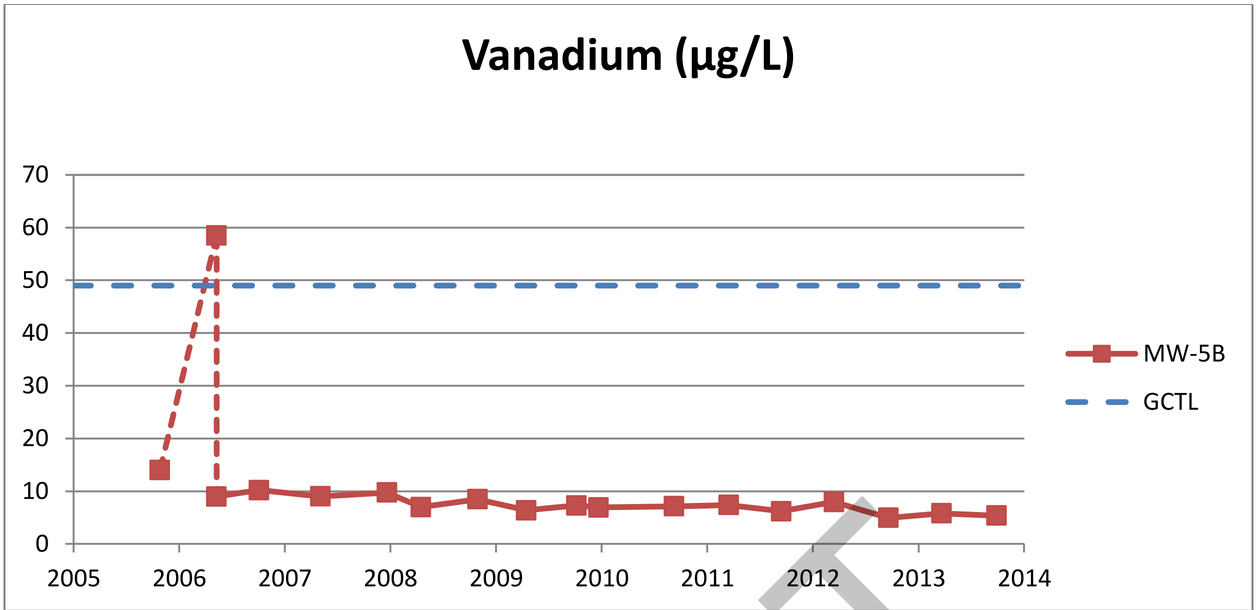

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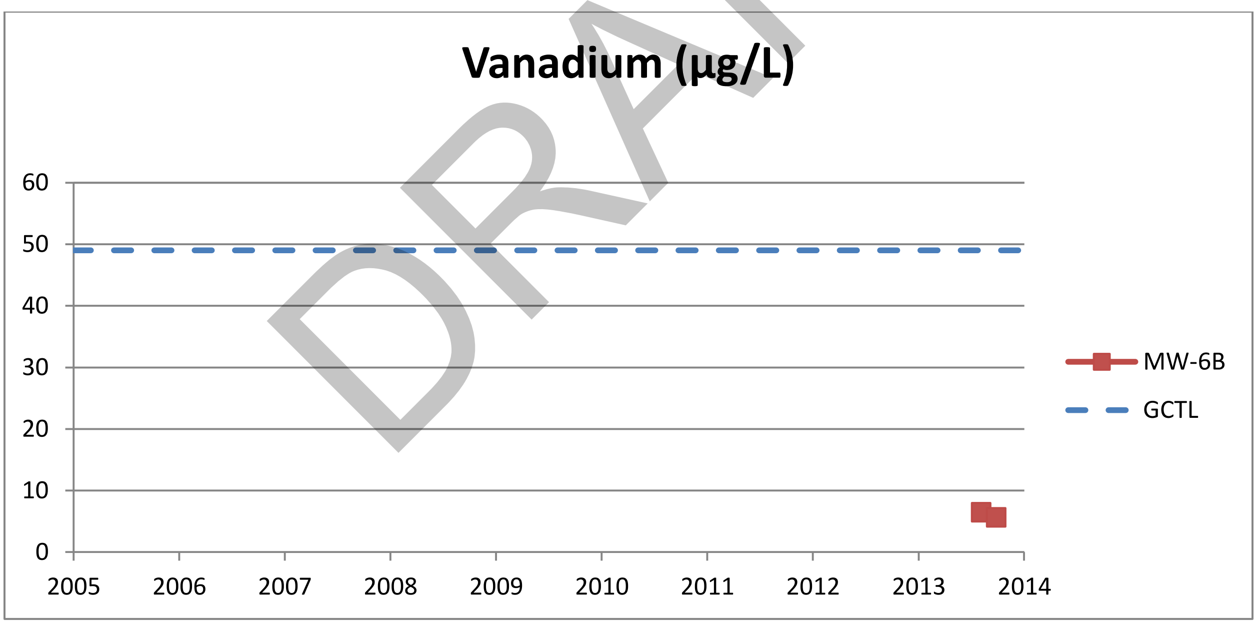

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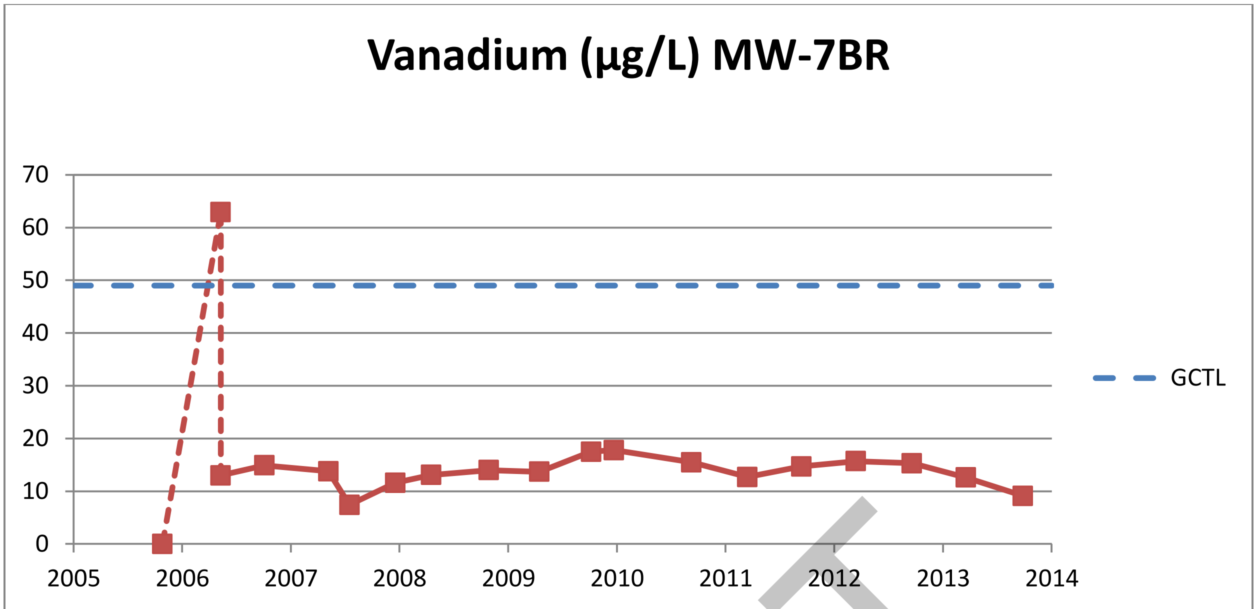

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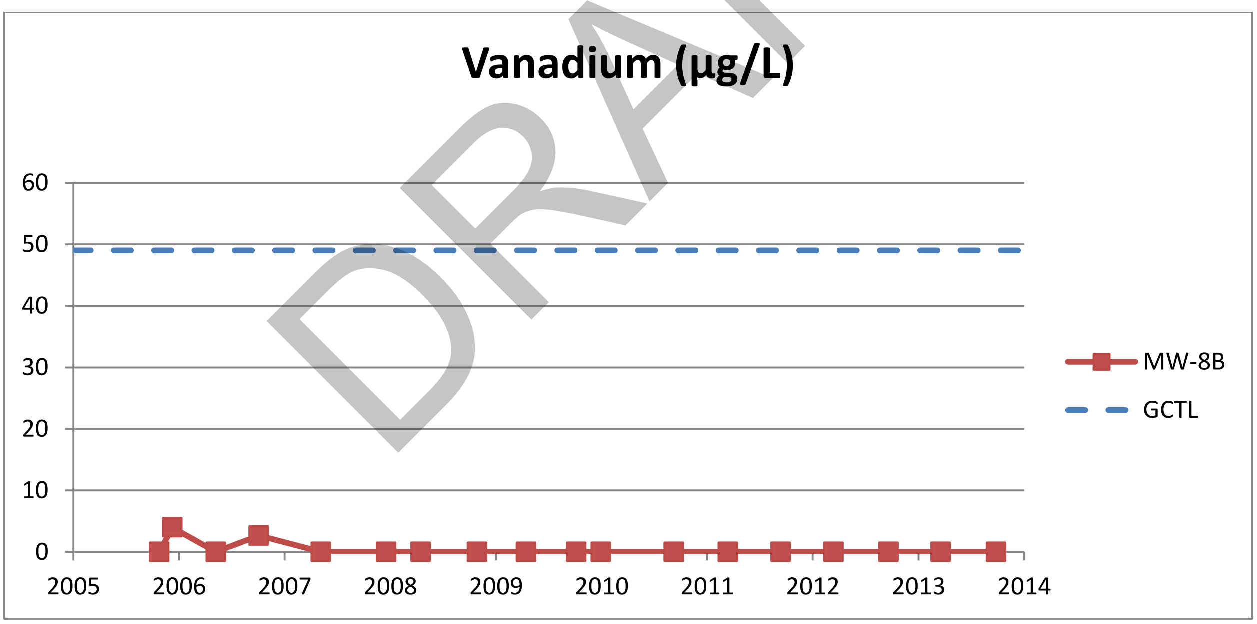

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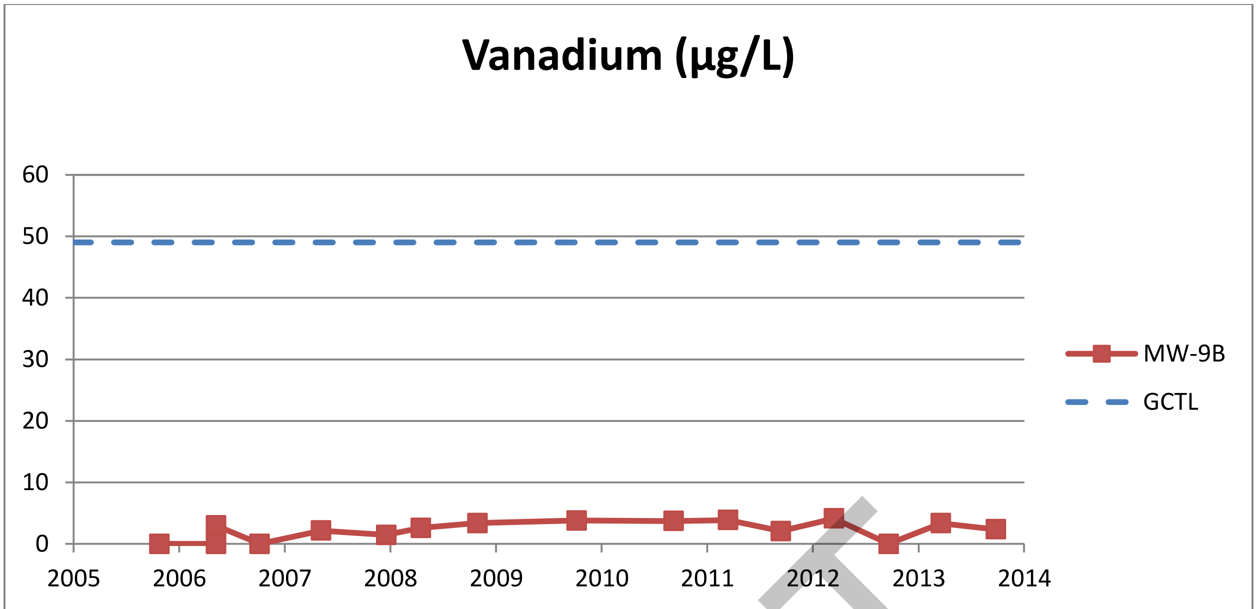

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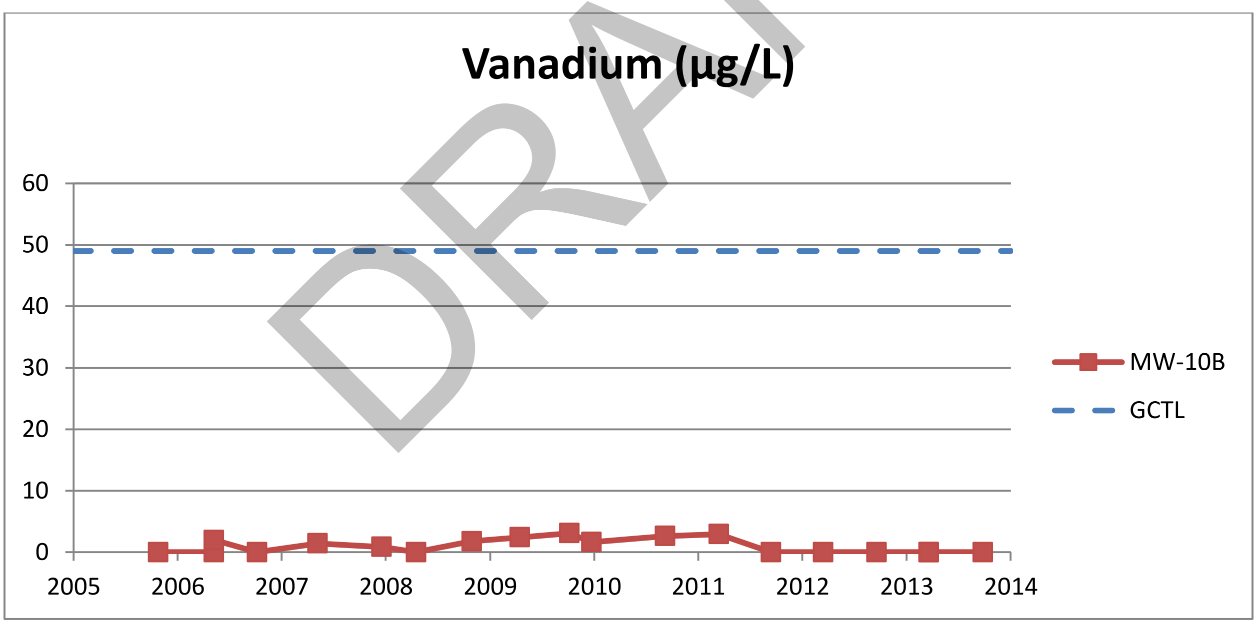

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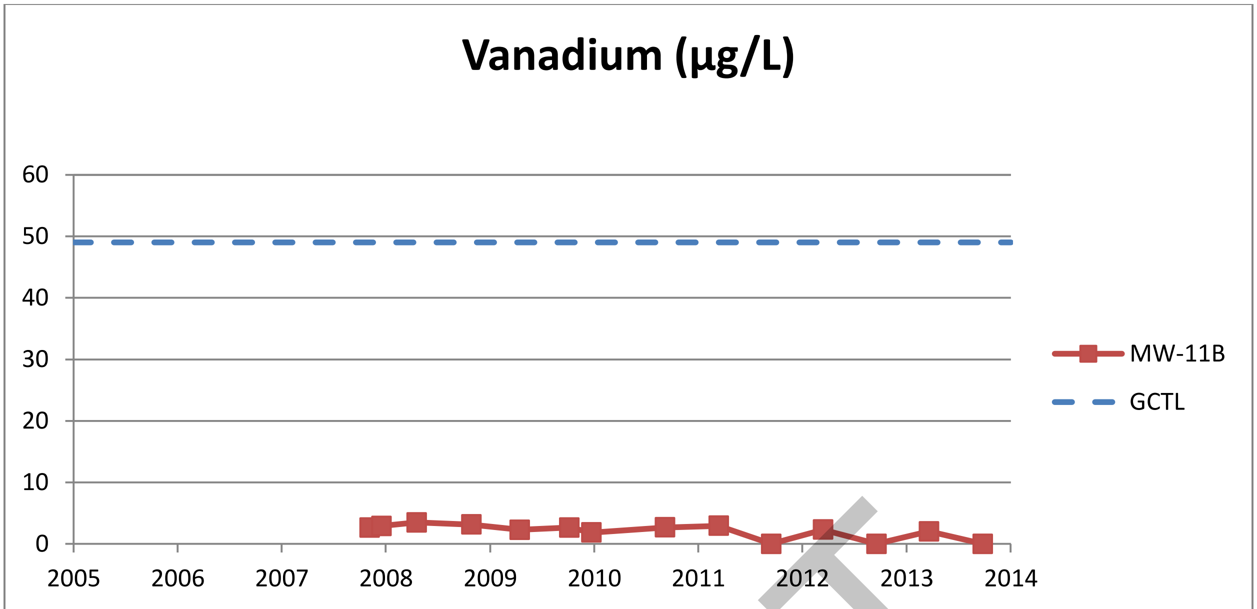


Figure 3.3.11-11

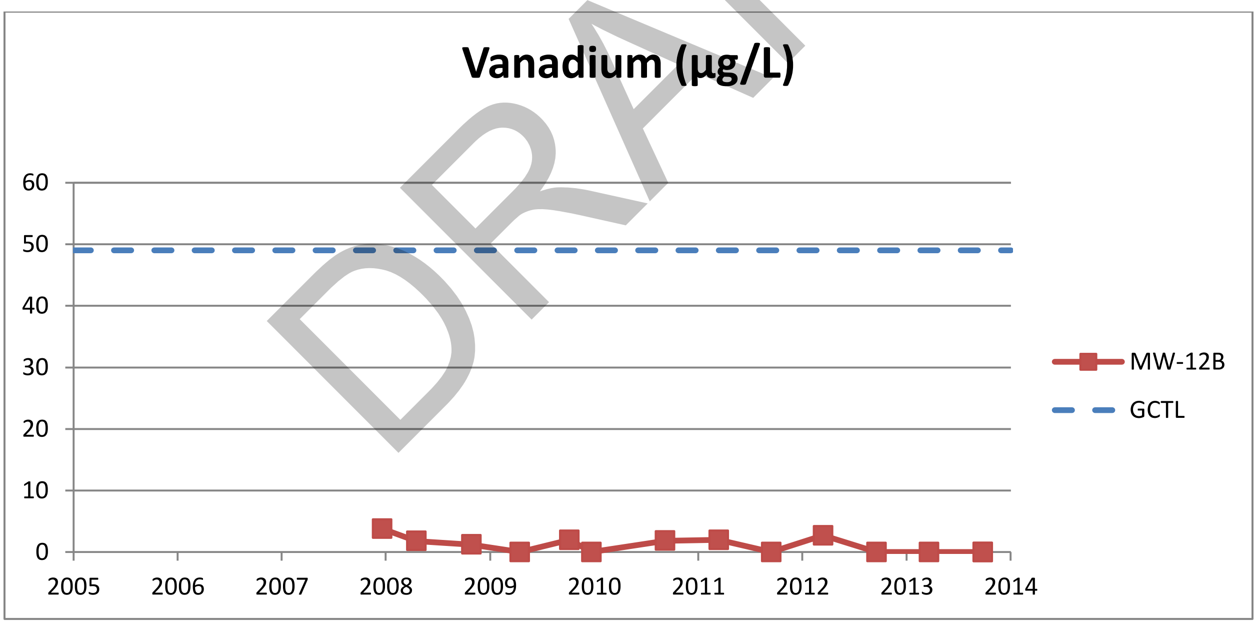
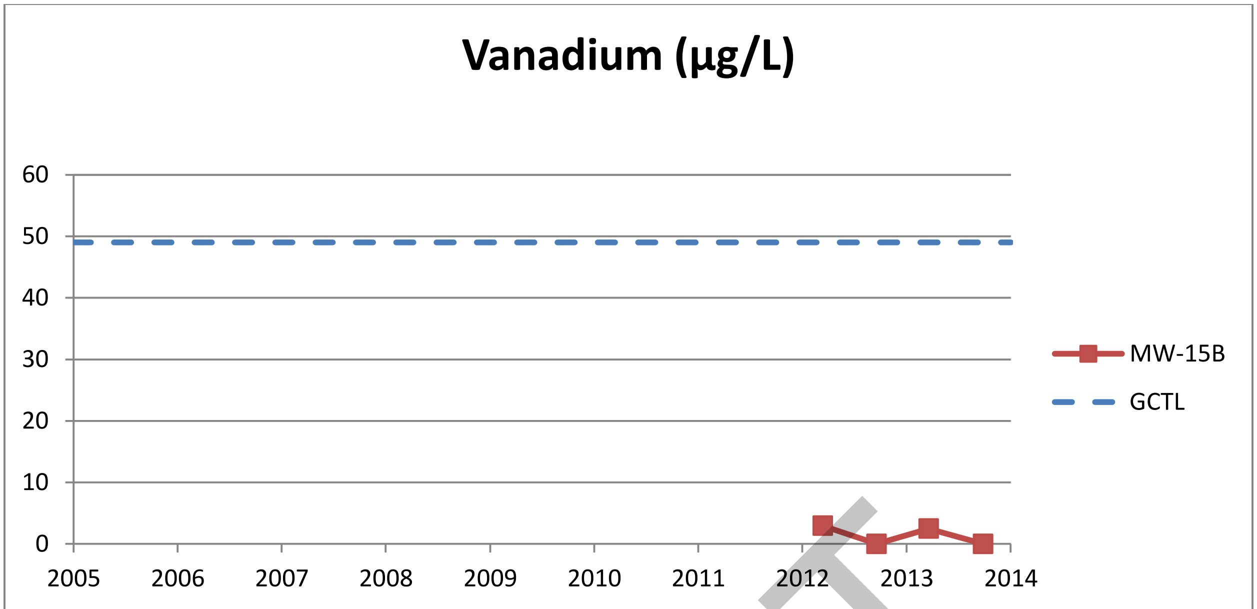


Figure 3.3.11-12



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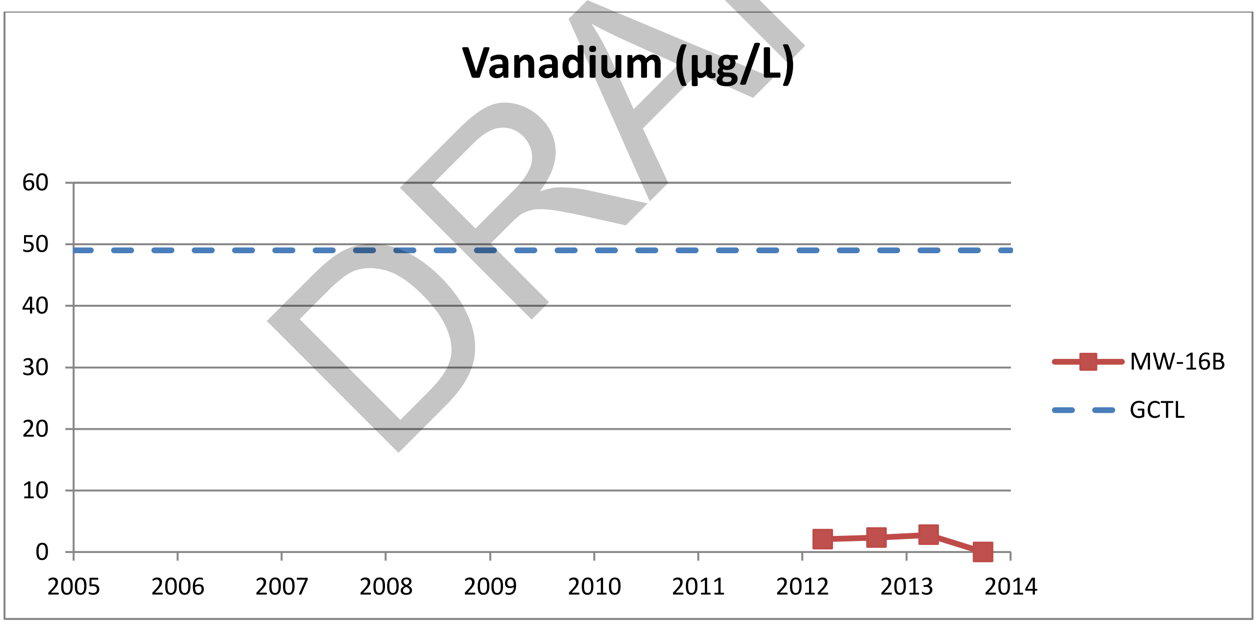

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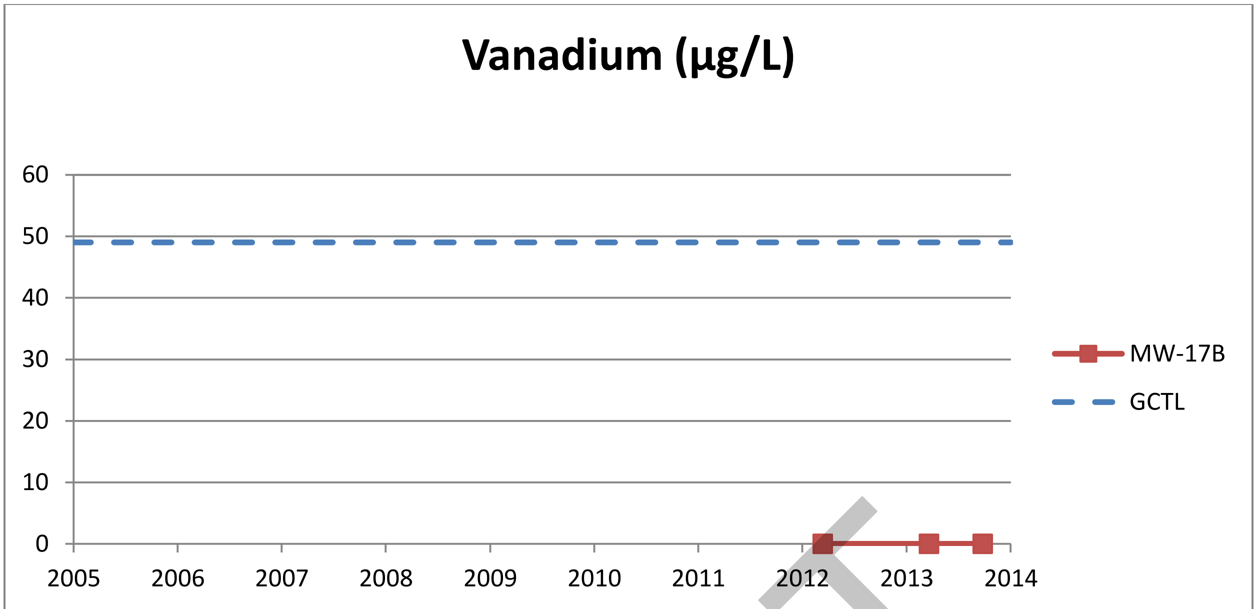


Figure 3.3.11-15

3.3.12 Iron

The box-and-whisker plots (Figure 3.3.12-1) of iron concentrations in the Floridan aquifer monitoring wells show that iron concentrations exceeded the GCTL (300 μg/L) in six monitoring wells MW-1B, MW-5B, MW-8B, MW-9B, MW-10B, and MW-12B in at least one monitoring event. However, the concentrations in each well were within the SWFWMD background iron concentration range (<100-55,700 μg/L) of the Floridan aquifer as shown in Table 3.1.

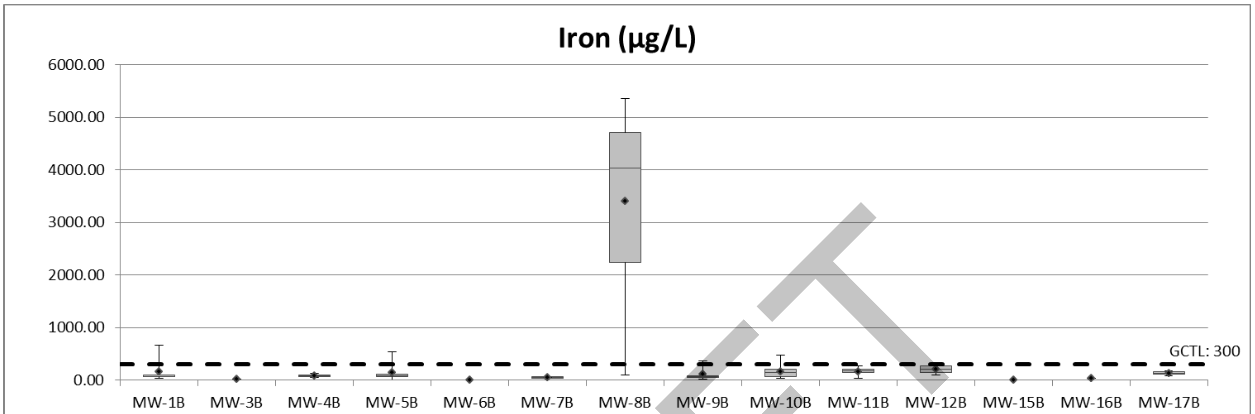


Figure 3.3.12-1

The temporal plots (Figure 3.3.12-2 to Figure 3.3.12-15) for iron monitoring wells MW-1B, MW-5B, MW-9B, and MW-12B show single instances where the GCTL was exceeded ranging from 318 μg/L to 656 μg/L. The temporal plot of iron concentrations for monitoring well MW-10B showed two exceedances of the GCTL (350 μg/L in October 2005 and 480 μg/L in December 2009). The iron exceedances in these wells dropped below the GCTL in the subsequent monitoring event. Hence, these exceedances of iron concentrations relative to its GCTL in MW-1B, MW-5B, MW-9B, MW-12B, and MW-10B can be considered as sporadic events, and they do not reflect any significant impact on water quality of the Floridan aquifer.

The temporal plot of the iron concentration in monitoring well MW-8B showed multiple exceedances of the GCTL since December 2007 ranging from 1,920 μg/L to 5,350 μg/L. The concentrations measured in this well may be the result of reducing conditions present in this area – for example, the measured DO concentrations have been consistently low (<1.0 mg/L) since late 2006. As described earlier, lack of oxygenation in the aquifer can result in the dissolution of naturally-occurring iron, resulting in elevated concentrations in groundwater. The construction of the landfill may have had an impact on the DO levels, resulting in elevated iron, which is a phenomenon that has been observed at several landfills throughout Florida. The concentrations measured in MW-8B were within the range of those levels measured in the SWFWMD. The increase in iron concentration over time is not unexpected as it would be a function of the amount of solid-phase iron present in this area.

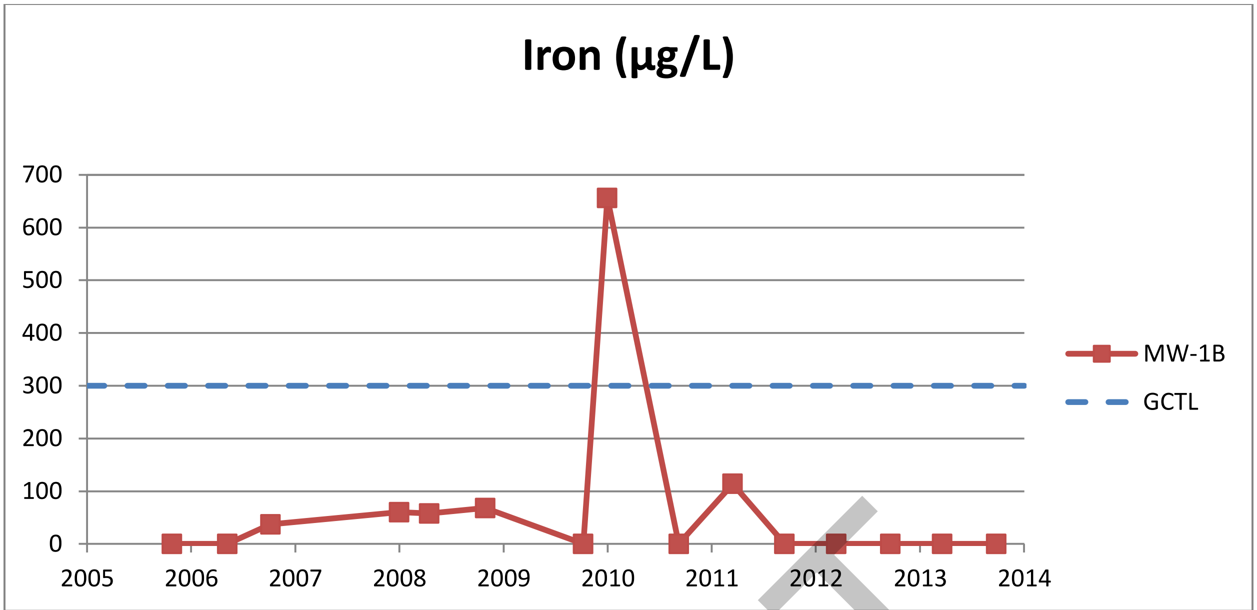


Figure 3.3.12-2

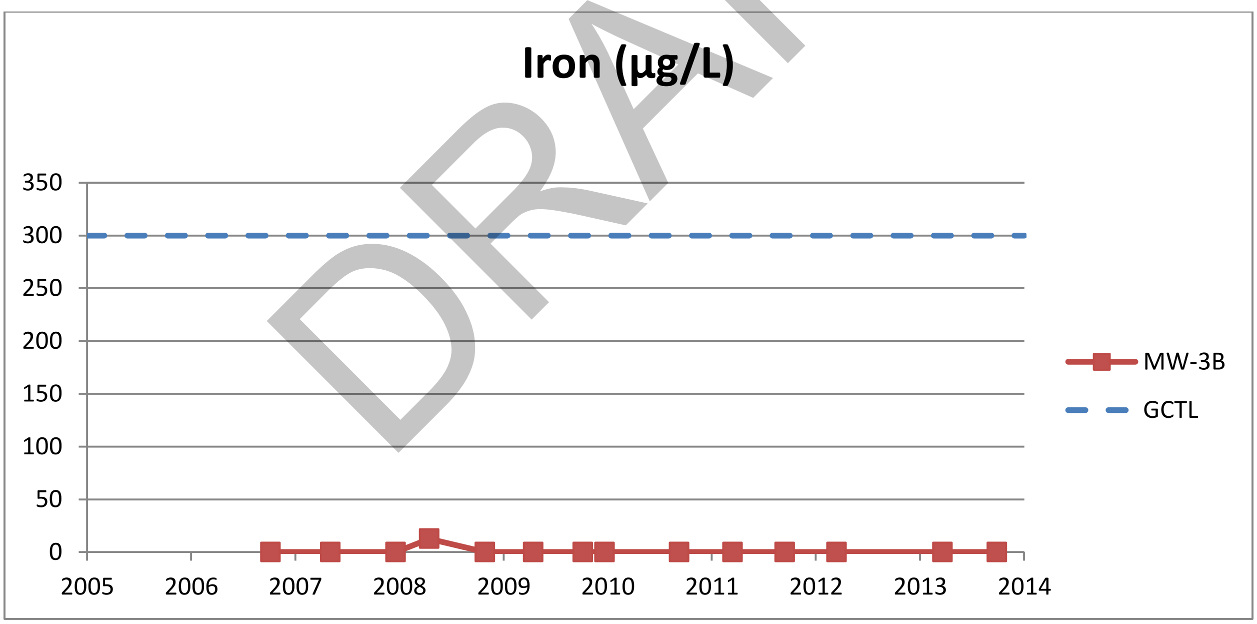


Figure 3.3.12-3

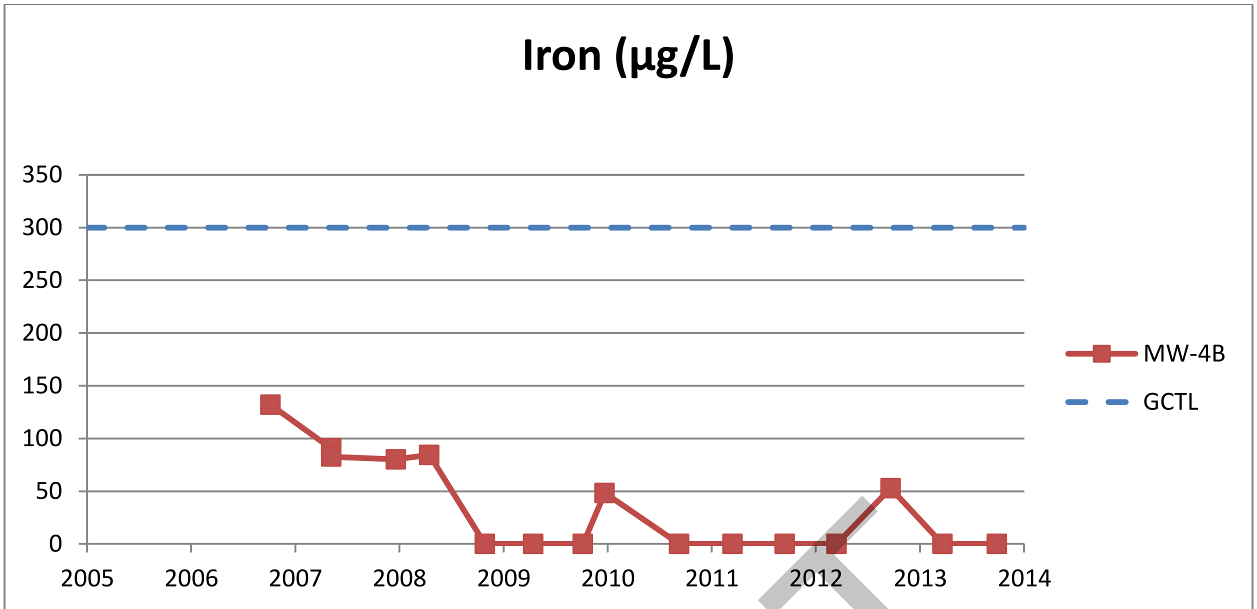
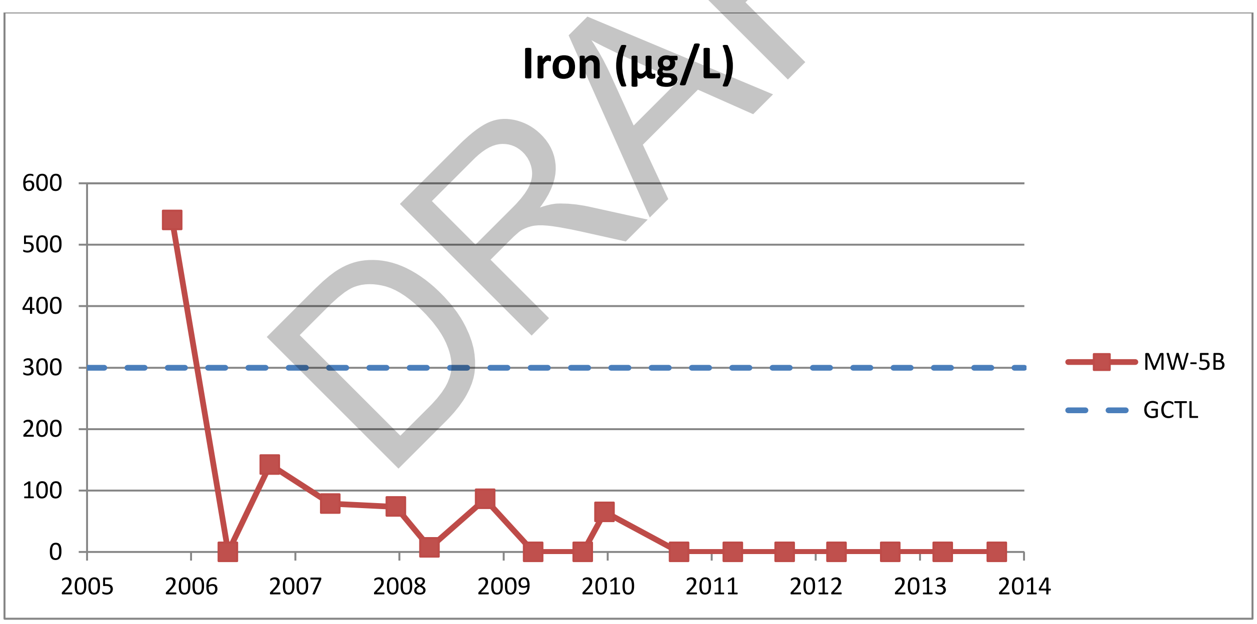


Figure 3.3.12-4



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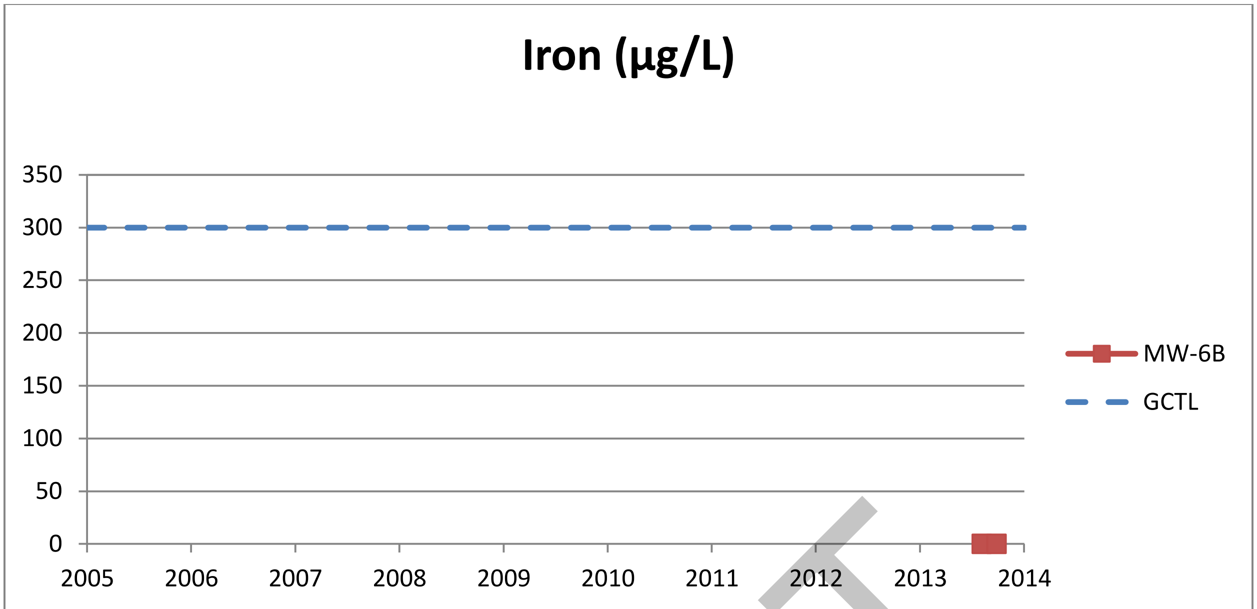


Figure 3.3.12-6

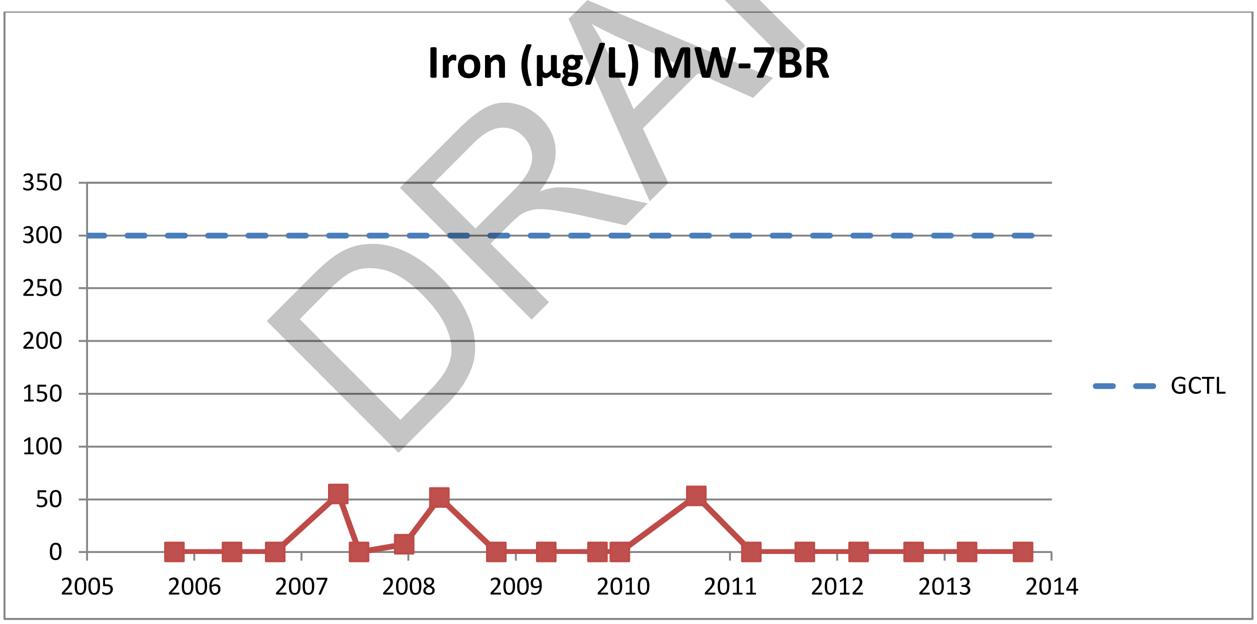


Figure 3.3.12-7

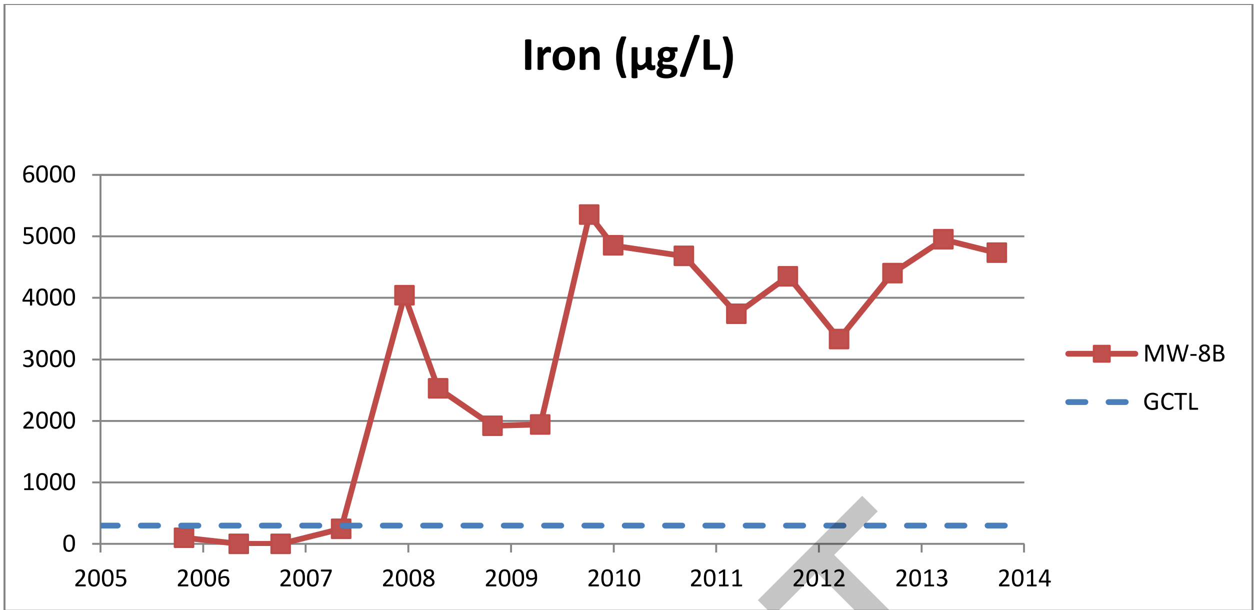


Figure 3.3.12-8

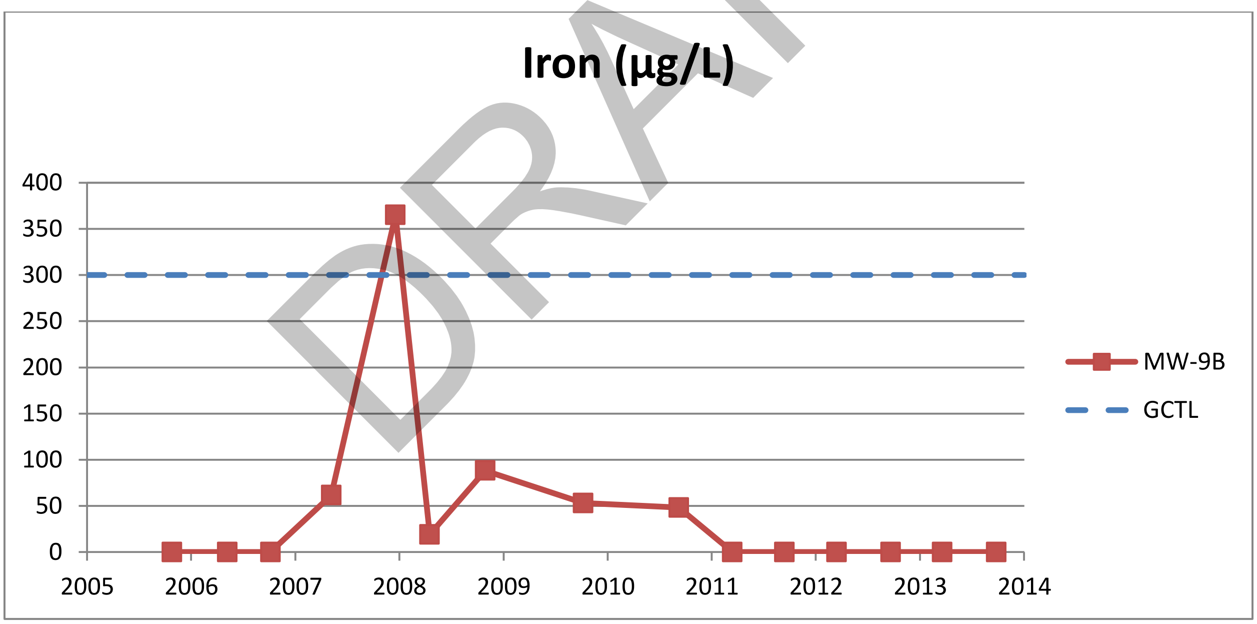


Figure 3.3.12-9

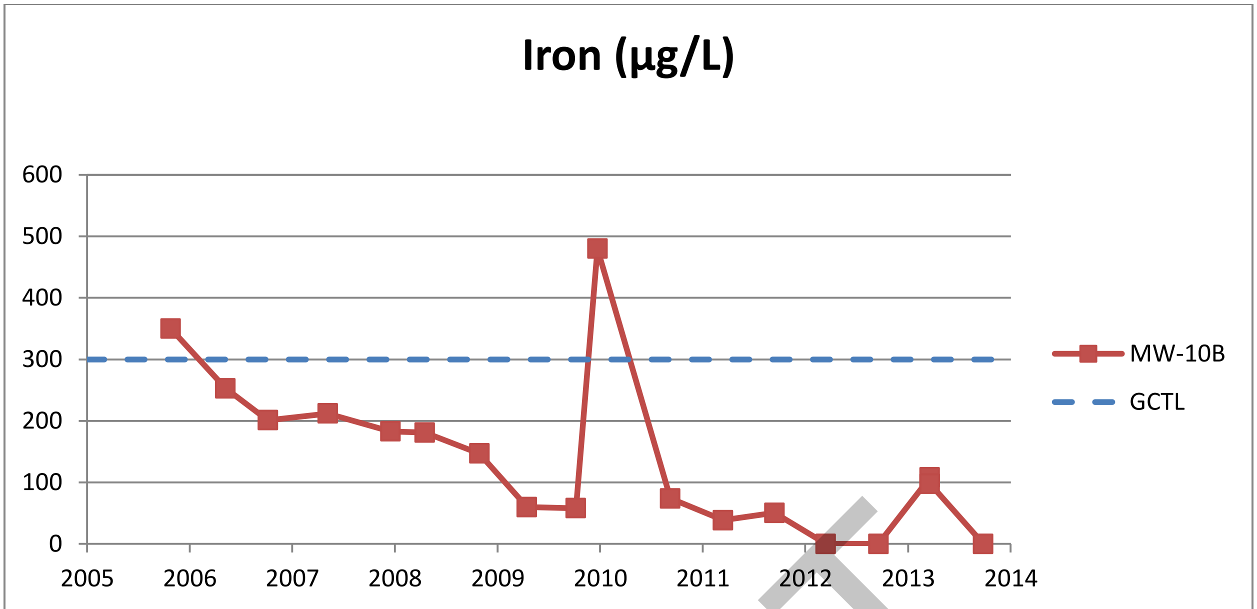


Figure 3.3.12-10

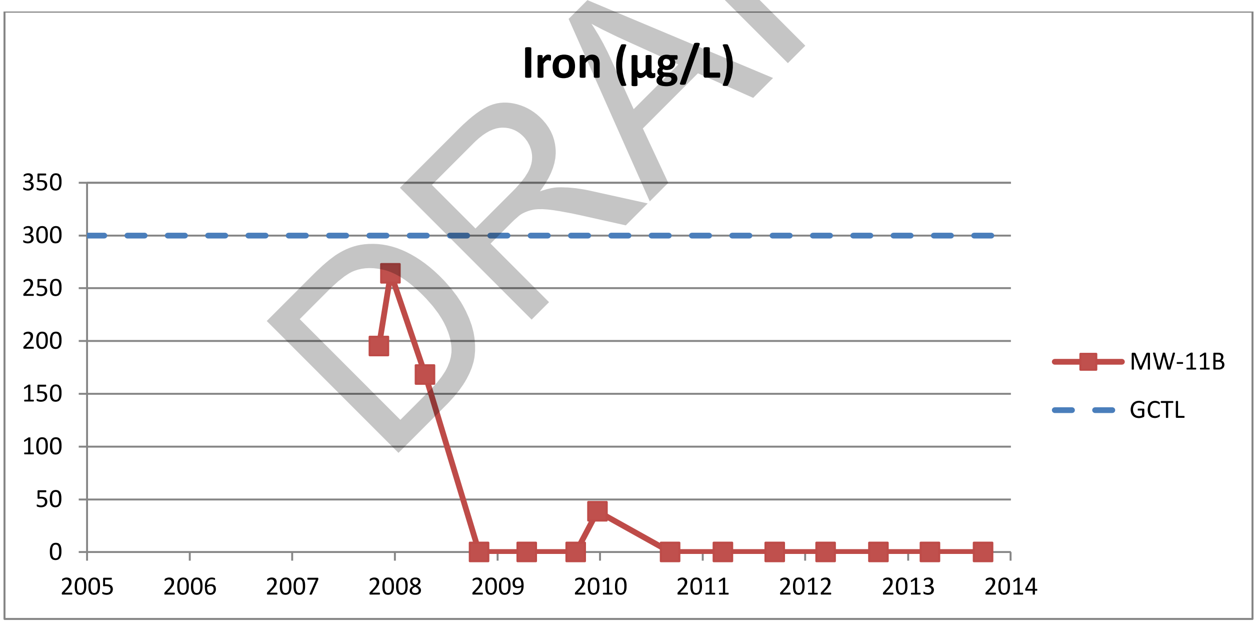
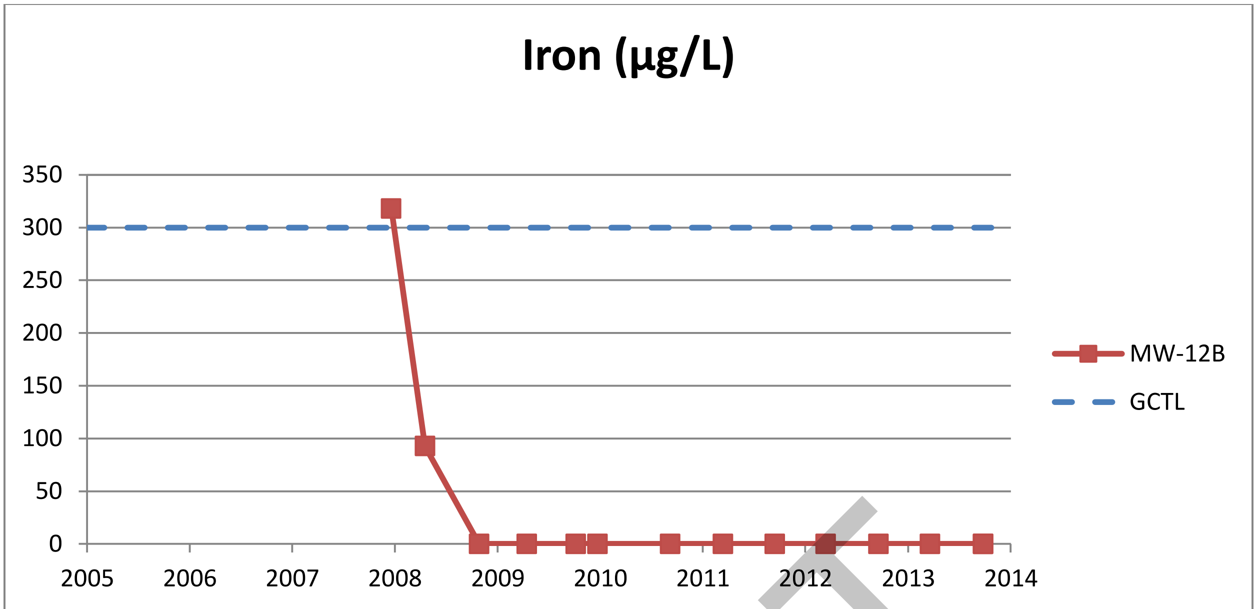


Figure 3.3.12-11



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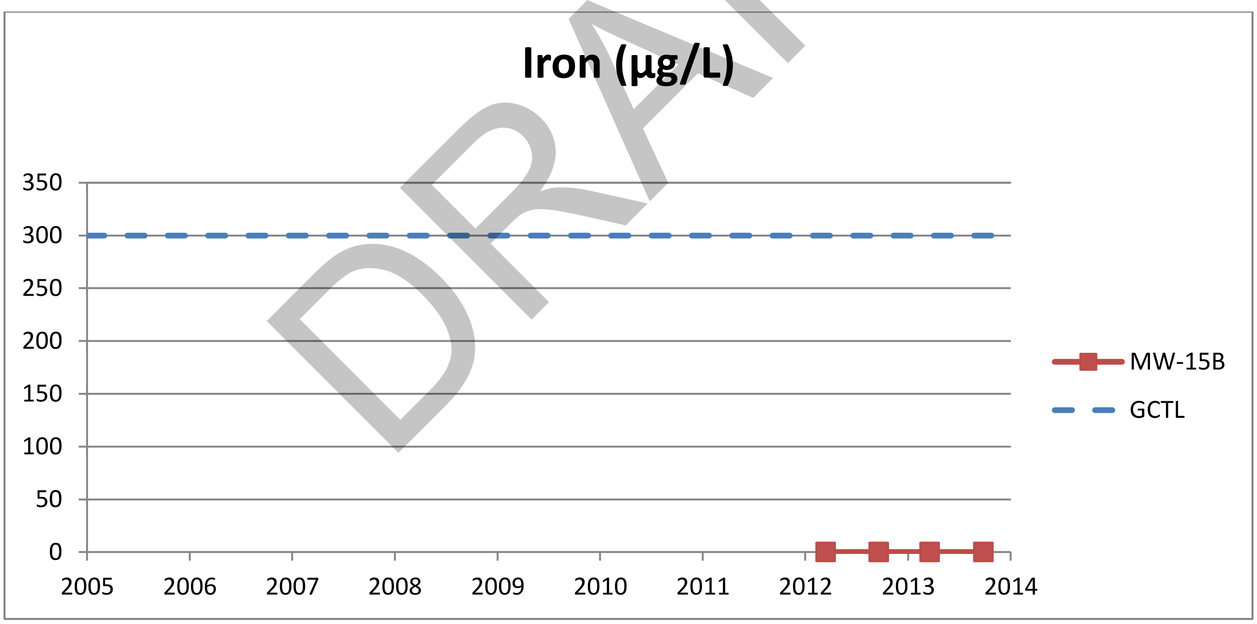


Figure 3.3.12-13

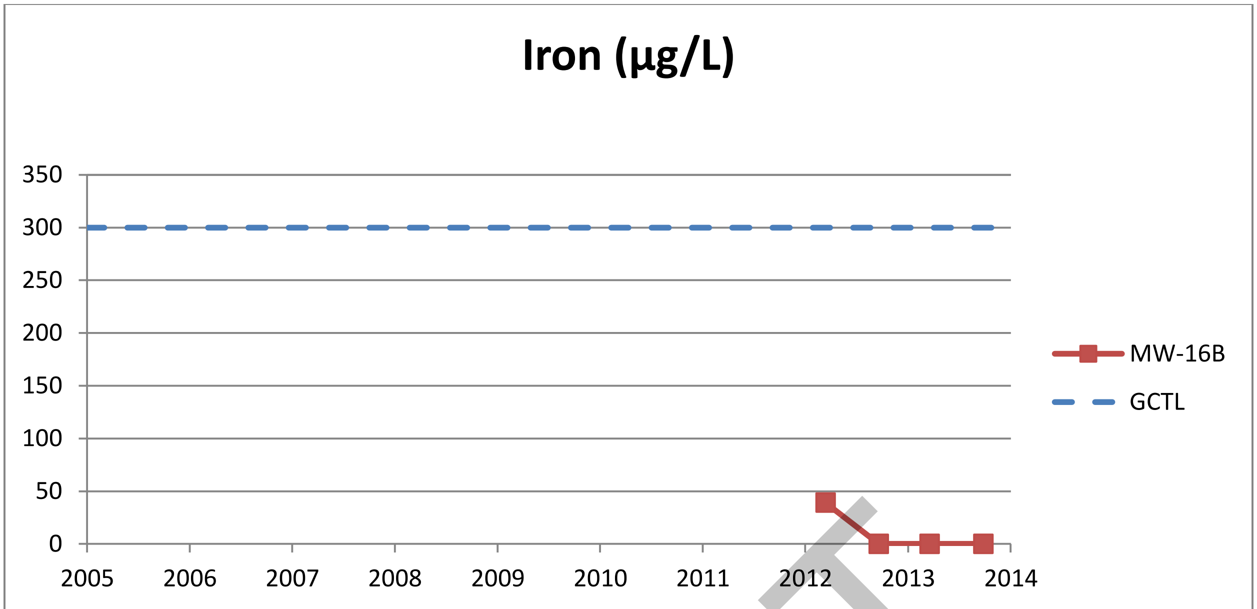


Figure 3.3.12-14

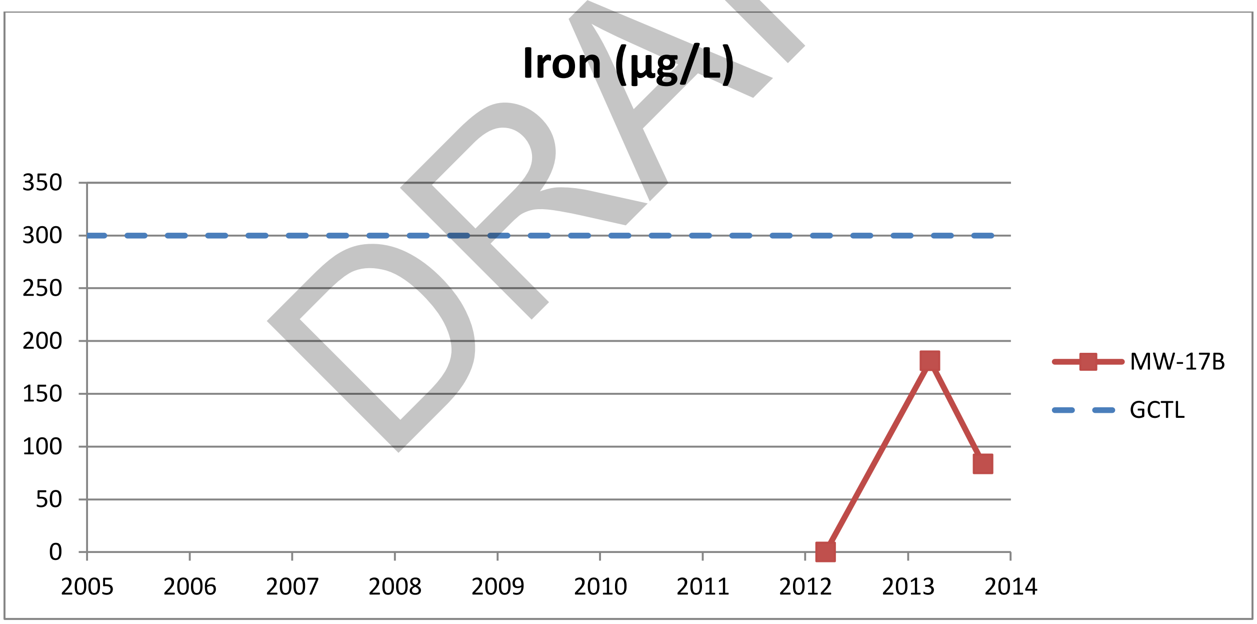


Figure 3.3.12-15

3.3.13 Other Constituents of Interest

Chloride, Sodium, and TDS did not exceed their respective GCTLs in any of the measurements as shown in box-and-whisker plots (Figure 3.3.13-1 to Figure 3.3.13-3). The concentrations of chloride, sodium, and TDS were also within the range of their respective SWFWMD background concentrations of the Floridan aquifer as listed in Table 3.1.

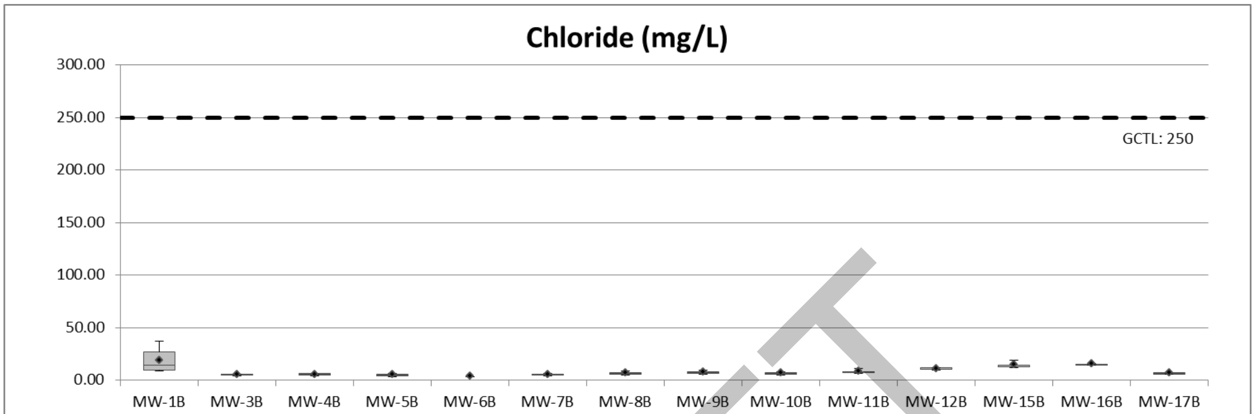


Figure 3.3.13-1

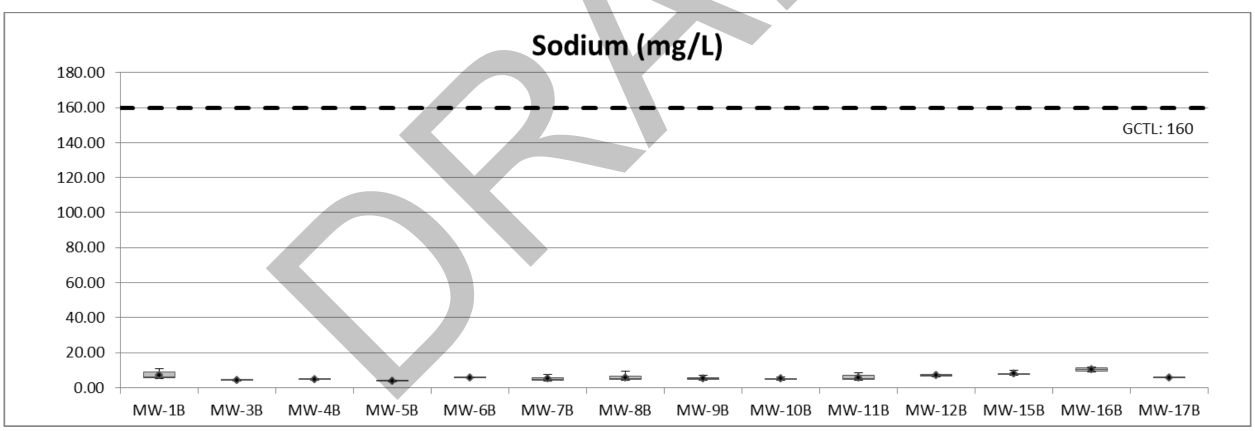


Figure 3.3.13-2

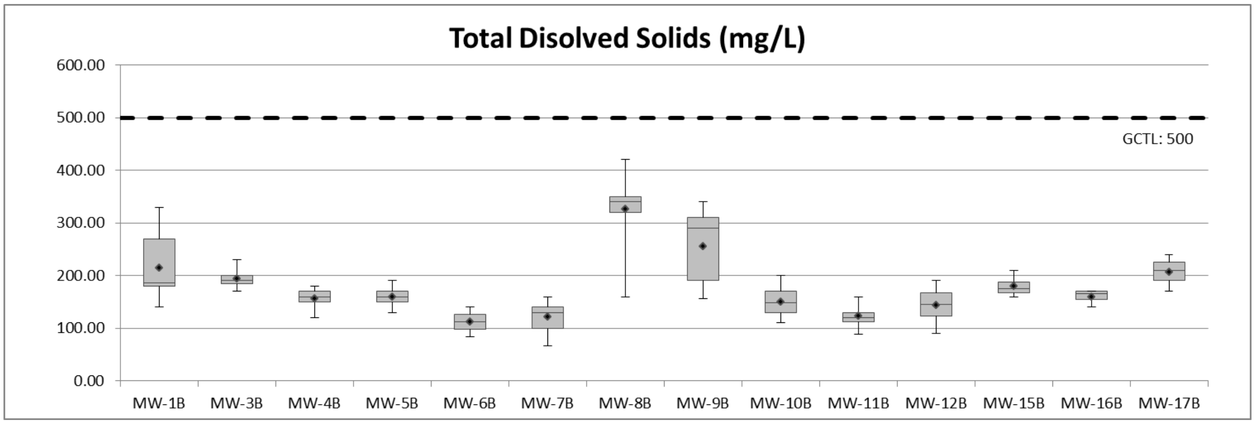
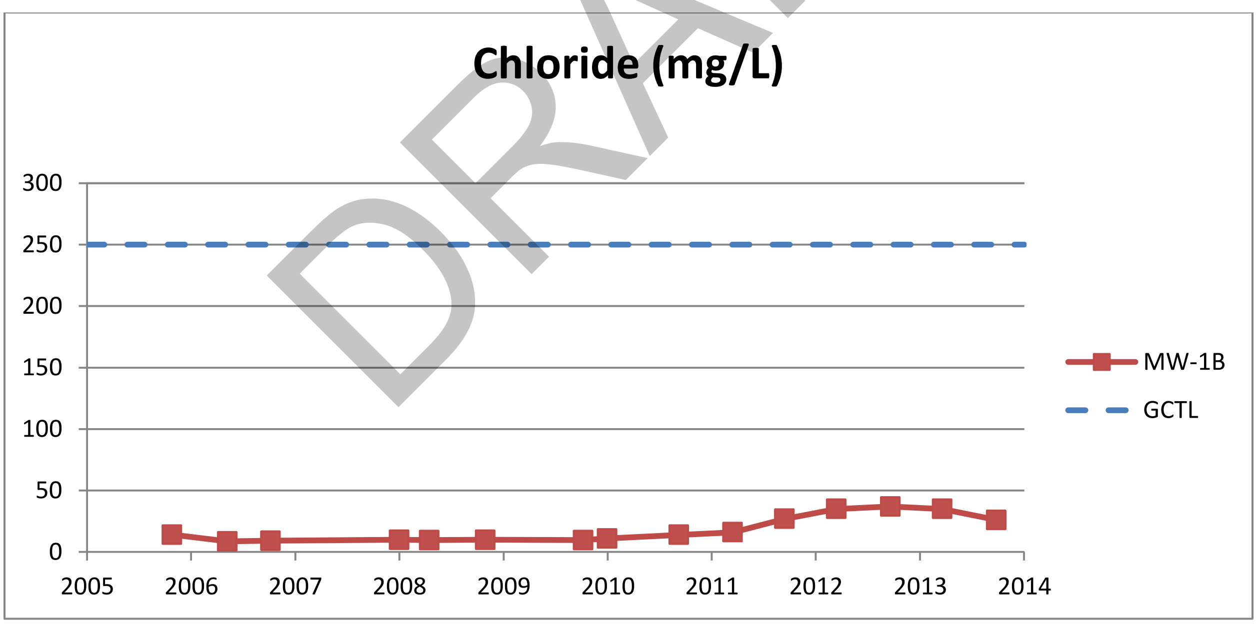


Figure 3.3.13-3

The temporal plots of chloride, sodium, and TDS for each monitoring well of the Floridan aquifer (shown in Figure 3.3.13-4 to Figure 3.3.13-45) were also analyzed to identify the trend in each well. In general the concentrations of these parameters remained constant or varied within a limited range for each well, and thus the data do not suggest any significant impact on water quality from landfilling activities at the site.



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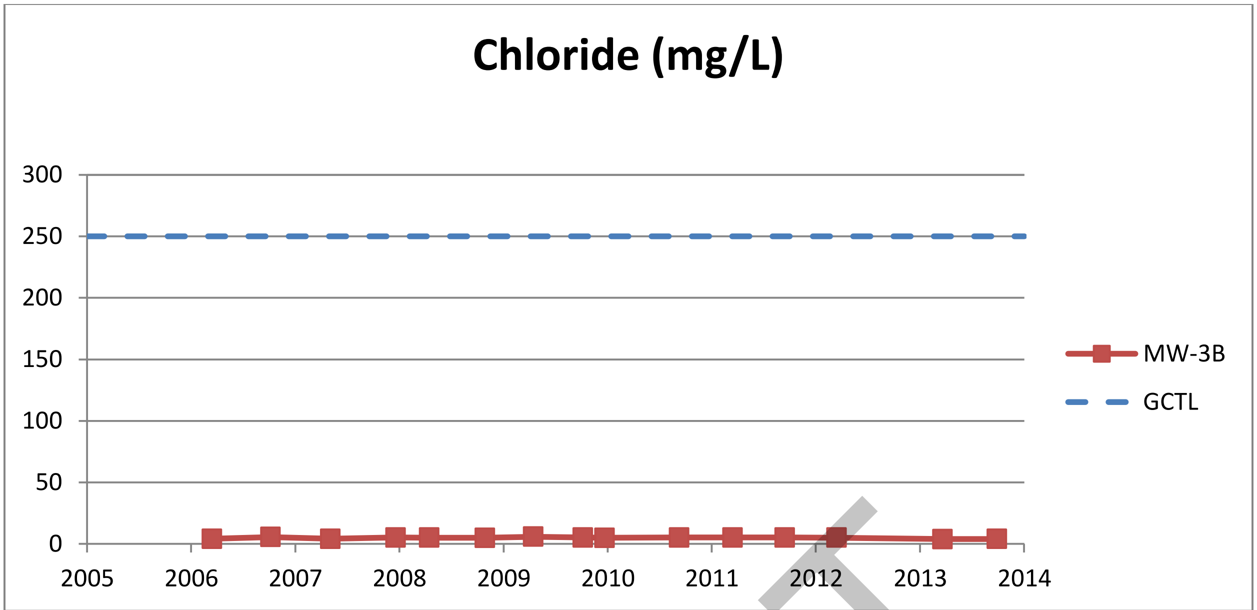

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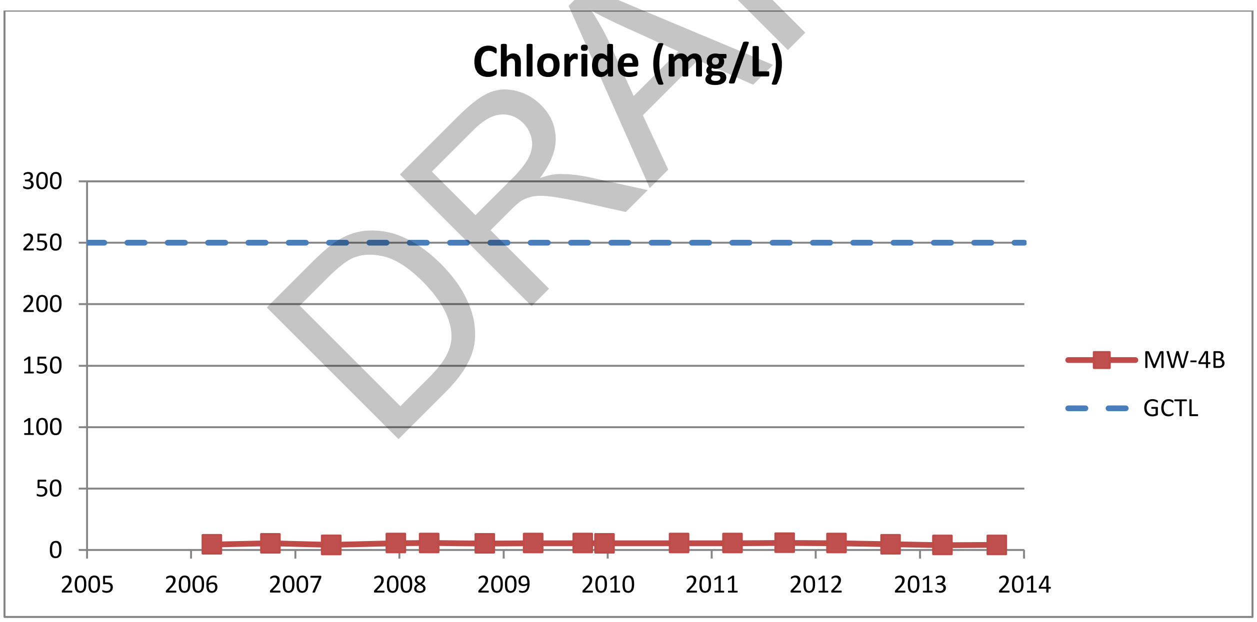
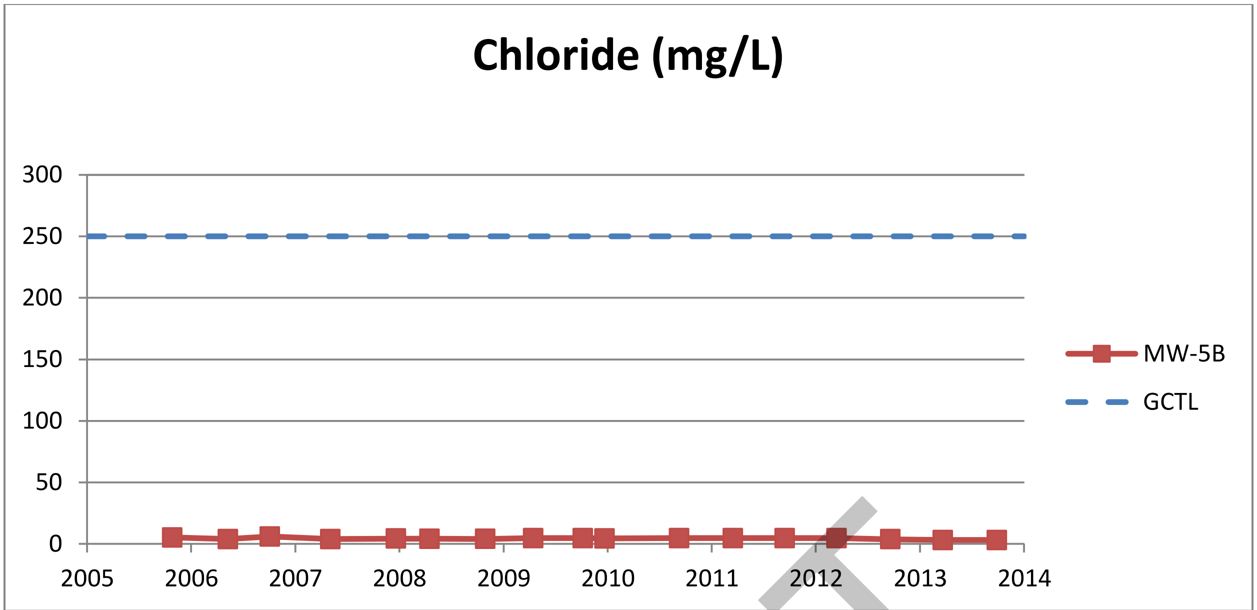


Figure 3.3.13-6



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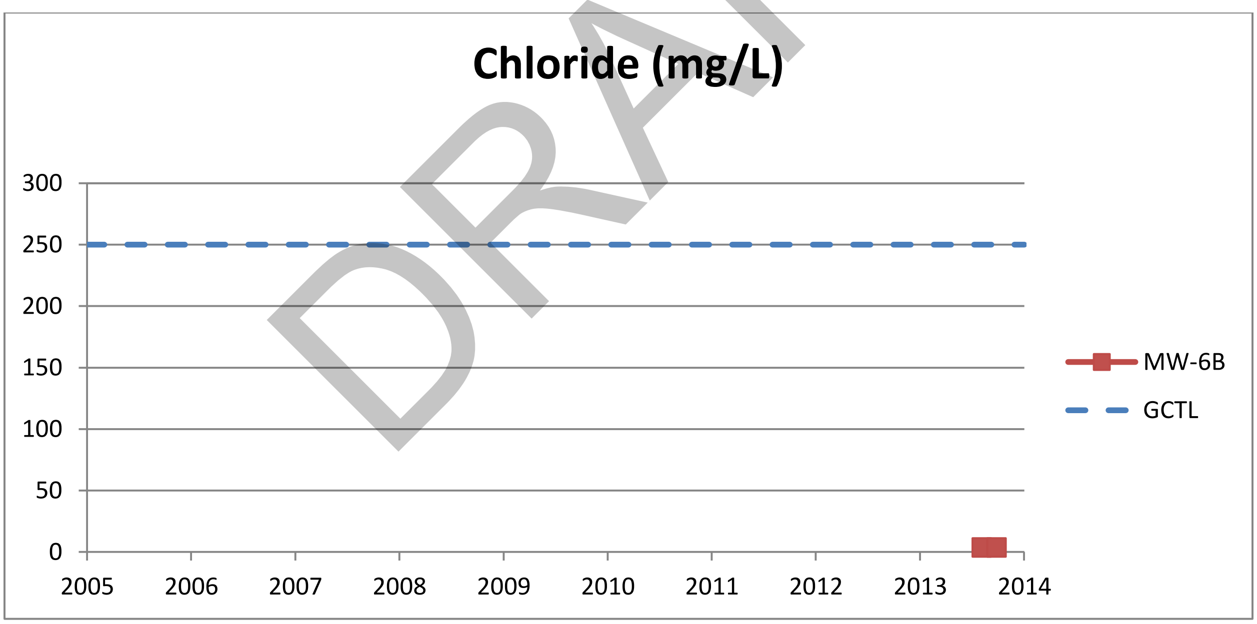

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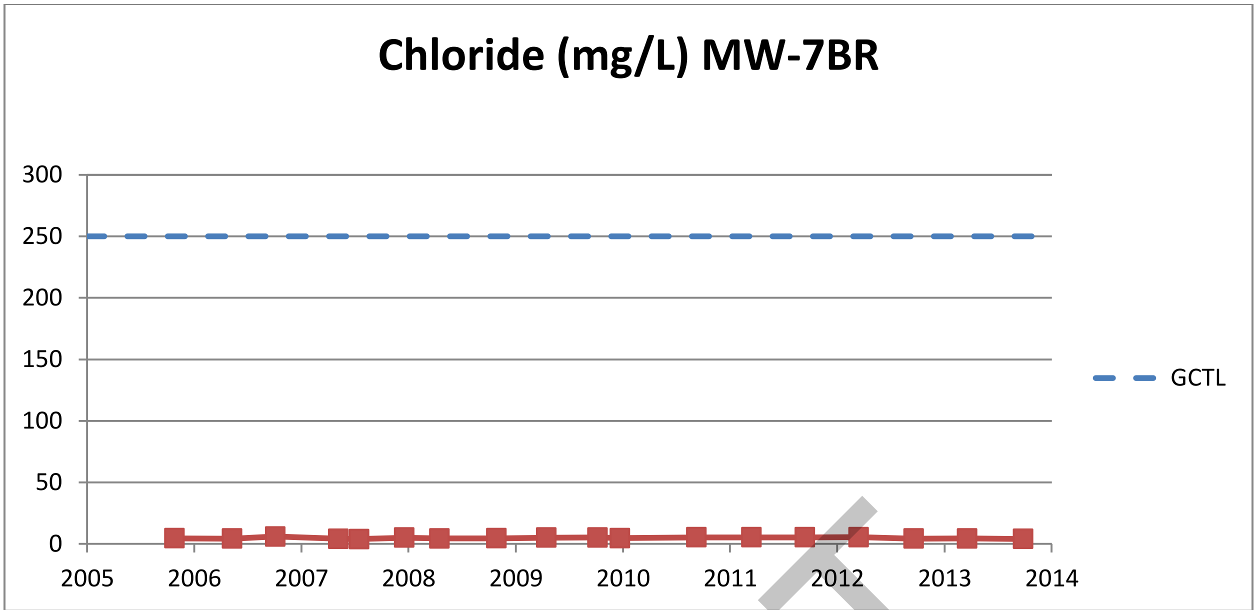

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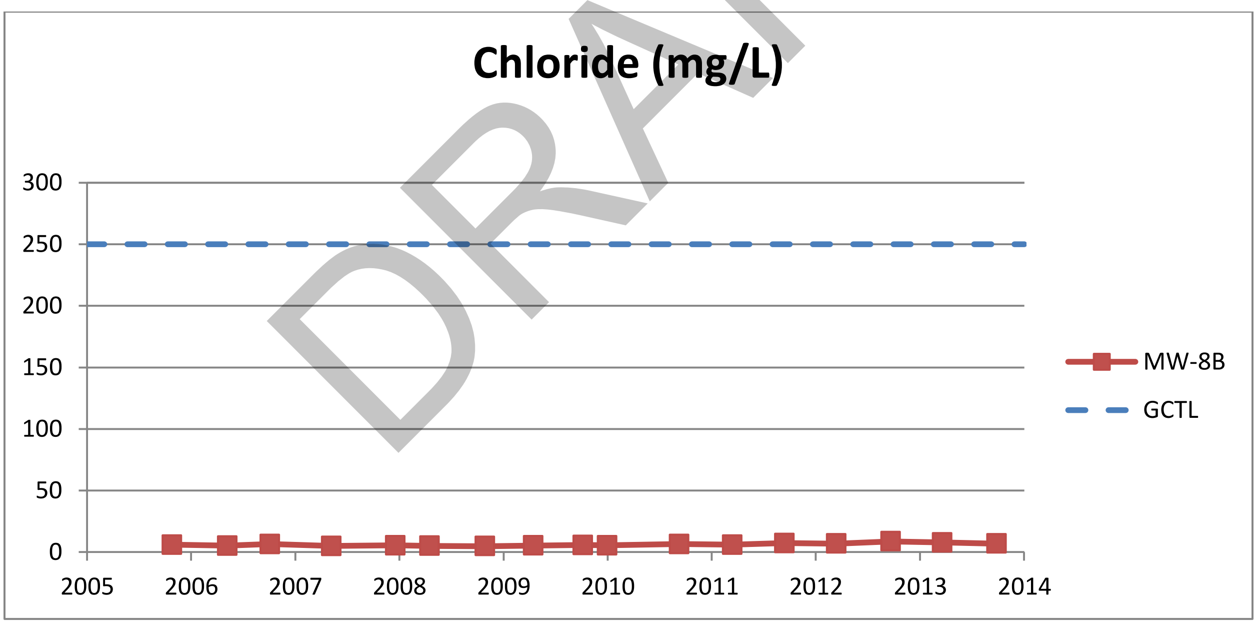

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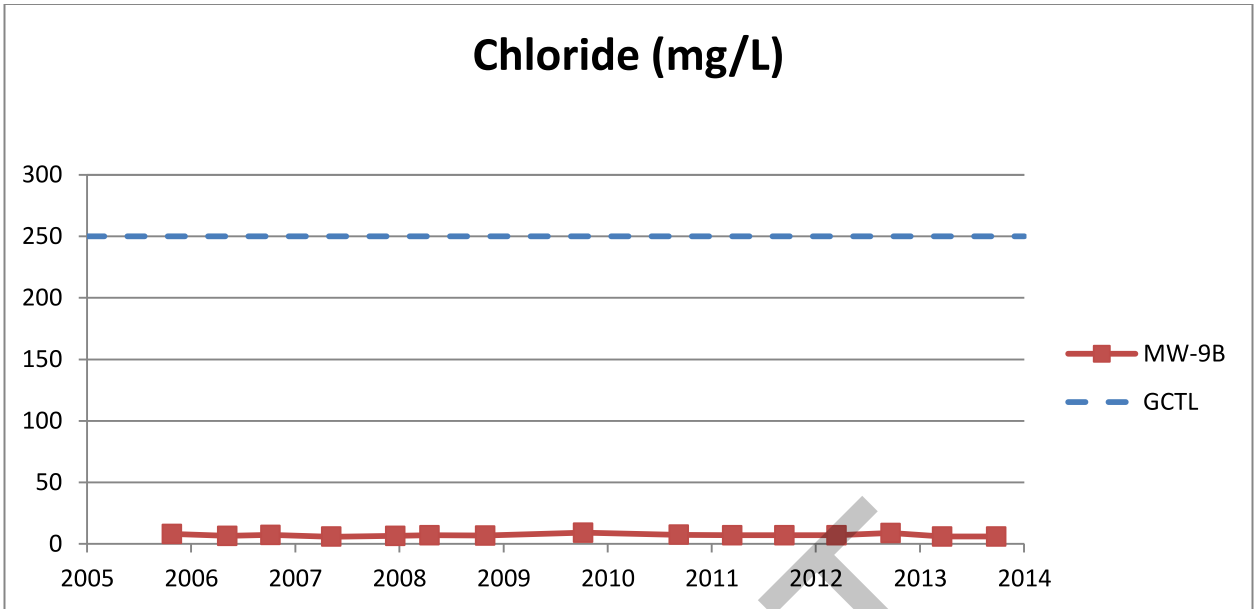

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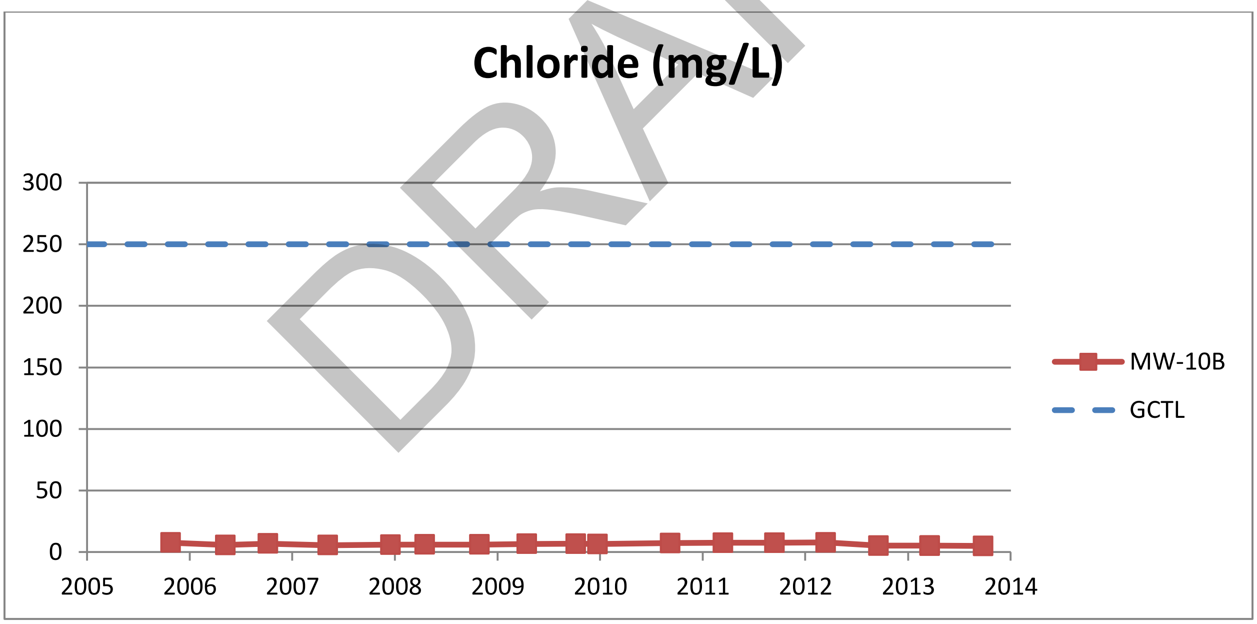

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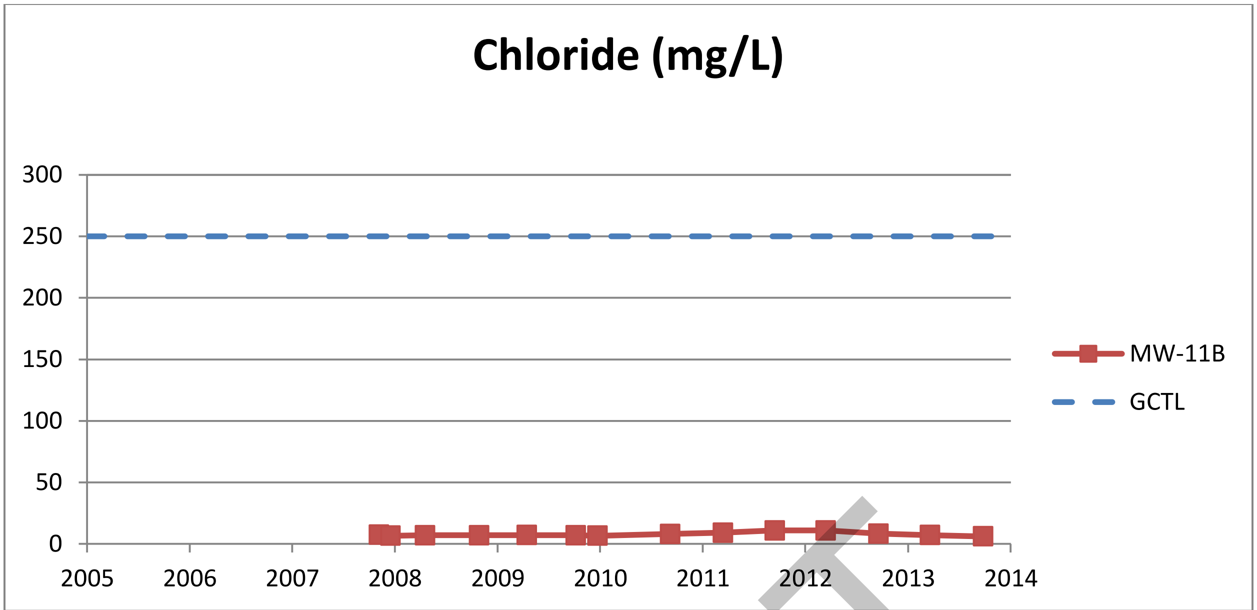

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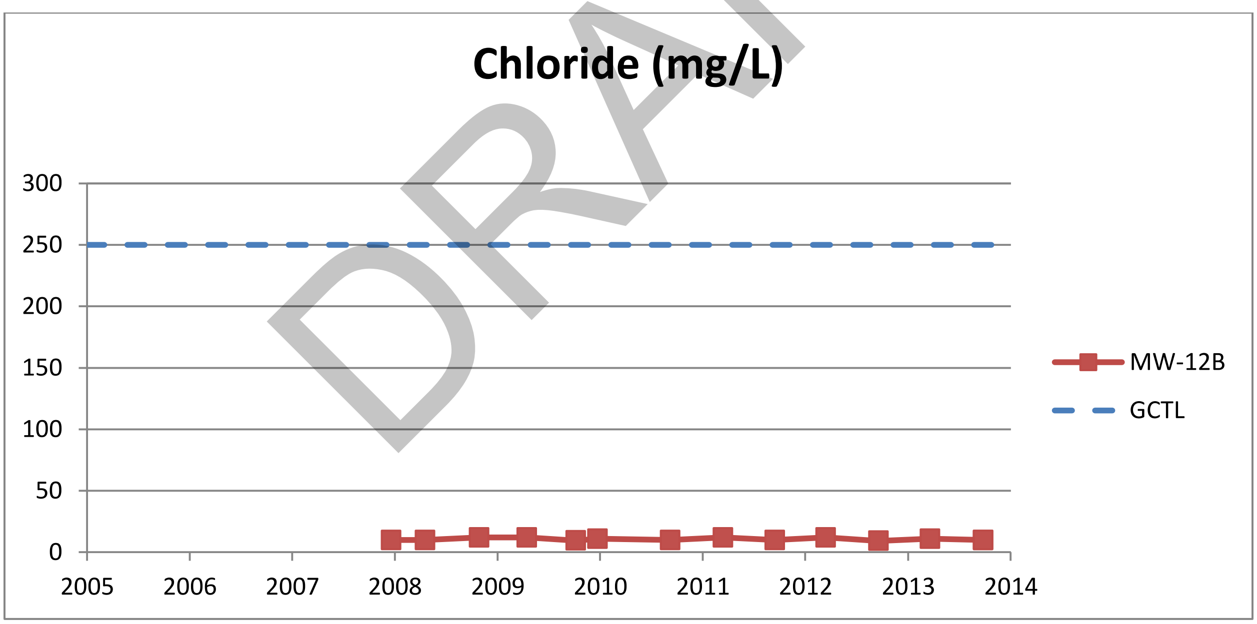

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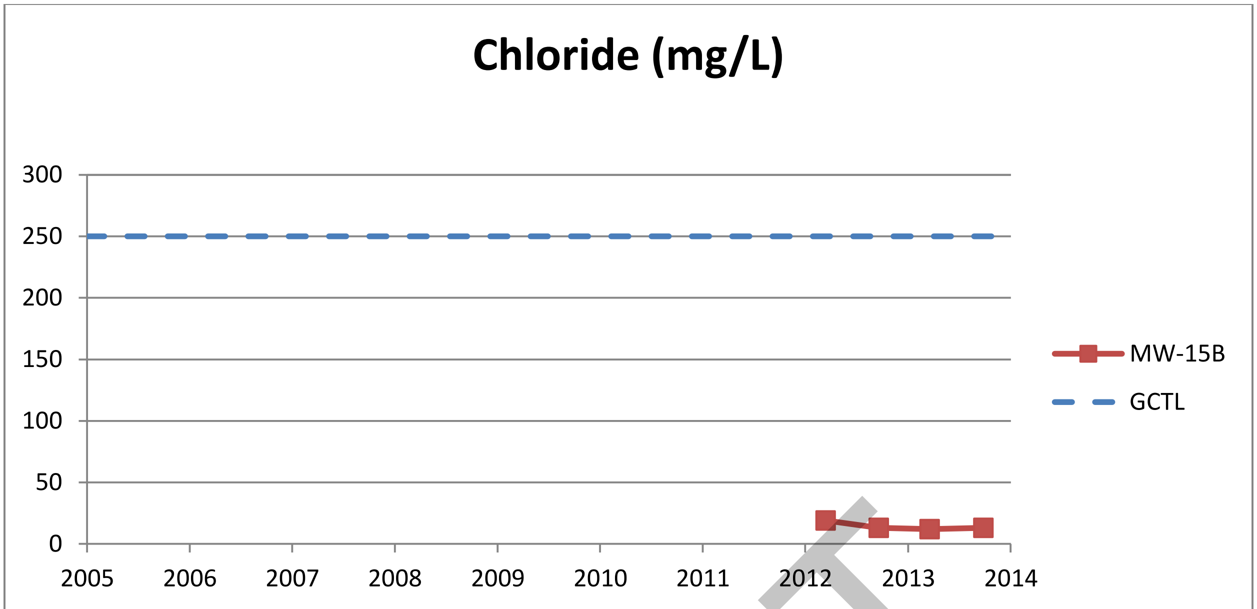

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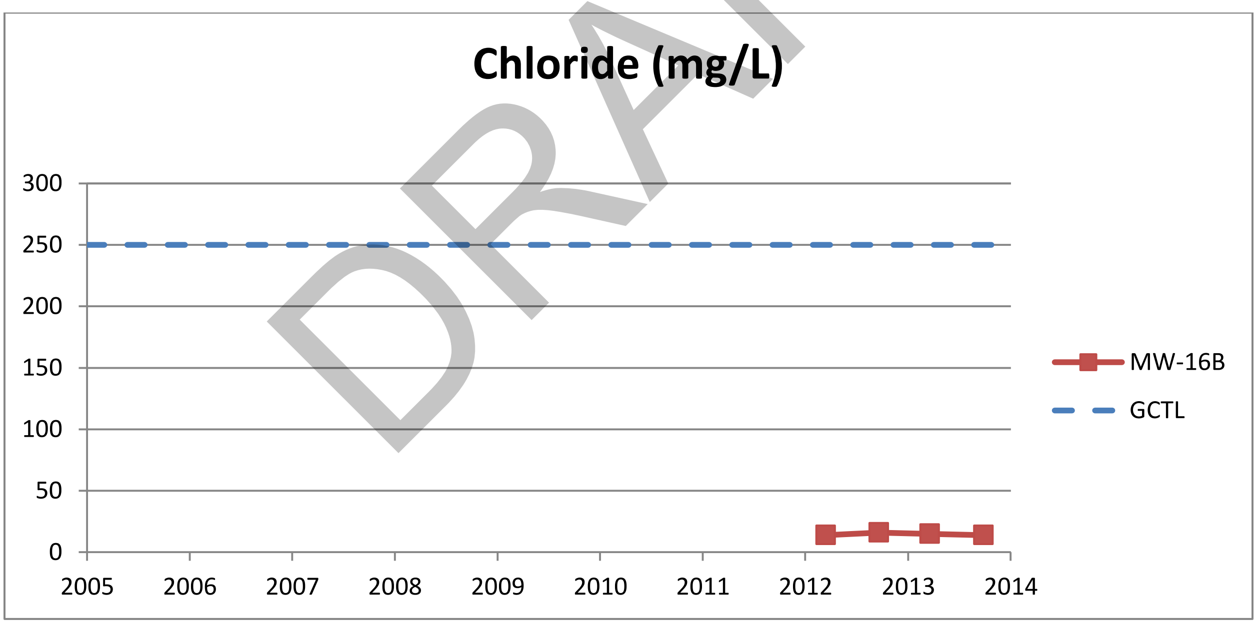

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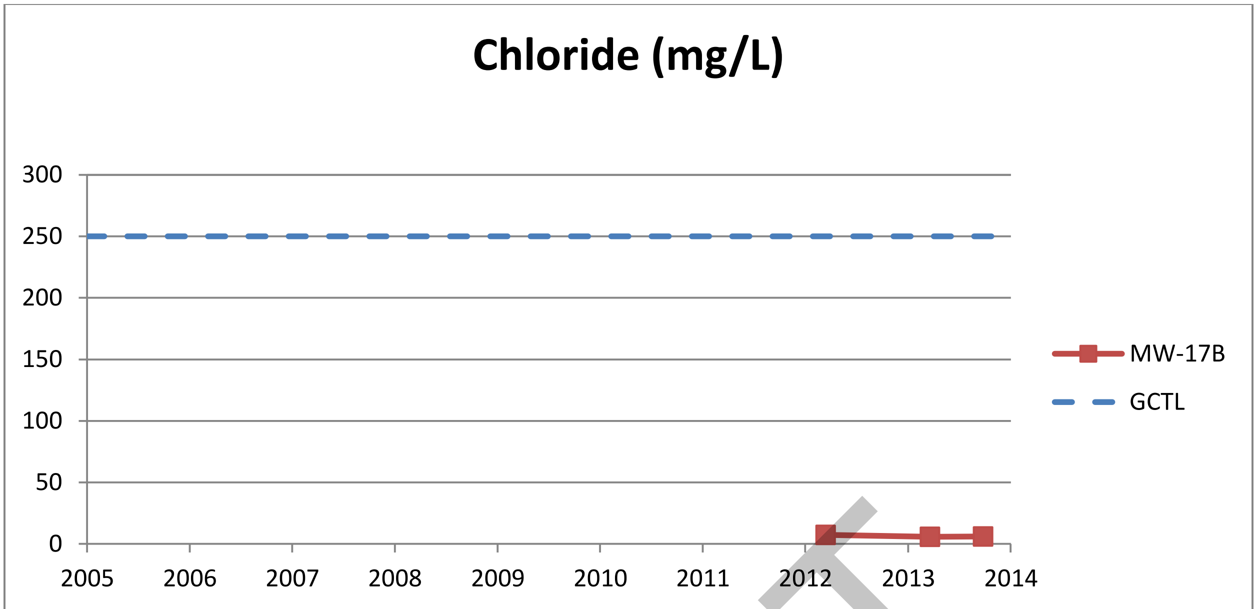

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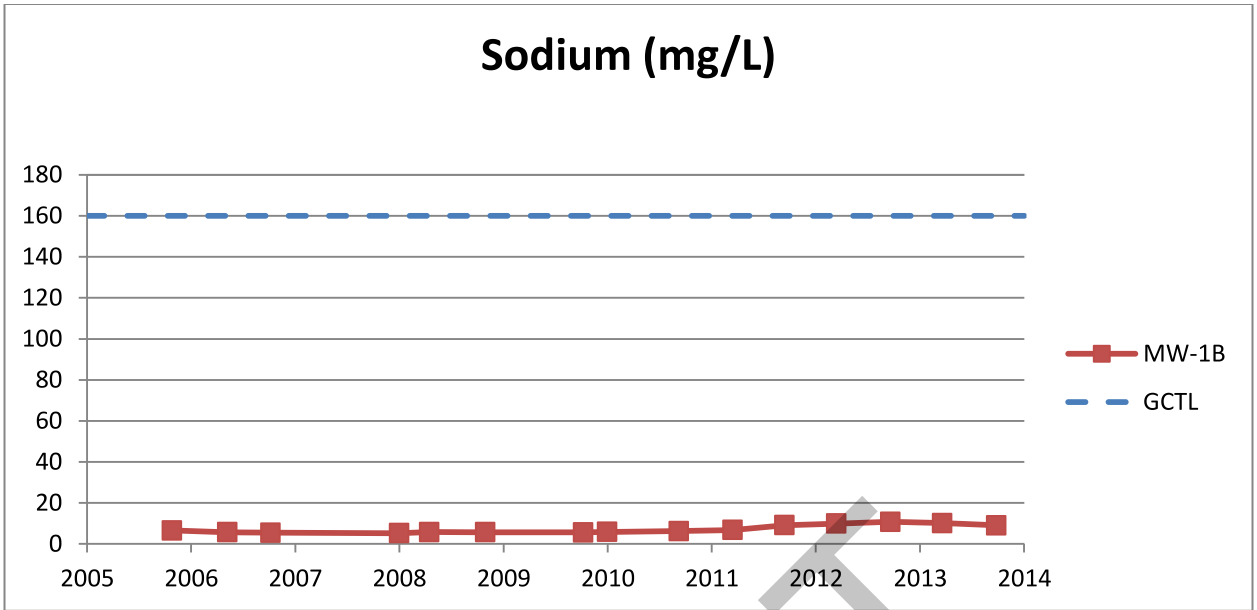

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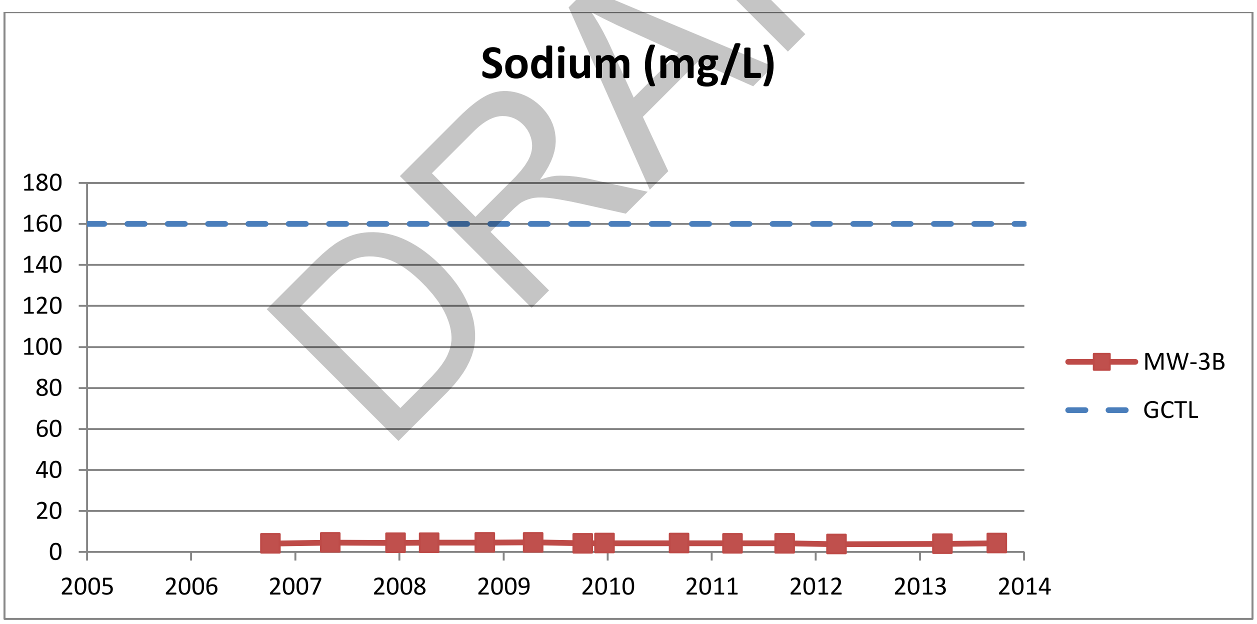

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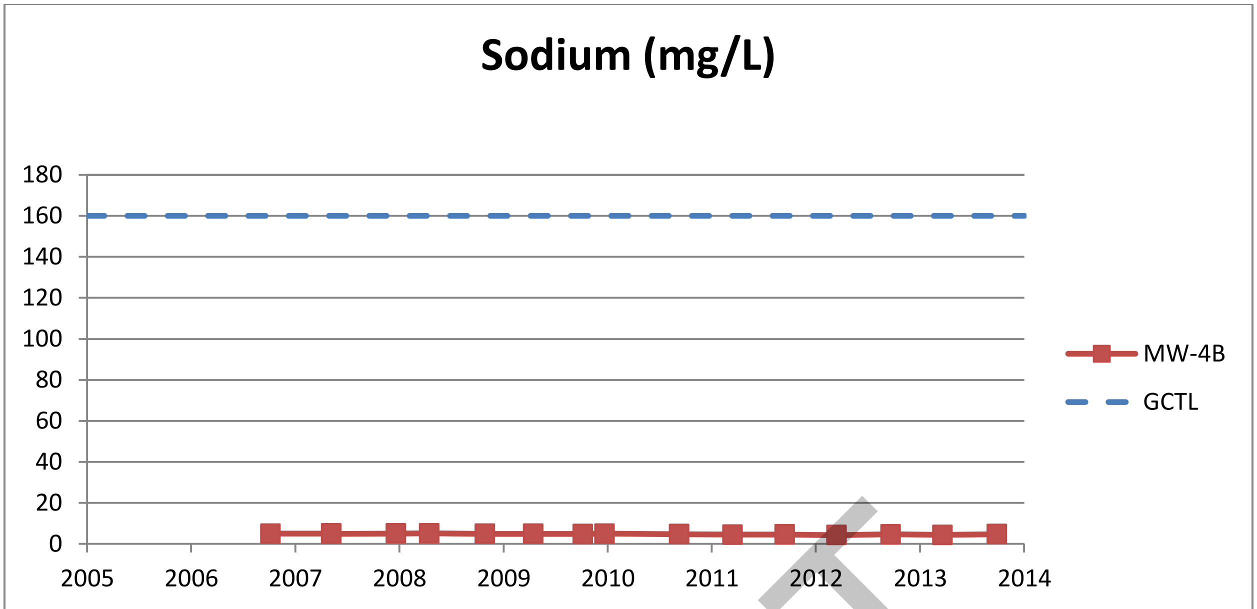

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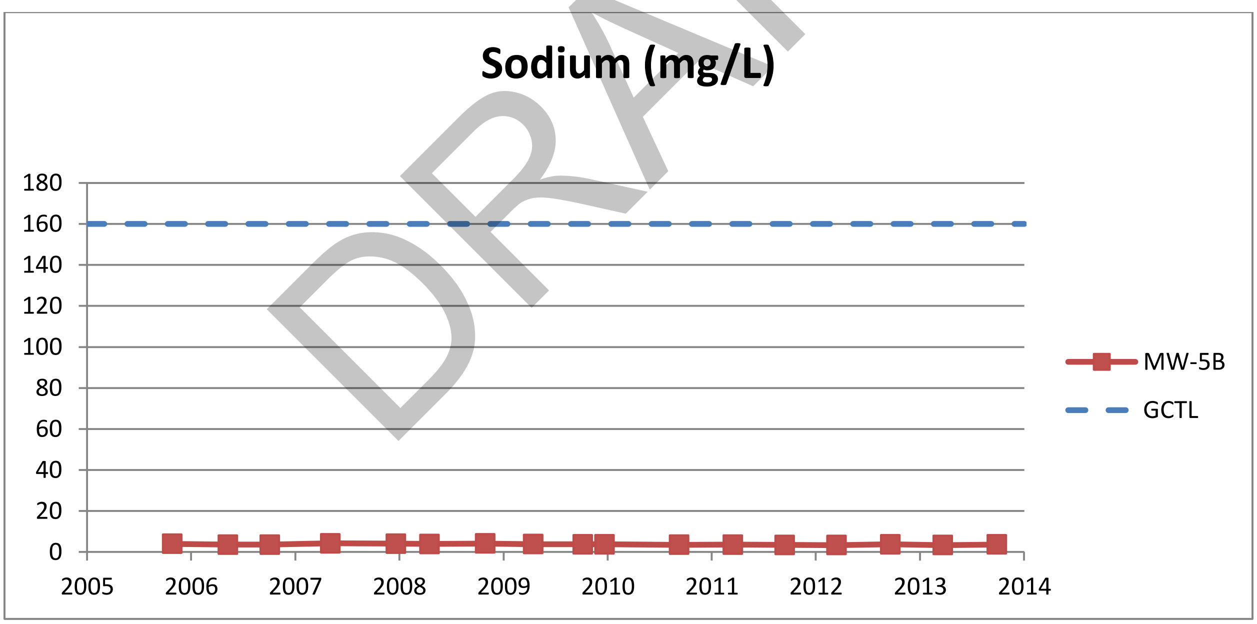

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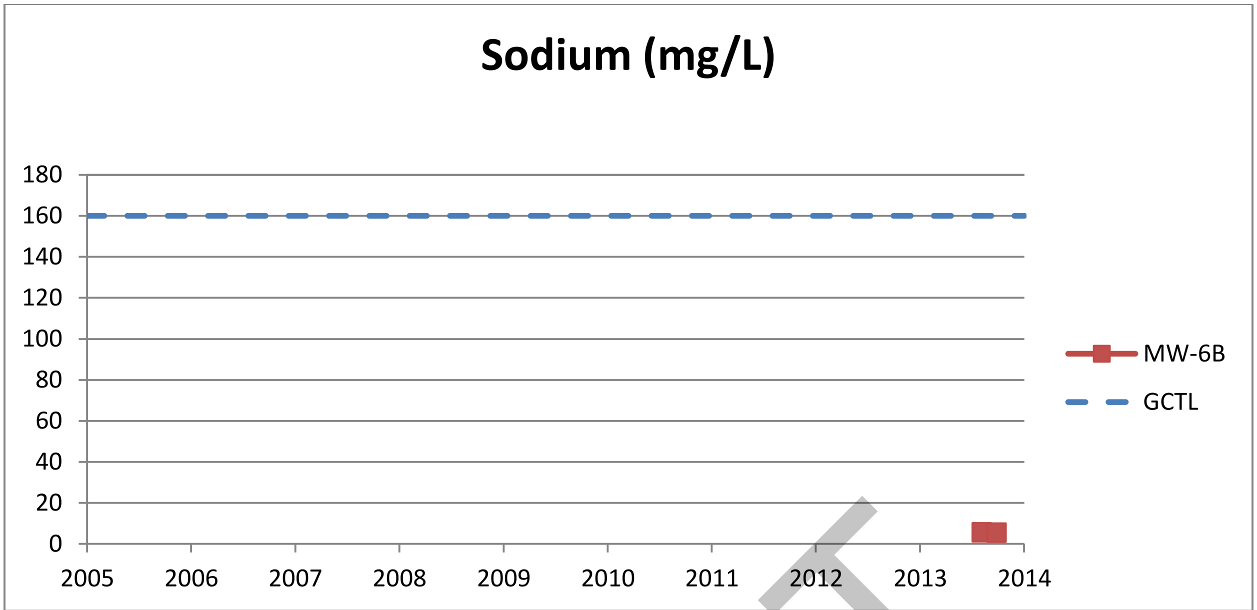

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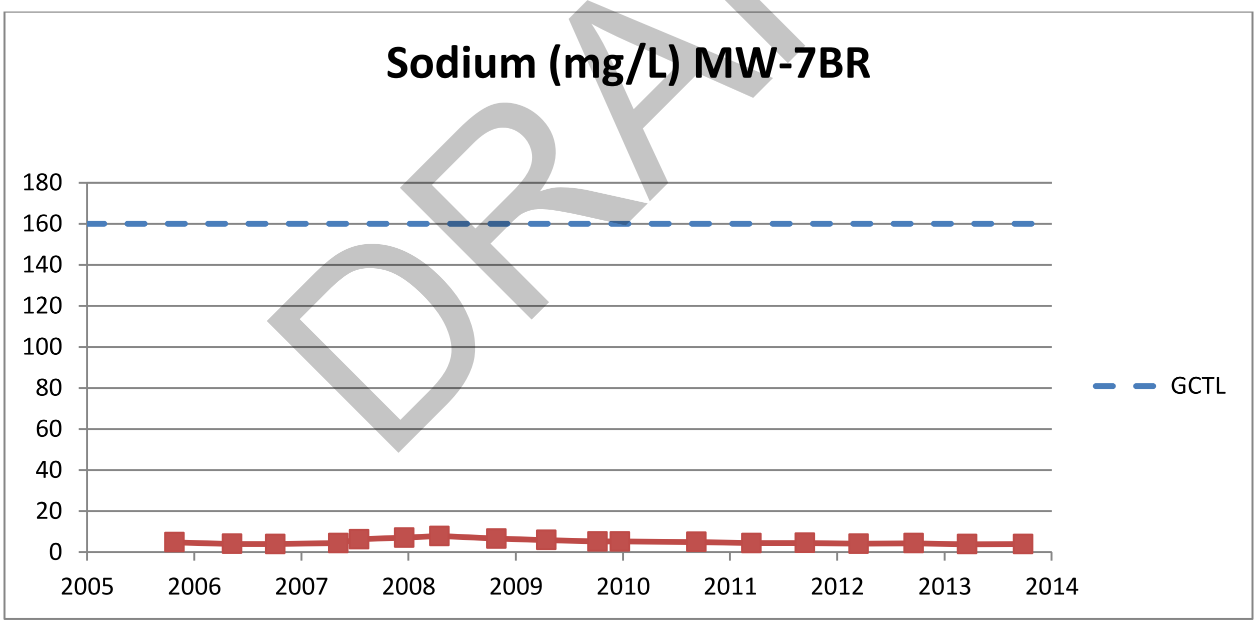

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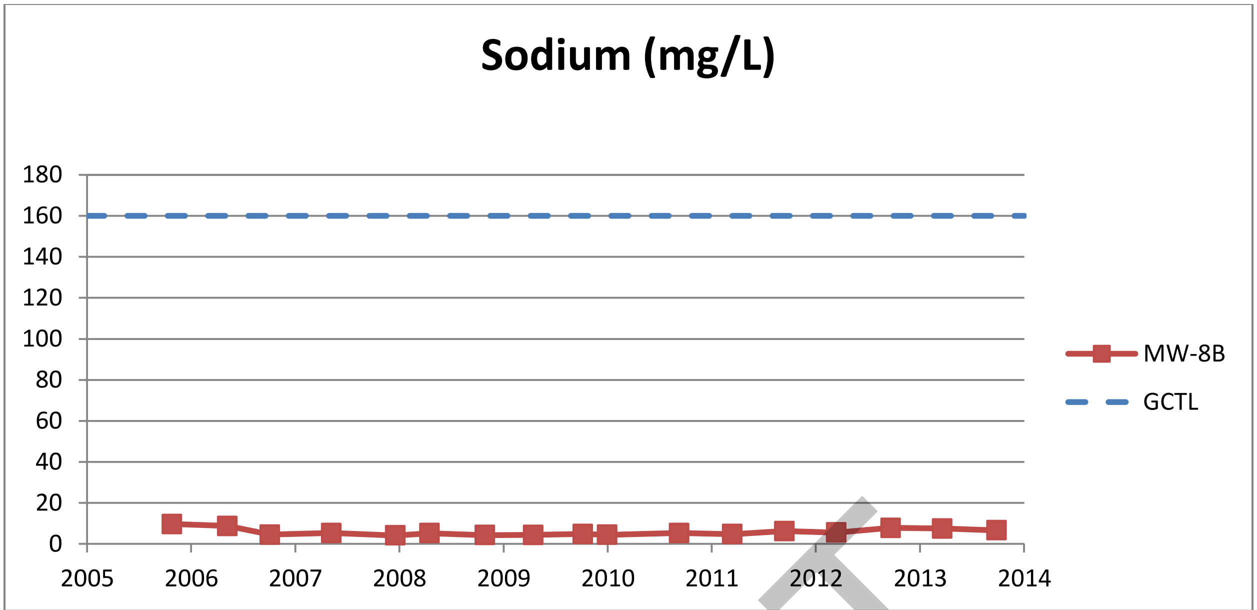

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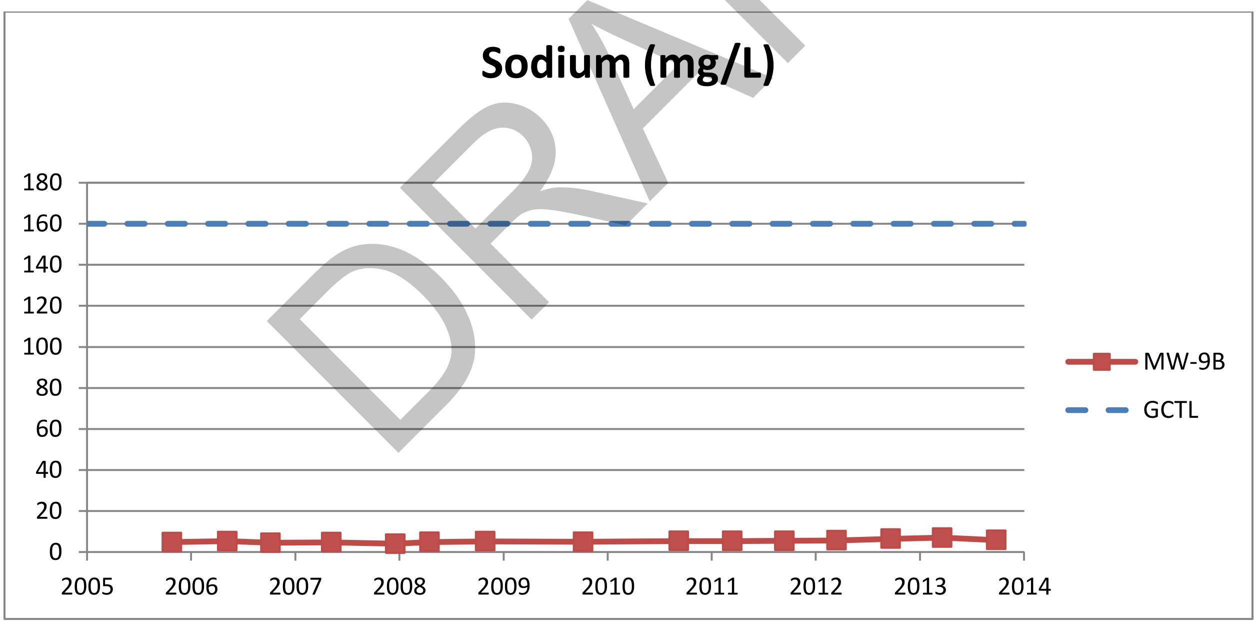

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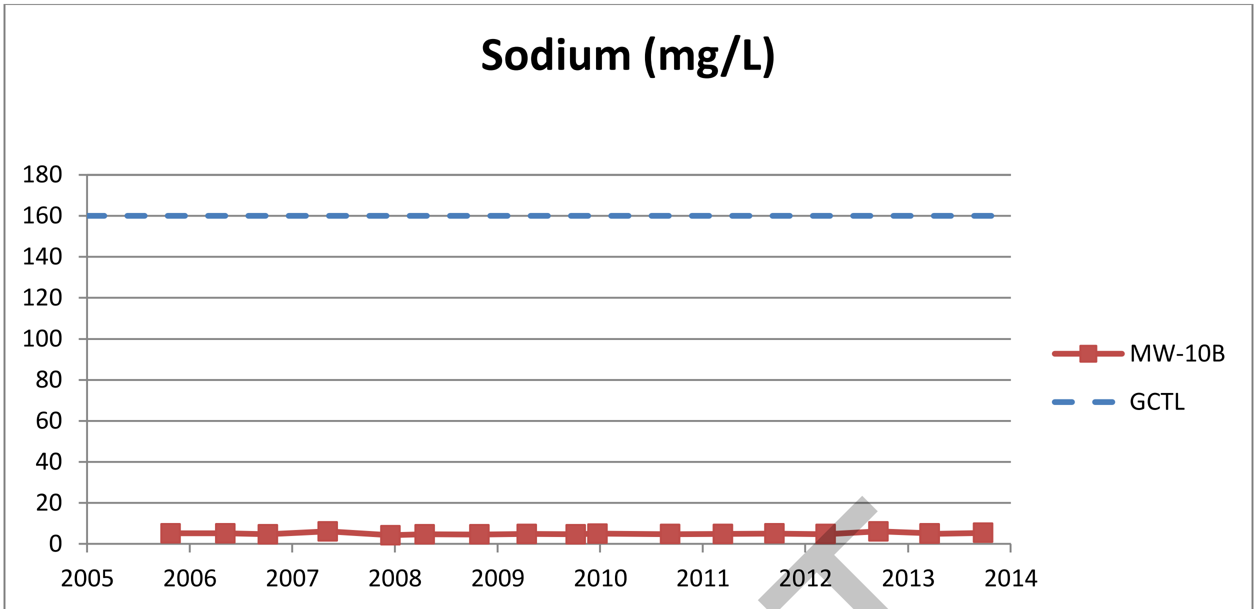

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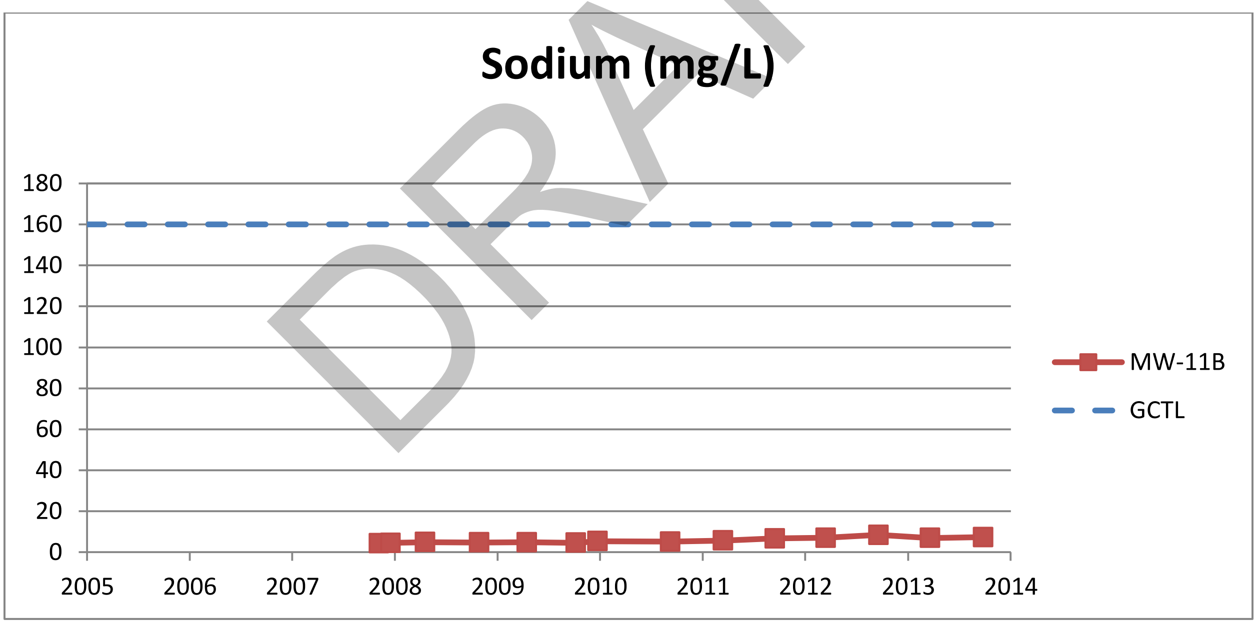

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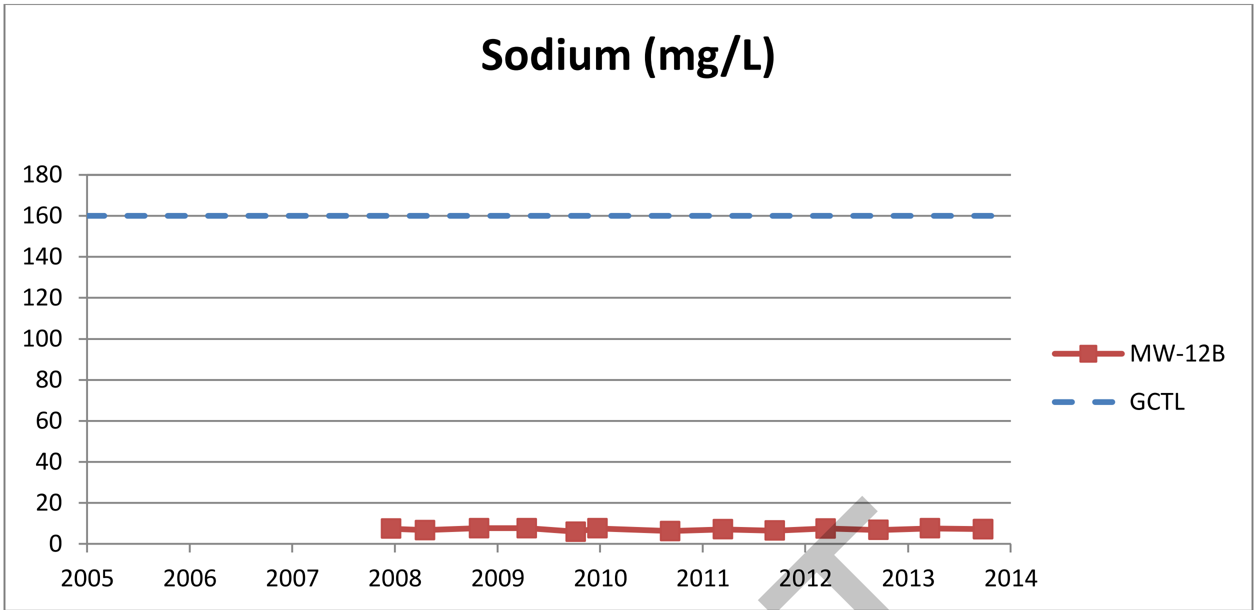

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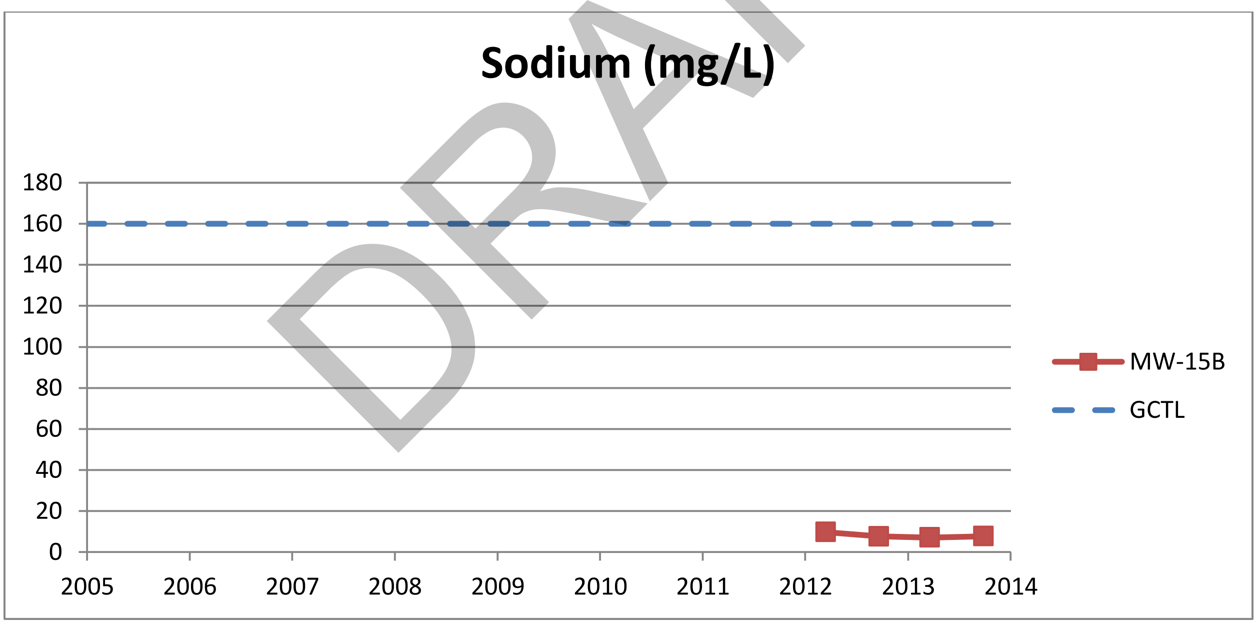

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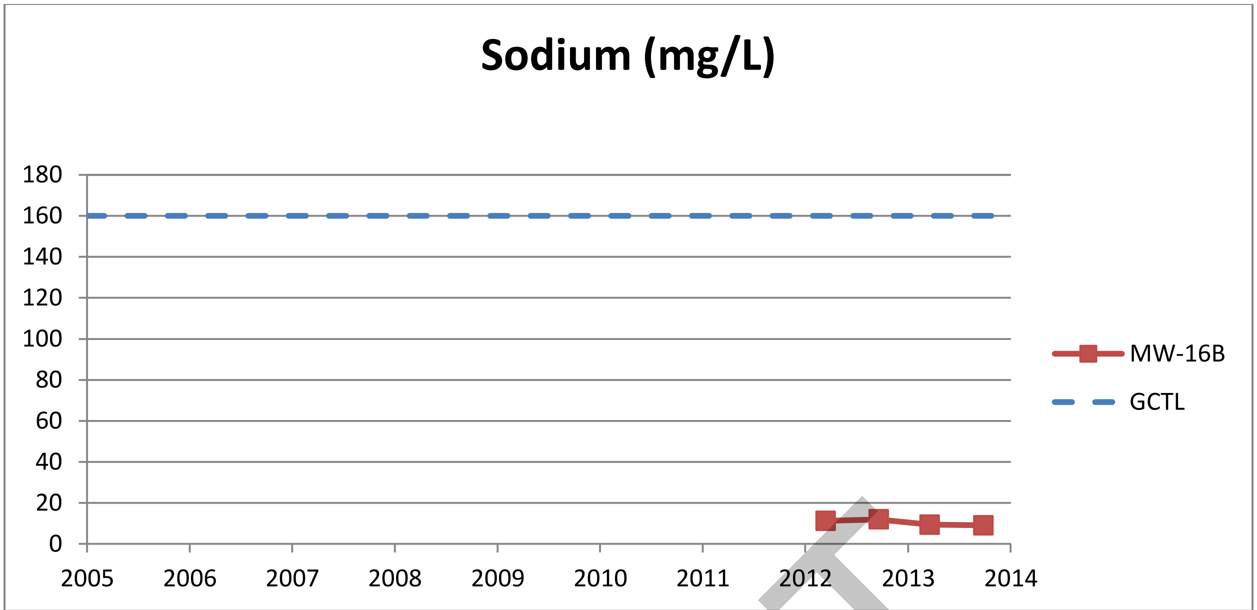

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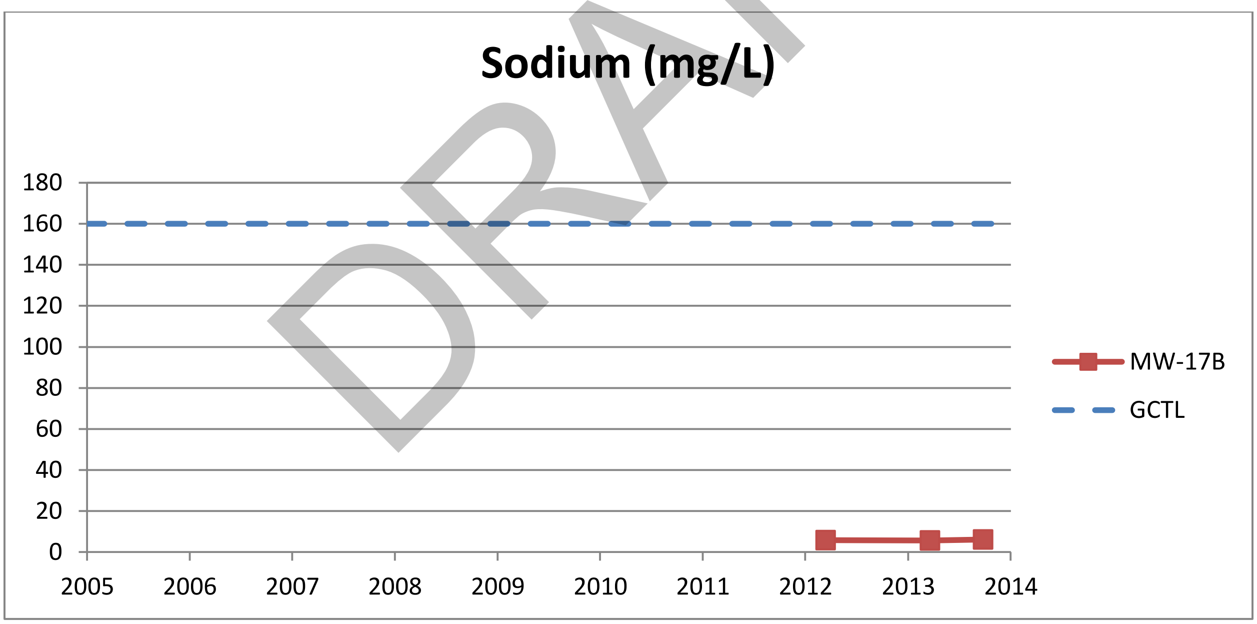

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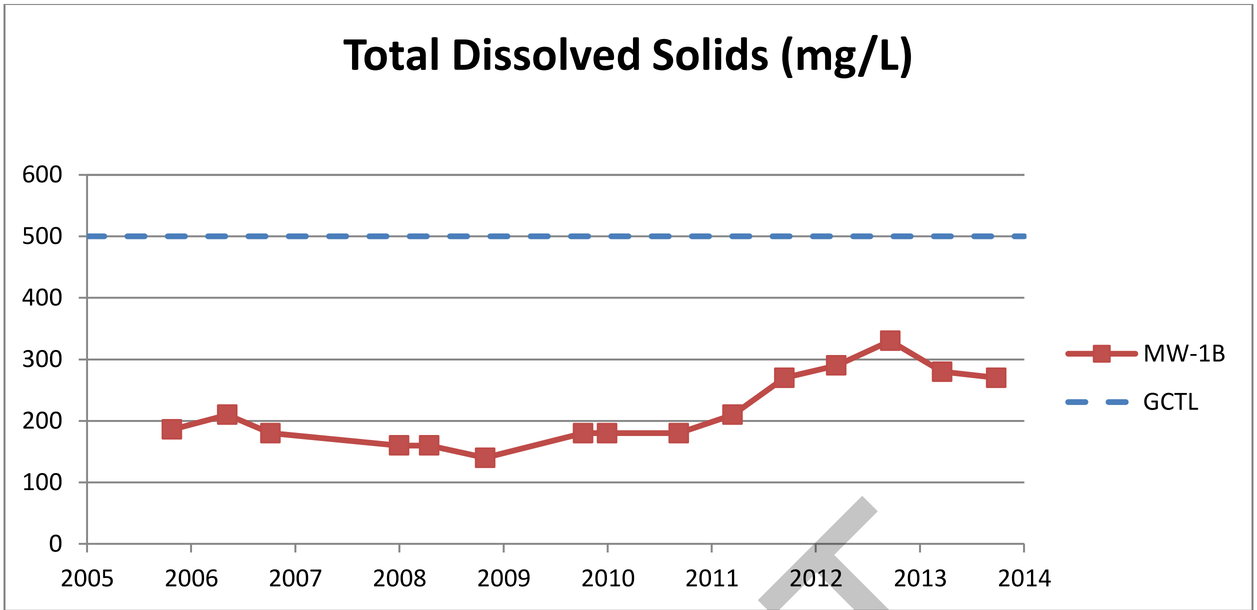

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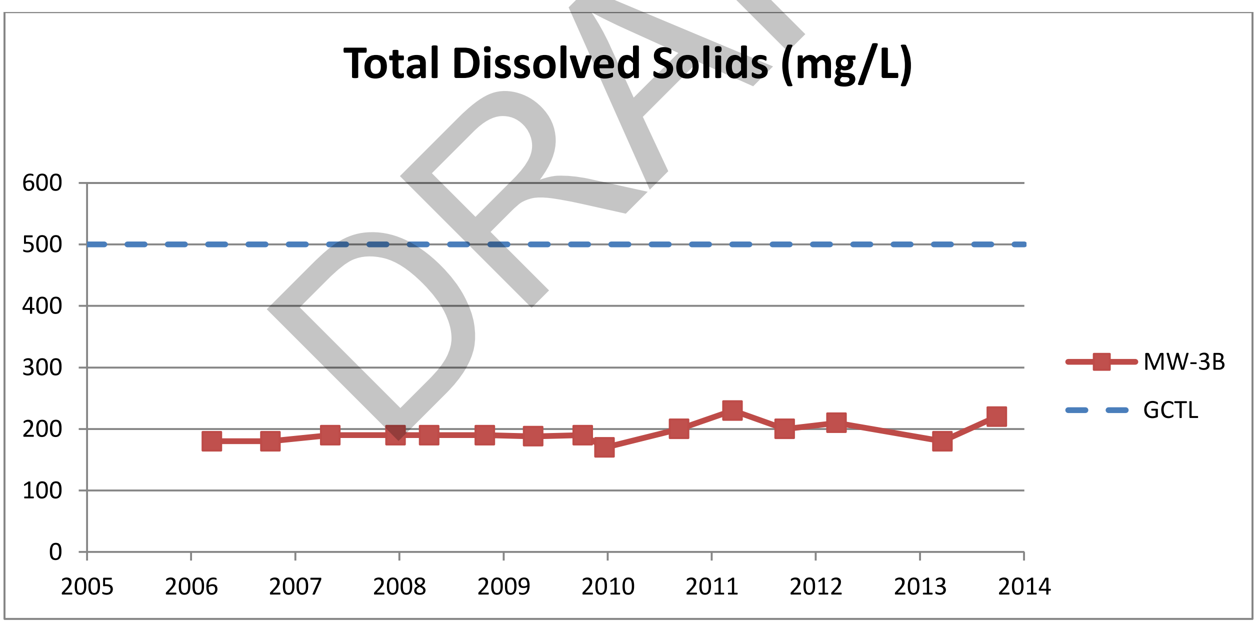

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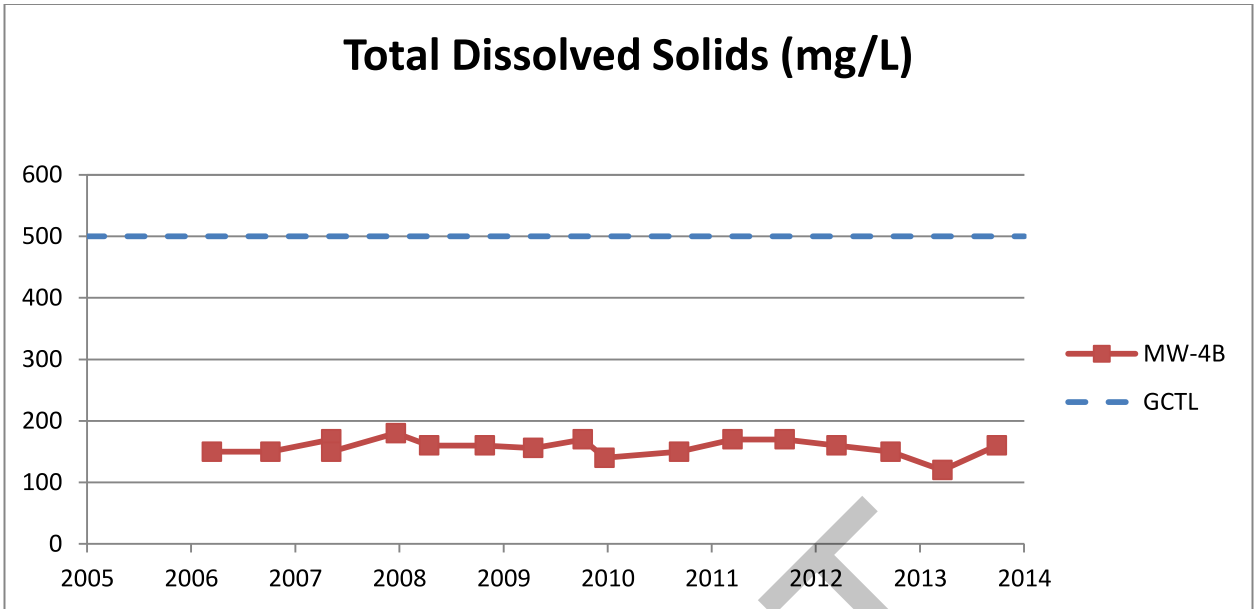

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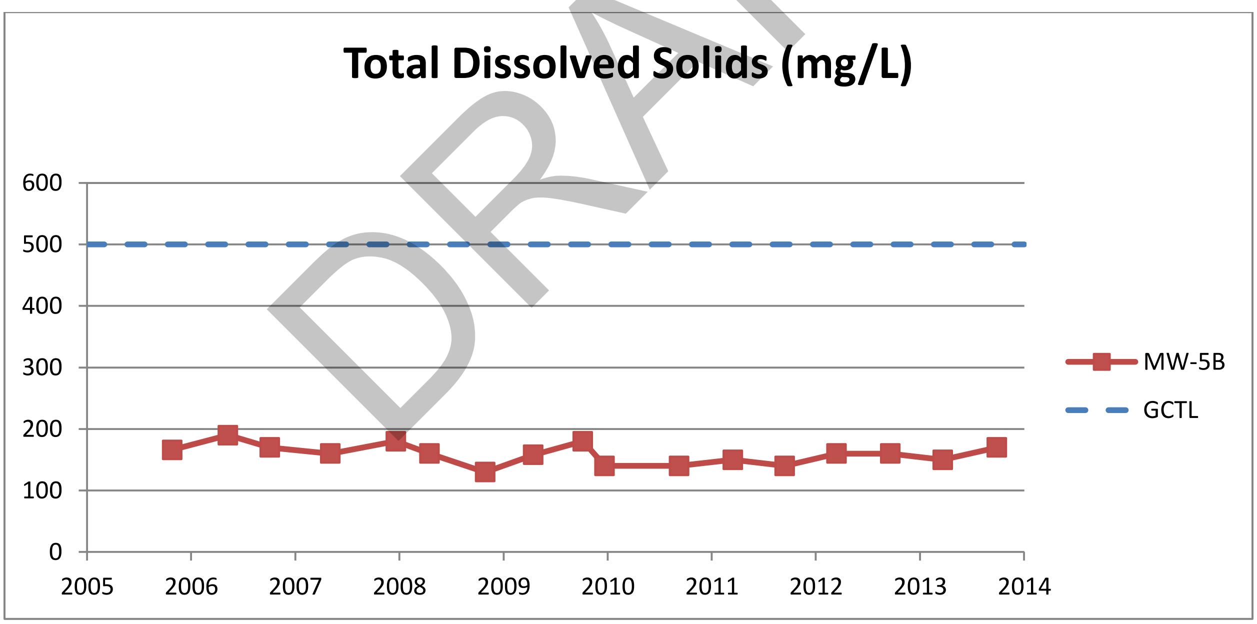

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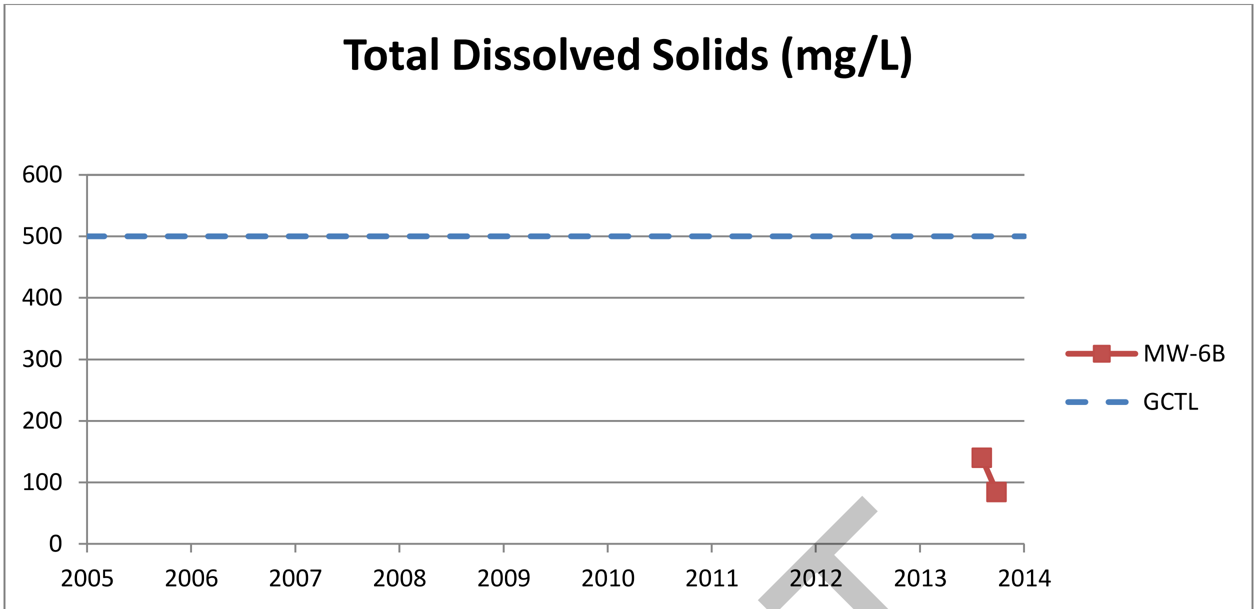

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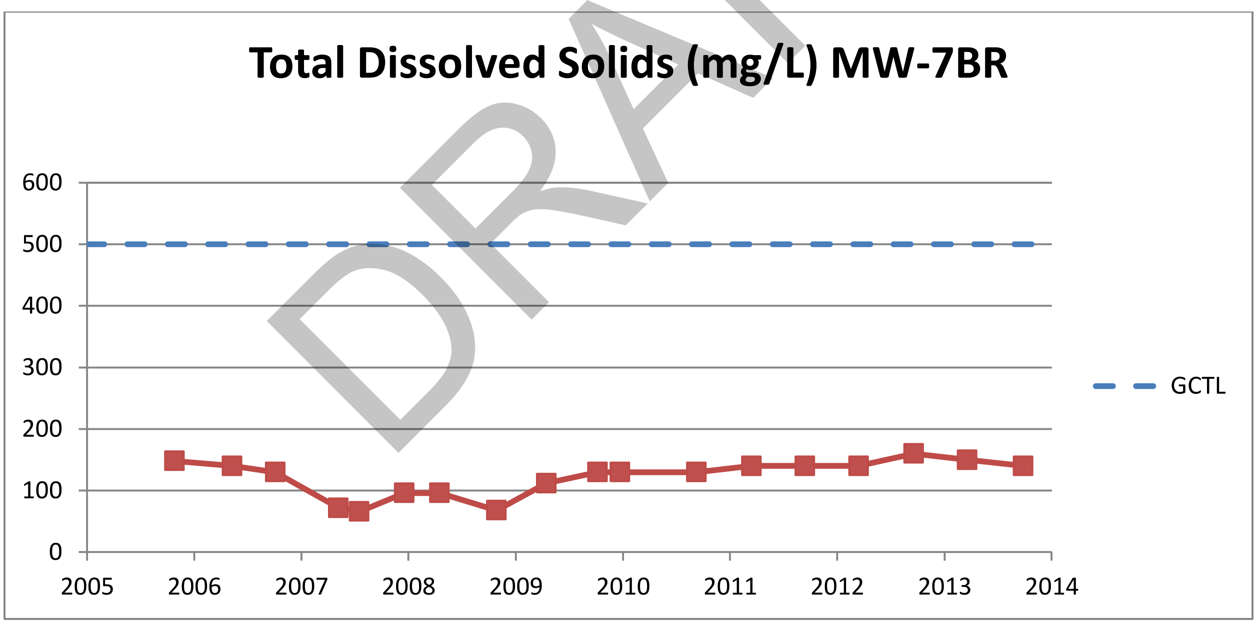

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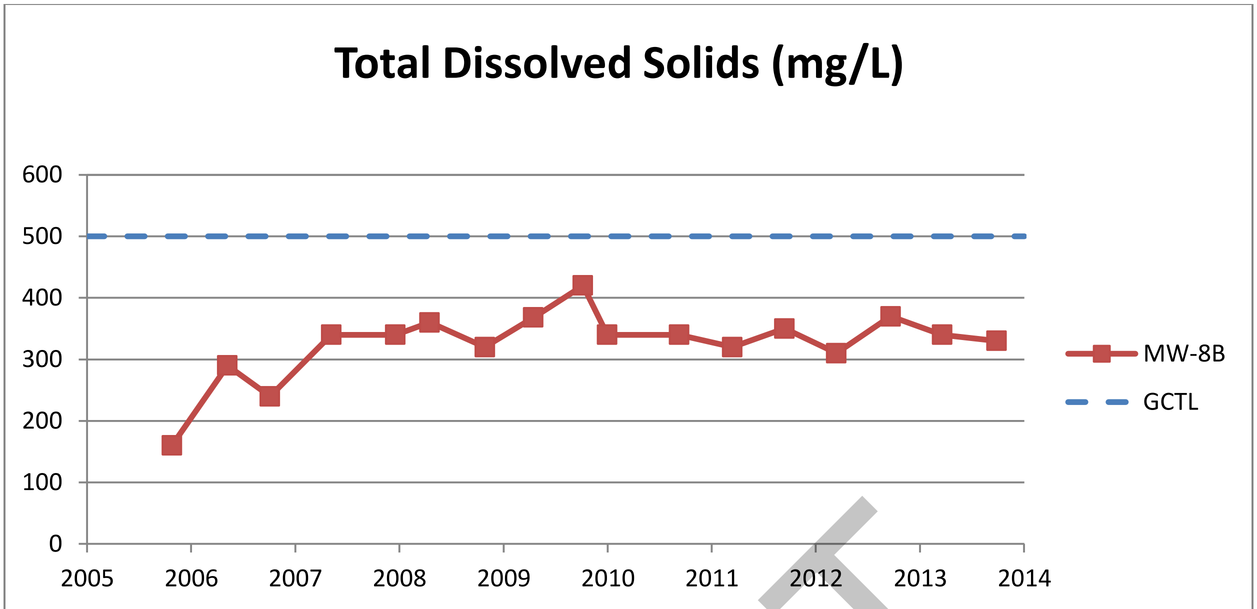

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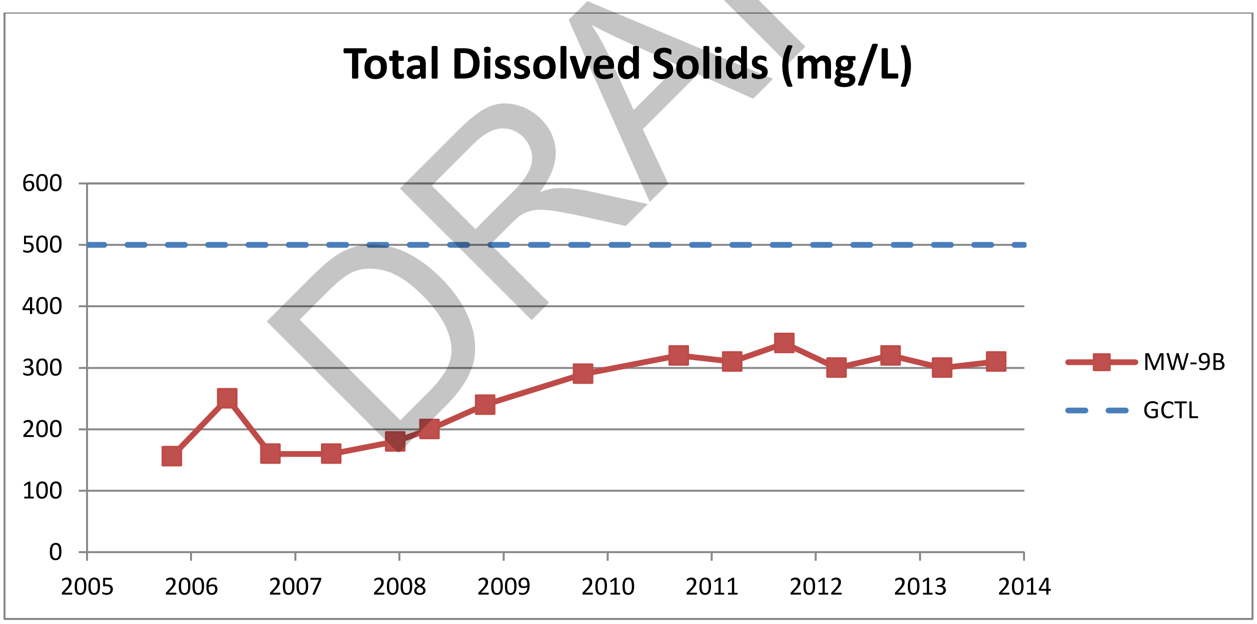

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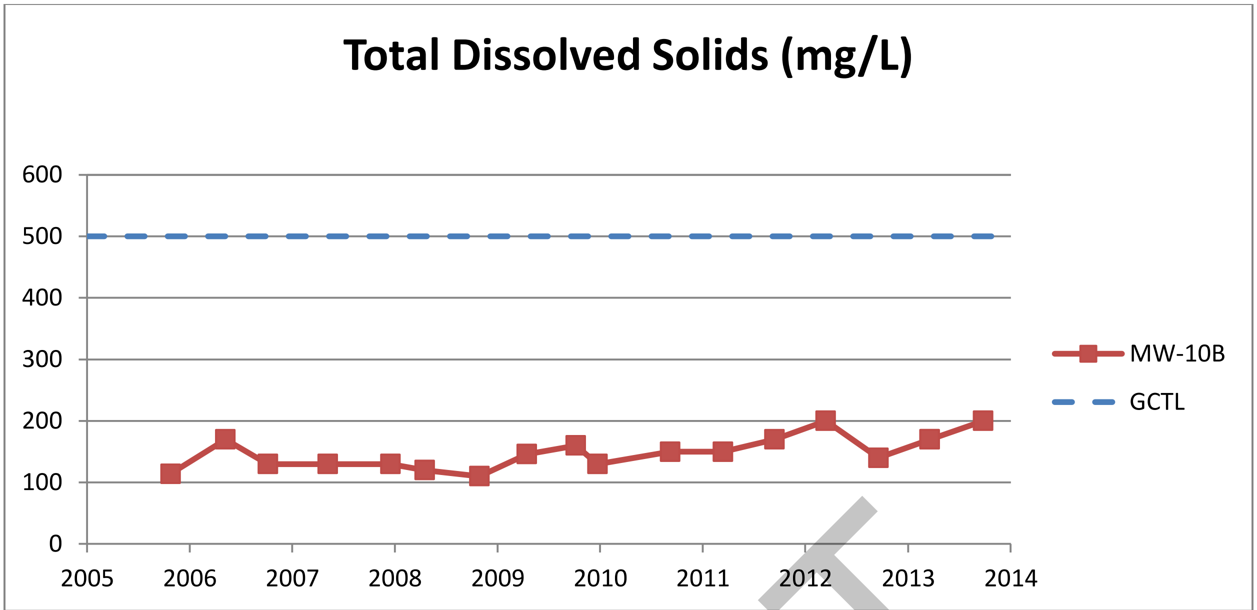

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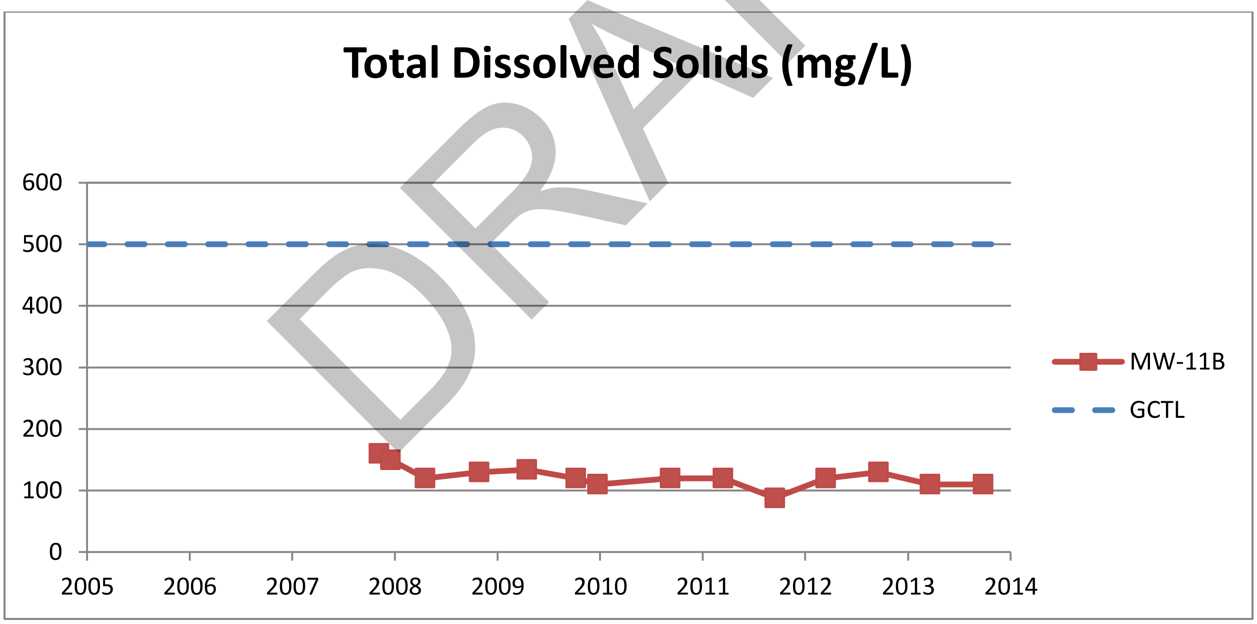

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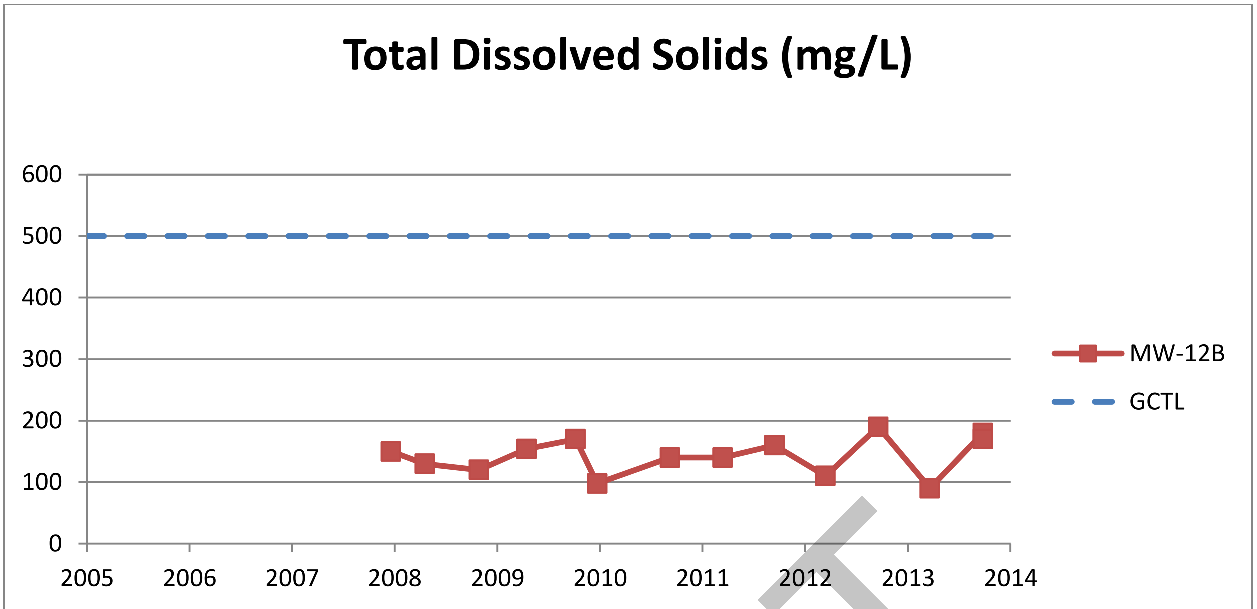

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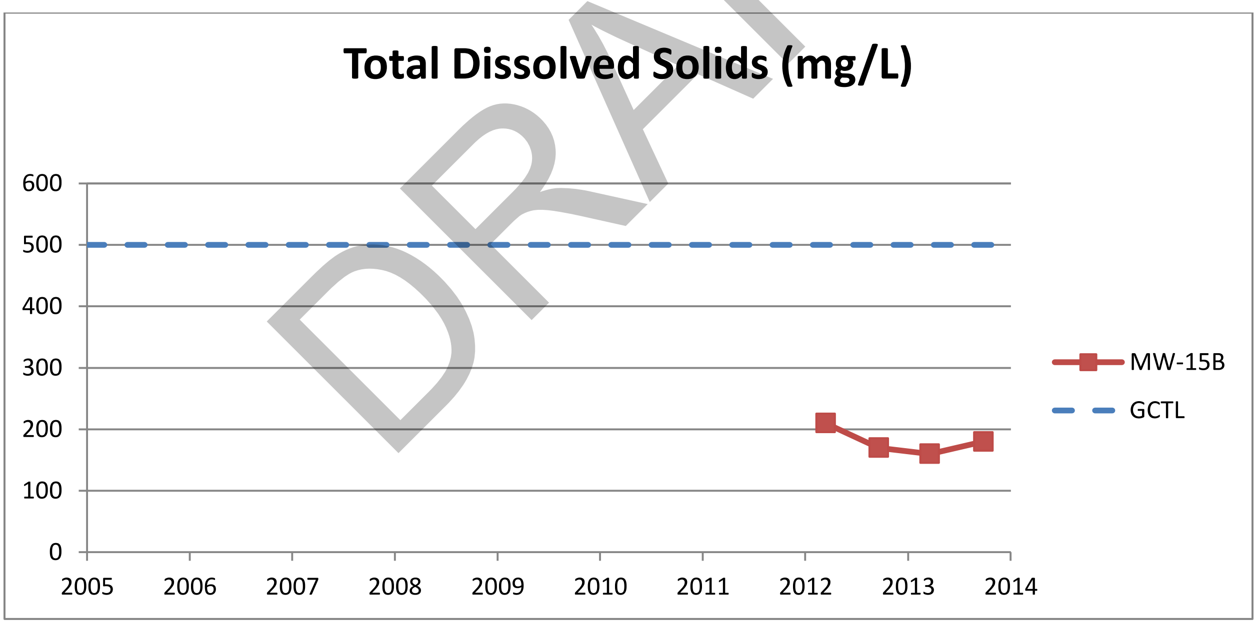
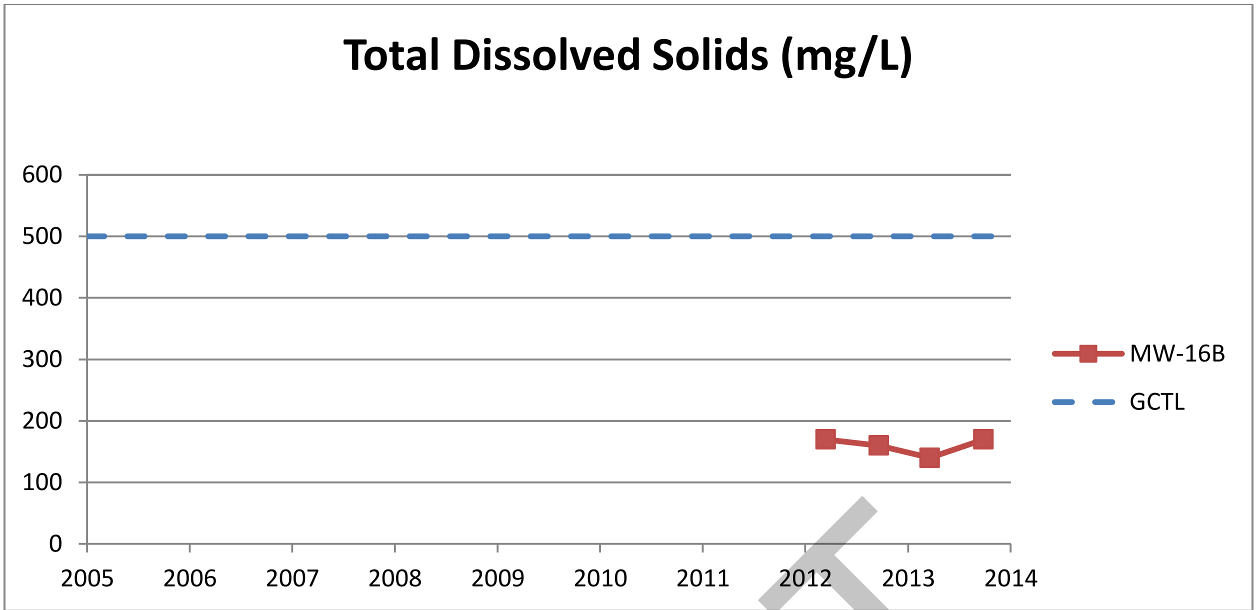


Figure 3.3.13-43



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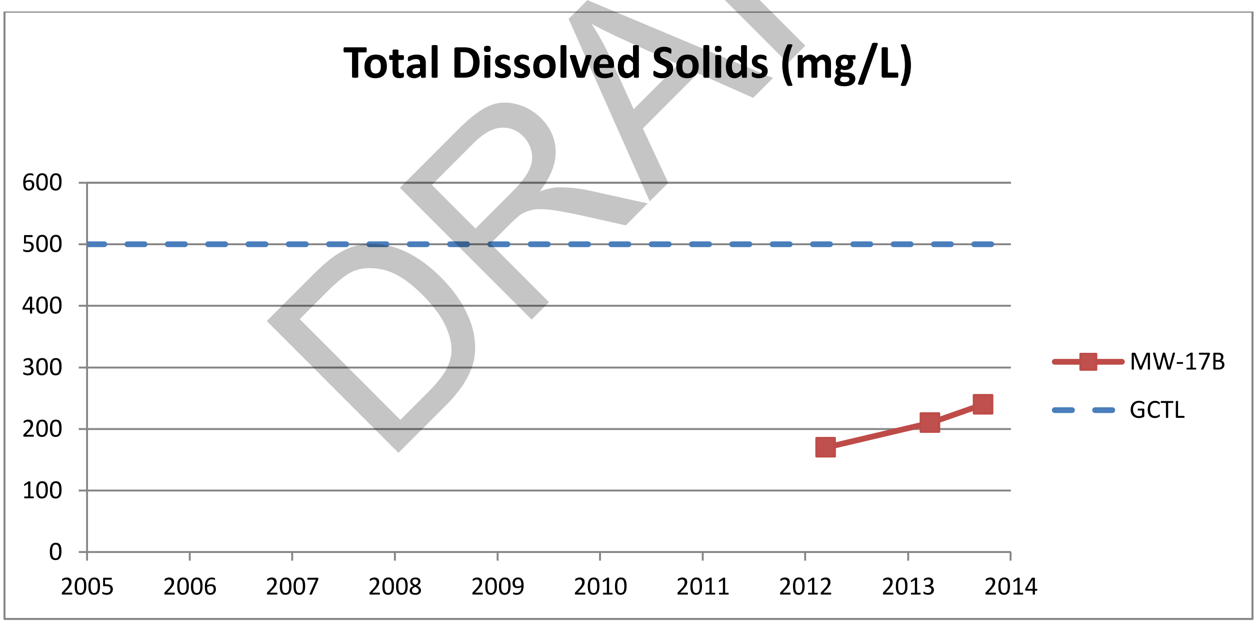


Figure 3.3.13-45

3.4 SUMMARY OF SITE GROUNDWATER QUALITY

The historical groundwater quality data presented in Sections 3.2 and 3.3 demonstrate that landfilling activities have not impacted groundwater quality at the Facility. Specifically, parameter concentrations for groundwater samples collected from both the Floridan aquifer and the upper, discontinuous water bearing zone are:

- Comparable to published regional background concentrations;
- Consistently below applicable groundwater cleanup target levels;
- Consistent over time, showing no temporal changes indicative of leachate impacts.

4.0 OPERATIONAL PROCEDURES AND WASTE RECEIVED

4.1 NATURE OF THE WASTE

The facility accepts only Class III waste, which is defined in Chapter 62-701.200(14), F.A.C. (emphasis added):

> *"Class III waste" means yard trash, construction and demolition debris, processed tires, asbestos, carpet, cardboard, paper, glass, plastic, furniture other than appliances, or other materials approved by the Department, that are not expected to produce leachate that poses a threat to public health or the environment.*

Therefore, the type of waste disposed at the facility is not expected to generate leachate which would result in violations of the groundwater standards and criteria.

An updated CCA Treated Wood Management Plan is provided in Section 5.9 of the Operations Plan (Appendix H of the Engineering Report).

4.2 OPERATING HISTORY

The current disposal area is operated in accordance with an FDEP-approved operations plan (Appendix H of the Engineering Report). Since the facility began operations, routine site inspections have been performed by FDEP staff to evaluate compliance with the procedures detailed in the operations plan. The facility operations have consistently been found by the Department to be in compliance with the operations plan procedures. The required procedures include spotting of the waste at three separate steps prior to final disposal:

1. Waste is spotted at the on-site scalehouse by the scalehouse attendant;
2. Waste is spotted as it is being unloaded from the vehicle; and
3. Waste is spotted again by the equipment operator while compacting and spreading the waste.

If prohibited waste is observed in Step 1, the load is rejected and the hauler is not allowed to deposit the load at the facility. If prohibited waste is observed in Steps 2 or 3, the operator removes the waste from the landfill into a temporary storage container for subsequent removal from the site.

The extensive spotting procedures are effective in ensuring that prohibited waste is not disposed at the facility. The remaining materials following spotting are Class III in nature and not expected to generate leachate.

5.0 CONCLUSIONS

5.1 OVERVIEW

The purpose of this Study Report is to provide information to the FDEP that demonstrates, based upon the types of waste received, the methods for controlling types of waste disposed, and the results of hydrogeological and geotechnical investigations, that the Facility is not expected to result in violations of the FDEP groundwater standards and criteria if built with a 3 feet thick clay liner. Based upon information provided herein, the following conclusions are provided:

5.2 WASTE RECEIVED

Class III waste is defined by the State as materials "*that are not expected to produce leachate that poses a threat to public health or the environment"*. Therefore, the nature of the materials to be disposed render it unlikely to result in violations of FDEP groundwater standards and criteria.

5.3 CONTROLLING WASTE DISPOSAL

The applicant has implemented effective procedures as part of the facility Operations Plan for spotting and removing prohibited waste and for managing CCA treated wood. The procedures have been approved by the Department in multiple permit iterations and have proven successful.

5.4 GROUNDWATER QUALITY

Groundwater quality has not been impacted by the operations of the existing Class III disposal operations. Time series plots prepared for both surficial and Floridan aquifer wells show consistent concentrations over time. Leachate indicator parameters showed no impact from landfilll operations. Therefore, continuing similar operations in Cells 7, 13, 14, and 16 with a 3 feet thick clay liner is equally unlikely to result in violations of FDEP groundwater standards and criteria.

5.5 GEOTECHNICAL INVESTIGATION

UES updated their investigation to include all current data and maintains their opinion that the landfill footprint is in an area that will provide the required support for the Class III solid waste.

5.6 REQUEST AND GROUNDS FOR RELIEF

This Study Report demonstrates that no significant threat to the environment will result from the construction and operation of Cells 7, 13, 14 and 16 without a bottom liner system based upon the types of waste received, methods for controlling types of waste disposed of, and the results of hydrogeological and geotechnical investigations. Therefore, the FDEP should continue to allow the use of a 3 feet thick clay liner for Cells 7, 13, 14, and 16.

ENGINEERING REPORT
APPENDIX D

GEOTECHNICAL INVESTIGATION REPORT UPDATE

UNIVERSAL
ENGINEERING SCIENCES
Consultants In: Geotechnical Engineering • Environmental Sciences
Geophysical Services • Construction Materials Testing • Threshold Inspection
Building Inspection • Plan Review • Building Code Administration

LOCATIONS:
- Atlanta
- Daytona Beach
- Fort Myers
- Fort Pierce
- Gainesville
- Jacksonville
- Miami
- Ocala
- Orlando (Headquarters)
- Palm Coast
- Panama City
- Pensacola
- Rockledge
- Sarasota
- Tampa
- Tifton, GA
- West Palm Beach

August 05, 2014

Angelo's Materials
41111 Enterprise Road
Dade City, Florida 33825

Attention: John, Arnold, P.E.

Reference: Geotechnical Services / Documentation Review
Dade City Landfill
NWC of Enterprise Rd and Auton Rd.
Dade City, Pasco County, Florida
UES Project No. 0830.1200487
UES Report No. 1134655

Dear Mr. Arnold:

As requested Universal Engineering Sciences, Inc. (UES) has completed the review of documentation and field conditions related to the Permit Renewal Applications being prepared by Locklear and Associates, Inc (L&A) dated July, 2014. We understand that the permit renewal also involves a change in fill sequence. The current fill sequence calls for waste to be placed in Cell 7 following completion of filling in Cell 6. The revised sequence will call for waste placement in Cell 16 followed by Cells 14 and 13 (A&B) after completion of filling in Cell 6; filling will than progress to Cell 7. We also understand that the well located to the north of the landfill, which resulted in modification of a circular set-back required at the time before the well abandonment, was abandoned.

Furthermore, we understand that at the pre-application meeting with the DEP, the applicant was asked to re-evaluate and assess the possibility of sinkhole/subsidence activity in the area. The re-evaluation was to consider the occurrence of a sinkhole in the vicinity of Cell 15 in January 2003 during the excavation of overburden material. The occurred subsidence was afterward remediated using a compaction grout method.

The following documents, provided to us by the client, were reviewed for this re-assessment report.

- January 19, 2004 Hartman & Associates, Inc (HAI) Correspondence to Ms. Susan Pelz, P.E.
- February 11, 2004 Hartman & Associates, Inc (HAI) Correspondence to Ms. Susan Pelz, P.E.
- February 18, 2004 Hartman & Associates, Inc (HAI) Correspondence to Ms. Susan Pelz, P.E.

- March 30, 2004 (Revised July 15, 2004) Hartman & Associates, Inc (HAI) Correspondence to Ms. Susan Pelz, P.E.

- Site Aerial Map, prepared by Kelner Engineering, with cell boundaries (existing and future) superimposed on it.

- January 6, 2011 letter from John Arnold, P.E. to Ms. Susan Pelz, P.E., subject: Enterprise Class III Landfill and Recycling Facility, Permit No.: 177982-007-SO/T3 & 177982-008-SC/T3, Response to January 5, 2011 email.

- October 2011 Enterprise Recycling and Disposal Facility Cell 6 Construction Completion Certification Report, prepared by John P. Arnold, P.E.

- December 7, 2011 letter from Steven Morgan to Mr. John Arnold, subject: Certification of Construction – Cell 6 Construction Enterprise Recycling and Disposal Facility, Permit No.: 177982-008-SC/T3, Pasco County, WACS No.: SWD/51/87895.

- March 2, 2012 letter from John Arnold, P.E. to Mr. Steve Morgan, subject: Enterprise Recycling and Disposal Facility, Cell 6 Construction Completion Report – RAI No. 1 Response, Angelo's Aggregate Materials, Ltd., FDEP Permit Nos. 177982-008-SC/T3 and 177982-007-SO/T3, WACS No.: 87895, Pasco County, Florida.

- March 26, 2012 letter from John Locklear, P.G. to John Morris, P.G., subject: Cell 6 Monitoring Well Installation, Enterprise Class III Landfill and Recycling Facility, Permit No. 177982-007-SO/T3, WACS No. 87895.

- April 24, 2012 letter from Steve Morgan to Mr. John Arnold subject: Certification of Construction – Cell 6 Construction Enterprise Recycling and Disposal Facility, Permit No.: 177982-008-SC/T3, Pasco County, WACS No.: SWD/51/87895.

- May 11, 2012 letter from John Arnold, P.E. to Mr. Steve Morgan subject: Enterprise Recycling and Disposal Facility Cell 6 Construction Completion Report – Response to RAI #2.

- July 15, 2014 email from John Locklear, P.G., subject: Additional boring and well construction logs.

In addition we revisited the following reports previously prepared by UES:

- Geotechnical Exploration, Proposed Dade City - Class III Landfill, prepared for Hartman & Associates, Inc. (UES Project No. 80010-002-01), dated May 5, 2000.

- Geotechnical Exploration - Update, Dade City - Class III Landfill (UES Project No. 80010-002-01), prepared for Hartman & Associates, Inc. dated January 26, 2006.

Based upon review of the above documentation we further evaluated events of limestone encounters during excavation of Cell 6 and how they relate to the information obtained during the course of our geotechnical exploration.

At the beginning of March of 2013 we were provided with the following documents:

- Cell 4 Construction Completion Report, FDEP Permits 177982-001-SC & 177982-002-SO, dated October, 2006.

- Cell 3 Construction Completion Report, FDEP Permits 177982-001-SC & 177982-002-SO, dated March 2007.

As a result of our review process we concluded the following:

- Both reports issued by UES conform to the requirements of the Florida Administrative Code including the assessment of potential for sinkhole occurrence presented in our May 5, 2000 report.

- UES report Geotechnical Exploration - Update, dated January 25, 2006 was a result of the proposed change in the landfill geometry (fill thickness and change in slopes) and questions raised by FDEP. The report provided analysis and conclusions related to the soil bearing capacity and total settlement of foundation soils, slope stability analysis and potential for sinkhole occurrence related to loss of circulation (LOC) events at the time of our geotechnical exploration.

- No additional information presented in the documentation provided to us warranted any changes, revisions or additions to analysis and/or conclusions and recommendations presented in our reports.

  Generally our conclusions can be summarized as:

- Landfill slopes are stable with safety factor of 1.5 or higher; Bearing capacity failure safety factor of 3 was estimated;

- This report confirms the conclusion drawn in previous geotechnical site investigations and that the site meets geotechnical requirements of Rule 62-701.410 F.A.C.

- Sinkhole risk in the proposed disposal footprint is low.

- Placement of three feet of clay layer in the proposed fill areas is adequate to meet the geotechnical requirements for the site.

We also performed a site visit on June 10, 2014 accompanied by Mr. John Arnold. The area of the former subsidence received a clay liner and was used as a temporary stormwater pond. Based on the site reconnaissance and information provided by Mr. Arnold no ground subsidence or indications of surficial expressions of sinkhole activity were observed within the temporary stormwater pond (future Cell 14 and 16) or anywhere at the site.

We appreciate the opportunity to have worked with you on this project and look forward to a continued association with Angelo's Materials. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

Respectfully submitted,

UNIVERSAL ENGINEERING SCIENCES, INC.
Certificate of Authorization No. 549

for

Dušan Jovanović
Senior Project Manager

MARK K. HARDY
LICENSE
NO. 57233
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Mark Hardy, P.E.
Regional Manager
Florida License No. 57233
Date

3 –Client

ENGINEERING REPORT
APPENDIX E

SLOPE STABILITY ANALYSIS

11012 N. Ridgedale Road
Temple Terrace, Florida 33617
(813) 629-1965 office
(813) 914-7347 fax

July 24, 2014 Project No. 14-01-0111.02

Mr. John Locklear, P.G.
President
Locklear & Associates, Inc.
4140 NW 37th Place, Suite A
Gainesville, Florida 32606

RE: Slope Stability and Bearing Capacity Analysis
Enterprise Class III Landfill – Modification
Dade City, Florida

Dear Mr. Locklear,

Civil Design Services, Inc. (CDS) is submitting the following Slope Stability Analysis Report (Report) to Locklear & Associates, Inc. (L&A) for the modifications to the Class III solid waste operations at the Enterprise Class III Landfill (Landfill), located in Dade City, Florida. It is our understanding that the modifications proposed include;

- Revising the sideslopes from 4(h):1(v) to 3(h):1(v) slopes;
- Modifying the sideslopes to be continuous from the bottom toe of slope until a grade break at the crest of the landfill (a small perimeter maintenance road will be constructed at approximately EL 90);
- Continuation of the compacted clay bottom northward beneath all cells; and
- Construction of a modified Stormwater Pond No. 3 on the northside of the landfill disposal cells.

Reference Documents
The following documents were reviewed and information contained within these reference documents were used as part of the slope stability analyses. The reference documents are as follows;

Reference No 1. Universal Engineering Sciences – Geotechnical Exploration dated May 5, 2000.

- Boring logs B-1 through B-10 were reviewed and the soils types and soil density/strengths were used for the subsurface soil layers.

Reference No 2. Jones Edmunds and Associates, Inc. – Angelo's Class III Operations Permit Renewal Request for Supplemental Information dated April 13, 2007.

Slope Stability Model Analysis

- L&A prepared the permit modification Plans (Plans) for the Landfill. These Plans were used as the basis for modeling the slope geometry.

- The most critical slope stability section is along a line running north to south through the waste units. This is most critical section since the slope is the highest (from the bottom of Pond No. 3 to the top of the landfill at EL 170 (crest) to EL 175 (peak). In general all the subsurface soil layers are similar in the boring and the soils properties used in the modeling are conservative. Soils borings B-4, B-5, B-6, and B-7 logs were used to create a model the subsurface soil strata along this critical section.

- The following table of soil and waste properties was reviewed and used in the slope stability models prepared by CDS;

Soil Description	Unit Weight	Phi (degree)	Cohesion (psf)
Sand / Clayey Sand (SP/SC)	105	28	0
Compacted Clay Base	110	34	0
Class III Waste	50	35	0
Clay (CH)	110	0	1,000
Clayey Sand (SC)	105	28	0
Limestone	*		

Sand / Clayey Sand (SP/SC) – Previous reference reports used a sand strength with a phi angle of 34 degrees. In our models, for this in-situ, medium dense sand/clayey sand (SPT N values of approximately 10) we used a lower strength soil with a phi angle of 28 degrees. This is conservative since the SP/SC soils are near the bottom of the disposal units and the failure planes are more likely to pass through the upper soils layers when modeling.

Compacted Clay (SC - compacted) – Previous reference reports used a clay strength of c=1,000 psf. This is generally used for soils with high clay content. The clayey sands onsite generally have a higher percentage of sand content than clay content. The onsite clayey sands will be excavated, remolded, and compacted as part of the construction of the landfill base for the expansion areas. The clayey sands were modeled as a cohesionless soil layer with a strength of 34 degrees. This is more representative of the compacted clayey sands and conservative for slope stability modeling.

Class III – A unit weight of 50 lb/ft^3 (1,350 lb/cy) is more representative of Class III material than previous units weights of 65 lb/ft^3 (1,755 lb/cy) used in the reference reports. A unit weight of 65 lb/ft^3 is more representative of Class I waste material.

Clayey Soil Layers (CH) – Previous reports used a cohesive shear strength equal to 1,000 psf for this layer. We reviewed the soil borings and with SPT N valves of approximately 10 and the clay contents would generally be higher for deeper soils at the site, so we felt this was an acceptable approximation of this material.

Clayey Sand (SC) – It appears the neither reference report specifically assigned a value to this material but our review of the borings indicated there is a significant amount of the material near the limestone layer. The material in the borings is relatively dense and similar in characteristics to a SP/SC soil (depending on clay content). We conservatively modeled this layer as a lower strength SP/SC soil type with a phi angle of 28 degrees.

Limestone properties were not provided but due to the high SPT blow counts shown in the boring logs, it can reasonably be assumed that potential failure surfaces would not extend below the top of the limestone.

- The waste equipment used in the analyses were a CAT D8T WH dozer; a CAT 826H compactor; and a CAT 740B off-road dump truck. All equipment types are used onsite and/or are representative of typical waste and construction equipment used at landfills. Refer to Attachment A of this Report for equipment loads and manufacturer data.

- The seasonal high groundwater table was estimated by L&A to be at EL 72. It is our understanding the previous measurements in local peizometers were not representative of the groundwater and may have been perched water tables. For slope stability modeling, a piezometric groundwater elevation of 72 was used.

A review of the above reference information and modeling assumptions made above is reasonable for completing the slope stability analyses prepared by CDS for the proposed slope modifications at the Landfill.

Slope Stability Analysis

PCSTABL was used to model and estimate slope stability of the Landfill during operational conditions using typical site waste equipment and waste filling during operations and final buildout. Both BLOCK and ROTATIONAL failure modes were evaluated. BLOCK failure modes are used to evaluate sliding failure planes and ROTATIONAL failure modes are used to evaluate shallow and deep rotational stability of the waste and foundation soils.

The construction scenarios evaluated by CDS were – Scenario 1) Final Buildout with the height of the waste mound at EL 170 (crest) and EL 175 (peak); Scenario 2) initial filling of the cells with an initial height of fill at EL 90, and Scenario 3) Waste Filling at mid-height of filling at EL 125. All scenarios were modeled with, and without, temporary waste equipment loading conditions.

All equipment loads were modeled at the crest of the slope, a position that will generate the greatest stress on the slopes and thus the lowest Factor of Safety. A typical input file of the slope stability models is contained in Attachment B. Each scenario the profile and failure search routines were adjusted to match that scenario.

Results

Table 1 summarized the results. As shown in Table 1, the slopes are stable and have a factor of safety above 1.5 with the exception of one temporary loading condition during initial fill; however, this factor of safety at 1.4 was deemed acceptable since it will be only a temporary condition when the initial waste is being placed in the expansion areas. The graphical output files of the slope stability analyses are contained in Attachment C.

Bearing Capacity Estimation

Bearing capacity is the capacity of the soils to support loads applied to the foundation soils. The bearing capacity of soil below the landfill disposal area is the maximum average contact loading, or pressure, exerted on the bottom of the landfill disposal cells and the loading (stress) on the foundation soils which should not produce a shear failure in the soil.

To estimate the bearing capacity of the soils below the landfill disposal cell, the unit weight of the Class III waste was incrementally increased until the Factor of Safety was reduced below 1.5. Both Block and Circular failure planes were evaluated for different unit weights for the waste materials.

The unit weight of the waste was increased from 50 pounds per cubic foot (pcf) to 78 pcf for the Block Failure Model and 100 pounds per cubic foot for the Circular Failure Model until the Factor of Safety was reduced to 1.5. Based upon the model results, the bearing capacity was computed using the lower unit weight of 78 pcf since this will result in a conservative estimate of the soils capacity to accommodate additional loading. Refer to Attachment D for bearing capacity models

At the crest of the expansion, at EL 170, the underlying base of the disposal cell is at approximately El 78, thus 92 feet of waste lays over the landfill foundation. The ultimate bearing capacity (maximum bearing capacity) was therefore estimated at 7,176 pounds per square foot (78 pcf * 92 feet). The proposed loading on the landfill foundation is estimated to be 4,600 psf (50 pcf * 92 feet), therefore the proposed expansion has sufficient additional bearing capacity to accommodate the proposed design.

<u>Conclusions</u>

- **Based upon the PCSTABL Model results, and the assumptions stated in this Report, a minimum Factor of Safety of 1.5 or greater was achieved for all waste configurations. One scenario, (Scenario 2 with a CAT D8T WH dozer) is a temporary loading condition. A Factor of Safety of 1.3 is acceptable for this type of temporary loading condition.**

- **Based upon the model results, the foundation soils beneath have sufficient bearing capacity strength for the proposed landfill modifications.**

Please call the undersigned if you have any questions.

Sincerely,
Civil Design Services, Inc.

Joseph H. O'Neill, P.E.
Vice President

Attachment A – Equipment Loading Data
Attachment B – Slope Stability Model Inputs
Attachment C – Slope Stability Model Outputs
Attachment D – Bearing Capacity Model Outputs

Joseph H. O'Neill, P.E.
P.E. No. 52049

Civil Design Services, Inc.
11012 N. Ridgedale Road
Temple Terrace, Florida 33617
Certificate of Authorization 28923

TABLES

Table 1 Summary of Slope Stability Results.

Slope Stability Description		Block	Circular
Scenario 1 - Final Buildout			
	No Load	1.9	2.1
	CAT D8T WH Dozer	1.9	2.0
	CAT 826H Compactor	2.0	2.0
	CAT 740B Dump Truck	1.8	1.9
Scenario 2 - Initial Fill EL 90			
	No Load	3.1	2.6
	CAT D8T WH Dozer (See Note 1)	1.4	1.5
	CAT 826H Compactor	2.1	1.9
	CAT 740B Dump Truck	1.5	1.6
Scenario 3 - Mid-Height EL 125			
	No Load	2.7	2.6
	CAT D8T WH Dozer	2.1	1.7
	CAT 826H Compactor	2.4	2.1
	CAT 740B Dump Truck	2.0	1.8

Note: 1) Temporary loading condition for a short time period as the dozer pushes waste to edge

ATTACHMENT A

Civil Design Services, Inc. **11012 N. Ridgedale Road** **Temple Terrace, FL 33617** **(813) 629-1965 office** **(813) 914-7347 fax** **www.civildesignservicesinc.com**	***Project Name*** **Angleos Recycling and Disposal Facility** Class III Modification 41111 Enterprise Road Dade City, Florida 33525-1589	**Slope Stability Evaluation** Estimated Equipment Surface Loads

Equipment Surface Loads

Operations and Closure

CAT 8T WH Dozer

Equipment Weight (Operating) = 91,270.0 lbf
Weight per Track = 45,635.0 lbf (2 tracks)

Track Contact Area (both tracks) 5,554.0 in^2

Per Track 2,777.0 in^2

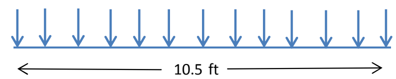
Track Length = 10.5 ft

Surface Loading

Load =	45,635.0 lbf
Area =	2,777.0 in2
Contact Pressure (Force/Area) =	16.43 psi
	2,366.38 psf

LOADING PATTERN

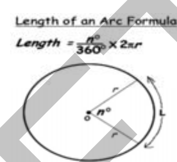
Approximately 2,400.00 psf

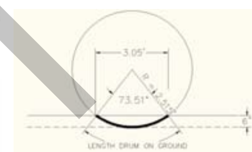


CAT 826H Compactor

Equipment Weight (Operating) = 81,498.0 lbf
Weight per Drum = 20,374.5 lbf (4 drums)

Drum Width = 3.94 ft
Drum Diameter = 5.03 ft
Drum Radius = 2.515 ft





Assumption on Wheels 6 in Wheel pentration into waste (compacted)
n = 73.51 degrees (from CADD)
Drum Length on Ground L = 3.23 ft

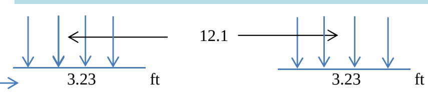
Drum Width = 3.94 ft
Drum Length on Ground L = 3.23 ft
Area of Each Drum = 12.71 sf

Distance Centerline to Centerline Drum = 12.1 ft

Surface Loading

Load =	20,374.5 lbf
Area =	12.7 sf
Contact Pressure (Force/Area) =	1,602.61 psf

LOADING PATTERN



Approximately 1,700.00 psf

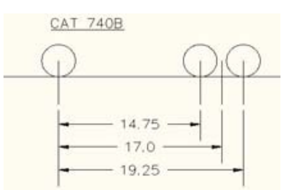
Equipment Surface Loads

Operations and Closure

Fully Loaded
Equipment Weight (Operating) = 165,311.0 lbf

Front Axle	50,977.0 lbf	per tire ===>	25,488.5 lbf
Center Axle	57,997.0 lbf	per tire ===>	28,998.5 lbf
Rear Axle	56,335.0 lbf	per tire ===>	28,167.5 lbf
	165,309.0 lbf		

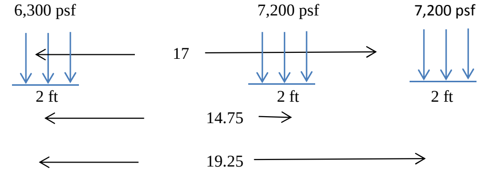
(negligible difference of 2 lbf)



Tires 29R 25	Contact Area			Tires (Contact Area)
Front Axle	583 in^2	============>	4.049 ft^2	30.4 in wide
Center Axle	583 in^2	============>	4.049 ft^2	19.2 length
Rear Axle	583 in^2	============>	4.049 ft^2	

Pressure			
Front Axle	Load per axle/area	43.7 psi	6,295.6 psf (Say 6,300 psf)
Center Axle	Load per axle/area	49.7 psi	7,162.6 psf (Say 7,200 psf)
Rear Axle	Load per axle/area	48.3 psi	6,957.3 psf (Say 7,000 psf)

LOADING PATTERN



CAT D8T WH DOZER

RITCHIE Specs Everything about Equipment

Select language

Current number of specifications

Home → Spec Search → Construction Equipment → Crawler Tractor → Caterpillar → D8R WHA

CATERPILLAR D8R WHA CRAWLER TRACTOR

VIEW ARTICLES ON THIS ITEM

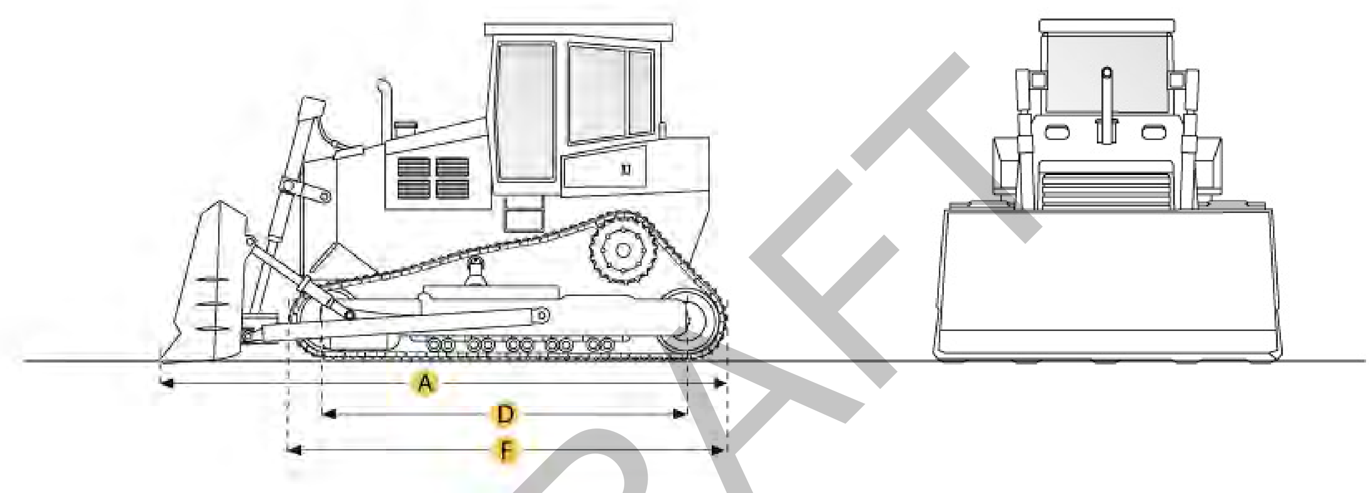
Print specification

Looking to purchase this item?

See all Caterpillar D8R WHA Crawler Tractor being sold at Ritchie Bros. auctions.

Need to sell equipment?

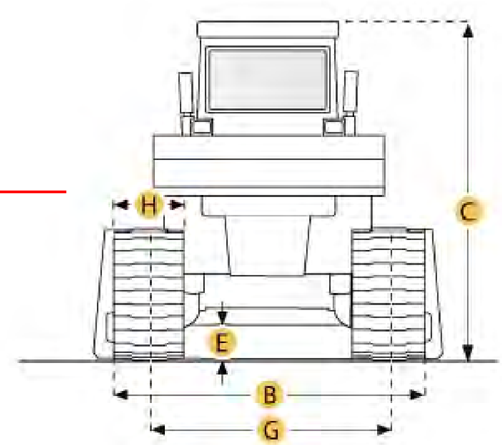
Just complete this form and a Ritchie Bros. representative will contact you.



Selected Dimensions

Dimensions		
A. LENGTH W/ BLADE	21 ft in	6390 mm
B. WIDTH OVER TRACKS	8.9 ft in	2700 mm
C. HEIGHT TO TOP OF CAB	8.8 ft in	2670 mm
D. LENGTH OF TRACK ON GROUND	10.5 ft in	3210 mm
E. GROUND CLEARANCE	1.9 ft in	585 mm
F. LENGTH W/O BLADE	16.2 ft in	4930 mm

Undercarriage		
G. TRACK GAUGE	6.8 ft in	2080 mm
H. STANDARD SHOE SIZE	22 in	560 mm



Specification

Engine		
MAKE	Caterpillar	
MODEL	3406ETA	
GROSS POWER	305 hp	227.4 kw
POWER MEASURED @	2100 rpm	
DISPLACEMENT	890.9 cu in	14.6 L
NUMBER OF CYLINDERS	6	

Operational		
OPERATING WEIGHT	82880.6 lb	37594 kg
FUEL CAPACITY	165.1 gal	625 L

Transmission		
NUMBER OF FORWARD GEARS	3	
NUMBER OF REVERSE GEARS	3	
MAX SPEED - FORWARD	6.6 mph	10.6 km/h
MAX SPEED - REVERSE	8.6 mph	13.8 km/h

Undercarriage

WASTE HANDLING DOZERS (/EN_US/PRODUCTS/NEW/EQUIPMENT/DOZERS/WASTE-HANDLING-DOZERS.HTML)

D8T WH (TIER 4 INTERIM/STAGE IIIB)

FINANCING & INSURANCE
See our Current Offers
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LOCATE YOUR DEALER

Enter Zip Code GO

REQUEST A QUOTE	(/EN_US/BUILD-QUOTE/REQUEST-A-QUOTE.HTML PRODUCTPATHNEW=/CONTENT/CATDOTCOM/EN HANDLING-DOZERS/18266806&PRODUCTNAMEN 29)
MACHINE COMPARISON	(HTTP://WWW.SPECCHECK.COM/LITE/SELEC MODID=ZX6EGOXTS3E.JQJQJ.&X=7IOLTELY: =2)

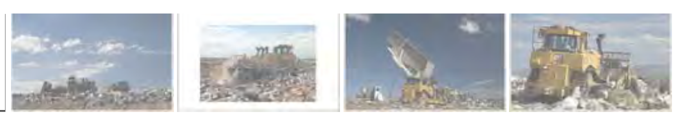
VIEW PRODUCT DOWNLOADS

IMAGE COMING SOON

Image Coming Soon

PHOTO

IMAGE COMING SOON



1 of 2

SPECIFICATIONS **BENEFITS & FEATURES** **RELATED PRODUCTS**

OVERVIEW

The Cat® D8T Waste Handler has earned a reputation for best-in-class versatility, productivity and resale value. Landfill customers choose the D8T WH because it excels at multiple tasks from pushing trash and spreading cover to cell construction and closing. Cat Waste Handlers are designed and built from the frame up to handle the demands of landfill work – and they do it with industry leading comfort and reliability. The D8T WH meets U.S. Tier 4 Interim/EU Stage IIIB emission standards.

ENGINE UNITS: **US** **METRIC**

Engine Model	Cat® C15 ACERT™
Flywheel Power	310.0 hp
Bore	5.4 in
Stroke	6.75 in
Displacement	928.0 in3
Emissions	U.S. Tier 4 Interim/EU Stage IIIB
Global Emissions	U.S. Tier 4 Interim/EU Stage IIIB
Gross Power – ISO 14396	318.0 hp
Gross Power – ISO 14396 (DIN)	322.0 hp
Gross Power – SAE J1995	348.0 hp
Net Power – EU 80/1269	310.0 hp
Net Power – ISO 9249	310.0 hp
Net Power – ISO 9249 (DIN)	314.0 hp
Net Power – SAE J1349	310.0 hp

SERVICE REFILL CAPACITIES

Cooling System	20.3 gal
Engine Crankcase*	10.0 gal
Final Drives (each)	3.3 gal
Hydraulic Tank	19.8 gal
Pivot Shaft Compartment	10.6 gal
Powertrain	41.0 gal
Roller Frames (each)	17.2 gal
Fuel Tank	170.0 gal

WEIGHTS

Operating Weight	85650.0 lb
Operating Weight – LGP WHA	91270.0 lb
Operating Weight – SU Blade WHA	85650.0 lb
Shipping Weight – LGP WHA	77840.0 lb
Shipping Weight – WHA	72220.0 lb

UNDERCARRIAGE

Track Gauge	82.0 in
Track Gauge – LGP	92.0 in
Length of Track on Ground	10.5 ft
Ground Contact Area	5554.0 in2
Track Rollers/Side	8
Ground Clearance	24.3 in
Ground Contact Area – LGP	9576.0 in2
Grouser Height	3.0 in
Number of Carrier Rollers	1 per side (optional)
Pitch	8.5 in
Shoe Type	Moderate Service
Shoes/Side	44
Width of Shoe	24.0 in
Width of Shoe – LGP	38.0 in

BLADES

Capacity (SAE J1265)	26.1 yd3
Capacity (SAE J1265)	32.4 yd3
Capacity (SAE J1265)	27.6 yd3

CAT 826H COMPACTOR

CATERPILLAR 826H COMPACTOR

VIEW ARTICLES ON THIS ITEM

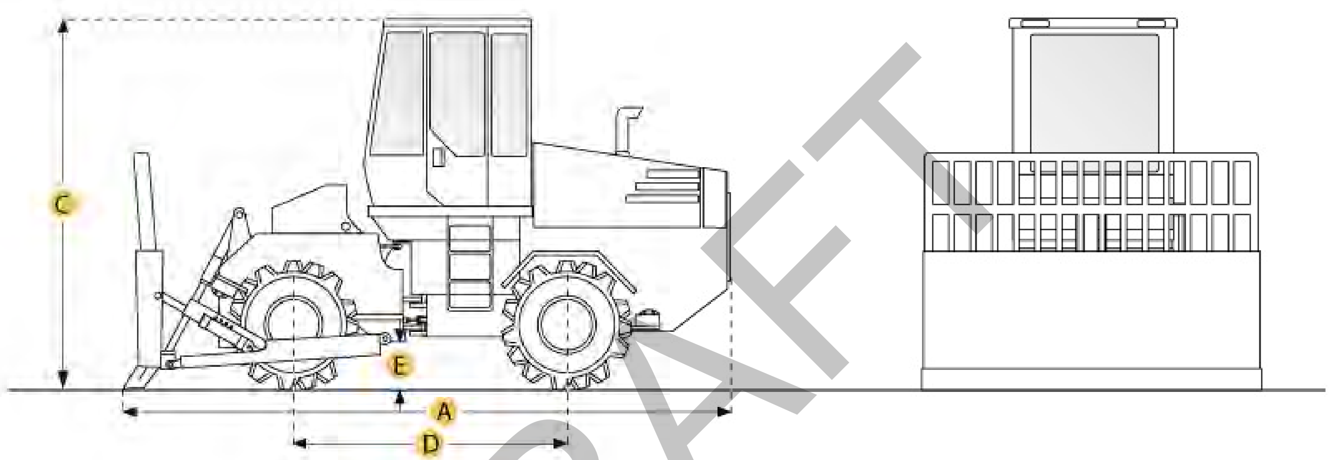
Print specification

Looking to purchase this item?

See all Caterpillar 826H Compactor being sold at Ritchie Bros. auctions.

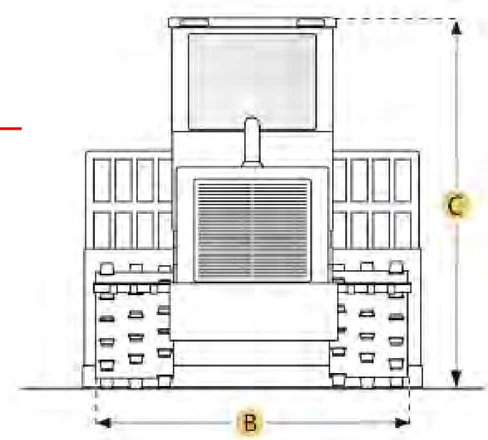
Need to sell equipment?

Just complete this form and a Ritchie Bros. representative will contact you.



Selected Dimensions

Dimensions		
A. LENGTH WITH BLADE ON GROUND	27.3 ft in	8332 mm
C. HEIGHT TO TOP OF CAB	13.8 ft in	4193 mm
D. WHEELBASE	12.1 ft in	3700 mm
E. GROUND CLEARANCE	1.6 ft in	488 mm



Specification

Engine		
MAKE	Caterpillar	
MODEL	C15 diesel with ACERT Technology	
GROSS POWER	401 hp	299 kw
NET POWER	354 hp	264 kw
DISPLACEMENT	927.6 cu in	15.2 L
Operational		
OPERATING WEIGHT	81498 lb	36966.9 kg
FUEL CAPACITY	177.5 gal	672 L
HYDRAULIC SYSTEM FLUID CAPACITY	23.3 gal	88 L
ENGINE OIL CAPACITY	9 gal	34 L
COOLING SYSTEM FLUID CAPACITY	21.7 gal	82 L
TRANSMISSION FLUID CAPACITY	16.4 gal	62 L
Transmission		
NUMBER OF FORWARD GEARS	2	
NUMBER OF REVERSE GEARS	2	
MAX SPEED	6.6 mph	10.6 km/h
Wheels		
FRONT WHEELS DRUM WIDTH	47.2 in	1200 mm
FRONT WHEELS DRUM DIAMETER	60.3 in	1532 mm
REAR WHEELS DRUM WIDTH	47.2 in	1200 mm
REAR WHEELS DRUM DIAMETER	60.3 in	1532 mm

LANDFILL COMPACTORS (/EN_US/PRODUCTS/NEW/EQUIPMENT/COMPACTORS/LANDFILL-COMPACTORS.HTML)

826H

FINANCING & INSURANCE

See our Current Offers (/en_US/promotions/financing-solutions.html)

LOCATE YOUR DEALER

Enter Zip Code GO

REQUEST A QUOTE	(/EN_US/BUILD-QUOTE/REQUEST-A-QUOTE.HTML? PRODUCTPATHNEW=/CONTENT/CATDOTCOM/EN_ COMPACTORS/18191806&PRODUCTNAMENEW=82
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USED LANDFILL COMPACTORS	(HTTP://CATUSED.CAT.COM/EN/COMPACTOR RESULTS.HTML?PRODUCTFAMILYCATEGORY
RENT LANDFILL COMPACTORS	(HTTP://WWW.CATRENTALSTORE.COM/EQUI EQUIPMENT/LANDFILL-COMPACTORS)

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:2)

826H - 2011, Global Landfill Compactors

PHOTO 360 VIEW

SPECIFICATIONS BENEFITS & FEATURES EQUIPMENT

OVERVIEW

Caterpillar put the first 826 landfill compactor to work in 1978. Since then, customers like you have helped us improve the safety, reliability and productivity of this very popular machine. Our H Series model has enhanced visibility and comfort from a new ergonomic cab. Operators have greater line of sight to areas around the machine, and with CAES installed, the 826H has the ability to be more efficient, lowering your operating costs.

ENGINE

UNITS: US METRIC

Gross Power	401.0 hp
Net Power	354.0 hp
Engine Model	Cat® C15 ACERT™
Flywheel Power	354.0 hp
Torque Rise	19.0 %
Bore	5.4 in
Stroke	6.7 in
Displacement	927.56 in3
Peak Torque – Gross	1387.0 ft-lb

TRANSMISSION

Forward 1	3.6 mph
Forward 2	6.03 mph
Reverse 1	4.1 mph
Reverse 2	6.59 mph

HYDRAULIC SYSTEM

Vane Pump Output @ 2,000 rpm and 6900 kPa (1,000 psi)	93.0 gal/min
Relief Valve Setting	3506.29 psi
Lift Cylinder Bore x Stroke	120.65 mm × 915 mm (4.74 in × 36.02 in)

AXLES

Front	Planetary – Fixed
Oscillating Rear	±5°

BRAKES

Standards	Meet OSHA, SAE J1473 DEC84, ISO 3450:1985 standards

WHEELS – CHEVRON-PATTERN, CHOPPER BLADES

Drum Width	3.94 ft
Drum Diameter	5.03 ft
Diameter with Blades	6.07 ft
Blades per Wheel	24

STRAIGHT BLADE

Capacity	17.0 yd3
Width Over End Bits	14.77 ft
Moldboard Length	14.14 ft
Height	6.23 ft

U-BLADE

Capacity	21.84 yd3
Height	6.81 ft
Moldboard Straight Length	6.81 ft
Moldboard U-Length	4.09 ft
U-Angle	25°
Width Over End Bits	14.43 ft

SEMI U-BLADE

Capacity	18.97 yd3
Height	6.43 ft
Moldboard Semi U-Length	1.51 ft
Moldboard Straight Length	11.92 ft
Semi U-Angle	25°
Width Over End Bits	14.73 ft

SERVICE REFILL CAPACITIES

Fuel Tank	177.52 gal
Cooling System	21.66 gal
Crankcase	8.98 gal
Transmission	16.38 gal
Differentials and Final Drives – Front	23.78 gal
Differentials and Final Drives – Rear	23.78 gal
Hydraulic Tank	23.25 gal

WEIGHTS

Operating Weight	81498.0 lb

CAB

ROPS/FOPS	Meets SAE and ISO standards

SOUND PERFORMANCE

Standards	Meet ANSI/SAE and ISO standards

DIMENSIONS (APPROXIMATE)

Center Line of Rear Axle to Hitch	7.46 ft
Width over Wheels	12.5 ft
Width over Endbits (Blade)	14.77 ft
Turning Radius – Inside	10.57 ft
Turning Radius – Outside	24.06 ft

HYDRAULIC STEERING SYSTEM

Piston Pump Output @ 2,000 rpm and 7000 kPa (1,015 psi)	49.0 gal/min
Relief Valve Setting	3499.0 psi

CAT 740B OFF-ROAD DUMP TRUCK

RITCHIE Specs Everything about Equipment

Select language

Current number of specifications

Home → Spec Search → Construction Equipment → Articulated Dump Truck → Caterpillar → 740B

CATERPILLAR 740B ARTICULATED DUMP TRUCK

VIEW ARTICLES ON THIS ITEM

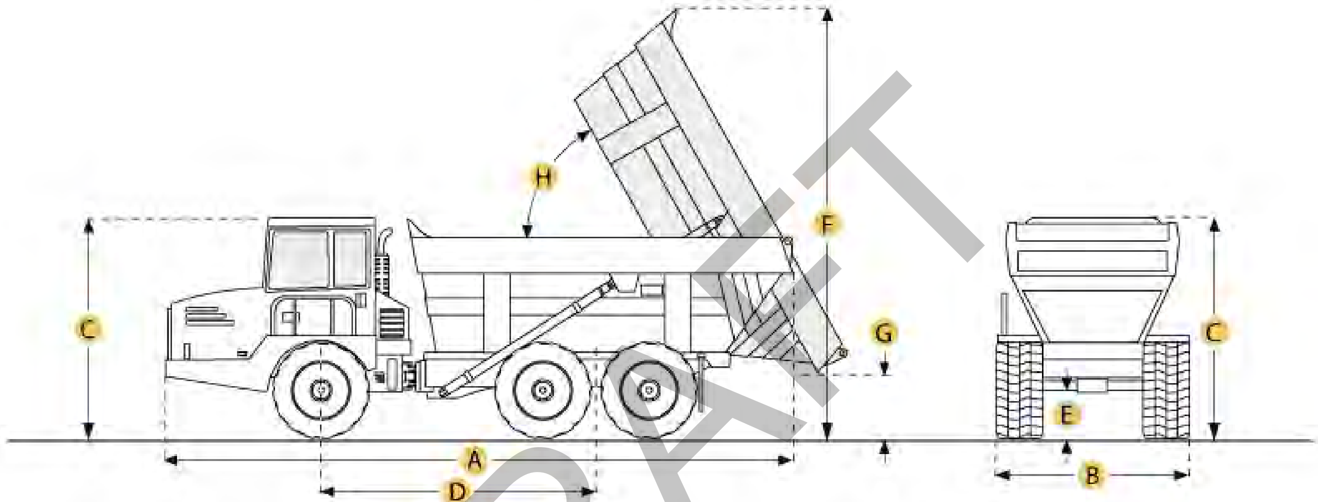
Print specification

Looking to purchase this item?

See all Caterpillar 740B Articulated Dump Truck being sold at Ritchie Bros. auctions.

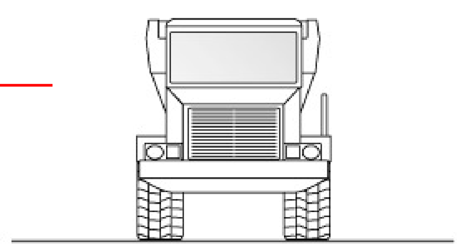
Need to sell equipment?

Just complete this form and a Ritchie Bros. representative will contact you.



Selected Dimensions

Dimensions		
A. OVERALL LENGTH	36.1 ft in	11000 mm
B. OVERALL WIDTH	12.4 ft in	3770 mm
C. OVERALL HEIGHT	13.3 ft in	4039 mm
D. WHEELBASE	17.2 ft in	5229 mm
E. GROUND CLEARANCE	1.9 ft in	577 mm
F. DUMP HEIGHT	23.3 ft in	7092 mm
G. DUMP GROUND CLEARANCE	2.3 ft in	697 mm



Dump		
H. DUMP ANGLE	70 degrees	

Specification

Engine		
MAKE	Caterpillar	
MODEL	C15	
GROSS POWER	489 hp	364.6 kw
NET POWER	474 hp	353.5 kw
POWER MEASURED @	1700 rpm	
DISPLACEMENT	926 cu in	15.2 L
TORQUE MEASURED @	1200 rpm	
MAX TORQUE	1819 lb ft	2466.2 Nm

Operational		
FUEL CAPACITY	147.9 gal	560 L
HYDRAULIC SYSTEM FLUID CAPACITY	86.6 gal	328 L
COOLING SYSTEM FLUID CAPACITY	21.1 gal	80 L
ENGINE OIL CAPACITY	10 gal	38 L
TRANSMISSION FLUID CAPACITY	19 gal	72 L
TIRE SIZE	29.5R25	

Transmission

THREE AXLE ARTICULATED TRUCKS (/EN_US/PRODUCTS/NEW/EQUIPMENT/ARTICULATED-TRUCKS/THREE-AXLE-ARTICULATED-TRUCKS.HTML)

740B EJ

FINANCING & INSURANCE

See our Current Offers (/en_US/promotions/financing-solutions.html)

LOCATE YOUR DEALER

Enter Zip Code GO

REQUEST A QUOTE	(/EN_US/BUILD-QUOTE/REQUEST-A-QUOTE.HTML?PRODUCTPATHNEW=/CONTENT/CATDOTCOM/EN_U: TRUCKS/THREE-AXLE-ARTICULATED-TRUCKS/178072
MACHINE COMPARISON	(HTTP://WWW.SPECCHECK.COM/LITE/SELECT.A MODID=C36.ZZXZZ.MAYW6GC.JQJQJ.&X=7IOLT
USED ARTICULATED TRUCKS	(HTTP://CATUSED.CAT.COM/EN/CATERPILLAR/A RESULTS.HTML?PRODUCTFAMILYCATEGORY=1(
RENT ARTICULATED TRUCKS	(HTTP://WWW.CATRENTALSTORE.COM/EQUIPM TRUCKS)

:2)

740B Ejector Articulated Trucks

VIEW PRODUCT DOWNLOADS

PHOTO 360 VIEW

2 of 2

SPECIFICATIONS | BENEFITS & FEATURES | EQUIPMENT

OVERVIEW

The new Cat® 740B ej with 38 tonnes (42 tons) rated payload offers proven reliability and durability, high productivity, superior operator comfort and lower operating costs. The spacious two-person cab with forward facing passenger seat and off road oil/nitrogen front suspension cylinders keep the operator comfortable through out the working day. The true “on-the-go” Automatic Traction Control (ATC) automatically modulates the correct level of Inter-Axle and Cross-Axle differential lock engagement which will improve cycle times and productivity. No operator interaction. Strong, durable Cat ACERT™ engines with the Tier 4 Interim/EU Stage IIIB exhaust emission solution and electronically controlled smooth shifting transmissions deliver high productivity with low fuel consumption. There are significant changes/improvements to the engine/transmission software that result in smoother gear changes.

ENGINE

UNITS: US METRIC

Engine Model	Cat® C15 ACERT™
Gross Power – SAE J1995	489.0 hp
Net Power – SAE J1349	474.0 hp
Bore	5.4 in
Stroke	6.75 in
Displacement	926.0 in3
Engine Model Tier 4 Interim/EU Stage IIIB	Cat® C15 ACERT™
Net Power – ISO 14396	484.0 hp

WEIGHTS

Rated Payload	42.0 tons

BODY CAPACITIES

Heaped SAE 2:1	30.2 yd3
Struck	23.3 yd3

TRANSMISSION

Forward 1	5.5 mph
Forward 2	7.5 mph
Forward 3	10.2 mph
Forward 4	13.7 mph
Forward 5	18.6 mph
Forward 6	25.1 mph
Forward 7	34.0 mph
Reverse 1	5.2 mph
Reverse 2	7.2 mph

SOUND LEVELS

Interior Cab	79.0 dB(A)

OPERATING WEIGHTS

Front Axle – Empty	47357.0 lb
Center Axle – Empty	17919.0 lb
Rear Axle – Empty	16257.0 lb
Total – Empty	81536.0 lb
Front Axle – Rated Load	3620.0 lb
Center Axle – Rated Load	40078.0 lb
Rear Axle – Rated Load	40078.0 lb
Total – Rated Load	83776.0 lb
Front Axle – Loaded	50977.0 lb
Center Axle – Loaded	57997.0 lb
Rear Axle – Loaded	56335.0 lb
Total – Loaded	165311.0 lb

BODY PLATE THICKNESS

Front	0.24 in
Side	0.24 in
Base	0.39 in

SERVICE REFILL CAPACITIES

Fuel Tank	149.3 gal
Cooling System	21.1 gal
Hydraulic System	89.0 gal
Engine Crankcase	9.0 gal
Transmission	19.0 gal
Final Drives/Differential	60.8 gal

RL-4K (24/24)(L-4)

Tire Size: 29.5R25

Extra tread radial loader tire designed for use in rock or load and carry service.

For rock or load and carry service, here is a long wearing radial loader tire available in multiple tread configurations. The 24/24 (24 lugs per side) is ideally suited for both general and load and carry service.

Available in ply ratings: *, **
Available locations: North America, Europe / Africa / Mid East

PAGE OPTIONS

Printable Version

Features

- 150-Level tread depth--50% deeper than standard L-3
- High tensile steel belt package
- Radial construction
- Tire available in multiple tread configurations
- Unique synthetic / natural rubber compound

Benefits

- Extra tread for long wear
- Impact and cut resistant
- Improved treadwear and cooler running than bias construction
- 24/24 (24 lugs per side) appropriate for both general or load and carry service
- Long wearing tread and advanced cut resistance

Change unit of measure: ◉ US ○ Metric

Tire Specs | Loads and Inflations

Rim Width & Flange	Min. Dual Spacing (in)	Overall Width (in)	Overall Diameter (in)	Load Sect. & Growth (in)	Static Load Radius (in)	Revolutions per Mi	Gross Contact Area (in^2)	Tire Vol. (gal)	Tread Depth ($^1/_{32}$in)	TMPH (2S)	TMPH (4S)	TMPH (6S)
25.00-3.5		30.4	75.7	33.6	33	278	583	325	72		90	85

ATTACHMENT B

```
PROFIL  C:\pcstabl\stedwin\angelos\classi~1\ns_final. Version 6H [STABL6H.EXE]
Class III Modification - Enterprise LF  N_S_Final El 175 (Bearing Capacity)
42 13
0. 190. 115. 190. 1
115. 190. 151. 178. 1
151. 178. 160. 175. 1
160. 175. 259. 175. 2
259. 175. 265. 177. 2
265. 177. 304. 190. 3
304. 190. 316. 190. 3
316. 190. 529. 261. 3
529. 261. 552. 272.5 3
552. 272.5 556. 272.5 3
556. 272.5 563.28 270.07 3
563.28 270.07 1056. 275. 3
1056. 275. 1500. 275. 3
141.15 178. 151. 178. 2
265. 177. 918. 181. 2
918. 181. 1500. 181. 2
141.51 178. 159.51 172. 1
159.51 172. 259.48 172. 1
259.48 172. 265.49 174. 1
265.49 174. 634.89 176.27 1
634.89 176.27 648. 177. 4
648. 177. 649. 178.35 1
649. 178.35 918. 180. 1
918. 180. 1500. 180. 1
0. 168.3 248. 168.3 4
248. 168.3 448. 165.8 4
448. 165.8 634.89 176.27 4
634.89 176.27 1350. 173.3 4
1350. 173.3 1500. 173.3 4
0. 151.3 248. 151.3 5
248. 151.3 448. 160.8 5
448. 160.8 648. 166.1 5
648. 166.1 1350. 168.3 5
1350. 168.3 1500. 168.3 5
0. 136.3 248. 136.3 4
248. 136.3 448. 143.8 4
448. 143.8 648. 156.1 6
648. 156.1 1350. 156.3 6
1350. 156.3 1500. 156.3 6
0. 129.6 248. 129.6 6
248. 129.6 438. 135.75 6
438. 135.75 448. 143.8 6
```

Soil Profile Geometry Adjusted for Each Scenario

```
SOIL  SP/SC   ClayBaseCl_III  CH       SC       Limeston
6
105. 115. 0. 28. 0. 0. 1
110. 120. 0. 34. 0. 0. 1
100. 100. 0. 35. 0. 0. 1
110. 120. 1000. 0. 0. 0. 1
105. 115. 0. 28. 0. 0. 1
110. 125. 0. 35. 0. 0. 1
```

Soil Properties

```
WATER
2 62.4
2
0. 172.
1500. 172.
2   W2
0. 188.
1500. 188.
```

Peizometer Surface Data

```
LOADS
1
563.28 573.78 2400. 0.
```

Equipment Load - Change with Type of loading

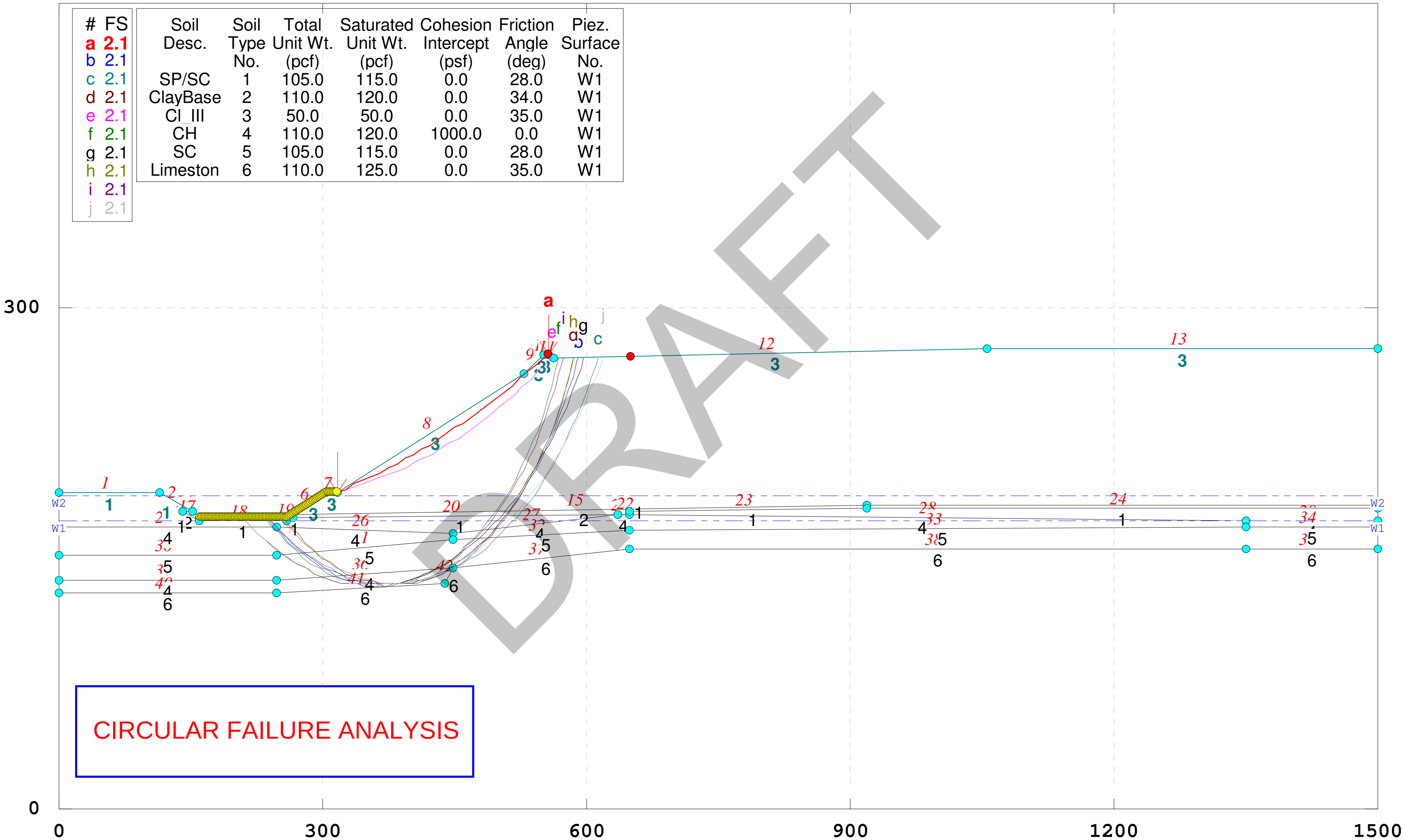
```
LOADS
0
CIRCL2
100 50
160. 316. 556. 650.
0. 10. 0. 0.
```

Type of Failure modeled - Either Circular or Block - both adjusted until lowest FS estimated

ATTACHMENT C

Class III Modification - Enterprise LF N_S_Final El 175 (No Load)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_FINAL.PL2 Run By: Civil Design Service, Inc 7/23/2014 5:11PM



Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

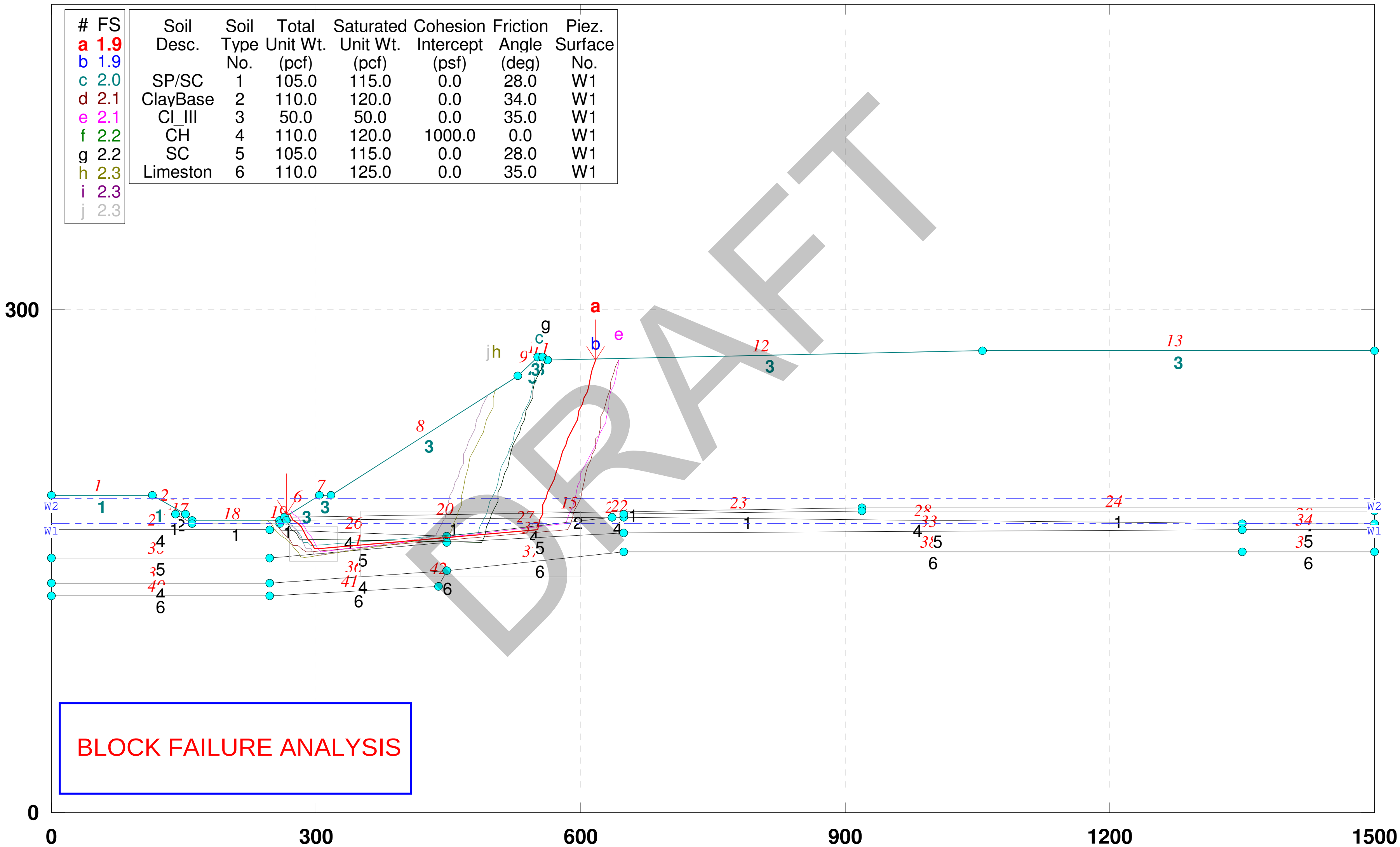
STABL6H FSmin=2.1

Safety Factors Are Calculated By The Modified Bishop Method

STED

Class III Modification - Enterprise LF N_S_Final El 175 (with NO LOAD)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_FINAL.PL2   Run By: Civil Design Service, Inc   7/23/2014   3:36PM



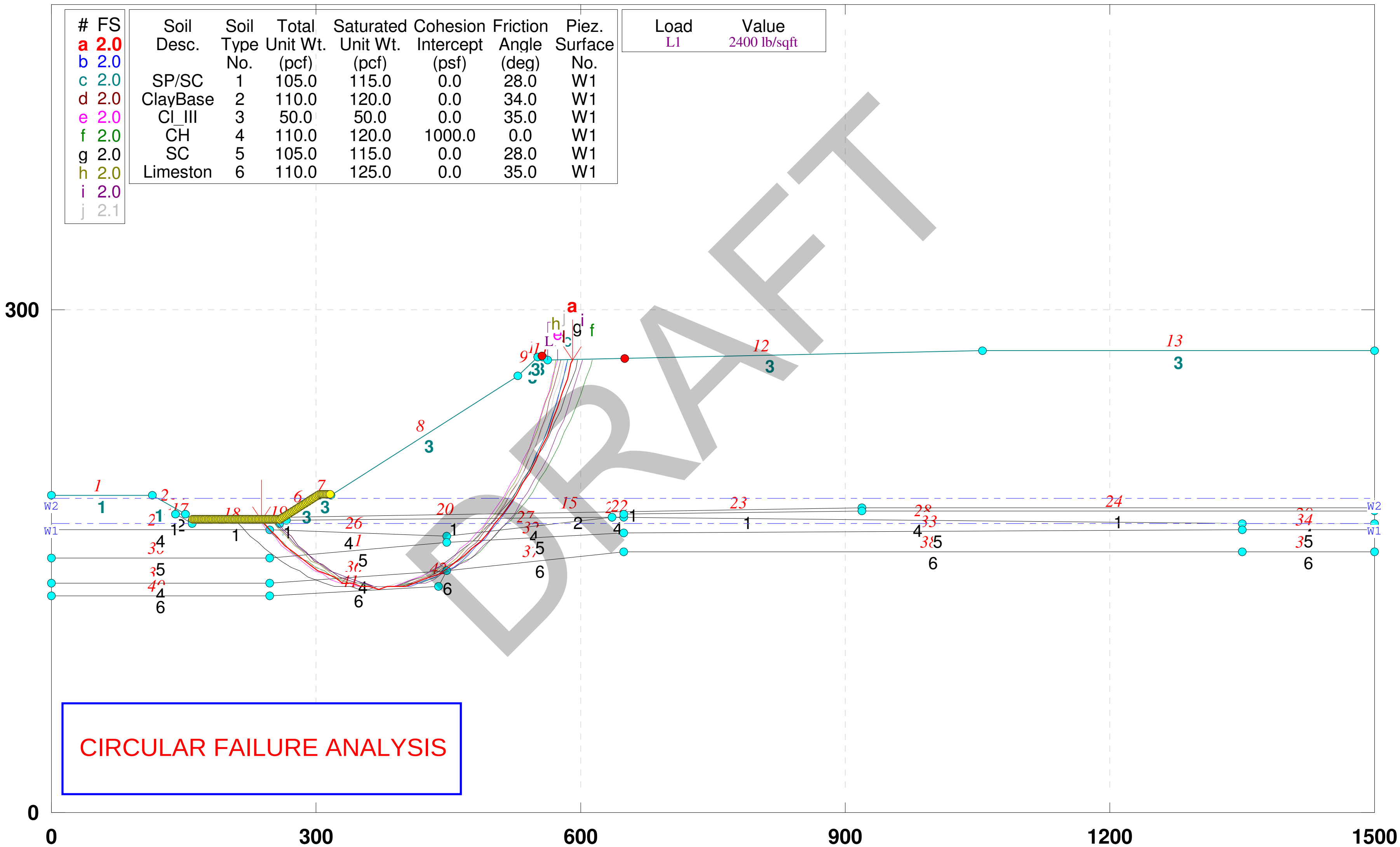
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

STABL6H FSmin=1.9

Safety Factors Are Calculated By The Modified Janbu Method

Class III Modification - Enterprise LF N_S_Final El 175 (with D8)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_FINAL.PL2 Run By: Civil Design Service, Inc 7/23/2014 3:22PM



#	FS
a	2.0
b	2.0
c	2.0
d	2.0
e	2.0
f	2.0
g	2.0
h	2.0
i	2.0
j	2.1

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	2400 lb/sqft

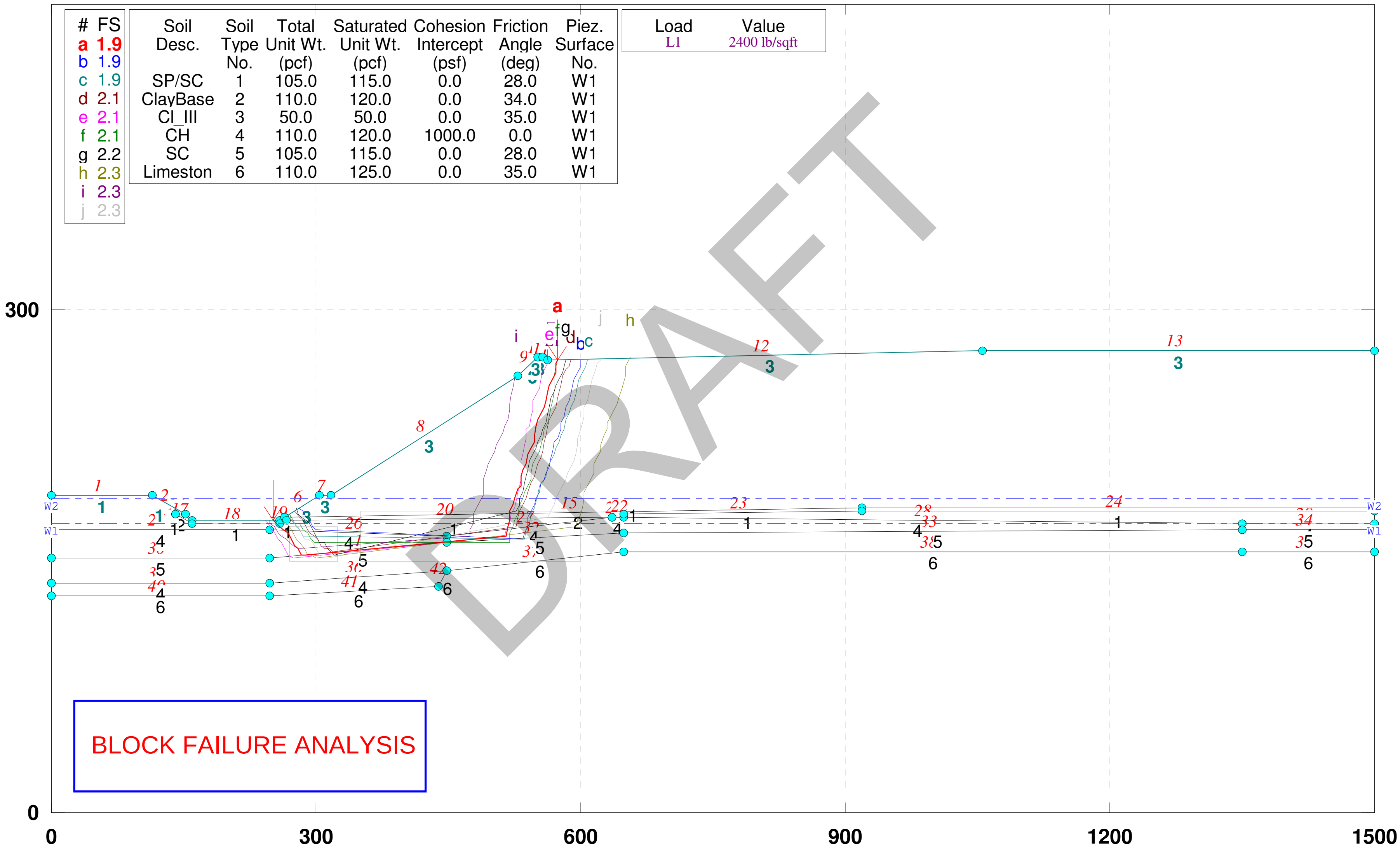
STABL6H FSmin=2.0

Safety Factors Are Calculated By The Modified Bishop Method

STED

Class III Modification - Enterprise LF N_S_Final El 175 (with D8)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_FINAL.PL2 Run By: Civil Design Service, Inc 7/23/2014 3:30PM



#	FS
a	1.9
b	1.9
c	1.9
d	2.1
e	2.1
f	2.1
g	2.2
h	2.3
i	2.3
j	2.3

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	2400 lb/sqft

STABL6H FSmin=1.9

Safety Factors Are Calculated By The Modified Janbu Method

STED

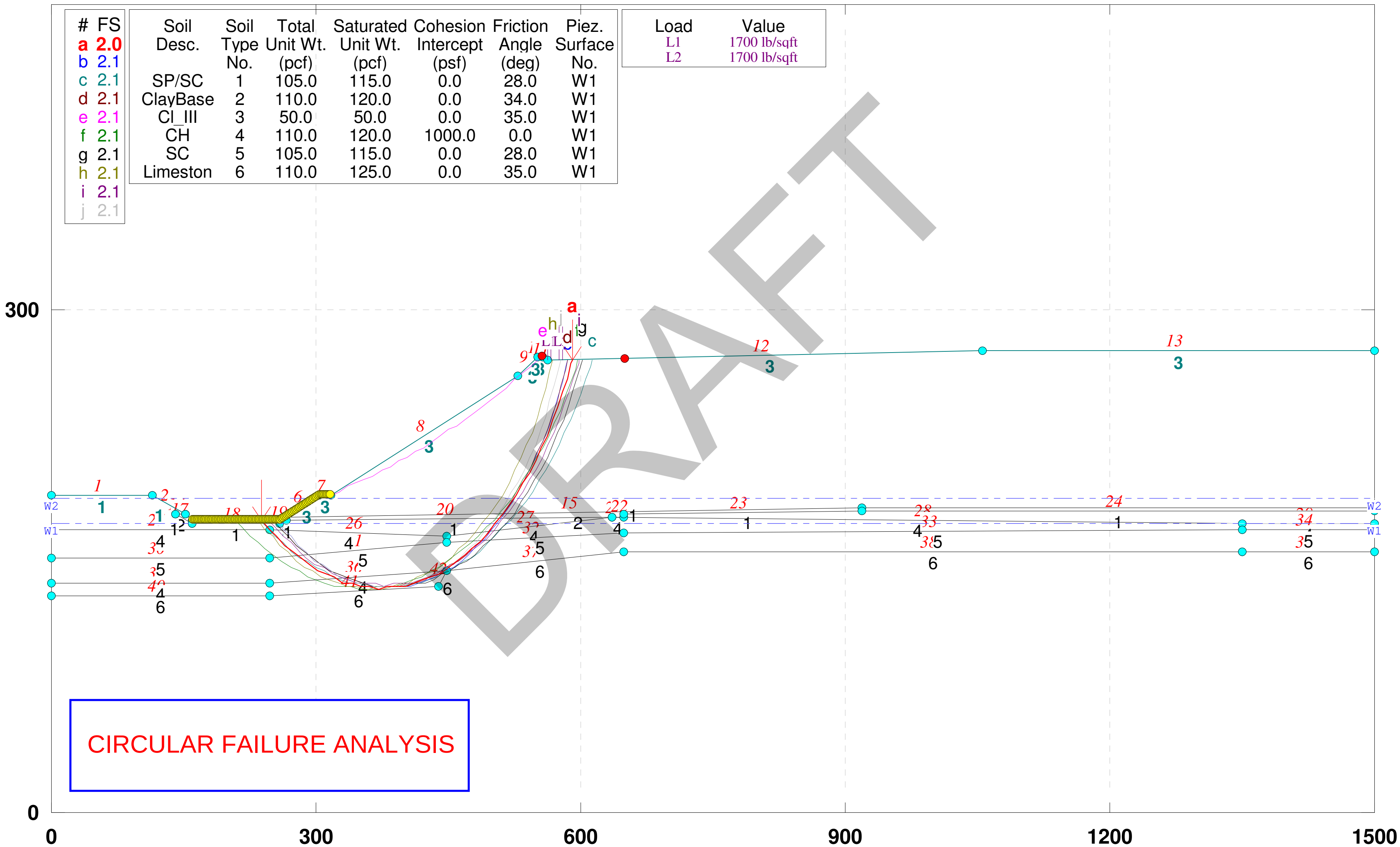
Class III Modification - Enterprise LF N_S_Final El 175 (with 826H)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_FINAL.PL2 Run By: Civil Design Service, Inc 7/23/2014 3:20PM

#	FS
a	2.0
b	2.1
c	2.1
d	2.1
e	2.1
f	2.1
g	2.1
h	2.1
i	2.1
j	2.1

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	1700 lb/sqft
L2	1700 lb/sqft



STABL6H FSmin=2.0

Safety Factors Are Calculated By The Modified Bishop Method

STED

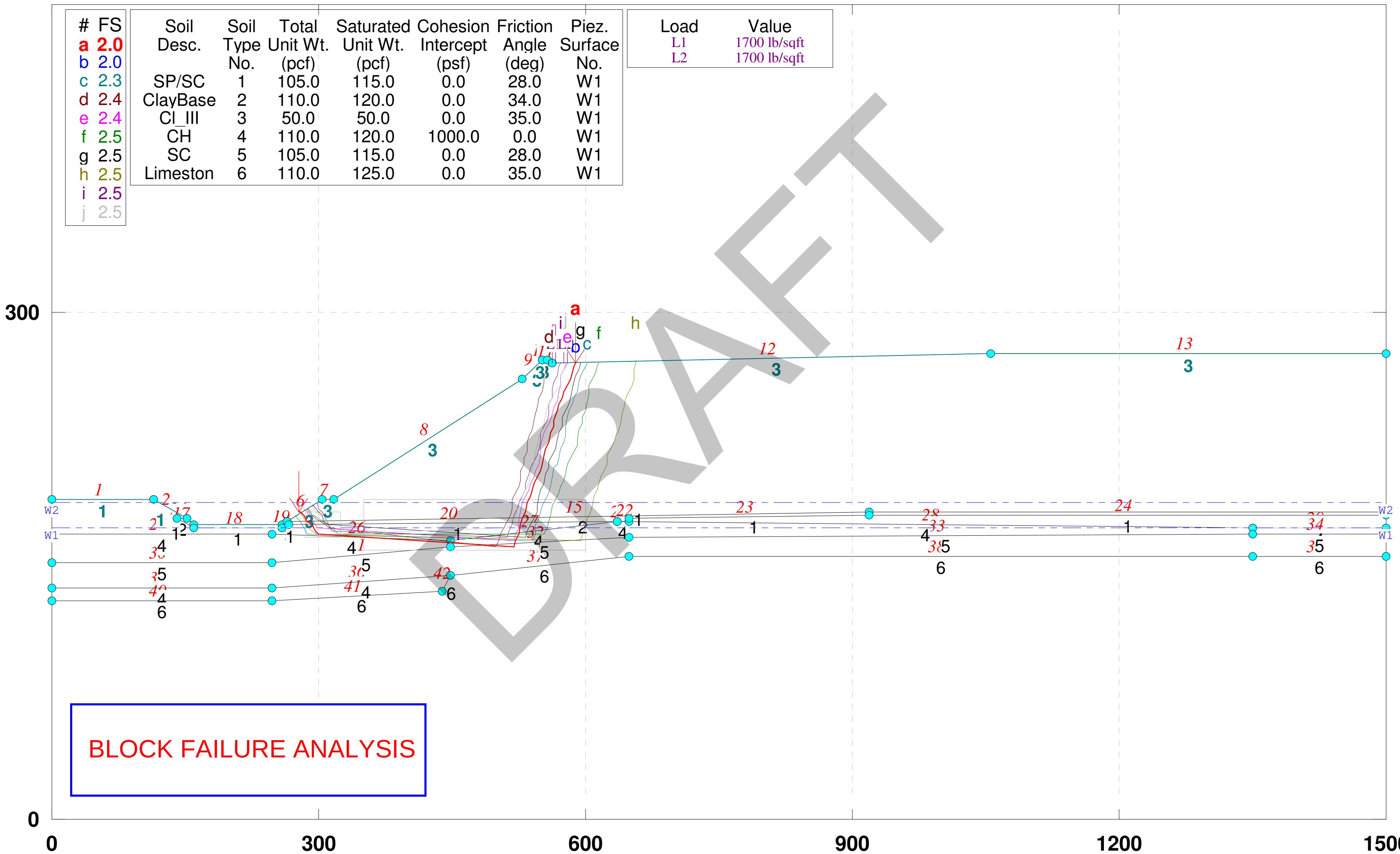
Class III Modification - Enterprise LF N_S_Final El 175 (with 826H)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_FINAL.PL2 Run By: Civil Design Service, Inc 7/23/2014 3:18PM

#	FS
a	2.0
b	2.0
c	2.3
d	2.4
e	2.4
f	2.5
g	2.5
h	2.5
i	2.5
j	2.5

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	1700 lb/sqft
L2	1700 lb/sqft



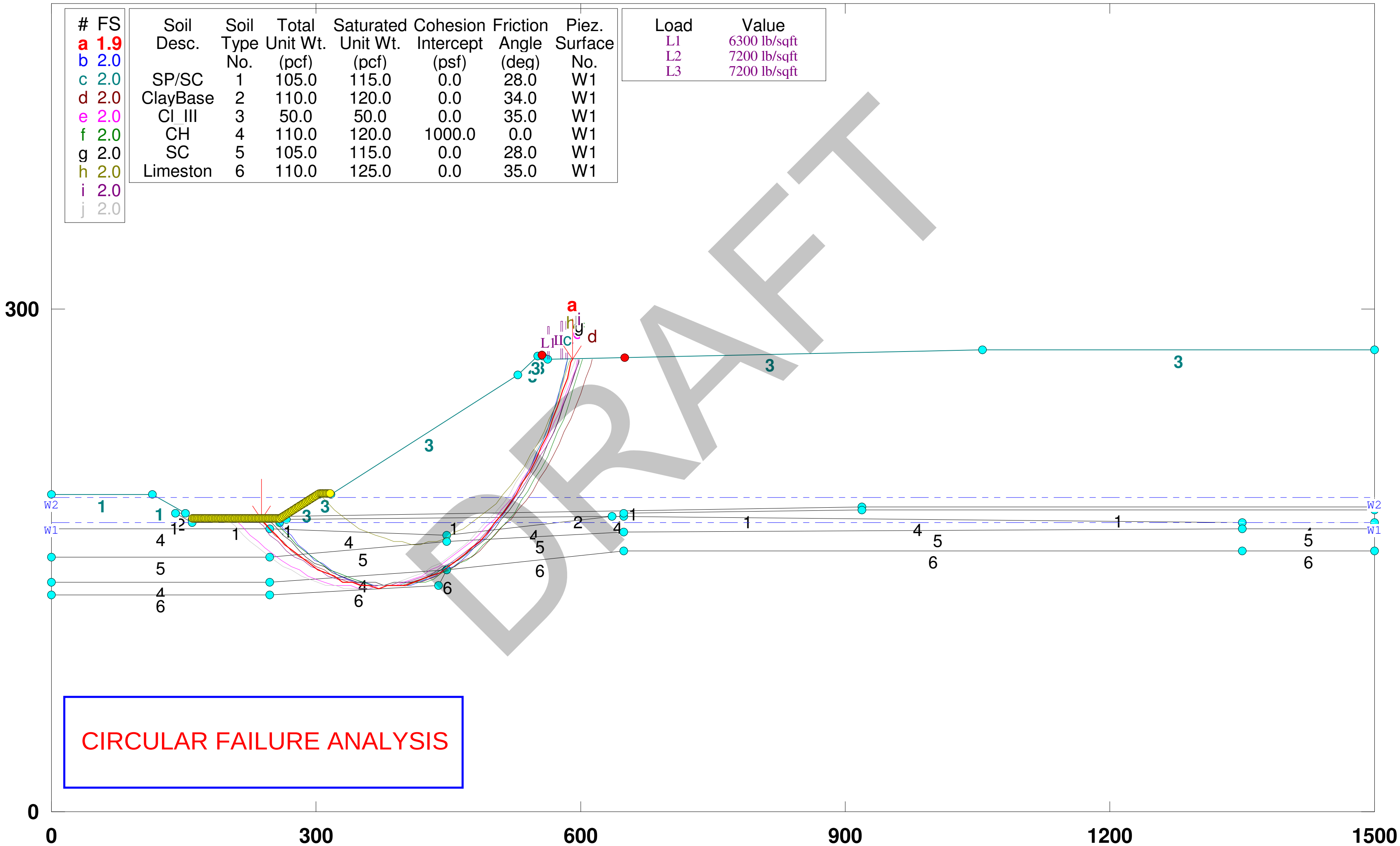
STABL6H FSmin=2.0

Safety Factors Are Calculated By The Modified Janbu Method

STED

Class III Modification - Enterprise LF N_S_Final El 175 (with 740B)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_FINAL.PL2 Run By: Civil Design Service, Inc 7/23/2014 3:06PM



#	FS
a	1.9
b	2.0
c	2.0
d	2.0
e	2.0
f	2.0
g	2.0
h	2.0
i	2.0
j	2.0

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	6300 lb/sqft
L2	7200 lb/sqft
L3	7200 lb/sqft

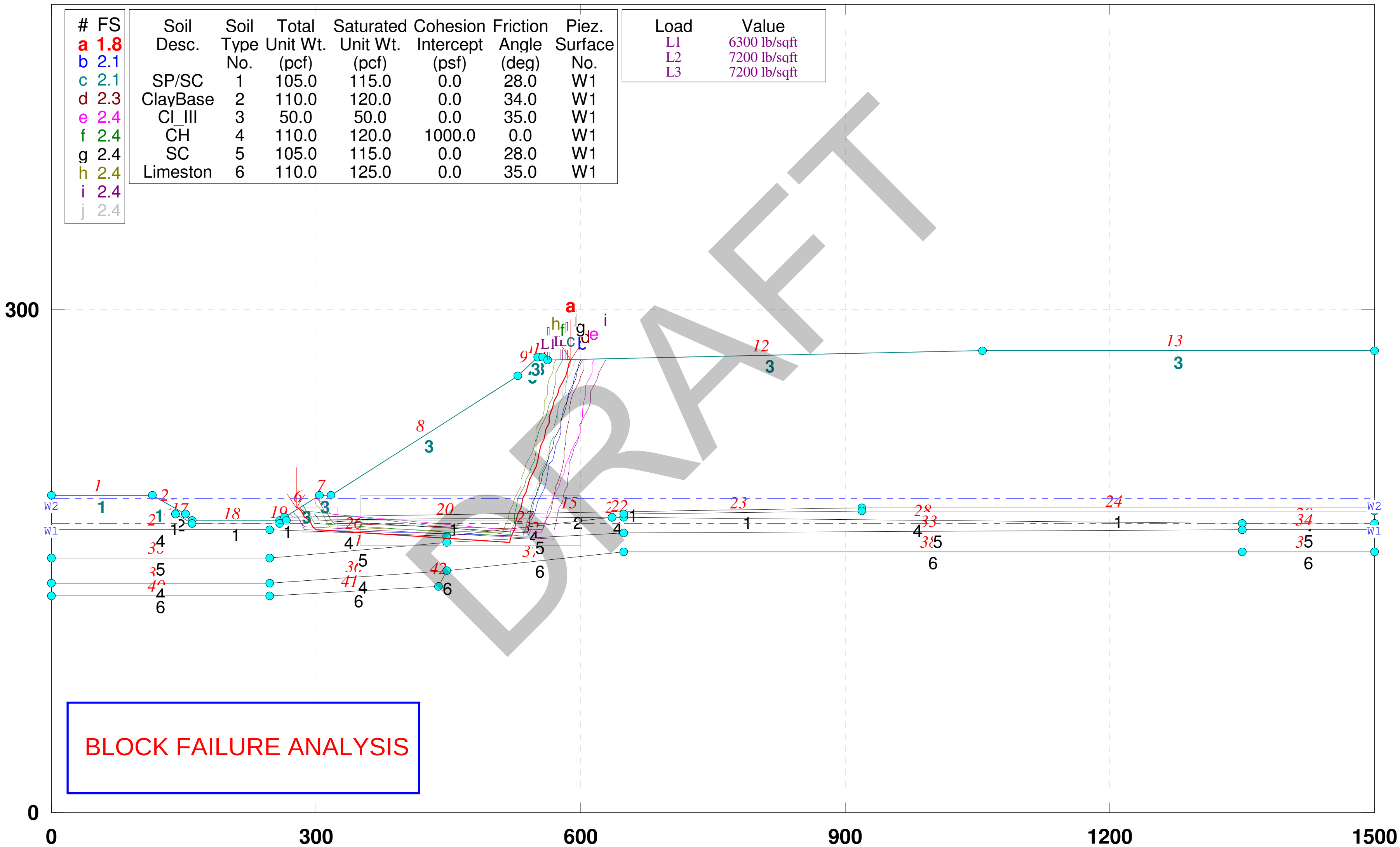
STABL6H FSmin=1.9

Safety Factors Are Calculated By The Modified Bishop Method

STED

Class III Modification - Enterprise LF N_S_Final El 175 (with 740B)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_FINAL.PL2 Run By: Civil Design Service, Inc 7/23/2014 3:12PM



STABL6H FSmin=1.8

Safety Factors Are Calculated By The Modified Janbu Method

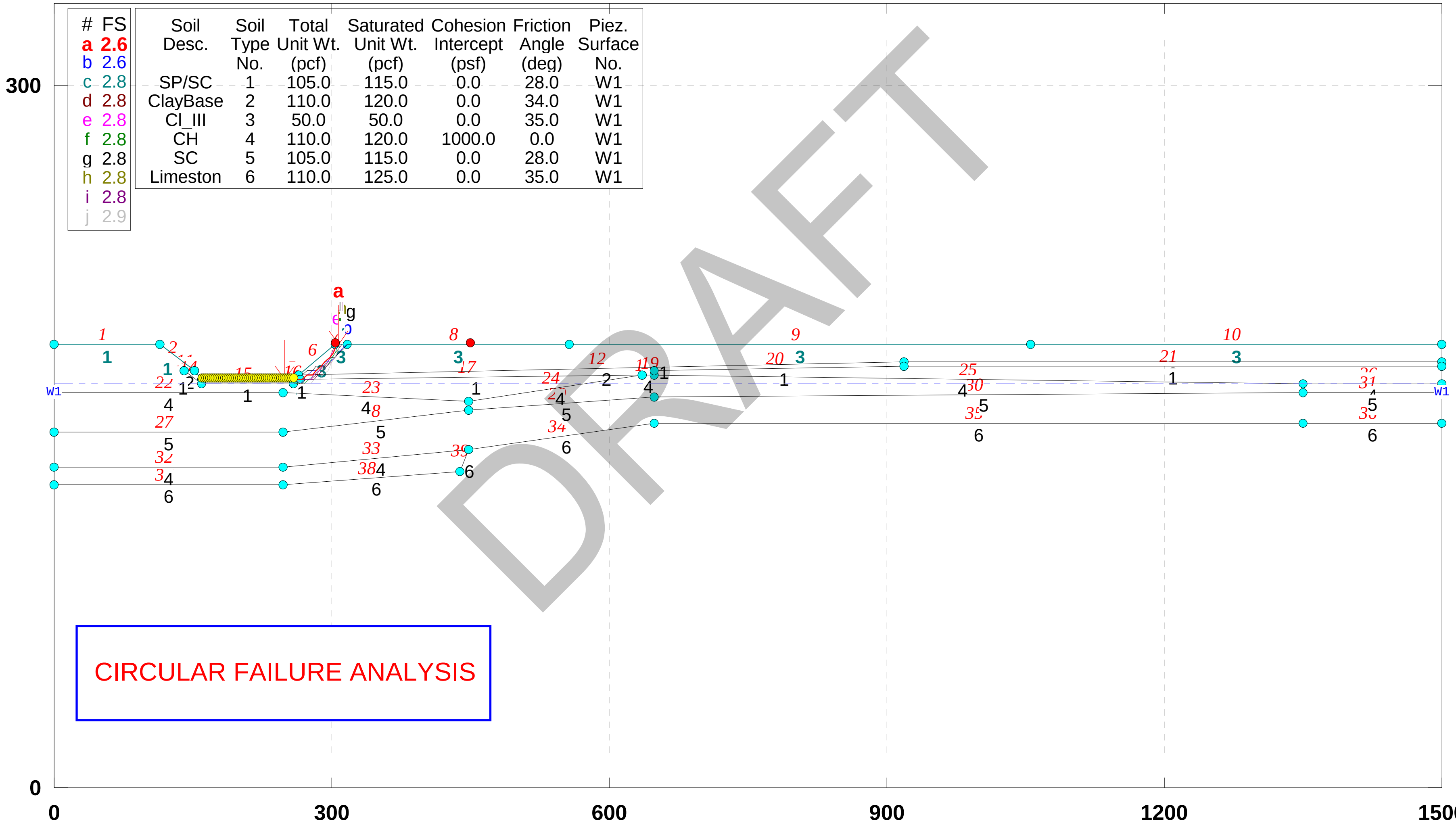
STED

Class III Modification - Enterprise LF N_S_Operations El 90 (with No Load)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_90.PL2 Run By: Civil Design Service, Inc 7/15/2014 9:53PM

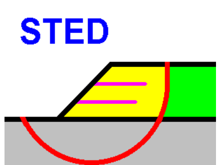
#	FS
a	2.6
b	2.6
c	2.8
d	2.8
e	2.8
f	2.8
g	2.8
h	2.8
i	2.8
j	2.9

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1



STABL6H FSmin=2.6

Safety Factors Are Calculated By The Modified Bishop Method

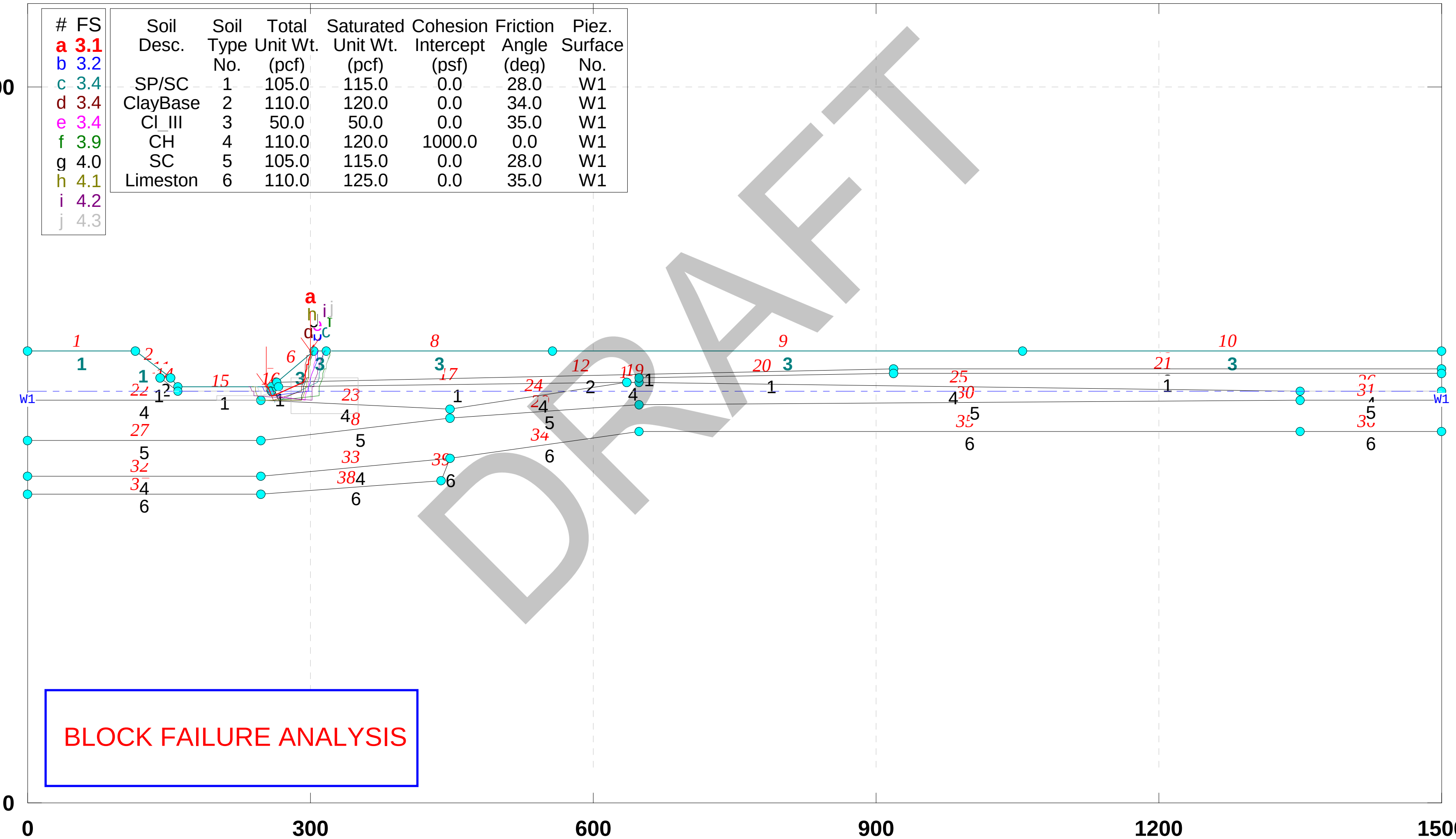


Class III Modification - Enterprise LF N_S_Operations El 90 (with No Load)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_90.PL2   Run By: Civil Design Service, Inc   7/15/2014   10:01PM

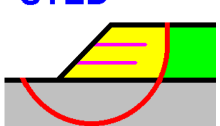
#	FS
a	3.1
b	3.2
c	3.4
d	3.4
e	3.4
f	3.9
g	4.0
h	4.1
i	4.2
j	4.3

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1



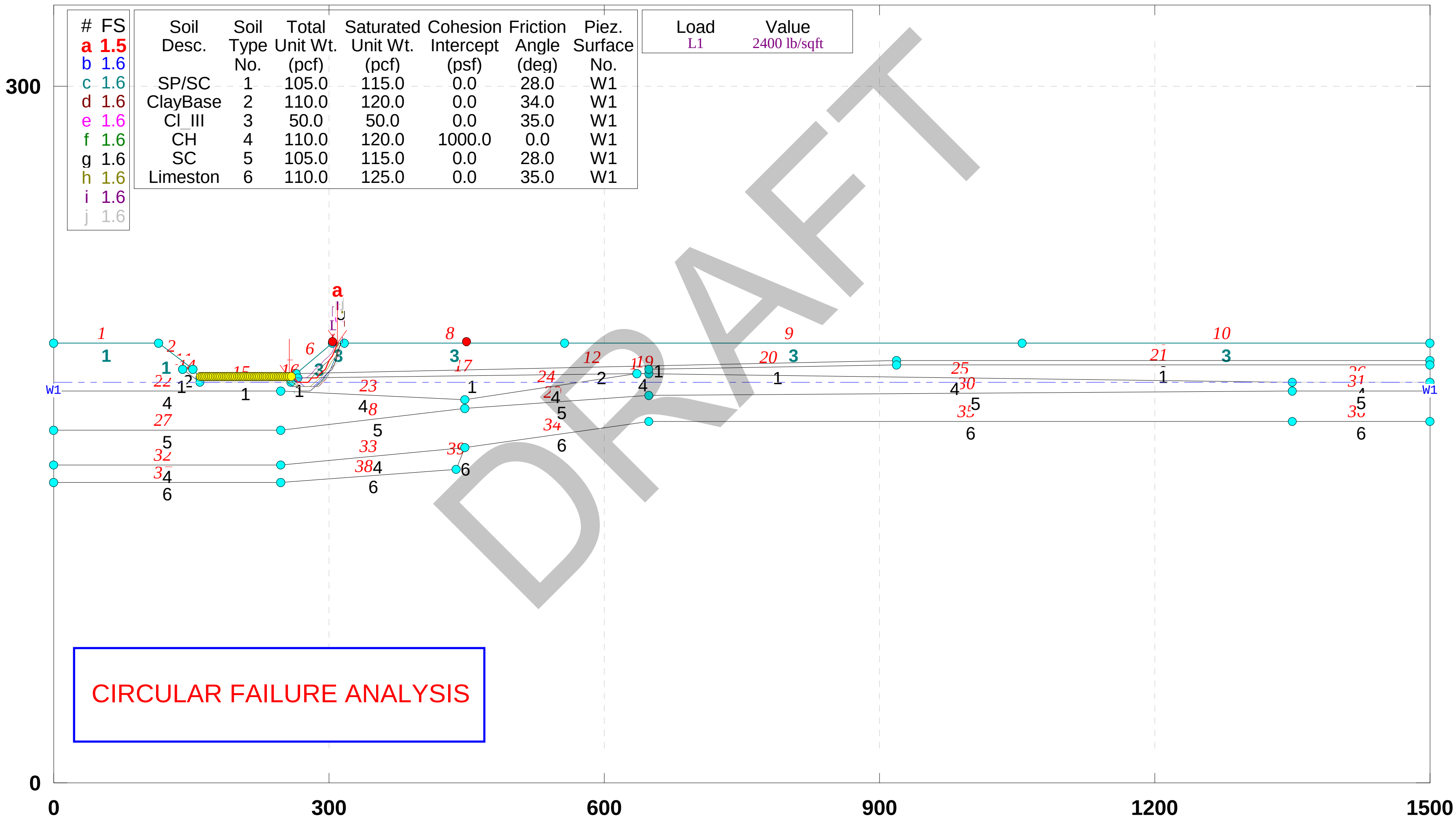
STABL6H FSmin=3.1

Safety Factors Are Calculated By The Modified Janbu Method



Class III Modification - Enterprise LF N_S_Operations El 90 (with D8)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_90.PL2 Run By: Civil Design Service, Inc 7/15/2014 9:51PM



Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

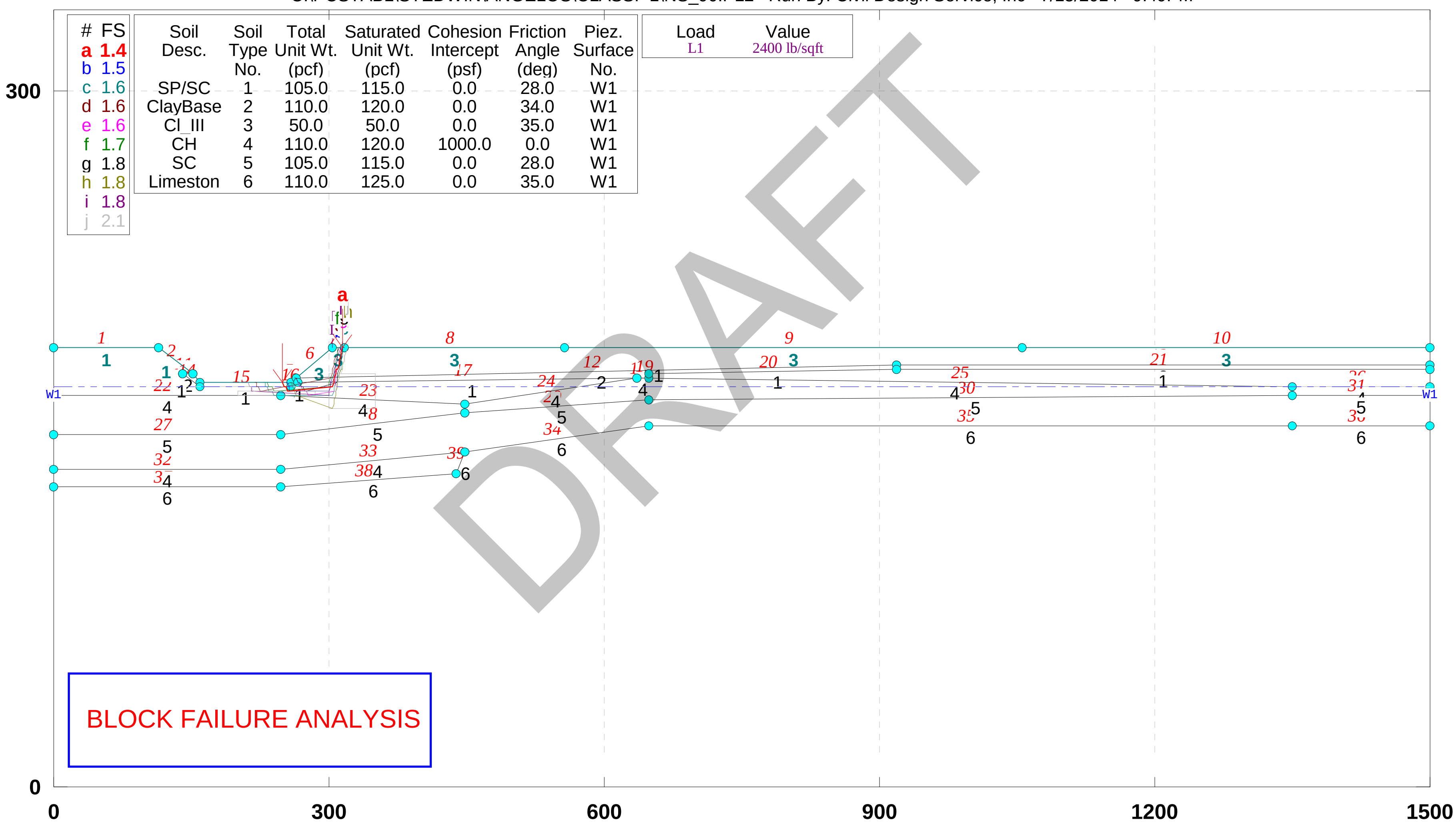
STABL6H FSmin=1.5

Safety Factors Are Calculated By The Modified Bishop Method

STED

Class III Modification - Enterprise LF N_S_Operations El 90 (with D8)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_90.PL2   Run By: Civil Design Service, Inc   7/15/2014   9:49PM



#	FS
a	1.4
b	1.5
c	1.6
d	1.6
e	1.6
f	1.7
g	1.8
h	1.8
i	1.8
j	2.1

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	2400 lb/sqft

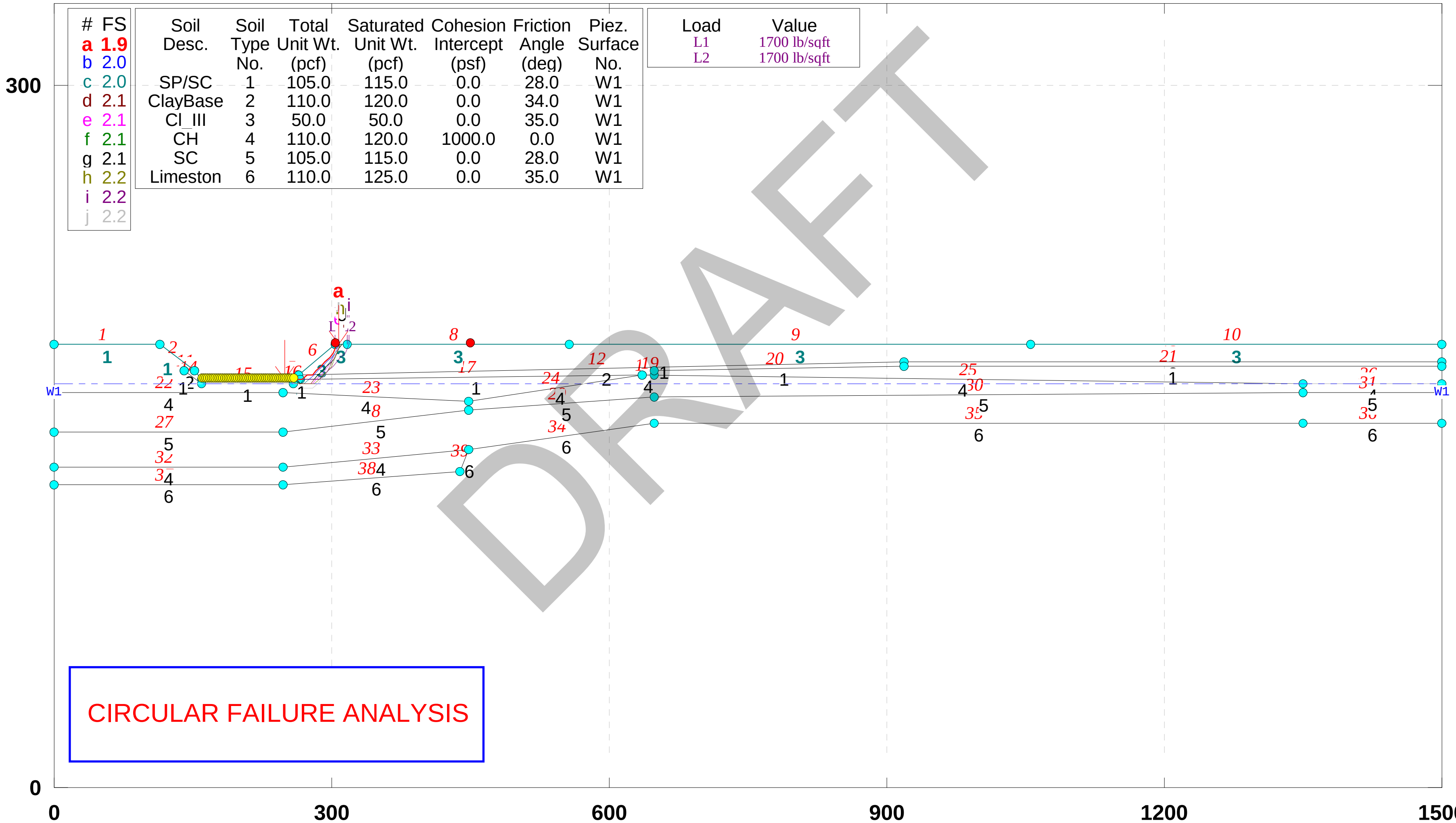
STABL6H FSmin=1.4

Safety Factors Are Calculated By The Modified Janbu Method

STED

Class III Modification - Enterprise LF N_S_Operations El 90 (with 826H)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_90.PL2   Run By: Civil Design Service, Inc   7/15/2014   10:06PM



#	FS
a	1.9
b	2.0
c	2.0
d	2.1
e	2.1
f	2.1
g	2.1
h	2.2
i	2.2
j	2.2

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	1700 lb/sqft
L2	1700 lb/sqft

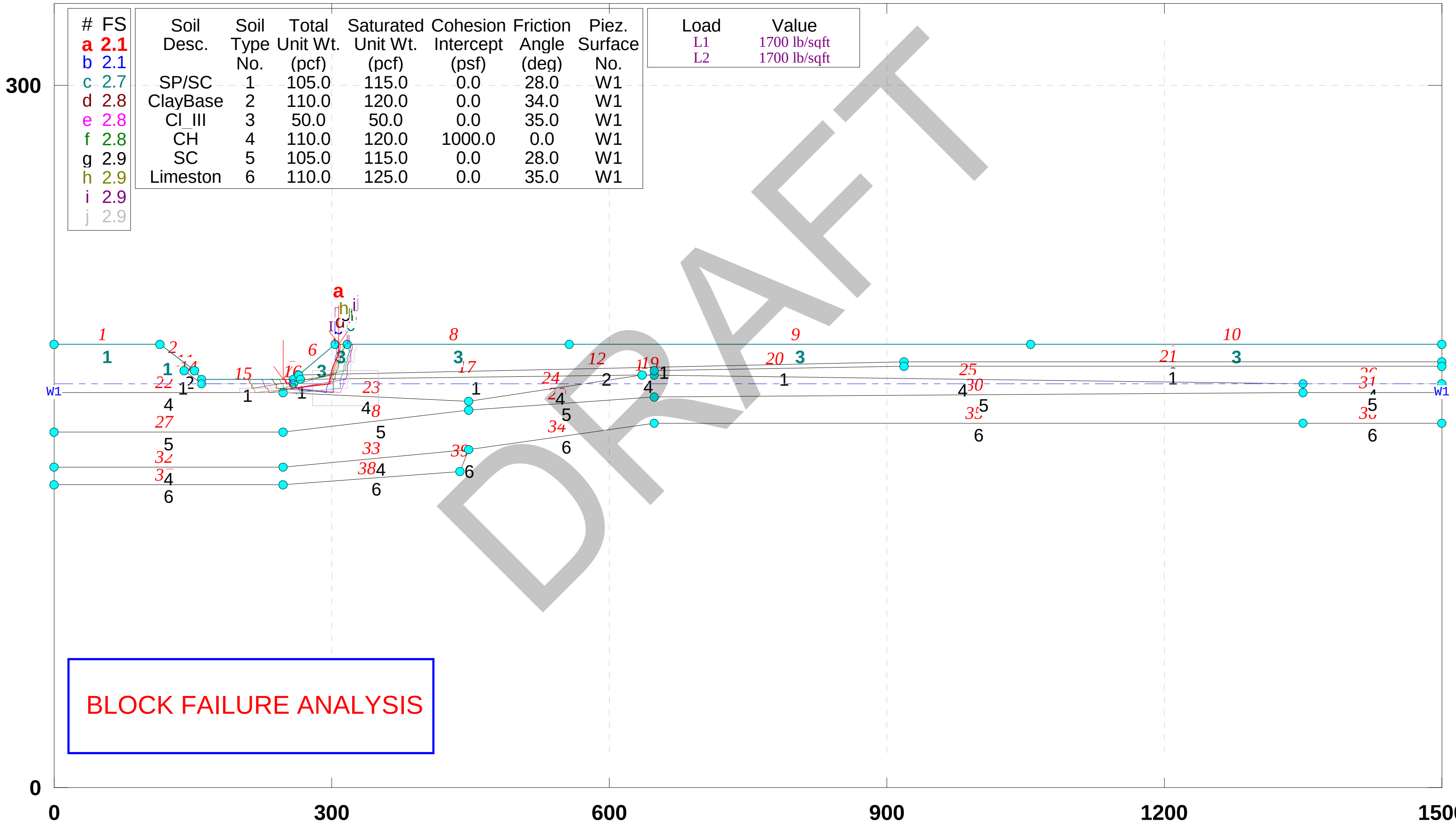
STABL6H FSmin=1.9

Safety Factors Are Calculated By The Modified Bishop Method

STED

Class III Modification - Enterprise LF N_S_Operations El 90 (with 826H)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_90.PL2   Run By: Civil Design Service, Inc   7/15/2014   10:04PM



#	FS
a	2.1
b	2.1
c	2.7
d	2.8
e	2.8
f	2.8
g	2.9
h	2.9
i	2.9
j	2.9

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	1700 lb/sqft
L2	1700 lb/sqft

STABL6H FSmin=2.1

Safety Factors Are Calculated By The Modified Janbu Method

STED

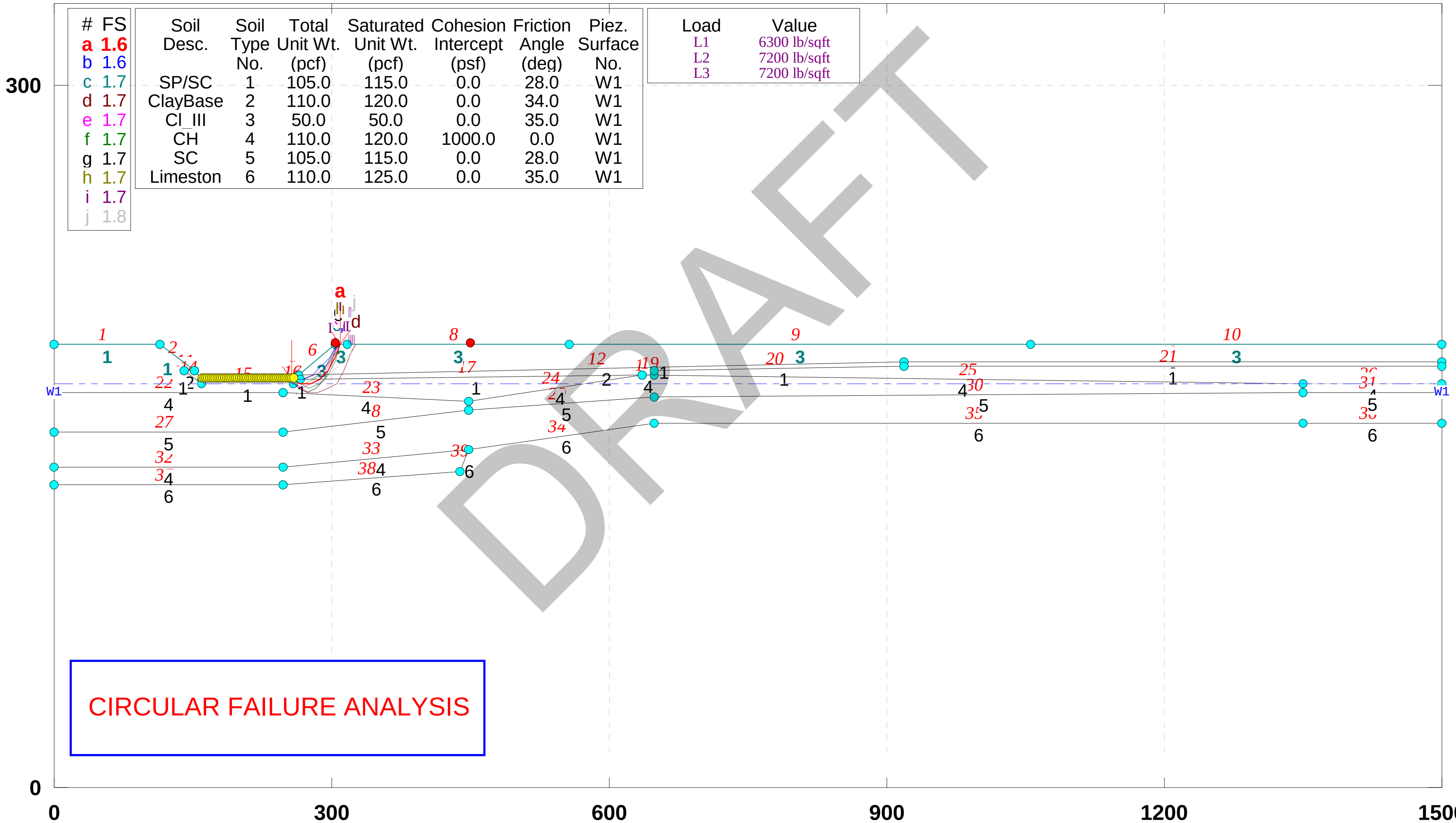
Class III Modification - Enterprise LF N_S_Operations El 90 (with 740B)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_90.PL2   Run By: Civil Design Service, Inc   7/15/2014   9:34PM

#	FS
a	1.6
b	1.6
c	1.7
d	1.7
e	1.7
f	1.7
g	1.7
h	1.7
i	1.7
j	1.8

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	6300 lb/sqft
L2	7200 lb/sqft
L3	7200 lb/sqft



STABL6H FSmin=1.6

Safety Factors Are Calculated By The Modified Bishop Method

STED

Class III Modification - Enterprise LF N_S_Operations El 90 (with 740B)

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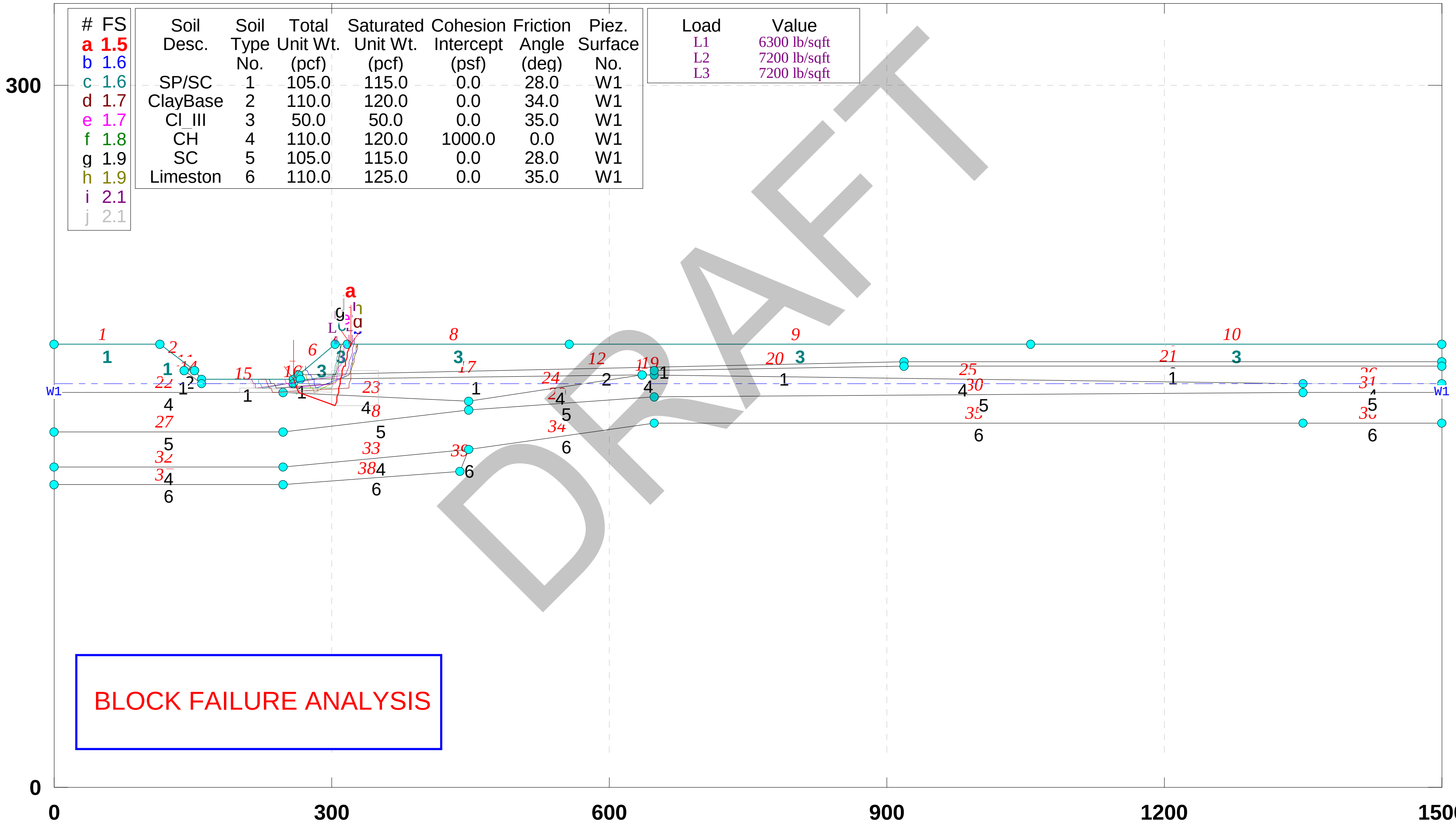


Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	6300 lb/sqft
L2	7200 lb/sqft
L3	7200 lb/sqft

STABL6H FSmin=1.5

Safety Factors Are Calculated By The Modified Janbu Method

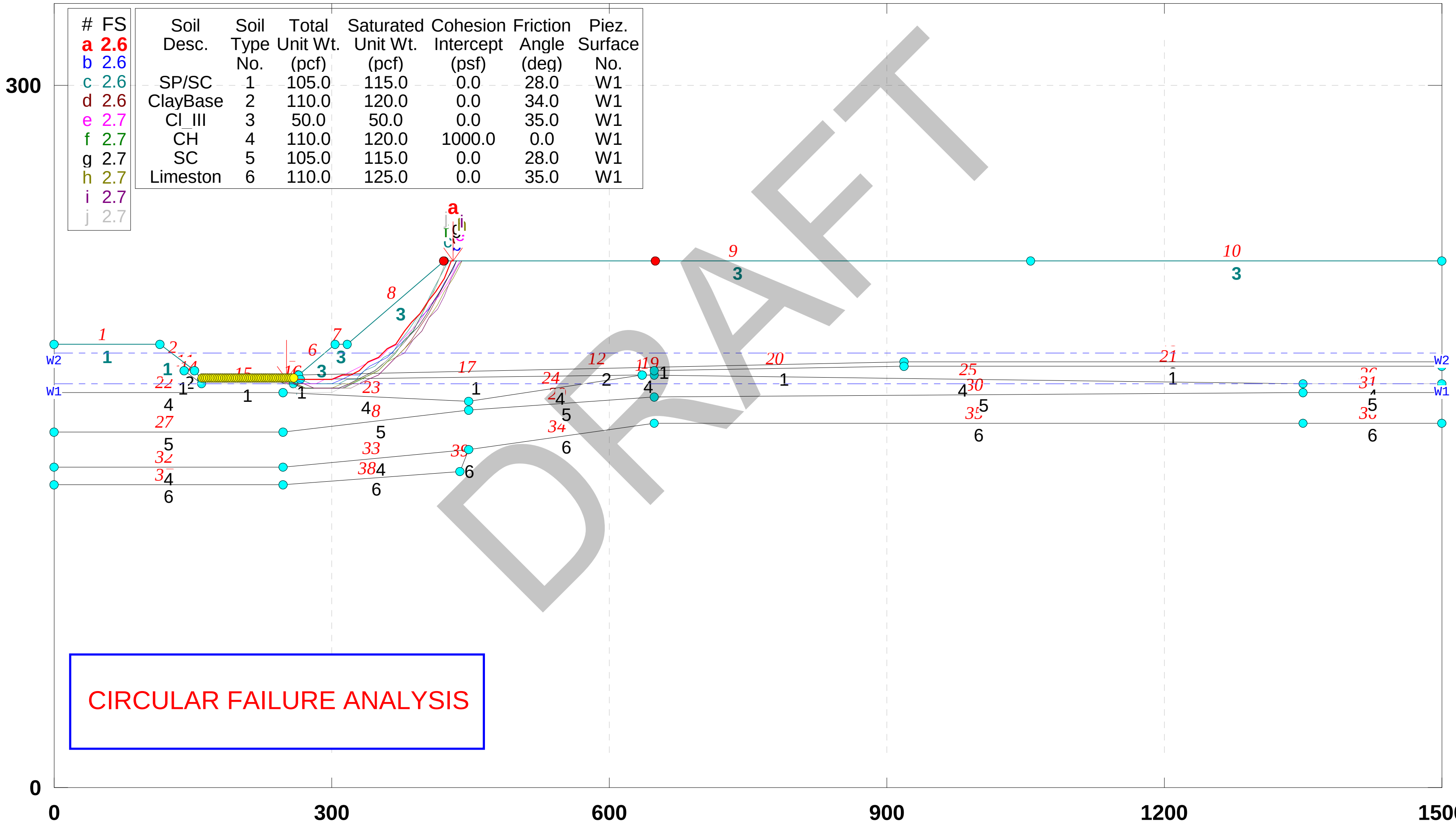
STED

Class III Modification - Enterprise LF N_S_Final El 125 (with No Load)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_125.PL2 Run By: Civil Design Service, Inc 7/15/2014 10:20PM

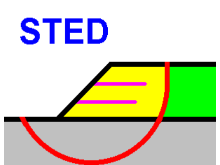
#	FS
a	2.6
b	2.6
c	2.6
d	2.6
e	2.7
f	2.7
g	2.7
h	2.7
i	2.7
j	2.7

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1



STABL6H FSmin=2.6

Safety Factors Are Calculated By The Modified Bishop Method



NO LOAD
(incorrectly labeled)

Class III Modification - Enterprise LF N_S_Final El 125 ~~(with 740B)~~

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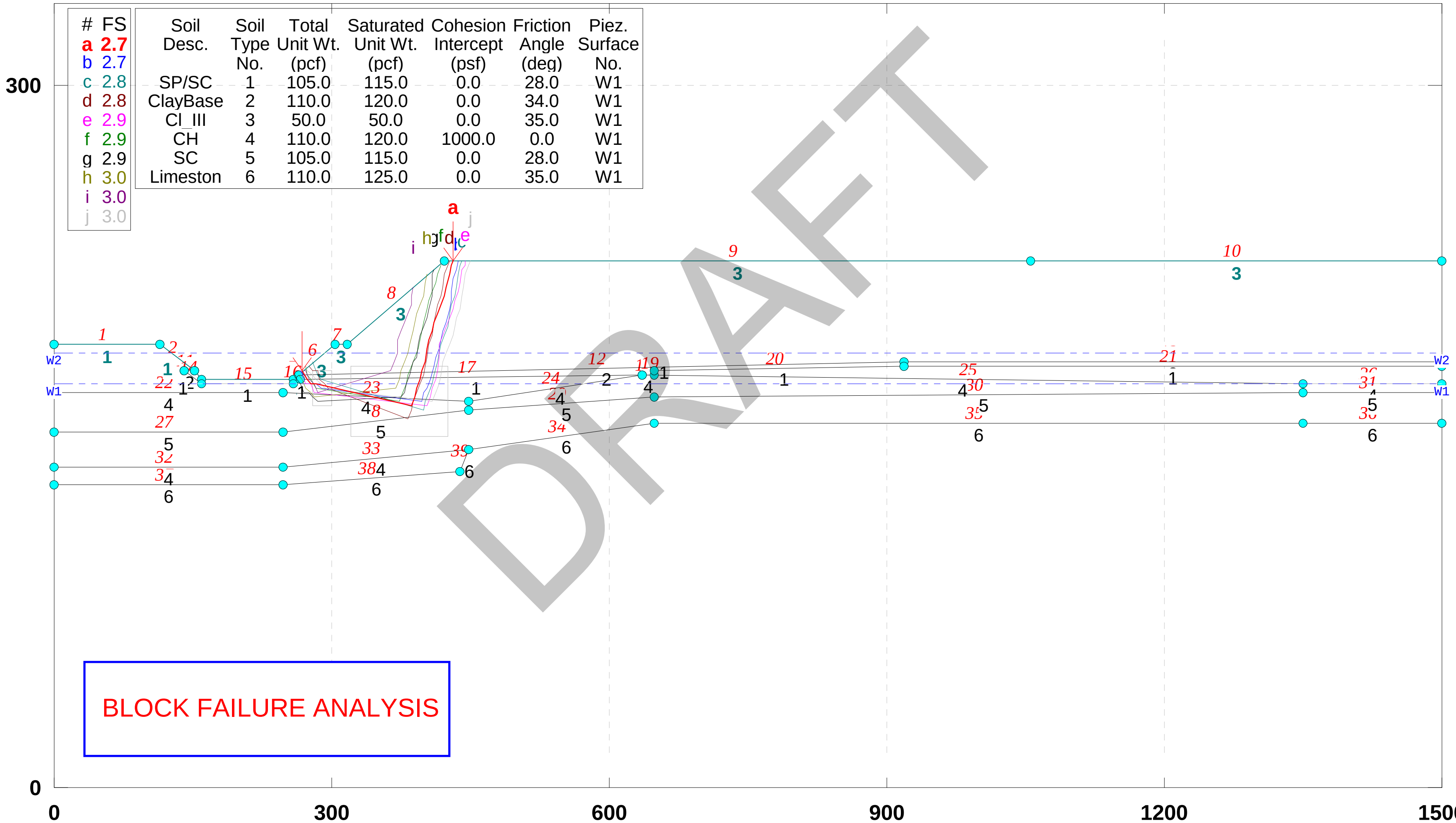

#	FS
a	2.7
b	2.7
c	2.8
d	2.8
e	2.9
f	2.9
g	2.9
h	3.0
i	3.0
j	3.0

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

STABL6H FSmin=2.7
Safety Factors Are Calculated By The Modified Janbu Method

STED

Class III Modification - Enterprise LF N_S_Final El 125 (with D8)

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#	FS
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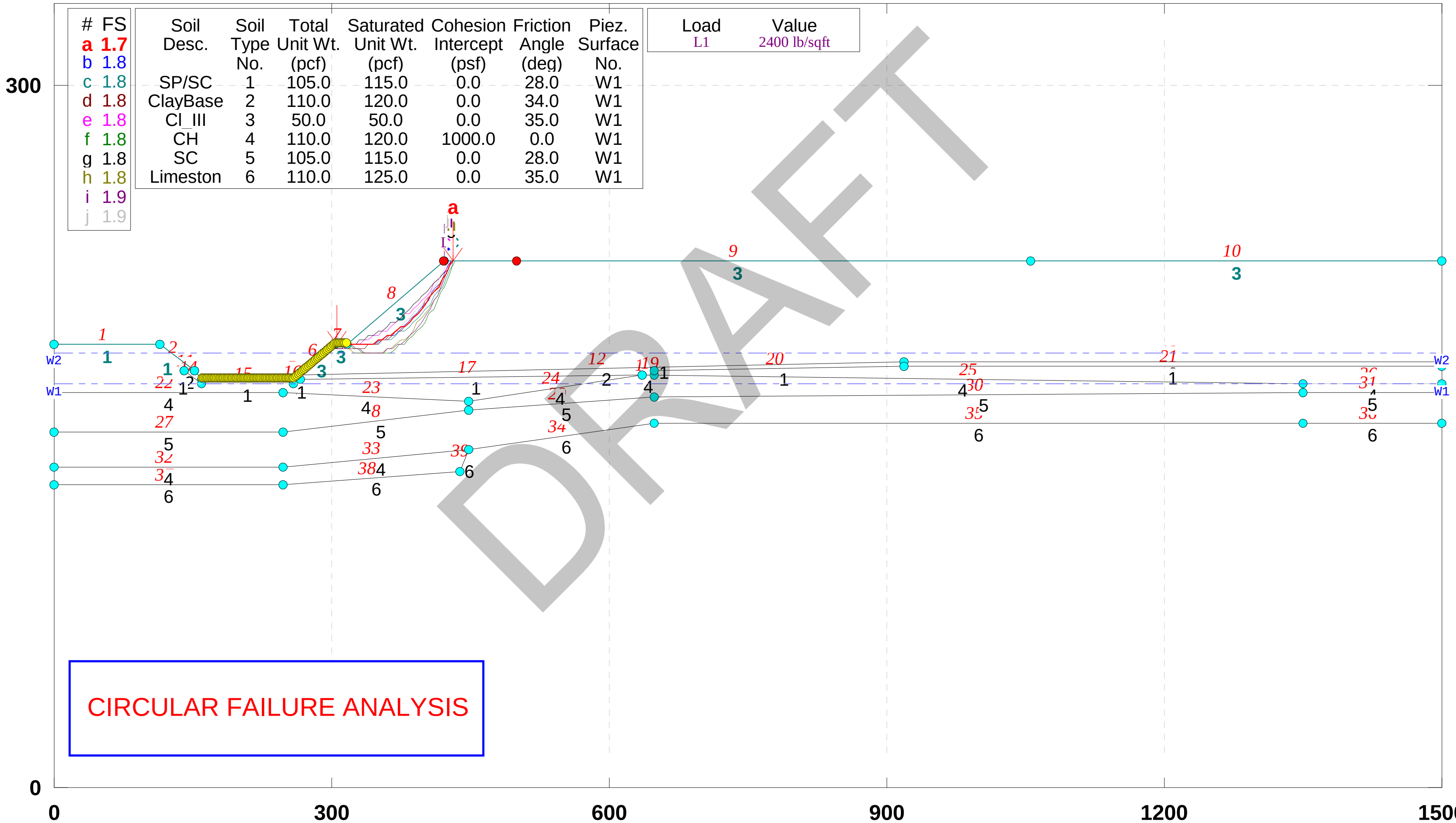
b	1.8
c	1.8
d	1.8
e	1.8
f	1.8
g	1.8
h	1.8
i	1.9
j	1.9

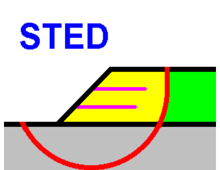
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	2400 lb/sqft



STABL6H FSmin=1.7

Safety Factors Are Calculated By The Modified Bishop Method



Class III Modification - Enterprise LF N_S_Final El 125 (with D8)

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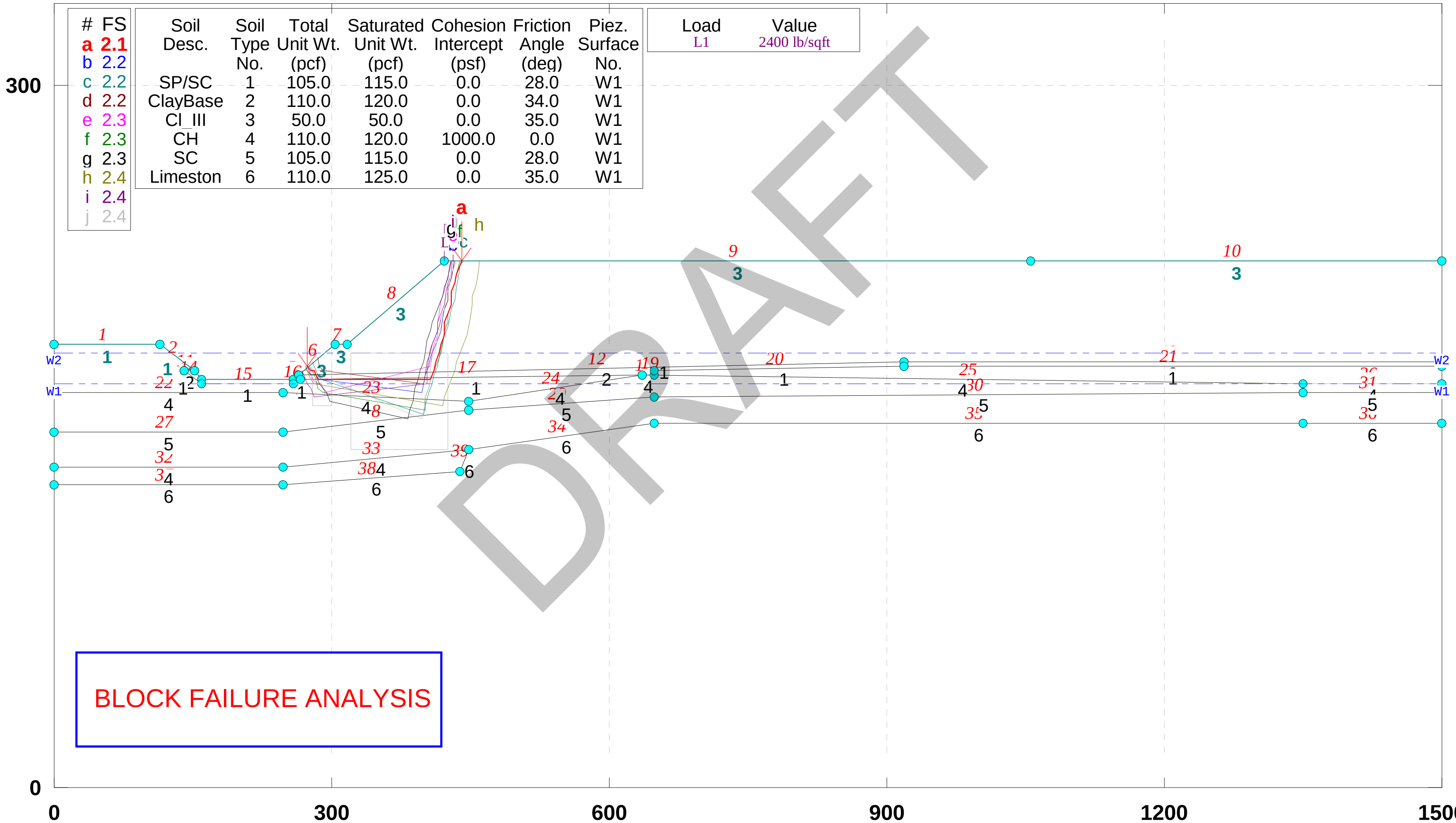

#	FS
a	2.1
b	2.2
c	2.2
d	2.2
e	2.3
f	2.3
g	2.3
h	2.4
i	2.4
j	2.4

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	2400 lb/sqft

STABL6H FSmin=2.1
Safety Factors Are Calculated By The Modified Janbu Method

STED

Class III Modification - Enterprise LF N_S_Final El 125 (with 826H)

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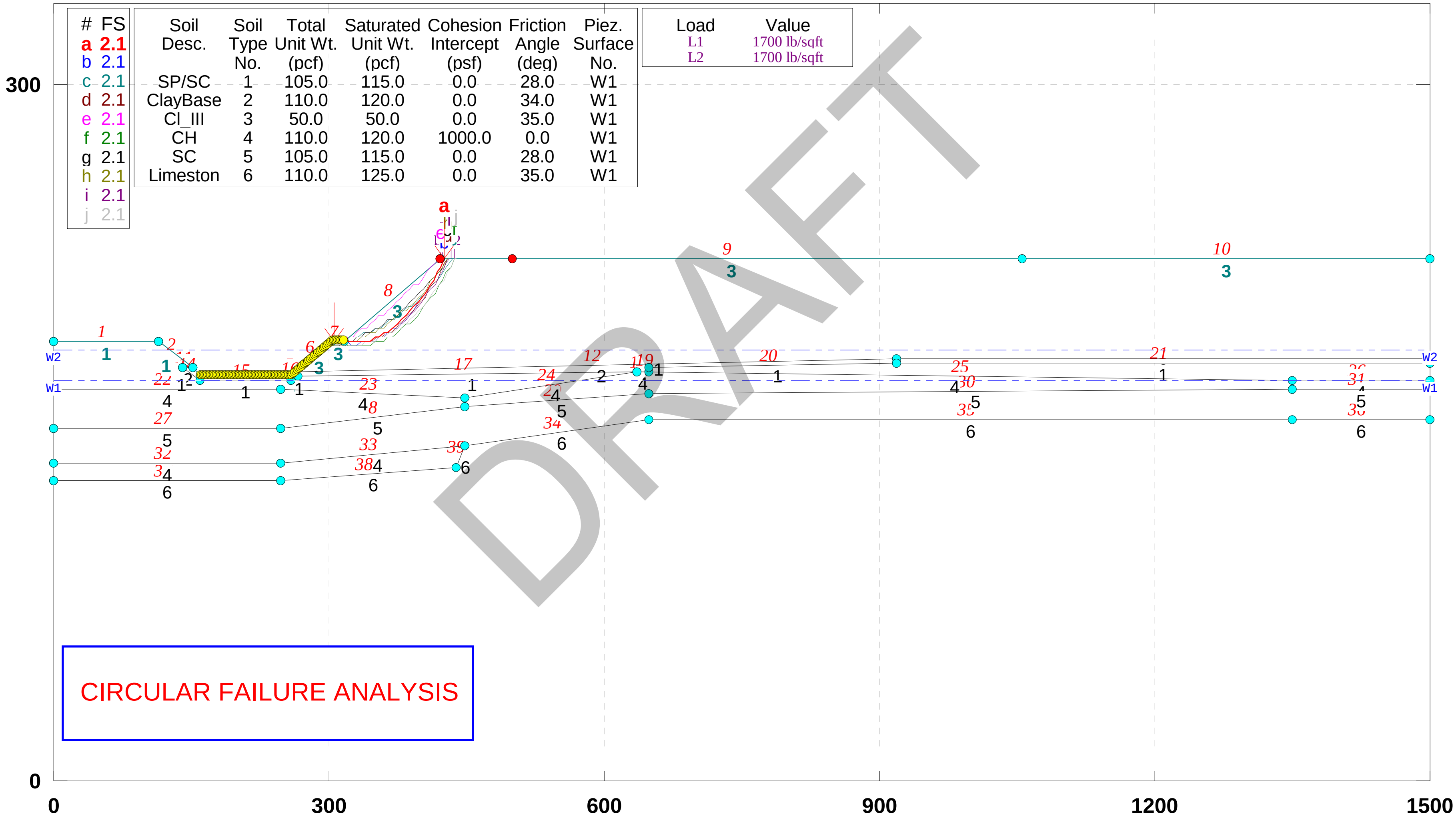

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	1700 lb/sqft
L2	1700 lb/sqft

STABL6H FSmin=2.1

Safety Factors Are Calculated By The Modified Bishop Method

STED

Class III Modification - Enterprise LF N_S_Final El 125 (with 826H)

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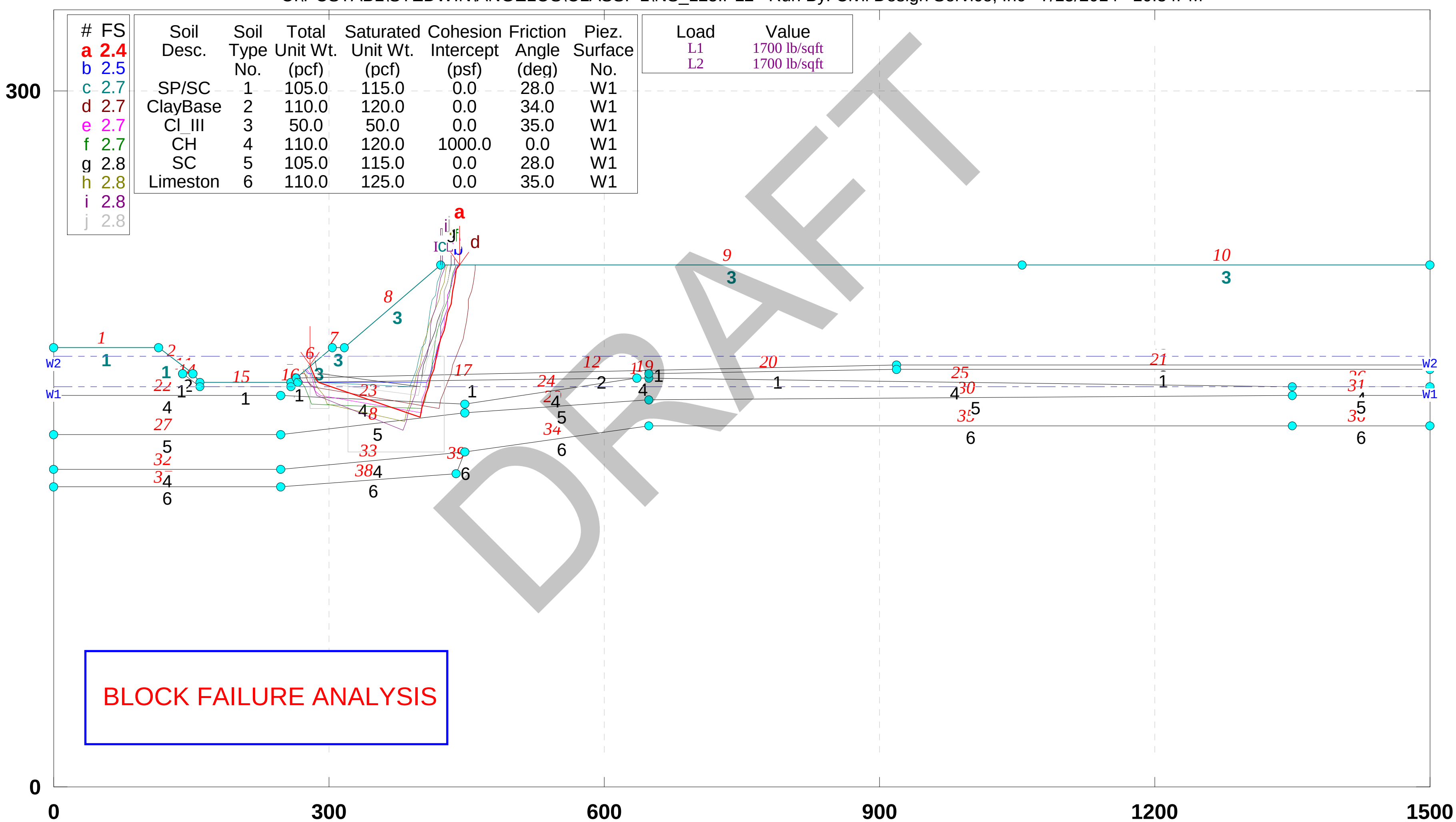

STABL6H FSmin=2.4

Safety Factors Are Calculated By The Modified Janbu Method

STED

Class III Modification - Enterprise LF N_S_Final El 125 (with 740B)

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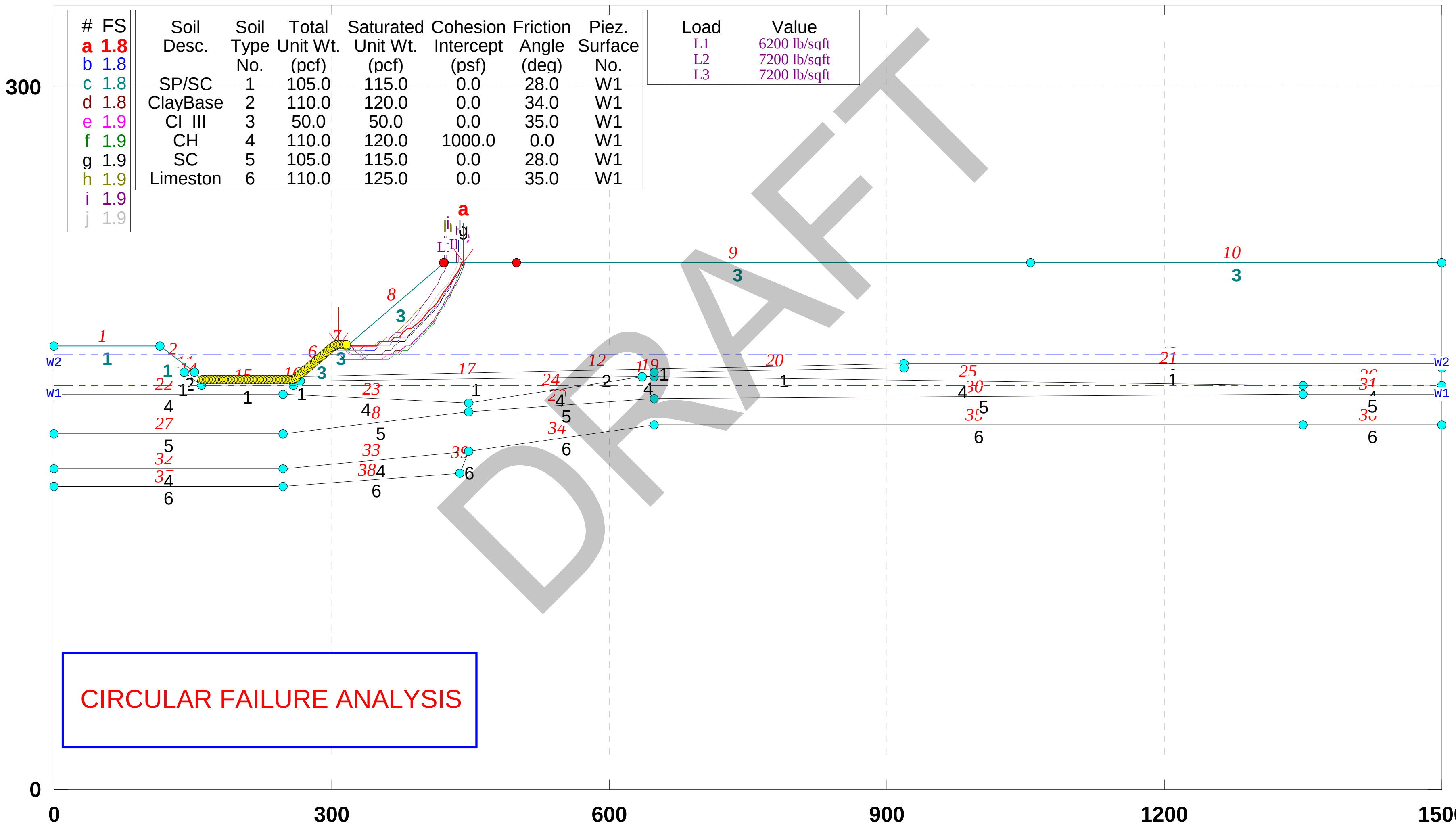

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	6200 lb/sqft
L2	7200 lb/sqft
L3	7200 lb/sqft

STABL6H FSmin=1.8

Safety Factors Are Calculated By The Modified Bishop Method

STED

Class III Modification - Enterprise LF N_S_Final El 125 (with 740B)

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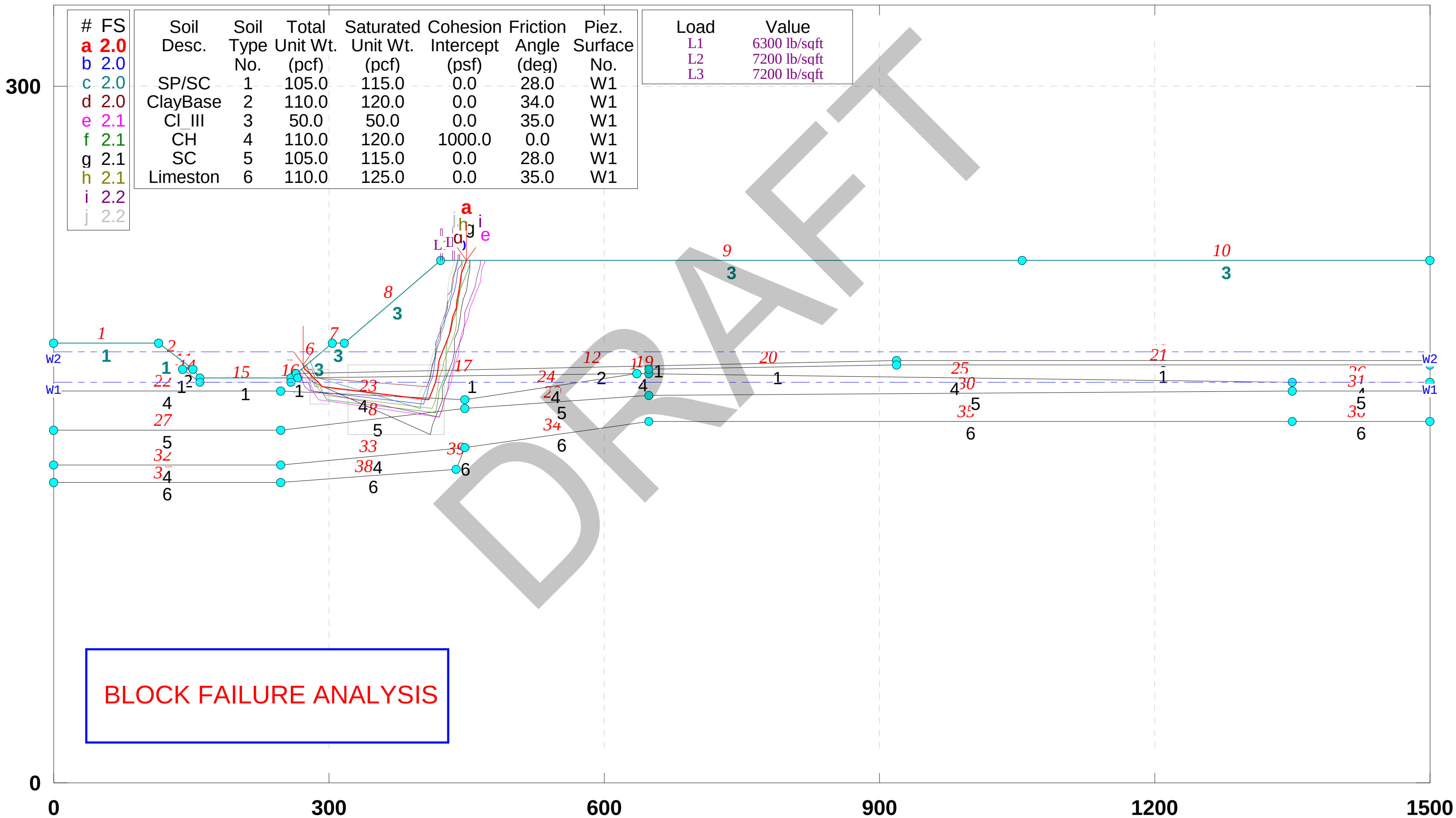

#	FS
a	2.0
b	2.0
c	2.0
d	2.0
e	2.1
f	2.1
g	2.1
h	2.1
i	2.2
j	2.2

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	50.0	50.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

Load	Value
L1	6300 lb/sqft
L2	7200 lb/sqft
L3	7200 lb/sqft

STABL6H FSmin=2.0

Safety Factors Are Calculated By The Modified Janbu Method

STED

ATTACHMENT D

Class III Modification - Enterprise LF N_S_Final El 175 (Bearing Capacity)

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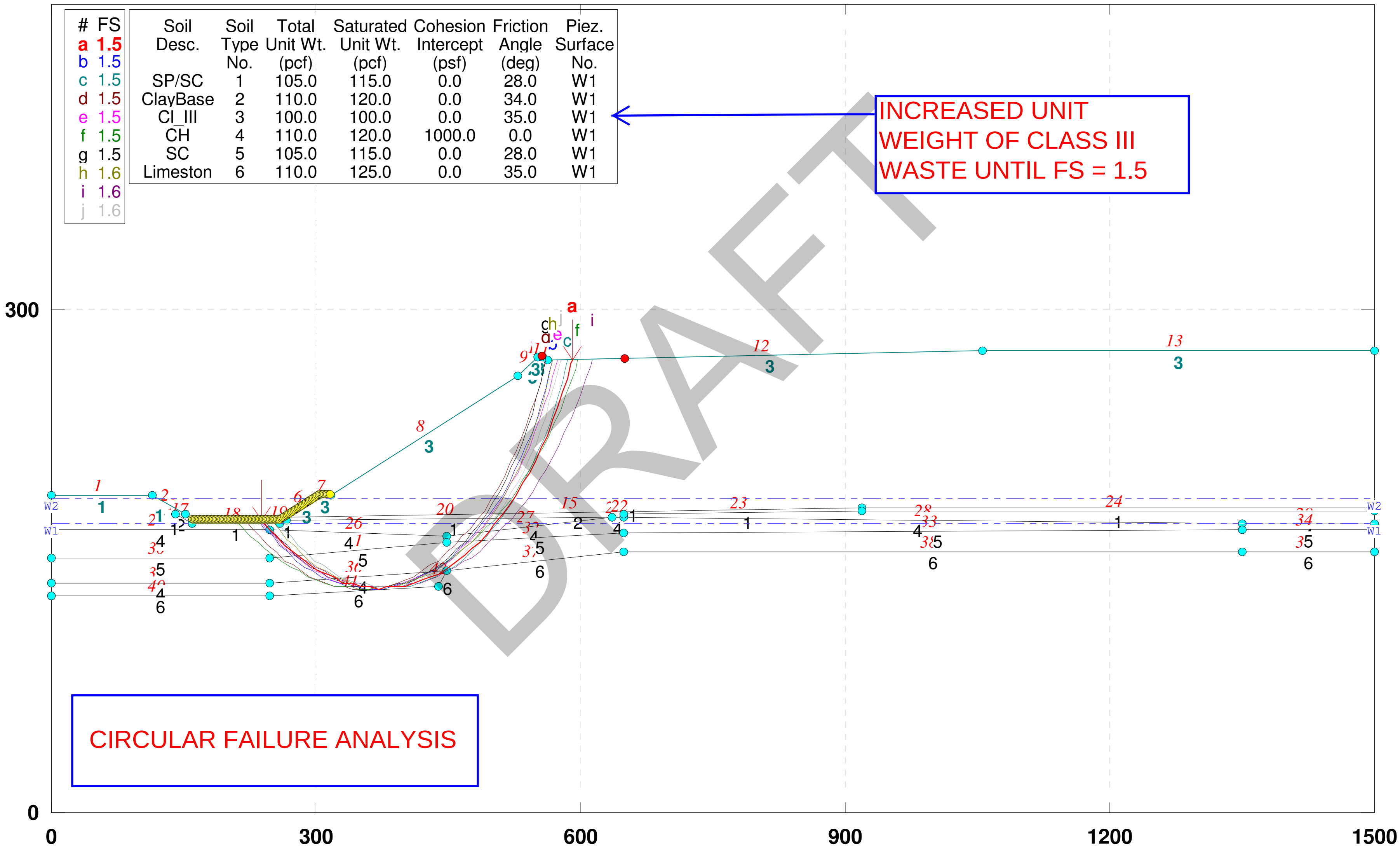


Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	100.0	100.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

STABL6H FSmin=1.5

Safety Factors Are Calculated By The Modified Bishop Method

STED

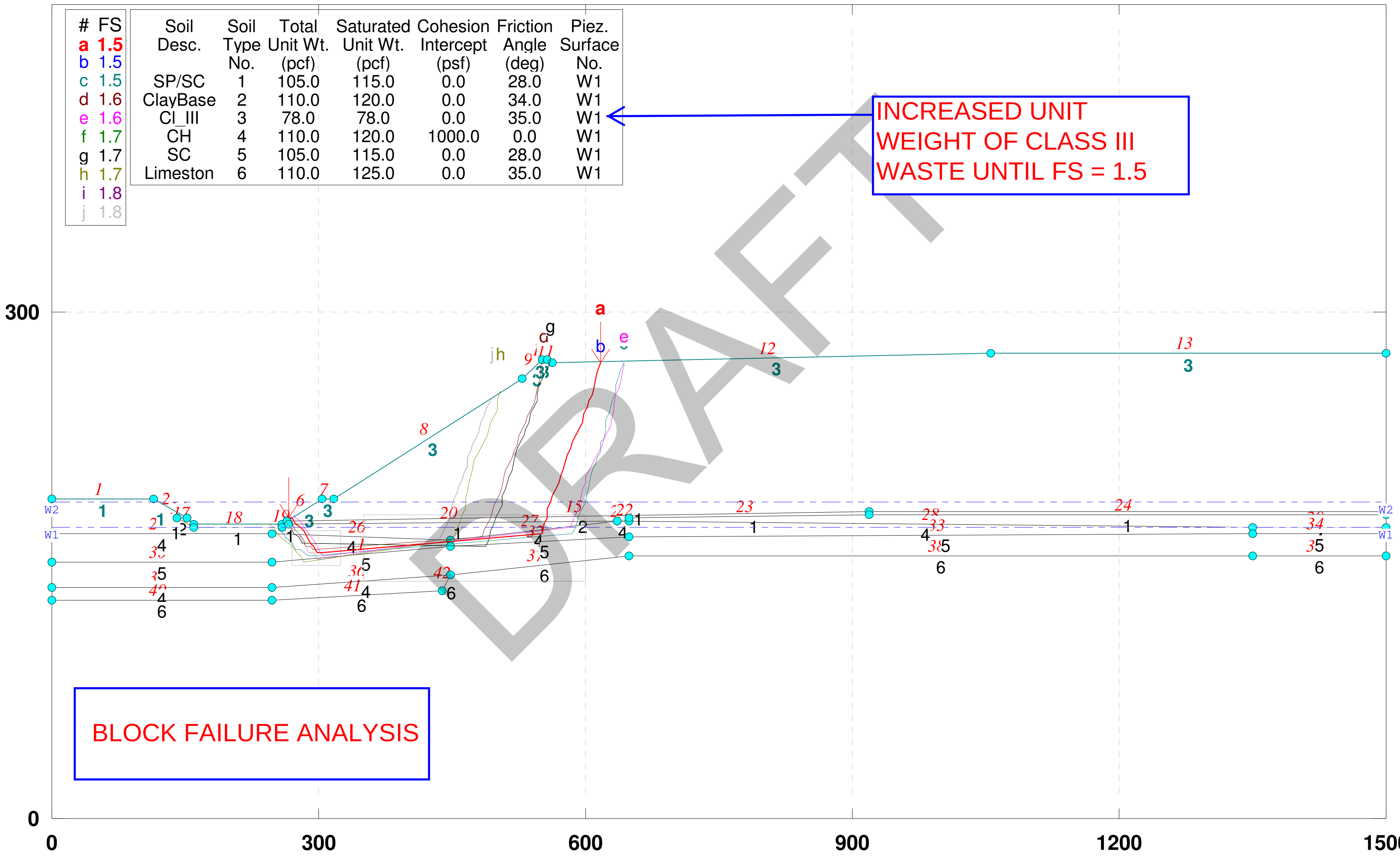
Class III Modification - Enterprise LF N_S_Final El 175 (Bearing Capacity)

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\NS_FINAL.PL2   Run By: Civil Design Service, Inc   7/23/2014   3:39PM

#	FS
a	1.5
b	1.5
c	1.5
d	1.6
e	1.6
f	1.7
g	1.7
h	1.7
i	1.8
j	1.8

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP/SC	1	105.0	115.0	0.0	28.0	W1
ClayBase	2	110.0	120.0	0.0	34.0	W1
Cl_III	3	78.0	78.0	0.0	35.0	W1
CH	4	110.0	120.0	1000.0	0.0	W1
SC	5	105.0	115.0	0.0	28.0	W1
Limeston	6	110.0	125.0	0.0	35.0	W1

INCREASED UNIT WEIGHT OF CLASS III WASTE UNTIL FS = 1.5



BLOCK FAILURE ANALYSIS

STABL6H FSmin=1.5

Safety Factors Are Calculated By The Modified Janbu Method

STED

ENGINEERING REPORT
APPENDIX F

CLOSURE AND RECLAMATION PLAN

ENTERPRISE ROAD CLASS III RECYCLING AND DISPOSAL FACILITY
PERMIT MODIFICATION
RECLAMATION AND CLOSURE PLAN

Prepared for:

ANGELO'S AGGREGATE MATERIALS, LTD
855 28th Street South
St. Petersburg, Florida 33712

Presented to:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHWEST DISTRICT – SOLID WASTE DIVISION
13051 N. Telecom Parkway
Temple Terrace, Florida 33637

Prepared by:

LOCKLEAR & ASSOCIATES, INC.
4140 NW 37 Place, Suite A
Gainesville, Florida 32606
Certificate of Authorization #30066

Project No.: 02000-144-14

August 2014

TABLE OF CONTENTS

1.0 RECLAMATION AND CLOSURE STANDARDS

This Closure Plan is designed to comply with the Florida Department of Environmental Protection (FDEP) requirements of Rule 62-701.600, F.A.C. and the Pasco County Land Development Code (LDC) for Class I Mine reclamation and Class III landfill closure. The landfill will be used to reclaim the borrow pit excavation as phases are completed.

1.1 TIMING

Mine reclamation and landfill closure will commence when all cells have been filled. Reclamation and closure will be completed within four (4) months of commencement. An intermediate soil cover of at least one (1) foot in depth will be applied and maintained within seven (7) days of lift completion. If the landfill operator (Operator) wishes to deposit additional solid waste in the completed cell, all or part of the intermediate cover may be removed to place the waste or to install the final cover. Intermediate cover will be placed on completed landfill cells and sideslopes as filling progresses. Final cover will be installed upon each completed landfill cell within 180 days after attaining final elevation. The remaining Facility life is provided in Section 3.8.3 of the Engineering Report in Section 3.

1.2 STORMWATER MANAGEMENT

The Conceptual Closure Plan (Drawing Sheet C1.30 of the 2014 Plan Set provided in Appendix A) includes a site stormwater system comprised of three dry retention ponds. Stormwater runoff will sheetflow down the sideslopes of the landfill into the retention ponds. The Facility's overall stormwater management system is governed by the Mining Operations and ERP Permits. Grades and elevations vary based on the current mining operations and topography. As required by the Florida Department of Environmental Protection (FDEP), a detailed Closure Permit Application with stormwater conveyance systems will be submitted at the time of closure. The stormwater facilities will be constructed in accordance to the approved Closure Permit to prevent the offsite runoff of stormwater.

1.3 FINAL COVER SPECIFICATIONS

The construction of the final cover will consist of three main operations. First, on-site clayey sand and sandy clay soils will be utilized to construct a barrier layer. Secondly, a layer of soil capable of sustaining vegetation will be constructed. Finally, seeding and mulching, or sodding with "Argentine" Bahia grass, or equivalent, will then be performed to establish a permanent ground cover. Detailed specifications for each of these operations are described as follows:

1.3.1 Final Cover Design

All areas filled with waste will have a final cover of soil designed to minimize infiltration of rainfall. Final cover will be initiated with 30 days of reaching final grade and will be placed and completed over each cell within 180 days after final waste deposit. The final cover will consist of a 3-foot thick layer of soil, of which the bottom 18 inches is barrier layer and the top 18 inches will sustain vegetative growth. A detail is provided on Sheet C1.40 of the 2014 Plan Set provided in Appendix A.

1.3.2 Barrier Layer

The 18-inch barrier layer will have a permeability of 1 x 10^{-6} cm/sec or less. On site clayey sands will be used to construct the barrier layer. Once these soils have been placed and compacted in 6-inch lifts to 95% standard proctor, a series of *insitu* thickness tests and permeability tests will be completed prior to placement to of the vegetative soil layer.

1.3.3 Vegetative Soil Cover

An 18-inch layer of soil from the onsite borrow operation may be used, as the vegetative soil layer. These soils will sustain vegetative growth (grasses).

1.3.4 Grading and Compaction

Grading work will be performed as shown and specified on the construction plans, (Sheet C1.00 through C1.40 of the 2014 Plan Set provided in Appendix A). Final slopes will not exceed a 3:1 slope.

The Applicant will be responsible for grading within the landfill limits. All irregularities and low areas will be fine graded with onsite soil material. The Applicant will maintain grades, profiles and contours as indicated on the approved final grading plan. The Applicant will protect and maintain finish graded areas from traffic and erosion. In the event that the site grading is eroded and/or damaged prior to final acceptance, the Applicant will repair and reestablish the grades in accordance with the construction plans.

1.3.5 Construction Quality Assurance Plan

To assure that the landfill's final cover meets the design parameters, the following Construction Quality Assurance Plan (CQA) plan has been developed. This CQA plan will be under the direction of a Florida registered professional engineer experienced in geotechnical engineering or landfill cover construction. The engineer or his designee will be on-site at all times during construction of the cover to monitor construction activities. Field and laboratory testing during final cover construction will be by a qualified soil testing laboratory.

Prior to final cover construction, a suitable borrow source meeting the project specifications for the barrier layer will be determined. The Applicant plans to use on-site soils to meet these specifications. A minimum of three (3) representative samples from on-site soils will be submitted to a laboratory for index testing to quantify the variability of the borrow materials. The index tests will consist of percent fines (ASTM D-1140), Atterburg limits (ASTM D-4318), and moisture content (ASTM D-2216).

In addition, a minimum of three (3) laboratory hydraulic conductivity tests will be conducted on the barrier layer borrow source by ASTM D-5084 under a consolidation stress no greater than 10 pounds per square inch. The borrow source will only be considered suitable if the laboratory reports document a hydraulic conductivity of 1 x 10^{-6} cm/sec or less at the 95 percent confidence level.

The following field tests will be performed during final cover construction:

1. Density tests at a minimum of two tests per acre per 6-inch lift, of the compacted cover material;
2. Thickness measurements at a minimum of three tests per acre;
3. Index testing as previously discussed at a minimum of one sample per acre;
4. Hydraulic conductivity testing of Shelby tube samples (ASTM D-2937) of compacted barrier layer by laboratory test method ASTM D-5084 at a minimum frequency of one test every two acres. The barrier layers' hydraulic conductivity will be considered acceptable if laboratory reports meet the project specifications of 1×10^{-6} cm/sec or less at the 95 percent confidence level.

If laboratory test data for a cover section does not meet these requirements, additional random sample testing may be conducted to determine if the cover is acceptable to the Project Engineer, the cover section must be reworked or reconstructed to meet these requirements.

CQA reporting requirements will include: daily summary reports during cover construction; observation data sheets; problem identification and corrective actions taken; and final documentation, laboratory reports and construction record drawings. A final report with all such documents will be submitted to the Pasco County and the FDEP.

1.3.6 Seeding and Mulching

Seeding and mulching will consist of establishing a dense stand of grass throughout each closed cell. Included with this task are fertilizing, watering, and periodic maintenance mowing as required to produce a healthy stand of grass. Seeding work will be performed only after planting and other work affecting ground surface has been completed unless the Applicant is specifically requested to do otherwise for purposes of stabilization, etc., prior to project completion. The vegetation species recommended are drought resistant and their roots will not penetrate the final cover to provide a channel for moisture infiltration.

1.3.7 Materials

Seeds and mulch materials will conform to the following:

1. Seed - Fresh, clean new crop mixture composed of the following variety and proportions:

Blend	Parts	Purity	Min. Germination
Argentine Bahia (or equivalent)	100 Percent	80 Percent	90 Percent

Rate will be 120 pounds per acre (Refer to Index No.104, *Roadway and Traffic Design Standards*, Florida Department of Transportation, 1992).

2. Mulch - Dry mulch, free from mature seed bearings stalks or roots of noxious weeds. Dry mulch will be straw or hay consisting of oat, rye or wheat straw. Approximately two (2) inches of the mulch material will be applied uniformly over the seeded area

3. Fertilizer - Granular, non-burning product containing 6 percent nitrogen, 6 percent phosphoric acid, and 6 percent potash by weight, and spread uniformly at a rate of 220 pounds per acre. Fertilizer will be mixed with the soil to a depth of ± four (4) inches.

4. Watering - The seeded area will be watered so as to provide optimum growth conditions for the establishment of grass. The water used in the grassing operations may be obtained from any approved supply well, like Larkin's well on the adjacent property to the west. The water will be free of excess and harmful chemicals, acids, alkalis, or any substance which might be harmful to plant growth or obnoxious odors to traffic. Salt water will not be used.

The Applicant will provide a uniform dense stand of grass by watering, mowing and maintaining seeded areas for a thirty (30) year period after closure or until final acceptance by FDEP and the County, whichever is less. Sodding may be used as an alternative to seeding and mulching.

1.4 RECLAMATION APPROVAL

Approval of reclaimed areas (final cover) may be requested at any time by submitting such request to the County and the FDEP. The request will include a map specifying reclamation areas (final cover) for which approval is sought and a general description of how reclamation has been accomplished. The Applicant will coordinate and schedule the review of the reclaimed areas with the appropriate departments, divisions or agencies. Reclamation of the site will be deemed completed upon demonstration and agency approval that the site has been reclaimed in accordance with the approved reclamation plan.

1.5 INSPECTIONS

County and FDEP staff will have access to the project to inspect and observe permitted activities in order to determine compliance with the terms of the Closure Permit. The County and FDEP will also have access to the site during the post-closure phase of the project.

1.6 SURVEY MONUMENTS

Permanent concrete monuments will be installed to mark the boundaries of the landfill property. Where the final grade of the landfill is 20 feet or less above grade, permanent markers will be installed to outline the general waste filled area. The location and elevation of all markers will be tied to boundary markers by the professional performing the final survey and will be submitted on a site plan filed with the "Declaration to the Public."

1.7 FINAL SURVEY AND AS BUILT REPORTS

A final topographic survey will be performed by a Florida registered land surveyor to verify the final contours and elevations of the facility are in accordance with the plans as approved in the permit within 180 days after closure. This survey will be submitted to the FDEP along with the Certification of Closure Construction Completion on Form 62-701.900(2), F.A.C..

1.8 OFFICIAL DATE OF CLOSING

Upon receipt and approval of the Certification of Closure Construction Completion and the "Declaration to the Public", FDEP and the County will, within 30 days, acknowledge by letter to the facility operator, that notice of termination of operations and closing of the facility has been completed. The date of the letter will be the official Date of Landfill Closing for purposes of determining the Long Term Care Period.

1.9 CLOSURE SCHEDULE

The schedule for closure activities will be based on the time required to fill each cell to the final grades. Please refer to Sections 1.10 through 1.12 for closure milestones.

1.10 NOTICE AND ADVICE TO USERS

At least 90 days prior to the date when wastes will no longer be accepted at the landfill, the owner or operator will submit an application to advise users of the intent to close the facility by posting signs at the entrance of the facility giving the date of closing, the location of alternative disposal facilities and name of the entity responsible for closing the landfill. These signs will be maintained throughout the closing period. If unforeseen circumstances do not allow the 120 day notice to users, notice will be provided as soon as the need to close the facility becomes apparent.

1.11 NOTICE TO THE PUBLIC

Once closure construction has been completed, a Declaration to the Public will be filed in the deed records in the office of the Pasco County Clerk of Courts. The Declaration to the Public will include a legal description of the Class III Landfill property and a site plan showing the limits of waste. The Declaration to the Public will also include a notice that any future owner or user of the site should consult with the Department prior to planning or initiating any activity involving disturbing the landfill, monitoring system, or control structures. A certified copy of this notice will be filed with the FDEP.

1.12 CLOSURE PERMIT APPLICATION SUBMITTAL

A Closure Permit application will be submitted to Pasco County and the FDEP no less than 90 days prior to the scheduled closing day in accordance with the requirements of Rule 62-701.600, F.A.C..

The Closure Permit application will include the following: Closure Design Plan, Closure Operation Plan, Long-Term Care Plan, and proof of financial responsibility for long-term care period.

2.0 FINAL USE AND LONG TERM CARE

The proposed final use of the closed landfill will be as pastureland. The final use for the landfill site will exclude any buildings or other structures, unless such buildings and structures are specifically designed to address gas venting and settlement considerations associated with construction over a landfill. Long term care for the site will include maintaining the landscaping, security facilities, erosion control, filling subsidence areas, and maintaining the stormwater system for a period of thirty (30) years and maintaining the groundwater monitoring plan for a period of time established by the County or the FDEP. The Long-Term Care period may be extended if the closure design or operation plan is found to be ineffective, per Rule 62-701.620 F.A.C..

2.1 REPLACEMENT OF MONITORING DEVICES

If the monitoring wells or other devices required by the Groundwater Monitoring Plan are destroyed or fail to operate for any reason, the landfill Owner or Operator will, upon discovery, notify the FDEP and County in writing. All inoperative monitoring devices will be repaired or replaced with functioning devices within 60 days of the discovery of the malfunctioning unit.

2.2 LONG TERM MONITORING

Once the proposed Landfill facility is closed, groundwater and gas monitoring will continue for a period of up to 30 years with reports submitted to the County and the FDEP. Groundwater reports will be submitted semi-annually and gas monitoring reports will be submitted on a quarterly basis.

A Stabilization Report will be submitted to the Department every 5 years after the long-term care permit is issued. The Stabilization Report will include or address the following:

- Water quality technical report
- Waste subsidence
- Barrier layer effectiveness
- Stormwater management
- Gas production and management

2.3 FINAL COVER SYSTEM MAINTENANCE

Regular maintenance of all reclaimed areas will be performed by the Operator or a designated agent in order to assure that the reclamation standards are achieved and the approved reclamation plan is accomplished. The maintenance will include monitoring for a minimum of thirty (30) years after planting, replacement of any planted areas that fail to survive in accordance with the established standards, the removal of non-native species that have not been approved by the County, and the maintenance of all required slopes, final cover, embankments, ponds, fences, gates, signs, monitoring systems and stormwater facilities. The operator will maintain a stockpile on-site of approximately 60,000 cyds of cover material to be used for final cover maintenance.

The Operator will conduct monthly inspections of the facility. The site inspection will include the verification that the final cover system retains its integrity and effectiveness. The final cover will be routinely evaluated and inspected for any evidence of soil erosion, settlement and subsidence, exposed waste, cracks, ponded water, vegetation stress, slope failure, and seeps.

Deficiencies such as cracks, erosion damage, or settlement in the final cover will be evaluated regarding its extent and depth. Repairs and restoration will be consistent with the final cover construction specifications. Location of areas repaired will be identified on a site map for future reference. Areas requiring repeated repairs will be evaluated and considered for special or expanded improvements to retain the integrity and performance of the final cover system. If necessary, temporary berms, ditches, and erosion materials will be used to prevent further erosion damage or ponding on damaged soil cover areas until the site conditions permit the final cover areas and vegetation to be re-established. Preventative maintenance of the final cover should preclude problems arising from potential seeps from infiltration of surface water.

2.4 REVEGETATION

1. Revegetation of all disturbed areas will be conducted in a manner so as to achieve permanent revegetation which will minimize soil erosion and surface water runoff, conceal the effects of surface mining and recognize the requirements for appropriate habitat for fish and wildlife. Should washes, rills, gullies, or the like, develop after revegetation and before a thirty (30) year maintenance period, such eroded areas will be repaired, the slopes stabilized and revegetated, within thirty (30) days.
2. Good quality topsoil will be applied as the soil cover material for all reclaimed areas. Alternate growing media must be approved by the County prior to commencement of revegetation.
3. Revegetation efforts will commence within thirty (30) days after completion of regrading and will be completed within one hundred and twenty (120) days.

2.5 LANDFILL GAS MANAGEMENT SYSTEM

If the gas probes or other devices required by the landfill gas management system are destroyed or fail to operate for any reason, the landfill Operator will, upon discovery, notify the FDEP and County in writing. All inoperative monitoring devices will be repaired or replaced with functioning devices within 60 days of the discovery of the malfunctioning unit.

2.6 STORMWATER DRAINAGE SYSTEMS

Drainage control system problems can result in accelerated erosion of the final cover system and differential settlement of drainage control structures can limit their usefulness and may result in failure of the drainage structure. It is expected that the drainage facilities at the Facility will require a greater amount of maintenance in the period immediately following construction than in later periods. This is due to greater potential for differential settlement early in the post closure period and the lack of mature vegetation.

The Operator will inspect the drainage facilities for the following:

- Evidence of erosion
- Standing water
- Formation of gullies
- Settlement, blockage, and damage to drainage channels, structures, swales and culverts

Inspection of the drainage facilities will occur prior to and during the rainy season to ensure proper functioning. Surface areas will be inspected during dry periods and necessary repairs made prior to the rainy season. Inspections will include checking for erosional ruts and settlement cracks. In addition, inspections will be made after each major storm to ensure that all swales are functioning properly and that there is no ponding water. All swales, drainage channels, and retention ponds will be inspected on a regular basis for silt or debris build-up. Damage to the drainage system will be addressed immediately after finding a problem. Permanent repairs and restoration will be made consistent with final closure construction specifications. Temporary repairs may be utilized until permanent repairs can be scheduled.

2.7 REDUCED LONG-TERM CARE PERIOD

The owner of the landfill may apply to Pasco County and FDEP for a permit modification to reduce the long-term care schedule after a 10-year history after closure in accordance with Rule 62-701.620 (2), F.A.C..

2.8 RIGHT OF ACCESS AND ACCESS CONTROL

The Owner currently poses a right of access to the subject site. Any future owner or operator will maintain this right of access to the access route and the property for the life of the landfill and throughout the long-term care period. All owners/operators will maintain all security barriers (fencing, signage, gates) for the design life and long-term care period of the landfill.

2.9 CONTINGENCY PLAN FOR EMERGENCIES

If fires or severe weather events occur, the Operator will follow the procedures discussed in the Contingency Plan, Appendix I of the Engineering Report.

2.10 SUCCESSORS OF INTEREST

Any person or corporation acquiring rights or ownership, possession or operation of the proposed Class III landfill will be subject to all the requirements of the permit for the proposed facility. Any lease or transfer of property will include the following conditions:

1. The previous owner or operator responsible for closure will maintain proof of financial responsibility with the FDEP and Pasco County.

2. State the party responsible for continuance of monitoring, maintenance, and correction of problems.

3. Mineral rights to any recoverable materials buried at the landfill. Disturbance of a closed landfill will require a Department permit.

2.11 COMPLETION OF LONG-TERM CARE

Upon completion of the landfill's long-term care period, the Operator will notify the FDEP and Pasco County that a Professional Engineer certification has been placed in the landfill's operating record verifying that long-term care has been completed in accordance with the approved Closure and Long-term Care Plans.

3.0 FINANCIAL RESPONSIBILITY

Upon approval of the application, the owner or operator will provide financial assurance documentation for closure and post-closure costs. This financial assurance documents will be submitted prior to permit being issued. See Appendix F-1 for the Financial Assurance Cost estimates for the Class III landfill. Third party estimates for selected portions of the proposed work were used for the estimates. A financial assurance mechanism will be fully funded prior to the acceptance of any solid wastes at the proposed landfill.

3.1 ANNUAL COST ADJUSTMENTS

The Operator of the landfill will submit an annual cost adjustment statement of closure and long-term care costs certified by a Professional Engineer to the FDEP and Pasco County. These cost estimates will be revised for inflation and any changes in closure or corrective action plans.

ENGINEERING REPORT
APPENDIX F-1

FINANCIAL ASSURANCE COST ESTIMATES

Print Form Reset Form

Florida Department of Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

DEP Form # 62-701.900(28), F.A.C.
Form Title: Closure Cost Estimating Form For Solid Waste Facilities
Effective Date: January 6, 2010
Incorporated in Rule 62-701.630(3), F.A.C.

CLOSURE COST ESTIMATING FORM FOR SOLID WASTE FACILITIES

Date of DEP Approval: ____________

I. GENERAL INFORMATION:

Facility Name: Enterprise Class III Landfill and Recycling Facility WACS ID: 87895

Permit Application or Consent Order No.: 177982-020-SO/T3 Expiration Date: 7/9/2018

Facility Address: 41111 Enterprise Road, Dade City, Florida 33525

Permittee or Owner/Operator: Angelo's Aggregate Materials, LTD

Mailing Address: 855 28th Street South, St. Petersburg, Florida 33712

Latitude: 28 ° 19 ' 53 " Longitude: 82 ° 08 ' 06 "

Coordinate Method: Stat Plane Datum: NGVD 29

Collected by: ____________ Company/Affiliation Pickett Surveying

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Solid Waste Disposal Units Included in Estimate:

Phase / Cell	Acres	Date Unit Began Accepting Waste	Active Life of Unit From Date of Initial Receipt of Waste	If active: Remaining life of unit	If closed: Date last waste received	If closed: Official date of closing
1-7 and 13-16	81.7	2004	21	11	N/A	N/A

Total disposal unit acreage included in this estimate: Closure: ______ Long-Term Care: ______

Facility type: ☐ Class I ☒ Class III ☐ C&D Debris Disposal
(Check all that apply) ☐ Other: ____________

II. TYPE OF FINANCIAL ASSURANCE DOCUMENT (Check type)

☒ Letter of Credit* ☐ Insurance Certificate ☐ Escrow Account
☐ Performance Bond* ☐ Financial Test ☐ Form 29 (FA Deferral)
☐ Guarantee Bond* ☐ Trust Fund Agreement

* - Indicates mechanisms that require the use of a Standby Trust Fund Agreement

III. ESTIMATE ADJUSTMENT

40 CFR Part 264 Subpart H as adopted by reference in Rule 62-701.630, Florida Administrative Code, (F.A.C.) sets forth the method of annual cost estimate adjustment. Cost estimates may be adjusted by using an inflation factor or by recalculating the maximum costs of closure in current dollars. Select one of the methods of cost estimate ajustment below.

☐ **(a) Inflation Factor Adjustment** ☐ **(b) Recalculated or New Cost Estimates**

Inflation adjustment using an inflation factor may only be made when a Department approved closure cost estimate exists and no changes have occurred in the facility operation which would necessitate modification to the closure plan. The inflation factor is derived from the most recent Implicit Price Deflator for Gross National Product published by the U.S. Department of Commerce in its survey of Current Business. The inflation factor is the result of dividing the latest published annual Deflatory by the Deflator for the previous year. The inflation factor may also be obtained from the Solid Waste website www.dep.state.fl.us/waste/categories/swfr or call the Financial Coordinator at (850) 245-8706.

This adjustment is based on the Department approved closing cost estimate dated: ____________

Latest Department Approved **Closing Cost** Estimate:		Current Year Inflation Factor, ***e.g. 1.02***		Inflation Adjusted Closing Cost Estimate:
____________	×	______	=	____________

This adjustment is based on the Department approved long-term care cost estimate dated: ____________

Latest Department Approved Annual **Long-Term Care** Cost Estimate:		Current Year Inflation Factor, ***e.g. 1.02***		Inflation Adjusted Annual Long-Term Care Cost Estimate:
____________	×	______	=	____________

Number of Years of Long Term Care Remaining: × ____________

Inflation Adjusted Long-Term Care Cost Estimate: = ____________

Signature by: ☐ **Owner/Operator** ☐ **Engineer** (check what applies)

____________ Signature	____________ Address
____________ Name & Title	____________ City, State, Zip Code
____________ Date	____________ E-Mail Address
____________ Telephone Number	

IV. ESTIMATED CLOSING COST (check what applies)

☒ **Recalculated Cost Estimate** ☐ **New Facility Cost Estimate**

Notes: 1. Cost estimates for the time period when the extent and manner of landfill operation makes closing most exp

2. Cost estimate must be certified by a professional engineer.

3. Cost estimates based on third party suppliers of material, equipment and labor at fair market value.

4. In some cases, a price quote in support of individual item estimates may be required.

Description	Unit	Number of Units	Cost / Unit	Total Cost
1. Proposed Monitoring Wells	**(Do not include wells already in existence.)**			
	EA			
		Subtotal Proposed Monitoring Wells:		
2. Slope and Fill (bedding layer between waste and barrier layer):				
Excavation	CY			
Placement and Spreading	~~CY~~ AC	81.7	$1,200.00	$98,040.00
Compaction	CY			
Off-Site Material	CY			
Delivery	CY			
			Subtotal Slope and Fill:	$98,040.00
3. Cover Material (Barrier Layer):				
Off-Site Clay	CY	202,229	$9.00	$1,820,061.00
Synthetics - 40 mil	SY			
Synthetics - GCL	SY			
Synthetics - Geonet	SY			
Synthetics - Other (explain)				
			Subtotal Cover Material:	$1,820,061.00
4. Top Soil Cover:				
Off-Site Material	CY	202,229	$4.25	$859,473.25
Delivery	CY			
Spread	CY			
			Subtotal Top Soil Cover:	$859,473.25
5. Vegetative Layer				
Sodding	SY			
Hydroseeding	AC	81.7	$9.75	$796.58
Fertilizer	AC			
Mulch	AC			
Other (explain)		4	$500.00	$2,000.00
			Subtotal Vegetative Layer:	$2,796.57
6. Stormwater Control System:				
Earthwork	CY			
Grading	SY			
Piping	LF			
Ditches	LF			
Berms	LF			
Control Structures	EA			
Other (explain)				
		Subtotal Stormwater Control System:		

Description	Unit	Number of Units	Cost / Unit	Total Cost
7. Passive Gas Control:				
Wells	~~EA~~ LF	550	$93.00	$51,150.00
Pipe and Fittings	LF			
Monitoring Probes	EA			
NSPS/Title V requirements	LS	1		
			Subtotal Passive Gas Control:	$51,150.00
8. Active Gas Extraction Control:				
Traps	EA			
Sumps	EA			
Flare Assembly	EA			
Flame Arrestor	EA			
Mist Eliminator	EA			
Flow Meter	EA			
Blowers	EA			
Collection System	LF			
Other (explain)				
			Subtotal Active Gas Extraction Control:	
9. Security System:				
Fencing	LF			
Gate(s)	EA			
Sign(s)	EA			
			Subtotal Security System:	
10. Engineering:				
Closure Plan Report	LS	1	$25,000.00	$25,000.00
Certified Engineering Drawings	LS	1	$18,000.00	$18,000.00
NSPS/Title V Air Permit	LS	1		
Final Survey	LS	1	$4,700.00	$4,700.00
Certification of Closure	LS	1	$15,000.00	$15,000.00
Other (explain)				
			Subtotal Engineering:	$62,700.00

Description	Hours	Cost / Hour	Hours	Cost / Hour	Total Cost
11. Professional Services					
	Contract Management		Quality Assurance		
P.E. Supervisor					
On-Site Engineer					
Office Engineer					
On-Site Technician					
Other (explain)	1	$113,9!	1	$199,4:	$313,383.00

Description	Unit	Number of Units	Cost / Unit	Total Cost
Quality Assurance Testing	LS	1	$29,583.75	$29,583.75
			Subtotal Professional Services:	$342,966.75

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Subtotal of 1-11 Above:	$3,237,187.58
12. Contingency 10 % of Subtotal of 1-11 Above	$323,718.76
Subtotal Contingency:	$323,718.76
Estimated Closing Cost Subtotal:	$3,560,906.33

Description	**Total Cost**
13. Site Specific Costs	
Mobilization	$130,000.00
Waste Tire Facility	
Materials Recovery Facility	$900.00
Special Wastes	
Leachate Management System Modification	
Other (explain)	
Subtotal Site Specific Costs:	$130,900.00

TOTAL ESTIMATED CLOSING COSTS ($): $3,691,806.33

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V. ANNUAL COST FOR LONG-TERM CARE

See 62-701.600(1)a.1., 62-701.620(1), 62-701.630(3)a. and 62-701.730(11)b. F.A.C. for required term length. For landfills certified closed and Department accepted, enter the remaining long-term care length as "Other" and provide years remaining.

(Check Term Length) ☐ 5 Years ☐ 20 Years ☒ 30 Years ☐ Other, ___ Years

Notes: 1. Cost estimates must be certified by a professional engineer.

2. Cost estimates based on third party suppliers of material, equipment and labor at fair market value.

3. In some cases, a price quote in support of individual item estimates may be required.

All items must be addressed. Attach a detailed explanation for all entries left blank.

Description	Sampling Frequency (Events / Year)	Number of Wells	(Cost / Well) / Event	Annual Cost
1. Groundwater Monitoring [62-701.510(6), and (8)(a)]				
Monthly	12			
Quarterly	4			
Semi-Annually	2	23	$478.26	$21,999.96
Annually	1			
		Subtotal Groundwater Monitoring:		$21,999.96
2. Surface Water Monitoring [62-701.510(4), and (8)(b)]				
Monthly	12			
Quarterly	4			
Semi-Annually	2			
Annually	1			
		Subtotal Surface Water Monitoring:		
3. Gas Monitoring [62-701.400(10)]				
Monthly	12			
Quarterly	4	10	$100.00	$4,000.00
Semi-Annually	2			
Annually	1			
		Subtotal Gas Monitoring:		$4,000.00
4. Leachate Monitoring [62-701.510(5), (6)(b) and 62-701.510(8)c]				
Monthly	12			
Quarterly	4			
Semi-Annually	2			
Annually	1			
Other (explain) ________				
		Subtotal Leachate Monitoring:		

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
5. Leachate Collection/Treatment Systems Maintenance				
Maintenance				
Collection Pipes	LF			
Sumps, Traps	EA			
Lift Stations	EA			
Cleaning	LS	1		
Tanks	EA			

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
5. (continued)				
Impoundments				
Liner Repair	SY			
Sludge Removal	CY			
Aeration Systems				
Floating Aerators	EA			
Spray Aerators	EA			
Disposal				
Off-site (Includes transportation and disposal)	1000 gallon			
		Subtotal Leachate Collection / Treatment Systems Maintenance:		
6. Groundwater Monitoring Well Maintenance				
Monitoring Wells	LF			
Replacement	EA	1	$3,500.00	$3,500.00
Abandonment	EA			
		Subtotal Groundwater Monitoring Well Maintenance:		$3,500.00
7. Gas System Maintenance				
Piping, Vents	LF			
Blowers	EA			
Flaring Units	EA			
Meters, Valves	EA			
Compressors	EA			
Flame Arrestors	EA			
Operation	LS	1	$2,500.00	$2,500.00
		Subtotal Gas System Maintenance:		$2,500.00
8. Landscape Maintenance				
Mowing	AC	326.6	$41.09	$13,419.99
Fertilizer	AC			
		Subtotal Landscape Maintenance:		$13,419.99
9. Erosion Control and Cover Maintenance				
Sodding	SY			
Regrading	AC			
Liner Repair	SY	1	$7,500.00	$7,500.00
Clay	CY			
		Subtotal Erosion Control and Cover Maintenance:		$7,500.00
10. Storm Water Management System Maintenance				
Conveyance Maintenance	LS	1	$3,000.00	$3,000.00
		Subtotal Storm Water Management System Maintenance:		$3,000.00
11. Security System Maintenance				
Fences	LS	1	$3,000.00	$3,000.00
Gate(s)	EA			
Sign(s)	EA			
		Subtotal Security System Maintenance:		$3,000.00

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
12. Utilities	LS	1	$1,200.00	$1,200.00
			Subtotal Utilities:	$1,200.00
13. Leachate Collection/Treatment Systems Operation				
Operation				
P.E. Supervisor	HR			
On-Site Engineer	HR			
Office Engineer	HR			
OnSite Technician	HR			
Materials	LS	1		
			Subtotal Leachate Collection/Treatment Systems Operation:	
14. Administrative				
P.E. Supervisor	HR			
On-Site Engineer	HR			
Office Engineer	HR	112	$70.00	$7,840.00
OnSite Technician	HR			
Other 5-Year Report	LS	1	$4,500.00	$4,500.00
			Subtotal Administrative:	$12,340.00
			Subtotal of 1-14 Above:	$72,459.95
15. Contingency	10	% of Subtotal of 1-14 Above		$7,246.00
			Subtotal Contingency:	$7,246.00

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
16. Site Specific Costs				
			Subtotal Site Specific Costs:	

ANNUAL LONG-TERM CARE COST ($ / YEAR): $79,705.95

Number of Years of Long-Term Care: 30

TOTAL LONG-TERM CARE COST ($): $2,391,178.48

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VI. CERTIFICATION BY ENGINEER

This is to certify that the Cost Estimates pertaining to the engineering features of this solid waste management facility have been examined by me and found to conform to engineering principles applicable to such facilities. In my professional judgment, the Cost Estimates are a true, correct and complete representation of the financial liabilities for closing and/or long-term care of the facility and comply with the requirements of Rule 62-701.630 F.A.C. and all other Department of Environmental Protection rules, and statutes of the State of Florida. It is understood that the Cost Estimates shall be submitted to the Department annually, revised or adjusted as required by Rule 62-701.630(4), F.A.C.

______________________ Signature	4140 NW 37th Place, Suite A Mailing Address
Lisa Baker, P.E. Name and Title (please type)	Gainesville, FL, 32606 City, State, Zip Code
06/27/2014 Date	lisa@locklearconsulting.com E-Mail address (if available)
______________________ Florida Registration Number (please affix seal)	(352) 672-6867 Telephone Number

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VII. SIGNATURE BY OWNER/OPERATOR

______________________ Signature of Applicant	855 28th Street South Mailing Address
John Arnold, P.E. Name and Title (please type)	St. Petersburg, FL 33712 City, State, Zip Code
john.phillip.arnold@gmail.com E-Mail address (if available)	(813) 477-1719 Telephone Number

ENGINEERING REPORT
APPENDIX G

STORMWATER MANAGEMENT PLAN

STORMWATER MANAGEMENT PLAN FOR ENTERPRISE ROAD RECYLING AND DISPOSAL FACILITY DADE CITY, PASCO COUNTY, FLORIDA

Prepared for:

ANGELO'S AGGREGATE MATERIALS, LTD
855 28th Street South
St. Petersburg, Florida 33712

Presented to:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHWEST DISTRICT – STORMWATER DIVISION
13051 N. Telecom Parkway
Temple Terrace, Florida 33637

Prepared by:

LOCKLEAR & ASSOCIATES, INC.
4140 NW 37 Place, Suite A
Gainesville, Florida 32606
Certificate of Authorization #30066

Project No.: 02000-144-14

July 2014

Lisa J. Baker, P.E.
Florida PE #74652

TABLE OF CONTENTS

1.0 PROJECT SUMMARY

A new Environmental Resource Permit (ERP) application is being submitted on behalf of Angelo's Aggregate Materials, LTD (Applicant) for the Enterprise Road Recycling and Disposal Facility (Facility) by Locklear & Associates, Inc. (L&A) The Facility was previously permitted under Florida Department of Environmental Protection (FDEP) ERP number 51-0172489 which has expired; therefore a new permit application is required. The proposed master stormwater management system design is in accordance with the previously permitted design criteria and parameters for the proposed site modifications.

The site is an existing permitted Class III landfill with associated office trailer, scalehouse, perimeter maintenance road and overall site stormwater management system. On-site soils are excavated in accordance with the current Pasco County Class I mining permit and are used for on-site road base and landfill filling operations. The landfill footprint boundary is currently divided into fifteen (15) individual landfill cells. As new cells are excavated and constructed, the cells are over excavated to approximately three-feet (3') below the approved excavation base grade. Stockpiled clay obtained from on-site excavations are used as the three-foot (3') thick compacted landfill cell floor and exterior cell side slope clay barrier layer in accordance with FDEP Solid Waste Permit number 177982-019-SC/T3. Stormwater runoff from the interior of the excavation and filling area is diverted to the onsite storage pond using a temporary interior swale and six-foot (6') high berm. Cell perimeter berms direct stormwater away from excavation and filling areas and to the designated stormwater facilities. Upon landfill closure, the final cover will be constructed. The final closure shall be graded to promote positive drainage to the designated stormwater management facilities.

The proposed stormwater management plan consists of three (3) retention ponds (Ponds 1, 2 and 3) constructed within the 200-foot setback along the south, east and northern property boundaries respectively. The stormwater facilities are designed to retain 100% of the post-developed runoff from the 100-year, 24-hour storm event as required by FDEP and Pasco County. Runoff from the landfill will be conveyed via sheet flow to the designated retention ponds.

The proposed stormwater management system is designed based on criteria that meets or exceeds the requirements specified by the FDEP and the Pasco County Land Development Codes. The site does not contain delineated wetlands therefore; NO impacts of wetlands are anticipated by the proposed site development modifications. See Appendix B of the Engineering Report for Figure 3 – Wetlands Map.

1.1 PRE-APPLICATION MEETING

A pre-application meeting was held on May 15, 2014 with FDEP staff, Applicant and L&A staff to discuss design concepts associated with the modified stormwater management system. The following is a summary of the key issues related to the permit application based on that meeting:

1. The permit application will be for a new ERP since the previous ERP for the facility has expired.
2. The stormwater management system will be designed to address stormwater for the entire 160+/- acre site.
3. The stormwater management system will not include off-site discharge.
4. The stormwater management system will include three stormwater ponds: (1) existing Pond 1; (2) existing Pond 2; and (3) new Pond 3.
5. The existing "Temporary Pond 3" will be eliminated from the stormwater management system.
6. Florida Statutes and the Florida Administrative Code related to ERPs do not include prohibitions regarding co-mingling of "leachate" or contact water with stormwater. Therefore, Pond 3 will be designed to receive "leachate", contact water and stormwater.
7. Pond 3 will be designed with a base of 3 feet of compacted clay. The clay will be placed in the bottom of the pond as well as a portion of the side walls. The clay will be from on-site materials which generally demonstrate an effective in-place permeability ranging from 10^{-5} to 10^{-7} cm/sec.
8. All stormwater ponds will be designed such that the bottom of the pond will be above the Season High Groundwater Table (SHGWT).
9. The stormwater management system design calculations shall be for the 100-year, 24-hour storm event.
10. Freeboard is not required for stormwater management systems that do not discharge off-site, however FDEP would prefer to see a minimum of 1-foot of freeboard if possible.
11. The permit application fee will be $9,000 for a facility that is in-between 100 and 640 acres.

2.0 GEOTECHNICAL SUMMARY

The subsurface conditions were explored for the original permitting of the landfill and stormwater management system by Universal Engineering Sciences, Inc. (UES) dated May 5, 2000. Subsequent investigations and site visits have occurred in support of modifications related to the landfill footprint and design. Please see Appendix D for a copy of UES's recent documentation review and certification of historical geotechnical reports and recommendations.

2.1 SITE SOILS

According to the Soil Survey of Pasco County, Florida, published by the U.S. Department of Agriculture Soil Conservation Services (USDA-SCS), the majority of the subject site and surrounding areas are covered by fine sands. A copy of the USDA-SCS Soils Survey Map showing the mapped areas of the major soil types at the subject site and its vicinity is presented in Figure 10 of Appendix B of the Engineering Report.

USDA-SCS soil type 12- Astatula fine sands encompass a small portion in the northeast portion of the site. Astatula sands are nearly level to gently sloping, and excessively drained mainly in the sandhills. Seasonal high water table (SHWT) is typically at a depth of 72 inches in Astatula soil. The permeability is very rapid throughout the soil. Both the available water capacity and natural fertility of the Astatula soil are low.

USDA soil type 32 - Lake fine sands comprise the majority of the soils found on the property. These soils are nearly level to gently sloping and excessively well drained. They occur along ridgetops and on low hillsides in the uplands. Permeability is rapid throughout the soil and the water table is below a depth of 120 inches. The available water capacity is very low in all layers and the natural fertility and organic matter content are both low.

USDA soil type 72 - Orlando fine sands are found in a small area in the northeast portion of the property. These soils are nearly level to gently sloping and well drained. The water table is typically at a depth greater than 72 inches with permeability of the soil rapid throughout. The available water capacity is low in the surface layer and very low in the other layers.

2.2 GROUNDWATER

From the previously permitted stormwater management plan, the following information was used for modeling hydraulic conductivity.

The Soil Conservation Service Soil Survey of Pasco County states the permeability of Lake Fine Sands as 6 to 20 inches/hour. Laboratory analysis by UES determined the vertical hydraulic conductivity (K_V) for the sand material found within the project site as 8 feet/day. The horizontal permeability value is usually calculated as two (2) times the vertical permeability (i.e.,

K_H = 16 feet/day). The value used in the Ponds analyses (10 feet/day) is below the 16 feet/day value of the K_H calculated, which is providing for the safety factor.

2.3 INPUT PARAMETERS FOR SATURATED CONDITIONS

From the historical geotechnical analyses, groundwater monitoring analysis and the previously permitted stormwater management system design; the proposed stormwater management plan is designed based on the following parameters:

o Average Vertical Unsaturated Infiltration Rate:	8.00 ft/day
o Average Horizontal Hydraulic Conductivity:	10.00 ft/day
o Average Elevation of Water Table:	72.00 ft
o Base of Aquifer Elevation:	47.00 ft
o Depth of Confining Layer:	NA
o Fillable Porosity:	22%

3.0 DRAINAGE SUMMARY

3.1 PRE-DEVELOPMENT DRAINAGE

The following pre-development drainage summary is based on the approved post-development stormwater management plan permitted under FDEP ERP number 51-0172489 which has expired. The permitted stormwater management plan for the landfill consisted of berms, swales, one (1) temporary stormwater pond and three (3) permanent stormwater ponds. The stormwater facilities were designed to retain the 100-year, 24-hour storm volume. The final grading plan divided the site into three (3) drainage basin boundaries as follows:

Drainage Basin Boundary 1:
On-site Area 51.63 acres
Off-site Area 1.43 acres

Drainage Basin Boundary 2:
On-site Area 22.28 acres

Drainage Basin Boundary 3:
On-site Area 57.09 acres
Off-site Area 13.27 acres

Three permanent ponds were designed to be constructed within the 200-foot landfill setback to divert, collect and contain stormwater runoff from the completed site. Currently, permanent ponds one (1) and two (2) are constructed to retain the existing landfill footprint area runoff. Stormwater from the active landfill areas is managed by an internal temporary pond with the capacity to retain the 100-year, 24-hour storm volume. Once landfilling reached the northern property boundary, permanent pond three (3) was designed to replace the temporary pond and contain the runoff from drainage basin boundary three (3). The temporary stormwater pond was constructed with a three-foot (3') thick confining layer in accordance with the FDEP landfill construction permit. The perimeter swales and ponds surrounding the landfill prevent stormwater from leaving the property.

3.2 POST-DEVELOPMENT DRAINAGE

The proposed stormwater management plan maintains the previously permitted design parameters for the overall site. The plan calls for total on-site retention of post-developed runoff from the 100-year 24-hour storm (12.96 inches). Runoff from the site will be conveyed via sheet flow, ditches, pipes and culverts to the designated drainage basin retention pond.

The following lists the proposed modifications to the existing permitted stormwater management system:

1) Redefine drainage basin boundaries one (1), two (2) and three (3);
2) Increase size of existing permitted ponds one (1), two (2) and three (3);
3) Remove temporary stormwater pond;
4) Redesign Pond 3 to have a three-foot (3') thick compacted clay bottom continuing three-feet (3') up the pond side slopes for additional attenuation resulting from any mixing of leachate from the Class III landfill.

Drainage basin boundary and pond characteristics are provided below in Section 3.3.

3.3 DRAINAGE DESIGN CRITERIA

In accordance with the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Pasco County 1996; the site is located in Flood Zone X defined as areas of minimal flooding. The site does not contain delineated wetlands therefore; NO impacts to wetlands are anticipated by the proposed development. See Appendix B of the Engineering Report for Figure 3 – Wetlands Map and Figure 7 – Flood Zone Map.

The stormwater water management system was designed using the SCS Runoff Curve Number for total on-site retention of post-developed runoff from the 100-year 24-hour. Runoff from the site will be conveyed via sheet flow, pipes and ditches to the designated drainage basin stormwater pond. Analysis of the maximum stage and recovery period for the retention ponds neglected the effects of evaporation and were conservatively estimated using infiltration rates based on the results from the previously permitted stormwater management plan.

3.3.1 TREATMENT VOLUME

The water quality treatment volume required by FDEP and Pasco County land development codes for the site is the volume for the 100 year-24 hour storm. One hundred percent of the post-development volume is being retained, resulting in approximately 36.38 acre-feet for Drainage Basin Boundary-1 (DA-1); 9.89 acre-feet for Drainage Basin Boundary-2 (DA-2) and 38.61 acre-feet for Drainage Basin Boundary-3 (DA-3).

Stage-storage calculations show that a total stormwater treatment volume of 43.54 acre-feet is provided in Pond 1; 12.38 acre-feet in Pond 2 and 42.38 acre-feet in Pond 3. Therefore, the required stormwater treatment volume is available in the stormwater management system.

Pond 3 is designed with a base of three (3) feet of compacted clay. The clay will be placed in the bottom of the pond as well as a portion of the side walls. The compacted clay barrier provides additional attenuation resulting from any contact of leachate from the Class III landfill.

3.3.2 RECOVERY TIME

Recovery of the ponds was modeled using PONDS version 3.3. Model input and results are included in Attachment 4 and summarized in the following sections.

Drainage Basin #1

The maximum anticipated stage for the proposed system is 102.72 feet NGVD, which is approximately 1.28 feet below the top of bank elevation of 104.00 feet NGVD. Stormwater input parameters were based on information provided in Section 2.3.

Pond 1 retention recovery results:
- Cumulative Inflow Volume: 1,584,799 (ft3)
- 72 hour (3 days) Stage Elevation: 81.03 (ft datum)
- 360 hour (15 days) Stage Elevation: 76.57 (ft datum)
- 720 hour (30 days) Stage Elevation: 75.27 (ft datum)

Drainage Basin #2

The maximum anticipated stage for the proposed system is 93.81 feet NGVD, which is approximately 1.19 feet below the top of bank elevation of 95.00 feet NGVD. Stormwater input parameters were based on information provided in Section 2.3.

Pond 2 retention recovery results:
- Cumulative Inflow Volume: 430,953 (ft3)
- 72 hour (3 days) Stage Elevation: 79.58 (ft datum)
- 360 hour (15 days) Stage Elevation: 75.61 (ft datum)
- 720 hour (30 days) Stage Elevation: 74.46 (ft datum)

Drainage Basin #3

The maximum anticipated stage for the proposed system is 88.29 feet NGVD, which is approximately 0.71 feet below the top of bank elevation of 89.00 feet NGVD. Stormwater input parameters were based on information provided in Section 2.3.

Pond 3 retention recovery results:
- Cumulative Inflow Volume: 1,682,035 (ft3)
- 72 hour (3 days) Stage Elevation: 83.32 (ft datum)
- 360 hour (15 days) Stage Elevation: 79.62 (ft datum)
- 720 hour (30 days) Stage Elevation: 77.48 (ft datum)

4.0 OPERATION AND MAINTENANCE SUMMARY

Operation and maintenance of the stormwater system will be performed the facility Operator. Maintenance of the system includes, but is not limited to: Retention/Detention areas size, volume and elevation will be maintained; Inlet and outlet structures will be maintained to their design capacity; Periodic cleaning of the facilities will be conducted, including removing sediment, silt deposits, debris and other matter that would normally impact the facilities function; Filtration systems, underdrains and other features as applicable will be checked periodically and cleaned (flushed) and/or replaced as necessary to function as designed; Any changes in on-site conditions (flooding, high water table, etc.) will be reported to the permitting authority.

ENGINEERING REPORT
APPENDIX H

OPERATIONS PLAN

ENTERPRISE ROAD CLASS III RECYCLING AND DISPOSAL FACILITY
PERMIT MODIFICATION
LANDFILL OPERATIONS PLAN

Prepared for:

ANGELO'S AGGREGATE MATERIALS, LTD
855 28th Street South
St. Petersburg, Florida 33712

Prepared by:

LOCKLEAR & ASSOCIATES, INC.
4140 NW 37th Place, Suite a
Gainesville, Florida 32606

August 2014

Performed Under the
Supervision of

____
Lisa J. Baker, P.E.
Florida PE #74652

ENTERPRISE RECYCLING AND DISPOSAL FACILITY
OPERATIONS PLAN

TABLE OF CONTENTS

ATTACHMENTS

1.0 DESIGNATION OF RESPONSIBLE PERSON(S) AND REFERENCES

Mr. John Arnold, P.E. is designated by Angelo's Aggregate Materials, LTD. (Applicant) as the individual responsible for operation and maintenance of the Enterprise Road Class III Recycling and Disposal Facility (Facility) in accordance with Rule 62-701.500, F.A.C.. All correspondence and inquiries concerning the Facility permits and operation should be addressed to him at:

Mr. John Arnold, P.E.
Angelo's Aggregate Materials, LTD.
855 28th Street South
St. Petersburg, Florida 33712
Telephone: (813) 477-1719

Updated plan sheets and figures are provided in Appendices A and B of the July 2014 Engineering Report, respectively.

2.0 LANDFILL SITE IMPROVEMENTS

The 160 acre landfill site is also permitted by Pasco County to be a Class I mine (Pasco County Petition #CU04-26, approved 9/23/2004). The following site improvements have been installed to continue operation of the Class III Landfill.

2.1 <u>Facilities</u>

An office trailer (gate house) is located onsite for the gate attendant. This trailer has hand washing and toilet facilities. Bottled potable water is used to provide drinking water for the trailer. Electric and telephone services are available to the trailer office. Site entrance improvements also include an all-weather entrance roadway, scales and perimeter road as shown on the Sheet C0.02 of the 2014 Plan Set provided in Appendix A of the Engineering Report.

2.2 <u>Primary Haul Routes</u>

The primary haul routes used to reach the Facility are U.S. 301, S.R. 52, C.R. 35A, U.S. 98, and Clinton Avenue. These routes lead to Enterprise Road, which is used to access the facility.

Enterprise Road was improved by the Applicant to an all-weather, paved access roadway from C.R. 35A to Auton Road. Enterprise Road is a Pasco county owned roadway that is maintained by the county. The Facility has an all-weather, paved access roadway that will be maintained by the Applicant to provide adequate access at all times.

2.3 Effective Barrier

The existing Facility property previously had a five-foot high wire fence along the perimeter of the site. A 6-foot security fence has been constructed along the south and east boundaries. The security fence consists of a 6-foot high galvanized chain link fence, hereafter referred to as the "security fence." The five-foot wire fence still exists along the north and west property boundaries. The chain link fence has been installed in accordance with permit issuance in October, 2001. Three (3) foot square "NO TRESSPASSING" signs with five-inch letters has been installed at no less than 500-feet spacing and at all corners to notice unauthorized access. The only point of access into the landfill site will be through the ticket gate at the entrance. This gate will be locked during closed hours.

An 8-foot high landscape berm has been constructed along the frontages of Enterprise and Auton roads as a visual and noise buffer.

3.0 OPERATING HOURS

The landfill will have the following operating hours:

Day	Hours of Operation
Monday through Friday	7:00 am to 6:00 pm
Saturday	7:00 am to 2:00 pm

Operational hours may be extended periodically to meet special requests of customers, but at no time will normal operating hours extend beyond 7:00 A.M. to 7:00 P.M. Monday through Saturday. Waste will not be accepted during non-daylight hours.

4.0 CONTINGENCY OPERATIONS

If a natural disaster occurs at the facility rendering it unusable, the waste accepted at the Facility would be rerouted to another permitted landfill. If a storm occurs within the surrounding community, storm debris waste will also be accepted at the facility, providing additional staff if required. In terms of equipment breakdown, there will be two operating pieces of equipment for all stages of landfill operation. Currently, Angelo's has on-site two compactors [Cat 826 (2)], two loaders (Cat 950, Cat 980), two dozers (Cat D5, Cat D8), four excavators [John Deere 450 (2), Komatsu PC1100, Komatsu PC300], and two articulated dump trucks (Volvo). If both should breakdown, replacements can be rented or substituted from onsite or offsite within 24 hours.

The site access roads will be constructed to allow passage of vehicles under all expected weather conditions. See Appendix I for the Contingency Plan.

5.0 WASTE STREAM QUALITY CONTROL PLAN

5.1 Visual Inspection

An estimated 550 tons of Class III waste material is currently received at the facility daily. Materials brought onto the Enterprise Road Class III RDF site will be inspected three times. The first inspection takes place at the site entrance. The site will only accept Class III debris (which includes construction and demolition debris by definition); therefore, any vehicles hauling unacceptable waste can be turned away by the attendant at the ticket gate. The gate attendant will question all waste carriers as to the character and origination of their wastes. A mirror is installed overhead and angled to allow gate inspection of all loads after they are untarped. A video camera has been installed over the scale location that allows the gate attendant to visually screen all carrier loads prior to disposal, mainly to identify fire or smoking loads. For loads that are not accepted, a Rejected Load Form will be completed.

The second inspection is a visual inspection that will occur at the working face by a certified, trained spotter. The spotter stationed at the working face will be responsible for spotting trucks bringing in disposal loads. The spotter will show the drivers where to unload, and will also inspect the trucks to make sure unacceptable materials are not unloaded. The spotter will have the authority to ensure that unacceptable materials are reloaded on the truck the material was brought in on.

The third inspection will occur as the waste is spread by the equipment operator. Any unacceptable wastes observed will be placed in the appropriate container located at the working face. The equipment operator may also serve as the spotter and will perform both visual inspections - as the waste is unloaded and as the waste is spread.

The facility will deploy and use spotters based on the volume of waste disposed at the working face. No more than two loads will be allowed to dump simultaneously per spotter at the working face.

5.2 Documentation of Waste Received

Documentation includes recording the name of the company disposing of the waste, driver's signature/information, all vehicle identification numbers, quantity of waste (tons), and type of waste (to meet FDEP and Pasco County's requirements). All vehicles entering the landfill will be weighed. The type of material and location from which the waste was generated will be recorded. This provides a record for tracing ownership of individual loads. See Landfill Operating Records, Section 19.2 for more details.

5.3 Contingency for Unacceptable Materials

If unacceptable waste materials are delivered to the landfill, the truck will be refused entry after inspection at the gate. If the unacceptable waste materials are observed by a spotter while unloading, they will be reloaded onto the delivery vehicle. Should the vehicle leave before the unacceptable waste has been discovered, Enterprise Road Class III RDF personnel will place the unacceptable material into an appropriate container located at the working face. A maximum of 20 cubic yards of covered dumpster storage for Class I waste will be provided near the active face of the landfill, as shown on Drawing C0.03 of the 2014 Plan Set provided in Appendix A of the Engineering Report. These containers are transported by Central Carting Disposal (or other qualified vendor) to a disposal facility permitted to accept Class I material. The covered storage containers will control vectors and odors and Class I waste will be removed within 30 days of discovery. If the storage containers cannot be secured to control vectors and odors, the putrescible waste will be stored no longer than 48-hours.

Unacceptable nonputrescible, non-hazardous wastes, such as batteries, paint, chemicals or similar items that are inadvertently accepted will be removed when observed and stored in a roll-off container or pile at the working face and removed daily to a lockable storage unit. A maximum of 40 cubic yards of stored unacceptable, nonputrescible, non-hazardous wastes may be provided near the active face of the landfill, as shown on Drawing C0.03 of the 2014 Plan Set provided in Appendix A of the Engineering Report. These materials will be removed from the site at least every 30 days (sooner if required) by City Environmental (or other qualified vendor) and taken to their facility for processing and proper disposal. This plan should meet the inspection needs for the site to prevent disposal of unacceptable wastes.

If suspect regulated hazardous wastes are identified by operators or spotters by random load inspection or discovered deposited at the landfill, the FDEP will be notified promptly, as well as the hauler and generator of the wastes, if known. The area where the hazardous wastes are stored will immediately be secured from public access. If the generator or hauler cannot be identified, Enterprise Road Class III RDF will assume the cleanup, transportation and disposal of the waste at a permitted hazardous waste management facility.

5.4 Acceptable and Unacceptable Class III Landfill Waste Materials

The Enterprise Road Class III RDF will accept only those solid wastes as defined in Rule 62-701.200 (14), F.A.C. as Class III wastes, except as allowed otherwise by permit.

Acceptable Class III waste materials include the following:

- Land clearing debris
- Demolition debris
- Glass
- Carpet
- Cardboard
- Asbestos
- Plastic
- Automobiles and parts without visible contamination from petroleum products or other chemicals
- Construction debris
- Non-Treated Wood Pallets
- Unpainted and untreated wood scraps from manufacturing
- Waste Tires (Processed)*
- Paper
- Furniture other than appliances
- Yard trash

* Processed waste tires are acceptable for disposal in the Class III Landfill provided that they have been cut into sufficiently small parts. The processed waste tire parts may be disposed of or used as initial cover at a permitted landfill. For use as initial cover, a sufficiently small part means that 70 percent of the waste tire material is cut into pieces of 4 square inches or less and 100 percent of the waste tire material is 32 square inches or less. For purposes of disposal, a sufficiently small part means that the tire has been cut into at least eight substantially equal pieces. Any processed tire which is disposed of in a landfill and which does not meet the size requirement of subsection (a) above must receive initial cover, as defined in subsection 62-701.200(53), F.A.C., once every week.

The following is a compilation of unacceptable Class III waste materials:

- Putresible Household Waste
- Paint (liquid)
- Any toxic or hazardous Materials (i.e., batteries, solvents, oils, etc.)
- Contaminated soils
- Electronics
- Refrigerators, freezers, air conditioners (white goods)
- Biomedical waste
- Automobiles or parts that are contaminated with petroleum products or other chemicals.
- Septic tanks and pumping
- Whole waste tires (except at the waste tire processing facility)

The site has a visible sign at the site entrance on Enterprise Road as provided in Attachment 1. The sign identifies the accepted wastes, hours of operation, landfill classification, and site's 24-hour emergency contact and telephone number. Industrial or excavated waste will be considered for acceptance on a case by case basis, only with prior consent of the Department.

5.5 Random Load Inspection

In accordance with Rule 62-701.500(6)a., F.A.C., the owner or operator will implement a load-checking program to detect and discourage attempts to dispose of unauthorized wastes at the landfill. The load checking program will consist of the following minimum requirements:

1. The landfill operator will examine at least three random loads of solid waste delivered to the landfill per week. The waste collection vehicle drivers selected by the inspector will be directed to discharge their loads at a designated location in the landfill. A detailed inspection of the discharged material will be made for any unauthorized wastes. The landfill operator will assure the random inspections will be distributed between both loads originating from the transfer facility and other private waste haulers delivering waste to the landfill.

2. If unauthorized wastes are found, the facility will contact the generator, hauler, or other party responsible for shipping the waste to the landfill to determine the identity of the waste sources.

The following procedures will be followed when inspecting the load:

A. The load will be "broken apart" by both the spotter and equipment operator to allow for a thorough inspection.

B. The inspectors will be searching and removing de minimis amounts of unauthorized waste contained in the load.

C. If the load contains more than de minimis amounts of unauthorized materials, they will immediately be reloaded onto the customer's vehicle for removal from the site. In the event that the transporter will not remove the unacceptable materials, the materials will be loaded into an appropriate container and removed from the site. The customer/generator will be contacted and notified of the site policies as well as charged for the off-site disposal services.

D. In all cases, if more than minimal unacceptable wastes are found during the inspection, the customer will be notified to assure the prevention of future occurrences.

All inspection will be documented on the site's "Random Load Inspection Form," signed by the inspector, and kept in a current Log Book, see Attachment 2. Log books will be maintained at the landfill for at least 3 years. Inspections will be performed by trained site personnel.

5.6 Asbestos Waste Disposal

Asbestos-containing materials (ACM's) will be accepted for disposal in accordance with 40 CFR Part 61.154. Arrangements for disposal of ACM's between the Facility and the waste generator/hauler will be recorded in the operations record as to the quantity and date of shipment to the landfill. The loads are accepted at pre-arranged times during operational hours.

To ensure that all waste deposited at the Facility meets state and local requirements, all facility personnel will receive training from their supervisor on the identification of unacceptable materials, which is any waste other than properly labeled and bagged ACM. Unregulated, non-friable asbestos containing materials are not required to be bagged, but all other requirements are unchanged.

Each load of ACM arriving at the facility must be accompanied by a completed Waste Shipment Record (WSR) in accordance with 40 CFR 61.150. Each load will be inspected to insure that it is properly bagged, that bags are intact and properly sealed, and that the required warning labels and generator labels are affixed. Bags will not be opened prior to disposal.

ACM arriving at the Facility for disposal will be visually screened by facility personnel a minimum of two times. The first screening will be at the scales, controlling access to the Facility, where the truck drivers will be questioned as to the contents of the load and the shipping documents will be reviewed. The gate attendant will direct the drivers to the appropriate disposal area.

The second screening will be at the working face where a trained inspector/spotter will again question the driver and make a visual examination of the load prior to dumping and as it is dumped. This examination will insure the ACM is properly bagged, the bags are intact and properly sealed, and that the warning labels and generator labels are affixed.

Facility personnel will direct the waste hauler to the designated ACM disposal location in each cell, to be determined by the Operator. The ACM will be covered with 6-inches of soil at the end of any day that ACM is accepted. This designated ACM location will be recorded and updated by the annual topographic survey in accordance with 40 CFR 61.154. ACM disposal records will be maintained for the life of the landfill and disposal locations documented in the Closure Report.

5.7 Incidental Recycling Operations

The Class III landfill does have a separate, dedicated materials recycling area. However, if recyclable wastes are incidentally received, such as metals, concrete rubble, asphalt, and wood wastes, the facility will separate them in stockpiles or in roll-off containers. Concrete and asphalt will be periodically transported to an appropriate location for crushing. Yard and wood wastes may be chipped for use onsite or be placed in roll-off containers for shipment to a wood recycler. These materials will be removed from the site approximately every 6 months. However, if the storage capacity is exceeded, the materials will be removed sooner. Incidental recyclable materials that are identified at the disposal area will be placed in containers located near the working face, as follows and as shown on Drawing C0.03 of the 2014 Plan Set provided in Appendix A of the Engineering Report:

TYPE	MAX. QTY	STORAGE
Ferrous Metal	500 CY	Roll-off or pile
Aluminum	300 CY	Roll-off or pile
Stainless Steel	300 CY	Roll-off or pile
Copper	25 CY	Trash pail, roll-off or pile
Asphalt	300 CY	Roll-off or pile
Concrete / Rubble	300 CY	Roll-off or pile
Recyclable electronics	8 CY	Covered dumpster

Trucks identified at the entrance as carrying primarily recyclable products, (i.e., concrete, metal, wood, paper) will be refused entrance into the landfill.

5.7.1 Reports

A Recovered Materials report will be submitted by type of waste recovered and tonnage to the FDEP and Pasco County Solid Waste Department. These reports will also be compiled into an annual report to the FDEP.

5.8 Wood Acceptance Area

Initial inspection will be performed at the scalehouse by the attendant. Wood wastes are stockpiled until processing takes place every 180 days. Personnel trained to identify and remove any unacceptable wastes will be present during processing. Unacceptable wastes, if found, will be removed prior to wood processing.

5.9 CCA Treated Wood Management Plan

The landfill operations are intended to minimize the amount of CCA treated wood that is delivered to the facility. Written notice will be posted at the scalehouse notifying incoming customers that CCA wood is not suitable for disposal. All reasonable efforts will be made to separate any CCA treated wood from other wastes during spotting operations. If any tipped load has excessive amounts of CCA, they will be rejected. CCA wood that is separated from other wastes at the Facility will not be disposed of at an unlined solid waste disposal facility.

6.0 WEIGHING OR MEASURING INCOMING WASTE

A scale system is used to weigh incoming waste. The scales will be calibrated every six (6) months. Vehicles will be weighed when they enter the disposal site, and based upon the tare weight of the vehicle, the waste tonnage will be determined. Prior to unloading debris, the tonnage or volume of the waste material disposed will be determined and the appropriate fee assessed. Weigh tickets will be kept on-site for a minimum of 5 years.

6.1 Fee Schedule

The fee schedule for disposal varies depending on the client, type of waste and volume received.

Waste Type	Unit	Fee per Unit
Class III	CY	Variable

This fee schedule will be periodically revised according to the prevailing market for waste disposal. The Operator will notify clients immediately in writing of all fee schedule changes.

7.0 VEHICLE TRAFFIC CONTROL AND UNLOADING

Generally, truck traffic will be controlled by first-in, first-out, as directed by the spotter located at the working. There will be adequate space for truck staging at the site's entrance (7-8 trucks) to mitigate any queuing onto Enterprise Road. Enterprise Road Class III RDF will discourage any truck staging prior to landfill opening. Signs will be posted at the entrance gate and on interior roads to guide mining truck traffic vs. landfill truck traffic to their appropriate areas of the site.

8.0 METHOD OF CELL SEQUENCE AND LIFE EXPECTANCY

8.1 Cell Sequence

Landfill activities are currently (as of July 2014) being conducted in Cells 6A and 6B of the Class III Landfill. The cell construction and filling sequence operations will be as follows (see Drawing Sheets C1.10 through C1.21 of the 2014 Plan Set provided in Appendix A of the Engineering Report):

Phasing Sequence 1

Fill Cell 6 in 10 – 12 foot lifts from base grade to cover elevation 175’, including filling over Cells 1 – 5, and 15.

Maximum slope is 3H:1V from base grade to cover elevation 170’; and 20H:1V from cover elevation 170’ to 175’.

Cover elevations noted include 18” intermediate cover and 18” top soil layer.

Construction of Cells 13A, 14 and 16 will be ongoing during Phasing Sequence 1.

Phasing Sequence 2

Complete construction of Cells 13A, 14 and 16 per Sheet C1.00 of the 2014 Plan Set provided in Appendix A of the Engineering Report.

Fill Cells 13A, 14 and 15 in 10 – 12 foot lifts from base grade to final cover grade (elevation 175), including filling over Cells 5, 6 and 15. Filling will begin in the east in Cell 16 and move west to Cell 13A. Certification for the use of these Cells may be requested incrementally as they are constructed.

Maximum slope is 3H:1V from base grade to cover elevation 170’; and 20H:1V from cover elevation 170’ to 175’.

Cover elevations noted include 18” intermediate cover and 18” top soil layer.

Construction of Cells 7 and 13B will be ongoing during Phasing Sequence 2.

Phasing Sequence 3

Complete construction of Cells 7 and 13B per Sheet C1.00 of the 2014 Plan Set provided in Appendix A of the Engineering Report.

Fill Cells 7 and 13B in 10 – 12 foot lifts from base grade to final cover grade (elevation 175’), including filling over Cells 6 and 13A. Certification for the use of these Cells may be requested incrementally as they are constructed.

Maximum slope is 3H:1V from base grade to cover elevation 170’; and 20H:1V from cover elevation 170’ to 175’.

Cover elevations noted include 18” intermediate cover and 18” top soil layer.

Lift height includes cover material. Due to the landfill bottom elevation some lifts may not be a full 10 feet in height.

As each sequence is active, the following procedures will be followed.

- The access road to the working face will be constructed and graded as necessary.

- Waste will be compacted as it is placed. General lift height will be 10 feet and will come within three (3) feet of the final elevation to provide for final cover.

- The working face will remain approximately 100 feet in length.

- Weekly cover of six (6) inches of soil will be placed on the working face.

- Intermediate cover of 12 inches of soil will be placed in areas that will not receive waste within 180 days. The cover may be removed immediately prior to placement of new waste.

Stormwater runoff on the interior of the excavation and filling area will be diverted to Pond 3 using temporary interior swales and berms. Perimeter berms will direct stormwater away from excavation and filling areas.

8.2 Erosion Control

The following engineering controls will be used to minimize erosion at the working face.

- Construct a berm along the top of the slope during the regrading to redirect any rainfall runoff away from the face of the slope. The area along the berm should be graded so as to allow rapid runoff along the top of the slope. Ponding of water near the top of the slope should not be allowed, since seepage through the slope may initiate slope erosion.

- As soon as possible following the construction of the clay liner, begin to fill against the 2H:1V slope with the landfill material.

In order to assist with erosion control of the intermediate cover as well as initial cover, the landfill may apply processed mulch over such covered areas to minimize erosion.

8.3 Life Expectancy.

The capacity and lifespan estimates are provided in Section 3.8.3 of the Engineering Report.

9.0 WASTE COMPACTION AND APPLICATION OF COVER

Waste received will be segregated based on compatibility. Bulky, incompressible items, such as concrete and tree debris, will be separated and stockpiled for future processing. Tree debris is separated from the waste and periodically mulched for on-site uses. The remaining debris is disposed of in designated "cells" using a CAT 826G Compactor, or equivalent to place, spread the waste daily and compact the debris weekly. Initial cover material is planned to be excavated from onsite areas and placed weekly in approximately 6-inch layers on the compacted lifts to control vectors, reduce rain infiltration and provide a more stable working face area. The facility may also use a 50/50 mixture of mulch and soil as cover in accordance with Policy Memo # SWM-05.4 dated April 25, 2001. An intermediate cover of one (1) foot of compacted soil will be applied if final cover or an additional lift is not to be applied within 180 days of cell completion. Cell closure will occur when all permitted cells are filled. For final buildout grade and closure details, see Drawing Sheets C1.30 and C1.40 of the 2014 Plan Set provided in Appendix A of the Engineering Report, respectively. Final cover grades are shown on Drawing Sheet C1.40 of the 2014 Plan Set provided in Appendix A of the Engineering Report.

Cell closure will generally conform to the lines and grades specified in the Landfill Conceptual Closure Plan. The grading plan will conform to the rules and regulation specified in 62-701.600, as well as 62-701.400(7) and 62-701.400(8), Florida Administrative Code. Pesticides when deemed necessary to control rodents, insects and other vectors will be used as specified by the Florida Department of Agriculture and Consumer Services. Uncontrolled and unauthorized scavenging will not be permitted at the landfill site. Controlled recycling may be permitted by the Site Manager responsible for the operation of the landfill facility. Temporary storage of soil fill or recycling materials may occur in the closed cell areas.

10.0 OPERATION OF GAS, LEACHATE AND STORMWATER CONTROLS

10.1 Gas Monitoring and Control

The type of materials to be disposed in the Class III Landfill are not expected to generate significant amounts of methane or other toxic gases since the landfill's design prevents groundwater contact therefore, a passive gas control system is proposed. The Landfill Manager will conduct daily and weekly inspections of the landfill and will check for objectionable odors or gas by driving around the perimeter of the site, record the results, and notify the FDEP and County of any positive detection and immediately take corrective actions. Corrective actions will include placement of additional soil cover, or mulch, or lime containing materials such as crushed concrete that is documented to abate the odors. Quarterly gas monitoring is currently conducted.

Within 30 days of being notified by the Department that objectionable odors per Rule 62-701.200(77), F.A.C. have been confirmed off-site, the Facility will submit to the Department for approval an odor remediation plan. The plan will describe the nature and extent of the problem and the proposed long-term solution, which will be implemented within 30 days of approval. The plan will include procedures to implement a routine odor monitoring program to determine the timing and extent of objectionable odors and a means of evaluating the effectiveness of the remedy.

The facility only accepts Class III debris for disposal and accepts no putrescible household wastes. Surface water and groundwater contact with the Class III wastes will be prevented by the approved facility design thus preventing possible odor operation. Other best management practices to prevent odors include: 1) closure of each cell as it is completed; 2) weekly soil cover application; and, 3) immediate corrective actions to abate odors.

A system of passive gas vents will be installed to manage landfill gas. The location of the gas vents is shown on Sheet C1.30 of the 2014 Plan Set provided in Appendix A of the Engineering Report. The construction details of the vents are shown on Figure 3-16 provided in Appendix B of the Engineering Report. The vents will be installed during the final closure and installation of the final cover over each landfill cell.

A system of 16 gas monitoring points will be installed to monitor gas at the site, see Sheet C0.03 of the 2014 Plan Set provided in Appendix A of the Engineering Report. The construction details a typical gas probe as shown on Figure 3-14 in Appendix B of the Engineering Report.

10.1.1 Methane Gas Measurement

In accordance with the requirements of the current FDEP permits, methane gas levels are monitored at each of the active gas monitoring points quarterly, with results submitted to the FDEP. A lower explosive limit (LEL) meter will be used to measure methane levels from each of the gas probes. LEL meters, such as the MSA Model 260 or GEM 500 or equivalent, will be used to conduct this monitoring. These meters are capable of measuring percent volume of methane in air and the percent LEL level of the methane by volume. The meter shall be calibrated in accordance with manufacturer's specifications prior to each methane monitoring event. Attachment 4 of the Operations Plan provided in Appendix H of the Engineering Report presents the proposed gas monitoring probe survey form to be used to conduct the quarterly monitoring at the subject site. This form will document at the time of each gas probe reading, air temperature in degrees Fahrenheit, methane levels in percent volume in air and percent LEL. The reporting action level for methane in air will be considered 5 percent by volume in air as measured by the lower explosive limit. The reporting action limit for methane in structures is 25% of the LEL, or 1.25% methane by volume. The results of each quarterly gas probe survey will be submitted to the Department on the presented form within two weeks of each monitoring event. These events are planned to be coordinated with the semi-annual groundwater monitoring at the subject site.

10.1.2 Gas Contingency Plan

The following Contingency Plan will be implemented if any of the measured gas monitoring points methane levels are detected above the 100% LEL of greater than 5 percent methane in air, or if 25% of the LEL or higher is measured in a structure. If this level of methane or greater is detected in any of the probes, the Facility operator will institute measurement of methane in nearby, at, or below grade structures, i.e., stormwater collection points, or any maintenance or office buildings within 100 feet of the subject gas probe on a weekly basis until these levels go below the 100% LEL at the subject probe. If methane levels measured in any on-site building exceed 25% of the LEL, building windows and/or doors will be opened for ventilation and all personnel evacuated until methane readings are maintained below 25% of the LEL for methane. The monitoring report for any event that detects methane above the LEL will also report methane levels from nearby structures, as indicated above, until the levels go below the methane LEL level or until corrective actions are conducted to reduce methane levels. The FDEP will be notified within seven days of any gas monitoring levels that exceed the reporting action levels.

10.2 Leachate Control

Leachate production that may occur at the landfill will be controlled with the use of a continuous 3-foot thick clay barrier layer that will be placed on the bottom and the cell. The clay layer beneath each individual cell will form a continuous barrier layer that will be graded to direct leachate to stormwater Pond 3, which is also lined with 3 feet of clay. The controlled method of screening waste also supplements the leachate control. Because Angelo's Recycled Materials privately owns the Enterprise Class III Landfill facility, most of the haulers, waste generators, and sources of waste are known to Angelo’s and the scale house attendants. For those haulers that are unfamiliar to Angelo's, the scale house attendants question the haulers more intensely to determine the contents of their loads. The spotters and operators add additional monitoring at the active disposal location. The addition of video surveillance to the monitoring process of incoming wastes helps to identify fires or smoking loads. Combined methods of screening waste is an effective method to reduce any possible threat to public health or the environment.

10.3 Stormwater Control

The Stormwater Management Plan for the landfill consists of berms, swales, and ponds constructed within the 200-foot landscape buffer zone to divert, collect and contain stormwater runoff from the completed site. The stormwater facilities are designated to retain the 100-year, 24-hour storm volume. During excavation, construction and waste disposal, stormwater will be controlled by a series of berms that direct stormwater to stormwater Pond 3 located along the northern landfill boundary. An approximate 6-foot high berm adjacent to active and filled cells retains stormwater from the filling area and diverts stormwater from the excavation area to stormwater Pond 3. Additional details concerning the stormwater management system is provided in the Stormwater Management Plan and the 2014 Plan Set found in Appendices G and A, respectively, of the Engineering Report.

The site manager will perform weekly inspections of the storm water management system. Any areas in need of maintenance will be repaired within seven days.

11.0 SIGNS

Signs will be posted at the entrance to the Facility site which will list the following information:

The operating entity;
Hours of operation;
No scavenging allowed;
No hazardous waste accepted;
List of acceptable and unacceptable waste; and,
24-hour phone number of emergency contact.

The scalehouse attendant will direct each driver to the area appropriate to unload wastes. Signs will also be posted to direct trucks to either the borrow pit or the landfill working face.

12.0 DUST ABATEMENT PLAN

The Facility will provide a water tanker to water the landfill access roads if and when dust becomes a problem. This will also be done whenever the County receives complaints about dust or when a dust problem is observed during a County or State inspection.

13.0 DUST, LITTER, AND VECTOR CONTROL PLAN

The nature of the waste to be disposed in the landfill does not typically create litter and vector problems. Daily placement of waste and/or compaction will be the primary means utilized to control litter and vectors. The facility personnel will perform daily inspections of the facility and the access road to assure litter is controlled. As needed, laborers will pick up blowing debris and dispose of it in appropriate containers and/or on site. Temporary fencing to contain litter at the working face of the landfill may be used as needed. These litter controls will also be implemented whenever the County or State receives a complaint from adjacent landowners or a litter problem is observed during an inspection.

If vectors (rodents, insects, and domestic animals) become a nuisance at the Facility, the Operator may obtain the services of a licensed pest management company to review the operations and recommend control measures.

14.0 FIRE PROTECTION AND FIRE FIGHTING FACILITIES

Fires that originate in landfills are primarily extinguished by soil application. Supplemental fire protection will be furnished by the Dade City Fire Department (Station No. 1). The Fire Department will be notified immediately of all landfill fires. An emergency contact list will be posted at the scalehouse with contact phone numbers.

During a fire, incoming trucks will be directed toward another area of the landfill so that a temporary active face can be established. Once the fire is extinguished, appropriate cover will be applied to the waste and operations will continue at the original active face. If the fire is extensive and a temporary active face cannot be established, incoming trucks will be redirected to another landfill.

Onsite fire prevention facilities will include:

- Fire extinguishers mounted in the cab of all heavy equipment and in the office/ scalehouse;
- Telephones to notify personnel of a fire;
- Onsite equipment (dozer) and fill dirt to extinguish fires on working face; and
- Site water truck

Soil for fire fighting purposes will be borrowed from the closest unexcavated area of the site to the fire. Details of all fire fighting episodes will be recorded in the landfill operating record.

14.1 Hot Loads and Spills

Any hot load (of authorized material) found will be dumped on an area at least 500 feet away from the active working face. The load will immediately be covered with soil if a fire is imminent. Once the fire is extinguished, the load will be pushed and spread using a dozer, allowing for the load to be inspected by a spotter. The waste will not be disposed of until it has cooled completely, and the fire hazard has been mitigated.

In the event of a fire at the working face, waste acceptance will cease until the fire has been completely extinguished and additional cover material compacted in the area of the fire. If the fire is located elsewhere in the landfill, waste acceptance operations may continue at the manager's discretion.

Since liquid disposal is prohibited in a Class III landfill, spills from waste vehicles are not anticipated. In the case of a fuel spill or leak, the contaminated soil will be collected to the extent possible, contained in a drum or roll off container, and taken offsite within thirty (30) days for proper disposal or treatment.

15.0 LANDFILL PERSONNEL

The scalehouse attendant and certified landfill operator will be onsite during all operating hours. In addition, there will be a minimum of one (1) other person (spotter) onsite, for a total of three (3). The state certified landfill operator will be assigned to manage the daily landfill operations. The personnel will be stationed at the landfill ticket gate and active disposal face. Additional personnel will be assigned to the landfill operation as the demand necessitates. Two spotters are generally located at the working face at all times that waste is accepted. However, there are up to eight spotter-trained or in-house trained spotter employees on-site each day and therefore; additional trained employees can be relocated to the working face as necessary to inspect the incoming waste. Certificates for current trained personnel are attached as Attachment 6 to this submittal.

At least one (1) spotter will be at the working face at all times the facility is accepting waste. The spotter will direct vehicle traffic around the working face and will direct drivers where to empty their vehicles. The loads will be inspected as described in Section 5.0. If the load is acceptable, the waste will be spread and compacted as necessary. If the load is unacceptable, the spotter will direct the driver to reload the waste into the vehicle, if possible. If the driver is unable to reload the material, on-site personnel will reload the material for the driver using onsite equipment. The spotter will also discourage scavenging by the public.

The equipment operator spreading waste at the working face may also act as a spotter in accordance with the following:

1. The heavy equipment operator must be trained as a spotter;
2. When unauthorized waste is discovered, the heavy equipment operator must either move the unauthorized waste away from the active area for later removal and proper management, or must stop operation and notify another person on the ground or on other equipment who will come to the active area and remove the unauthorized waste before operations are resumed;

3. Each load of waste must be visually inspected for unauthorized waste prior to being compacted or loaded into a transfer vehicle.

A typical work schedule is as follows:

Day	Operating Hours	Scalehouse Attendant	Certified Operator	Spotter(s)	Equipment Operator*
M-F	7 am – 6 pm	1 (7 am – 6 pm)	1 (7 am – 6 pm)	Min. 1 (7 am – 6 pm) For 2 or more (7 am – 4 pm), (12 pm – 6 pm)	Min. 1 (7 am – 6 pm)
S	7 am – 2 pm	1 (7 am – 3pm)	1 (7 am – 3 pm)		Min. 1 (7 am – 2 pm)

* - Equipment Operator may also serve as a spotter

15.1 Training Plan

The Facility will implement an employee training plan to properly train their landfill operators and spotters to operate the landfill in accordance with this Operations Plan, state and local regulations, and accepted disposal practices and to properly manage any hazardous or prohibited materials which are received at the landfill.

A trained operator will be at the site during all times that the landfill receives waste. All facility operators will be trained at an approved FDEP training course. Each operator will submit proof of training and documentation to the FDEP upon receipt of their certificates.

Landfill operators must have at least one year of work experience in landfill operation and a high school diploma; or have at least two (2) years experience at a Class I, II, or III landfill. Each operator will complete at least 24 hours of initial training in an FDEP-approved training course, and will pass an examination as part of that training. Sixteen (16) hours of continuing training will be completed within three (3) years of each operator's initial training from an approved course documented by the form in Attachment 3. A list of FDEP approved training courses for operators and spotters are included in Attachment 5.

The Facility spotters will complete an initial eight (8) hour FDEP-approved course and four (4) hours of continuing training every three (3) years. Records documenting each employee's training course completion and schedule will be maintained and kept at the landfill office at all times.

Interim operators must become trained operators within one year of employment as an interim operator and interim spotters must become trained spotters within 3 months of employment as an interim spotter

16.0 COMMUNICATIONS FACILITIES

The landfill scalehouse will have both telephone and facsimile facilities. In addition, all landfill operating areas (gate house, working face etc.) will have radio communication or cell phones with the base station at the gate house.

17.0 EQUIPMENT INVENTORY

Equipment currently planned for use at the landfill site includes:

A. D-8 Caterpillar bulldozer, CAT 826 G Compactor; two 2.5 cyd loaders, water truck, 590 John Deer backhoe, or equivalent are sufficient for adequate operation of the facility. A wood chipper/grinding machine (Hogzilla), or equivalent, will be moved to the site periodically (approximately once every six months) to process wood wastes as needed. Additional equipment, such as a grader may be rented as needed.

B. Arrangements will be made to provide alternate equipment within 24 hours following an equipment breakdown.

   Equipment rental companies that may be used to obtain reserve equipment include the following:

      Ring Power - Brooksville, Florida
      Contact: 352-796-4978

      Flagler Equipment - Tampa, Florida
      Contact: 813-630-0077

C. There will be safety devices present on equipment to shield and protect the operators from potential hazards during operation.

17.1 Equipment Maintenance

The Facility will conduct routine heavy equipment and vehicle maintenance onsite. Maintenance includes fueling of heavy equipment with diesel fuel, lubrication, oil changes and, antifreeze changes. Tire repairs will be handled by an outside service company.

A permanent equipment fueling facility will be installed and registered in accordance with F.A.C. 62-761. Pasco County will be copied on the registration.

Oil and antifreeze changes will be contained by large drip pans to catch the waste oils. These wastes will then be transferred either to a 250-gallon waste oil skid tank or to a 55-gallon drum for waste antifreeze, which will be located in a containment area. The containment area is a covered metal storage shed. Enterprise RDF plans to enter into contracts with licensed recyclers to periodically pick up the waste oil and antifreeze. Records of these pickups will be maintained by Enterprise RDF. All virgin lubricants will be stored undercover within the gate house building or suitable enclosure.

18.0 SAFETY DEVICES

All operating equipment which will be utilized at the landfill site will be fitted with rollover protection and fire extinguishers. All landfill personnel will be required to wear safety helmets, safety shoes, eye protective glasses, gloves, and safety vests. The onsite heavy equipment will meet OSHA safety requirements. First aid equipment will be kept in the office trailer and in the operating equipment.

19.0 RECORDS, PERMITS AND REPORTS

A copy of any Florida Department of Environmental Protection (FDEP) and Pasco County approved engineering drawings, permits and supporting information will be kept at the facility for reference and inspections. Permits will be posted at site per ordinance. A waste type and quantity intake (in tons) log will be kept daily, compiled monthly and a report will be submitted annually to Pasco County and the FDEP.

An annual estimate of the remaining life and capacity in cubic yards of the landfill will be reported annually to the FDEP.

19.1 Water Quality Monitoring

The Facility will conduct the required initial and semi-annual groundwater monitoring at the sites' monitoring wells as described in the Facility’s Groundwater Monitoring Plan. Semi-annual reports of this monitoring will be submitted to Pasco County and FDEP in accordance with this plan. Quarterly monitoring will also be conducted and reported at specific wells per Pasco County conditions.

19.2 Landfill Operating Records

The operating record for the landfill will document daily as a minimum the following activities:

- Self inspections of landfill conditions, safety equipment and unacceptable waste received, any odor detected;
- Records used to develop permit applications;
- Change in construction, operation or closure permits and supporting designs;
- Water quality sampling events, analytical reports, well installation or repair;
- Employee training;
- Random load checks;
- Facility construction, major maintenance, or demolition;
- Other activities that significantly affect facility operations.

Self-inspections of the landfill conditions are conducted daily, and more extensive inspections are included weekly. Daily inspections include general inspection of site access, site security, and conditions of intermediate cover. Weekly inspections include more detailed inspections of the conditions of the surface water and stormwater management systems and groundwater monitoring wells.

The Operating Record will be kept at the landfill and be accessible to the landfill operators to maintain and for FDEP or Pasco County inspection at reasonable times.

Operational records will be maintained for the design life of the landfill, with the exception of weigh tickets which will be kept at least 5 years. Water quality monitoring information, maintenance records, and permit reports will be maintained for a minimum of 10 years. Background water quality records will be maintained for the design period of the landfill.

20.0 EROSION CONTROL

The site's inherent design as an excavation pit will prevent stormwater from leaving the property. Stabilization by seeding and mulching of the final fill areas will occur as the fill operations progress from cell to cell.

21.0 FINAL GRADE PLAN

Interim grades of the cells are shown on the plans (Drawings C1.10 and C1.20 of the 2014 Plan Set provided in Appendix A of the Engineering Report) and in the cross-sections (Drawings C1.11 and C1.21). Permitted mining activities will continue in accordance with the site’s Class I mining permit. The final elevations after construction of future cells is planned to reclaim excavated areas back to the grade which existed prior to the site being opened as a mine with allowance for positive drainage. The Landfill Conceptual Closure Plan is provided in Drawing C1.30 (Appendix A of the Engineering Report).

22.0 CLOSURE AND LONG TERM CARE

The site's Reclamation and Closure Plan details the procedures to properly close and maintain the landfill during the 30-year post-closure period. A Closure Report will be prepared for the landfill that details the site-specific limitations for land use based on geotechnical stability (settlement), potential gas migration, and site access. Long-term maintenance of erosion controls, storm water controls and monitoring devices is discussed in the Closure Plan (Appendix F of the Engineering Report).

23.0 CERTIFICATION

Laboratory testing and observation of cell floor conditions during cell construction completion will consist of the following:

- In-place density testing for each 12-inch thick soil lift, based on laboratory proctor test results for the construction material, will be recorded by a properly trained technician. These tests will be conducted in the location of each permeability test.

- Thickness testing of each lift will be recorded at a minimum frequency of two tests per acre, per lift.

- Confirmation hydraulic conductivity testing of Shelby tube or drive cylinder samples of the compacted cell floor material will be performed at a minimum frequency of one test per lift, per acre.

- Observance for unstable areas such as limestone, sink holes and soft ground will be performed for each cell.

If the test data from a cell floor section does not meet the requirements of the anticipated conditions of the hydrogeological and geotechnical reports and the requirements of the facility construction permit, additional random samples may be tested from that cell section. If the additional testing demonstrates that the hydraulic conductivity meets the requirements, the cell will be considered acceptable. If not, that cell will be reworked or reconstructed so that it will meet these requirements.

Upon completion of construction of any cell (or cell increment) within the disposal facility, the Applicant will provide the FDEP with the necessary reports, documents, and form 62-701.900(2), F.A.C. demonstrating that the approved construction is complete and in accordance with the submitted plans. The operator will provide the completed form to the FDEP in accordance with Rule 62-701.320(9)a., F.A.C., along with the quality assurance test results described above.

24.0 HISTORY OF ENFORCEMENT ACTION

In 2000, OGC Case No. 00-0009 was opened against the applicant for the Frontier Recycling facility (now Angelo's Recycling Facility) in Largo, Florida. A model consent order was used to resolve the issues of the case. The DEP's database did not include information regarding the subject of the enforcement.

In 2004, OGC Case No. 04-0887 (solid waste) and No. 04-0426 (stormwater) were opened against the applicant for Angelo's Recycling facility in Largo, Florida. ARM requested a minor permit modification to resolve the solid waste enforcement case. Formal enforcement was not taken to resolve the stormwater case. Instead, it was handled through submittal of a new permit application.

In 2006, OGC Case No. 06-0783 was opened against the applicant for the Enterprise Class III Landfill and Recycling Facility in Pasco County, Florida. ARM performed the corrective actions that were required to bring the facility into compliance and the assessed civil penalties were paid.

In 2007, Warning Letter #WL07-0019SW51SWD was issued to Angelo’s Aggregate Materials, Ltd. for the Enterprise Class III Landfill. The Warning Letter was settled June 5, 2008 for total fines of $18,397. In the “Proposed Settlement of Warning Letter WL07-0019SW51SWD,” the Department acknowledged that Angelo’s would not be considered “irresponsible” under FDEP Rule 62-701.320, FAC, as a result of the enforcement action.

ATTACHMENT 1

FACILITY ENTRANCE SIGN


Angelo's Recycled Materials
ENTERPRISE CLASS III LANDFILL
PERATING HOURS: MONDAY - FRIDAY 7:00 am 5:00 pm
24 Hour Emergency Contacts:
Manager (352) 302-8934
ALL CUSTOMERS MUST CHECK IN AT GATE HOUSE
ACCEPTABLE WASTE: Construction and demolition debris, yard waste, land clearing, glass, carpet, cardboard, plastic, asbestos, paper, furniture, wood pallets, scrap and shredded tires.
UNACCEPTABLE WASTE: Household garbage, toxic and hazardous waste, batteries, appliances,automobile, paint, solvents, drums, septic tanks and pumping, whole tires.
WARNING: We will be sorting all loads for prohibited waste. Any unacceptable waste/loads may be reloaded onto a vehicle to be taken to an appropriate disposal facility at your expense.
FDEP/SWN PERMIT NUMBER: 177982-002-SO
ERP PERMIT NUMBER: 51-0172489-001
NO SCAVENGING

ATTACHMENT 2

RANDOM LOAD INSPECTION FORM

ENTERPRISE RECYCLING AND DISPOSAL FACILITY

RANDOM LOAD INSPECTION FORM

1. DATE:____

2. TIME:____

3. HAULING COMPANY:________________________________

4. VEHICLE INFORMATION: A) TRUCK #____________________
   B) LICENSE PLATE #________________

5. NAME OF DRIVER:__________________________________

6. SOURCE OF WASTE MATERIAL:__________________________

7. DESCRIPTION OF WASTE MATERIAL:_______________________

8. DOES THE LOAD CONTAIN UNACCEPTABLE WASTE MATERIALS? YES: __ NO: __
   IF YES, WHAT MATERIALS WERE FOUND, AND WHAT PROCEDURES WERE FOLLOWED? ____________________________

9. OTHER OBSERVATIONS:________________________________

10. INSPECTOR SIGNATURE:_____________________________

SIGNED

Note: Forms must be maintained in Inspection Log Book

ENTERPRISE CLASS III LANDFILL **Load Rejection Form**

Date:________________ Time:________________ am/pm

CUSTOMER/GENERATOR

Name ________________________________

Address ________________________________

City/State/Zip ________________________________

TRANSPORTER/HAULER

☐ Same as Customer/Generator

Name ________________________________

Address ________________________________

City/State/Zip ________________________________

Vehicle License and State ________________________________

REASON FOR REJECTION

☐ Suspected Special Waste ☐ Suspected Medical Waste ☐ Non-Processable

☐ Suspected Hazardous Waste ☐ Suspected Asbestos ☐ Other (Explain below)

Explanation________________________________

ACKNOWLEDGEMENT

☐ Rejected prior to dumping ☐ Rejected After Load was Dumped

Comments________________________________

Driver's Signature________________ Operator's Signature________________

Customer/Generator Notified? ☐ YES ☐ NO Transporter/Hauler Notified? ☐ YES ☐ NO

If yes, name of person contacted ________________ If yes, name of person contacted ________________

ATTACHMENT 3

FACILITY TRAINING LOG

ENTERPRISE RECYCLING AND DISPOSAL FACILITY

TRAINING LOG

COURSE	TRAINED OPERATOR INSTRUCTOR	HRS. ATTENDED	SIGNATURES/ DATE

ATTACHMENT 4

GAS MONITORING SURVEY FORM

ENTERPRISE RECYCLING & DISPOSAL FACILITY
CLASS III LANDFILL
GAS MONITORING SURVEY FORM

Date: ______________
Instrument: ________________
Sampler: ______________

GAS PROBE NO.	TIME OF READING	AMBIENT AIR TEMP °F	AMBIENT AIR OXYGEN CONTENT %	AMBIENT AIR METHANE % of LEL	METHANE LEVEL Pre-Purge Measurement			METHANE LEVEL Post-Purge Measurement		
					% O_2	% by Vol.	% of LEL	% O_2	% by Vol.	% of LEL
1	Not installed									
2	Not installed									
3	Not installed									
4	Not installed									
5	Not installed									
6										
7										
8										
9 -R**										
10-R**										
11										
12										
13										
14										
15 *										
16	Not installed									
Scale house					N/A	N/A	N/A	N/A	N/A	N/A

NR - Not required, no methane indicated in pre-purge measurement

Notes: (Wind direction, weather conditions, damage to gas probes, adjacent off-site activity observed, etc.)

** Revised December 2012 by Kelner Engineering (RAI #1)

*Revised March 2012 by Kelner Engineering
to reflect installation of GW-15

ATTACHMENT 5

LIST OF APPROVED COURSES

Florida's Solid Waste Operators & Spotters University of Florida

Track Detail

Class I, III Landfill Operator

Is a solid waste facility that accepts Class I waste that is not hazardous waste and can be disposed in a lined landfill. The landfill may also accept yard trash, construction and demolition debris, processed tires, asbestos, carpet, cardboard, paper, glass, plastic, furniture other than appliances, or other materials approved by the FDEP that are not expected to produce leachate which poses a threat to public health or the environment. Operators required 24 hours initial course and pass exam with 70% proficiency, then 16 hours of continuing education every 3-year period.

Requirements

Initial Courses

- 24-Hour Initial Training Course for Landfill Operators (Class I, II, III and C&D Sites)
- Initial Training Course for Landfill Operators and C&D Sites - 24 Hour
- SWANA - Manager of Landfill Operations [MOLO] & Exam
- SWANA-Management of Landfill Operations
- SWANA-Manager of Landfill Operations (MOLO) Course and Exam

Hours

Hours Required	Effective Date
15	01/01/1800
16	05/27/2001

3900 SW 63rd Blvd.
Gainesville, FL 32608
tel: (352) 392-9570
fax: (352) 392-6910
train@treeo.ufl.edu

UF Division of Continuing Education
UNIVERSITY of FLORIDA

Track Detail

Spotter / Waste Screener

Is a person employed at a solid waste management facility whose job it is to inspect incoming waste and to identify and properly manage any hazardous or prohibited materials, which are received at the facility. Spotter required 8 hours initial course, then 4 hours of continuing education every 3-year period.

Requirements

Initial Courses

- 8-Hour Initial Training Course for Spotters at Class I, II, III Facilities, Waste Processing Facilities and C&D Facilities
- 8-hour Initial Training for Spotters
- 8-Hour Spotter Training for Class I II III Landfill C&D Sites and Transfer Facilities
- 8-Hour Training Course for Spotters at Landfills, C&D Sites and Transfer Stations
- Environmental Management Systems: An Introduction
- Spotter Training
- Spotter Training for Solid Waste Facilities
- Spotter Training for Solid Waste Facilities - Spanish
- Spotter Training for Solid Waste Management Staff with Elements of a Solid Waste Operations Plan
- Waste Screening and Identification for Landfill Operators and Spotters
- Waste Screening at MSW Mgmt Facilities [Onsite Delivery]

Hours

Hours Required	Effective Date
4	01/01/1800

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Course Information

Course #	Name	Status
582	16-Hour Initial Training Course for Transfer Station and MRF Operators	Active
575	2010 North American Environmental Field Conference and Expo	Active
516	24 Hour HazMat Techician Level	Active
608	24-Hour Initial Training Course for Landfill Operators (Class I, II, III and C&D Sites)	Active
478	40 Hour HazWoper	Active
507	40-Hour HazWoper	Active
626	40-Hour HazWoper Course in Accordance to 29 CFR 1910.120	Active
646	40-Hour OSHA HazWoper	Active
69	40-hour OSHA HAZWOPER Training Course	Active
450	40hr General Site Worker Hazardous Waste Operations	Active
463	4-Hour Refresher Course for Spotters at Landfills, C&D Sites and Transfer Stations	Active
616	6-Hour DOT Regulations	Active
601	8 Hour General Site Worker Refresher Training	Active
623	8 Hour HazWoper Refresher Training	Active
203	8-Hour Initial Training Course for Spotters at Class I, II, III Facilities, Waste Processing Facilities and C&D Facilities	Active
219	8-hour Initial Training for Spotters	Active
62	8-Hour OSHA HazWoper Annual Refresher	Active
644	8-Hour OSHA HazWoper Refresher	Active
488	8-Hour Spotter Training for Class I II III Landfill C&D Sites and Transfer Facilities	Active
462	8-Hour Training Course for Spotters at Landfills, C&D Sites and Transfer Stations	Active
410	Adult CPR	Active
0	Adult CPR	Active
675	Air Regulations and How They Impact MSW Facilities	Active
624	ANSI/AIHA Z10-2006 Occupational Safety and Health Management Systems Training Course Construction Standard	Active
652	Asbestos: Awareness (Class IV)	Active
630	Basic Life Support	Active
639	Bird and Wildlife Management for Utilities	Active
550	Bloodborne Pathogens	Active
618	Carbon Markets, Offsets & Project Level GHG Accounting	Active
614	Chemical Spill Response Training for Hazardous Materials Operations/OSHA Level II	Active
386	Community Hurricane Preparedness - online	Active
525	Composting Wastewater Residuals (Biosolids) in Charlotte County	Active
656	Confined Space Awareness	Active
657	Confined Space Competent Person Training	Active
436	Confined Space Entry Safety Course	Active
440	Construction and Demolition Debris Workshop	Active
485	Contemporary Techniques of Supervision/Management	Active
357	CPR and First Aid	Active

520	Design of Waste Containment Liners and Closure Systems	Active
457	Disaster Debris Management	Active
544	EIA/NSWMA Safety Seminar	Active
542	Electrical Troubleshooting & Preventive Maintenance	Active
596	Emergency Response and Recovery Training	Active
557	Environmental Quality Training Workshop	Active
563	Environmental Safety Occupational Health [EOSH] 2009 Training Symposium	Active
568	Environmental Sampling Field Course	Active
679	Environmental Studies	Active
500	Excavation and Trenching Safety Procedures	Active
100	Excavation and Trenching: Competent Person Training	Active
228	FDEP 8 Hour HazWoper OSHA Refresher	Active
435	FDEP 8 Hour HazWoper OSHA Refresher [DeHate]	Active
433	FDEP Annuals SQG Workshop [5/3-5/06]	Active
434	FDEP Household Hazardous Waste Workshop [5/1-3/06]	Active
445	FEMA Debris Management Course	Active
678	FEMA Debris Management Course - G202	Active
484	Fires at Landfills and Other Solid Waste Management Facilities	Active
411	First Aid (Standard) Workplace Training	Active
634	Florida Composting Facility Operator Training Course: Introduction to Handling Source Seperated Organics	Active
491	Florida Construction & Demolition Debris & Management Workshop - May 2008	Active
451	Florida Water & Pollution Control Operators Association Short School - Stormwater Section	Active
579	Food Recycling and Composting Workshop	Active
521	Foundations of Project Management	Active
156	Four Hour Spotter Refresher for Class I, II and III Landfills, Waste Processing Facilities and C&D Facilities	Active
591	Fundamentals of Emergency Management	Active
638	General Site Worker 8-hour Refresher Course Hazardous Waste Operations & Emergency Response	Active
423	Geosynthetic Testing and Landfill Design Issues Short Course	Active
629	Getting Back to Basics With Landfill Gas	Active
545	GHG Reporting for Landfill & Wastewater Treatment - Webinar	Active
558	Greenhouse Gas Accounting	Active
0	Greenhouse Gas Accounting- Measuring an Organization's Carbon Footprint	Active
604	Greenhouse Gas Recovery at Solid Waste Landfills	Active
224	Hazardous Materials in Construction and Demolition Waste OnLine	Active
503	Hazardous Materials Incident & Waste Training - 24 Hours	Active
356	Hazardous Materials Incident Response Operations-40hr	Active
469	Hazardous Materials Operations / OSHA Level II	Active
439	Hazardous Materials Training	Active
510	Hazardous Waste Management Course	Active
535	Hazardous Waste Management: The Complete Course - 16 hour	Active
541	Hazardous Waste Management: The Complete Course - 8 hour	Active
540	Hazardous Waste Operations with Emergency Response	Active
63	Hazardous Waste Regulations for Generators	Active
514	Hazardous/Chemical Safety Training	Active
555	HazMat IQ	Active
216	HazWoper 40-Hour Health & Safety Online	Active
421	HazWoper 40-Hour OSHA Course	Active

218	HazWoper 8-Hour Refresher Online	Active
422	HazWoper 8-Hour Refresher OSHA Course	Active
659	HazWoper Refresher	Active
617	HazWoper Training for Escambia County	Active
170	Health & Safety Issues for Solid Waste Management Facilities	Active
498	Health and Safety for Solid Waste Workers-4 Hours	Active
281	Health and Safety for Solid Waste Workers-8 Hours	Active
149	Health and Safety Training for Landfill Operations	Active
495	Heavy Equipment Safety	Active
492	Hurricane Debris Management Workshop	Active
683	Hydraulic Excavator Operator Training	Active
613	Identification of Unknowns	Active
476	Improving Landfill Operations	Active
517	Improving Transfer Station Efficiency	Active
442	Initial Training Course for Landfill Operators and C&D Sites - 24 Hour	Active
443	Initial Training Course for Transfer Station Operators and Material Recovery Facilities - 16 Hour	Active
628	Innovative Recycling Grant Workshop at Polk County Landfill	Active
574	Integrated Waste Management Workshop	Active
645	Introduction to Debris Operations in FEMA Public Assistance Program IS-632	Active
212	Introduction to Electrical Maintenance	Active
527	Introduction to Heavy Equipment and Skill Testing	Active
0	Introduction to Wastescreening for Spotters-Spanish	Active
546	IS-700.a NIMS An Introduction	Active
472	Landfill and Transfer Station Operators: Waste Acceptability and Safety Issues Review	Active
676	Landfill Design and Construction	Active
518	Landfill Gas Collection and Re-Use	Active
686	Landfill Gas Collection System Operations and Compliance Training Course	Active
511	Landfill Gas Control and Compliance Seminar	Active
650	Landfill Operations	Active
399	Landfill Operator and MRF Operator Training	Active
589	Landfill Operator Training - 2007 Certified Operators Class	Active
588	Landfill Operator Training 2008 - Certified Operators Class	Active
553	Landfills and Transfer Stations: Past, Present and Future	Active
552	Landfills: Past, Present and Future	Active
441	Laws and Rules	Active
277	Laws and Rules for Florida Engineers	Active
677	Leachate and Landfill Gas Management System Design	Active
684	Linear Construction - Stormwater Compliance for Road and Utility Construction	Active
538	Maintenance of Traffic Training	Active
654	Mathematics for Landfill Operators	Active
523	Maximizing Beneficial Use of Disaster Debris	Active
674	Measurement and Improvement of Performance at Solid Waste Management Facilities ("If you Can't Measure it, You Can't Manage It")	Active
3	Military Service Active Duty	Active
528	NAHAMMA Conf HHW / SQG Workshop - 2009 - HazMat IQ Training	Active
528	NAHAMMA Conference HHW / SQG Workshop - 2009 - General Session	Active
609	NAHMMA 2010 Annual Conference	Active
653	NAHMMA 2011 Florida Chapter Annual Conference	Active
424	National Incident Management System [NIMS] and Introduction IS-00700	Active

454	North American Hazardous Materials Management Association Conference 2007 - FL Chapter	Active
489	North American Hazardous Materials Management Association Conference 2008- FL Chapter	Active
670	North Carolina Landfill Manager Course	Active
1001	OK per "Current" Class I II III Transcript	Active
621	Online Laws and Rules	Active
438	Operating Considerations for Transfer Stations	Active
655	Operational Techniques and Compliance Inspections for Landfills	Active
412	Operator Certification for Caterpillar Landfill Equipment	Active
0	OSHA 10-Hour General Industry Course	Active
547	OSHA 10-Hour General Industry Outreach Course	Active
619	OSHA 10-Hour Industrial Outreach Safety Training Program	Active
592	OSHA 1910 General Industry 10-Hour Course	Active
0	OSHA 24 Hour Emergency Response Course (Technician Level)	Active
0	OSHA 8-hour HazWoper Refresher Training	Active
561	OSHA Annual Refresher at KSC	Active
515	OSHA Operations Level Course	Active
532	Paint Filter Test - 1 Hour	Active
192	Pedestrian, Vehicles and Equipment Safety at Transfer Stations	Active
494	Permit Required Confined Space Awareness	Active
104	Permit Required Confined Space Entry	Active
0	Permit Required Confined Space Entry Supervisor	Active
497	Personal Protection Equipment (PPE) and Safety Procedures	Active
602	Personal Radiation Detector Course [PRD] PER-243	Active
533	Principles of Landfill Fires E-Course	Active
468	Project Risk Management	Active
603	Recycle Florida Today - 2010 Annual Conference	Active
651	Recycle Florida Today - 2011 Annual Conference	Active
432	Recycle Florida Today 2006 Annual Conf	Active
431	Recycle Florida Today 2006 Issues Forum 1/2006	Active
414	Recycle Florida Today 2006 Issues Forum 1/23-24/06	Active
460	Recycle Florida Today 2007 Annual Confrence - 6/4-7/2007	Active
512	Recycle Florida Today 2008 Annual Conference	Active
554	Recycle Florida Today Conference [June 2009]	Active
479	Recycled Florida Today 2007 Issues Forum 1/2007	Active
0	Recycled Florida Today 2007 Issues Forum 1/2007	Active
661	Refresher Training Course for Experienced Solid Waste Operators-16 Hours	Active
663	Refresher Training Course for Experienced Solid Waste Operators-4 Hours	Active
662	Refresher Training Course for Experienced Solid Waste Operators-8 Hours	Active
627	RFT / SWANA FL Winter Meeting & Issues Forum 2011	Active
687	RFT / SWANA FL Winter Meeting & Issues Forum 2012	Active
581	RFT/SWANA-FL Winter Wonderland in Waste - 2010 Issues Forum	Active
565	Sanitary Landfill Design	Active
690	Sector L: Landfills & Land Application Sites	Active
4811	Solid Waste Operator & Spotter Refresher Training - Spring 2008 a	Active
584	Southeast Recycling 2010 Conference & Trade Show	Active
640	Southeast Recycling 2011 Conference & Trade Show	Active
692	Southeast Recycling 2012 Conference & Trade Show	Active
580	Southwest Partners Meeting	Active

605	SPCC - Spill Prevention Control Act - online	Active
526	Spill Prevention, Control, and Countermeasure Regulation Seminar	Active
400	Spotter Training	Active
0	Spotter Training	Active
214	Spotter Training	Active
437	Spotter Training Course for Waste Processing and Transfer Stations	Active
248	Spotter Training for Solid Waste Facilities	Active
378	Spotter Training for Solid Waste Facilities - Spanish	Active
474	Spotter Training for Solid Waste Management Staff with Elements of a Solid Waste Operations Plan	Active
471	Spotters at Landfills and Transfer Stations: Safety Awareness Review	Active
506	Storage Tank Conference - Central Florida 18th Annual	Active
505	Storage Tank Conference - North Florida 14th Annual	Active
578	Storage Tank Conference -16th Annual Central Florida State Conference	Active
453	Storage Tank Conference 17th Annual	Active
475	Storage Tank Conference Central Florida State 13th Annual	Active
647	Stormwater Erosion And Sedimentation Control Inspector Training Program	Active
202	Stormwater Inspector Certification Course	Active
594	Stormwater Matters	Active
632	Supervisor Safety Training for Solid Waste Operations Staff	Active
586	Sustainability and Recycling	Active
429	SWANA - Compost on Subtitile D Landfills - Webinar	Active
416	SWANA - eCourse - Litter Management at Landfills	Active
567	SWANA – Groundwater Monitoring, Sampling, Analysis and Well Construction	Active
636	SWANA - Integrated Solid Waste Management	Active
693	SWANA - Landfill Gas Basics 1-Day Course	Active
635	SWANA - Landfill Gas Systems Operation and Maintenance	Active
694	SWANA - Landfill Gas Systems Operation and Maintenance - 1 day	Active
537	SWANA - Landfill Operations E- Course	Active
543	SWANA - Landfill Symposium 14th Annual (June 2009)	Active
597	SWANA - Manager of Landfill Operations [MOLO]	Active
598	SWANA - Manager of Landfill Operations [MOLO] & Exam	Active
560	SWANA - Manager of Recycling Course	Active
413	SWANA 2006 Recycling and Special Waste Conference	Active
562	SWANA E-Course Just the Math	Active
556	SWANA e-Course Operation Efficiency at Landfills	Active
599	SWANA e-course: Bioreactor Landfill Research & Development Agencies	Active
577	SWANA e-course: Carbon Credit and Production Tax Credits for LFG Projects	Active
576	SWANA e-course: Financing Solid Waste Facilities: The Roller Coaster to Oblivion?	Active
691	SWANA e-course: Traumatic Injury and Fatality Risks in Solid Waste	Active
564	SWANA- Health & Safety E-Study (Home Study Course)	Active
566	SWANA- Managing Landfill Gas at MSW Landfills	Active
297	SWANA Online - Health & Safety at MSW Landfills	Active
296	SWANA Online - Training Sanitary Landfill Operation Personnel	Active
298	SWANA Online - Wastescreening at MSWS Facilities	Active
345	SWANA-Bioreactor Landfill Course	Active
404	SWANA-Bioreactor Landfill Manager	Active
250	SWANA-Construction and Demolition Debris Course	Active
685	SWANA-e Course: Groundwater Monitoring	Active

643	SWANA-e Course: Landfill Gas & Solid Waste Air Contaminant Hazards	Active
252	SWANA-FEMA's Debris Management	Active
425	SWANA-FL 2006 Spring Tri-State Conference [4/2-5/06]	Active
426	SWANA-FL 2006 Summer Conference [7/23-26/06]	Active
447	SWANA-FL 2007 Summer Conference [7/15-18/07]	Active
480	SWANA-FL 2008 Senior Managers Conference [1/2008]	Active
551	SWANA-FL 2009 Summer Symposium	Active
607	SWANA-FL 2010 Summer Conference	Active
658	SWANA-FL 2011 Summer Conference	Active
534	SWANA-FL Managers Meeting - 2009 Winter	Active
606	SWANA-FL Road-e-o: Heavy Equipment Safety Training	Active
94	SWANA-Health & Safety at MSW Landfills	Active
244	SWANA-Landfill Gas Basics	Active
428	SWANA-Landfill Gas Symposium 29th Annual [3/27-30/06]	Active
446	SWANA-Landfill Gas Symposium 30th Annual [3/4-8/07]	Active
483	SWANA-Landfill Gas Symposium 31st Annual [3/2008]	Active
536	SWANA-Landfill Gas Symposium 32nd	Active
689	SWANA-Landfill Gas Symposium 35th Annual - 2012	Active
231	SWANA-Landfill Gas System Operation and Maintenance	Active
539	SWANA-Landfill Gas System Operations Workshop	Active
93	SWANA-Landfill Operational Issues	Active
681	SWANA-Landfill Symposium (16th Annual - 2011)	Active
427	SWANA-Landfill Symposium 11th Annual [6/5-7/06]	Active
465	SWANA-Landfill Symposium 12th Annual [6/25-28/07]	Active
30	SWANA-Management of Landfill Operations	Active
1	SWANA-Manager of Landfill Operations (MOLO) - Exam Only	Active
1600	SWANA-Manager of Landfill Operations (MOLO) Course	Active
160	SWANA-Manager of Landfill Operations (MOLO) Course and Exam	Active
243	SWANA-Managing Composting Programs	Active
251	SWANA-Managing MSW Collection Systems	Active
234	SWANA-Managing MSW Recycling Systems	Active
222	SWANA-Managing Transfer Station Systems	Active
444	SWANA-Transfer Station Design & Operations	Active
42	SWANA-Transfer Station Design & Operations	Active
448	SWANA-WasteCon 2006 [9/19-21/06]	Active
455	SWANA-WasteCon 2007 [10/16-18/07]	Active
509	SWANA-WasteCon 2008	Active
559	SWANA-WasteCon 2009	Active
660	SWANA-WasteCon 2011	Active
570	The Complete Ground Water Monitoring Field Course	Active
572	The Complete Ground Water Monitoring Well Design, Construction and Development Course	Active
569	The Complete Ground Water Sampling Field Course	Active
116	The Complete Ground-Water Monitoring Course	Active
571	The Complete Surface Water and Sediment Field Course	Active
573	The Florida Stormwater Construction Permit-Contractor's Short Course	Active
530	The Original Environmental Bootcamp	Active
406	The Sense of Smell, Odor, Theory and Odor Control	Active
612	Things That Go Boom	Active

625	Topics in Solid Waste Management for Landfill Operators, MRF Operators and Transfer Station Operators	Active
477	Tractor/Mower Operator Safety Training Program	Active
187	Traffic and Equipment Safety at Landfills	Active
680	Train the Trainer: How to Design & Deliver Effective Training	Active
641	Train-the-Trainer for Operator of Heavy Equipment	Active
642	Trenching Shoring Services Safety in Excavation Course	Active
112	U.S. DOT Hazardous Materials/Waste Transportation	Active
519	Understanding Hazardous Waste in Solid Waste Operations	Active
419	Waste Expo [4/4-6/06]	Active
549	Waste Expo 2007	Active
595	Waste Expo 2010	Active
36	Waste Screening and Identification for Landfill Operators and Spotters	Active
9	Waste Screening at MSW Mgmt Facilities [Onsite Delivery]	Active
51	Waste Screening at Municipal Solid Waste [5/23/94, 12/5/01]	Active
0	Waste Screening Introduction-Spanish	Active
524	Waste Screening Refresher for Supervisors and Managers	Active
418	Waste Tech 2006 [2/27-28/06]	Active
508	Waste Tech 2007	Active
587	Waste-to-Fuels 2010 Conference	Active
622	Wet Weather Operations	Active
449	Wetlands Variance Training	Active
673	Wildlife and Plants at Florida Solid Waste Management Facilities	Active
482	Workzone Safety Training	Active

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ATTACHMENT 6

TRAINING CERTIFICATES

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Participant Information

De Rubeis, Mr. Neiro

Title:	Project Manager
Company:	Angelos Recycled Materials
Address:	2100 E. Bay Dr. #. # 205 Largo, FL 33771
Phone:	(727) 612-9256

Tracks

Track	Status*	Current Period		Training Hours		Has met requirements to rollover to next 3-year period?		Transcript
		Start	Stop	Taken	FDEP Required	Yes/No	Rollover Date	
Class I, III Landfill Operator	Current	11/15/2010	11/14/2013	0	16	False	11/15/2013	Transcript
Construction and Demolition Debris Landfill Operator	Current	11/15/2010	11/14/2013	0	16	False	11/15/2013	Transcript
Transfer Station Operator	Current	10/30/2010	10/29/2013	0	8	False	10/30/2013	Transcript
Material Recovery Facility Operator	Current	10/30/2010	10/29/2013	0	8	False	10/30/2013	Transcript

* If Expired, click on transcript link to see the training course history.

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Participant Information

Iafrate, Mr. Dominic

Title:	
Company:	Angelo's Recycled Materials
Address:	1809 Crooked Oak Ln. Lutz, FL 33559
Phone:	(727) 919-4702

Tracks

Track	Status*	Current Period		Training Hours		Has met requirements to rollover to next 3-year period?		Transcript
		Start	Stop	Taken	FDEP Required	Yes/No	Rollover Date	
Class I, III Landfill Operator	Current	11/21/2011	11/20/2014	0	16	False	11/21/2014	Transcript
Construction and Demolition Debris Landfill Operator	Current	11/21/2011	11/20/2014	0	16	False	11/21/2014	Transcript
Transfer Station Operator	Current	08/05/2010	08/04/2013	4	8	False	08/05/2013	Transcript
Material Recovery Facility Operator	Current	08/05/2010	08/04/2013	4	8	False	08/05/2013	Transcript

* If Expired, click on transcript link to see the training course history.

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Participant Information

Santos, Alfonso

Title:	
Company:	Angelos Recycled Materials
Address:	1755 20th Ave SE Largo, FL 33771
Phone:	(813) 477-5920

Tracks

Track	Status*	Current Period		Training Hours		Has met requirements to rollover to next 3-year period?		Transcript
		Start	Stop	Taken	FDEP Required	Yes/No	Rollover Date	
Spotter / Waste Screener	Current	03/15/2011	03/14/2014	0	4	False	03/15/2014	Transcript

* If Expired, click on transcript link to see the training course history.

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Participant Information

Azpeitia, Mario

Title:	
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Phone:	(813) 477-5920

Tracks

Track	Status*	Current Period		Training Hours		Has met requirements to rollover to next 3-year period?		Transcript
		Start	Stop	Taken	FDEP Required	Yes/No	Rollover Date	
Spotter / Waste Screener	Current	03/15/2011	03/14/2014	0	4	False	03/15/2014	Transcript

* If Expired, click on transcript link to see the training course history.

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Participant Information

Santos, Alfredo

Title:	
Company:	Angelos Recycled Materials
Address:	1755 20th Ave SE Largo, FL 33771
Phone:	(813) 477-5920

Tracks

Track	Status*	Current Period		Training Hours		Has met requirements to rollover to next 3-year period?		Transcript
		Start	Stop	Taken	FDEP Required	Yes/No	Rollover Date	
Spotter / Waste Screener	Current	03/15/2011	03/14/2014	0	4	False	03/15/2014	Transcript

* If Expired, click on transcript link to see the training course history.

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Participant Information

Martinez, Mr. Saturnino

Title:	Spotter
Company:	Angelos Recycled Materials
Address:	41111 Enterprise Rd. Dade City, FL 33525
Phone:	(352) 567-7676

Tracks

Track	Status*	Current Period		Training Hours		Has met requirements to rollover to next 3-year period?		Transcript
		Start	Stop	Taken	FDEP Required	Yes/No	Rollover Date	
Spotter / Waste Screener	Current	10/10/2009	10/09/2012	4	4	True	10/10/2012	Transcript

* If Expired, click on transcript link to see the training course history.

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Participant Information

Martinez, Alfredo T

Title:	Equipment Operator
Company:	Angelos Recycle Materials
Address:	41111 Enterprise Rd Dade City, FL 33525
Phone:	3525677676

Tracks

Track	Status*	Current Period		Training Hours		Has met requirements to rollover to next 3-year period?		Transcript
		Start	Stop	Taken	FDEP Required	Yes/No	Rollover Date	
Class I, III Landfill Operator	Current	11/17/2009	11/16/2012	0	16	False	11/17/2012	Transcript
Construction and Demolition Debris Landfill Operator	Current	11/17/2009	11/16/2012	0	16	False	11/17/2012	Transcript
Spotter / Waste Screener	Current	10/10/2009	10/09/2012	0	4	False	10/10/2012	Transcript

* If Expired, click on transcript link to see the training course history.

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ENGINEERING REPORT
APPENDIX I

CONTINGENCY PLAN

ENTERPRISE ROAD CLASS III RECYCLING AND DISPOSAL FACILITY
PERMIT MODIFICATION
EMERGENCY AND CONTINGENCY OPERATIONS

Prepared for:

ANGELO'S AGGREGATE MATERIALS, LTD
855 28th Street South
St. Petersburg, Florida 33712

Presented to:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHWEST DISTRICT – SOLID WASTE DIVISION
13051 N. Telecom Parkway
Temple Terrace, Florida 33637

Prepared by:

LOCKLEAR & ASSOCIATES, INC.
4140 NW 37 Place, Suite A
Gainesville, Florida 32606
Certificate of Authorization #30066

Project No.: 02000-144-14

August 2014

TABLE OF CONTENTS

1.0 EMERGENCY AND CONTIGENCY OPERATIONS

Angelo's Aggregate Materials, LTD (Applicant) is the Owner and Operator of the Enterprise Road Class III Recycling and Disposal Facility (Facility). Emergency conditions that may require a contingency operation plan may be created by a natural disaster (i.e., hurricane, tornado, and/or flooding), or fire. During emergency conditions normal waste acceptance procedures will continue, as feasible. The following procedures are to be initiated at the onset of a site emergency or major storm:

1.1 Communications

The designated emergency coordinator for the Facility is Mr. Fred Martinez, who may be reached at (352) 303-5618. Mr. Martinez is responsible for implementing emergency and contingency operations or designating an alternate coordinator.

As necessary the emergency coordinator will notify the appropriate emergency response personnel including:

- 911 - Fire/Police/Medical
- Dade City Fire Department- (352) 521-1492
- Dade City Police Department- (352) 521-1493
- Pasco County Hospital - Dade City - (352) 521-1100
- Florida Department of Environmental Protection (813) 632-7600
- Pasco County (727) 847-2411

If needed, the Operator will coordinate with emergency response and Pasco County personnel to notify neighbors and / or local government officials of emergency and contingency conditions that may affect them.

1.2 Major Storm or Disaster

1. All personnel understand their role in an emergency situation. At least one office employee will monitor the telephone. Radio or telephone communication is provided between the office and all operating areas of the landfill at all times.

2. All lightweight signs and equipment are to be collected and stored in a secure area.

3. All depressed and eroded areas are to be protected and the stormwater management system is to be inspected and maintained, as necessary.

4. Work is to begin in dry areas only when operations are resumed; waste materials are not to be deposited in standing water.

5. On-site emergency equipment locations, such as first aid and eye wash stations, are shown on Site Plan.

1.3 Fire

Although open burning is strictly prohibited, several types of fires could occur at the Facility including equipment fires, structure fires, waste fires, buffer zone fires, and receipt of hot loads. The Operator will provide a truck mounted water tank on-site for use in fire fighting purposes. A stockpile of soil will be located near the active disposal area at all times for use in smothering waste fires and hot loads. During a fire, incoming trucks will be directed toward another area of the landfill so that a temporary active face can be established. Once the fire is extinguished, appropriate cover will be applied to the waste and operations will continue at the original active face. If the fire is extensive and a temporary active face cannot be established, incoming trucks will be redirected to another landfill.

For all fires, the Florida Department of Environmental Protection (FDEP) and Pasco County will be notified of the fire control plan being implemented if the fire cannot be extinguished or controlled within an hour. If the fire cannot be extinguished or controlled within 48 hours, the emergency coordinator will notify the local Fire Department listed above for assistance and will also notify Pasco County and any neighbors likely to be affected by the fire.

The Operator will take the following procedures if a fire occurs at the Facility:

1.3.1 Equipment and Structural Fires

If the fire is minor in nature, site personnel will attempt to extinguish the fire using available on-site fire fighting equipment. The local Fire Department listed above will be summoned for assistance if site personnel and equipment cannot extinguish the fire.

1.3.2 Waste Fires

Burning waste will be separated from the fill area and immediately covered with soil stockpiled near the disposal area. If necessary, water will also be applied to the burning waste using the on-site truck mounted water tank. The local Fire Department listed above will be summoned for assistance if the site personnel and equipment cannot extinguish the fire.

1.3.3 Buffer Zone Fires

The local Fire Department listed above will be immediately summoned to control and extinguish the fire. Available site personnel will create and maintain fire breaks between the active disposal area and the oncoming fire, and water down areas between the fire and the disposal area using the water tank. Available site personnel will assist the Fire Department as requested.

1.3.4 Hot Load Fires

If a hot load has not been unloaded, the driver will be directed to an isolated area of the Facility and site personnel will use available fire fighting equipment in an attempt to extinguish the load. If a hot load has been unloaded, the load will be spread out and separated from the active disposal area and immediately covered with soil stockpiled near the area. If necessary, water will also be applied to the load using the on-site water tank.

The local Fire Department listed above will be summoned for assistance if site personnel and equipment cannot extinguish the load.

1.3.5 Fire-Fighting Equipment

Fire extinguishers are located in locations indicated below.

- <u>Office / Scale House</u>
- <u>Heavy Equipment Cabs</u>

1.4 <u>Spills</u>

In the event of a spill, the site manager will determine whether on site personnel are capable of the cleanup. For example, if oil is spilled while performing vehicle maintenance, the site manager will direct landfill personnel to use a sorbent material to cleanup the spill if spill occurred on an impervious surface. For spills on unpaved areas of the facility, the contaminated soil will be removed and placed in an appropriate container. All cleanup materials will be placed in a drum, stored in the shipping/storage container on-site for proper disposal. If unknown or hazardous chemicals are spilled, the site manager will contact the Department (813-632-7600) and Pasco County (727-847-2411) for direction.

1.5 Discovery of Hazardous Wastes

The operator will take the following steps if hazardous wastes are discovered at the active disposal area that may pose a serious health and safety risk to site personnel, the public, or the environment. Site personnel will establish a minimum 50-foot perimeter around the suspect waste using pylons and "Caution" and/or "Do Not Enter" tape. The driver and other customers will not be allowed closer than 50 feet to the suspect waste. Site personnel will immediately contact their supervisor. The supervisor will contact a hazardous waste materials response team to coordinate cleanup and disposal of the hazardous materials.

1.6 Equipment Failure

Arrangements with equipment rental companies will be maintained in order to provide for additional equipment during unanticipated breakdowns.

Equipment rental companies that may be used to obtain reserve equipment include the following:

Ring Power - Brooksville, Florida
Contact: 352-796-4978

Flagler Equipment - Tampa, Florida
Contact: 813-630-0077

1.7 Landfill Shutdown

1. If the landfill should need to be shut down, the Department will be notified and haulers will be directed to another properly permitted facility.
2. Initial cover of six (6) inches will be placed on all waste exposed areas.

The stormwater management system will allow for disposal operations to continue during periods of inclement weather. Temporary berms, ditches, and grading are to be used to drain stormwater away from the active face of the landfill. The following actions should be taken at the landfill following a severe storm, hurricane, or other natural disaster:

- FDEP and Pasco County are to be notified by telephone immediately should any need for emergency and contingency operations arise. The phone number for the Department's Solid Waste Section is (813) 470-5700. The phone number for Pasco County is (727) 847-2411. The calls are to be confirmed by letter.

- Operational hours of the landfill may be extended at the landfill to meet the needs of the community. Pasco County and the Department will be consulted prior to changes in the hours of operation of the landfill.
- Necessary additional equipment, if required, will be rented. Arrangements are in place between the operator of the Landfill and equipment rental companies to facilitate this activity.
- If required, additional equipment operators and/or other personnel will be contracted. Arrangements are in place between the operator of the Landfill and temporary staffing companies to facilitate this activity.
- Appropriate public notices will be issued, including notification of the landfill's customer's by telephone and other media
- Contacts with local governmental bodies and local emergency agencies such as fire and rescue have been established in order to coordinate emergency activities. Fire and rescue personnel responsible for this district have visited the site in order to discuss emergency procedures.
- Site personnel may be trained in CPR and First Aid.

ATTACHMENT 1

DEED

9,420

2001048224

Rcpt: 489384 Rec: 10.50
DS: 13226.50 IT: 0.00
04/12/01 Dpty Clerk

JED PITTMAN, PASCO COUNTY CLERK
04/12/01 02:18pm 1 of 2
OR BK 4583 PG 960

R

Prepared by and return to:
Mandy Baldwin-Luffman
Employee
Johnson, Auvil & Brock, P.A.
37837 Meridian Avenue Suite 314
Dade City, Florida 33525

File Number: 01-03-47

[Space Above This Line For Recording Data]

Warranty Deed

This Warranty Deed made this 12th day of April, 2001 between **Sid Larkin & Son, Inc., a Florida corporation** whose post office address is P.O. Box 1747 Dade City, FL 33526, grantor, and **Angelo's Aggregate Materials, LTD, *a Florida limited partnership*** whose post office address is ***26400 Sherwood, Warren,*** **Michigan 48091**, grantee:

(Whenever used herein the terms "grantor" and "grantee" include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Pasco County, Florida** to-wit:

> **The South 1/2 of the SW 1/4 of Section 5 Lying West of the Right-of-Way on Auton Road: And the South 30.0 feet of the NE 1/4 of the SW 1/4 of Section 5, Lying West of the Right-of-Way on Auton Road: Less the East 50.0 feet thereof: And the SW 1/4 of the NW 1/4 of Section 5, all in Section 5, Township 25 South, Range 22 East.**
>
> **The South 1/2 of the NE 1/4 of Section 6: And the North 1/2 of the SE 1/4 of Section 6: Less the South 281.0 feet of the West 181.0 feet thereof: And the NE 1/2 of the NE 1/4 of the SE 1/4 of the SE 1/4 of Section 6: All in Township 25 South, Range 22 East.**
>
> **The North 1/2 of the NW 1/4 of Section 8 Lying West of the Right-of-Way on Auton Road; Less the South 25.0 feet thereof; All in Township 25 South, Range 22 East.**
>
> **All lying in and being in Pasco County, Florida.**
>
> **Subject to maintained right-of-way on Duck Lake Canal Road**
>
> **Parcel Identification Number: 05-25-22-0000-00500-0030**

Together with all the tenements, hereditaments, easements and appurtenances thereto belonging or in anywise appertaining.

To Have and to Hold, *the same in fee simple forever.*

And the grantor hereby covenants with said grantee that the grantor is lawfully seized of said land in fee simple; that the *grantor has good right and lawful authority to sell and convey said land; that the grantor hereby fully warrants the title to* said land and will defend the same against the lawful claims of all persons whomsoever; and that said land is free of all encumbrances, except taxes and solid waste assessments accruing subsequent to December 31,2000, zoning and/or restrictions imposed by governmental authority.

DoubleTime®

In Witness Whereof, grantor has hereunto set grantor's hand and seal the day and year first above written

Signed, sealed and delivered in our presence:

Witness Name: Jon L. April

Witness Name: Marcy Baldwin-Hoffman

Sid Larkin & Son, Inc.
a Florida corporation

By: Jon S Larkin II, Pres.
Jon S. Larkin, II
President

(Corporate Seal)

CORP SEAL

State of Florida
County of Pasco

The foregoing instrument was acknowledged before me this 17th day of April, 2001 by Jon S. Larkin, II, President of Sid Larkin & Son, Inc., a Florida corporation, on behalf of the corporation. He [_] is personally known to me or [X] has produced a driver's license as identification

[Notary Seal]

Notary Public

Printed Name: Elizabeth A. Baldwin

Elizabeth A. Baldwin
MY COMMISSION # CC599381 EXPIRES
November 30, 2001

My Commission Expires: ________

3/3 7,497,425

2005266480

Rcpt:952030 Rec: 27.00
DS: 52482.50 IT: 0.00
12/15/05 Dpty Clerk

JED PITTMAN, PASCO COUNTY CLERK
12/15/05 04:31pm 1 of 3
OR BK 6749 PG 432

R

Prepared by and return to:
Josephine Lee Larkin, For
Meridian Title Company, Inc.
37837 Meridian Avenue Suite 100
Dade City, FL 33525

File Number: 05-07-67

[Space Above This Line For Recording Data]

Warranty Deed

This Warranty Deed made this 14 day of December, 2005, between **Sid Larkin and Son, Inc., a Florida corporation,** whose post office address is **39651 LARKIN LAKE DRIVE, Dade City, FL 33525**, grantor, and **Angelo's Aggregate Materials, LTD., a Florida Limited Partnership,** whose post office address is **26400 Sherwood, Warren, MI 48091**, grantee:

(Whenever used herein the terms "grantor" and "grantee" include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Pasco County, Florida** to-wit:

SEE EXHIBIT "A" ATTACHED HERETO & MADE A PART HEREOF FOR A MORE PARTICULAR DESCRIPTION OF SAID PROPERTY.

Parcel Identification Number: 082522 0000 00100 0000
and
Parcel Identification Number: 082522 0000 00100 0100
and
Parcel Identification Number: 072522 0000 00100 0000

Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

To Have and to Hold, the same in fee simple forever.

And the grantor hereby covenants with said grantee that the grantor is lawfully seized of said land in fee simple; that the grantor has good right and lawful authority to sell and convey said land; that the grantor hereby fully warrants the title to said land and will defend the same against the lawful claims of all persons whomsoever; and that said land is free of all encumbrances, except taxes accruing subsequent to **December 31, 2005**, zoning and/or restrictions imposed by governmental authority, and easements, restrictions and reservations of record, if any, however this reference shall not serve to reimpose same.

In Witness Whereof, grantor has hereunto set grantor's hand and seal the day and year first above written.

Signed, sealed and delivered in our presence:

Witness Name: Josephine Lee Larkin

Witness Name: Linda Breakey

SID LARKIN AND SON, INC., a Florida corporation

By: Jon S. Larkin, II

Jon S. Larkin, II, President

(Corporate Seal)

Sid Larkin & Son, Inc.
A FL Corp.
a FL Corp.

State of Florida
County of Pasco

The foregoing instrument was acknowledged before me this 14 day of December, 2005 by Jon S. Larkin, II, President of SID LARKIN AND SON, INC., a Florida corporation, on behalf of the corporation. He [ ] is personally known to me or [X] has produced a driver's license as identification.

[Notary Seal]

Notary Public

Printed Name: Josephine Lee Larkin

My Commission Expires: July 16, 2007

Josephine Lee Larkin
MY COMMISSION # DD206215 EXPIRES
July 16, 2007
BONDED THRU TROY FAIN INSURANCE, INC.

Exhibit A

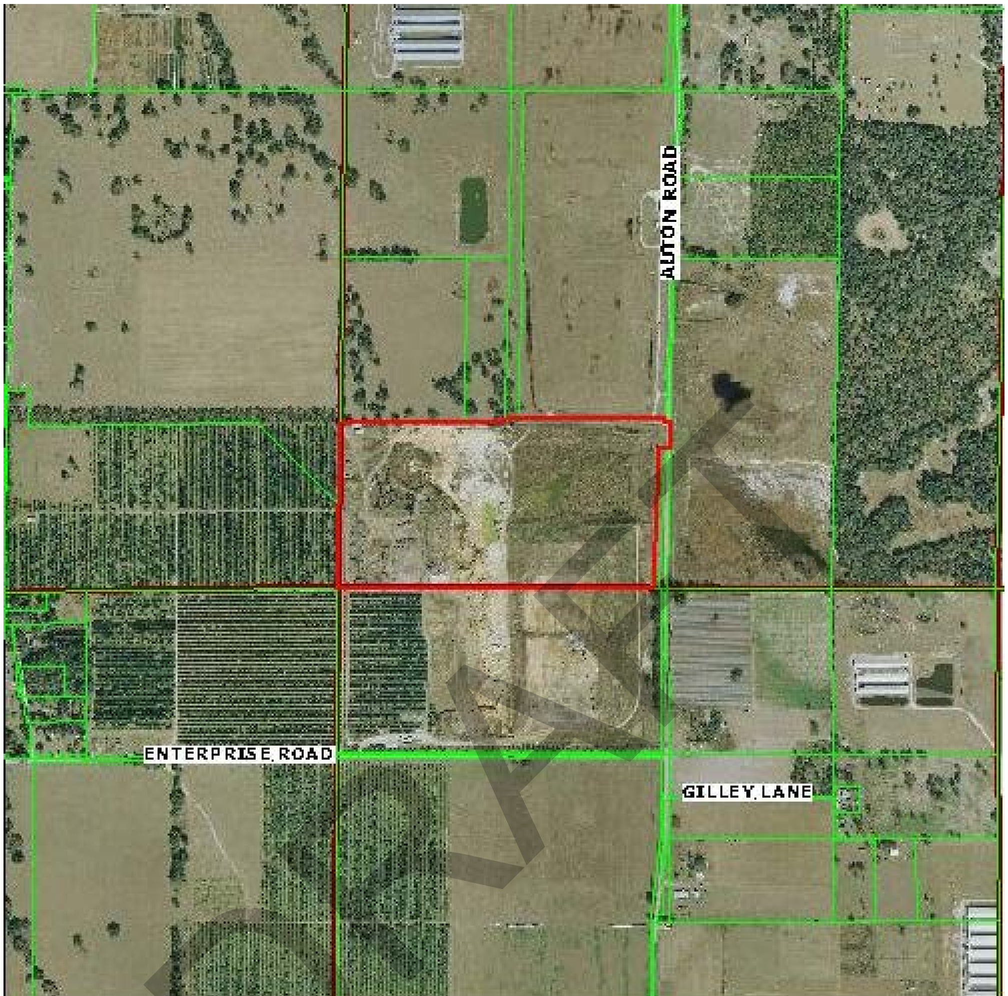
A PORTION OF SECTIONS 7 AND 8, TOWNSHIP 25 SOUTH, RANGE 22 EAST, PASCO COUNTY, FLORIDA, FURTHER DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF SECTION 7, TOWNSHIP 25 SOUTH, RANGE 22 EAST, BEING ALSO THE SOUTHWEST CORNER OF SECTION 8, TOWNSHIP 25 SOUTH, RANGE 22 EAST, THENCE ALONG THE SOUTH LINE OF THE SOUTHEAST 1/4 OF SECTION 7, RUN S-89°26'48"-W, 2425.00 FEET, THENCE N-00°12'51"-W, 3948.82 FEET TO THE INTERSECTION OF THE SOUTHERLY RIGHT-OF-WAY LINE OF ENTERPRISE ROAD, THENCE ALONG SAID RIGHT-OF-WAY LINE THE FOLLOWING COURSES: N-89°43'20"-E, 792.52 FEET; N-89°10'39"-E, 934.87 FEET; N-89°29'16"-E, 710.53 FEET; N-89°58'25"-E, 821.74 FEET; N-89°44'06"-E, 1769.79 FEET; TO THE INTERSECTION OF THE WESTERLY RIGHT-OF-WAY LINE OF SINGLETARY ROAD, THENCE ALONG SAID RIGHT-OF-WAY LINE THE FOLLOWING COURSES: S-00°13'53"-E, 609.68 FEET; S-07°39'10"-W, 656.12 FEET; S-00°13'53"-E, 50.00 FEET TO THE SOUTH LINE OF THE NORTHWEST 1/4 OF SAID SECTION 8, THENCE ALONG SAID LINE AND CONTINUING ALONG SAID RIGHT-OF-WAY LINE N 89°49'11"-E, 6.00 FEET; TO A POINT IN THE CENTER OF SINGLETARY ROAD AS NOW LOCATED; THENCE LEAVING SAID RIGHT-OF-WAY LINE AND RUNNING ALONG THE CENTERLINE OF SINGLETARY ROAD, S-00°27'46"-W, 2629.32 FEET, THENCE LEAVING SAID RIGHT-OF-WAY LINE S-89°38'12"-W, 557.00 FEET, THENCE S-89°47'10"-W, 1878.44 FEET, THENCE S-81°47'17"-W, 54.85 FEET TO THE POINT OF BEGINNING.

Parcel Identification Number: 082522 0000 00100 0000
and
Parcel Identification Number: 082522 0000 00100 0100
and
Parcel Identification Number: 072522 0000 00100 0000

Pasco County, Florida
3.7 miles N of Richland

Prepared by the Office of Mike Wells, Pasco County Property Appraiser.

Map Created on 10/1/2011 at 5:52:58 PM.



Data Current as Of:	Weekly Archive - Saturday, September 24, 2011
Parcel ID	05-25-22-0000-00500-0030 (Card: 001 of 001)
Classification	66 - Orchard Groves

Mailing Address

ANGELO'S AGGREGATE MATERIALS
LTD
PO BOX 1493
LARGO FL 33779-1493

Physical Address

Physical Address N/A

Legal Description (First 4 Lines)

SOUTH 1/2 OF SW1/4 OF SECTION
5 LYING WEST OF RIGHT-OF-WAY
OF AUTON ROAD & SOUTH 30.00 FT
OF NE1/4 OF SW1/4 OF SECTION

Property Value

Ag Land	$1,510,541
Land	$1,556,688
Building	$0
Extra Features	$3,968
Market Value	**$1,514,509**
Assessed (Non-School Amendment 1)	$1,514,509
Taxable Value	**$1,514,509**

Land Detail (Card: 001 of 001)

Line	Use	Description	Zoning	Units	Type	Price	Condition	Value
1	6601	CIT.GRV.LD	00AC	10.50	AC	$1,000.00	1.00	$10,500
2	6610	ORANGE GRV	00AC	10.50	AC	$3,300.00	0.85	$29,453
3	9200	MINING	00AC	31.78	AC	$8,200.00	4.50	$1,172,682
4	9200	MINING	00AC	36.33	AC	$8,200.00	1.00	$297,906
5	9910	MKT.VAL.AG	00AC	31.78	AC	$8,200.00	4.50	$1,172,682
6	9910	MKT.VAL.AG	00AC	46.83	AC	$8,200.00	1.00	$384,006

Additional Land Information

Acres		Tax Area		FEMA Code		Residential Code	
	78.61		21MF		X		3EDC.S1

Building Information (Card: 001 of 001)

Unimproved Parcel 00 - Unimproved

Extra Features (Card: 001 of 001)

Line	Description	Year	Units	Value
1	CLFENCE	2003	9,380	$3,968

Sales History

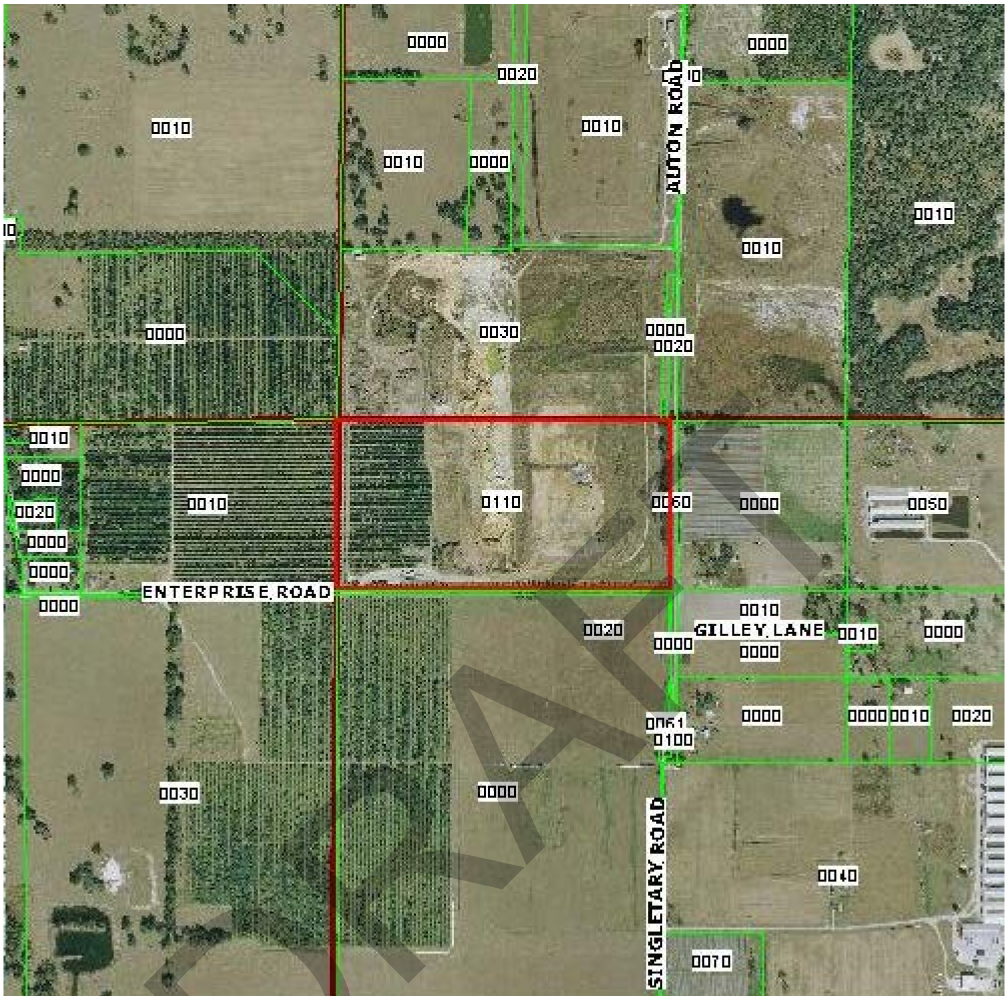
Previous Owner: SID LARKIN & SON INC

Year	Month	Book/Page	Type	Amount
2001	04	4583 / 0960	WD	$0
1986	06	1509 / 0998	WD	$0
1983	04	1256 / 0292	WD	$0

Pasco County, Florida
3.5 miles N of Richland

Prepared by the Office of Mike Wells, Pasco County Property Appraiser.

Map Created on 10/1/2011 at 6:01:33 PM.



Data Current as Of:	Weekly Archive - Saturday, September 24, 2011
Parcel ID	08-25-22-0000-00100-0110 (Card: 001 of 002)
Classification	66 - Orchard Groves

Mailing Address

ANGELO'S AGGREGATE MATERIALS
LTD
PO BOX 1493
LARGO FL 33779-1493

Physical Address - See All 3 addresses **(First Shown)**

41111 ENTERPRISE RD
DADE CITY FL 33525-1589

Legal Description (First 4 Lines)

N1/2 OF NW1/4 OF SECTION 8
LYING WEST OF AUTON ROAD LESS
SOUTH 25.00 FT THEREOF
OR 4583 PG 960

Property Value

Ag Land	$1,115,538
Land	$1,282,398
Building	$44,695
Extra Features	$39,224
Market Value	**$1,199,457**
Assessed (Non-School Amendment 1)	$1,199,457
Taxable Value	**$1,199,457**

Land Detail (Card: 001 of 002)

Line	Use	Description	Zoning	Units	Type	Price	Condition	Value
1	6601	CIT.GRV.LD	00AC	31.00	AC	$1,000.00	1.00	$31,000
2	6610	ORANGE GRV	00AC	18.00	AC	$1,150.00	1.00	$20,700
3	6610	ORANGE GRV	00AC	12.00	AC	$3,300.00	0.90	$35,640
4	9200	MINING	00AC	22.22	AC	$8,200.00	4.50	$819,918
5	9200	MINING	00AC	25.40	AC	$8,200.00	1.00	$208,280
6	9910	MKT.VAL.AG	00AC	22.22	AC	$8,200.00	4.50	$819,918

Additional Land Information

Acres	78.62	Tax Area	21MF	FEMA Code	--	Residential Code	3EDC.S1

Building Information - **Use** 02 - Mobile Home (Card: 001 of 002)

Year Built	2001	**Stories**	1.0
Exterior Wall 1	Above Average	**Exterior Wall 2**	None
Roof Structure	Gable or Hip	**Roof Cover**	Asphalt or Composition Shingle
Interior Wall 1	Drywall	**Interior Wall 2**	None
Flooring 1	Sheet Vinyl	**Flooring 2**	Carpet
Fuel	Electric	**Heat**	Forced Air - Ducted
A/C	None	**Baths**	2.0

Line	Description	Sq. Feet	Repl. Cost New
1	BAS	1,536	$44,360

Extra Features (Card: 001 of 002)				
Line	**Description**	**Year**	**Units**	**Value**
1	CAC-4	2003	1	$616
2	CLFENCE	2003	21,000	$8,883
3	PAV CON	2003	4,620	$5,544
4	PAV ASP	2003	24,388	$15,804
5	BARN	2005	1	$6,552

Sales History				
Previous Owner		N/A		
Year	**Month**	**Book/Page**	**Type**	**Amount**
2001	04	4583 / 0960	WD	$0

ATTACHMENT 2

LETTERS OF AUTHORIZATION

June 19, 2013

Dominic Iafrate, Vice President
Angelo's Aggregate Materials, LLC
855 28th Street South
St. Petersburg, FL 33712

RE: Angelo's Aggregate Materials, LLC (d/b/a Angelo's Recycled Materials)
Agent Authorization

To Whom It May Concern,

Mr. John Arnold, P.E. is authorized by Angelo's Aggregate Materials, LLC to act on its behalf for all matters related to our existing and contemplated facilities in the state of Florida. Such authorization includes permitting, construction, operations, closure activities, and dealings as may be necessary in the pursuit of Angelo's Aggregate Materials, LLC interests. This authorization shall remain in effect until rescinded in writing by an authorized agent of Angelo's Aggregate Materials, LLC.

Sincerely,

Dominic Iafrate, Vice President
Angelo's Aggregate Materials, LLC

Witness Signature:

Witness Name (printed): NEIRO DE RUBEIS

Date: 6/20/2013

July 25, 2014

Angelo's Aggregate Materials, LLC
John Arnold, P.E.
41111 Enterprise Road
Dade City, FL 33525

RE: Engineer of Record Authorization

To Whom It May Concern,

Locklear and Associates, Inc. is authorized to act as the engineer of record on behalf of Angelo's Aggregate Materials, LLC for solid waste facilities located at 41111 Enterprise Road, Dade City, FL 33525. This authorization shall remain in effect until rescinded in writing by an authorized agent of Angelo's Aggregate Materials, LLC.

Sincerely,

John Arnold, P.E.
Manager
Angelo's Aggregate Materials, LLC

Witness Signature: ____________

Witness Name (printed): John Lockler

Date: 7/25/14

ATTACHMENT 3

NOTICE OF APPLICATION

TO BE PUBLISHED IN A LOCAL NEWSPAPER OF GENERAL CIRCULATION UPON RECEIPT OF NOTIFICATION FROM THE DEPARTMENT TO PUBLISH NOTIFICTATION.