March 31, 2016

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 one (1) copy 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. 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 with any questions or comments regarding this submittal.

Sincerely,

John Locklear

John Locklear, P.G.
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.: 02000-144-15

March 2016

Performed Under the
Supervision of

3-31-16

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

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SECTION 1

INTRODUCTION

INTRODUCTION

Locklear & Associates, Inc. (L&A) is submitting one (1) copy 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 in multiple pre-application meetings with the Department, 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.

The application generally involves modifying the current permits to allow for the construction and operation of an approximately six-acre lateral expansion referred to as Cell 16. Cell 16 is proposed to be constructed with a 3-foot thick clay layer consistent with the previously constructed cells. As discussed with the Department, a separate application has been submitted concurrently to permit Pond 3 (not yet constructed) as an Industrial Wastewater (IW) pond. Based on discussions with the Department, the applicant may elect to submit a permit application to modify the designation of Pond 3 from an IW pond to a stormwater pond following closure of the landfill.

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: February 15, 2015

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

Northwest District	Northeast District	Central District	Southwest District	South District	Southeast District
160 Governmental Street	7777 Baymeadows Way West	3319 Maguire Boulevard	13051 North Telecom Pkwy	2295 Victoria Ave, Suite 364	3301 Gun Club Road
Suite 308	Suite 100	Suite 232	Temple Terrace, FL 33637	P.O. Box 2549	MSC 7210-1
Pensacola, FL 32502-5794	Jacksonville, FL 32256-7590	Orlando, FL 32803-3767	813-470-5700	Fort Myers, FL 33901-3881	West Palm Beach, FL 33406
850-595-8300	904-256-1700	407-897-4100		239-344-5600	561-681-6600

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 permit application shall be submitted in accordance with the requirements of Rule 62-701.320(5)(a), F.A.C., 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 ☐ Ash Monofill
☑ Class III Landfill ☐ Asbestos Monofill
☐ Industrial Solid Waste
☐ Other (describe):

____

____

____

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 ☑ Substantial Modification
☐ Renewal ☐ 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: 487,588 (Pasco County 2015 Census Est) Five-Year Projection: 540,367 (Pasco County 2020 Projections)

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:

______________ yds³/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: 67.0 Used acres: 50.5 Available acres: 16.5

4. Weighing scales used: ☑ Yes ☐ No

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

6. Charge for waste received: +/- $9.00 $/yds³ ____ $/ton

7. Surrounding land use, zoning:

☐ Residential	☐ Industrial
☑ Agricultural	☐ None
☐ Commercial	☐ Other (describe):

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

8. Types of waste received:

☐ Household	☑ C & D debris
☐ Commercial	☑ Shredded/cut tires
☐ Incinerator/WTE ash	☑ Yard trash
☐ Treated biomedical	☐ Septic tank
☐ Water treatment sludge	☐ Industrial
☐ Air treatment sludge	☐ Industrial sludge
☐ Agricultural	☐ Domestic sludge
☑ Asbestos	☑ 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
- ☑ Single clay liner
- ☐ Single geomembrane
- ☐ Single composite
- ☐ Slurry wall
- ☐ Double geomembrane
- ☐ Geomembrane & composite
- ☐ Double composite
- ☐ None
- ☐ Other (describe):

21. Leachate collection method:

- ☐ Collection pipes
- ☐ Geonets
- ☐ Well points
- ☐ Perimeter ditch
- ☑ Other (describe):
- ☐ Double geomembrane
- ☐ Gravel layer
- ☐ Interceptor trench
- ☐ None

Gravity drainage to temporary stormwater pond (Cell 14) and proposed 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 51-0172489-006

PART C. PROHIBITIONS (62-701.300, FAC)

LOCATION

S ☑ Section 3, App A 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), (13) and (16) 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)

S ☐ ____________ N/A ☐ N/C ☑ 11. Provide documentation that the facility will be in compliance with the CCA treated wood restrictions; (62-701.300(14), FAC)

S ☐ ____________ N/A ☐ N/C ☑ 12. Provide documentation that the facility will be in compliance with the dust control restrictions; (62-701.300(15), FAC)

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

LOCATION		
S ☑ Section 2	N/A ☐ N/C ☐	1. A minimum of one completed electronic 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)
S ☑ Section 2	N/A ☐ N/C ☐	4. A completed application form dated and signed by the applicant; (62-701.320(7)(b), FAC)
S ☑ Cover Letter	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)
S ☑ Section 3	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)
S ☑ Section 3, App G & F	N/A ☐ N/C ☐	7. Operation Plan and Closure Plan; (62-701.320(7)(e)1, FAC)
S ☑ Section 3, App H	N/A ☐ N/C ☐	8. Contingency Plan; (62-701.320(7)(e)2, FAC)
S ☑ Section 3, App A	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;
S ☑ Section 3, App A	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 ☑ Section 3, App A	N/A ☐ N/C ☐	c. A site plan showing all property boundaries certified by a Florida Licensed Professional Surveyor and Mapper;
S ☑ Section 3, App A	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;

LOCATION **PART D CONTINUED**

S ☑ Attachment 1 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)

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 ☑ Section 3, App B 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 ☑ Section 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 ☑ Section 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 ☑ Section 3, App A N/A ☐ N/C ☐ a. Dimensions;

S ☑ Section 3, App D N/A ☐ N/C ☐ b. Locations of proposed and existing water quality monitoring wells;

S ☑ Section 3, App C N/A ☐ N/C ☐ c. Locations of soil borings;

S ☑ Section 3, App A N/A ☐ N/C ☐ d. Proposed plan of trenching or disposal areas;

S ☑ Section 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;

LOCATION				PART E CONTINUED
S ☑	Section 3, App A	N/A ☐	N/C ☐	f. Any previously filled waste disposal areas;
S ☑	Section 3, App A	N/A ☐	N/C ☐	g. Fencing or other measures to restrict access;
S ☑	Section 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 ☑	Section 3, App A	N/A ☐	N/C ☐	a. Proposed fill areas;
S ☐		N/A ☐	N/C ☑	b. Borrow areas;
S ☑	Section 3, App A	N/A ☐	N/C ☐	c. Access roads;
S ☑	Section 3, App A	N/A ☐	N/C ☐	d. Grades required for proper drainage;
S ☑	Section 3, App A	N/A ☐	N/C ☐	e. Cross sections of lifts;
S ☐		N/A ☑	N/C ☐	f. Special drainage devices if necessary;
S ☑	Section 3, App A	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 ☑	Section 3, App A	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 ☑ Section 3, App B 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 ☑ Section 3, App A 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 ☑ Section 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), (c) and (d), FAC

S ☐ _____________ N/A ☑ N/C ☐ (1) Bottom 12 inches having hydraulic conductivity $\geq 1 \times 10^{-3}$ 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 ☐ (5) Schedule provided for routine maintenance of LCRS.

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 ☐	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(2), FAC)

LOCATION

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

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

S ☑ Section 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 ☑ Section 3, App C N/A ☐ N/C ☐ c. Background quality of ground water and surface water;

S ☑ Section 3, App C N/A ☐ N/C ☐ d. Any on-site hydraulic connections between aquifers;

S ☑ Section 3, App C N/A ☐ N/C ☐ e. Site stratigraphy and aquifer characteristics for confining layers, semi-confining layers, and all aquifers below the site that may be affected by the disposal facility;

S ☑ Section 3, App C 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 site 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 ☑ Section 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 ☑ Section 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(3) and (4), FAC)

LOCATION

S ☑ Section 3, App C-1 N/A ☐ N/C ☐ 1. Submit a geotechnical site investigation report defining the engineering properties of the site including at least the following:

S ☑ Section 3, App C-1 N/A ☐ N/C ☐ a. Description of subsurface conditions including soil stratigraphy and ground water table conditions;

S ☑ Section 3, App C-1 N/A ☐ N/C ☐ b. Investigate for the presence of muck, previously filled areas, soft ground, and lineaments;

S ☑ Section 3, App C-1 N/A ☐ N/C ☐ c. Estimates of average and maximum high water table across the site;

S ☑ Section 3, App C-1 N/A ☐ N/C ☐ d. Evaluation of potential for fault areas and seismic impact zones;

S ☑ Section 3, App E N/A ☐ N/C ☐ e. Foundation analysis including:

LOCATION **PART I CONTINUED**

S ☑ Section 3, App E N/A ☐ N/C ☐ (1) Foundation bearing capacity analysis;

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

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

S ☐ ____________ N/A ☐ N/C ☑ f. Evaluation of potential for sinkholes and sinkhole activity at the site that is based upon the investigations required in Rule 62-701.410(3)(f), F.A.C.;

S ☐ ____________ N/A ☐ N/C ☐ g. A geotechnical report providing a description of methods used in the investigation, and includes soil boring logs, laboratory results, analytical calculations, cross sections, interpretations, conclusions, and a description of any engineering measures proposed for the site;

S ☑ Sec 3, App C & 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 any violations of water quality standards or criteria, 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 ☑ Section 3, App G 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 ☑ Section 3, App G N/A ☐ N/C ☐ f. Method and sequence of filling waste;

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

S ☑ Section 3, App G N/A ☐ N/C ☐ h. Operations of gas, leachate, and stormwater controls;

S ☑ Section 3, App D 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, App G	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, App G 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 ☑ Section 3, App D 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 ☑ Section 3, App D 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 ☑ Section 3, App D N/A ☐ N/C ☐	b. All sampling and analysis performed in accordance with Chapter 62-160, FAC; (62-701.510(2)(b), FAC)
S ☑ Section 3, App D N/A ☐ N/C ☐	c. Ground water monitoring requirements; (62-701.510(3), FAC)
S ☑ Section 3, App D N/A ☐ N/C ☐	(1) Detection wells located downgradient from and within 50 feet of disposal units;
S ☑ Section 3, App D N/A ☐ N/C ☐	(2) Downgradient compliance wells as required;
S ☑ Section 3, App D N/A ☐ N/C ☐	(3) Background wells screened in all aquifers below the landfill that may be affected by the landfill;
S ☑ Section 3, App D N/A ☐ N/C ☐	(4) Location information for each monitoring well;
S ☑ Section 3, App D 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 ☑ Section 3, App D N/A ☐ N/C ☐	(6) Properly selected well screen locations;
S ☑ Section 3, App D 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 ☑ Section 3, App D 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 ☑ Section 3, App D 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 ☑ Section 3, App D N/A ☐ N/C ☐		f. Describe procedures for implementing evaluation monitoring, prevention measures, and corrective action as required; (62-701.510(6), FAC)
S ☑ Section 3, App D N/A ☐ N/C ☐		g. Water quality monitoring report requirements; (62-701.510(8), FAC)
S ☑ Section 3, App D N/A ☐ N/C ☐	(1)	Semi-annual report requirements; (see paragraphs 62-701.510(5)(c) and (d), FAC for sampling frequencies)
S ☑ Section 3, App D 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 ☑ Section 3, App D N/A ☐ N/C ☐	(3)	Two and one-half year, or annual, 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 ☑ Section 3 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)

S	LOCATION	N/A	N/C	
☑	Section 3, App F	☐	☐	1. Closure permit requirements; (62-701.600(2), FAC)
☑	Section 3, App F	☐	☐	a. Application submitted to the Department at least 90 days prior to final receipt of wastes;
☑	Section 3, App F	☐	☐	b. Closure plan shall include the following:
☑	Section 3, App F	☐	☐	(1) Closure design plan;
☑	Section 3, App F	☐	☐	(2) Closure operation plan;
☑	Section 3, App F	☐	☐	(3) Plan for long-term care;
☑	Section 3, App F-1	☐	☐	(4) A demonstration that proof of financial assurance for long-term care will be provided;
☑	Section 3, App A	☐	☐	2. Closure design plan including the following requirements: (62-701.600(3), FAC)
☑	Section 3, App A	☐	☐	a. Plan sheet showing phases of site closing;
☑	Section 3, App A	☐	☐	b. Drawings showing existing topography and proposed final grades;
☑	Section 3, App A	☐	☐	c. Provisions to close units when they reach approved design dimensions;
☑	Section 3, App A	☐	☐	d. Final elevations before settlement;
☑	Section 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 ☑	Section 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 ☑	Section 3, App A	N/A ☐	N/C ☐	g. Final cover design requirements;
S ☑	Section 3, App A	N/A ☐	N/C ☐	(1) Protective soil layer design;
S ☑	Section 3, App A	N/A ☐	N/C ☐	(2) Barrier soil layer design;
S ☑	Section 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 ☑	Section 3, App E	N/A ☐	N/C ☐	(6) Stability analysis of the cover system and the disposed waste;
S ☑	Section 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 and final reports 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 ☑ c. Closure construction quality assurance report; (62-701.400(7), 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 ☑ Section 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.

John Arnold	855 28th Street South
Signature of Applicant or Agent	Mailing Address
John Arnold, P.E., Director of Engineering & Facilities	St. Petersburg, FL 33712
Name and Title (please type)	City, State, Zip Code
John.Phillip.Arnold@gmail.com	(813) 477-1719
E-Mail Address (if available)	Telephone Number
	Date: 3/31/16

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.

Lisa Baker	4140 NW 37th Place, Suite A
Signature	Mailing Address
Lisa Baker, P.E., Engineering Division Director	Gainesville, FL 32606
Name and Title (please type)	City, State, Zip Code
	lisa@locklearconsulting.com
	E-Mail Address (if available)
74652	(352) 672-6867
Florida Registration Number (please affix seal)	Telephone Number
	Date: 3-31-16

LISA J. BAKER LICENSE No. 74652 STATE OF FLORIDA PROFESSIONAL ENGINEER

SECTION 3

ENGINEERING REPORT

ENTERPRISE ROAD CLASS III RECYCLING AND DISPOSAL FACILITY
MAJOR 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

March 2016

Performed Under the
Supervision of

LISA BAKER
LICENSE
No. 74652
3-31-16
Lisa J. Baker, P.E.
STATE OF FLORIDA
Florida PE #74652
PROFESSIONAL ENGINEER

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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 March 2016 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 March 2016, titled 2016 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 C, Attachment 1);
- Updated Groundwater Monitoring Plan (Appendix D);
- An analysis of slope stability (Appendix E);
- Updated Closure and Reclamation Plan (Appendix F);
- Updated financial assurance cost estimates (Appendix F-1);
- Updated Operations Plan (Appendix G);
- Updated Contingency Plan (Appendix H).

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 and 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 and 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 2016 Plan Set provided in Appendix A.

3.4.1 <u>100-Year Flood Prone Areas</u>

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 C0.02 of the 2016 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 2016 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 C1.00 and C1.10 of the 2016 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/Construction 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 C3.00 of the 2016 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.

A berm will be constructed along the northern outer edge boundaries of Cells 6B and 7 to account for mining excavation in this area. Stockpiled clay obtained from on-site excavation to be utilized for berm construction shall be sampled consistent with the procedures described for the clay barrier layer and demonstrate acceptable test results, as described above. A detail of the berm and tie-in is provided on sheet C-5 of the 2012 permit modification Plan Set provided by Kelner Engineering.

3.8 METHOD OF CELL SEQUENCE

Filling activities are currently (as of March 2016) occurring in Cells 6 and 6B of the Class III Landfill. The cell construction and filling sequence operations will be as follows (see Drawing

Sheets C1.00 and C1.10 of the 2016 Plan Set provided in Appendix A):

Phasing Sequence 1	Fill Cells 6, 6B, 7, 1, 2, 3, 4, 5 and 15 in 10 – 12 foot lifts from base grade to elevation 150’, including filling over Cells 1 – 5, and 15. Maximum slope is 3H:1V from base grade to elevation 125’; 3H:1V from elevation 125’ to 170’; Minimum 2 % grade from elevation 170’ to 175’; 10-ft wide stormwater benches are to be constructed at elevation 125’ and 150’. Cover elevations noted include 18” intermediate cover and 18” top soil layer. Fill elevations shall be such that design cover elevations will be achieved on all external slopes. Construction of Cell 16 will be ongoing during Phasing Sequence 1.
Phasing Sequence 2	Complete construction of Cell 16 per sheets C1.00 and C1.10 of the drawing set in Appendix A. Continue filling Cell 7 and begin filling Cell 16 in 10 – 12 foot lifts from base grade to elevation 150’, including filling over Cells 1 - 6 and 15. Maximum slope is 3H:1V from base grade to elevation 125’; 3H:1V from elevation 125’ to 170’; Minimum 2 % grade from final cover elevation 170’ to 175’; 10-ft wide stormwater benches are to be constructed at final cover elevations 125’ and 150’. Cover elevations noted include 18” intermediate cover and 18” top soil layer. Fill elevations shall be such that design cover elevations will be achieved on all external slopes.
Phasing Sequence 3	Continue filling Cells 1 through 7, and 16 in 10 – 12 foot lifts from base grade to elevation 150’, including filling over Cells 1 – 6, and 15. Maximum slope is 3H:1V from base grade to final cover elevation 125’; 3H:1V from final cover elevation 125’ to 170’; Minimum 2 % grade from final cover elevation 170’ to 175’; 10-ft wide stormwater benches are to be constructed at elevation 125’ and 150’. Cover elevations noted include 18” intermediate cover and 18” top

soil layer. Fill elevations shall be such that design cover elevations will be achieved on all external slopes.

Sideslope berms and stormwater appurtenances are to be constructed at final closure.

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.
- 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.
- 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 excavation and filling area will be diverted to the onsite temporary storage pond using a temporary interior swale and 6-foot berm. Perimeter berms will direct stormwater away from excavation and filling areas. The temporary stormwater pond will receive runoff until Pond 3 is developed.

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 C2.00 of the 2016 Plan Set provided in Appendix A. The

Conceptual Closure Plan includes construction of berms on the stormwater benches that will direct stormwater to drop inlets and downcomer pipes spaced approximately every 400 – 500 feet along the benches. The downcomer pipes will discharge through an energy dissipater to the existing stormwater system. The facility's overall stormwater management system is governed by the mining operations and ERP Permits. Grades and elevation vary based on ongoing mining operations and topography. 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.

The top (minimum 2% grade) 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, grass, and maintain intermediate covers

Use culverts, 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 – 7, 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 – 7, 15 and 16 at closure was generated, using the following assumptions:

- 3H:1V sideslopes between grades up to elevation 170'; minimum 2% grade from elevation 170' to elevation 175'.
- 10-foot inset for benches at elevations 125-ft and 150-ft NGVD
- 36 inches of cover over the 67.0 acre 2D surface was subtracted from the maximum volume

The airspace volume remaining as of March 2016 was calculated to be approximately 2,443,034 yd^3 after accounting for the final cover volume of 321,510 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 – 7, 15 and 16 was calculated to be 13 years from the survey date, or 2026.

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 C2.00 and C2.10 of the 2016 Plan Set provided in Appendix A, respectively. 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 C2.00 (2016 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 C0.03 of the 2016 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	Future Cell 13 or closure
GP-5	Future Cell 14 or closure
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 3-C of the 2012 permit renewal application submitted by Kelner Engineering) 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 Passive Gas Vents

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 C2.00 shows the location of the 9 gas vents and Figure 3-16 (provided in Appendix 3-C of the 2012 permit renewal application submitted by Kelner Engineering) 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 Leachate Control

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 Stormwater Controls

The approved 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. These stormwater facilities are designated to retain the 100-year, 24-hour storm volume as required by Pasco County and the FDEP. During excavation, construction and waste disposal, stormwater will be controlled by a series of berms that direct stormwater to the temporary stormwater pond located in the northeast corner of the site. A 6-foot berm adjacent to active and filled cells retains stormwater from the filling area and diverts stormwater from the excavation area to the temporary stormwater pond. A portion of the temporary stormwater pond will be filled as part of the construction of Cell 16. A new stormwater Pond 3 is being proposed and submitted to be permitted as an Industrial Wastewater Pond through FDEP. Additional details concerning the stormwater management system are provided in Drawing Sheets C1.00, C1.10, C2.00 and C2.10.

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 (above elevation 125’ NGVD) 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 C1.00 and C1.10 of the 2016 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 September 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 C, Attachment 1 for Universal Engineering Sciences' Geotechnical Services / Documentation Review dated January 29, 2016 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 Cell 16 has 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 G.

3.17 CONTINGENCY PLAN

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

ENGINEERING REPORT
APPENDIX A

2016 PLAN SET

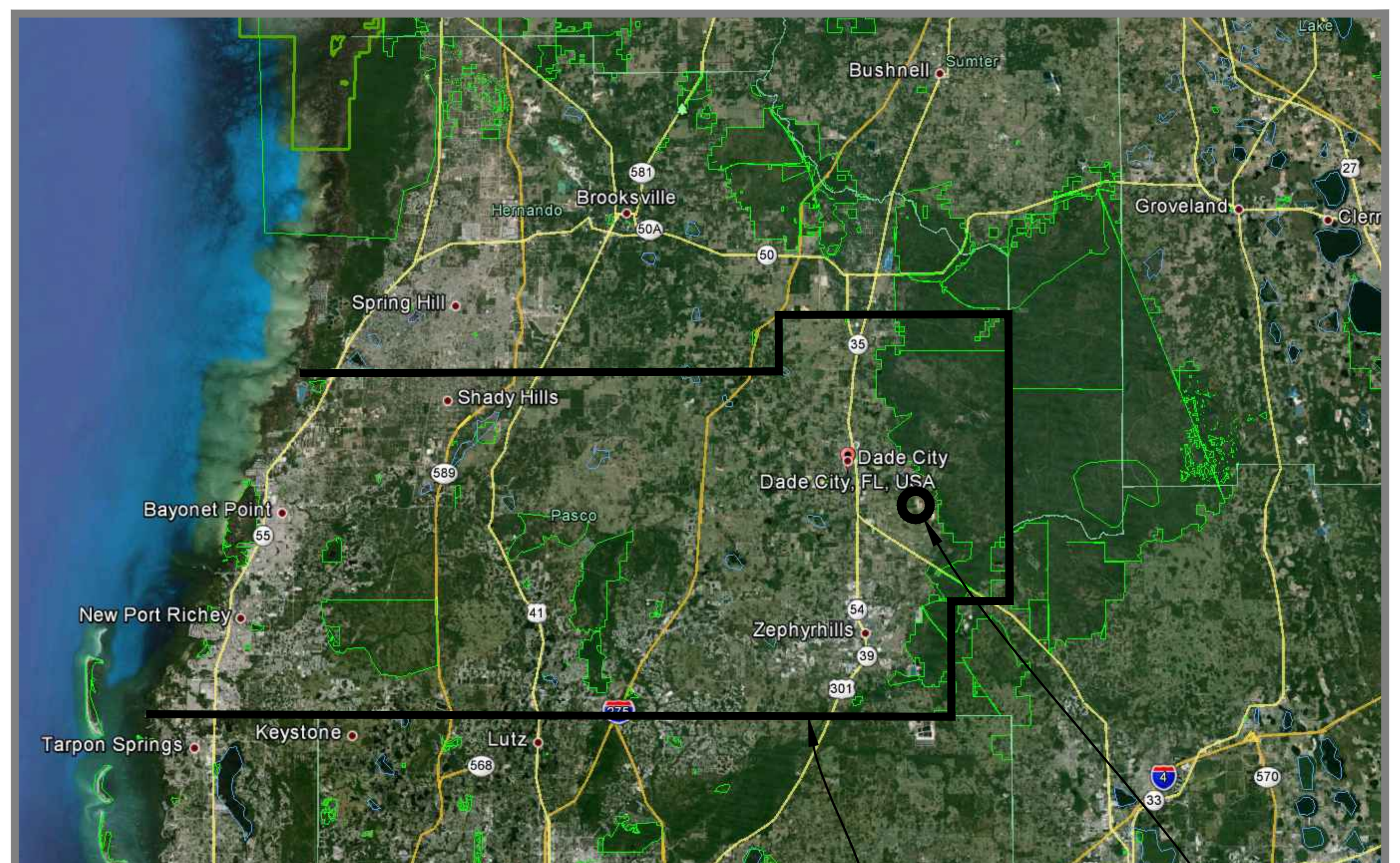
ENTERPRISE CLASS III LANDFILL
RECYCLING & DISPOSAL FACILITY
LANDFILL PERMIT MODIFICATION

LOCATED:

DADE CITY, PASCO COUNTY, FLORIDA

SUBMITTED TO:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION



COUNTY LOCATION MAP

Sheet List Table	
Sheet Number	Sheet Title
C0.00	COVER SHEET
C0.01	GENERAL NOTES AND ABBREVIATIONS
C0.02	AERIAL SITE PLAN
C0.03	SITE PLAN
C0.04	CELL FLOOR GRADING PLAN
C1.00	OPERATIONS SEQUENCE
C1.10	OPERATIONS SEQUENCE SECTIONS
C2.00	CONCEPTUAL CLOSURE SEQUENCE
C2.10	CONCEPTUAL CLOSURE SEQUENCE SECTIONS
C3.00	CLOSURE DETAILS
SHEET 1 OF 2	TOPOGRAPHIC SURVEY (BY PICKETT SURVEYING & PHOTOGRAMMETRY)
SHEET 2 OF 2	TOPOGRAPHIC SURVEY (BY PICKETT SURVEYING & PHOTOGRAMMETRY)

VICINITY MAP

NO.	DATE	REVISION DESCRIPTION	BY

Locklear & Associates
Engineering & Environmental Consulting
4140 NW 37th Place, Suite A
Gainesville, Florida 32606
Phone: 352.672.6867 Fax: 352.692.5390
Certificate of Authorization No. 30066

PERMIT PLANS
ENTERPRISE ROAD CLASS III
RECYCLING & DISPOSAL FACILITY
2016 PERMIT MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

LISA J. BAKER
FL PE NO. 74652

DESIGNED BY	LJB
DRAWN BY	LJB
CHECKED BY	JDL
APPROVED BY	LJB

SHEET TITLE:
COVER SHEET

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: MARCH 2016
DRAWING: C0.00

REVIEW ONLY-NOT FOR CONSTRUCTION

Z:\Civil 3D Projects\02000-144-14_01\CADD\Sheet_List\C0.00.dwg PLOT DATE 4/1/2016 11:16 AM BY LJB

GENERAL NOTES

1. ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929, UNLESS OTHERWISE NOTED.
2. THE INFORMATION PROVIDED IN THESE PLANS IS SOLELY TO ASSIST THE PERMITTING AGENCY IN ASSESSING THE NATURE AND EXTENT OF THE CONDITIONS WHICH MAY BE ENCOUNTERED AT THE SITE.
3. CONTRACTOR SHALL CERTIFY IN WRITING TO THE ENGINEER OF RECORD THE ACCURACY OF ALL SURVEY AND OTHER GRADING DATA PRIOR TO BEGINNING WORK.
4. LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES ARE SHOWN TO THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE PLANS BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THERE MAY BE OTHER IMPROVEMENTS, UTILITIES, ETC. WHICH ARE WITHIN THE PROJECT AREA. THE CONTRACTOR SHALL VERIFY, PRIOR TO CONSTRUCTION, THE LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ALL EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES (WHETHER OR NOT SHOWN ON THE PLANS) AFFECTING THE WORK.
5. CONTRACTOR SHALL TAKE WHATEVER MEANS NECESSARY TO PROTECT EXISTING PIPING, MONITORING WELLS/PIEZOMETERS FROM DAMAGE DURING CONSTRUCTION. CONTRACTOR SHALL REPAIR OR REPLACE PIPING, MONITORING WELLS/PIEZOMETERS DAMAGED DURING CONSTRUCTION WITH EQUIVALENT MATERIALS AND CONSTRUCTION METHODS AS APPROVED BY FACILITY OWNER AT NO ADDITIONAL COST TO THE OWNER.
6. FIELD CONDITIONS MAY NECESSITATE SLIGHT ALIGNMENT AND GRADE DEVIATION OF THE PROPOSED CONSTRUCTION TO AVOID OBSTACLES, AS ORDERED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
7. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH EXISTING PASCO COUNTY DESIGN AND CONSTRUCTION STANDARDS UNLESS THOSE STANDARDS CONFLICT WITH THESE CONTRACT DOCUMENTS IN WHICH CASE THESE CONTRACT DOCUMENTS SHALL GOVERN. SUCH CONFLICTS SHALL BE BROUGHT TO THE PROFESSIONAL'S ATTENTION IMMEDIATELY.
8. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH PREVAILING FEDERAL, STATE, LOCAL AND OTHER APPLICABLE REGULATIONS.
9. CONSTRUCTION MONUMENTS FOR VERTICAL AND HORIZONTAL CONTROL HAVE BEEN PROVIDED AT THE PROJECT SITE.
10. PRIOR TO BEGINNING EARTHWORK, THE CONTRACTOR SHALL PROVIDE STORMWATER AND EROSION CONTROL PLANS TO PREVENT PONDING AND CONTROL EROSION AND RUNOFF. NO PONDING OF WATER SHALL BE ALLOWED. THE CONTRACTOR SHALL USE WHATEVER MEANS NECESSARY TO PREVENT EROSION AND SHALL BE RESPONSIBLE FOR ALL WORK, INCLUDING PROVIDING EQUIPMENT, LABOR, FILL, ETC NECESSARY TO REMEDIATE AND/OR RESTORE ALL AREAS IMPACTED BY EROSION.
11. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BECOME FAMILIAR WITH THE OSHA EXCAVATION SAFETY STANDARDS AND TO ABIDE BY THEM.
12. THE CONTRACTOR SHALL PROVIDE ALL WARNING SIGNALS, SIGNS, LIGHTS, AND FLAG PERSON AS REQUIRED BY DOT IN THE "MANUAL ON TRAFFIC CONTROL & SAFE PRACTICES."
13. ALL PIPING SHALL HAVE MINIMUM COVER OF 24" UNLESS OTHERWISE NOTED.
14. WHERE IT IS NECESSARY TO DEFLECT PIPE EITHER HORIZONTALLY OR VERTICALLY, PIPE DEFLECTION SHALL NOT EXCEED 75% OF THE MANUFACTURER'S RECOMMENDED DEFLECTION ANGLE. MINIMUM PIPE RADIUS SHALL BE A MINIMUM OF 25% GREATER THAN THE MANUFACTURER'S RECOMMENDED MINIMUM RADIUS.
15. CONTAMINATED STORMWATER, DEWATERING DISCHARGE, LEACHATE, CONTAMINATED SOILS, OR EXCAVATED WASTE SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE LANDFILL OPERATIONS.
16. CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO CONSTRUCTION.
17. THE CONTRACTOR SHALL MAINTAIN A CLEAR PATH FOR ALL SURFACE WATER DRAINAGE STRUCTURES AND DITCHES DURING ALL PHASES OF CONSTRUCTION AND SHALL UTILIZE WHATEVER MEANS NECESSARY TO MANAGE STORMWATER SUCH THAT IMPACT TO CONSTRUCTION IS MINIMIZED. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF DAMAGE DUE TO STORMWATER.
18. NO DISTURBANCE SHALL BE ALLOWED OUTSIDE OF THE AREAS SHOWN ON THE FINAL GRADING PLAN UNLESS APPROVED BY THE ENGINEER, OR SPECIFICALLY NOTED ON THE PLANS.
22. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ENVIRONMENTAL PROTECTION DURING THE LIFE OF THE CONTRACT. THE CONTRACTOR'S OPERATIONS SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS PERTAINING TO WATER, AIR, SOLID WASTE, HAZARDOUS WASTE MATERIALS, OILY SUBSTANCES, AND NOISE POLLUTION. THE CONTRACTOR SHALL IMPLEMENT EROSION AND SEDIMENTATION CONTROL MEASURES AS NECESSARY TO COMPLY WITH THESE REGULATIONS FOR BOTH TEMPORARY AND PERMANENT CONSTRUCTION.
23. THE CONTRACTOR SHALL COMPLY WITH ALL TERMS, CONDITIONS, AND REQUIREMENTS OF ALL APPLICABLE PERMITS, INCLUDING FDEP PERMITS FOR THE SITE.
24. THE CONTRACTOR SHALL REPLACE ALL EXISTING PAVING, LANDFILL COVER MATERIAL, ACCESS ROADS, PIPES, STABILIZED EARTH, FENCES, SIGNS AND OTHER IMPROVEMENTS WITH THE SAME TYPE OF MATERIAL THAT WAS REMOVED OR DAMAGED DURING CONSTRUCTION, AS A RESULT OF CONSTRUCTION, OR AS DIRECTED BY THE ENGINEER WITHOUT INCREASE IN THE CONTRACT PRICE OR TIME.
25. THE CONTRACTOR SHALL BE AWARE THAT THERE MAY BE SOME UTILITY CONFLICTS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ANY AND ALL EXISTING UTILITIES ON THIS PROJECT WITHOUT INCREASE IN THE CONTRACT PRICE OR TIME.
26. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY WHEN CONFLICTS BETWEEN DRAWINGS AND ACTUAL CONDITIONS ARE DISCOVERED.
27. THE CONTRACTOR SHALL COMPLY WITH ALL TERMS, CONDITIONS, AND REQUIREMENTS OF ALL APPLICABLE PERMITS, INCLUDING FDEP AND WATER MANAGEMENT DISTRICT PERMITS FOR THE SITE.

GRADING NOTES

1. ALL AREAS WITHIN AND AROUND THE LIMITS OF CONSTRUCTION SHALL BE MAINTAINED AS NEEDED TO CONTROL EROSION DURING THE LENGTH OF THE PROJECT.
2. FILL ELEVATIONS SHALL BE SUCH THAT INTERMEDIATE AND FINAL COVER DESIGN ELEVATIONS SHALL BE ACHIEVED ON ALL SLOPES.

NO.	DATE	REVISION DESCRIPTION	BY

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PERMIT PLANS
ENTERPRISE ROAD CLASS III
RECYCLING & DISPOSAL FACILITY
2016 PERMIT MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

LISA J. BAKER	DESIGNED BY	LJB
	DRAWN BY	LJB
	CHECKED BY	JDL
FL PE NO. 74652	APPROVED BY	LJB

SHEET TITLE:
GENERAL NOTES AND ABBREVIATIONS

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: MARCH 2016
DRAWING: C0.01

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NORTH

0 150 300
GRAPHIC SCALE

LEGEND

	PERIMETER FENCE
	PROPERTY BOUNDARY
	LANDFILL FOOTPRINT (AT BUILD OUT)
	LANDFILL CELLS

NOTES:

1. PROPERTY BOUNDARY SURVEY CONDUCTED BY SIMMONS & BEALL, INC. 3-30-2001, PROVIDED BY ANGELO'S AGGREGATE MATERIALS.
2. CLASS III LANDFILL PERMITTED AND FUTURE CELL LAYOUT PER NOVEMBER 2006 ANGELO'S RECYCLED MATERIALS ENTERPRISE RECYCLING & DISPOSAL FACILITY (AS AMENDED FEBRUARY 2008 AND JANUARY 2010 BY JONES EDMUNDS AND AMENDED MARCH 2013 BY KELNER ENGINEERING).
3. 2013 AERIAL PHOTOGRAPHY PROVIDED BY FLORIDA DEPARTMENT OF TRANSPORTATION WEBSITE.

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PERMIT PLANS
ENTERPRISE ROAD CLASS III
RECYCLING & DISPOSAL FACILITY
2016 PERMIT MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

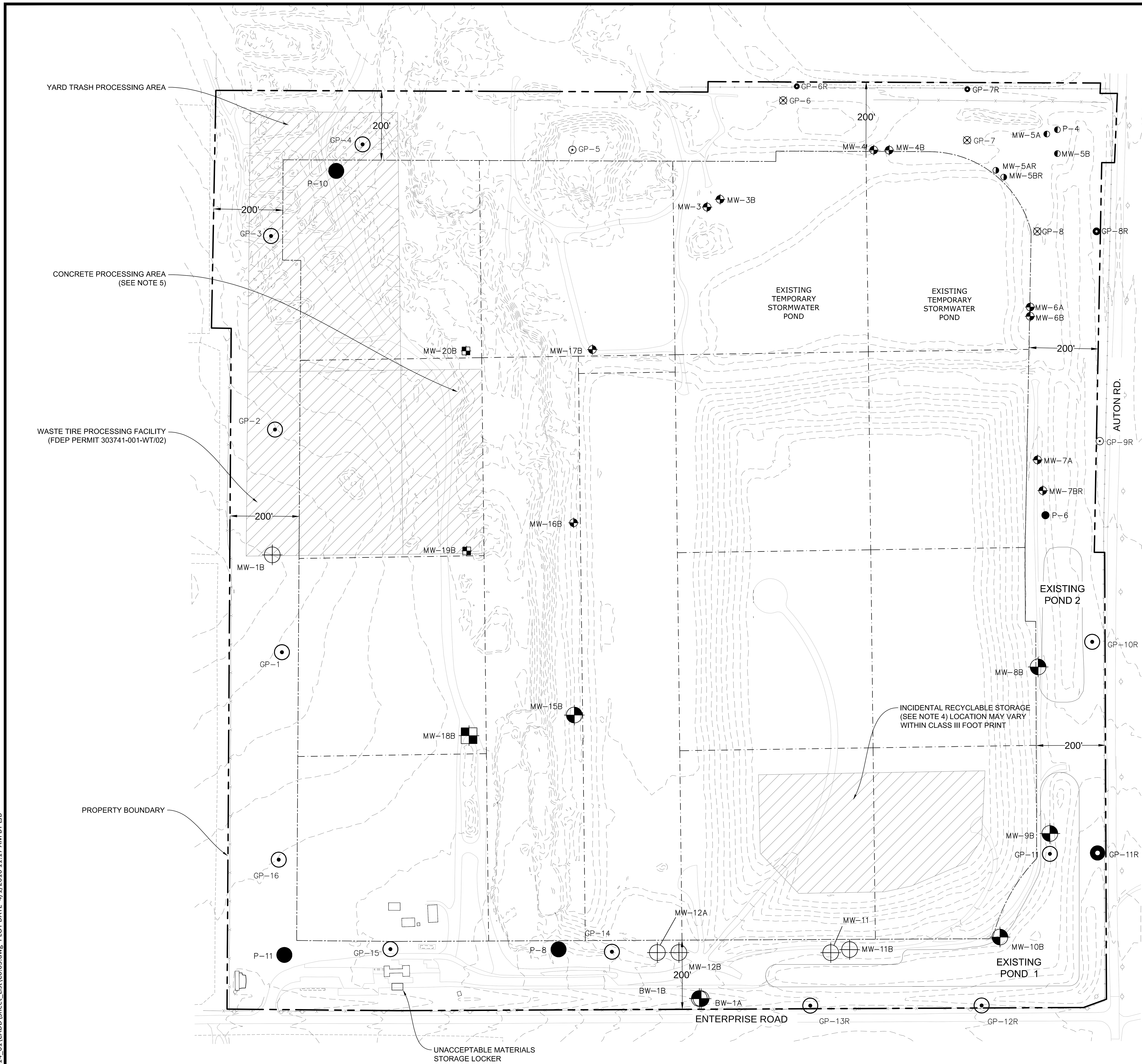
LISA J. BAKER
FL PE NO. 74652

DESIGNED BY	LJB
DRAWN BY	LJB
CHECKED BY	JDL
APPROVED BY	LJB

SHEET TITLE:
AERIAL SITE PLAN

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: MARCH 2016
DRAWING: C0.02

REVIEW ONLY-NOT FOR CONSTRUCTION



LEGEND

PERIMETER FENCE	
PROPERTY BOUNDARY	
LANDFILL FOOTPRINT (AT BUILD OUT)	
LANDFILL CELLS	
EXISTING CONTOURS	
SPECIAL WASTE MANAGEMENT AREA	

- MW-4B MONITORING WELL LOCATION
- MW-5A MONITORING WELL TO BE ABANDONED
- MW-5BR MONITORING WELL TO BE INSTALLED
- GP-1 GAS PROBE LOCATION
- GP-8 GAS PROBE TO BE ABANDONED
- GP-8R FUTURE GAS PROBE LOCATION
- P-11 PIEZOMETER WELL LOCATION
- MW-18B FUTURE MONITOR WELL LOCATION*

NOTES:

1. PROPERTY BOUNDARY SURVEY CONDUCTED BY SIMMONS & BEALL, INC. 3-30-2001, PROVIDED BY ANGELO'S AGGREGATE MATERIALS.
2. CLASS III LANDFILL PERMITTED AND FUTURE CELL LAYOUT PER NOVEMBER 2006 ANGELO'S RECYCLED MATERIALS ENTERPRISE RECYCLING & DISPOSAL FACILITY (AS AMENDED FEBRUARY 2008 AND JANUARY 2010), PREPARED BY JONES EDMUNDS.
3. TOPOGRAPHIC SURVEY BY PICKETT SURVEYING & PHOTOGRAMMETRY, DATED 11/11/13, UPDATED ON 12/31/13.
4. TEMPORARY STORAGE OF UNACCEPTABLE MATERIALS AND INCIDENTAL RECYCLABLES WITHIN THE LANDFILL FOOTPRINT AND NEAR WORKING FACE MAY BE PROVIDED AS FOLLOWS:

TYPE	MAX. QTY	STORAGE
INCIDENTAL RECYCLABLES		
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
ELECTRONICS	8 CY	COVERED DUMPSTER
UNACCEPTABLE MATERIALS		
PAINT, BATTERIES, SOLVENTS, ELECTRONICS, OILS, ETC.	40 CY	ROLL-OFF OR PILE AT WORKING FACE, REMOVED DAILY TO STORAGE LOCKER
CLASS I WASTE	20 CY	COVERED DUMPSTERS

5. CONCRETE PROCESSING AREA WILL BE RELOCATED WHEN EXCAVATION OPERATIONS MOVE TO THIS AREA.
6. PERIMETER GAS MONITORING PROBES LOCATIONS PER GROUNDWATER MONITORING PLAN, FIGURE 1 BY LOCKLEAR AND ASSOCIATES, MARCH 2012.

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PERMIT PLANS
ENTERPRISE ROAD CLASS III
RECYCLING & DISPOSAL FACILITY
2016 PERMIT MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

LISA J. BAKER
FL PE NO. 74652

DESIGNED BY	LJB
DRAWN BY	LJB
CHECKED BY	JDL
APPROVED BY	LJB

SHEET TITLE:
SITE PLAN

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: MARCH 2016
DRAWING: C0.03

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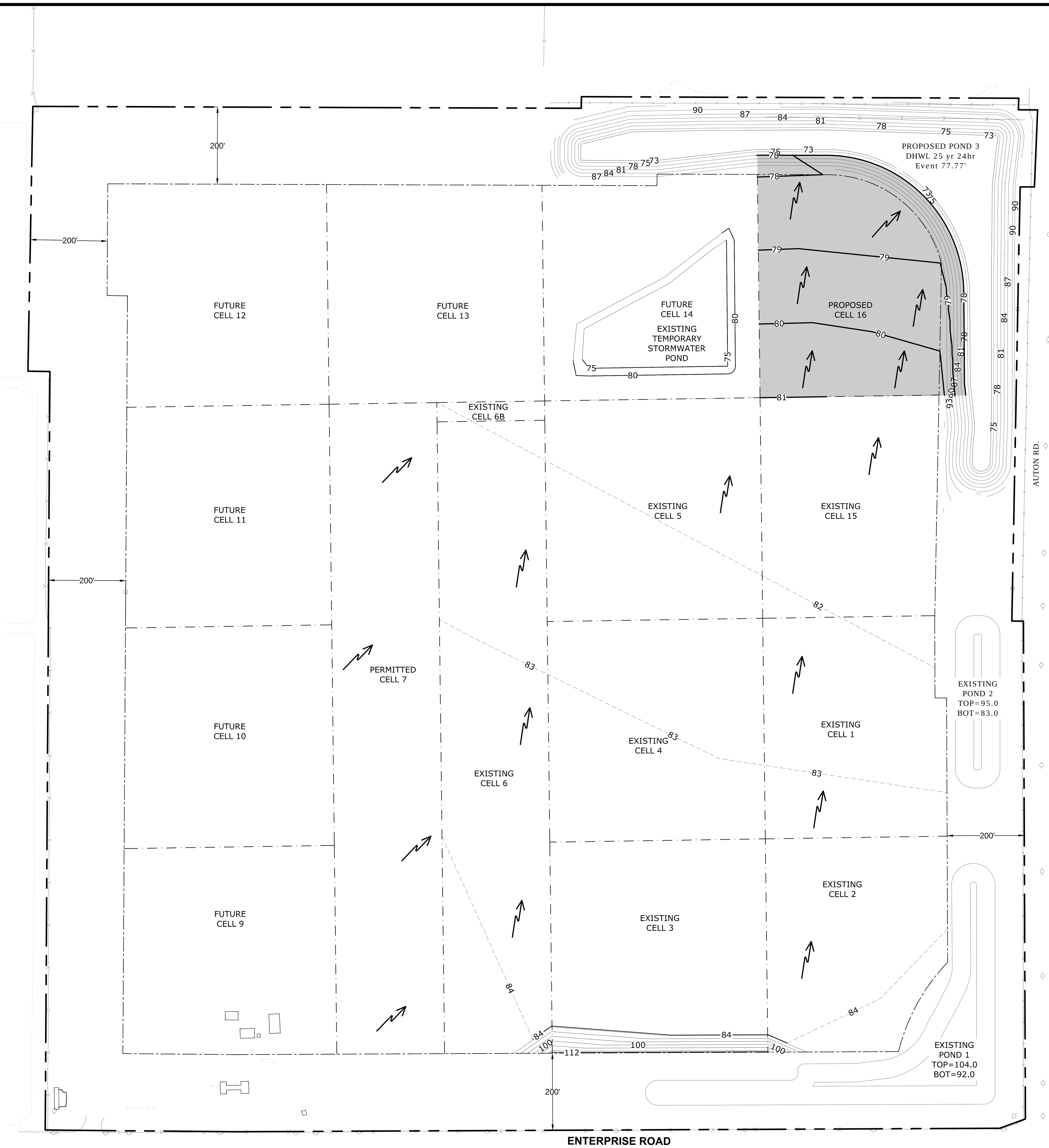

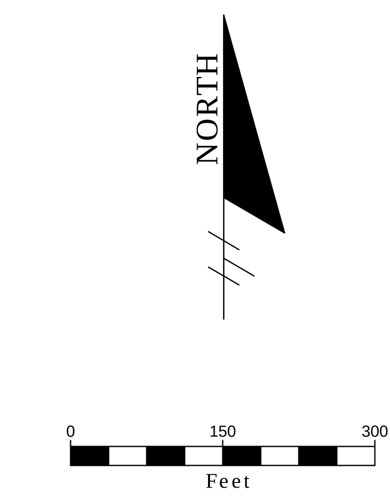

LEGEND

- PERIMETER FENCE
- PROPERTY BOUNDARY
- LANDFILL FOOTPRINT (AT BUILD OUT)
- LANDFILL CELLS
- 90 EXISTING CLAY LAYER CONTOURS
- 90 PROPOSED CLAY LAYER CONTOURS
- DIRECTIONAL FLOW ARROW

NOTES:

1. PROPOSED CONTOURS REPRESENT THE TOP OF CLAY (3' BARRIER LAYER) ELEVATION.
2. TOPOGRAPHIC SURVEY BY PICKETT SURVEYING & PHOTOGRAMMETRY, DATED 11/11/2013.

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DADE CITY, PASCO COUNTY, FLORIDA

LISA J. BAKER
FL PE NO. 74652

DESIGNED BY	LJB
DRAWN BY	LJB
CHECKED BY	JDL
APPROVED BY	LJB

SHEET TITLE:
CELL FLOOR GRADING PLAN

PROJECT NO.:	02000-144-14
SCALE:	AS SHOWN
DATE:	MARCH 2016
DRAWING:	C0.04

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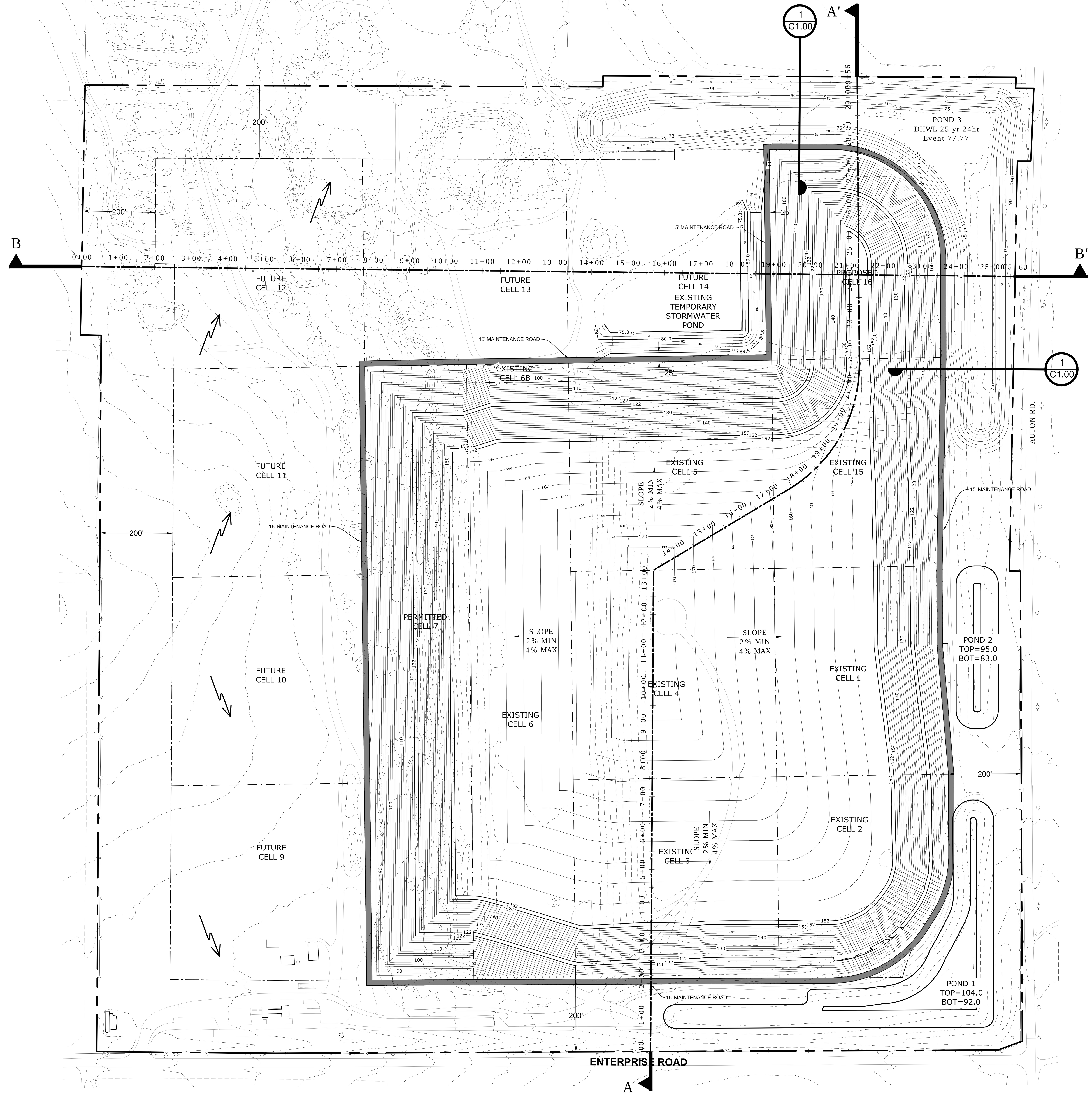


NORTH

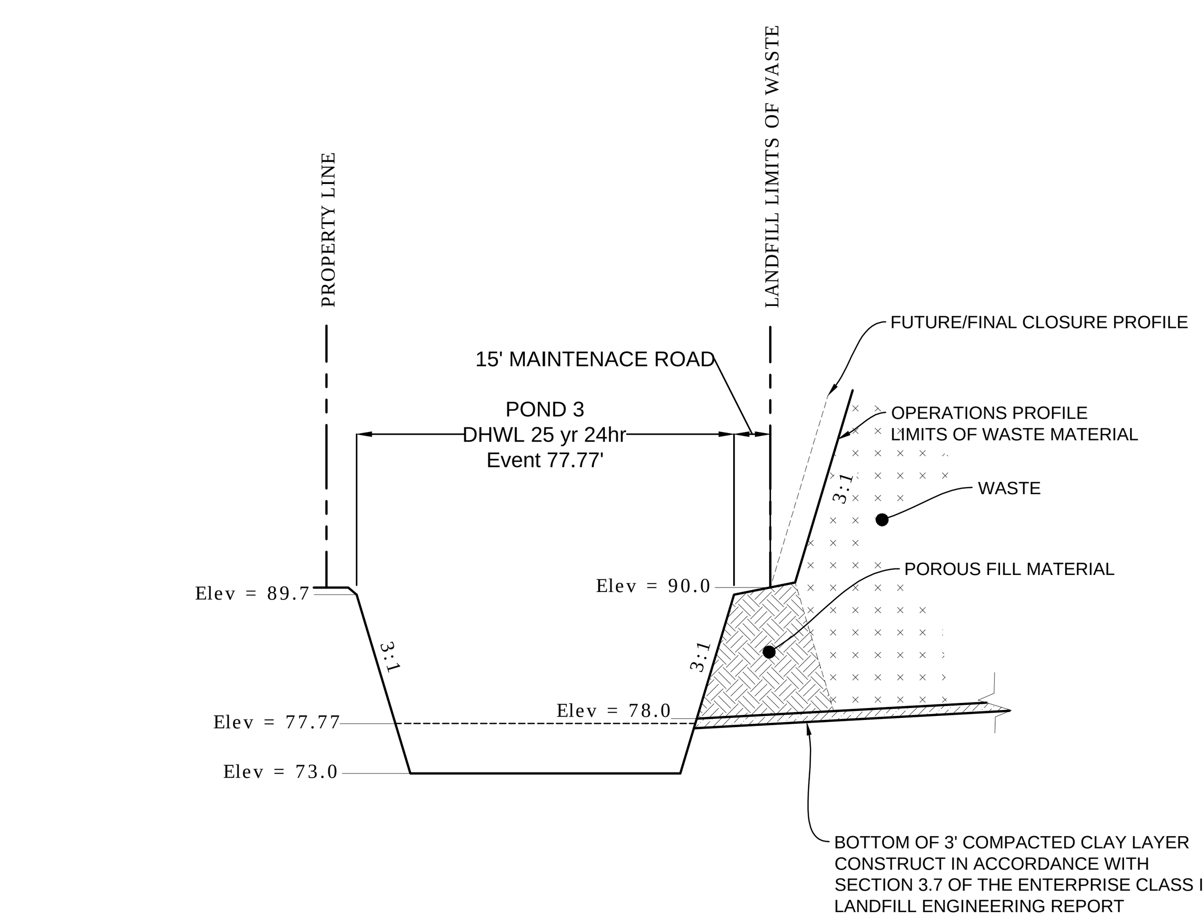
0 150 300
Feet

LEGEND

- PERIMETER FENCE
- PROPERTY BOUNDARY
- LANDFILL FOOTPRINT (AT BUILD OUT)
- LANDFILL CELLS
- EXISTING CONTOURS
- DIRECTIONAL FLOW ARROW
- 10+00 CROSS SECTION STATIONS

NOTES:

1. **CONTOURS REPRESENT FINAL COVER. FILL ELEVATIONS SHALL BE SUCH THAT FINAL COVER DESIGN ELEVATIONS SHALL BE ACHIEVED ON ALL SLOPES.**
2. TOPOGRAPHIC SURVEY BY PICKETT SURVEYING & PHOTOGRAMMETRY, DATED 11/11/13, UPDATED ON 12/31/13.



PROPOSED NORTH BERM DETAIL CELL 16
(OPERATIONS SEQUENCE)

1 C1.00 SCALE: N.T.S.

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2016 PERMIT MODIFICATION
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LISA J. BAKER
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PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: MARCH 2016
DRAWING: C1.00

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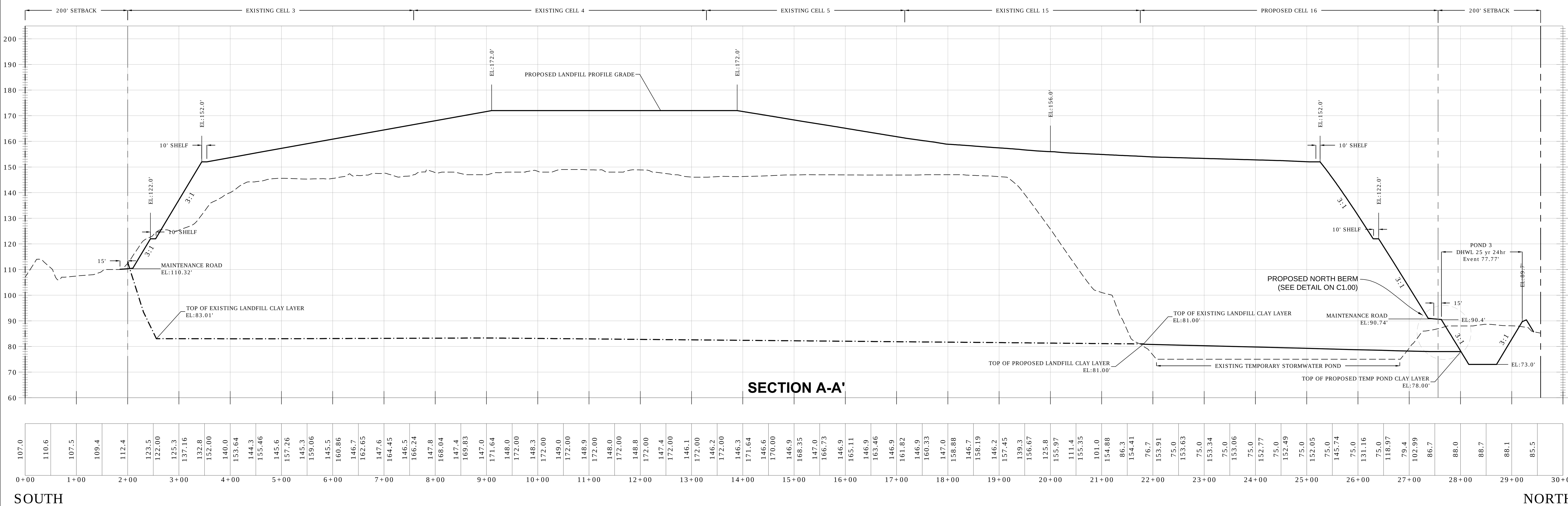
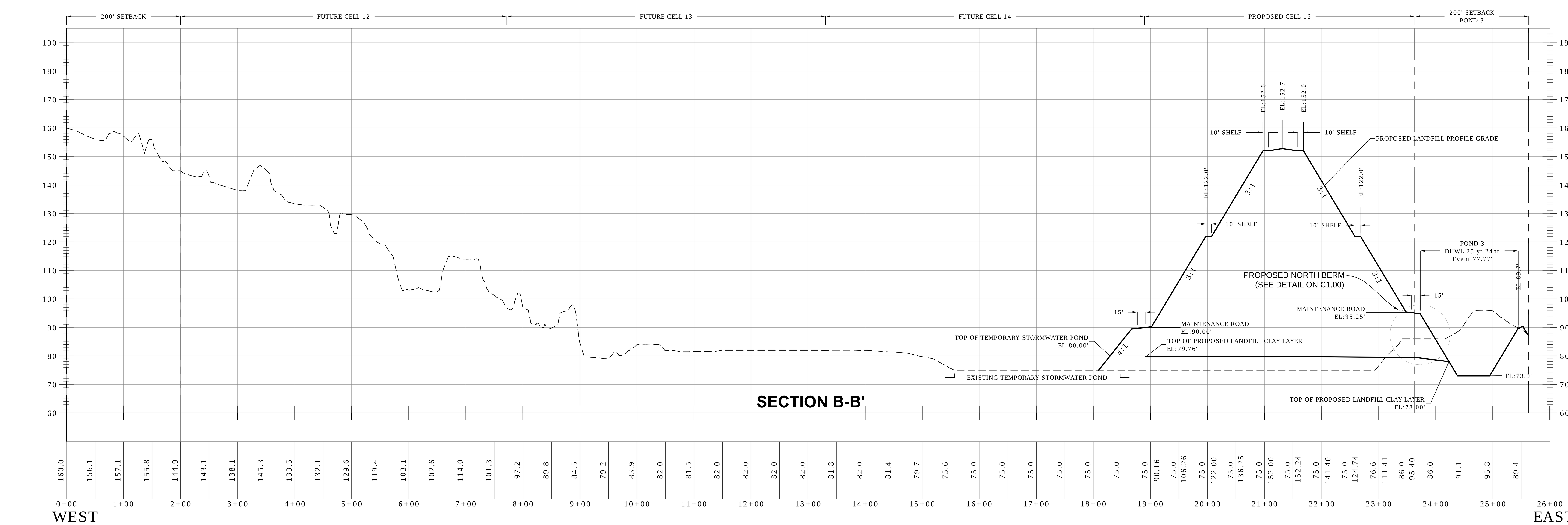
SCALES:
HORIZONTAL 1"=100'
VERTICAL 1"= 20'





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SHEET TITLE:
OPERATIONS SEQUENCE SECTIONS

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: MARCH 2016
DRAWING: C1.10

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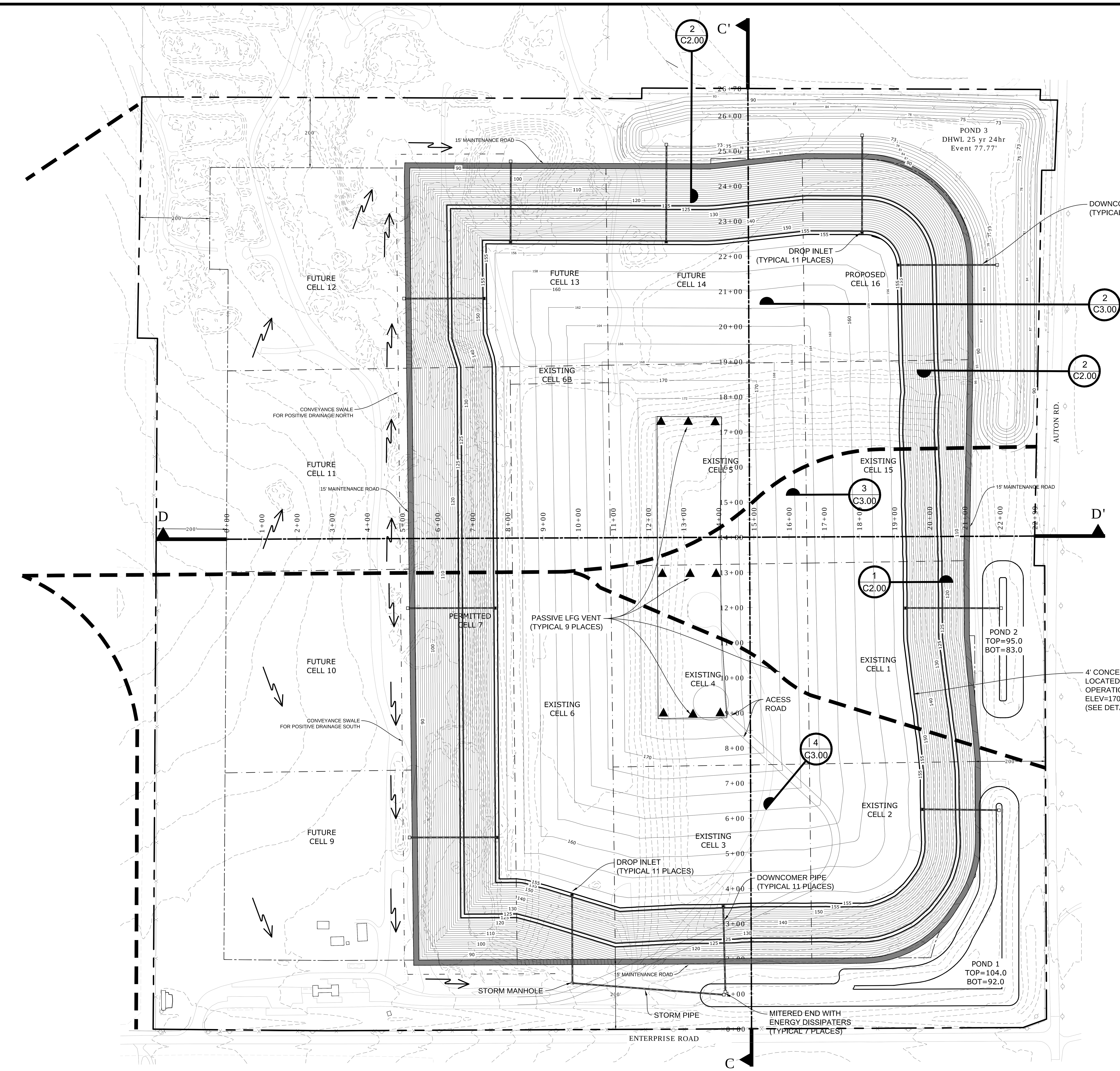


LEGEND

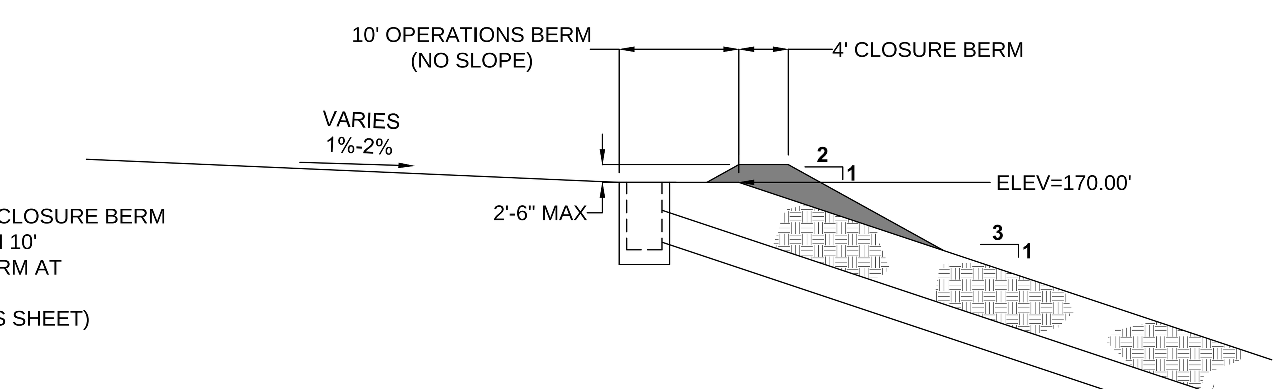
- PERIMETER FENCE
- PROPERTY BOUNDARY
- LANDFILL FOOTPRINT (AT BUILD OUT)
- LANDFILL CELLS
- EXISTING CONTOURS
- DIRECTIONAL FLOW ARROW
- DRAINAGE DIVIDE
- 10+00 CROSS SECTION STATIONS
- PASSIVE LFG VENT
- STORMWATER CONVEYANCE SYSTEM (DOWNCOMER PIPE, DROP INLET, MITERED END WITH ENERGY DISSIPATERS)

NORTH

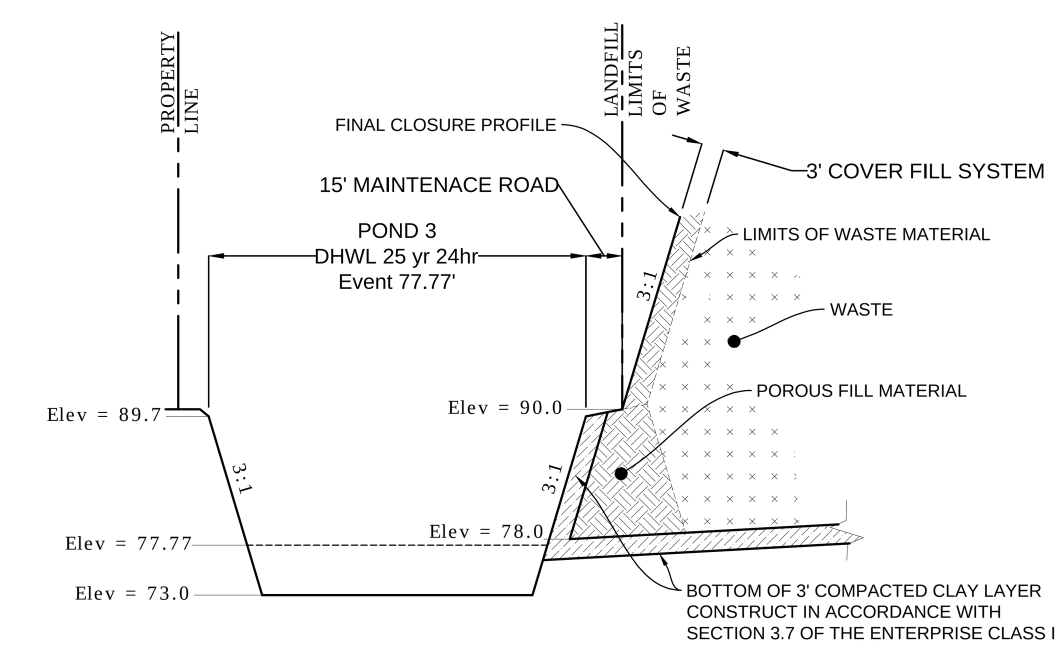
0 150 300 Feet

NOTES:

1. CONTOURS REPRESENT FINAL COVER. FILL ELEVATIONS SHALL BE SUCH THAT FINAL COVER DESIGN ELEVATIONS SHALL BE ACHIEVED ON ALL SLOPES
2. PRIOR TO WASTE BEING DISPOSED IN PROPOSED CELLS, BACKFILL TEMPORARY DIVERSION SWALE WITH COMPACTED CLAY TO DRAIN TO EAST.
3. LANDFILL FINAL COVER PER DETAIL 3, SHEET C3.00.
2. TOPOGRAPHIC SURVEY BY PICKETT SURVEYING & PHOTOGRAMMETRY, DATED 11/11/13, UPDATED ON 12/31/13.
3. FINAL COVER CONSTRUCTION TO BE IN ACCORDANCE WITH SECTION 7.1 OF THE ENTERPRISE RECYCLING & DISPOSAL FACILITY RECLAMATION & CLOSURE PLAN.
4. THE FACILITY'S OVERALL STORMWATER MANAGEMENT SYSTEM IS GOVERNED BY THE MINING OPERATIONS AND ERP PERMITS. GRADES AND ELEVATION VARY BASED ONGOING MINING OPERATIONS AND TOPOGRAPHY. 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.



CONCEPTUAL CLOSURE BERM
1 / C2.00 SCALE: N.T.S.



PROPOSED NORTH BERM DETAIL CELL 16 (CLOSURE SEQUENCE)
2 / C2.00 SCALE: N.T.S.

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2016 PERMIT MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

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SHEET TITLE:
CONCEPTUAL CLOSURE SEQUENCE

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: MARCH 2016
DRAWING: C2.00

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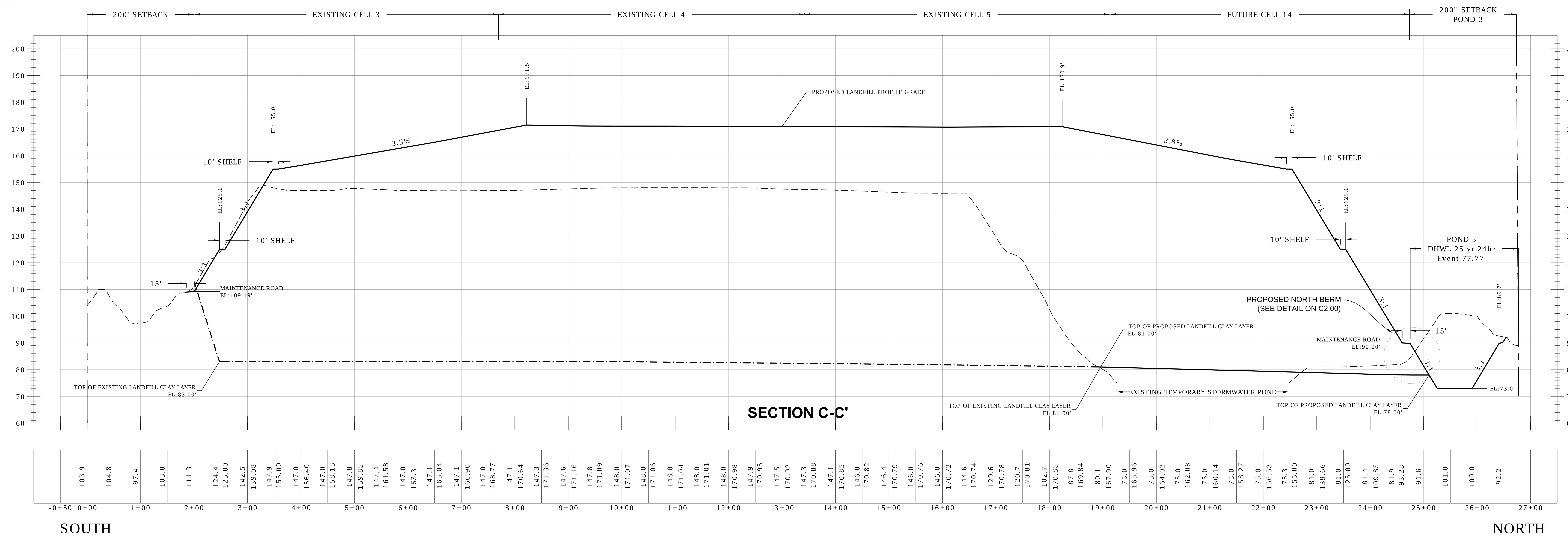
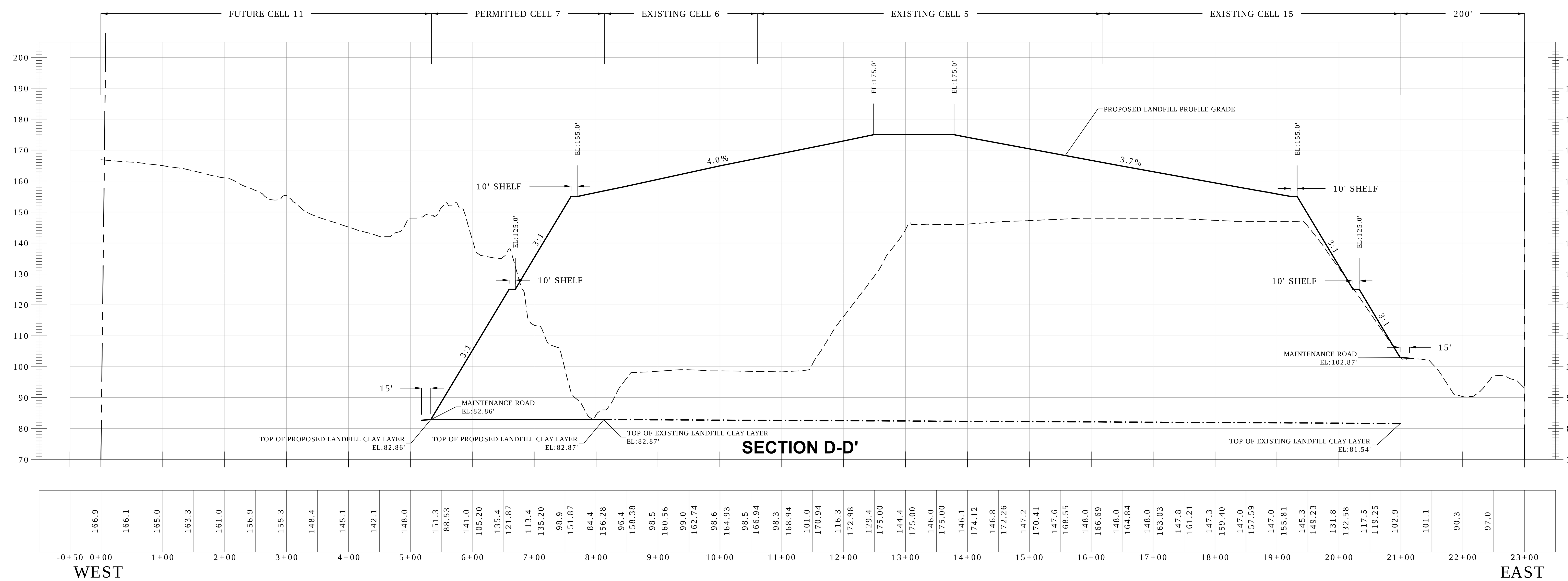
VERTICAL 1"= 20'





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SHEET TITLE:
CONCEPTUAL CLOSURE SEQUENCE
SECTIONS

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
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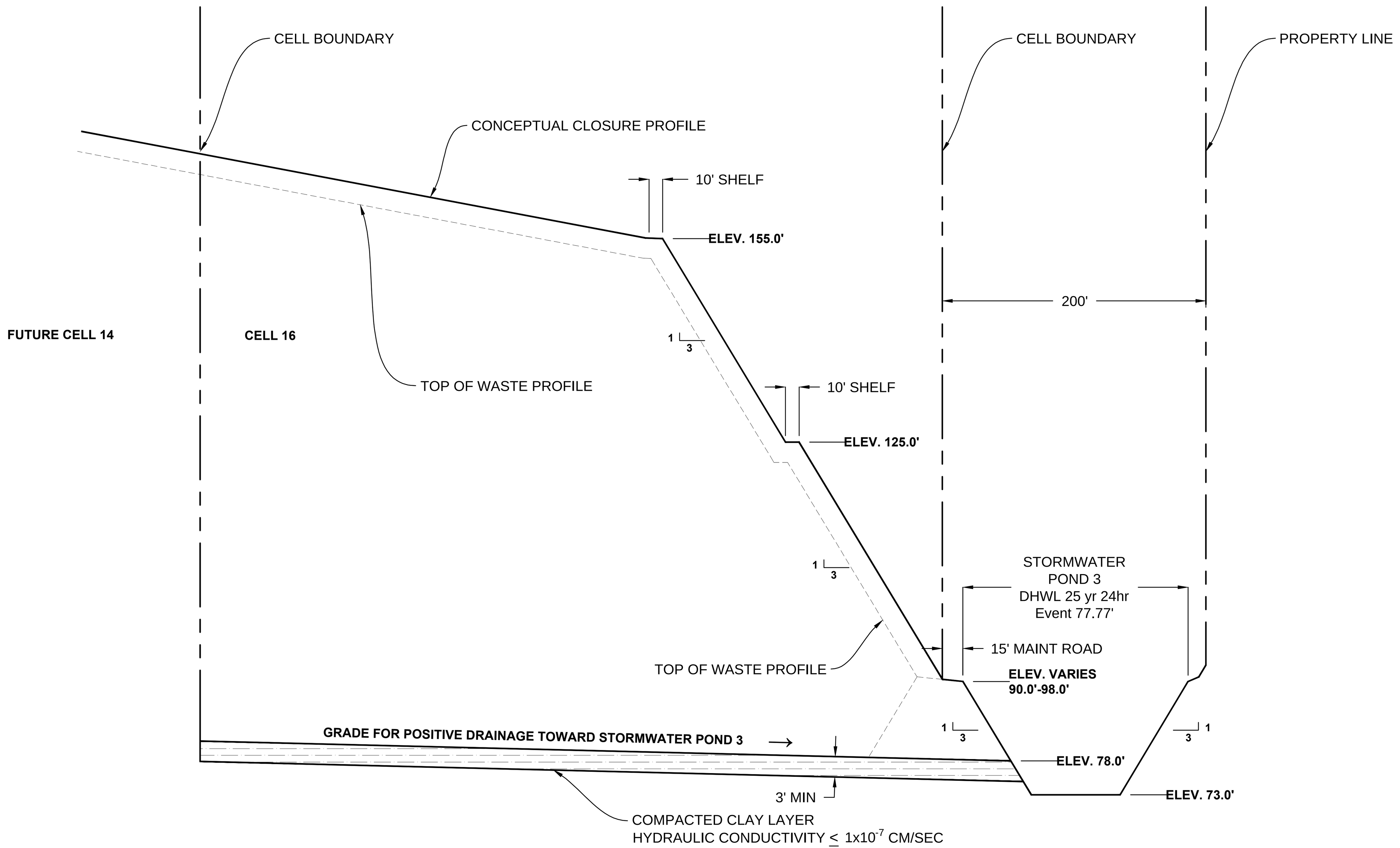
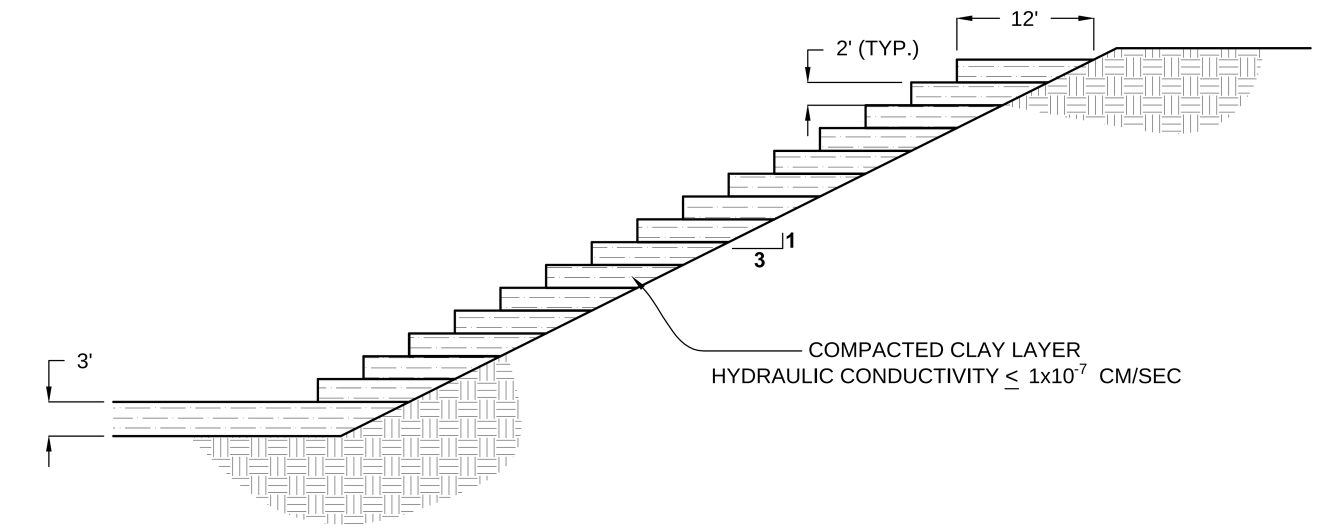


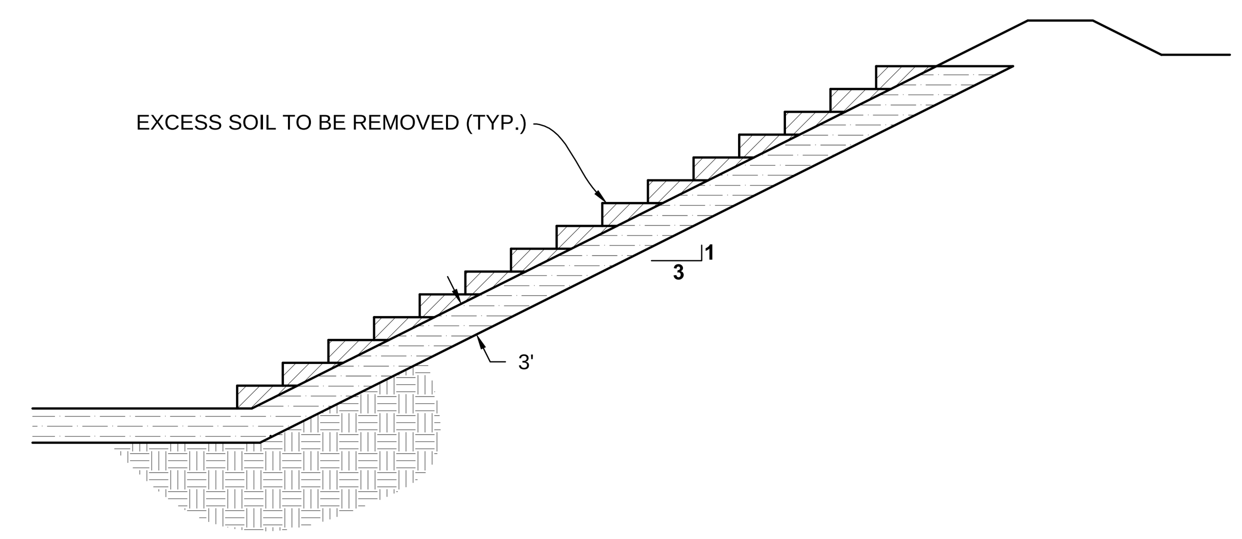
1 C3.00 TYPICAL DISPOSAL AREA DETAIL

SCALE: N.T.S.



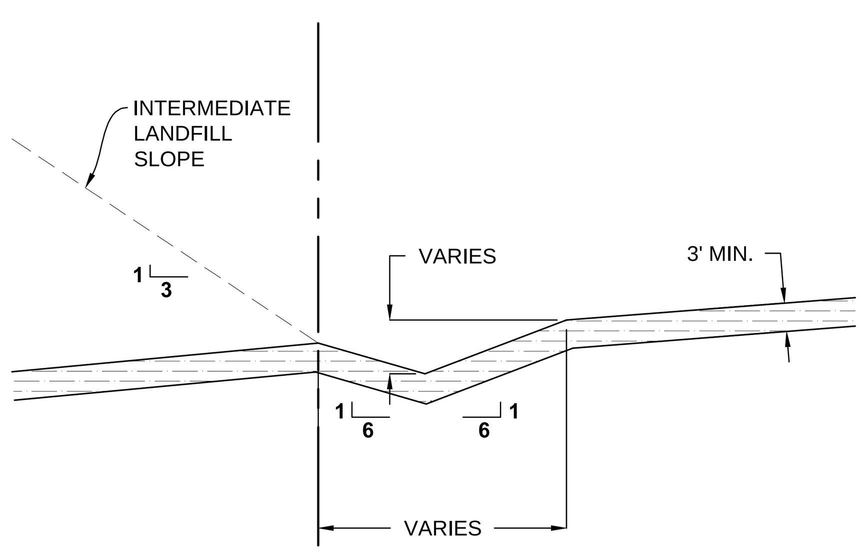
6 C3.00 CELL 16 NORTH CLAY SIDE SLOPE CONSTRUCTION DETAIL

SCALE: N.T.S.



5 C3.00 CELL 16 EAST CLAY SIDE SLOPE CONSTRUCTION DETAIL

SCALE: N.T.S.

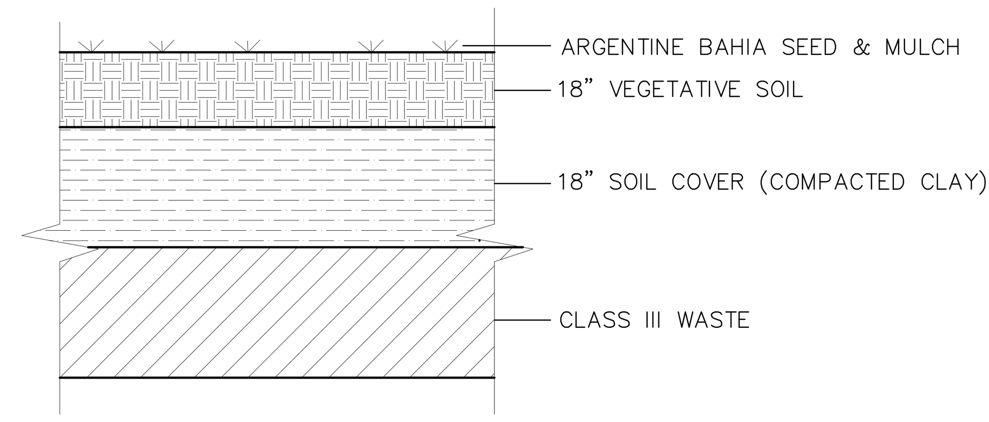


2 C3.00 TEMPORARY STORMWATER DIVERSION SWALE DETAIL

SCALE: N.T.S.

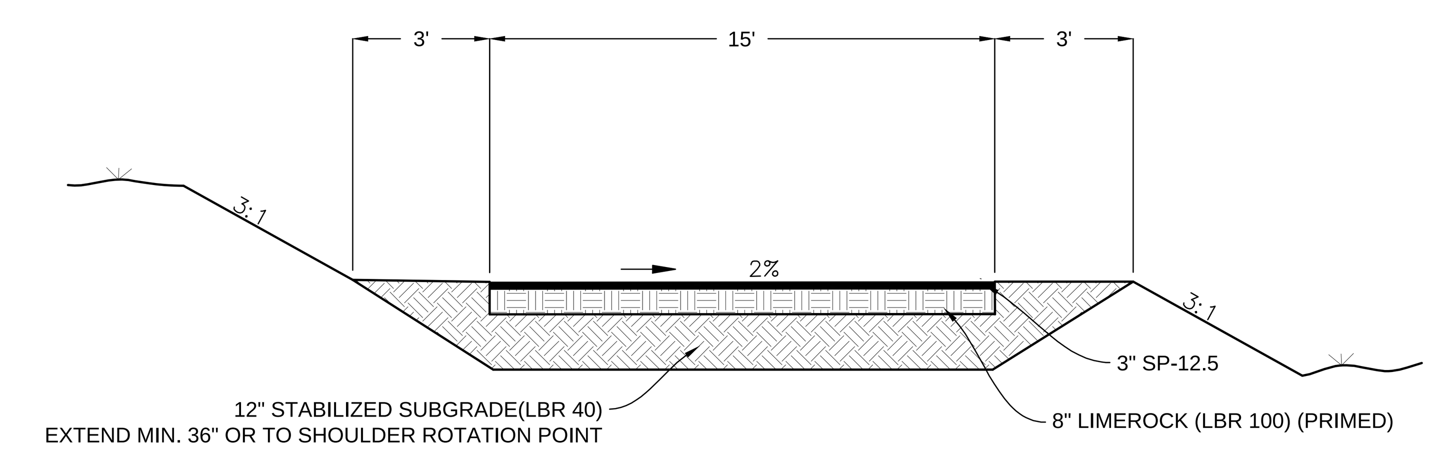
NOTES:

1. FOR CELL 16 THE TEMPORARY DIVERSION SWALE IS CONSTRUCTED PRIOR TO WASTE ACCEPTANCE WITHIN CELL.
2. PRIOR TO WASTE BEING DISPOSED OF ON THE PREVIOUS INTERMEDIATE SLOPE THE TEMPORARY SWALE IS BACKFILLED AND COMPACTED WITH CLAY TO PROVIDE A CONTINUOUS CLAY BARRIER LAYER THAT DRAINS TO THE STORMWATER POND 3.
3. CLAY BARRIER LAYER TO BE CONSTRUCTED IN ACCORDANCE WITH SECTION 3.7 OF THE ENTERPRISE CLASS III LANDFILL ENGINEERING REPORT.
4. STEP BACK AND SCARIFY EXISTING CLAY LAYER IN 12" LIFTS PRIOR TO CONSTRUCTION NEW CLAY LAYER ADJACENT TO EXISTING.
5. FINAL COVER CONSTRUCTION TO BE IN ACCORDANCE WITH SECTION 7.1 OF THE ENTERPRISE RECYCLING & DISPOSAL FACILITY RECLAMATION & CLOSURE PLAN.



3 C3.00 TYPICAL FINAL COVER

SCALE: N.T.S.



4 C3.00 ACCESS ROAD TYPICAL SECTION

SCALE: N.T.S.

NO.	DATE	REVISION DESCRIPTION	BY

Locklear & Associates
Engineering & Environmental Consulting

4140 NW 37th Place, Suite A
Gainesville, Florida 32606
Phone: 352.672.6867 Fax: 352.692.5390
Certificate of Authorization No. 30066

PERMIT PLANS
ENTERPRISE ROAD CLASS III
RECYCLING & DISPOSAL FACILITY
2016 PERMIT MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

LISA J. BAKER
FL PE NO. 74652

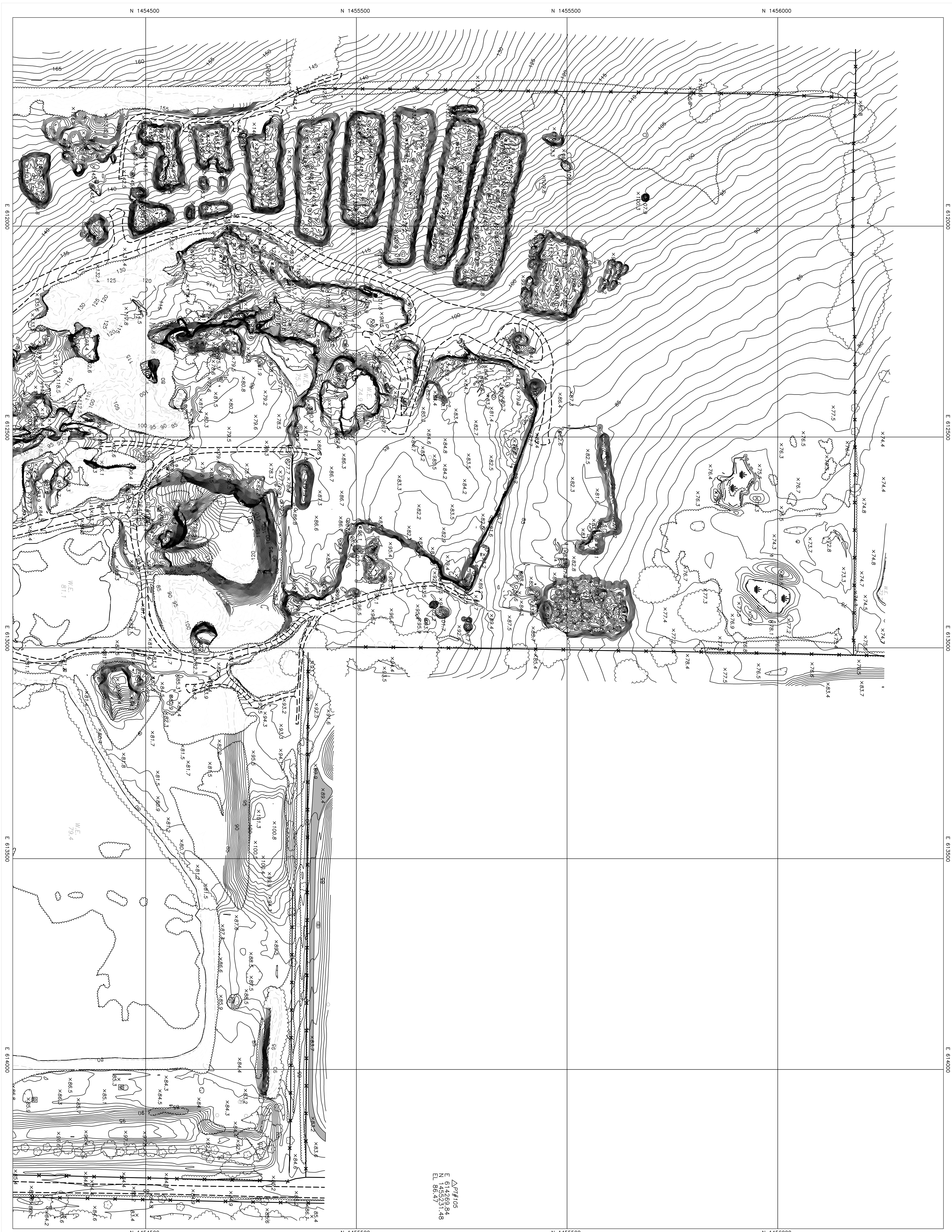
DESIGNED BY	LJB
DRAWN BY	LJB
CHECKED BY	JDL
APPROVED BY	LJB

SHEET TITLE:
CLOSURE DETAILS

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: MARCH 2016
DRAWING: C3.00

REVIEW ONLY-NOT FOR CONSTRUCTION

Z:\Civil 3D Projects\02000-144-14_01\CADD\Sheet_List\C3.00.dwg PLOT DATE 4/1/2016 12:20 PM BY LJB



SURVEYOR's NOTES:

1.) North, the grid, and the coordinates shown hereon are referenced to the West Zone of the Florida State Plane Coordinate System, NAD 83, 1990 adjustment

2.) Elevations are to National Geodetic Vertical Datum of 1929.

3.) This topographic survey was prepared by photogrammetric methods. See the attached report for map accuracy and surveyor's signature and seal. This map is limited to those features visible on aerial photography.

LEGEND:

(THESE FEATURES ARE REPRESENTED BY SYMBOLS NOT TO SCALE)

- CONTROL
- PT# TARGET NUMBER
- N NORTHING
- E EASTING
- EL ELEVATION
- UTILITY POLE
- SIGN
- POST
- CULVERT
- TREE
- SWAMP/MARSH
- MISCELLANEOUS SYMBOL

(THESE FEATURES ARE TO SCALE)

- PAVED ROAD
- CONCRETE SURFACE
- UNPAVED ROAD
- FENCE
- GUARDRAIL
- STRUCTURE
- TREE LINE
- SHRUB LINE
- EDGE OF GROVE
- EDGE OF WATER
- SWAMPLINE
- OBSCURED CONTOUR
- DEPRESSION CONTOUR

(THESE INFORMATIVE LABELS ARE NOT SCALE DEPENDENT)

- W.E. WATER ELEVATION
- ×120.1 SPOT ELEVATION
- ×120.1 OBSCURED SPOT
- MISC MISCELLANEOUS

C-3

NORTH

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

ACCURACY STATEMENT: The following stated plus or minus tolerances encompass a minimum of 90% of the difference between photogrammetrically measured values and ground truth of all well-identified features. Mapped features meet or exceed the Florida Minimum Technical Standards.

VERTICAL: Contours have been measured to an estimated vertical positional accuracy of 0.5'. Spot elevations and well-identified features have been measured to an estimated vertical positional accuracy of 0.25'

HORIZONTAL: Well-identified features have been measured to an estimated horizontal positional accuracy of 1.66'.

MAP PLOTTING: This map is intended to be displayed at a scale of 1" = 50' (1:600) or smaller.

MEASUREMENT METHODS: In areas where vegetation makes the ground difficult to determine contours are shown dashed and do not meet the above stated accuracy. Contours are removed from areas where vegetation completely hides the ground. This map is limited to those features visible on aerial photography.

LIMITATIONS: This mapping should be used for preliminary design work only and should not replace an actual field survey where the required accuracy is greater than the accuracy stated in this report. No responsibility is assumed for areas outside the contracted scope.

11/11/13
SURVEY DATE

T. JEFFREY YOUNG, PSM, CP
FLORIDA REGISTRATION NO. 5440
PICKETT AND ASSOCIATES, INC.

No.	DATE	APPROVED	REVISION
O.R.	12/31/13	TJY	ORIGINAL RELEASE

PROJECT No. 14094-7
DRAWING No. LD-5285

C-2

TOPOGRAPHIC SURVEY

ENTERPRISE ROAD LANDFILL

PREPARED FOR: ANGELO'S RECYCLED MATERIALS

PICKETT
SURVEYING & PHOTOGRAMMETRY
PICKETT & ASSOCIATES, INC. LICENSED BUSINESS No. LB364

475 SOUTH FIRST AVENUE
BARTOW, FLORIDA 33830
PHONE: (863)-533-9095
FAX: (863)-534-1464

Horiz. Scale: 1" = 100'
Contour Interval: 1'
Edited by: RP
Compiled by: AK
Flight Date: 11/11/13
Drawing Name: 14094-7.DWG

SURVEYOR's NOTES:

1.) North, the grid, and the coordinates shown hereon are referenced to the West Zone of the Florida State Plane Coordinate System, NAD 83, 1990 adjustment

2.) Elevations are to National Geodetic Vertical Datum of 1929.

3.) This topographic survey was prepared by photogrammetric methods. See the attached report for map accuracy and surveyor's signature and seal. This map is limited to those features visible on aerial photography.

LEGEND:

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- N NORTHING
- E EASTING
- EL ELEVATION
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- SIGN
- POST
- CULVERT
- TREE
- SWAMP/MARSH
- MISCELLANEOUS SYMBOL

(THESE FEATURES ARE TO SCALE)

- PAVED ROAD
- CONCRETE SURFACE
- UNPAVED ROAD
- FENCE
- GUARDRAIL
- STRUCTURE
- TREE LINE
- SHRUB LINE
- EDGE OF GROVE
- EDGE OF WATER
- SWAMPLINE
- OBSCURED CONTOUR
- DEPRESSION CONTOUR

(THESE INFORMATIVE LABELS ARE NOT SCALE DEPENDENT)

- W.E. WATER ELEVATION
- × 120.1 SPOT ELEVATION
- × 120.1 OBSCURED SPOT
- MISC MISCELLANEOUS

C-2
C-3

NORTH

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

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LIMITATIONS: This mapping should be used for preliminary design work only and should not replace an actual field survey where the required accuracy is greater than the accuracy stated in this report. No responsibility is assumed for areas outside the contracted scope.

THIS MAP AND ATTACHED REPORT ARE NOT FULL AND COMPLETE WITHOUT THE OTHER AND ARE NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER

SEE PAGE 1 FOR THE SIGNATURE AND THE ORIGINAL RAISED SEAL

PROJECT No. 14094-7
DRAWING No. LD-5285

C-3

TOPOGRAPHIC SURVEY

ENTERPRISE ROAD LANDFILL

PREPARED FOR: ANGELO'S RECYCLED MATERIALS

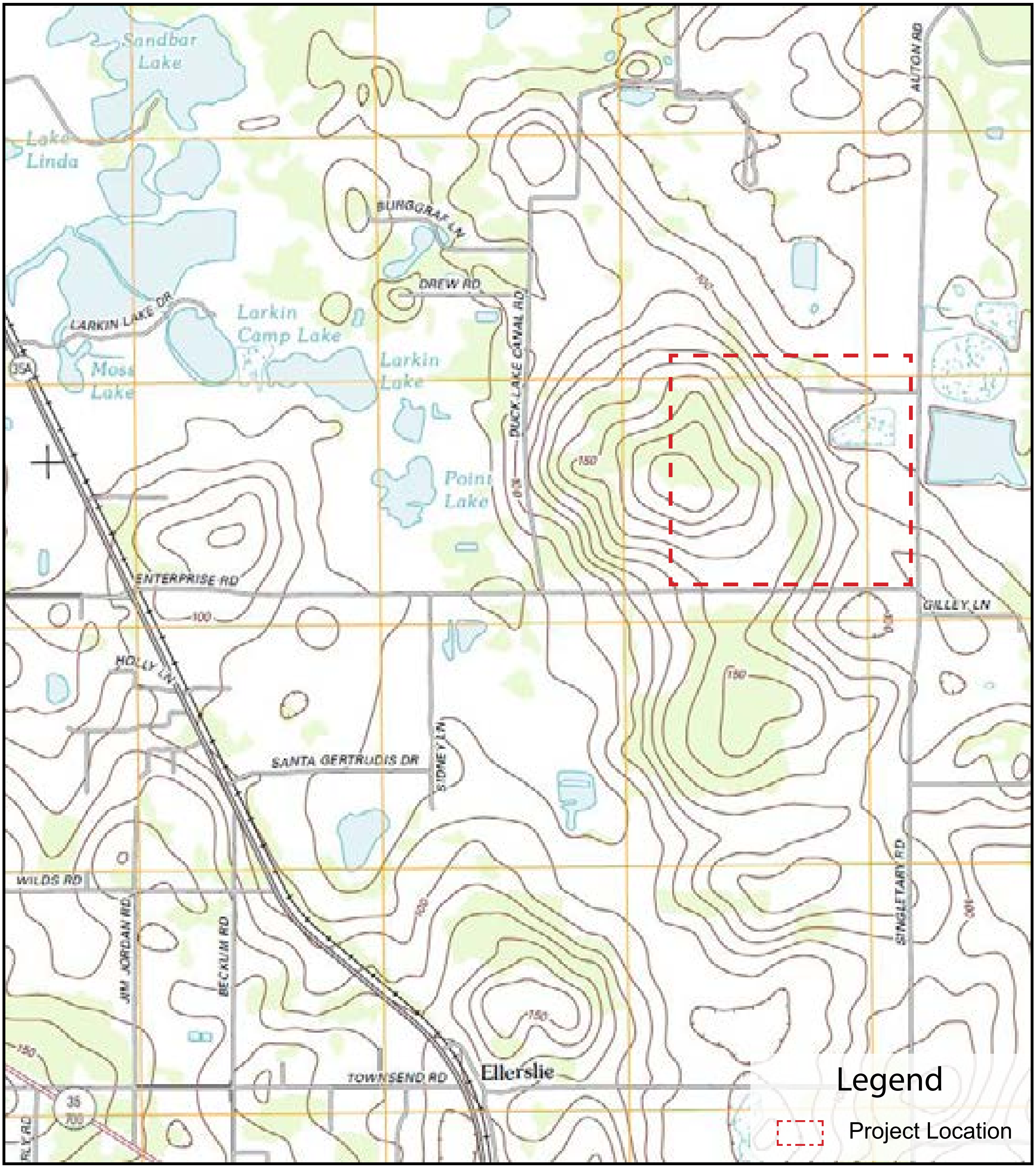
PICKETT
SURVEYING & PHOTOGRAMMETRY
PICKETT & ASSOCIATES, INC. LICENSED BUSINESS No. LB364
475 SOUTH FIRST AVENUE
BARTOW, FLORIDA 33830
PHONE: (863)-533-9095
FAX: (863)-534-1464

Horiz. Scale: 1" = 100' | Edited by: RP | Compiled by: AK | Flight Date: 11/11/13
Contour Interval: 1' | Drawing Name: 14094-7.DWG

No.	DATE	APPROVED	REVISION
O.R.	12/31/13	TJY	ORIGINAL RELEASE

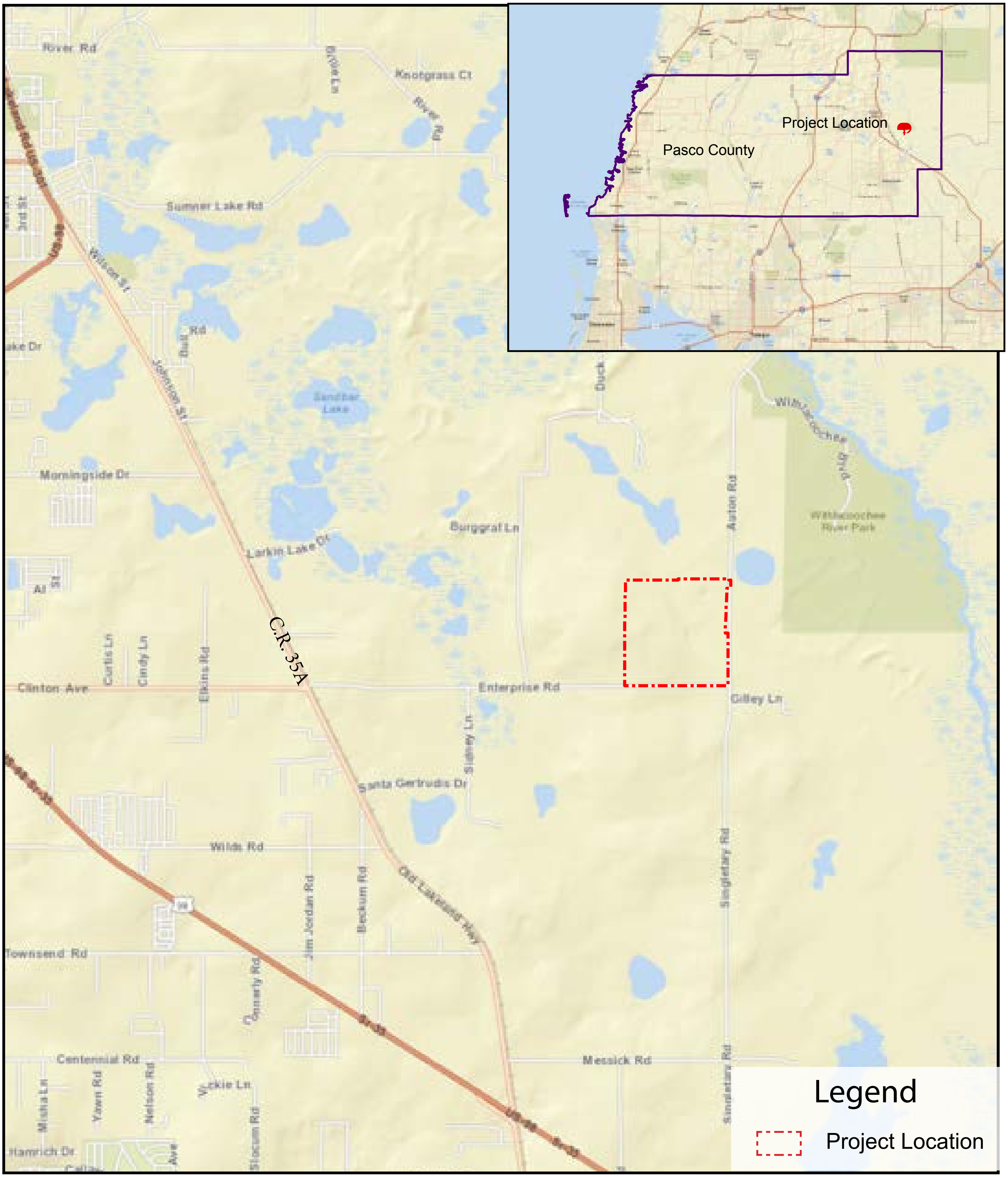
ENGINEERING REPORT
APPENDIX B

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



Locklear & Associates
Engineering & Environmental Consulting

Site Location Map

Enterprise Road Class III Recyling and Disposal Facility Permit Modification

Dade City, Pasco County, Florida

FIGURE 2

N

SCALE: 1”=3,200’

SOURCE: Esri Maps

Locklear & Associates
Engineering & Environmental Consulting

Aerial Map

Enterprise Road Class III Recyling and Disposal Facility Permit Modification

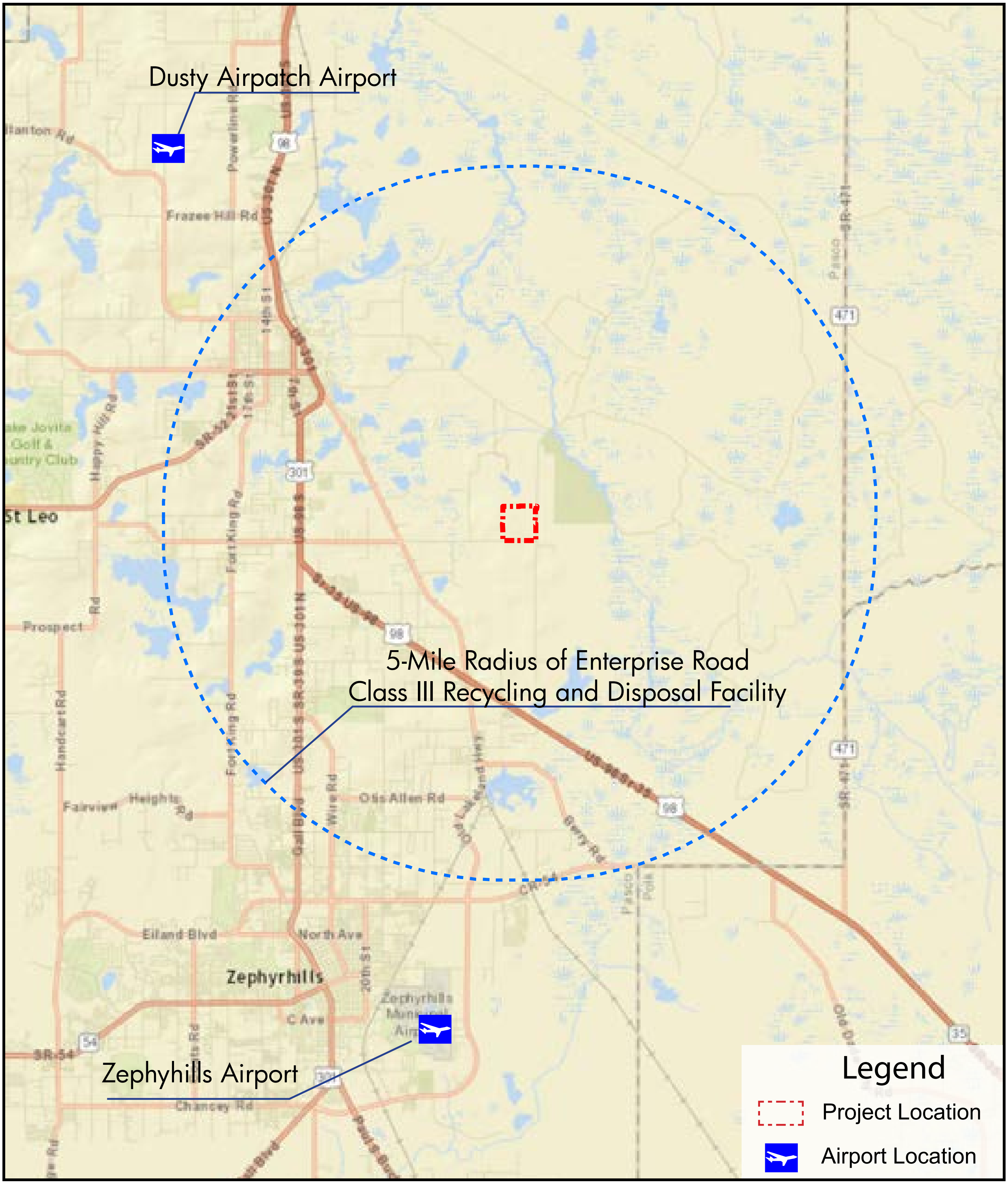
Dade City, Pasco County, Florida

FIGURE 3

N

SCALE: 1”=800’

SOURCE: Esri Maps



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

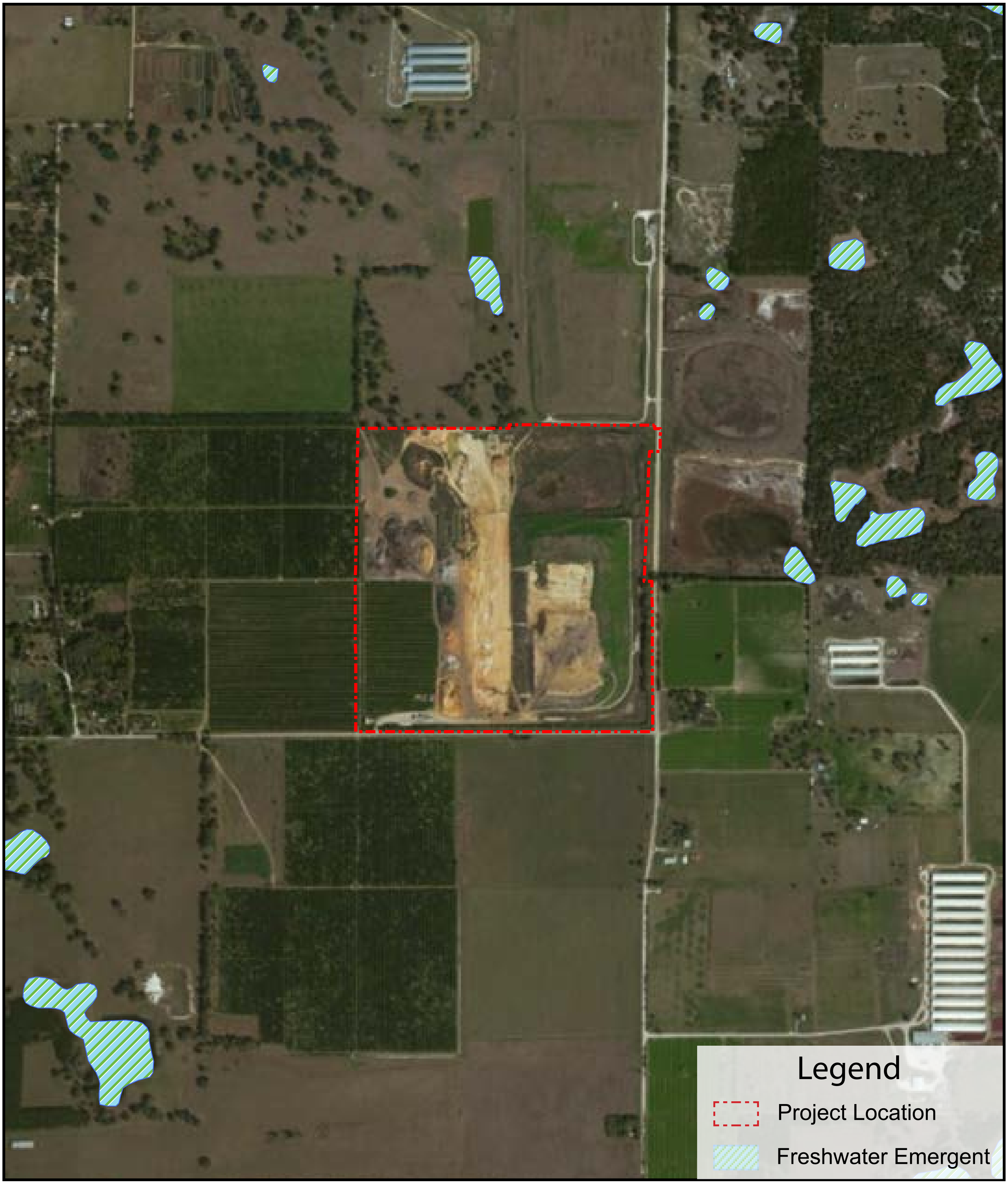
Locklear & Associates
Engineering & Environmental Consulting

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’

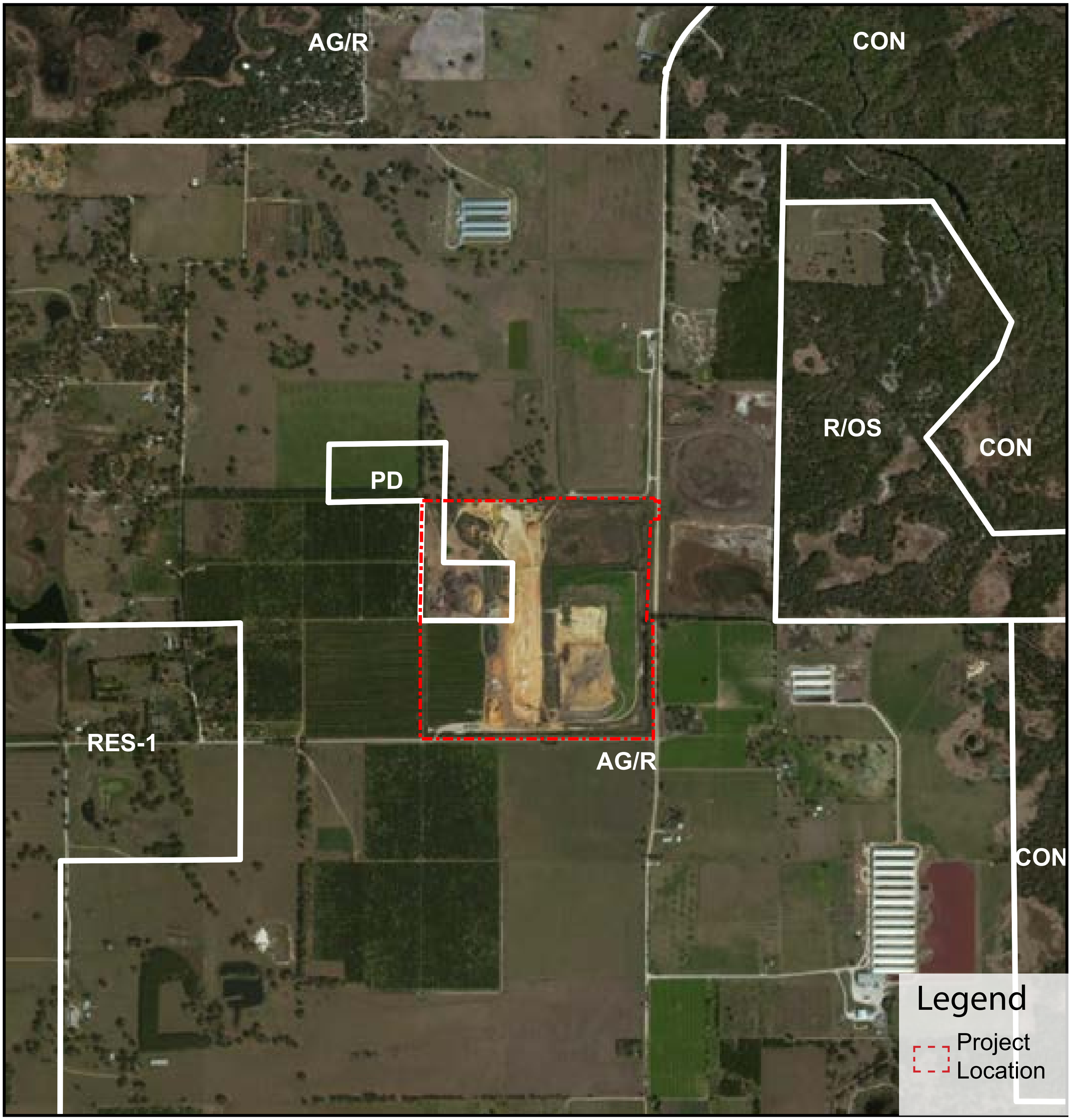
SOURCE: Florida Geographic Data Library & Esri

FLUCCS Codes (published 2009):

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

*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

Flood Zone Map

Enterprise Road Class III Recyling and Disposal Facility Permit Modification

Dade City, Pasco County, Florida

Locklear & Associates
Engineering & Environmental Consulting

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:

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

Project No.: 02000-144-15

March 2016

JOHN D. LOCKLEAR LICENSE No. PG 2467 STATE OF FLORIDA PROFESSIONAL GEOLOGIST

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

TABLE OF CONTENTS

FIGURES

TABLES

ATTACHMENTS

1.0 INTRODUCTION

Angelo's Aggregate Materials, Ltd. (Applicant) operates the Enterprise Road Class III Landfill in accordance with Florida Department of Environmental Protection (FDEP) operation permit 177982-022-SO and construction permit 177982-021-SC. The Applicant desires to expand the disposal footprint laterally to the north of the existing disposal cells and is seeking a determination from FDEP regarding specific construction requirements. The initial lateral expansion will be limited to Cell 16 as shown in Sheet C0.02 in Appendix A of the March 2016 Major Permit Modification Application.

Rule 62-701.400(3)(g) of the Florida Administrative Code (F.A.C.) reads as follows:

> *A Class III landfill shall be constructed with a bottom liner consisting of a single 60-mil minimum average thickness HDPE geomembrane. In the sumps located inside the landfill footprint and in the leachate collection trenches, the geomembrane shall be placed on a GCL with a hydraulic conductivity of less than or equal to 1 x 10^{-7} cm/sec, or on a compacted clay liner which is a minimum six inches thick with a saturated hydraulic conductivity of less than or equal to 1 x 10^{-7} cm/sec. The liner shall be placed on a prepared subgrade that will not damage the geomembrane liner or the GCL. A primary leachate collection and removal system and a drainage layer shall be installed above the geomembrane liner. Except in sumps and leachate collection trenches, the system shall be designed to limit leachate head above the liner during routine landfill operation after placement of initial cover to no greater than 12 inches. An applicant may request exemption from the requirements of this paragraph in accordance with paragraph 62- 701.340(2)(b), F.A.C.*

Rule 62-701.340(2)(b), F.A.C. reads as follows:

> *Class III landfills are those which receive only Class III waste. The Department shall exempt Class III landfills from some or all of the requirements for liners, leachate controls, and water quality monitoring in subsections 62-701.400(3) and (4), and Rule 62-701.510, F.A.C., if the applicant demonstrates that no significant threat to the environment will result from the exemption based upon the types of waste received, methods for controlling types of waste disposed of, and the results of the hydrogeological and geotechnical investigations required in Rule 62-701.410, F.A.C. Such a demonstration must include a CCA treated wood management plan as described in subsection 62-701.730(20), F.A.C., if the landfill will not have a constructed liner system.*

The applicant is seeking a partial exemption from the bottom liner and leachate collection requirements of Rule 62- 701.400(3)(g), F.A.C. as allowed by Rule 62-701.340(2)(b), F.A.C. for the proposed lateral expansion referred to as Cell 16 (the applicant understands that additional geotechnical data will be required to evaluate the applicability of the exemption for future cells 13 and 14). Specifically, in lieu of the single HDPE geomembrane and leachate collection system, the applicant proposes to construct a compacted clay layer with a minimum thickness of three feet and a saturated hydraulic conductivity of less than or equal to 1 x 10^{-7} cm/sec (note that this is the average value of the existing clay layer which ranges from 1 x 10^{-6} cm/sec to 1 x 10^{-8} cm/sec). Leachate that reaches the clay layer will be conveyed to Pond 3 (not constructed yet), which will be an industrial wastewater pond permitted with the FDEP.

The requested partial exemption is consistent with the existing approved and constructed system at the facility. Therefore, it is contingent upon the applicant to demonstrate the in-place infrastructure and operating procedures have not resulted in environmental impacts and, as such, extending the same infrastructure and operating procedures to the proposed Cell 16 expansion would not be expected to be a significant threat to the environment.

The information provided herein will demonstrate that no significant threat to the environment will result from the partial exemption based on: the types of waste received; methods for controlling types of waste disposed; the results of hydrogeological and geotechnical investigations.

2.0 CELL 16 DESIGN CONCEPT

The conceptual closure design for Cell 16 is shown in Appendix A of the March 2016 Major Permit Modification Application. The cell will be constructed with a compacted clay layer with a minimum thickness of three feet and a saturated hydraulic conductivity of less than or equal to 1 x 10^{-7} cm/sec, consistent with the existing cells. The clay layer will tie into the existing clay layer on the northern boundary of Cell 15 and slope to the north and northwest towards Pond 3.

3.0 TYPES OF WASTE RECEIVED

Class III waste is defined by Section 62-701.200 (14), F.A.C. as “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.”

4.0 METHODS FOR CONTROLLING TYPES OF WASTE DISPOSED

The facility is operated in accordance with the Operations Plan which is incorporated by reference in operations permit 177982-022-SO. The following items summarize the key components of the operations plan which directly address controlling the types of waste disposed at the facility:

- The site is protected from unauthorized disposal by a fence and a locked gate during non-operating hours; A trained operator is on site and trained spotters are at the working face whenever waste is being accepted;
- All waste is inspected prior to placement for final disposal;
- All customers must enter through the scalehouse and are questioned about the type of waste to be disposed;
- Any customer having unauthorized waste is refused entry to the facility;
- Signs are posted notifying customers that hazardous and household wastes are not accepted at the facility;
- Unauthorized waste detected by a spotter is removed from the waste stream and placed in a separate container for transport to an authorized facility;
- No other loads are tipped in the vicinity of detected non-Class III waste until the

authorized waste has been removed;

- CCA-treated wood is not accepted for disposal and is removed from the waste stream and stored in a container until it can be transported to a lined disposal facility.

5.0 GEOTECHNICAL INVESTIGATION

A geotechnical site investigation as required by Section 62-701.410(3), F.A.C. was performed for the entire facility by Universal Engineering Sciences, Inc. (UES) in 1999 and 2000 (report dated May 5, 2000). An update to the site geotechnical investigation was performed by UES in 2005 (report dated January 25, 2006. Substantial geotechnical data has been collected across the site including in the proposed Cell 16 lateral expansion area. UES has prepared a second update to the original geotechnical investigation report which focuses on the proposed Cell 16 footprint. A copy of the UES report is provided in Attachment 1.

6.0 HYDROGEOLOGIC EVALUATION

6.1 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 excerpted 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.*

6.2 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 current site monitoring network is summarized in Table 1 and shown in Figure 1.

TABLE 1

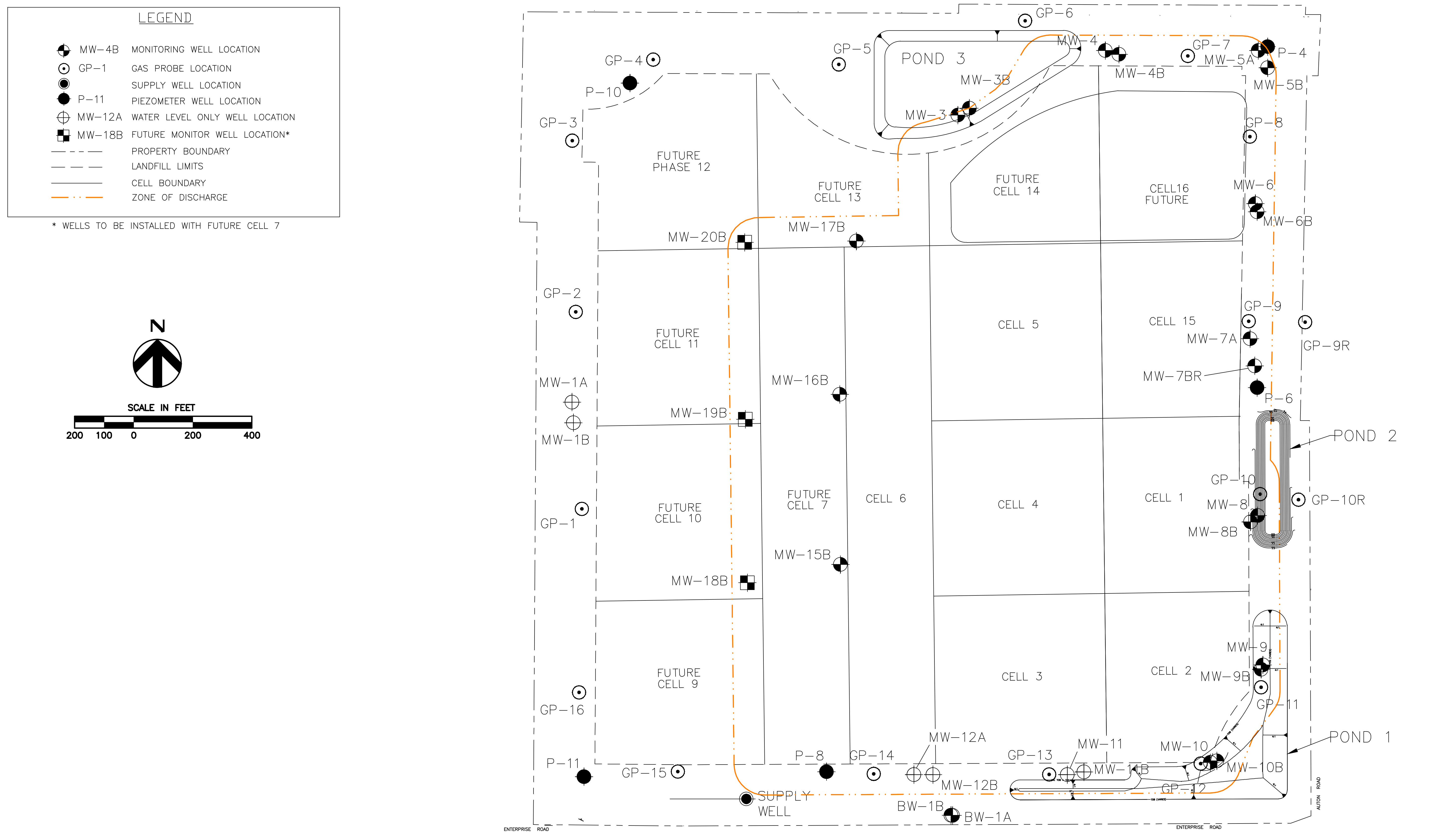
Well ID	Well Type	Aquifer	Existing or Future	Notes
BW-1A	Background	Surficial	Existing	
BW-1B	Background	Floridan	Existing	
MW-1A	Water Level	Surficial	Existing	
MW-1B	Water Level	Floridan	Existing	
MW-3	Detection	Surficial	Existing	
MW-3B	Detection	Floridan	Existing	
MW-4	Detection	Surficial	Existing	
MW-4B	Detection	Floridan	Existing	
MW-5A	Detection	Surficial	Existing	To be abandoned within 60 days of permit modification issuance
MW-5AR	Detection	Surficial	Future	To be installed within 60 days of permit modification issuance
MW-5B	Detection	Floridan	Existing	To be abandoned within 60 days of permit modification issuance
MW-5BR	Detection	Floridan	Future	To be installed within 60 days of permit modification issuance
MW-6	Detection	Surficial	Existing	
MW-6B	Detection	Floridan	Existing	
MW-7A	Detection	Surficial	Existing	
MW-7BR	Detection	Floridan	Existing	
MW-8	Detection	Surficial	Existing	
MW-8B	Detection	Floridan	Existing	
MW-9	Detection	Surficial	Existing	
MW-9B	Detection	Floridan	Existing	
MW-10	Detection	Surficial	Existing	
MW-10B	Detection	Floridan	Existing	
MW-11	Water Level	Surficial	Existing	
MW-11B	Water Level	Floridan	Existing	
MW-12A	Water Level	Surficial	Existing	
MW-12B	Water Level	Floridan	Existing	
MW-15B	Detection	Floridan	Existing	
MW-16B	Detection	Floridan	Existing	
MW-17B	Detection	Floridan	Existing	
Water Supply	Supply	Floridan	Existing	
MW-18A*	Detection	Surficial	Future	To be installed in conjunction with Cell 7 construction
MW-18B	Detection	Floridan	Future	To be installed in conjunction with Cell 7 construction
MW-19A*	Detection	Surficial	Future	To be installed in conjunction with Cell 7 construction
MW-19B	Detection	Floridan	Future	To be installed in conjunction with Cell 7 construction
MW-20A*	Detection	Surficial	Future	To be installed in conjunction with Cell 7 construction
MW-20B	Detection	Floridan	Future	To be installed in conjunction with Cell 7 construction
P-4	Piezometer	Surficial	Existing	To be abandoned within 60 days of permit modification issuance
P-6	Piezometer	Surficial	Existing	
P-8	Piezometer	Floridan	Existing	
P-10	Piezometer	Floridan	Existing	
P-11	Piezometer	Surficial	Existing	

* To be installed only if water bearing sediments are encountered above the clay units

Groundwater data for the site were compiled from the semi-annual groundwater monitoring reports submitted to the Department between October 2005 and September 2015 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, FAC, and were established to identify individual chemical concentration limits above which aesthetics or human health may be negatively impacted.

6.2.1 Background Water Quality Comparisons

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. Despite several years of groundwater monitoring data at the site, rigorous comparisons between background groundwater concentrations and concentrations in detection wells in the surficial aquifer is not feasible. The original background surficial aquifer well (MW-1) was abandoned in 2008 and replaced by MW-1A. MW-1A was recently replaced by a new shallow background well, BW-1A. Both replacement background wells have been dry since installation. Therefore, evaluating changes in parameter concentrations in downgradient wells over time becomes the best indicator of potential impacts from landfilling activities.



Locklear & Associates
Engineering & Environmental Consulting

PROJECT MANAGER	J. LOCKLEAR
DESIGNED	J. LOCKLEAR
CHECKED BY	J. LOCKLEAR
DRAWN BY	S. KARWAN
PROJECT NUMBER	114-004

ENTERPRISE ROAD
RECYCLING AND DISPOSAL FACILITY
DADE CITY, FLORIDA

GROUNDWATER MONITORING NETWORK

REVISED NOVEMBER 2013

FIGURE 1

FILENAME

SCALE

SHEET

6.2.2 Groundwater Quality of Surficial Aquifer Wells

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, and presented in Attachment 2. The temporal plots are also presented in Attachment 2. Figure 2 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 75th percentile and the bottom of the box represents the 25th percentile. The lines that extend upward and downward (whiskers) from the box represent the 90th and 10th percentiles, respectively. The outliers (data points that lie outside the 90th and 10th 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.

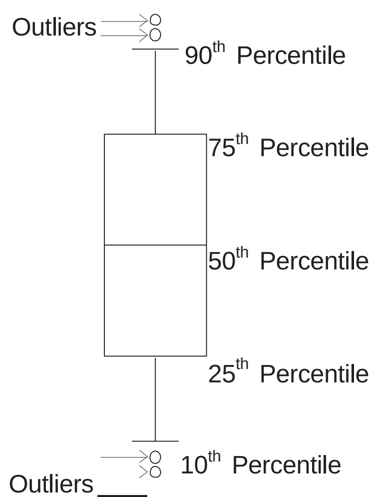


Figure 2. Box-and-whisker plot definition sketch

Note: The results of the August 2013 sampling event at BW-1A are considered to be unreliable. Historically, pH values in surficial aquifer waters do not trend toward basic results (> 7.0 S.U.). Based on the unusually high pH (10.44 S.U.), high Turbidity (796 NTU) and the fact that subsequent attempts to sample BW-1A failed due to insufficient water volume, we believe this sample reflected remnant waters as a result of the well installation.

pH

The pH is a measure of strength of acid or base in a solution, and its value ranges between 0 and 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 pH values in the surficial aquifer wells were found below the lower GCTL limit of 6.5 standard units (SU).

The temporal plots of pH for each surficial aquifer monitoring well 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.

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. Conductivity was observed to be less than 200 μS/cm for each well except for BW-1A (335 μS/cm during the 13S2 event) and MW-4 (557 to 1,007 μS/cm).

The temporal plots of conductivity for each surficial aquifer monitoring well 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.

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 temporal plots of turbidity for each surficial aquifer monitoring well 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.

Dissolved Oxygen

The temporal plots of DO for each monitoring well of the surficial aquifer 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.

<u>Oxidation Reduction Potential</u>

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). 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 temporal plots of ORP for each surficial aquifer monitoring well 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.

<u>Total Dissolved Solids</u>

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 plots and temporal plots of TDS concentrations in the surficial aquifer monitoring wells show 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. 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. 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 were analyzed to identify trends in TDS variation. The results generally show that TDS remained relatively constant or remained within a limited range.

<u>1,2-Dibromoethane</u>

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 shows that 1,2-Dibromoethane concentrations were generally below the laboratory method 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.

Ammonia

Ammonia is a standard indicator of leachate impacts to groundwater. Ammonia concentrations were consistent over time.

Nitrate as N

Nitrate as N is another common indicator of leachate impacts to groundwater. All Nitrate concentrations were significantly below the GCTL. Concentrations of Nitrate were consistent over time.

Nitrite as N

Nitrite as N is another common indicator of leachate impacts to groundwater. Temporal plots for Nitrite in the surficial aquifer monitoring wells were not possible. All Nitrite concentrations were below the laboratory method detection limit (0.007 mg/L) for the surficial aquifer wells. Evaluating trends is not possible as Nitrite was only analyzed in samples collected during the first semiannual monitoring event of 2006.

Chloride

Chloride is another common indicator of leachate impacts to groundwater. All Chloride concentrations were significantly below the GCTL. Concentrations of Chloride were consistent over time.

Sodium

Sodium is another common indicator of leachate impacts to groundwater. 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.

Chromium

The GCTL of Chromium (100 μg/L) was exceeded once in MW-7A. The temporal impact plot of Chromium for MW-7A shows that the Chromium concentration exceeded its GCTL in the November 2008 sampling event with a measured level of 120 μg/L. Results from equipment and trip blanks were assessed to evaluate potential cross-contamination; however, data from the blanks do not indicate any cross-contamination. The concentrations of Chromium ranged from below the laboratory method detection limit to 6.12 μg/L in all subsequent sampling events. The single exceedance of the Chromium concentration in MW-7A can be considered an isolated event and does not reflect any significant change in water quality in well MW-7A.

Iron

The box-and-whisker plots and temporal plots 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 (BW-1A, MW-4, MW-5A, MW-6, MW-7A, and MW-10). The BW-1A exceedance is considered to be unreliable as previously stated. 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.

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-4, MW-5A, MW-6, MW-7A, and MW-10 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.

Mercury

The temporal impact plot of Mercury for MW-7A shows that the Mercury concentration exceeded its GCTL (2 μg/L) in the November 2008 (7.0 μg/L) and the October 2009 (2.35 μg/L) sampling events. Equipment and trip blanks were evaluated to assess potential influences from contaminated laboratory equipment; however, data from blanks do not 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 October 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.

Nickel

All concentration of Nickel were below the GCTL (100 μg/L). Concentrations of Nickel in the surficial aquifer wells predominantly were recorded below the laboratory detection limit, however the Nickel was reported as high as 70 μg/L in the November

2008 sample from MW-7A. Subsequent samples collected from MW-7A reported Nickel concentrations below 6.5 µg/L. The November 2008 Nickel concentration in MW-7A can be considered an isolated event and does not reflect any significant change in water quality in well MW-7A.

Vanadium

The box-and-whisker plots and temporal plots of Vanadium concentrations in surficial aquifer monitoring wells show that the Vanadium concentrations exceeded its GCTL (49 µg/L) in four monitoring wells BW-1A, MW-5A, MW-6, and MW-7A. The BW-1A exceedance is considered to be unreliable as previously stated. Each Vanadium exceedance in the remaining wells 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.

The temporal plots of Vanadium for each monitoring well of the surficial aquifer 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-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.

Zinc

All concentrations of Zinc were substantially below the GCTL in all samples. Concentrations were consistent over time.

Additional Constituents

The following constituents were sporadically encountered at one or few surficial aquifer monitoring wells significantly below their established GCTL: Acetone, Antimony, Arsenic, Barium, Beryllium, Cadmium, Carbon Disulfide, Cobalt, Copper, Lead, Selenium, Silver and Toluene.

6.2.3 Groundwater Quality of Floridan Aquifer Wells

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 BW-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.

pH

Floridan aquifer monitoring wells showed pH ranging from 5.9 to 11.66 S.U. with approximately 85% of measurements falling within the GCTL range of 6.5 to 8.5 S.U. Monitoring wells MW-7BR and MW-16B exhibited the highest pH levels ranging as high as 11.66 S.U. and monitoring wells MW-10B exhibited the lowest pH of 5.9 S.U. The pH of the Floridan aquifer at the site ranged from 7.6 to 9.6 S.U. 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 show that the pH of this well was trended from a high of 11.66 S.U. to a neutral value in recent sampling events. This is due to the residual grout in the well.

The temporal plots of pH for each Floridan aquifer monitoring well 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.

Conductivity

Higher conductivity values of monitoring well MW-8B (226 to 898 μS/cm) were observed compared to the other Floridan aquifer monitoring wells.

The temporal plots of conductivity for each monitoring well installed in the Floridan aquifer 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.

Turbidity

The Turbidity of each well was below 20 NTU throughout the monitoring period. The temporal plots of Turbidity for each Floridan aquifer well were analyzed to identify trends in turbidity measurements. In general, turbidity values remained constant or varied within a limited range (0 to 19.9 NTU) for each well since the start of monitoring. As a whole, decreasing trends of Turbidity are expressed in the temporal plots.

Dissolved Oxygen

The temporal plots of DO for each Floridan aquifer monitoring well 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 0.09 to 8.1 mg/L.

Oxidation Reduction Potential

The temporal plots of ORP for each Floridan aquifer monitoring well were analyzed to identify trends in ORP levels. ORP values were variable or slightly increasing over time during the monitoring period analyzed ranging from -301 to 537.6 mV.

Ammonia-N

Ammonia-N (NH_3-N) is the most reduced form of nitrogen and is highly soluble in water. Values in MW-8B increased slightly in 2009, but have been decreasing in monitoring events conducted since 2009.

Chloride

All Chloride concentrations were significantly below the GCTL. Concentrations of Chloride were consistent over time.

Nitrate-N

Nitrate-N (NO_3^--N) forms due to oxidation of ammonia-N present in water. The box-and-whisker plots and temporal plots of nitrate-N concentration for each Floridan aquifer monitoring wells show that the nitrate-N concentrations did not exceeded its GCTL (10 mg/L) in the Floridan aquifer wells.

Nitrite-N

All Nitrite concentrations were below the laboratory method detection limits (0.007 and 0.002 mg/L) for the Floridan aquifer wells, with the exception of MW-7BR (0.21 mg/L). Evaluating trends is not possible as Nitrite was only analyzed in samples collected during the first semiannual monitoring event of 2006.

Chromium

All Chromium concentrations were significantly below the GCTL (100 μg/L). Concentrations of Chromium were consistent over time. Chromium levels spiked in December 2007 in MW-9B to 55.5 μg/L. Based on subsequent Chromium results in MW-9B, this result is considered to be erroneous and not representative.

Vanadium

The box-and-whisker plots and temporal plots 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. No other exceedances were observed for Vanadium.

Iron

The box-and-whisker plots and temporal plots of Iron concentrations in the Floridan aquifer monitoring wells show that Iron concentrations exceeded the GCTL (300 μg/L) in four monitoring wells MW-5B, MW-8B, MW-9B and MW-10B in at least one monitoring event.

The temporal plots for Iron in monitoring wells MW-5B and MW-9B show single instances where the GCTL was exceeded ranging from 365 μg/L to 540 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-5B, MW-9B 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 5,450 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 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. Regardless of the origin of the elevated Iron concentrations in MW-8B, the impact is very localized and there are no downgradient receptors in the immediate vicinity of the site. Therefore, the Iron values are not considered to be a significant impact; particularly considering that Iron is a Secondary Drinking Water Standard.

<u>Mercury</u>

Mercury was reported in groundwater samples collected from piezometer well MW-11B beginning with the second semiannual sampling event of 2010. Mercury values showed an increasing trend between 2010 and 2014 reaching a maximum concentration of 3.2 μg/L. However, MW-11B was resampled following the second semiannual 2014 sampling event and mercury concentrations were found to be below the PDWS. A downward trend was confirmed by the first semiannual sampling event of 2015 which reported mercury at a concentration of 0.2 μg/L.

<u>Additional Constituents</u>

The following constituents were sporadically encountered at one or few Floridan aquifer monitoring wells significantly below their established GCTL: Acetone, Antimony, Arsenic, Barium, Beryllium, Carbon Disulfide, Chloroform, Cobalt, Copper, Lead, Methylene Chloride, Nickel, Selenium, Silver, Toluene, Trichlorofluoromethane, Vanadium and Zinc.

6.2.4 Summary of Groundwater Quality

Groundwater quality in the site monitoring wells has remained very consistent over time. Concentrations of leachate indicator parameters, such as sodium, chloride and ammonia, are not elevated and have remained relatively constant since the initial sampling event. The consistency of the parameter concentrations over time combined with the absence of elevated leachate indicator parameters demonstrates that the landfilling activities had little to no impact on groundwater quality beneath the site.

Several parameters, including iron, have shown concentrations above their applicable Secondary Drinking Water Standard. These concentrations have been isolated to single wells (for example Iron in MW-8B) or have been sporadic in nature. These concentrations are not considered to represent a significant environmental impact nor are they considered to be a potential threat to human health and safety. The potable well survey provided in Attachment 3 shows that there are no potential downgradient receptors within ½ mile of the facility. The elevated secondary parameters, which may be attributable to natural variations in the local geology between wells, do not represent a significant environmental impact.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

We offer the following conclusions based upon our review of the information as discussed herein:

- The types of waste received, as defined by the Department, are not expected to produce leachate that poses a threat to public health or the environment.
- The applicant has implemented methods as required by Chapter 62-701, F.A.C. to control the types of waste disposed at the facility.
- Collectively, the SPT borings show dense to very dense sediments and indicate no significant signs of active sinkholes, such as raveling soils, voids and large areas of soft soils.
- The small subsidence feature observed in 2004 was successfully remediated with grouting. The feature has remained stable for 12 years despite continued hydraulic loading.
- No other subsidence features have been observed at the facility despite the removal of substantial clay overburden as part of mining operations.
- Groundwater quality for samples collected from the site monitoring network between July 2003 and September 2015 has shown only minor exceedances of secondary drinking water standards, with the exception of low levels of Mercury in a single well which have decreased well below the primary drinking water standard.
- There are no potential downgradient receptors within ½ mile of the facility based on potable well surveys. The elevated secondary parameters do not represent a significant environmental impact.
- The groundwater quality data, including a lack of elevated leachate indicator parameters, demonstrates that the current clay layer and facility operational procedures have resulted in minimal groundwater impacts in 15 years.
- The proposed clay layer combined with the existing subgrade geology provide reasonable assurances that the system will not result in a significant threat to the environment.

Recommendations

Based on the data reviewed herein, we offer the following recommendations regarding Cell 16:

- Cell 16 should be designed with a compacted clay layer with a minimum thickness of three feet and a saturated hydraulic conductivity of less than or equal to 1×10^{-7} cm/sec.
- The clay layer should tie into the existing clay layer beneath Cell 15 and slope to the north and northwest towards Pond 3.

ATTACHMENT 1
UNIVERSAL ENGINEERING REPORT

UNIVERSAL
ENGINEERING SCIENCES

GEOTECHNICAL EXPLORATION

Enterprise Class III Landfill
Dade City, Florida

UES Project No. 0830.1500202

PREPARED FOR:

Angelo's Materials
c/o Lockler & Associates
4140 NW 37th Place, Suite A
Gainesville, FL 32606

PREPARED BY:

Universal Engineering Sciences
9802 Palm River Road
Tampa, Florida 33619
(813) 740-8506

January 29, 2016

UNIVERSAL
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- Sarasota
- St. Petersburg
- Tampa
- Tifton
- West Palm Beach

January 29, 2016

Angelo's Materials
c/o Lockler & Associates
4140 NW 37th Place, Suite A
Gainesville, FL 32606

Attention: John Locklear, P.E.

Reference: Geotechnical Services/Documentation Review
Dade City Landfill, Cell 16
NWC of Enterprise Rd. and Auton Rd.
Dade City, Pasco County, Florida
UES Project No. 0830.1500202
UES Report No. 1306524

Dear Mr. Locklear:

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 & Associates, Inc. (L&A).

This report contains the results of our study, an engineering interpretation of the subsurface data obtained with respect to the project characteristics described to us, geotechnical design recommendations, and general construction and site preparation considerations.

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

Dušan Jovanović
Senior Project Manager

Mark K. Hardy, P.E.
Regional Manager
Professional Engineer No. 57233
Date: 1/29/2016

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

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LIST OF APPENDICES

1.0 INTRODUCTION

Universal Engineering Sciences, Inc. (UES) has completed the review of documentation and field conditions related to the permit modification application being prepared by Locklear & Associates, Inc. (L&A). We understand the permit modification involves the construction of a lateral expansion of the landfill north of existing Cell 15 into the area referred to as Cell 16. Furthermore, we understand the Department has requested a re-evaluation of the geotechnical conditions present in the area of Cell 16.

A general location map of the project area appears in Appendix A: Site Location Map. Also included in Appendix A for your reference are a Site Aerial Photographs, USGS Site Topographic Map and SCS Soil Survey Map.

2.0 DOCUMENT REVIEW

2.1 GENERAL

The following documents, provided to us by the applicant and L&A, were reviewed for this re-evaluation 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. Grouting Completion Report
- Site Map, prepared by L&A 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-SOfT3 & 177982-008-SCfT3, 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-SCfT3, 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-SCfT3 and 177982-007-SOfT3, 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-SOfT3, 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.

- June 2015 plan set from L&A compiling previous geotechnical boring data for the Cell 16 area.

- June 2015 plan set from L&A of geologic cross sections for the Cell 16 area.

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

- Geotechnical Exploration, Proposed Dade City - Class 111 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.

2.2 GENERAL GEOLOGY

2.2.1 GEOLOGY

According to the Geologic Map of the State of Florida, 2001, the surficial deposits underlying the site and the general vicinity are classified as the Hawthorn Group (Th) of Miocene geologic age. The Hawthorn Group sediments are light olive gray and blue gray, poorly to moderately consolidated, clayey sands to silty clays.

The Oligocene Suwannee Limestone (Ts) generally lies below the Hawthorn Group sediments in the region. The Suwannee Limestone generally consists of a white to cream, poorly to well indurated, fossiliferous limestone. The upper portion of the limestone is highly variable due to paleo-weathering it is not uncommon for limestone to be found at relatively shallow depths (< 50 feet) or at depths greater than 100 feet below the land surface.

2.2.2 HYDROGEOLOGY

The Floridan aquifer is semi-confined in this area of Pasco County. The Floridan aquifer system consists of the Upper and Lower Floridan aquifers separated by the middle confining unit. The middle confining unit and the Lower Floridan aquifer in west-central Florida generally contain highly mineralized water. The water-bearing units containing fresh water are herein referred to as the Upper Floridan aquifer. The Upper Floridan aquifer is the principal source of water in the Southwest Florida Water Management District (SWFWMD) and is used for major public supply, domestic use, irrigation, and brackish water desalination in coastal communities (SWFWMD, 2000).

According to the Potentiometric Surface of the Upper Floridan Aquifer, West Central Florida, September 2008, groundwater flow is generally towards the west and depth to water is approximately 5 feet NGVD 1929

2.3 CELL 16 BORINGS AND GEOLOGIC CROSS SECTIONS

All geotechnical data collected within and immediately adjacent to the proposed Cell 16 lateral expansion area was compiled and reviewed. Sources of information included the following: (1) mining exploration borings performed prior to 2000; (2) borings performed during initial 1999/2000 geotechnical investigation; (3) borings performed as part of the 2004 subsidence remediation; (4) borings performed in conjunction with groundwater monitoring well installations. Because many of these borings were performed prior to mining and landfilling activities, the site land surface has changed significantly. As a result, the original borings include lithology which is no longer present. In order to update this information and provide a more accurate representation of what actually exists in the area, each boring log was reviewed relative to the current topographic elevation. In locations where natural material has been removed (either from mining or landfilling activities), the log has been revised to remove the portions of the column which no longer exist. Copies of the revised boring logs are provided in Appendix B. Also, geologic cross sections were generated with the boring log data and are provided in Appendix B. The cross sections also include the existing and proposed clay liner and cell boundaries to assist in visualizing the proposed expansion concept.

A total of 51 borings have been performed in the Cell 16 area and vicinity. The majority of the borings were performed as Standard Penetration Test Borings and include the required blow count and N values. N values are shown on the boring logs provided in Appendix B. It should be noted that the boring logs were prepared by different people and the lithologic descriptions are variable.

Geologic Cross Section A-A'

Cross section A-A' extends north to south through the approximate center of the Cell 16 area. The northern extent (A) begins with boring SSA-29 approximately 50 feet south of the northern cell boundary. The section ends with boring DCL01-12 located in the southern portion of Cell 15. Boring SSA-29 was completed to a depth of 55 feet, NGVD. The geology encountered consisted of silty sands and silty clays. Progressing south along the section the next boring is

B-32, which was completed to a depth of 35 feet, NGVD. The geology encountered consisted of alternating layers of silty sands to sandy clays until limestone was observed at an elevation of 36 feet, NGVD. The next two borings, B-26 and B-22, show deeper silty sands underlain by silty to sandy clays. Limestone was not encountered in either of the borings which terminated at elevations of 15 and 30 feet, NGVD, respectively. The two southernmost borings, DCL01-13 and DCL01-12, were completed within the existing Cell 15 footprint. Sandy clays were observed in both borings, with limestone encountered at an elevation of 65 feet, NGVD in DCL01-13.

N-values for the borings comprising cross section A-A' are provided in Appendix B. Of the six borings, all but SSA-29 included SPT data. N-values for B-22 ranged from 7 to 58. N-values for B-26 and B-32 ranged from 3 to 12 and 10 to 23, respectively. N-values for DCL01-12 and DCL01-13 ranged from 2 to 18 and 2 to 9, respectively. Note that discussions of N-values include values for those intervals that still remain in place. Therefore, the range discussed herein may be different than the full range displayed on the original boring logs.

Geologic Cross Section B-B'

Cross section B-B' extends from the southwest corner to the northeast corner of the Cell 16 area. The southwestern extent of the section begins with boring L-14 located within the Cell 1 footprint. The section ends in the northeastern corner of the proposed Cell 16 footprint with boring B-21. Borings L-14 and SSA-25 were both completed to depths of 65 feet, NGVD. The lithology described for both borings consists of sandy clays. As we move north in the proposed Cell 16 footprint, boring B-23 shows interbedded clayey sand, sandy clays and clays to a depth of 55 feet, NGVD. Borings B-33 and B-31 were completed to depths of 43 and 40 feet, NGVD, respectively. Both columns show similar interbedded clayey sands, sandy clays and clays. Boring B-33 shows a limestone marl underlain by limestone beginning at an elevation of 47 feet, NGVD. The limestone marl is seen at the same elevation in B-31 but is underlain by clayey sand rather than limestone. The section terminates with boring B-21 which was completed to a depth of 55 feet, NGVD. This column shows interbedded clayey sands and silty clays with a thin limestone marl layer from 64 to 61 feet, NGVD.

N-values for the borings comprising cross section B-B' are provided in Appendix B. Of the six borings, B-21, B-23, B-31 and B-33 included SPT data. N-values for B-21 ranged from 4 to 9. N-values for B-23 ranged from 5 to 19. N-values for B-31 ranged from 8 to 18. N-values for B-33 ranged from 3 (at the limestone contact) to 33. It is very common to observe lower blow counts and N-values at the contact between two differing lithologic units.

Geologic Cross Section C-C'

Cross section C-C' extends from the northwest corner to the southeast corner of the Cell 16 area. The section begins with boring B-34 in the northwest corner of the proposed Cell 16 footprint and extends to MW-6 just outside of the southeastern corner of Cell 16. Boring B-34 was completed to a depth of 50 feet, NGVD and consists of silty sand overlying interbedded clayey sand, silty clay and sandy clay. Boring SSA-26 was completed to a depth of 55 feet, NGVD. It consists of silty to clayey sands overlying silty clay. The upper portion of boring B-32 shows similar lithology to SSA-26 which is then underlain by more sandy clay and clayey sands and ultimately limestone at a depth of 36 feet, NGVD. Boring B-31 shows a very similar column to that of B-32, though a thin limestone marl layer is encountered at approximately 47 feet, NGVD. SSA-30 is the last boring located within the Cell 16 footprint. SSA-30 was completed to a depth of 55 feet, NGVD. The column consists of silty clay underlain by a thin clayey sand layer and then silty clay with limestone fragments. Limestone was encountered at an elevation of 56 feet, NGVD. The boring performed during construction of monitoring well MW-6B represents the southern extent of the section. The boring was completed to a depth of 30 feet, NGVD. The column consists of sandy clay to clay underlain by limestone starting at an elevation of 55 feet, NGVD.

N-values for the borings comprising cross section C-C' are provided in Appendix B. Of the six borings, B-21, B-23, B-31 and B-33 included SPT data. N-values for B-21 ranged from 4 to 9. N-values for B-23 ranged from 5 to 19. N-values for B-31 ranged from 8 to 18. N-values for B-33 ranged from 3 (at the limestone contact) to 33. It is very common to observe lower blow counts and N-values at the contact between two differing lithologic units.

Geologic Cross Section D-D'

A geologic cross section (D-D') running north to south through the southeastern corner of Cell 16 is provided in Appendix B. The northern extent of the section is represented by boring B-42 and the southern extent by boring B-39. Boring B-42 was completed to a depth of 55 feet, NGVD. The column consists of sandy clay underlain by clay to clayey sand limestone marl at an elevation of 60 feet, NGVD. Boring B-41 shows sandy clay overlying limestone marl, followed by limestone at an elevation of 57 feet, NGVD. Borings B-40, B-36 and B-35 show a similar sequence though B-35 was completed deeper than the other borings (40 versus 57 feet, NGVD). Boring B-39 shows a slightly thinner layer of sandy clay underlain by limestone at an elevation of 70 feet, NGVD.

N-values for the borings comprising cross section D-D' are provided in Appendix B. All six borings included SPT data. N-values for B-42 ranged from 9 to 23. N-values for B-41 ranged from 7 to 36. N-values for B-40 ranged from 3 to refusal. N-values for B-36 ranged from 8 to refusal. N-values for B-35 ranged from 1 (at the limestone contact which is common) to 21. Boring B-39 N-values ranged from 9 to 36.

Geologic Summary

Collectively, the SPT borings show dense to very dense sediments and indicate no significant signs of active sinkholes, such as raveling soils, voids and large areas of soft soils. There is evidence of the typical loss of circulation at the soil-limestone interface at depth, and a few one to two foot thick layers of soft sediments (one to three blow counts). However, in all borings dense to very dense sediments have surrounded these softer soil layers in a stable setting.

3.0 Evaluation of 2004 Subsidence Feature

In 2004, a small (12 feet in diameter) subsidence feature was observed by Hartman & Associates, Inc. (HAI) in the southeastern portion of the Cell 16 area. The area was investigated through the advancement of additional SPT borings.

The feature was subsequently remediated through grouting. The purpose of the grouting program was to seal the upper limestone zones and compact, fill and improve loose soil conditions encountered at this location. The grouting operation was conducted using present industry standards.

The remediation included 26 grout injection points. The casing depths of the injection points generally ranged from 25 to 45 feet below land surface (bls), with the exception of injection point 26 which extended to 60 feet, bls. The higher quantities of grout were generally injected in the points with deeper casing depths. The largest quantity of grout was injected in point 26. The initial grout take within the lower portion of this grout injection point, at depths between 60 and 42 feet, was relatively large per foot of depth. The grout take was significantly less per linear foot within the upper portion of this grout injection point with much higher line pressures. Based on the above observation we believe the upper limestone zone was sealed and the cavity was filled with low slump grout.

For the remaining grout injection points the njection pressures were generally higher at shallow depths.

A copy of Grouting Completion Report as presented to Department of Environmental Protection by Hartman & Associates in 2004 is attached.

Since completion of the grouting remediation, the entire area around the feature has been hydraulically loaded by the temporary stormwater pond. The feature has been stable for more than 10 years under conditions which are considered conducive to the formation of subsidence features.

3.0 CONCLUSIONS

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:

- 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. This conclusion is particularly applicable to the temporary retention pond area (Cell 15 and Cell 16) based on ten years of monitoring under conditions which are considered conducive to the formation of subsidence features.

- Placement of three feet of clay layer in the proposed fill areas including Cell #16 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.

4.0 LIMITATIONS

During the early stages of most construction projects, geotechnical issues not addressed in this report may arise. Because of the natural limitations inherent in working with the subsurface, it is not possible for a geotechnical engineer to predict and address all possible subsurface variations. An Association of Engineering Firms Practicing in the Geosciences (ASFE) publication, "Important Information About Your Geotechnical Engineering Report" appears in Appendix C, and will help explain the nature of geotechnical issues. Further, we present documents in Appendix C: Constraints and Restrictions, to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

Do not apply any of this report's conclusions or recommendations if the nature, design, or location of the facilities is changed. If changes are contemplated, UES must review them to assess their impact on this report's applicability. Also, note that UES is not responsible for any claims, damages, or liability associated with any other party's interpretation of this report's subsurface data or reuse of this report's subsurface data or engineering analyses without the express written authorization of UES.

* * * * * * * * *

APPENDIX A

UNIVERSAL
ENGINEERING SCIENCES

PROPOSED CLASS III LANDFILL
NWC OF ENTERPRISE RD. AND AUTON RD.
DADE CITY, FLORIDA

SITE LOCATION MAP

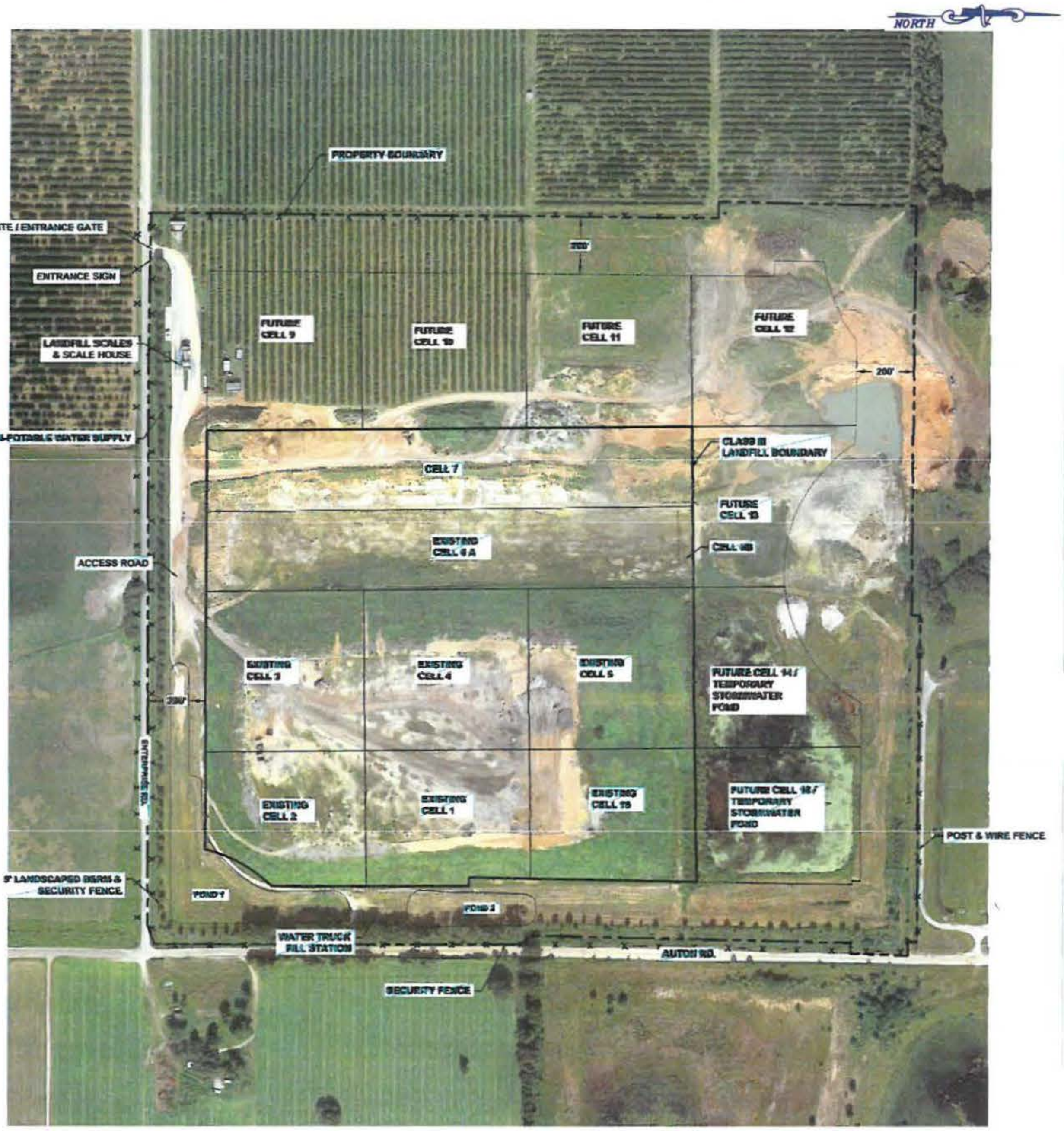
CLIENT: ANGELO'S MATERIALS		DRAWN BY: SB	DATE: AUG 10, 2015
SCALE: NOT TO SCALE	PROJECT NO: 0830.1500202	REVIEWED BY: SS	APPENDIX: A

PROPOSED CLASS III LANDFILL
NWC OF ENTERPRISE RD. AND AUTON RD.
DADE CITY, FLORIDA

SITE AERIAL PHOTOGRAPH

UNIVERSAL
ENGINEERING SCIENCES

CLIENT: ANGELO'S MATERIALS		DRAWN BY: SB	DATE: AUG 10, 2015
SCALE: NOT TO SCALE	PROJECT NO: 0830.1500202	REVIEWED BY: SS	APPENDIX: A

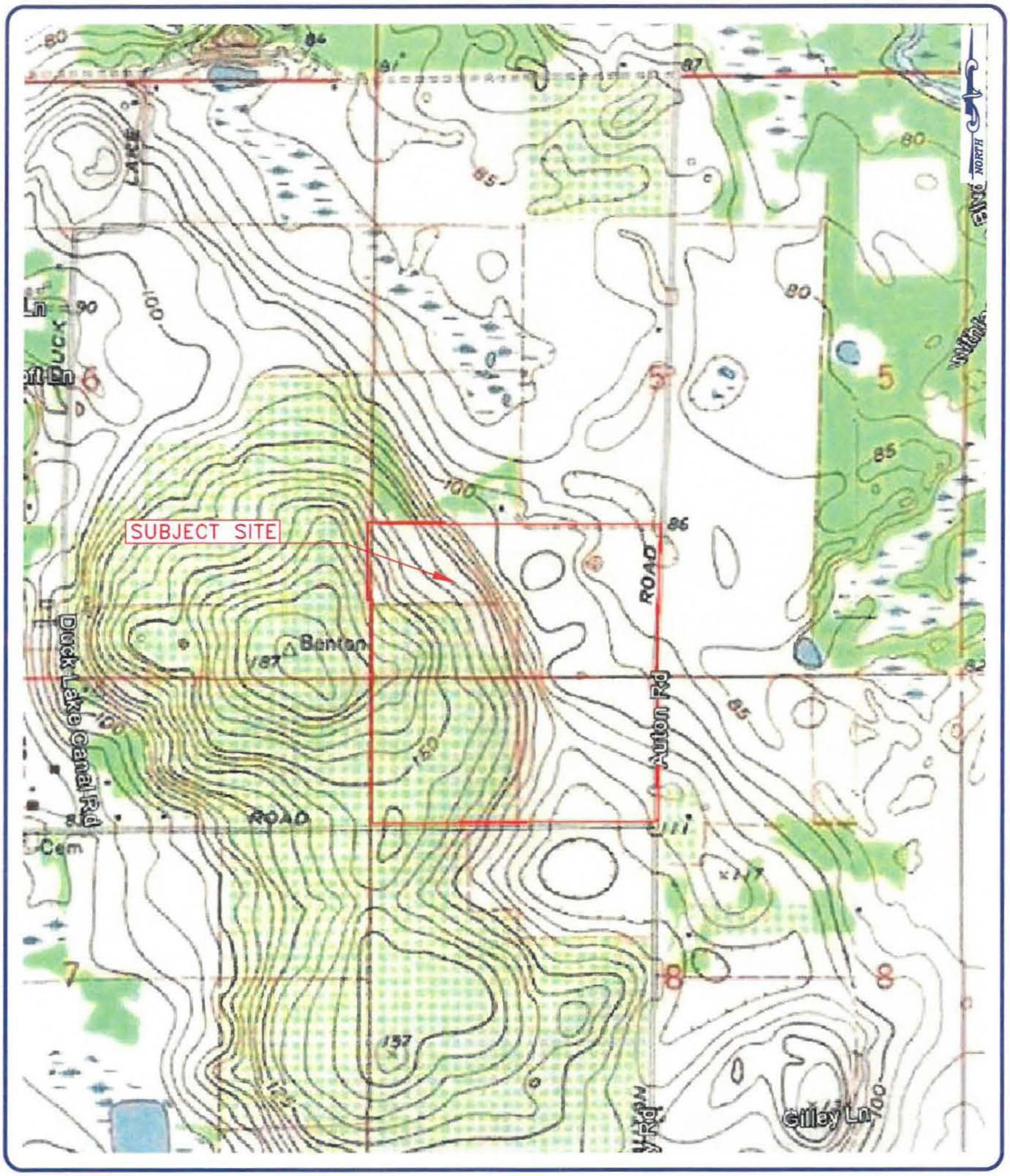


GRAPHIC SCALE

0 275 550

(IN FEET)

UNIVERSAL ENGINEERING SCIENCES	PROPOSED CLASS III LANDFILL NWC OF ENTERPRISE RD. AND AUTON RD. DADE CITY, FLORIDA		
	SITE AERIAL PHOTOGRAPH		
	CLIENT: ANGELO'S MATERIALS	DRAWN BY: SB	DATE: AUG 10, 2015
	SCALE: 1" = 550' PROJECT NO: 0830.1500202	REVIEWED BY: SS	APPENDIX: A



UNIVERSAL
ENGINEERING SCIENCES

PROPOSED CLASS III LANDFILL
NWC OF ENTERPRISE RD. AND AUTON RD.
DADE CITY, FLORIDA

SITE TOPOGRAPHIC MAP

CLIENT: ANGELO'S MATERIALS		DRAWN BY: SB	DATE: AUG 10, 2015
SCALE: NOT TO SCALE	PROJECT NO: 0830.1500202	REVIEWED BY: SS	APPENDIX: A

PROPOSED CLASS III LANDFILL NWC OF ENTERPRISE RD. AND AUTON RD. DADE CITY, FLORIDA				
SCS SOIL SURVEY MAP				
CLIENT: ANGELO'S MATERIALS		DRAWN BY: SB	DATE: AUG 10, 2015	
SCALE: NOT TO SCALE	PROJECT NO: 0830.1500202	REVIEWED BY: SS	APPENDIX: A	

UNIVERSAL
ENGINEERING SCIENCES

APPENDIX B

NO.	DATE	REVISION DESCRIPTION	BY

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4140 NW 37th Place, Suite A
Gainesville, Florida 32606
Phone: 352.672.6867 Fax: 352.692.5390
Certificate of Authorization No. 30066

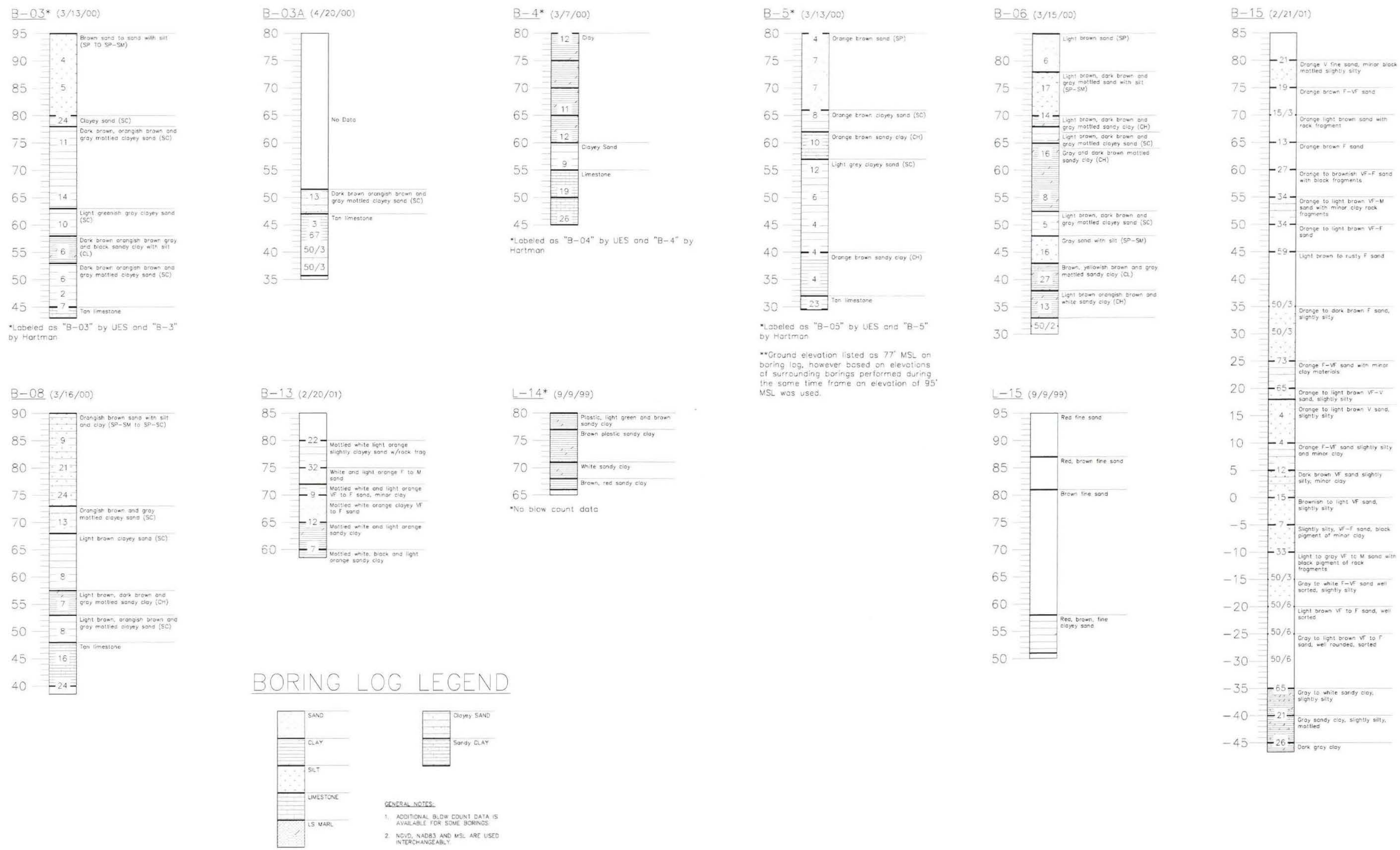
HISTORICAL GEOTECHNICAL DATA SUMMARY PLAN
ENTERPRISE RECYCLING & DISPOSAL FACILITY
CLASS III LANDFILL MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

LISA J. BAKER
FL PE NO. 74652

DESIGNED BY	LJB
DRAWN BY	LTK
CHECKED BY	JDL
APPROVED BY	LJB

SHEET TITLE:
BORING LOCATION MAP

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: DECEMBER 2014
DRAWING: C1.10



NO.	DATE	REVISION DESCRIPTION	BY

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Phone: 352.672.6867 Fax: 352.692.5390
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HISTORICAL GEOTECHNICAL DATA
SUMMARY PLAN
ENTERPRISE RECYCLING & DISPOSAL FACILITY
CLASS III LANDFILL MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

LISA J. BAKER
FL PE NO. 74652

DESIGNED BY	LJB
DRAWN BY	LTK
CHECKED BY	JDL
APPROVED BY	LJB

SHEET TITLE:
BORING LOGS

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: DECEMBER 2014
DRAWING: C1.11

NO.	DATE	REVISION DESCRIPTION	BY

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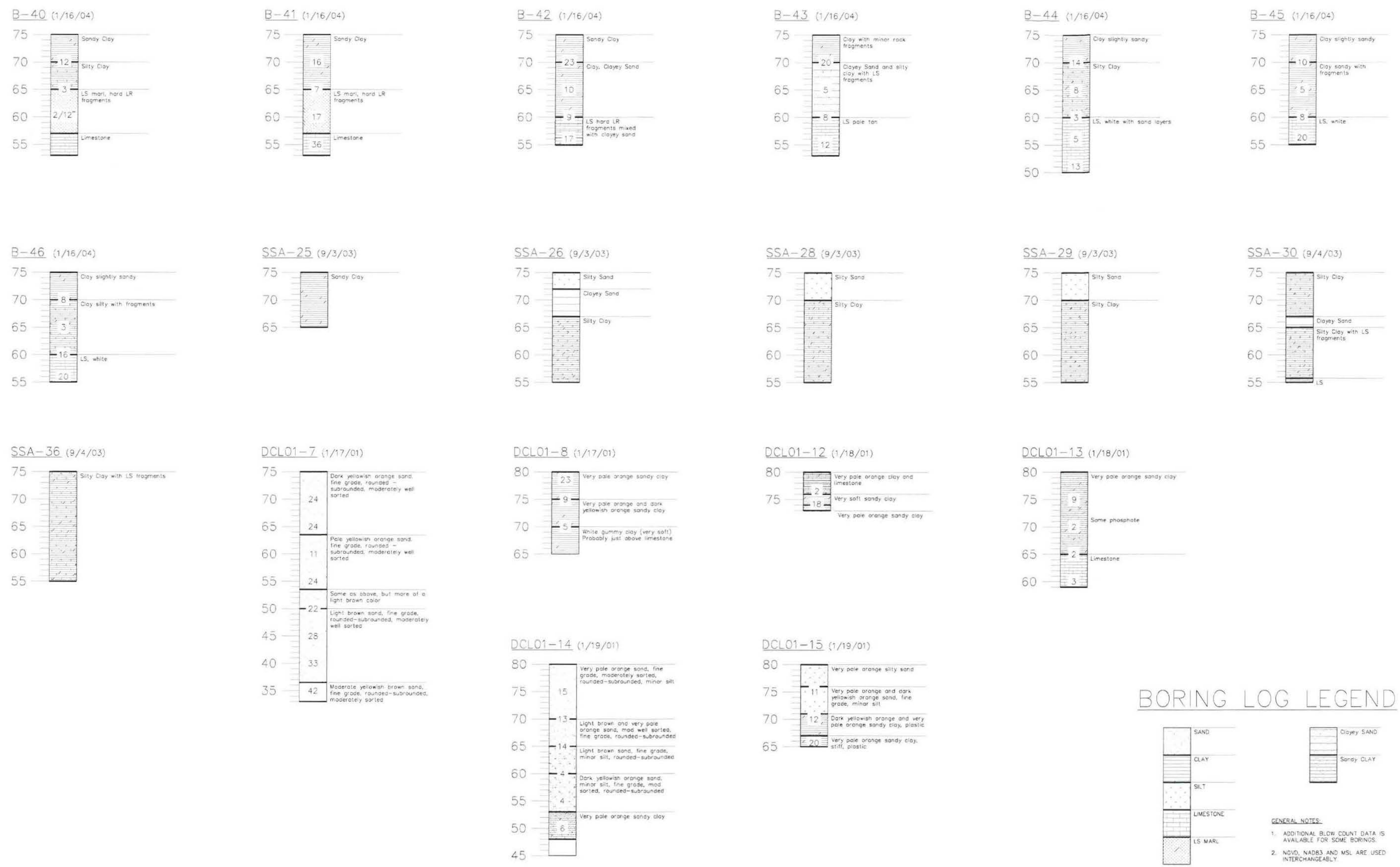
SUMMARY PLAN
ENTERPRISE RECYCLING & DISPOSAL FACILITY
CLASS III LANDFILL MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

LISA J. BAKER
FL PE NO. 74652

DESIGNED BY	LJB
DRAWN BY	LTK
CHECKED BY	JDL
APPROVED BY	LJB

SHEET TITLE:
BORING LOGS

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: DECEMBER 2014
DRAWING: C1.12



GENERAL NOTES:

1. ADDITIONAL BLOW COUNT DATA IS AVAILABLE FOR SOME BORINGS.
2. NGVD, NAD83 AND MSL ARE USED INTERCHANGEABLY.

NO.	DATE	REVISION DESCRIPTION	BY

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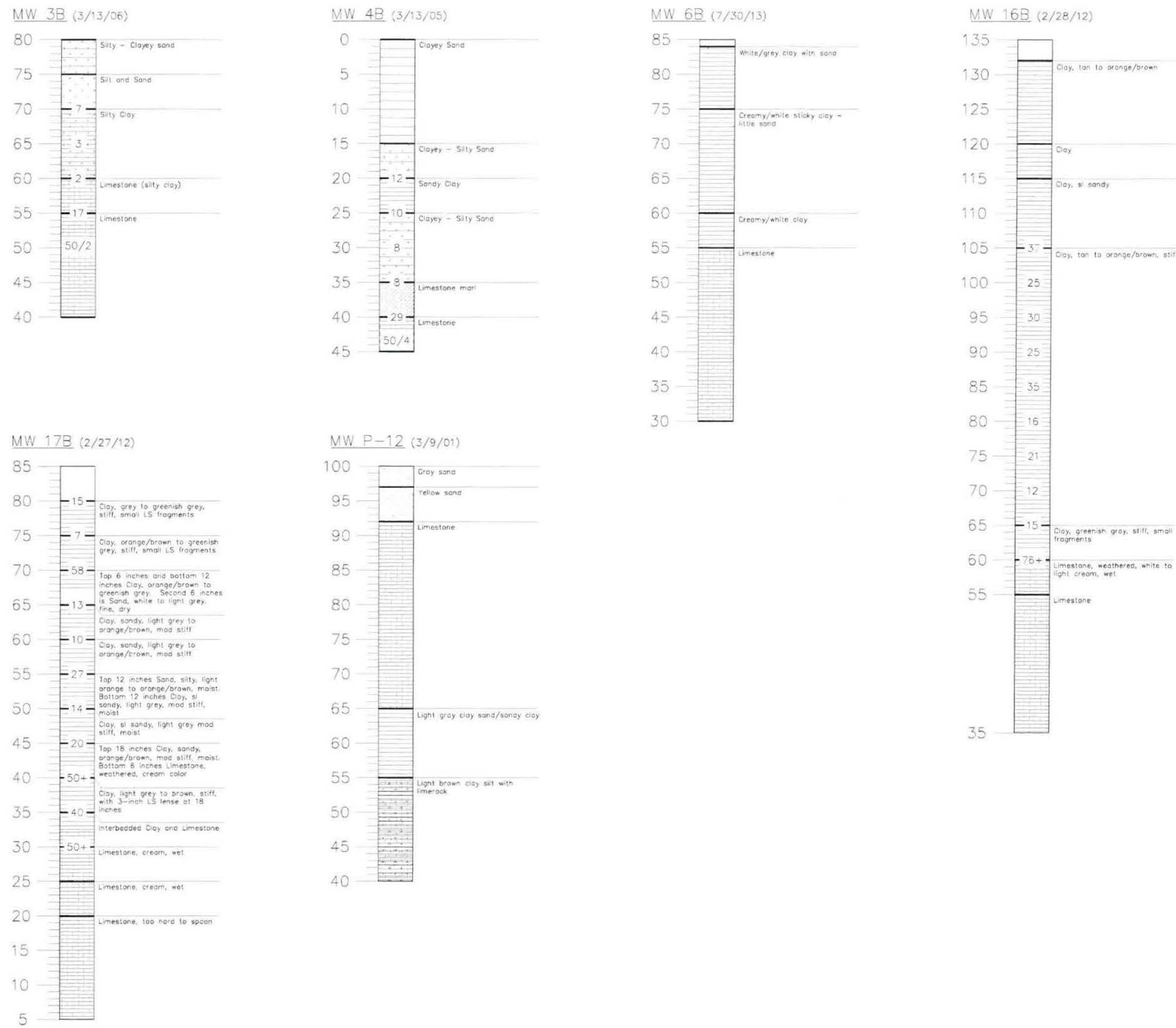
HISTORICAL GEOTECHNICAL DATA
SUMMARY PLAN
ENTERPRISE RECYCLING & DISPOSAL FACILITY
CLASS III LANDFILL MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

LISA J. BAKER
FL PE NO. 74652

DESIGNED BY	LJB
DRAWN BY	LTK
CHECKED BY	JDL
APPROVED BY	LJB

SHEET TITLE:
BORING LOGS

PROJECT NO.:	02000-144-14
SCALE:	AS SHOWN
DATE:	DECEMBER 2014
DRAWING:	C1.13



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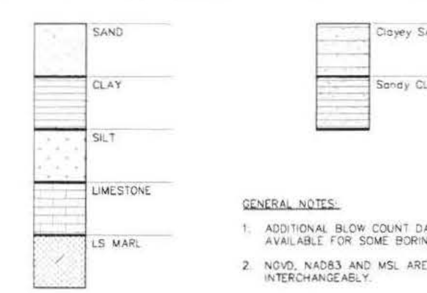

GENERAL NOTES:

1. ADDITIONAL BLOW COUNT DATA IS AVAILABLE FOR SOME BORINGS.
2. NGVD, NAD83 AND MSL ARE USED INTERCHANGEABLY.

NO.	DATE	REVISION DESCRIPTION	BY

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Gainesville, Florida 32606
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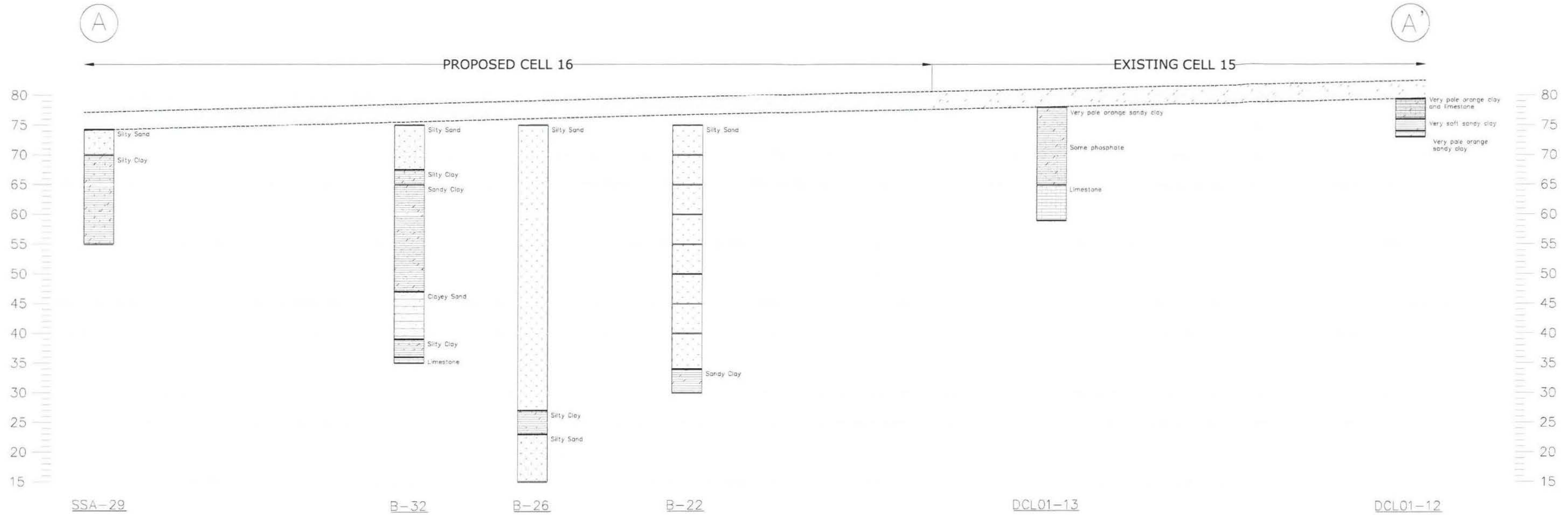
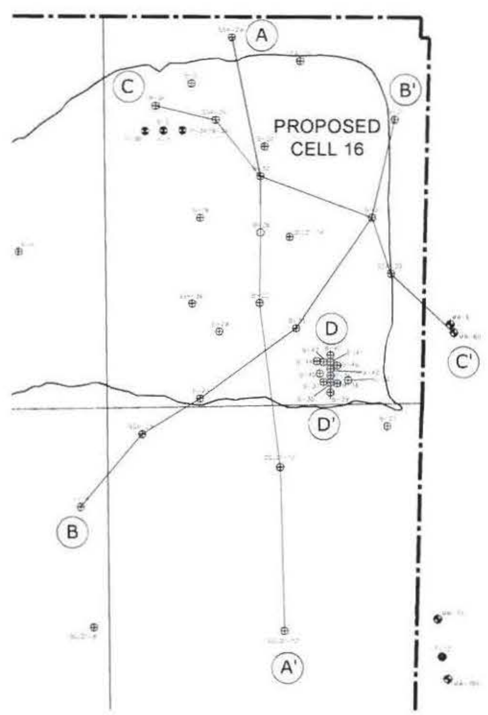
HISTORICAL GEOTECHNICAL DATA
SUMMARY PLAN
ENTERPRISE RECYCLING & DISPOSAL FACILITY
CLASS III LANDFILL MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

LISA J. BAKER	DESIGNED BY	LJB
	DRAWN BY	LTK
	CHECKED BY	JDL
FL PE NO. 74652	APPROVED BY	LJB

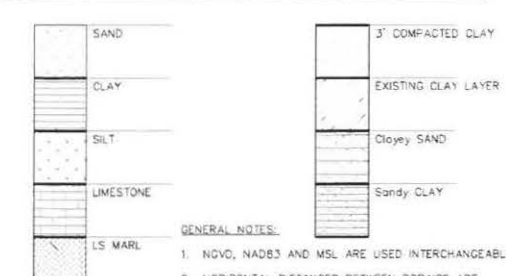
SHEET TITLE:
BORING LOGS

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: DECEMBER 2014
DRAWING: C1.14





BORING LOCATION MAP



BORING LOG LEGEND

GENERAL NOTES:

1. NGVD, NAD83 AND MSL ARE USED INTERCHANGEABLY.
2. HORIZONTAL DISTANCES BETWEEN BORINGS ARE RELATIVE.

NO.	DATE	REVISION DESCRIPTION	BY

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Gainesville, Florida 32606
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Certificate of Authorization No. 30066

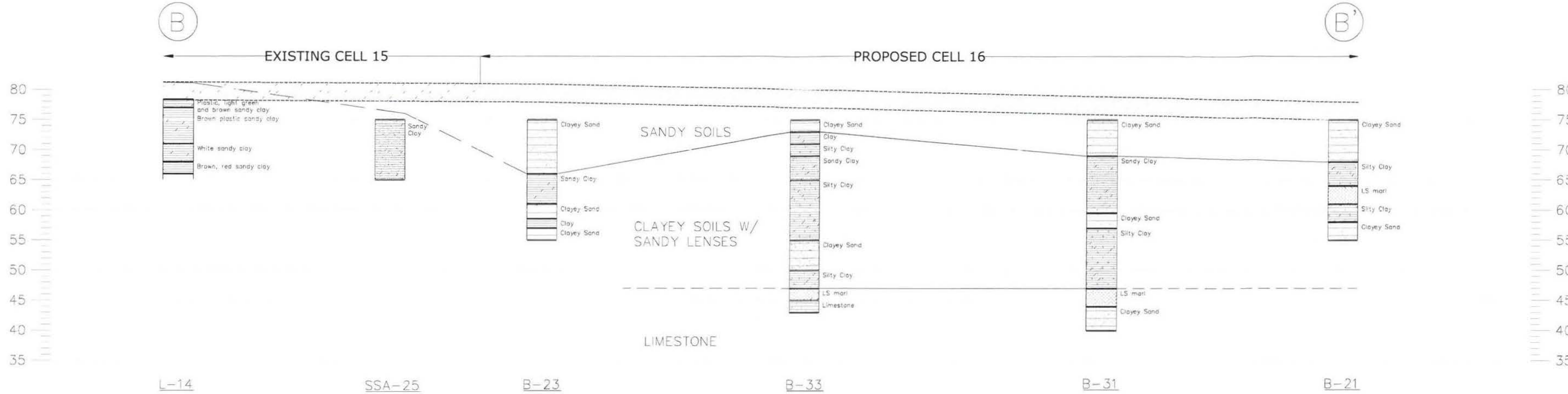
ENTERPRISE RECYCLING & DISPOSAL FACILITY
CLASS III LANDFILL MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

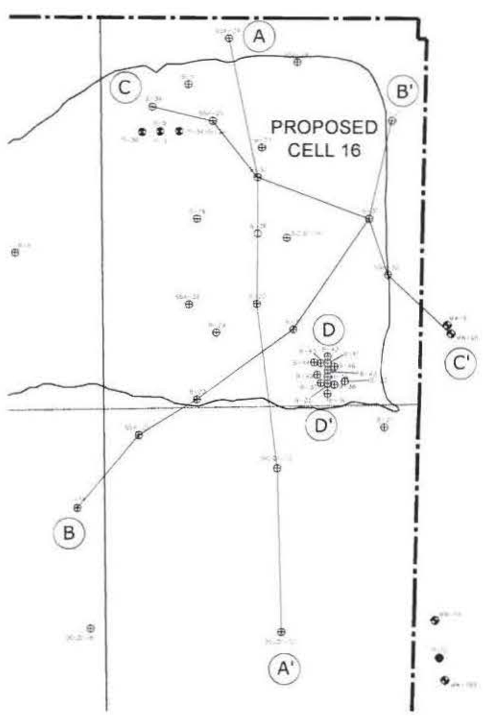
LISA J. BAKER	DESIGNED BY	LJB
	DRAWN BY	LTK
	CHECKED BY	JDL
FL PE NO. 74652	APPROVED BY	LJB

SHEET TITLE:

GEOLOGIC CROSS SECTION A - A'

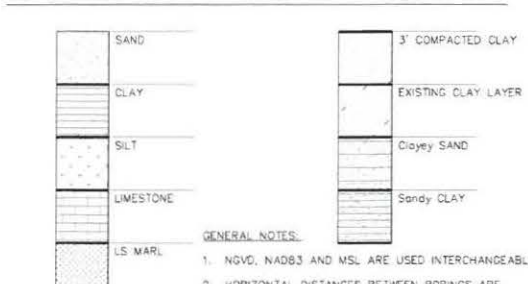
PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: JUNE 2015
DRAWING:





BORING LOCATION MAP

BORING LOG LEGEND



GENERAL NOTES:

1. NGVD, NAD83 AND MSL ARE USED INTERCHANGEABLY.
2. HORIZONTAL DISTANCES BETWEEN BORINGS ARE RELATIVE.

NO.	DATE	REVISION DESCRIPTION	BY

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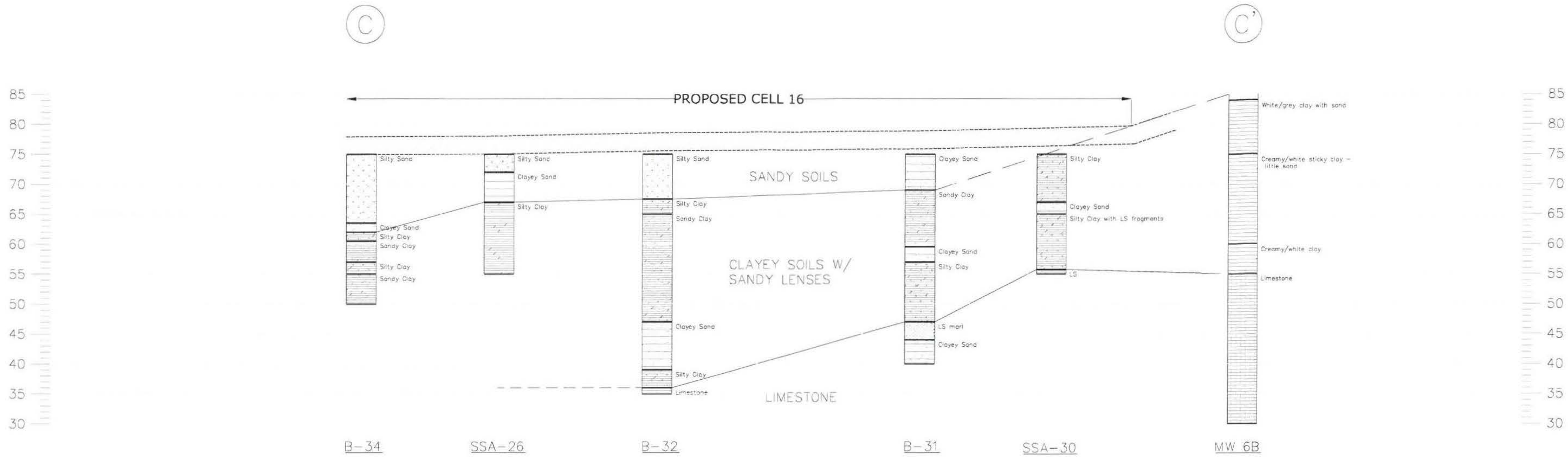
ENTERPRISE RECYCLING & DISPOSAL FACILITY
CLASS III LANDFILL MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

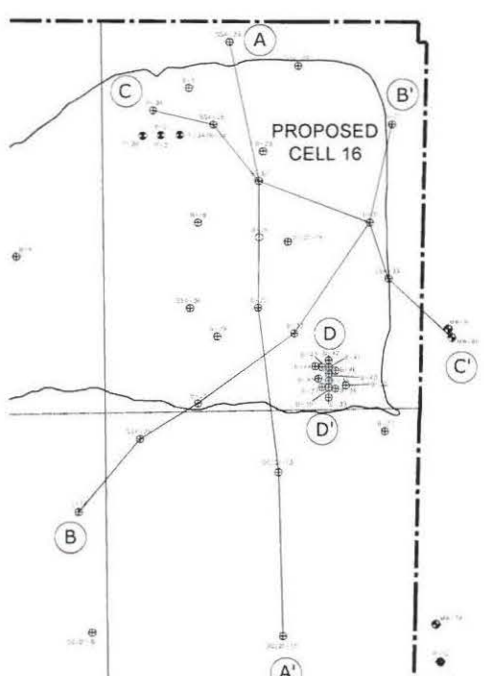
LISA J. BAKER	DESIGNED BY	LJB
	DRAWN BY	LTK
	CHECKED BY	JDL
FL PE NO. 74652	APPROVED BY	LJB

SHEET TITLE:

GEOLOGIC CROSS SECTION B - B'

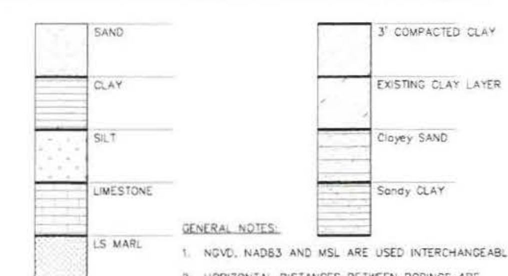
PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: JUNE 2015
DRAWING:





BORING LOCATION MAP

BORING LOG LEGEND



GENERAL NOTES:
1. NGVD, NAD83 AND MSL ARE USED INTERCHANGEABLY.
2. HORIZONTAL DISTANCES BETWEEN BORINGS ARE RELATIVE.

NO.	DATE	REVISION DESCRIPTION	BY

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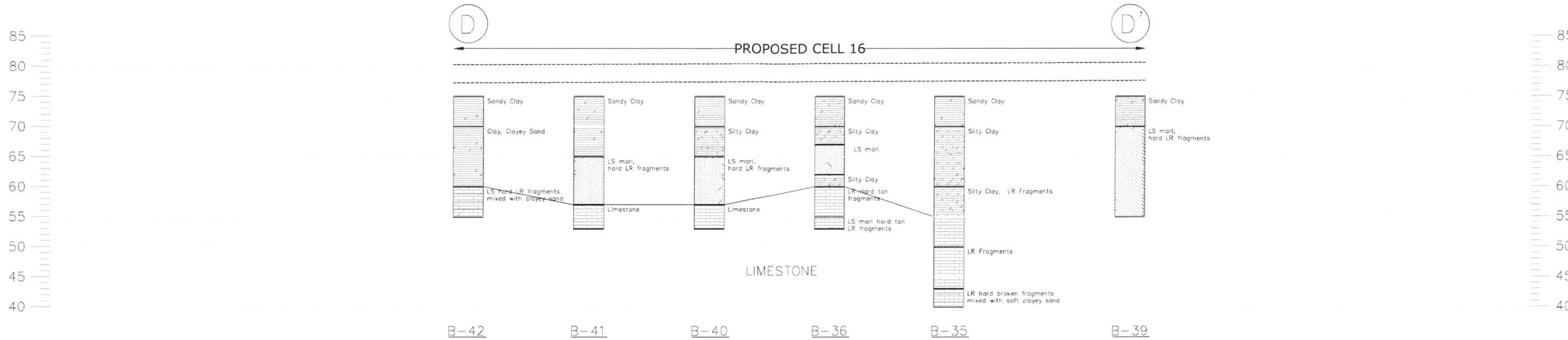
ENTERPRISE RECYCLING & DISPOSAL FACILITY
CLASS III LANDFILL MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

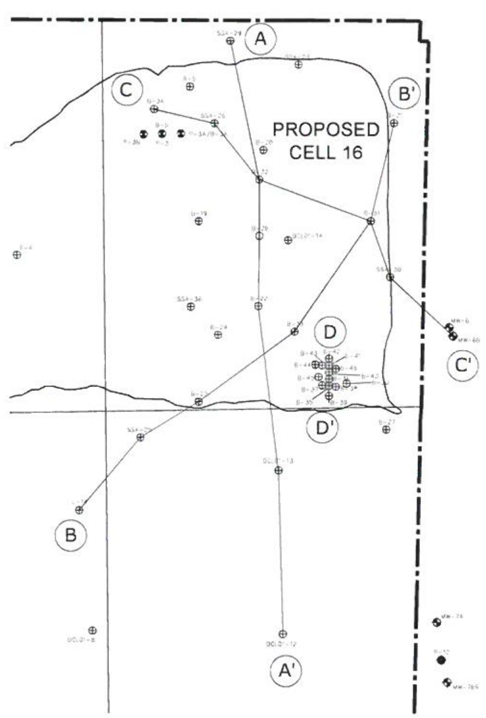
LISA J. BAKER
FL PE NO. 74652

DESIGNED BY	LJB
DRAWN BY	LTK
CHECKED BY	JDL
APPROVED BY	LJB

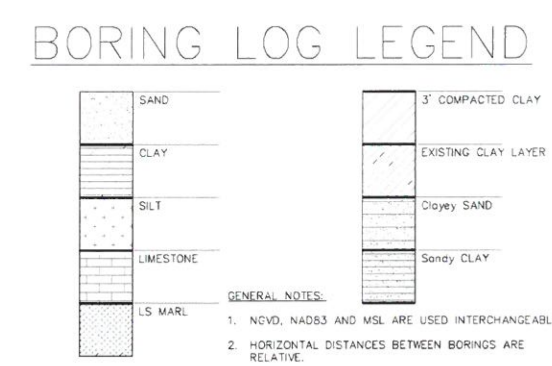
SHEET TITLE:
GEOLOGIC CROSS SECTION C - C'

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: JUNE 2015
DRAWING:





BORING LOCATION MAP



GENERAL NOTES:

1. NGVD, NAD83 AND MSL ARE USED INTERCHANGEABLY.
2. HORIZONTAL DISTANCES BETWEEN BORINGS ARE RELATIVE.

NO.	DATE	REVISION DESCRIPTION	BY

Locklear & Associates
Engineering & Environmental Consulting

4140 NW 37th Place, Suite A
Gainesville, Florida 32606
Phone: 352.672.6867 Fax: 352.692.5390
Certificate of Authorization No. 30066

ENTERPRISE RECYCLING & DISPOSAL FACILITY
CLASS III LANDFILL MODIFICATION
DADE CITY, PASCO COUNTY, FLORIDA

LISA J. BAKER
FL PE NO. 74652

DESIGNED BY	LJB
DRAWN BY	LTK
CHECKED BY	JDL
APPROVED BY	LJB

SHEET TITLE:
GEOLOGIC CROSS SECTION D - D'

PROJECT NO.: 02000-144-14
SCALE: AS SHOWN
DATE: JUNE 2015
DRAWING:

UNIVERSAL ENGINEERING SCIENCES
9802 Palm River Road
Tampa, Florida 33619

(813) 740-8506

SOIL CLASSIFICATION CHART

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS (major portions retained on No. 200 sieve): includes (1) clean gravel and sands and (2) silty or clayey gravels and sands. Condition is rated according to relative density as determined by laboratory tests or standard penetration resistance tests.

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 4
Loose	15 to 35 %	4 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

FINE-GRAINED SOILS (major portions passing on No. 200 sieve): includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings, SPT blow count, or unconfined compression tests.

Descriptive Terms	Unconfined Compressive Strength kPa	SPT Blow Count
Very soft	< 25	< 2
Soft	25 to 50	2 to 4
Medium stiff	50 to 100	4 to 8
Stiff	100 to 200	8 to 15
Very stiff	200 to 400	15 to 30
Hard	> 400	> 30

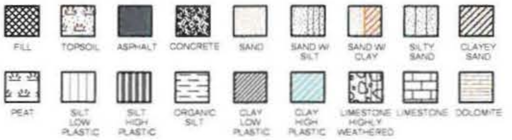
GENERAL NOTES

1. Classifications are based on the United Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.

2. Surface elevations are based on topographic maps and estimated locations.

3. Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were made. They are not guaranteed to be representative of subsurface conditions at other locations or times.

SOIL SYMBOLS

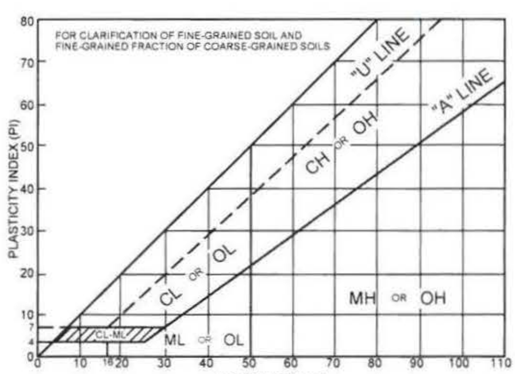


OTHER SYMBOLS

▼ Measured Water Table Level

▽ Estimated Seasonal High Water Table

Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria		
Coarse-Grained soils (More than half the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravel (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Determine percentages of sand and gravel from grain size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve) coarse-grained soils are classified as follows: Less than 5 percent....... GW, GP, SW, SP; More than 12 percent....... GM, GC, SM, SC; 5 to 12 percent....... Borderline cases requiring dual symbols*	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines		Not meeting all gradation requirements for GW	
		Gravel with fines (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures		Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are border-line cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-silt mixtures		Atterberg limits above "A" line or P.I. greater than 7	
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines		$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
			SP	Poorly-graded sands, gravelly sands, little or no fines		Not meeting all gradation requirements for SW	
		Sands with fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures		Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are border-line cases requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures		Atterberg limits above "A" line or P.I. greater than 7	
Fine-Grained soils (More than half the material is smaller than No. 200 sieve size)	Silts and Clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock floor, silty or clayey fine sands or clayey silts with slight plasticity			
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays			
			OL	Organic silts and organic silty clays of low plasticity			
	Silts and Clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or disto-maceous fine sandy or silty soils, organic silts			
			CH	Inorganic clays of high plasticity, fat clays			
			OH	Organic clays of medium to high plasticity, organic silts			
	Highly Organic Soils		Pt	Peat and other highly organic soils			



Plasticity Chart

Material		Particle Size: Sieve sizes	Particle Size: mm
Silt or clay		< #200	< 0.074
Sand	Fine	#200 to #40	0.074 to 0.42
	Medium	#40 to #10	0.42 to 2.00
	Coarse	#10 to #4	2.00 to 4.76
Gravel	Fine	#4 to 3/4 in.	4.76 to 19.1
	Coarse	3/4 in. to 3 in.	19.1 to 76.2
Cobble		3 in. to 12 in.	76.2 to 304.8
Boulders		12 in. to 36 in.	304.8 to 914.4

* When the percent passing a No. 200 sieve is between 5% and 12%, a dual symbol is used to denote the soil. For example; SP-SC, poorly-graded sand with clay content between 5% and 12%.

HARTMAN & ASSOCIATES, INC.

engineers, hydrogeologists, surveyors & management consultants
A Tetra Tech Company

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Alexis K. Stewart, P.E.
Ada R. Terrero
Christopher W. Hardin, P.E.
James R. Warner, E.I.

March 30, 2004
(Resubmitted July 15, 2004)

HAI #99.0331.007
File 13.2

D.E.P.
JUL 1 9 2004
Southwest District Tampa

Via UPS Ground

Ms. Susan Pelz, P.E.
Florida Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Subject: **Grouting Completion Report**
Enterprise Recycling & Disposal Facility
Angelo's Aggregate Materials, Ltd.
FDEP Permit Nos. 177982-001-SC, 177982-002-SO
Pasco County, Florida

Dear Ms. Pelz:

On behalf of Angelo's Aggregate Materials, Inc. (AAM), Hartman & Associates, Inc. (HAI) is submitting for your review the grouting completion report for the remediation of the subsidence area in cell 16, at the subject site in Dade City, Florida.

The subsidence area was discovered during an HAI site visit on January 12, 2004. The Department was notified about the existing site conditions within 24-hours, as required by the approved Construction Permit. AAM was advised by one of its consultants to fill in the subsidence area with clay immediately to prevent any additional slumping and to create areas stable enough to accommodate a drill rig. The approximate location of the subsidence area prior to being filled and the top of the excavated slope was marked and surveyed by Foresight Surveyors, Inc. A map showing the surveyed location of the subsidence area is included as Figure 1. HAI was onsite from January 15 through 17, 2004 with UES drillers to complete SPT borings in an effort to delineate the lateral and vertical extent of the subsidence area.

Using the lithologic description and blow count data from the SPT borings, engineers from UES calculated the approximate volume of grout required to remediate the subsidence area. LRE Ground Services, Inc. was onsite from March 2 through 9, 2004 to complete the grouting operation. A total of 357 cubic yards of grout was injected into a total of twenty-seven (27) grout injection points, within and adjacent to the original subsidence area.

Universal Engineering Sciences, Inc. (UES) observed the remedial grouting operation at the site, performed by LRE Ground Services, Inc. A grouting completion report, signed and sealed by a UES engineer has been included in Attachment A. Field notes completed by the onsite UES technician during the remedial grouting are included in Attachment B.

201 EAST PINE STREET • SUITE 1000 • ORLANDO, FL 32801-2723
TELEPHONE (407) 839-3955 • FAX (407) 839-3790 • www.consulthai.com
A TETRA TECH COMPANY (Offices Nationwide)
ORLANDO FORT MYERS FT LAUDERDALE JACKSONVILLE DESTIN ATLANTA

FILE

We trust that we have provided the adequate information required for the submittal of the grouting completion report for the subject site in Dade City, Florida. Please feel free to contact us if you require additional information or have any questions.

Very truly yours,

Hartman & Associates, Inc.

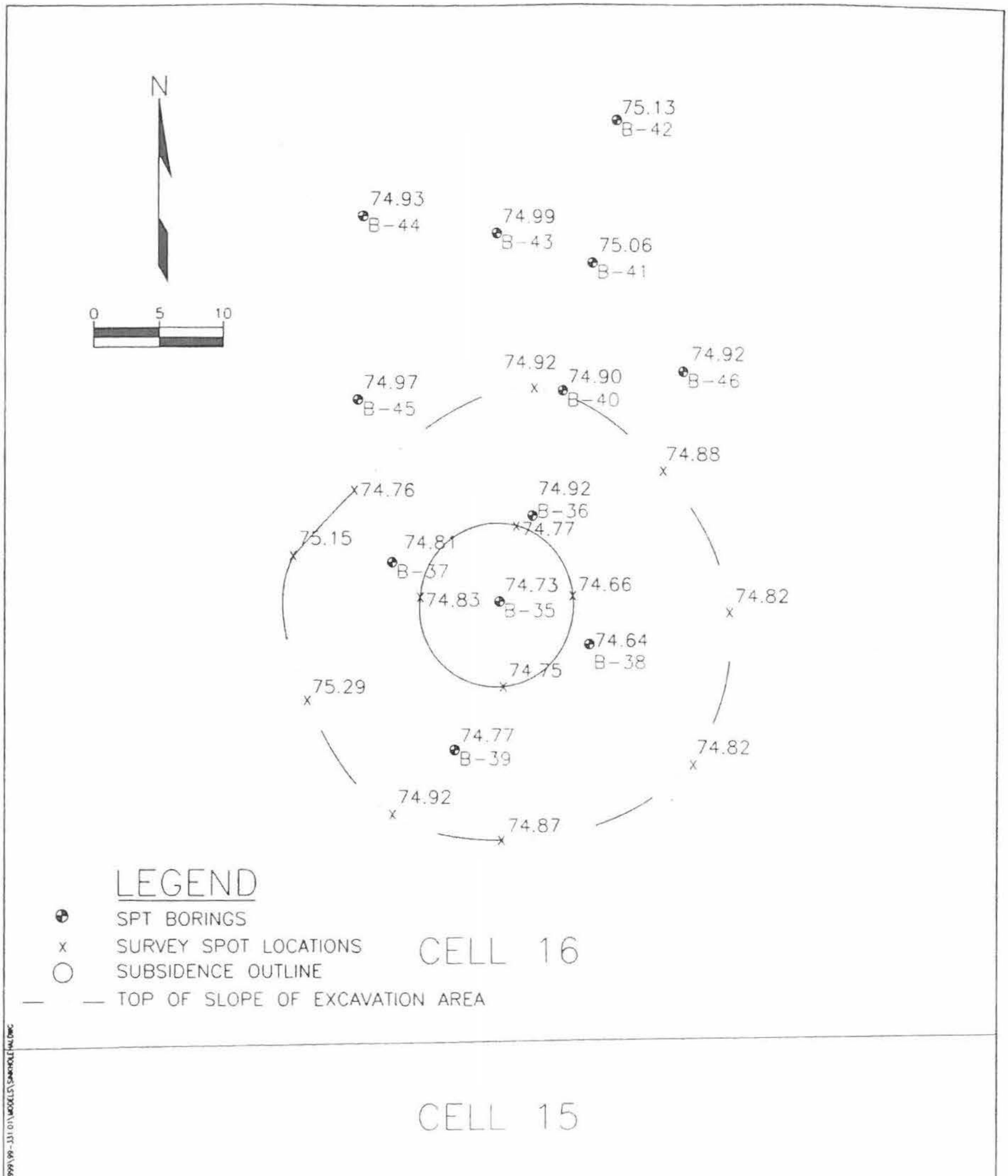
Miguel A. Garcia
Project Hydrogeologist

Bruce W. Lafrenz
Project Hydrogeologist/Associate

MAG/cr/99.0331.007/corresp/grouting completion.doc

cc: Dominic Iafrate, Angelo's Recycled Materials, Inc., Warren, MI
Craig Bryan, Angelo's Aggregate Materials, Inc., Largo, FL

FIGURES



HARTMAN & ASSOCIATES, INC.
engineers, hydrogeologists, surveyors & management consultants
201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801
TELEPHONE (407) 839-3955 - FAX (407) 839-3790

SUBSIDENCE AREA
ENTERPRISE LANDFILL
& DISPOSAL FACILITY
PASCO, FLORIDA

FIGURE
1

ATTACHMENT A

UNIVERSAL
ENGINEERING SCIENCES
Consultants in: Geotechnical Engineering • Environmental Sciences
Construction Materials Testing • Threshold Inspection • Private Provider Inspection

March 10, 2004

Mr. Dominic Iafrate
Angelo's Recycled Materials, Inc.
1755 20th Avenue SE
Largo, FL 34641

Reference: Grouting Completion Report
Dade City Class III Landfill
NEC Enterprise Rd. and Auton Rd.
Dade City, Florida
UES Project No. 80626-002-02

Dear Mr. Iafrate:

As authorized, Universal Engineering Sciences, Inc. (UES) observed remedial grouting operation at the proposed retention area at Dade City landfill, performed by LRE Ground Services, Inc. The purpose of the grouting operation was to remediate suspected sinkhole conditions below the portion of the retention area by filling of any subsurface voids encountered in the general vicinity of the soil subsidence that occurred recently at this location.

UES developed the grouting program based on geotechnical subsurface exploration at the subject site directed by Hartman and Associates. The assessment regarding the remedial scope of work was made based upon the subsurface information provided by the SPT borings performed within the general vicinity of the soil subsidence.

A total of twenty seven (27) grout injection points were used during the grouting program. The approximate location, depth of installed casing, and actual pumped grout quantity for each grout injection point location are presented on the attached Grout Injection Point Location Plan. The installed length of the grout injection points generally varied from 10 to 46 feet, reflecting the variable subsurface conditions encountered during the geotechnical exploration. Grout injection point #26 however, was installed within a major void or partially filled void within limestone, believed to have contributed to the recent sinkhole related subsidence. A total of 68.6 yards of grout (nearly 20% of the grout total) was injected through this grout injection point alone. Total of 886 feet of casing was used to inject 357 cubic feet of grout. Approximately 8 cubic yards of grout was returned after completion of the grouting program.

The completion date, installed length of each grout injection point and the amount of grout pumped is presented in the following table. The grout injection points are listed in numerical order.

9802 Palm River Road • Tampa, Fl 33619-4438 • (813) 740-8506 • Fax (813) 740-8706

OFFICES IN: • Clermont • Daytona Beach • DeBary • Fort Myers • Gainesville • Hollywood • Jacksonville • Ocala • Orlando • Palm Coast • Rockledge • Sarasota • St. Augustine • Tampa • West Palm Beach

GIP#	DATE COMPLETED	CASING LENGTH (FT)	TOTAL GROUT PUMPED (YDS^3)
1	March 3, 2004	45	27.2
2	March 2, 2004	45	27.0
3	March 2, 2004	38	19.9
4	March 2, 2004	34	7.1
5	March 3, 2004	26	3.0
6	March 8, 2004	30	26.0
7	March 8, 2004	46	32.5
8	March 5, 2004	32	9.4
9	March 5, 2004	34	14.5
10	March 3, 2004	26	17.2
11	March 9, 2004	22	1.8
12	March 9, 2004	27	1.2
13	March 5, 2004	31	7.0
14	March 5, 2004	32	17.9
15	March 9, 2004	35	4.1
16	March 9, 2004	35	3.8
17	March 5, 2004	29	0.2
18	March 4, 2004	33	10.2
19	March 8, 2004	34	0.2
20	March 8, 2004	35	6.8
21	March 8, 2004	36	1.4
22	March 9, 2004	10	0.1
23	March 5, 2004	38	19.0
24	March 8, 2004	30	16.5
25	March 8, 2004	43	14.4
26	March 5, 2004	60	68.6
TOTAL		886	357.0

Based on the grout take and depth of grout injection points, it appears that one major cavity and several zones of very loose soil conditions indicating possible sinkhole activity may have existed in the immediate vicinity and to the north of the occurred subsidence

Based on our observation of the grouting program performed within the proposed retention area, and our subsequent analysis of data gathered during the grouting, we feel that the intent of the remedial program was met. In our opinion, the subsurface grouting met the goals of the remedial program, by improving the overall subsurface conditions within the treated area and reducing the risk of future soil subsidences. We note that measures such as subsurface grouting are intended to treat, in a practical and cost-effective manner, potentially detrimental subsurface conditions which could affect the ground surface. However, evaluation of the effectiveness of treatment is subject to inference and interpretation of the end result and cannot be predicted with certainty.

It has been a pleasure assisting you with this phase of your program. If you have any questions regarding this report or when we can be of further assistance please contact the undersigned at (813) 740-8506.

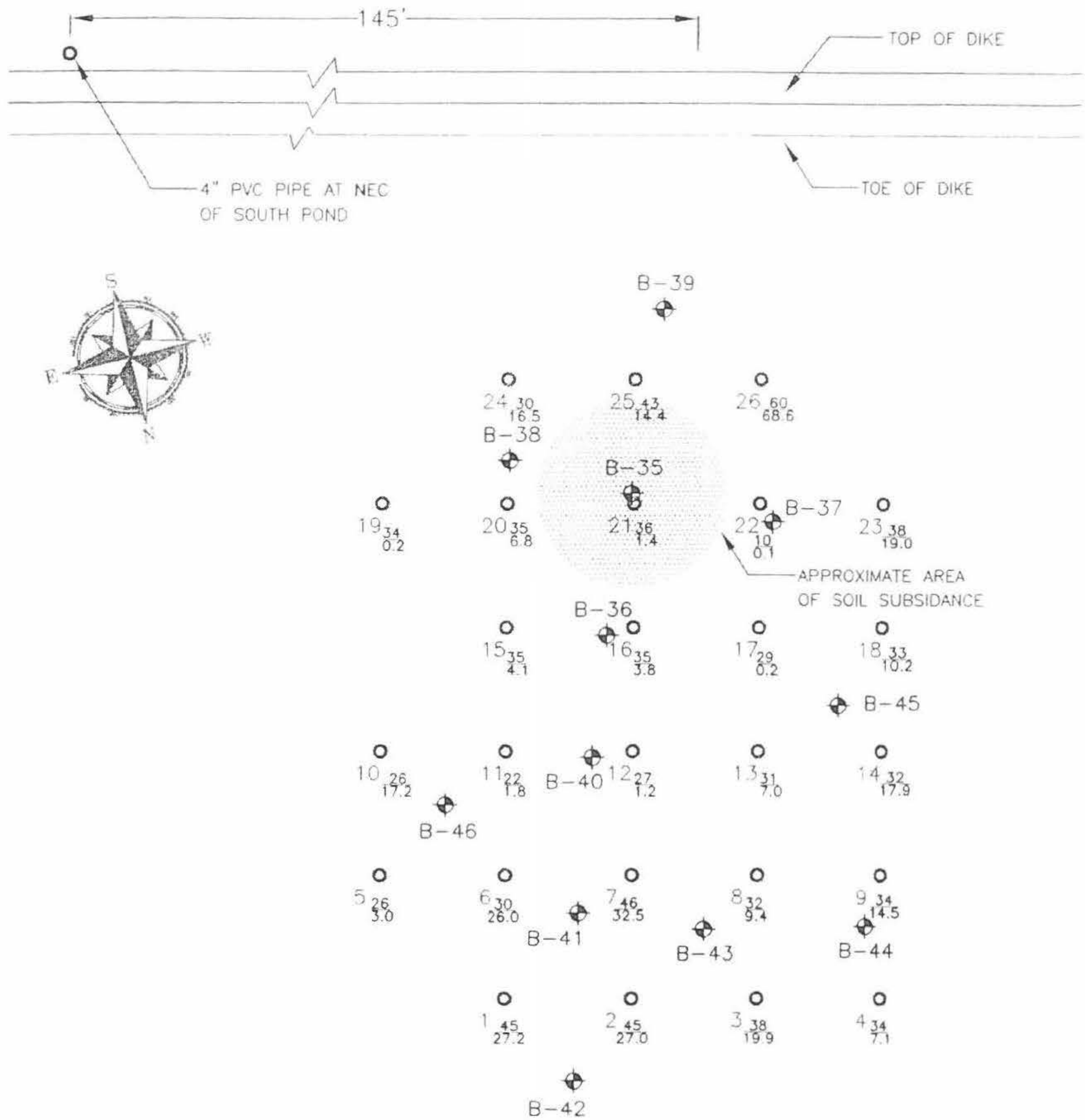
Respectfully submitted,

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

Dusan Jovanovic
Senior Project Manager

Mark Hardy, P.E.
Tampa Regional Manager
Professional Engineer No. 57233
Date 3-10-04

Attachment: Grout Injection Point Location Plan
cc: Client (3)



LEGEND:

- B-1 Approximate SPT boring location
- 2 Approximate primary grout injection point location
- $\frac{25}{1.5}$ Depth of pin (ft.)/ Grout pumped (cubic yards)

GRAPHIC SCALE

0 5 10

(IN FEET)

UNIVERSAL
ENGINEERING SCIENCES

RETENTION POND SOIL SUBSIDENCE
DADE CITY CLASS III LANDFILL
DADE CITY, FLORIDA

FINAL GROUT INJECTION POINT LOCATION PLAN

DRAWN BY: C.C.	DATE: MAR. 10, 2004	CHECKED BY: D.J.	DATE: MAR. 10, 2004
SCALE: 1" = 10'	PROJECT NO: 80626-002-02	REPORT NO:	APPENDIX:

ATTACHMENT B

Universal Engineering Sciences, Inc.
9802 Palm River Road
Tampa, Florida 33619-4438
Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.ucsonline.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-3-04

Project: DADE CITY LANDFILL Injection Point: 1

Csng. Depth (ft.)	Grout Time Start	Grout Time Finish	Max. Pressure (psi)	Pump Strokes 1-9	Reason to stop pumping HP	GH	GP	CM	Remarks	
45	← TOTAL CASING DEPTH			8					Start Truck	
45	10:11	1037	200	496					End Truck [illegible]	9.0
				2-9					New Truck	
42	1129		300+	2					boost	
41			300+	5					boost	
38			250/140	86						
38		1156	220	492					End Truck BRK 10	90
				3-9					New Truck	
32	1210	1237	200	490			+		End Truck BRK 5	90
				4-9						
27	1036		300+	2					boost	
25			"	4					boost	
23			"	5					BRK 5	
22	1315	1317	300+	9				X	Completed	.2
									Go To 10	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 272

Total To Date (Cu. Yd.):

Universal Engineering Sciences, Inc.
9802 Palm River Road
Tampa, Florida 33619-4438
Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-2-04

Project: DADE CITY LANDFILL Injection Point: 2

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes 4-9	Reason to stop pumping				Remarks	
	Start	Finish			HP	GH	GP	CM		
45	← TOTAL CASING DEPTH			2					Continue Truck	
45	1401	1426	160	468					End Truck BRK	9.0
				5-14					New Truck	
42	1433	1433	400+	2	X				BOOST	
41			400+	5	X				BOOST	
40			400+	6	X				BOOST	
38	1434	1455	140	427					End Truck BRK 10	9.0
32										
				5-9					New Truck	
32	1531	1558	210	523					End Truck BRK 5	9.0
27							X		BRK 5	
22		1618						X	Flush	
									Completed	
									END DAY	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ______ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 27.0

Total To Date (Cu. Yd.): ______

Universal Engineering Sciences, Inc.
9802 Palm River Road
Tampa, Florida 33619-4438
Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG Day one

Client: ANGELO'S RECYCLING — Date: 3-2-04

Project: DADE CITY LANDFILL — Injection Point: 3

Csng. Depth (ft.)	Grout Time Start	Grout Time Finish	Max Pressure (psi) KE17	Pump Strokes	Reason to stop pumping HP	GH	GP	CM	Remarks	
38	← TOTAL CASING DEPTH			[illegible]					Start Truck	
37	1028	1050	180	446					End Truck BRK 5	9.0
32										
				[illegible]					New Truck	
32	1131	1156	200	494					End Truck BRK T	9.0
				[illegible]					New Truck	
27	1251	1251	400+	3	X				BOOST	
25			401+	5					Pipe Lift 3 FT	
22			400+	8	X				BRK10	
17	1301	1	200	53					water out Ground IP 8	
17		1304	400+	67	X				Boost	
13	1305	1307	200	110		X			South side of I.P.	
									completed	1.9
									Go To 4	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ____________ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 19.9

Total To Date (Cu. Yd.): ____________

Universal Engineering Sciences, Inc.
9802 Palm River Road
Tampa, Florida 33619-4438
Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING   Date: 3-2-04

Project: DADE CITY LANDFILL   Injection Point: 4

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes 3-9	Reason to stop pumping				Remarks
	Start	Finish			HP	GH	GP	CM	
34	← TOTAL CASING DEPTH			110					Continue Truck
32	1321		200	135					WATER out Ground AT IP
32		1341	220	511					End Truck BRKS
27							X		BRKS
22				[illegible]			X		BRKS
17									
				[illegible]					New Truck
17	1351	1351	100	2				X	
									completed
									Go To 2

7.1

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ______   Inspector: JOHN MOTKO

Company: LRE   Total (Cu. Yd.): 7.1

Total To Date (Cu. Yd.): ______

Universal Engineering Sciences, Inc.
9802 Palm River Road
Tampa, Florida 33619-4438
Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING   Date: 3-3-07

Project: DADE CITY LANDFILL   Injection Point: 5

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes 5-9	Reason to stop pumping				Remarks
	Start	Finish			HP	GH	GP	CM	
26	← TOTAL CASING DEPTH			459					Continue Truck
26	1501		160	465					mud & water out Ground IP
		1503	160	492					End Truck
				[illegible]					New Truck
26	1517	15[illegible]	210	125		X			pet 5
22							X		pet 5
17	15[illegible]	1532	180	132		X			pet
12							X		completed
									Go To 26

.6

2.4

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ____   Inspector: JOHN MOTKO

Company: LRE   Total (Cu. Yd.): 3.0

Total To Date (Cu. Yd.): ____

Universal Engineering Sciences, Inc.
9802 Palm River Road
Tampa, Florida 33619-4438
Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-8-04

Project: DADE CITY LANDFILL Injection Point: 6

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks	
	Start	Finish			HP	GH	GP	CM		
30	← TOTAL CASING DEPTH			460					Cont Truck	
	1450	1502	210	647						7.5
			Cemtn						New Truck	
30	1516	1547	150/210	630					End Truck	10.0
27							X			
									Plant stop sending Trucks	
			KEYS						Continue Truck from	
				24					I.P. 21	
27	1623	1644	280	435		X			BRKS	
22							X		BRKS	
17							X		BRKS	8.5
12	1658	1700	300	456				X	End Truck	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ______ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 26.0

Total To Date (Cu. Yd.): ______

H:\djovanovic\Grouting\Grout Monitoring 7 oaks.wpd

Universal Engineering Sciences, Inc.
9802 Palm River Road
Tampa, Florida 33619-4438
Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING | Date: 3-8-04

Project: DADE CITY LANDFILL | Injection Point: 7

Csng. Depth (ft.)	Grout Time Start	Grout Time Finish	Max. Pressure (psi)	Pump Strokes	Reason to stop pumping H P	G H	G P	C M	Remarks	
46	← TOTAL CASING DEPTH		CEMEX	[illegible]					START Truck	
1/60									Grouted In BRKT	
42	1044	1116	160	672					End Truck BRKT	10.0
			CEMEX	[illegible]					New Truck	
37	1159	1231	180	671					End Truck BRKS	10.0
			CEMEX	[illegible]					New Truck	
32	1303	1325	180 ~~400~~	462	X				BRKT	
27	1326	1340	160	668					End Truck BRKT	10.0
									New Truck	
22			CEMEX	[illegible]						
22	1412	1425	~~200~~ 300	451	X	X			BRKS	
17							X		BRKT	
12	1439	1444	200	460		X			BRKT	2.5
									Completed	
									Go To 6	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: | Inspector: JOHN MOTKO

Company: LRE | Total (Cu. Yd.): 32.5

Total To Date (Cu. Yd.):

H:\djovanovic\Grouting\Grout Monitoring 7 oaks.wpd

Universal Engineering Sciences, Inc.
9802 Palm River Road
Tampa, Florida 33619-4438
Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING

Date: 3-5-04

Project: DADE CITY LANDFILL

Injection Point: 8

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks
	Start	Finish		5-10	HP	GH	GP	CM	
32	← TOTAL CASING DEPTH			30					Continue Truck
32	1725	1738	180/200	198		X			BRKT
27							X		BRKT
22	1745	1749	200	317		X			BRKT
17	1754	1757	200	493					End Truck BRKT
12							X		Completed
									END DAY
									GO TO 7

9.4

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor:

Inspector: JOHN MOTKO

Company: LRE

Total (Cu. Yd.): 9.4

Total To Date (Cu. Yd.):

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GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-5-09

Project: DADE CITY LANDFILL Injection Point: 9

Csng. Depth (ft.)	Grout Time Start	Grout Time Finish	Max. Pressure (psi) Betra mix	Pump Strokes	Reason to stop pumping HP	GH	GP	CM	Remarks	
34	← TOTAL CASING DEPTH			[redacted]					Start Truck	
34	1217	1229	190/100	368	X				BRKS	
32							X		BRK	
27	1234	1236	180/100	391	X				BRKS	
22	1240	1249	180	626					End truck	10.0
			B-mix	[redacted]					New Truck	4.5
22	1319	1320	110/180	255		X			BRK	
17							X		BRK	
12										
									GO TO 14	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ____________ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 14.5

Total To Date (Cu. Yd.): ____________

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9802 Palm River Road
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Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-3-04

Project: DADE CITY LANDFILL Injection Point: 10

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks	
	Start	Finish		4-9	HP	GH	GP	CM		
33	← TOTAL CASING DEPTH			9					Continue Truck	
	1308	1401	160	481					End Truck BRKS	8.8
									New Truck	
27	1413		180	139					WATER OUT Ground I.P. 6	
27		1435	200/400	374	X				BRKS	
22	1443	1449	200	459		X			BRKS	
17							X		BRKT	
12							X		completed	
										8.4
									Go To 5	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ____________ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 17.2

Total To Date (Cu. Yd.): ____________

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GROUT MONITORING LOG

Client: ANGELO'S RECYCLING   Date: 3-9-04

Project: DADE CITY LANDFILL   Injection Point: 11

Csng. Depth (ft.)	Grout Time Start	Grout Time Finish	Max. Pressure (psi)	Pump Strokes 1-10	Reason to stop pumping HP	GH	GP	CM	Remarks
22	← TOTAL CASING DEPTH			249					Continue Truck
22	956	1001	170	351		X			BRKT
17							X		BRKT
12	1006	1006	170	359				X	Completed
									GO TO 12

1.8

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ____________   Inspector: JOHN MOTKO

Company: LRE   Total (Cu. Yd.): 1.8

Total To Date (Cu. Yd.): ____________

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9802 Palm River Road
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Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-9-04

Project: DADE CITY LANDFILL Injection Point: 12

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks
	Start	Finish		1-10	HP	GH	GP	CM	
27	← TOTAL CASING DEPTH			359					Continue Truck
27	1018		210	421		X			BRK 5
22							Y		
17	1027	1028	210	431		X		X	completed
									Go To 16

1.2

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ____________ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 1.2

Total To Date (Cu. Yd.): ____________

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GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-5-04

Project: DADE CITY LANDFILL Injection Point: 13

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes 4-10	Reason to stop pumping				Remarks	
	Start	Finish			HP	GH	GP	CM		
31	← TOTAL CASING DEPTH			200					Continue Truck	
31	1639	1656	180/180	557					End Truck	6.4
			B-mix	[illegible]					New Truck	
31	1701	170	500+	2	X				Pipe Jet	
29		1702	300+	5	X				Pipe Jet BCC 10	
22	1708	1709	160	30				X	completed	.6
									Go To 8	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ____________ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 7.0

.19

Total To Date (Cu. Yd.): ____________

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GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-5-04

Project: DADE CITY LANDFILL Injection Point: 14

Csng. Depth (ft.)	Grout Time Start	Grout Time Finish	Max. Pressure (psi)	Pump Strokes [illegible]	Reason to stop pumping HP	GH	GP	CM	Remarks	
32	← TOTAL CASING DEPTH			255					C. Truck	
	1340	1355	150/120	572					End Truck	5.5
			KEYS	[illegible]					New Truck	
32	1408	1438	160/160	630					End Truck BRET	9.0
			B-mix	[illegible]					New Truck	
27	1558	1604	180/400	126	X				BRET	
22							X		BRET	
17	1610	1613	160/180	189		X			BRET	
12							X		completed	3.4
									Go To 17	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ____________ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 17.9

Total To Date (Cu. Yd.): ____________

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GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-9-04

Project: DADE CITY LANDFILL Injection Point: 15

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks
	Start	Finish		GMIX	HP	GH	GP	CM	
35	← TOTAL CASING DEPTH								START Truck
35									Tight pipe BRKT
32									" BRKT
27	930	939	160	187		X			BRKT
22							X		
17	944	949	160	249				X	completed 4.1
									GO TO 11

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 4.1

Total To Date (Cu. Yd.):

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GROUT MONITORING LOG

Client: ANGELO'S RECYCLING

Date: 3-9-04

Project: DADE CITY LANDFILL

Injection Point: 16

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks	
	Start	Finish		1-10	HP	GH	GP	CM		
35	← TOTAL CASING DEPTH			431					Continue Truck	
	1036	/	500+	466	X					
			"	467	Y					
		1037	"	461	Y				BPPS	
32	1034/	1041	500+	469	X				BOOT	
31	1059	10:03	210	540		X			BRK 5	
27	1030	1037	210	605					End Truck	2.9
			Press	2-9					New Truck:	
27	11'12	[illegible]	200	36		X			BRKT	
22	1150	1151	[illegible]	40		X			BRKT	.9
17							X		BRKT	
12									Completed	
									Go To 22	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor:

Inspector: JOHN MOTKO

Company: LRE

Total (Cu. Yd.): 3.8

Total To Date (Cu. Yd.):

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GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-5-04

Project: DADE CITY LANDFILL Injection Point: 17

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks
	Start	Finish			HP	GH	GP	CM	
29	← TOTAL CASING DEPTH			189					Continue Truck
29	1625	1626	200	195					Pipe 24T BRKT
27							X		BRKT
22	1631	1631	200	198					Pipe 25T
20	1633	1633	200	200				X	completed
									Go To 13

.2

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ______ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 0.2

Total To Date (Cu. Yd.): ______

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Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING | Date: 3-4-04

Project: DADE CITY LANDFILL | Injection Point: 18

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks	
	Start	Finish		39	HP	GH	GP	CM		
33	← TOTAL CASING DEPTH			0					New Truck	
33	1420	1446	240	468					End Truck BRKS	9.0
				49					New Truck	
27	1546	1549	300	47		X			About I.P. BRKS	
22	1549	1551	300	63				X	BRKS completed	1.2
17									completed	
									Go To 23	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ____________ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 10.2

Total To Date (Cu. Yd.): ____________

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Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING — Date: 3-8-04

Project: DADE CITY LANDFILL — Injection Point: 19

Csng Depth (ft.)	Grout Time Start	Grout Time Finish	Max. Pressure (psi)	Pump Strokes 1/-9	HP	GH	GP	CM	Remarks
37	← TOTAL CASING DEPTH			37					Continue Truck
34									Boot
32	1415		500+	59	X				Boot
30			500+	65	Y				BRKT
27			500+	67	X				BRKT
22			500+	69	Y				BRKT
17			500+	70	Y				BRKT
12		1450	500+	71	Y				Completed
				-					
									Go To 20

.2

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ____________ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 0.2

Total To Date (Cu. Yd.): ____________

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9802 Palm River Road
Tampa, Florida 33619-4438
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GROUT MONITORING LOG

Client: ANGELO'S RECYCLING

Date: 3-8-2004

Project: DADE CITY LANDFILL

Injection Point: 28

Csng Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks
	Start	Finish		4-9	HP	GH	GP	CM	
35	← TOTAL CASING DEPTH			71					Cont Jpeck
32	1956	1956		72	X				Bkgs
28				73	X				BRKT
27	1959		300+	78	X				Dkgt
25		1509	400+	285	X				[illegible]
22	1514	1521	180	432		X			BRKS
17							X		Dek
12							X		Completed
									GO TO 21

6.8

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor:

Inspector: JOHN MOTKO

Company: LRE

Total (Cu. Yd.): 6.8

Total To Date (Cu. Yd.):

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9802 Palm River Road
Tampa, Florida 33619-4438
Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-8-04

Project: DADE CITY LANDFILL Injection Point: 21

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks	
	Start	Finish		1/-9	HP	GH	GP	CM		
36	← TOTAL CASING DEPTH			432					Continue Truck	.9
	1536	1540	150	480					End Truck BRK 5	
32							X			
			KEYS	[illegible]					Start Truck	
27	1600	1600	180	2		X			BRK 5	
22	1608	1609	180	24		X			BRK 5	
17							X		BRK 5	.5
12										
									GO TO 6	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ____________ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 1.4

Total To Date (Cu. Yd.): ____________

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GROUT MONITORING LOG

Client: ANGELO'S RECYCLING
Date: 3-9-04

Project: DADE CITY LANDFILL
Injection Point: 22

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks
	Start	Finish		2-9	HP	GH	GP	CM	
10	← TOTAL CASING DEPTH			40					Continue Truck
1159	1159	1159	200	46				X	completed
									Job Completed
									SENT BACK 8CY

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor:
Inspector: JOHN MOTKO

Company: LRE
Total (Cu. Yd.): 0.1

Total To Date (Cu. Yd.):

.1

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Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-4-04

Project: DADE CITY LANDFILL Injection Point: 23

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks
	Start	Finish		1-9	HP	GH	GP	CM	
38	← TOTAL CASING DEPTH		63	[illegible]					Continue Truck
38	1609	1631	140	491					End Truck [illegible]
32									Flush [illegible]
									END DAY

7.8

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ______ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 7.8 +

Total To Date (Cu. Yd.): ______

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GROUT MONITORING LOG

Client: ANGELO'S RECYCLING

Date: 3-5-04

Project: DADE CITY LANDFILL

Continue Injection Point: 23
from 3-4-05

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks	
	Start	Finish		B Mix	HP	GH	GP	CM		
	← TOTAL CASING DEPTH			[illegible]					Start Truck	
22	1217	1241	1160						End Truck BRKS	(10.0)
			Keys	[illegible]					New Truck	
27	1247	1249	160/410	41	X				BRKS	
22	1255	1255	1100 +	43	X			X	completed	
17										(1.2)
									Go BACK TO 26	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor:

Inspector: JOHN MOTKO

Company: LRE

Total (Cu. Yd.): 7.8 + 11.2 = 19.0

Total To Date (Cu. Yd.):

Universal Engineering Sciences, Inc.
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GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 2-8-04

Project: DADE CITY LANDFILL Injection Point: 24

Csng. Depth (ft.)	Grout Time Start	Grout Time Finish	Max. Pressure (psi)	Pump Strokes	Reason to stop pumping HP	GH	GP	CM	Remarks	
30	← TOTAL CASING DEPTH			135					Continue Truck	
30	1225	1240	140/	459					End Truck BRKT	6.4
				[illegible]					New Truck	
27	1205	1327	180/180	461					End Truck BRK 5	9.0
			KEY 9	[illegible]					New Truck	
22	1355		160	21					water on Ground IP 20	
		1358	160/	57				X	BRKT	1.1
17							Y		completed	
									Go To 19	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 16.5

Total To Date (Cu. Yd.):

Universal Engineering Sciences, Inc.
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GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-5-04

Project: DADE CITY LANDFILL Injection Point: 25

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes 6-9	Reason to stop pumping				Remarks
	Start	Finish			HP	GH	GP	CM	
43	← TOTAL CASING DEPTH			325					Cont Truck
47									Tight pipe brk
42									" "
37	1756	1802	180	469					End Truck
32									Flush BRK 0
32									End Day

2.8

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 2.8 +

Total To Date (Cu. Yd.):

Universal Engineering ~~Sciences~~ces, Inc.
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Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-8-04

Project: DADE CITY LANDFILL Continue Injection Point: 25
from 3-5-04

Csng. Depth (ft.)	Grout Time Start	Grout Time Finish	Max. Pressure (psi)	Pump Strokes	Reason to stop pumping HP	GH	GP	CM	Remarks	
	← TOTAL CASING DEPTH		KEYS	[illegible]					Start Truck	
32										
27	1026	1048	200	461					End Truck BRKS	90
			KEYS	[illegible]					New Truck	
22	1150	1156	200	126		X			AT I.P. BRKS	
17							X		BRKS	2.6
12	1205	1205	200	135		X			Completed	
									Go To 24	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 2.8 + 11.6 = 14.4

Total To Date (Cu. Yd.):

Universal Engineering Sciences, Inc.
9802 Palm River Road
Tampa, Florida 33619-4438
Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-3-04

Project: DADE CITY LANDFILL Injection Point: 26

Csng. Depth (ft.)	Grout Time		Max. Pressure (psi)	Pump Strokes	Reason to stop pumping				Remarks
	Start	Finish		6-9	HP	GH	GP	CM	
60	← TOTAL CASING DEPTH			132					Con Tinue Tire
60	1551	1610	150	413					pump out of fuel
	1616	1622	150	487					End Truck 66
									Flush nec 0
60									
									END DAY

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ____________ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 6.6+

Total To Date (Cu. Yd.): ____________

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Tampa, Florida 33619-4438
Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING

Date: 3-4-04

Project: DADE CITY LANDFILL

Injection Point: 26

Continue from 3-3-04

Csng. Depth (ft.)	Grout Time Start	Grout Time Finish	Max. Pressure (psi)	Pump Strokes [illegible]	Reason to stop pumping HP	GH	GP	CM	Remarks	
	← TOTAL CASING DEPTH								Start Truck	
60	1206	1232	140	485					End Truck Bar...	9.0
				[illegible]					New Truck	
57	1332	1353	140	458					End Truck	9.0
									Low pressures [illegible] Flush	
									Go To Point 18	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ____________

Inspector: JOHN MOTKO

Company: LRE

Total (Cu. Yd.): 6.6 + 18

Total To Date (Cu. Yd.): ____________

Universal Engineering Sciences, Inc.
9802 Palm River Road
Tampa, Florida 33619-4438
Telephone: (813) 740-8506 Fax: (813) 740-8706 Website: www.uesorl.com

GROUT MONITORING LOG

Client: ANGELO'S RECYCLING Date: 3-5-04

Project: DADE CITY LANDFILL Continue Injection Point: 26 from 3-4-04

Csng. Depth (ft.)	Grout Time Start	Grout Time Finish	Max. Pressure (psi)	Pump Strokes 2-9	Reason to stop pumping HP	GH	GP	CM	Remarks	
	← TOTAL CASING DEPTH			43					Continue Truck	
57	1303	1321	110	462					End Truck BRKS	7.8
			B-MIX	[illegible]					New Truck	
52	1334	1400	200	572					End Truck BRKS	10.0
			B-MIX	[illegible]					New Truck	
47	1454	1517	200/200	543					End Truck BRKS	10.0
			B-MIX	[illegible]					New Truck	
42	1618	1623	200/100	110	X				BRKS	
37	1623	1627	400	113	X				BRKS	
32	1633	1652	180	551					End Truck BRKS	10.0
			KEYS	[illegible]					New Truck	
27	1659	1714	200/200	252		X			AT IP BRKS	
22	1721	1724	200/90	321	X				BRKS	
17	1726	1726	400+	335	X				Compl	6.2
									GOT 25	

HP - High Pressure; GH - Ground Heave; GP - Grout out of Pipe; CM - Communication

Supervisor: ______ Inspector: JOHN MOTKO

Company: LRE Total (Cu. Yd.): 6.6 + 18 + 44 = 68.6

Total To Date (Cu. Yd.): ______

APPENDIX C

Important Information about Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

ASFE THE GEOPROFESSIONAL BUSINESS ASSOCIATION

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

IIGER03135.0MRP

CONSTRAINTS AND RESTRICTIONS

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until construction begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other explorations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

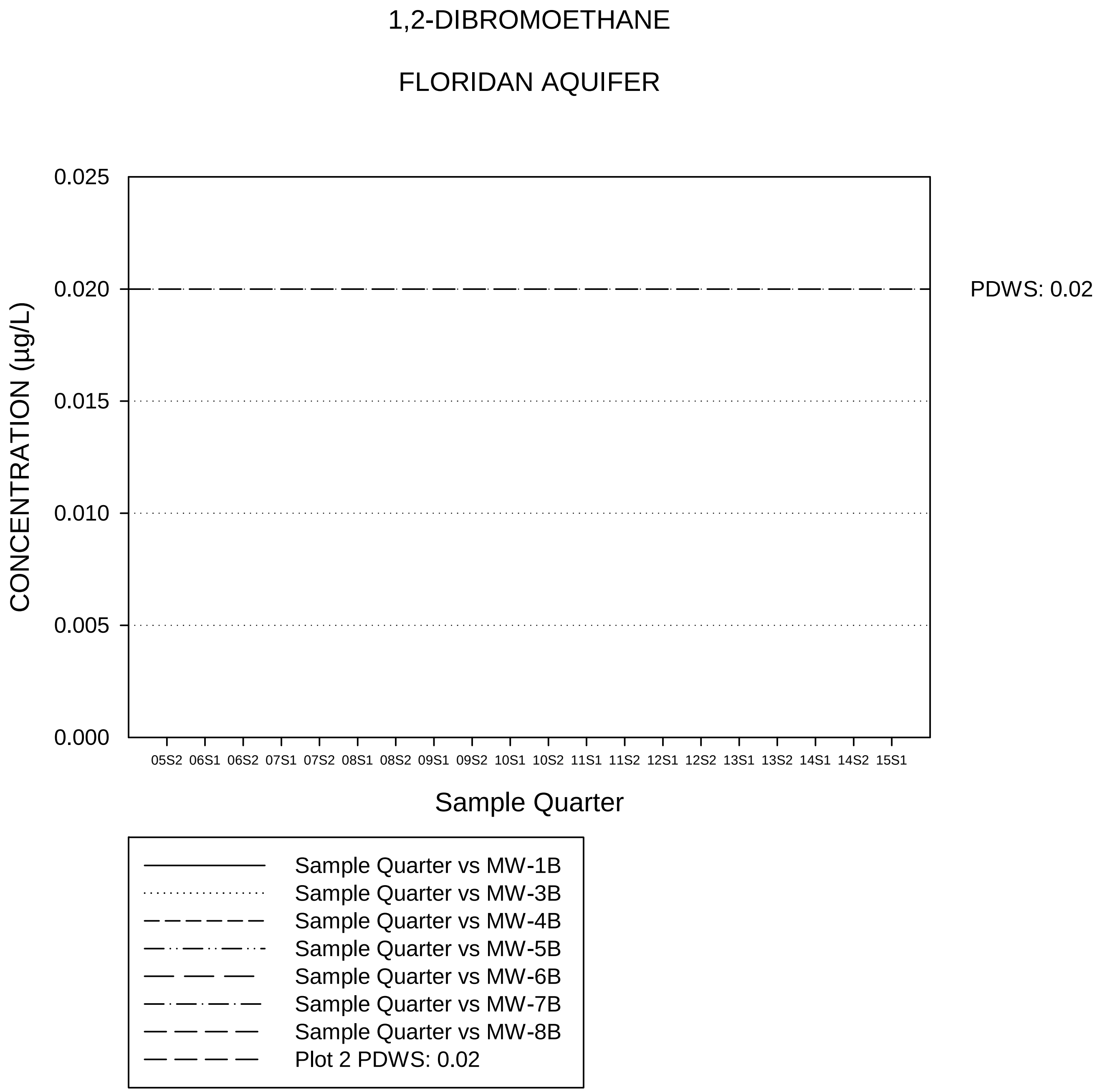
LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

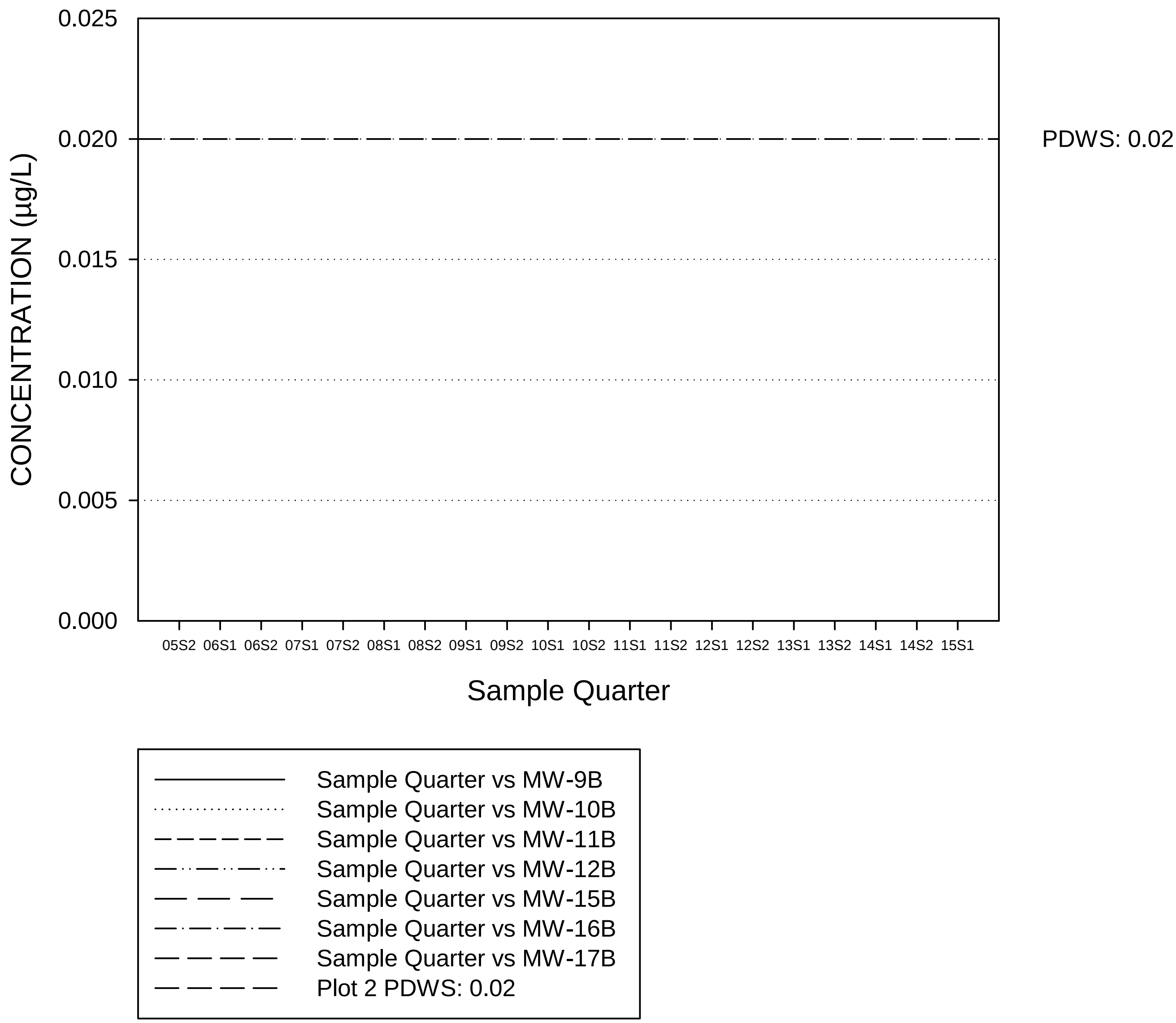
This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.

ATTACHMENT 2
GROUNDWATER DATA


1,2-DIBROMOETHANE
FLORIDAN AQUIFER
0.025
0.020
0.015
0.010
0.005
0.000
CONCENTRATION (µg/L)
PDWS: 0.02
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 0.02

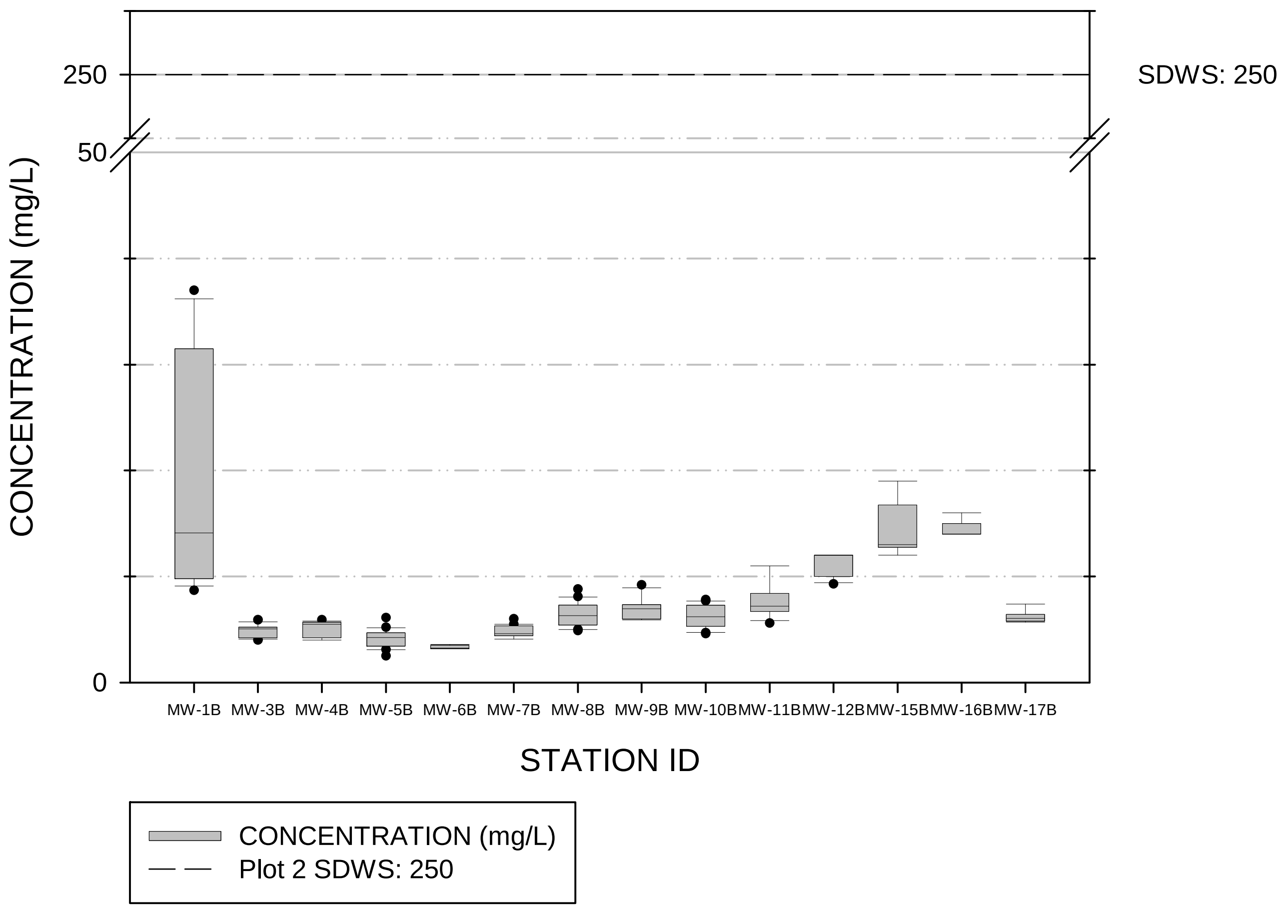
1,2-DIBROMOETHANE

FLORIDAN AQUIFER



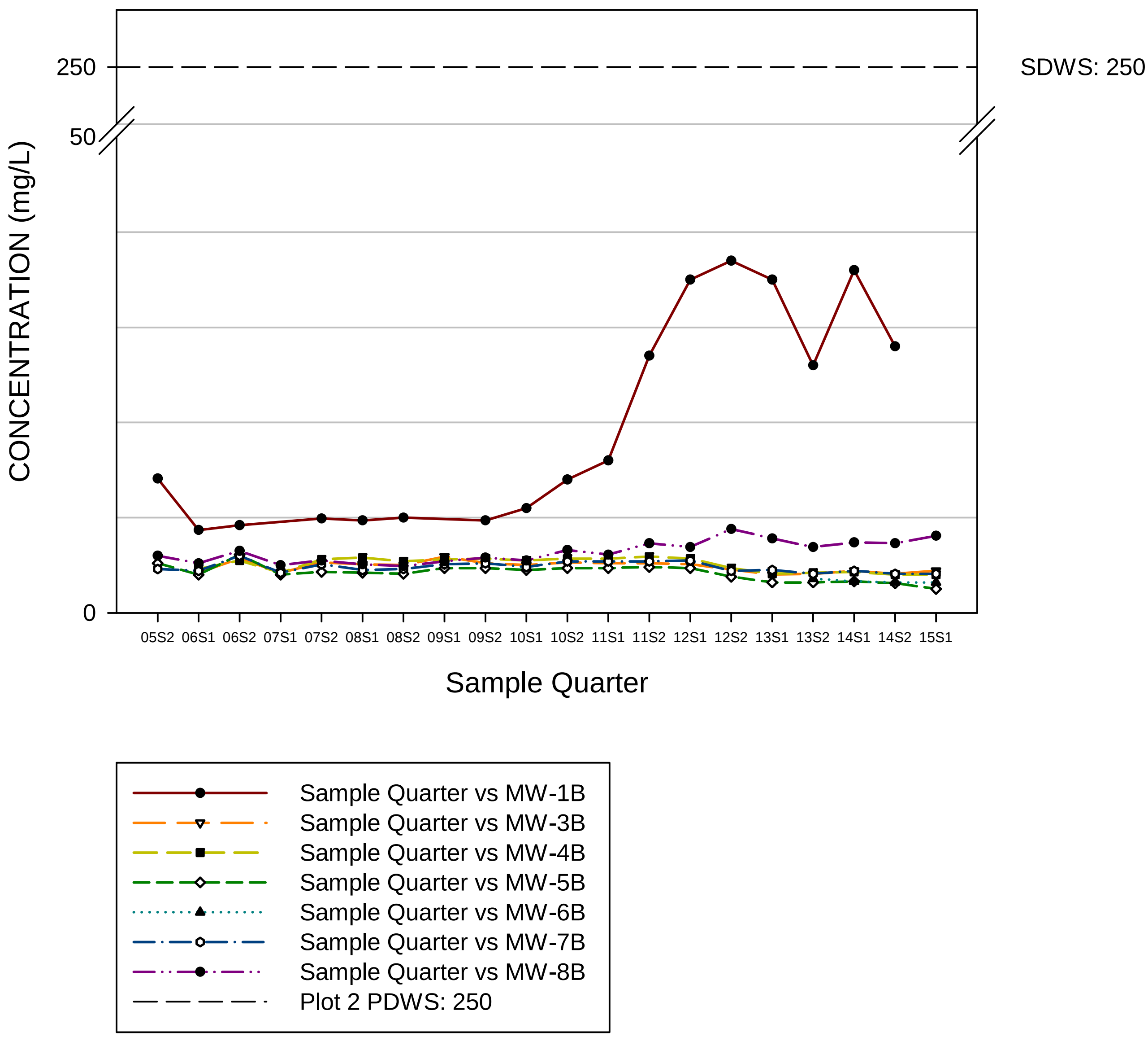
CHLORINE

FLORIDAN AQUIFER



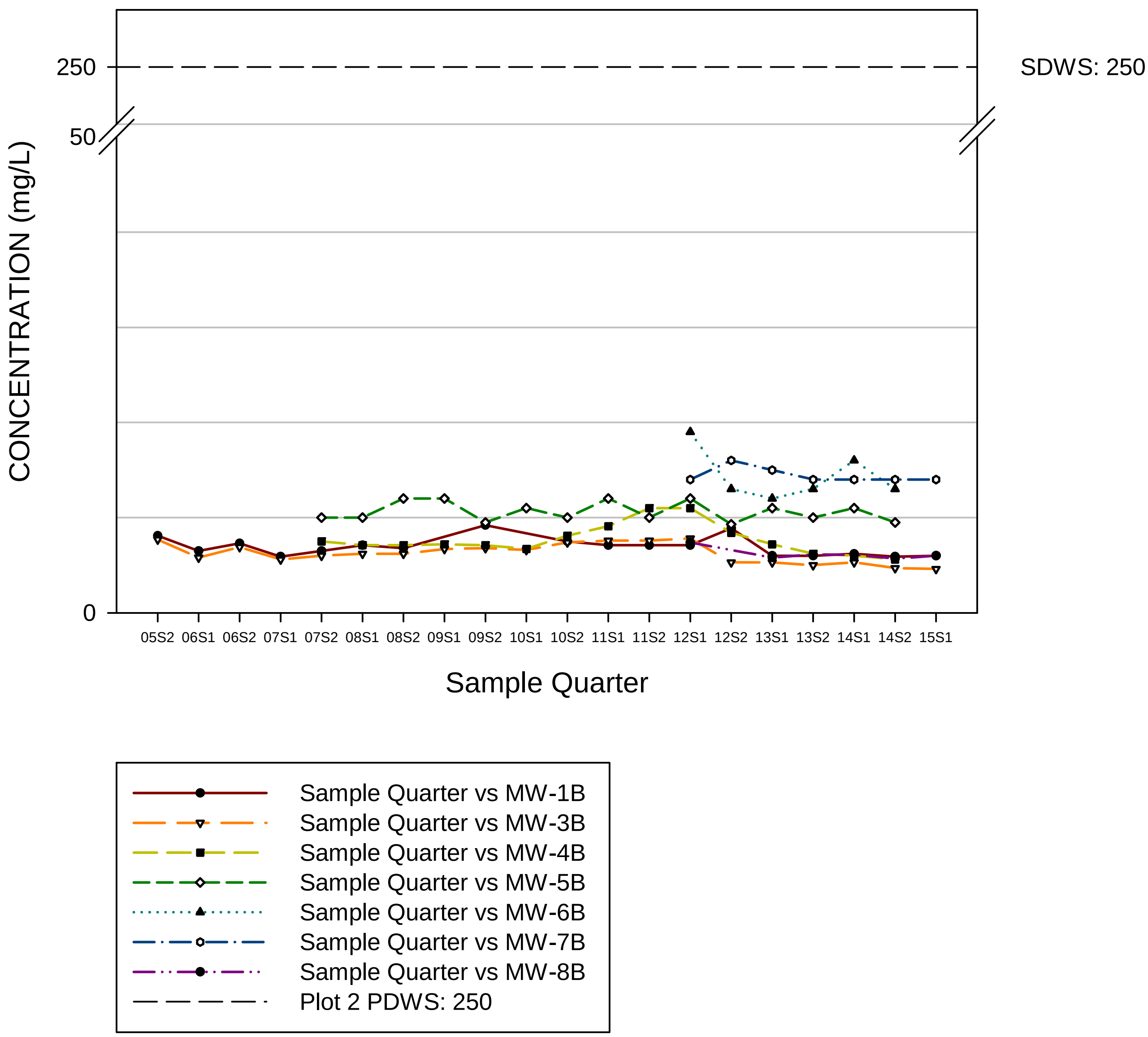
CHLORINE

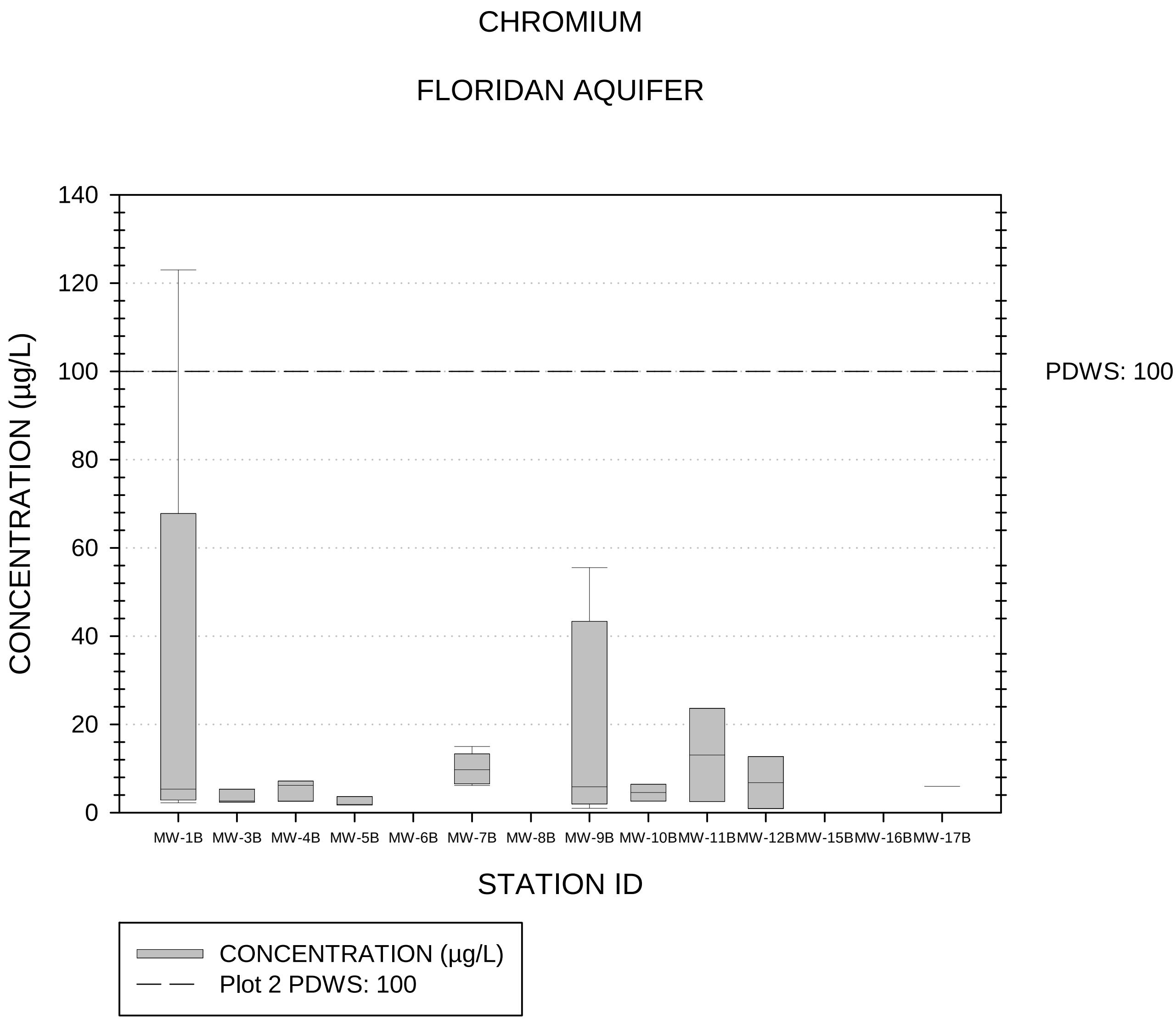
FLORIDAN AQUIFER

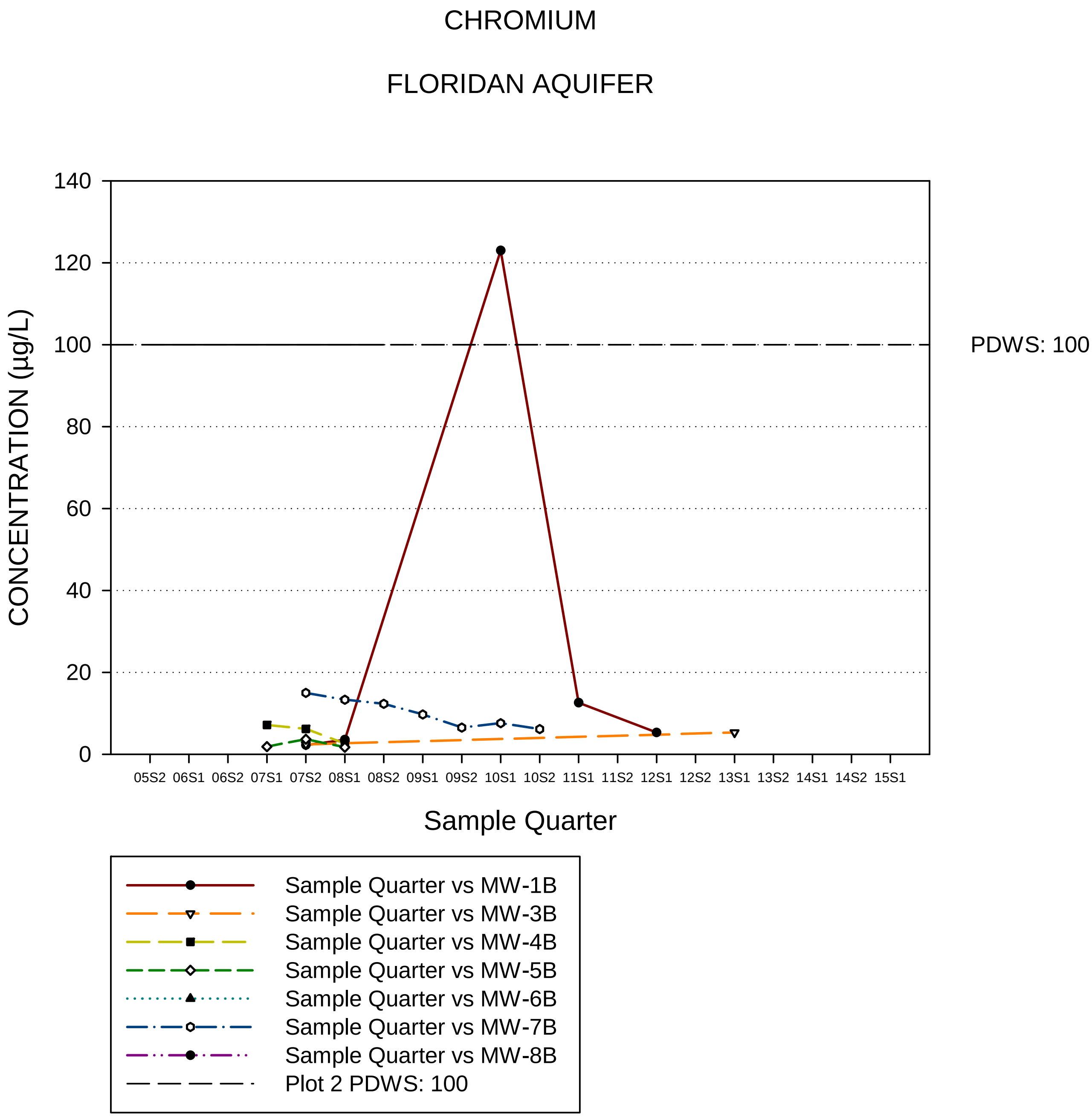


CHLORINE

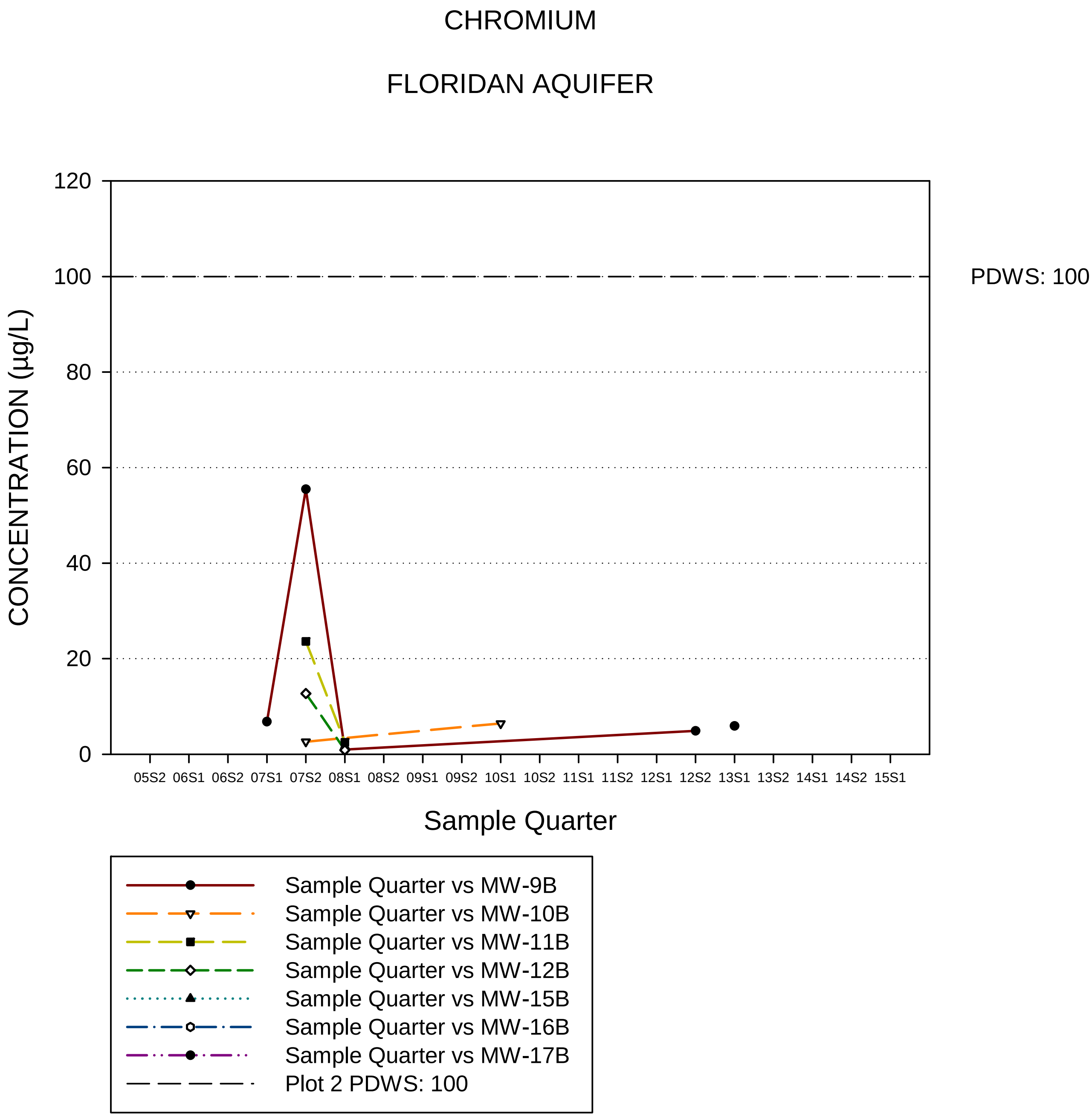
FLORIDAN AQUIFER




CHROMIUM
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
0
20
40
60
80
100
120
140
PDWS: 100
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 100

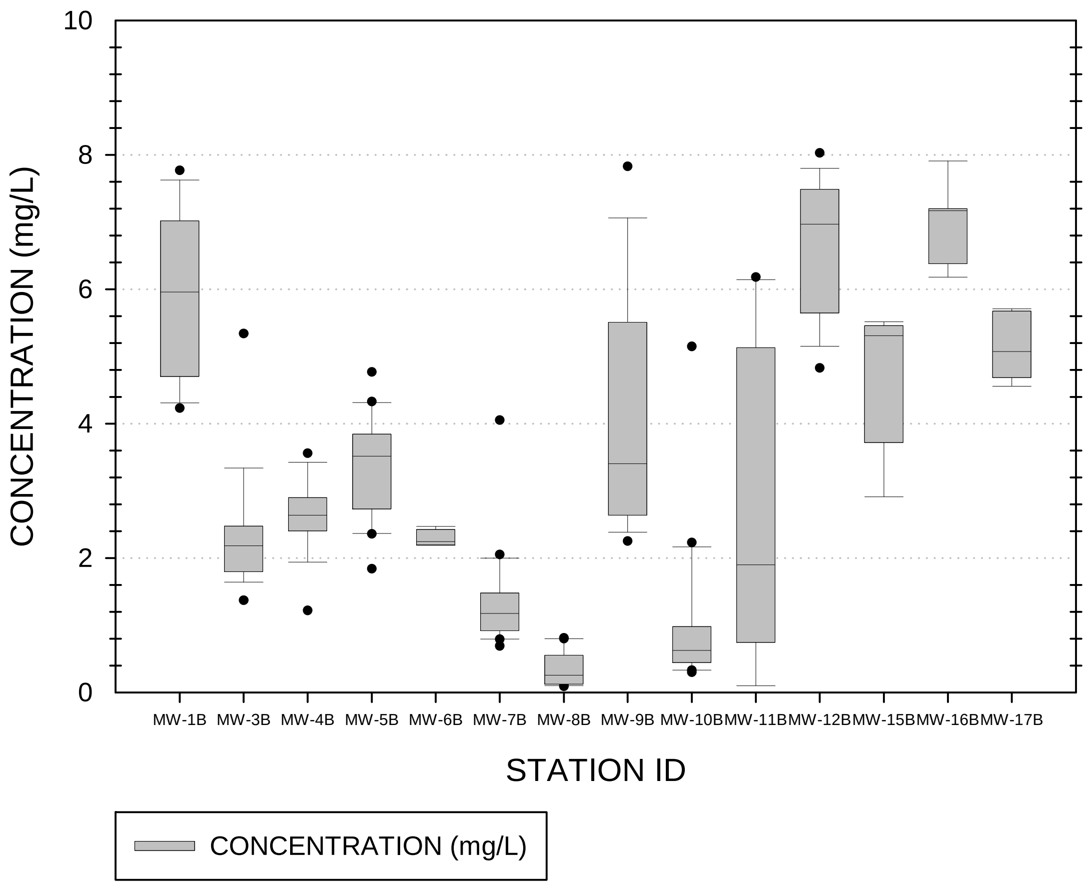


CHROMIUM
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
140
120
100
80
60
40
20
0
PDWS: 100
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 100


CHROMIUM
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
120
100
80
60
40
20
0
PDWS: 100
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-9B
Sample Quarter vs MW-10B
Sample Quarter vs MW-11B
Sample Quarter vs MW-12B
Sample Quarter vs MW-15B
Sample Quarter vs MW-16B
Sample Quarter vs MW-17B
Plot 2 PDWS: 100

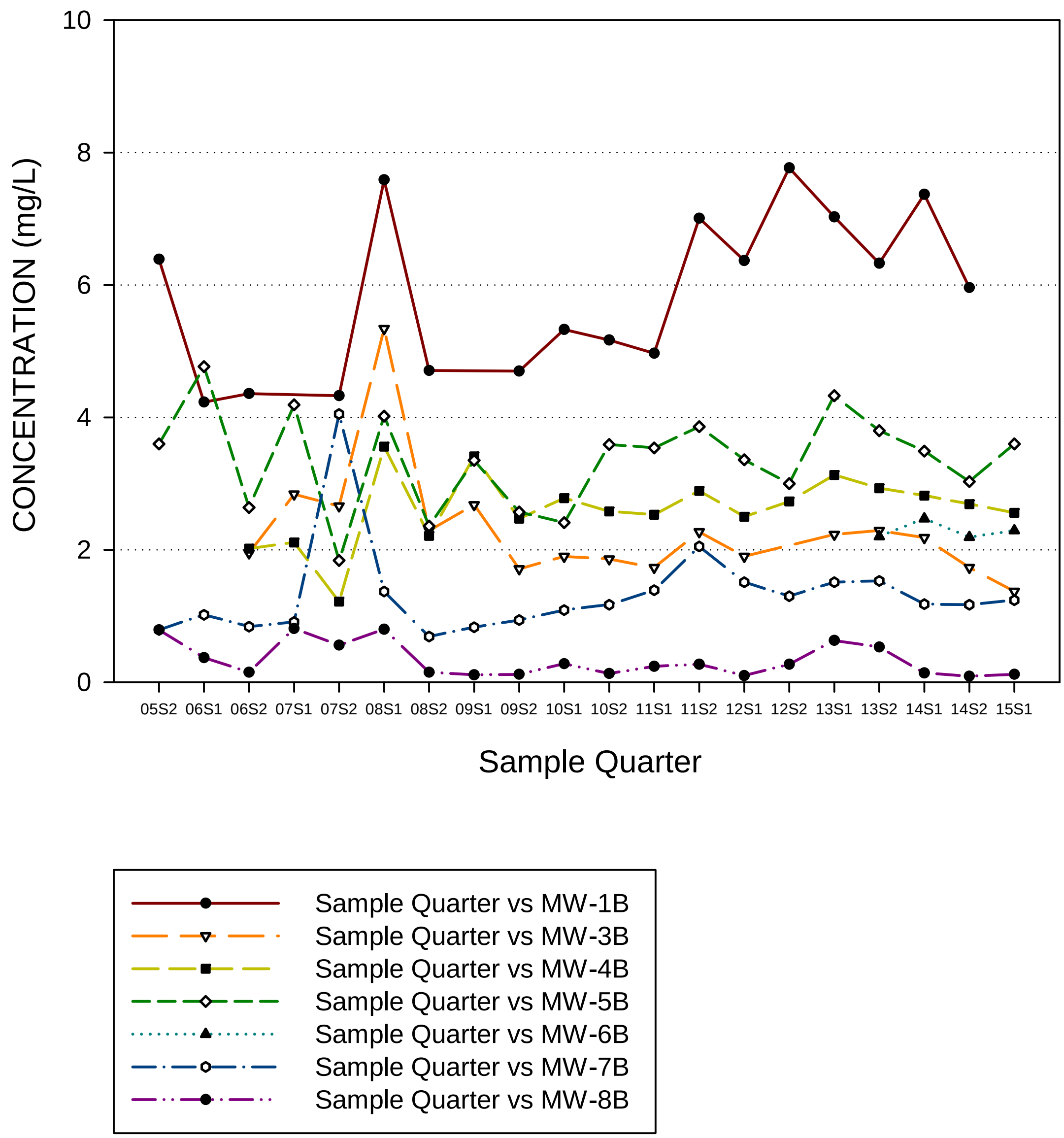
DISSOLVED OXYGEN

FLORIDAN AQUIFER



DISSOLVED OXYGEN

FLORIDAN AQUIFER



DISSOLVED OXYGEN

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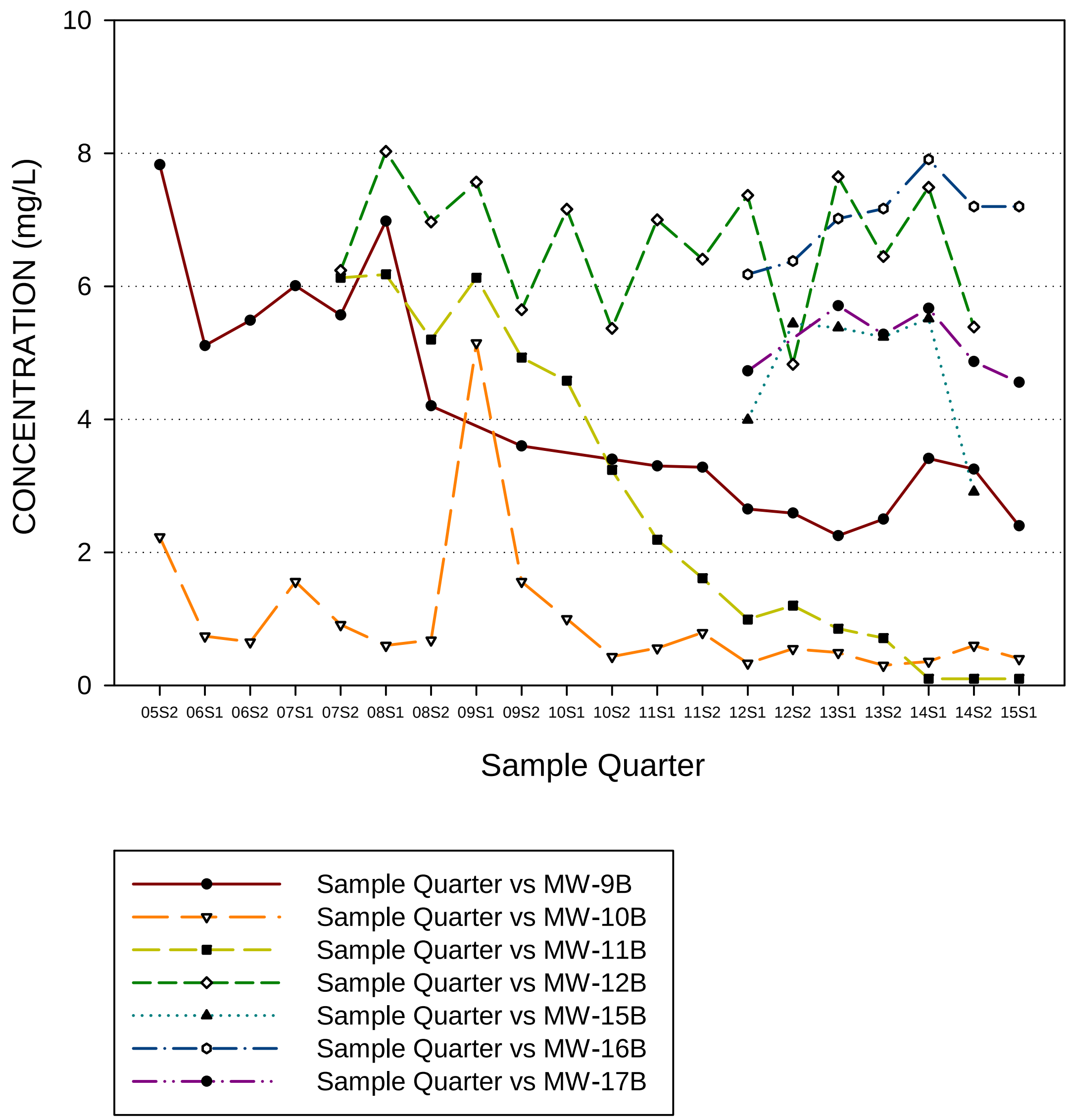
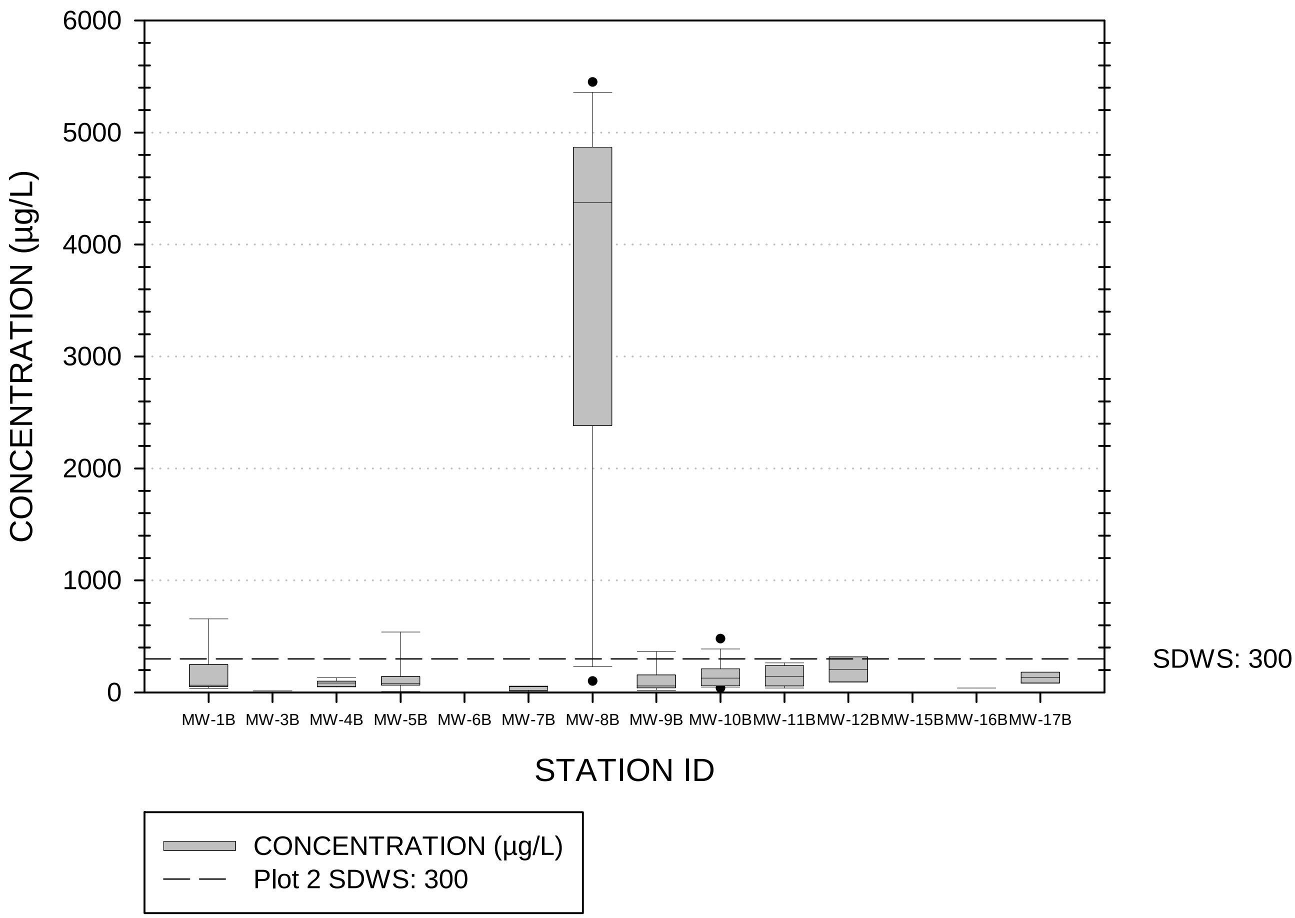


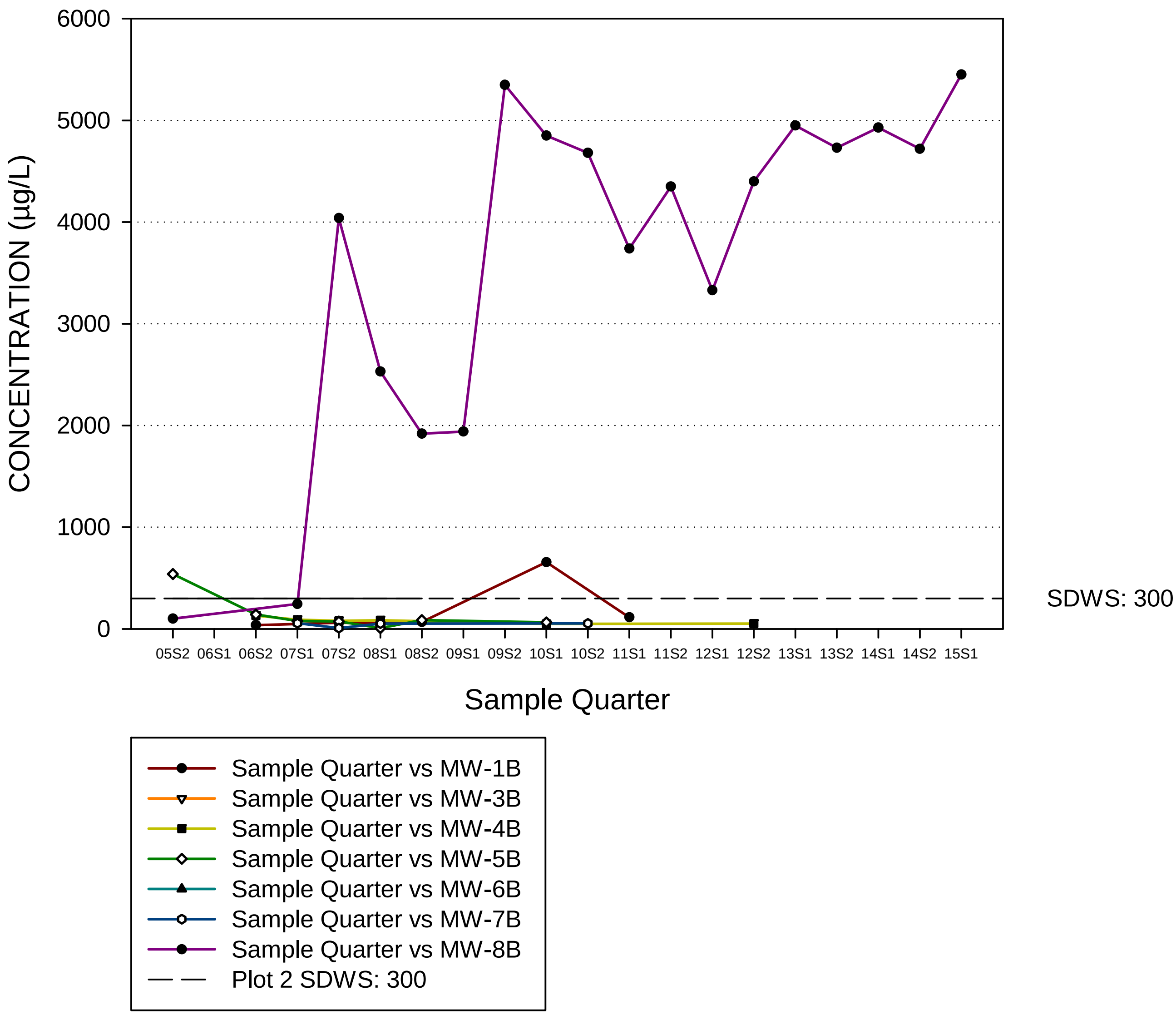
IRON

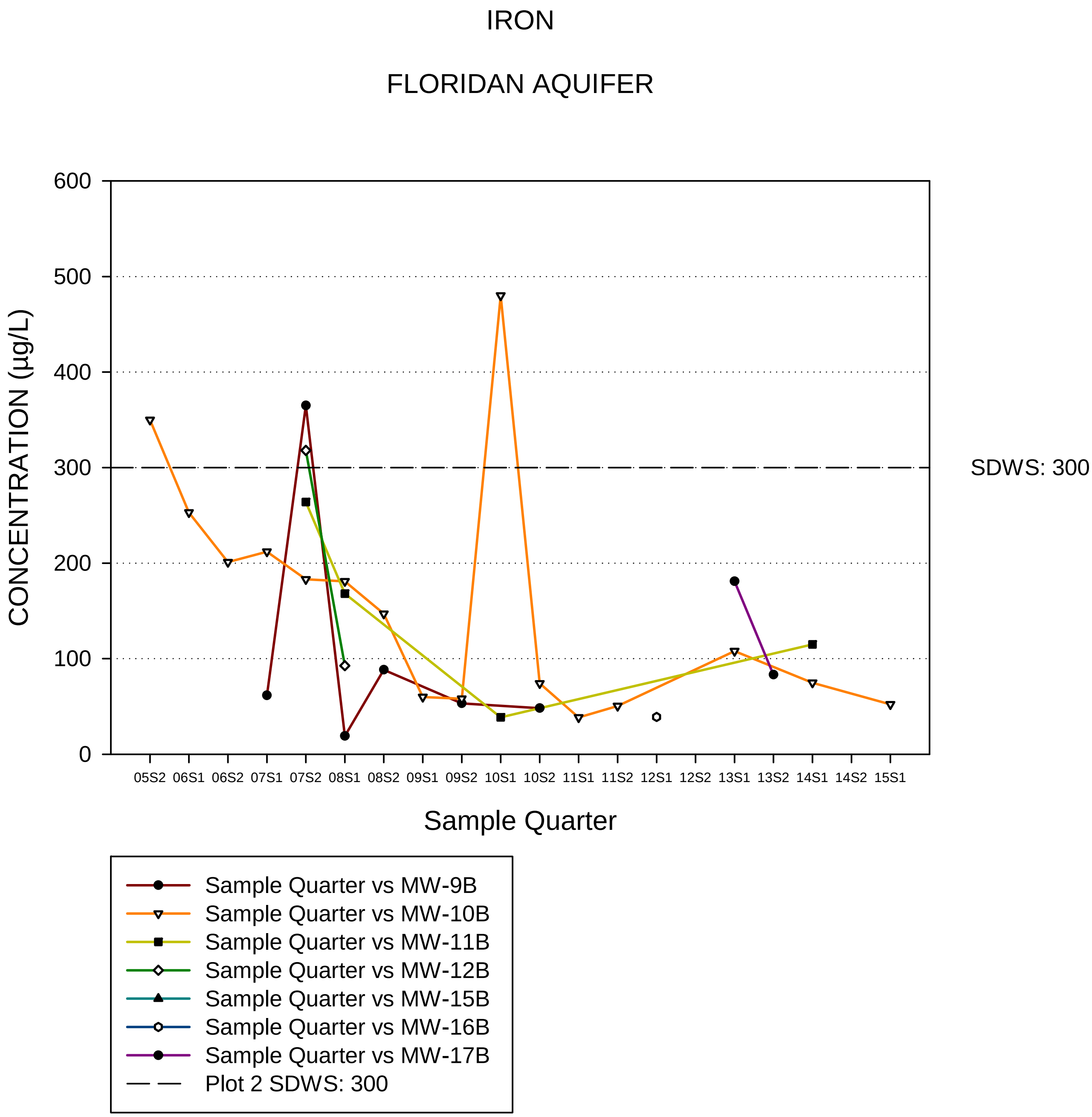
FLORIDAN AQUIFER



IRON

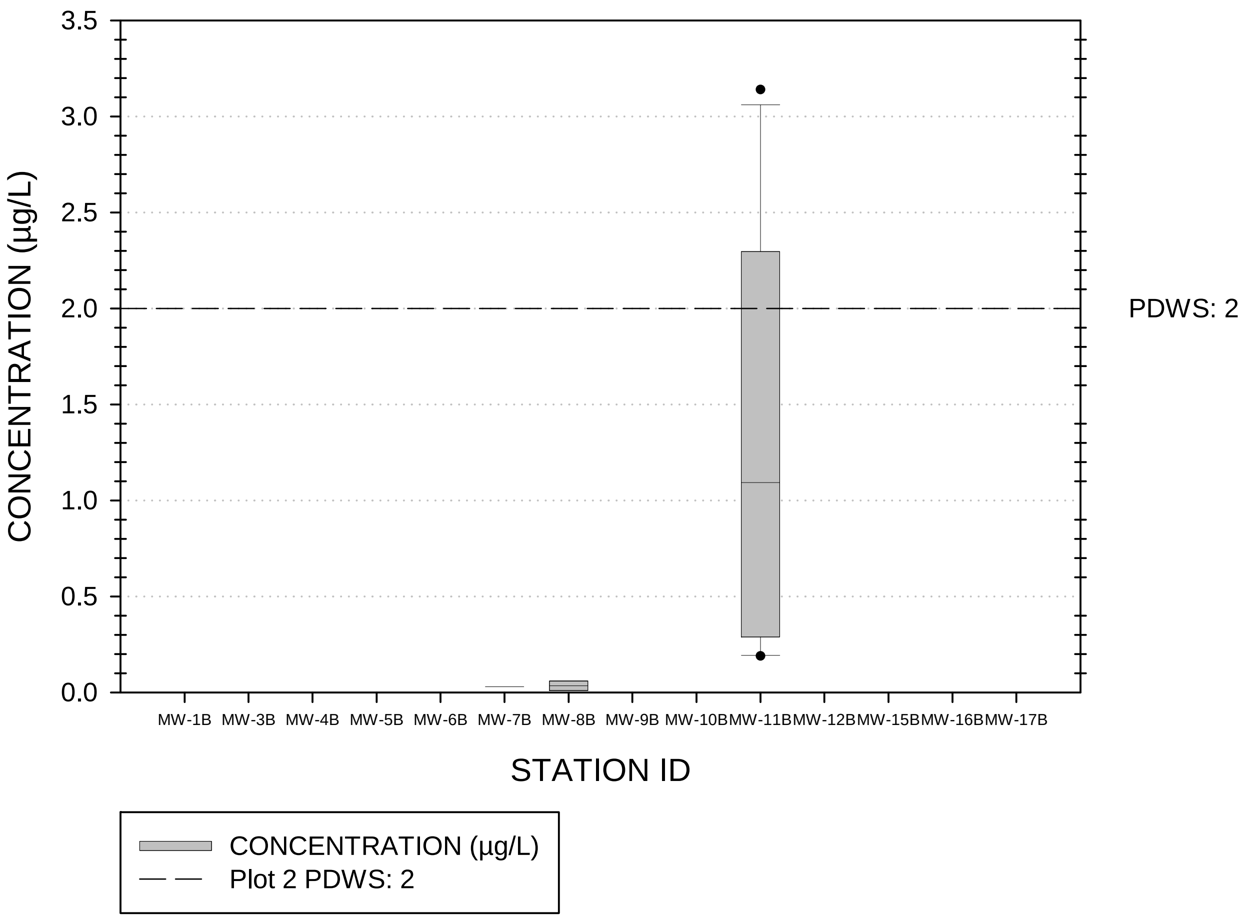
FLORIDAN AQUIFER




IRON
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
600
500
400
300
200
100
0
SDWS: 300
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs MW-9B
Sample Quarter vs MW-10B
Sample Quarter vs MW-11B
Sample Quarter vs MW-12B
Sample Quarter vs MW-15B
Sample Quarter vs MW-16B
Sample Quarter vs MW-17B
Plot 2 SDWS: 300

MERCURY

FLORIDAN AQUIFER



MERCURY

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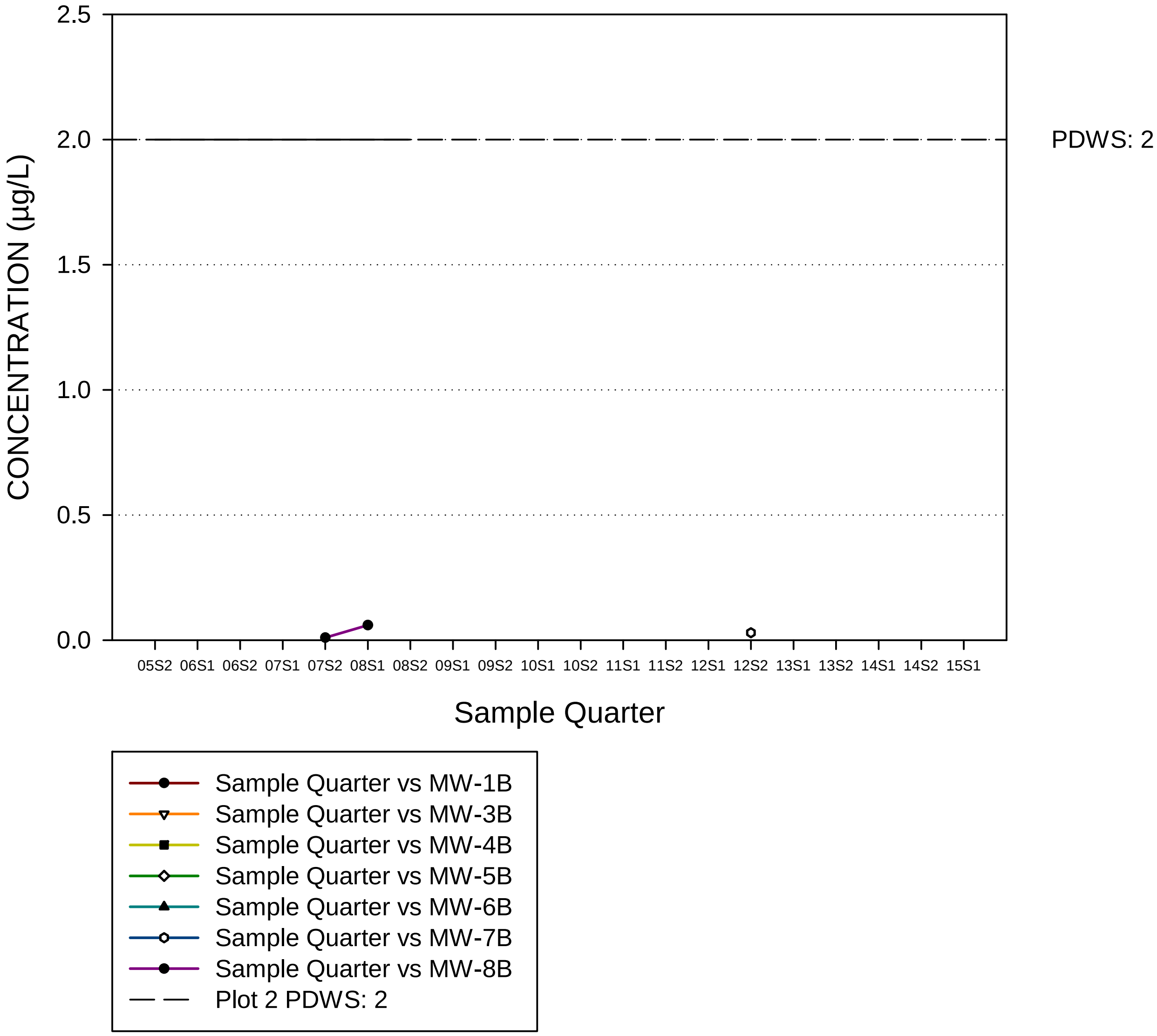
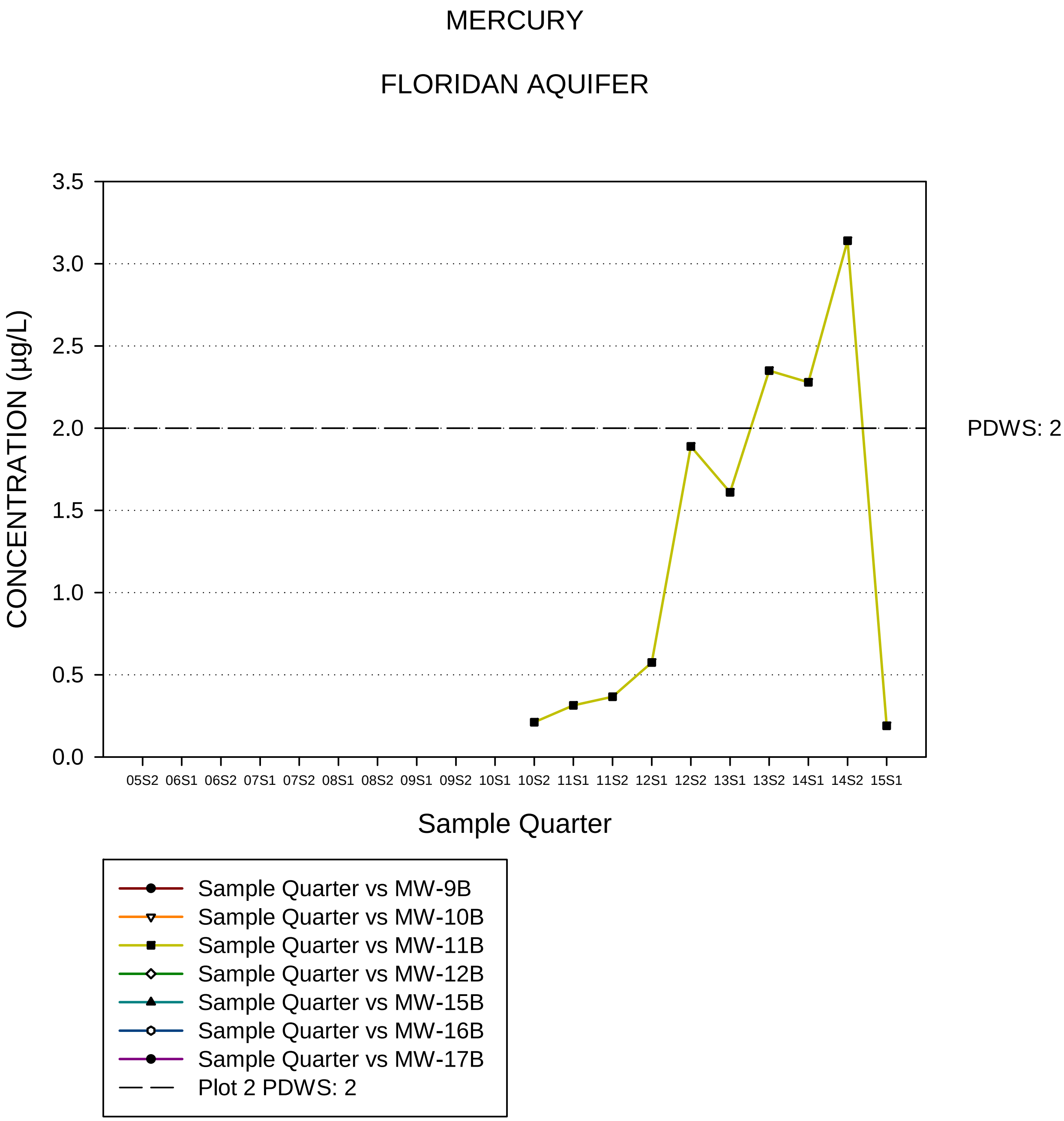
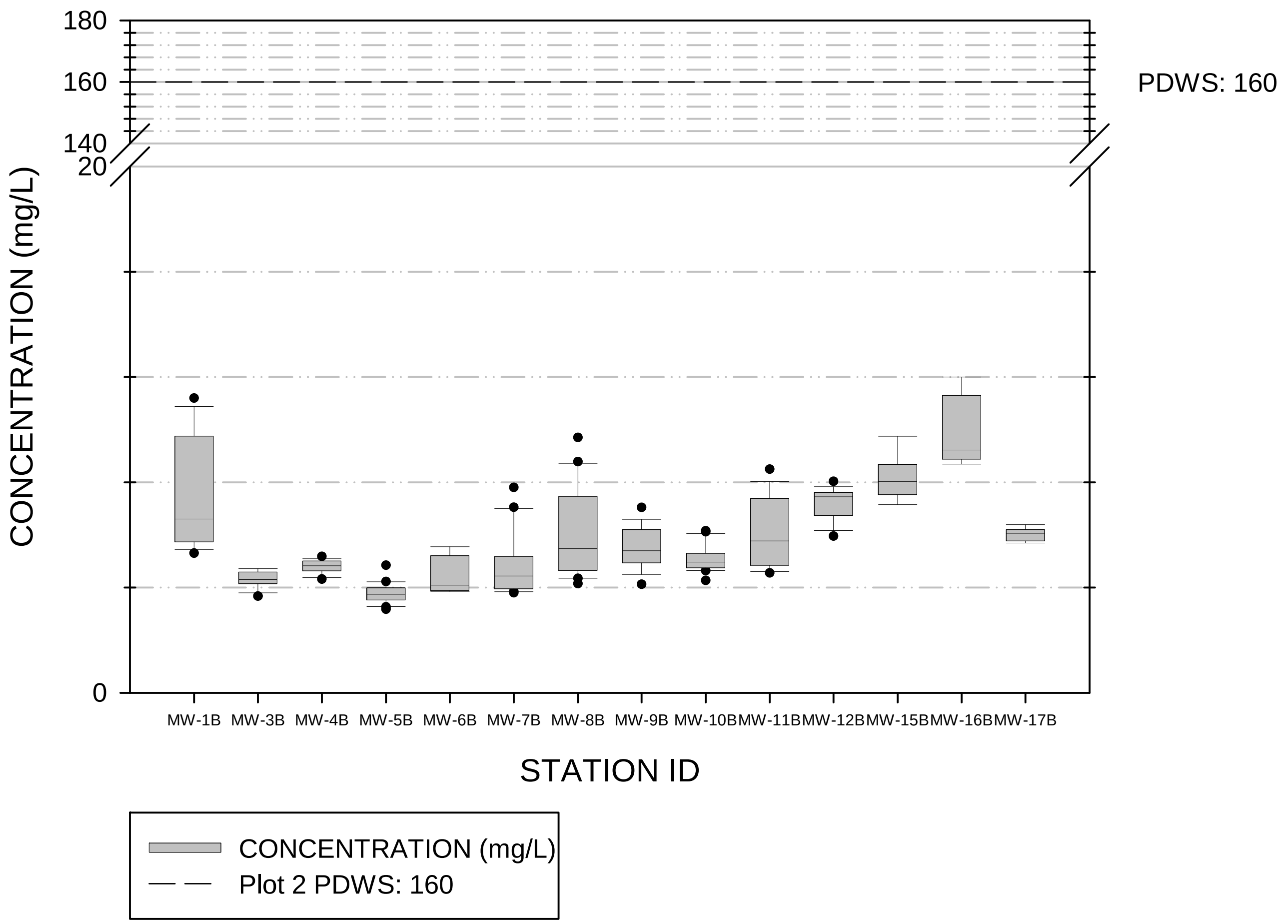



MERCURY
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
PDWS: 2
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-9B
Sample Quarter vs MW-10B
Sample Quarter vs MW-11B
Sample Quarter vs MW-12B
Sample Quarter vs MW-15B
Sample Quarter vs MW-16B
Sample Quarter vs MW-17B
Plot 2 PDWS: 2

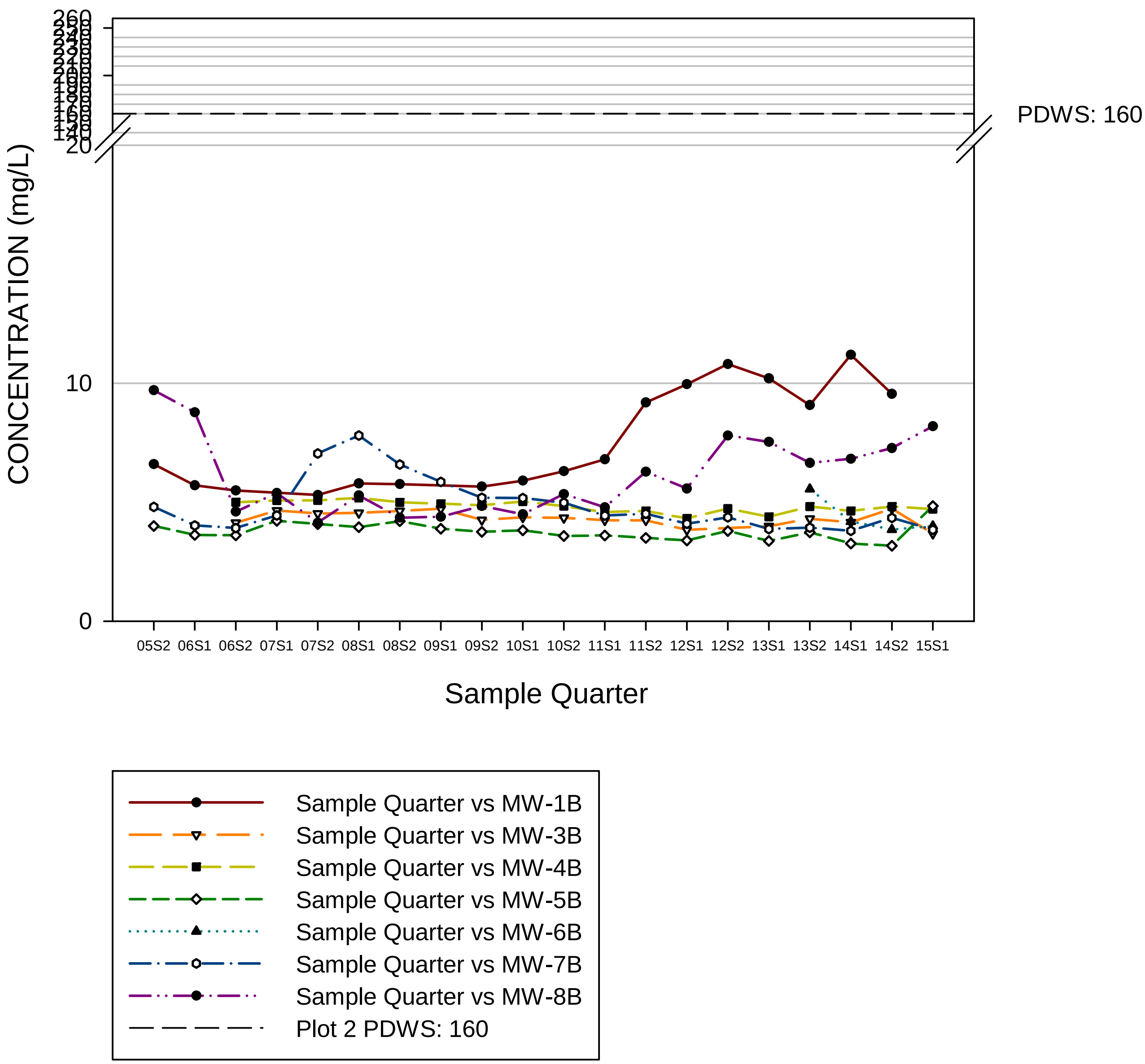
SODIUM

FLORIDAN AQUIFER



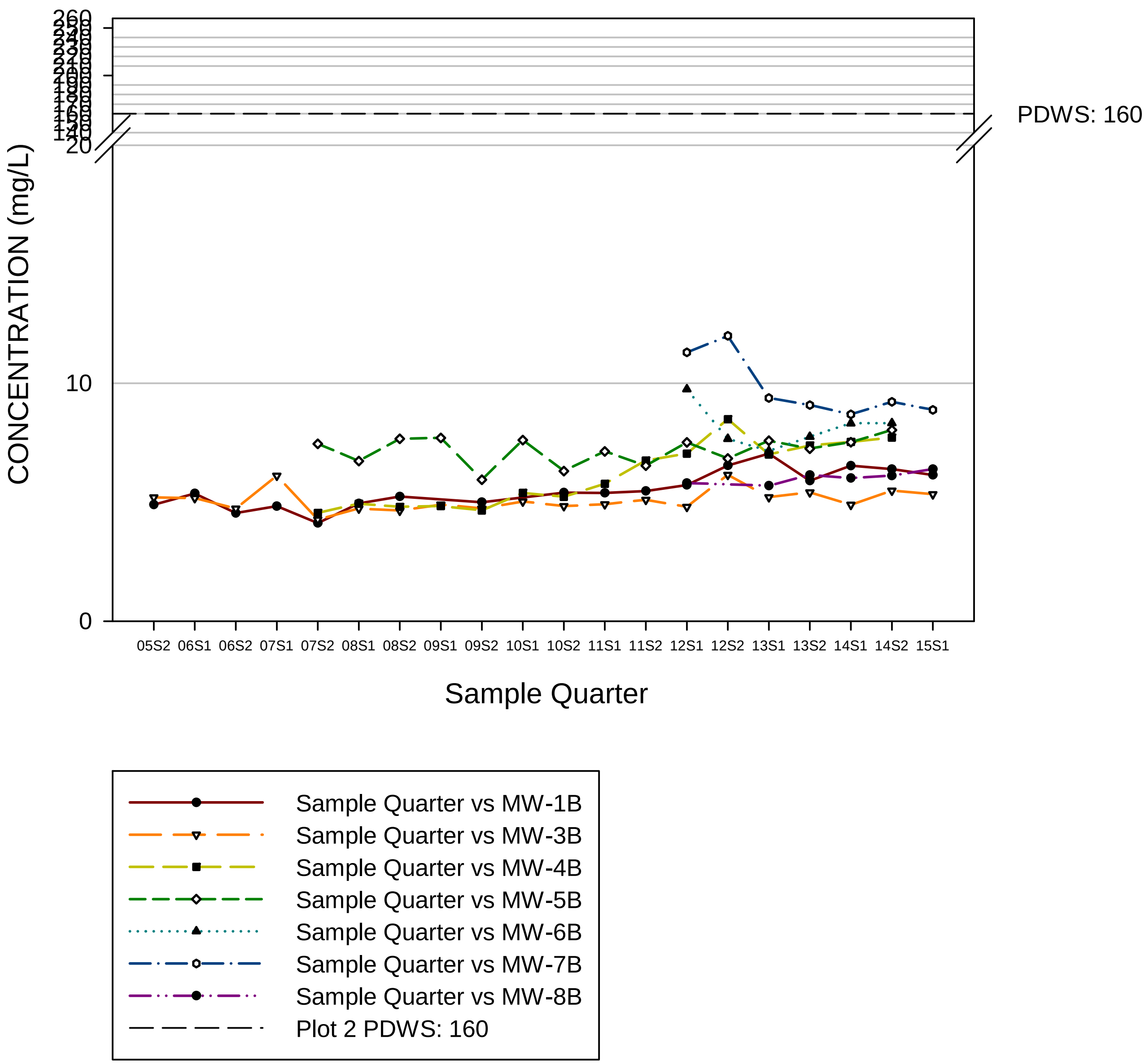
CHLORINE

FLORIDAN AQUIFER



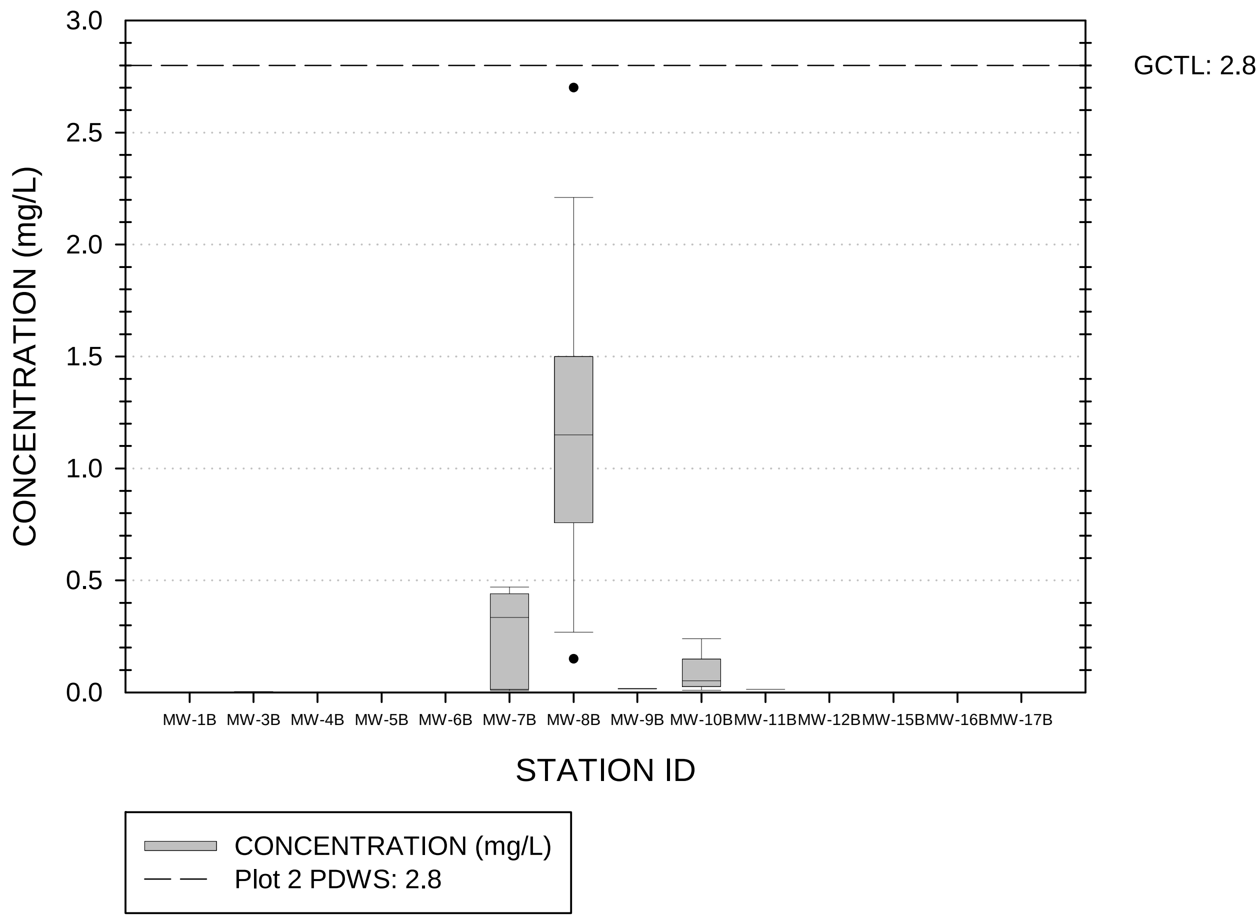
SODIUM

FLORIDAN AQUIFER



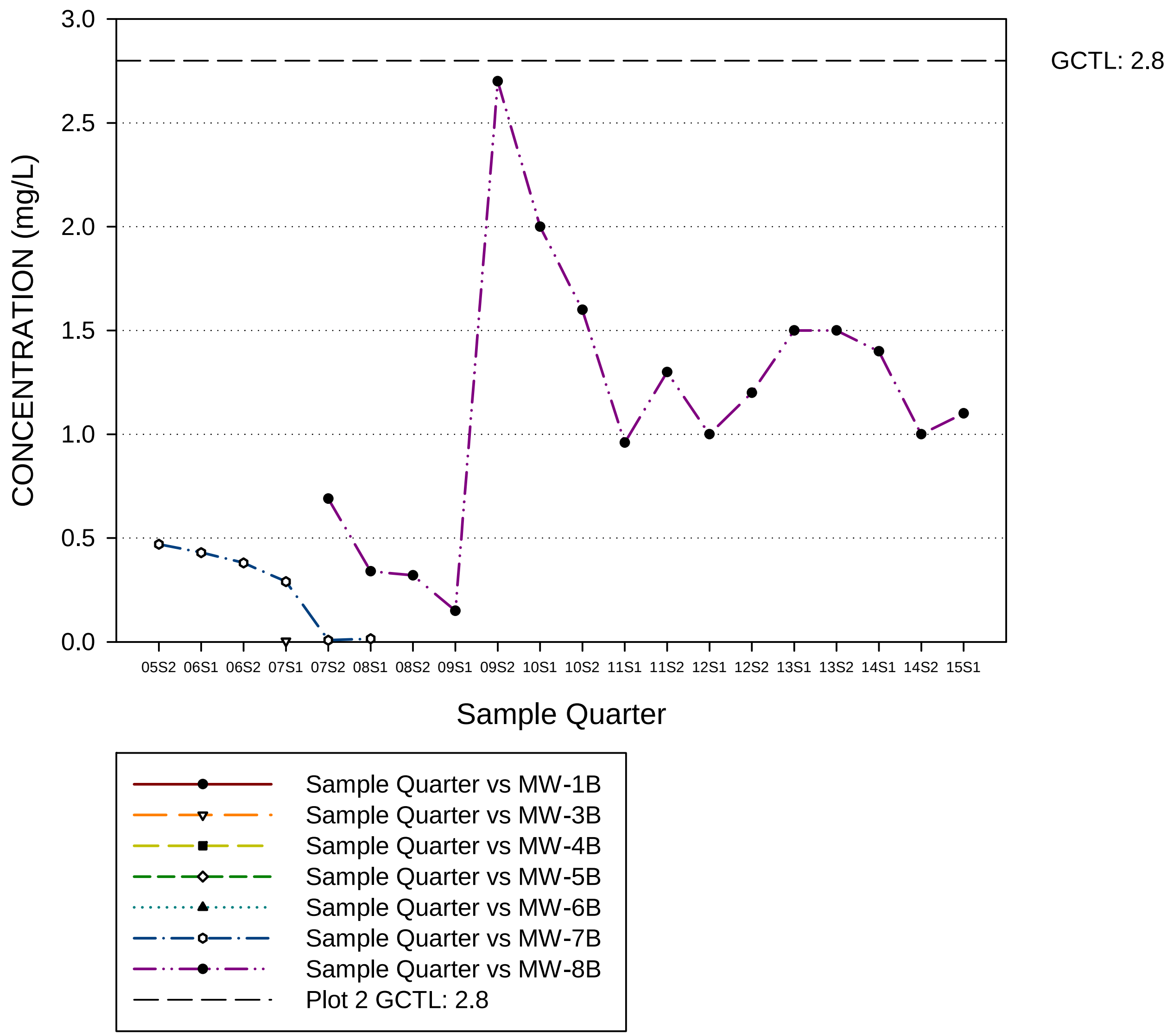
AMMONIA AS NITROGEN

FLORIDAN AQUIFER



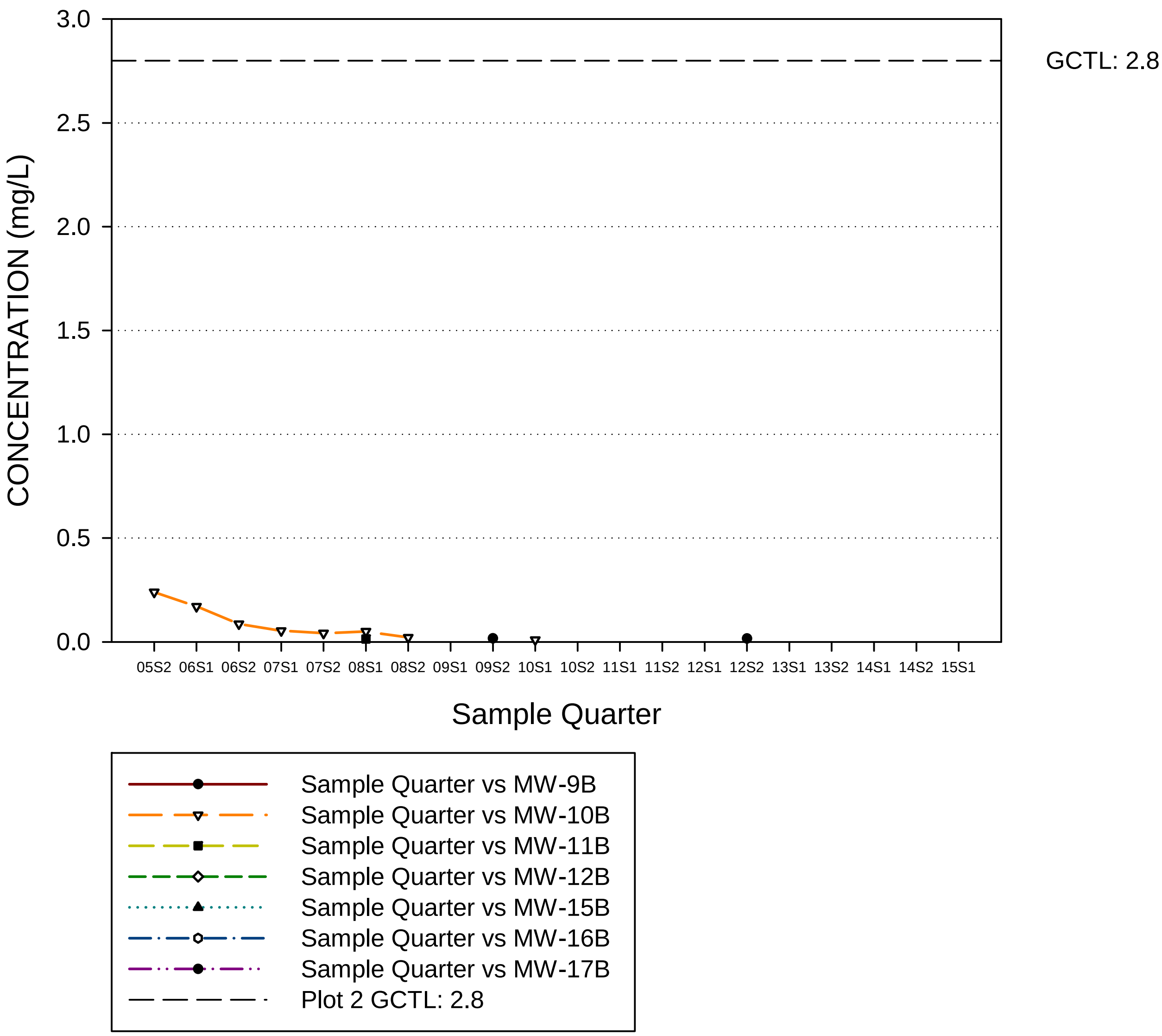
AMMONIA AS NITROGEN

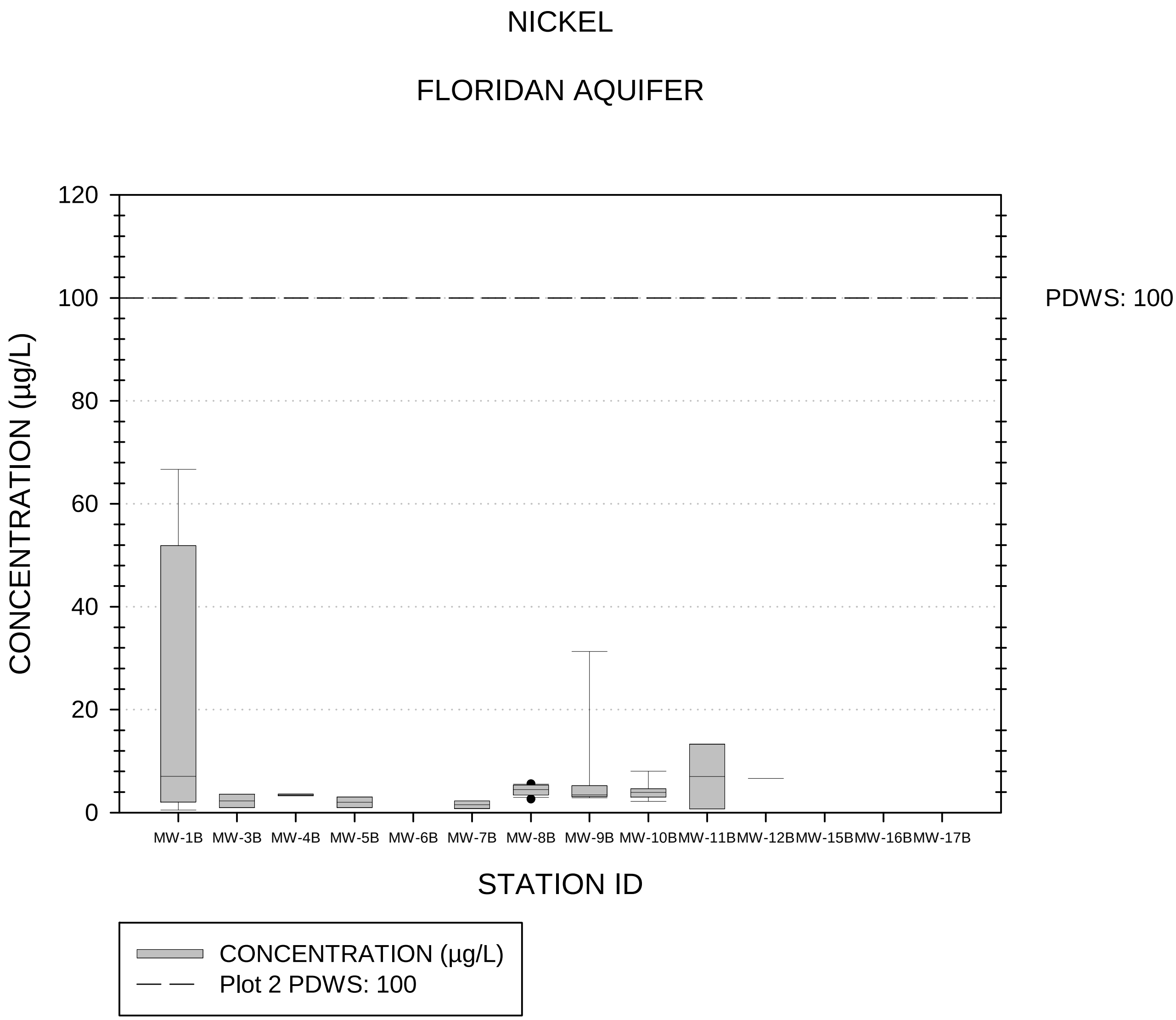
FLORIDAN AQUIFER



AMMONIA AS NITROGEN

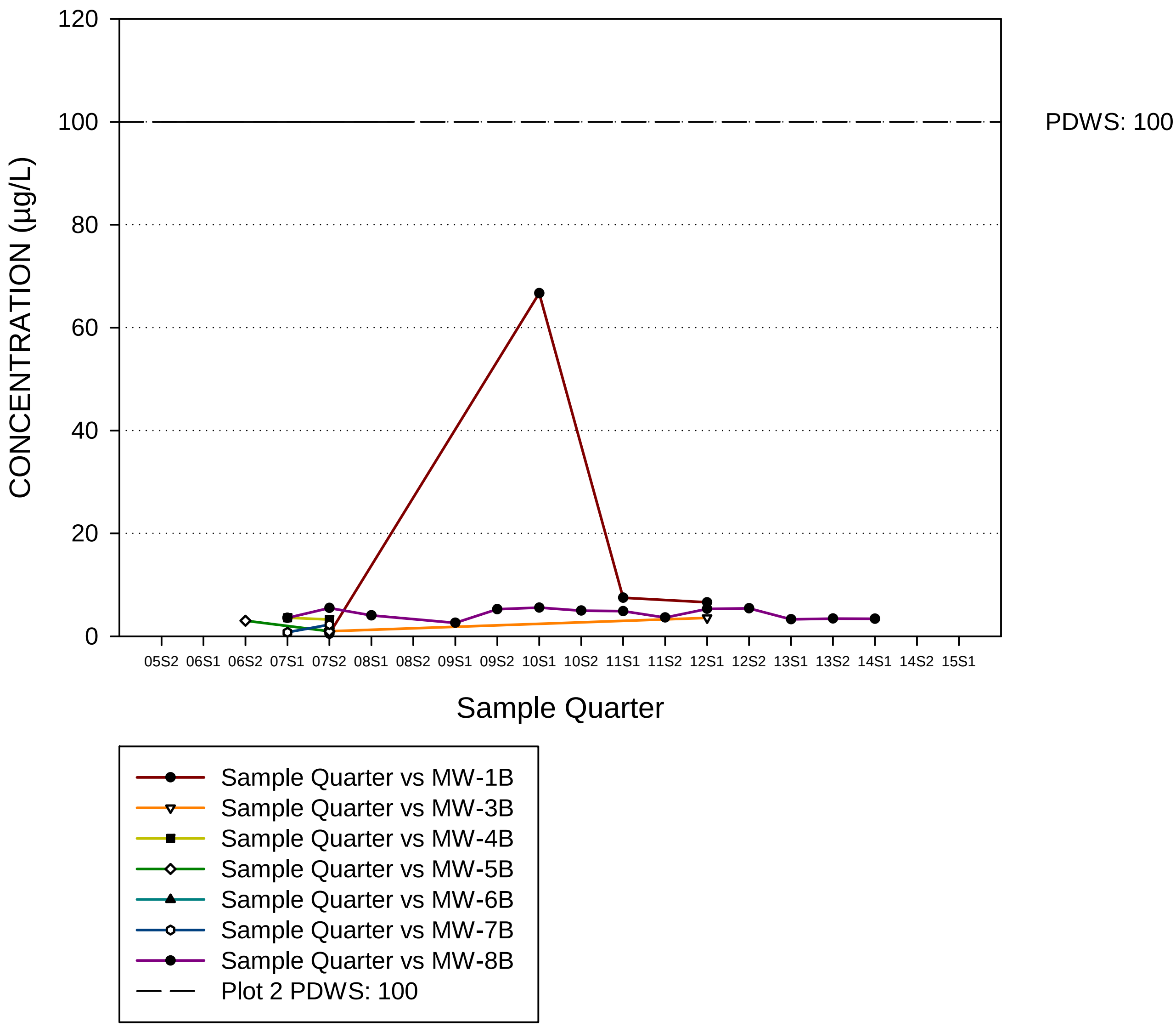
FLORIDAN AQUIFER




NICKEL
FLORIDAN AQUIFER
120
100
80
60
40
20
0
PDWS: 100
CONCENTRATION (µg/L)
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 100

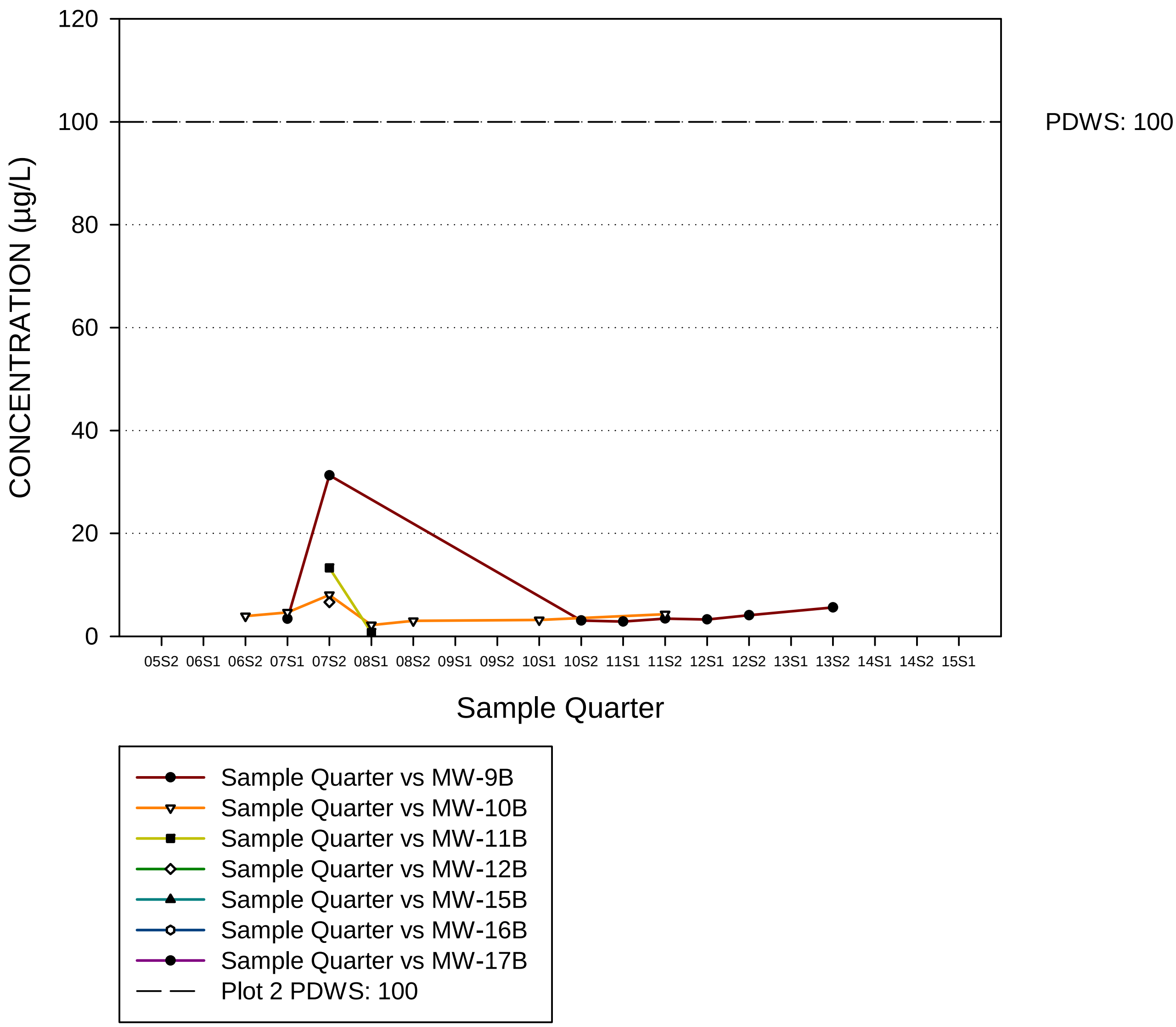
NICKEL

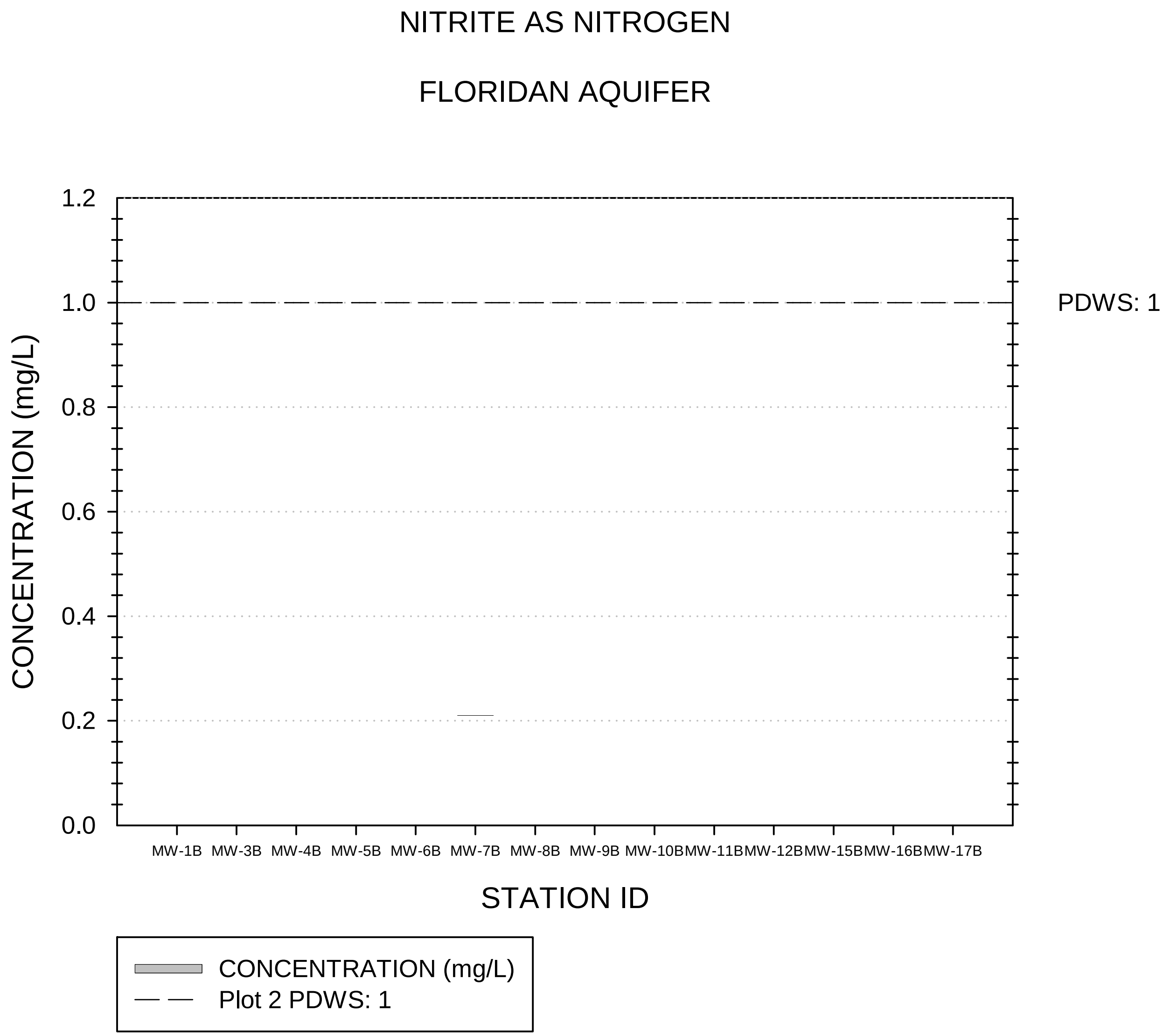
FLORIDAN AQUIFER

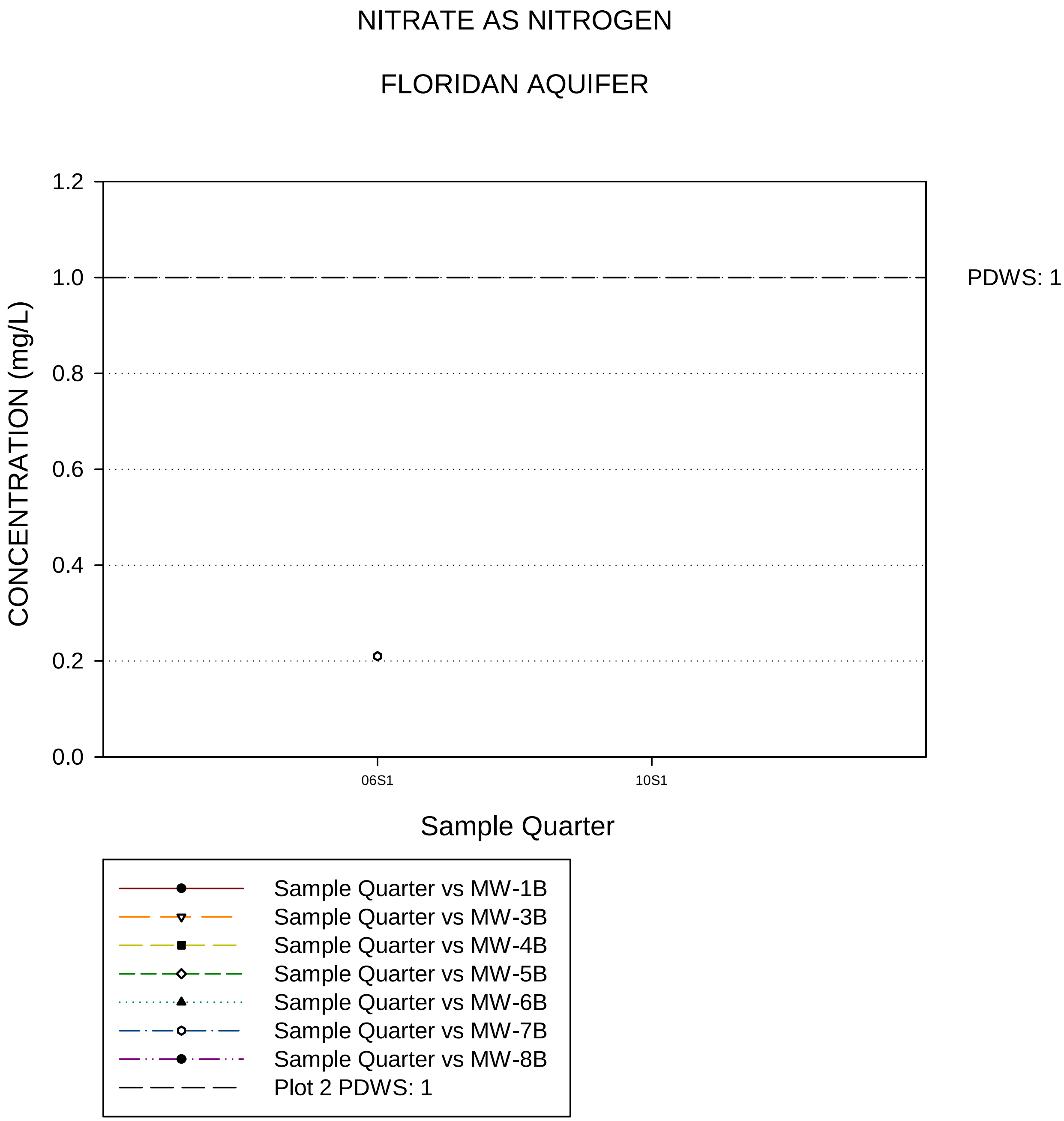


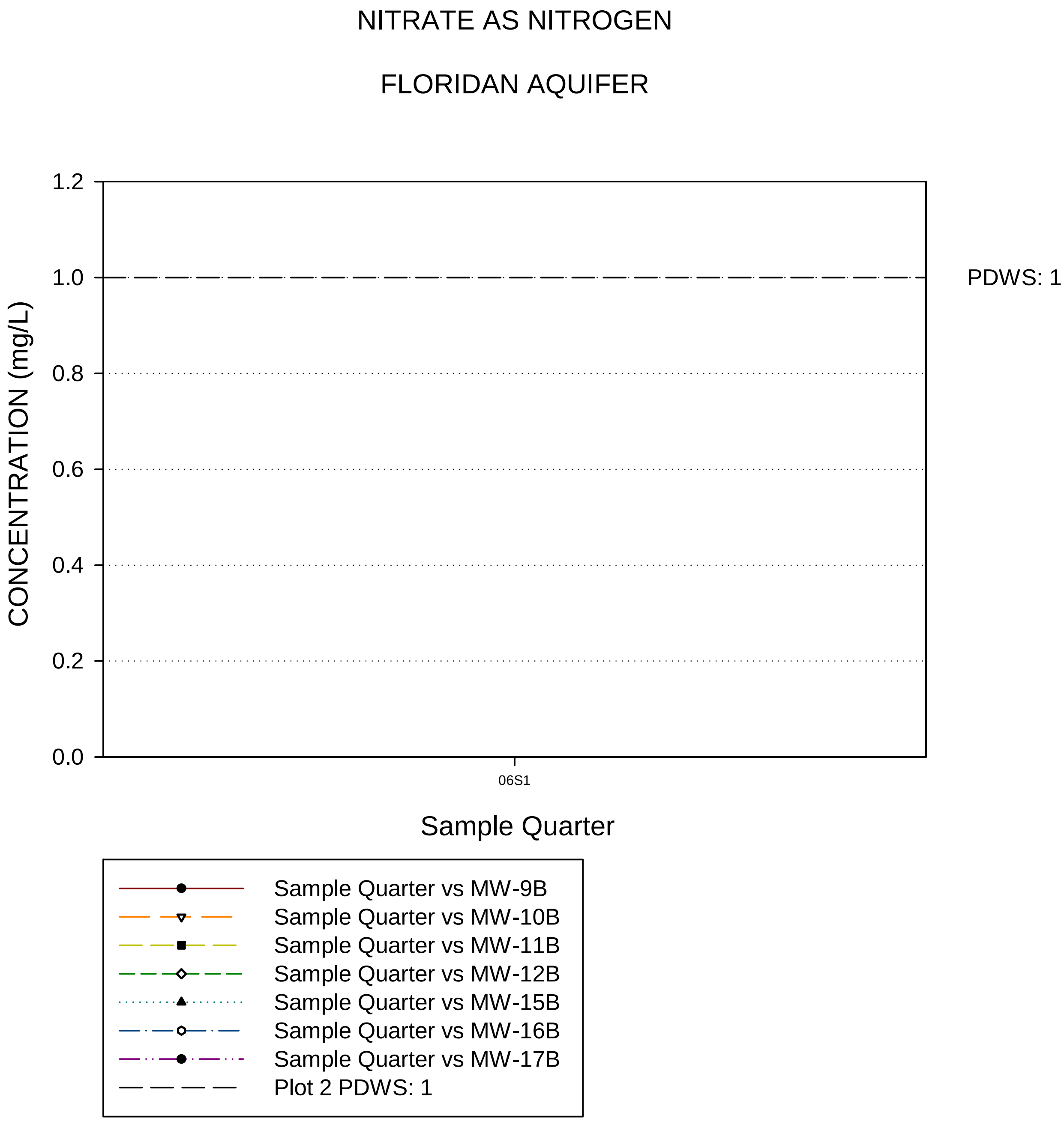
NICKEL

FLORIDAN AQUIFER



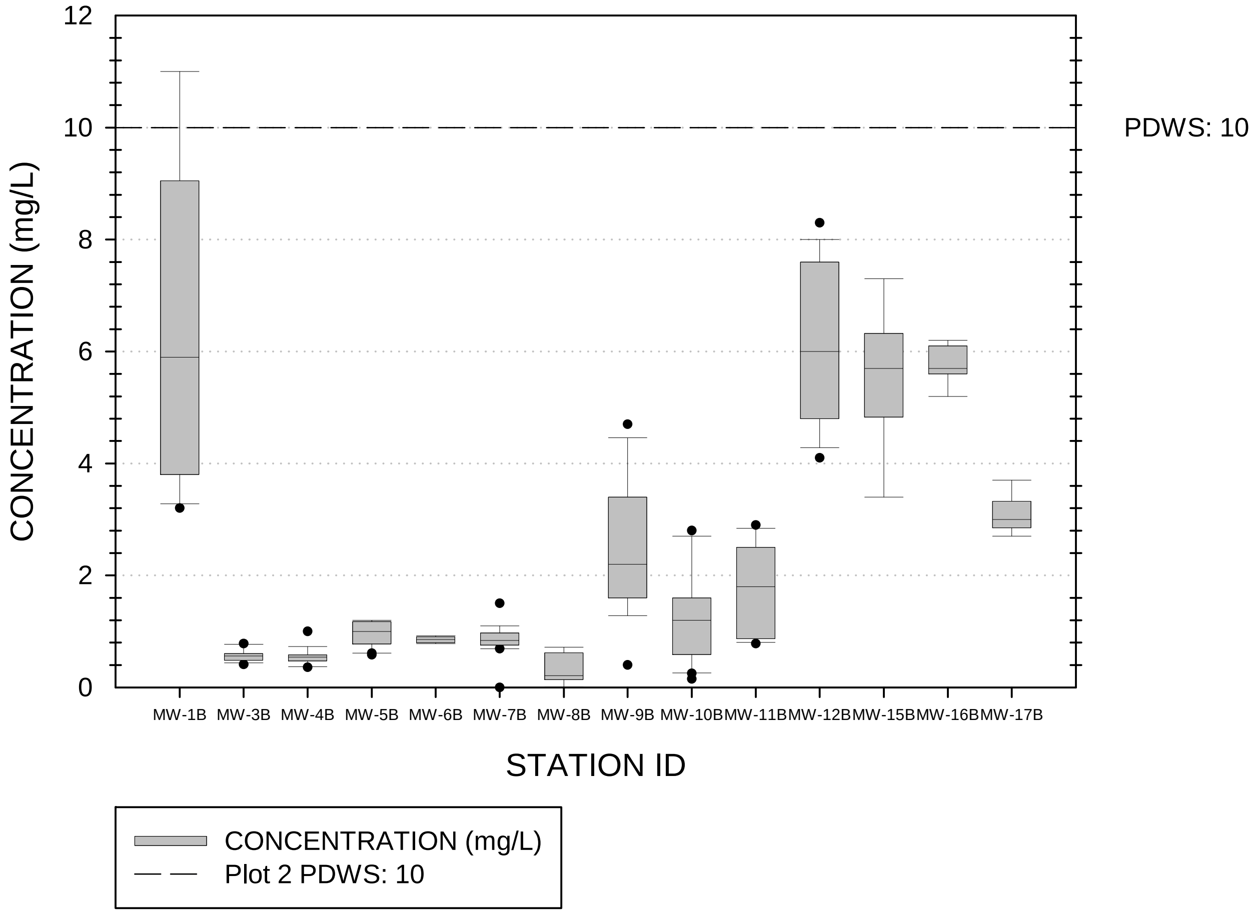

NITRITE AS NITROGEN
FLORIDAN AQUIFER
1.2
1.0
0.8
0.6
0.4
0.2
0.0
CONCENTRATION (mg/L)
PDWS: 1
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
CONCENTRATION (mg/L)
Plot 2 PDWS: 1


NITRATE AS NITROGEN
FLORIDAN AQUIFER
CONCENTRATION (mg/L)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
PDWS: 1
06S1
10S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 1


NITRATE AS NITROGEN
FLORIDAN AQUIFER
CONCENTRATION (mg/L)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
PDWS: 1
06S1
Sample Quarter
Sample Quarter vs MW-9B
Sample Quarter vs MW-10B
Sample Quarter vs MW-11B
Sample Quarter vs MW-12B
Sample Quarter vs MW-15B
Sample Quarter vs MW-16B
Sample Quarter vs MW-17B
Plot 2 PDWS: 1

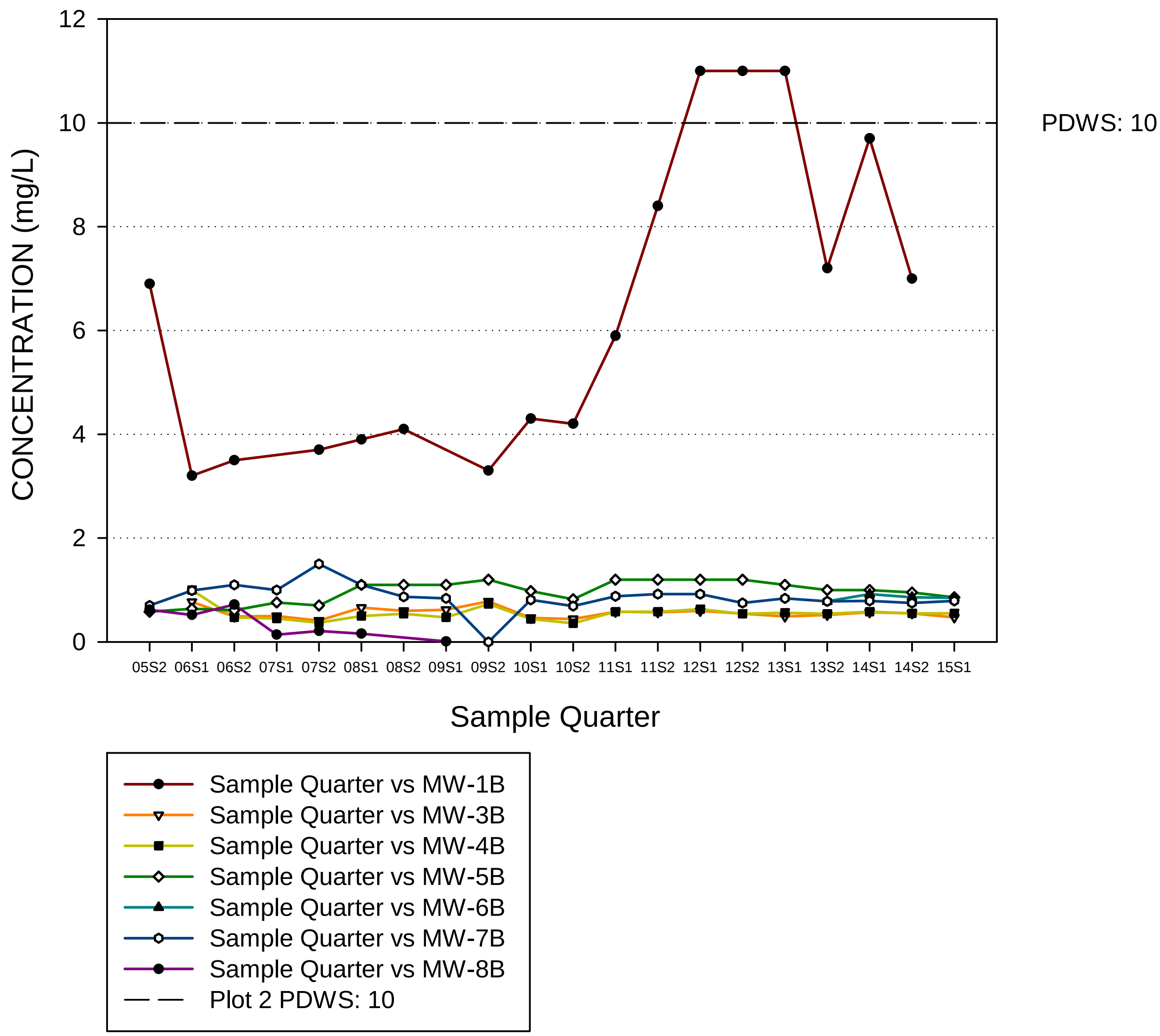
NITRATE AS NITROGEN

FLORIDAN AQUIFER



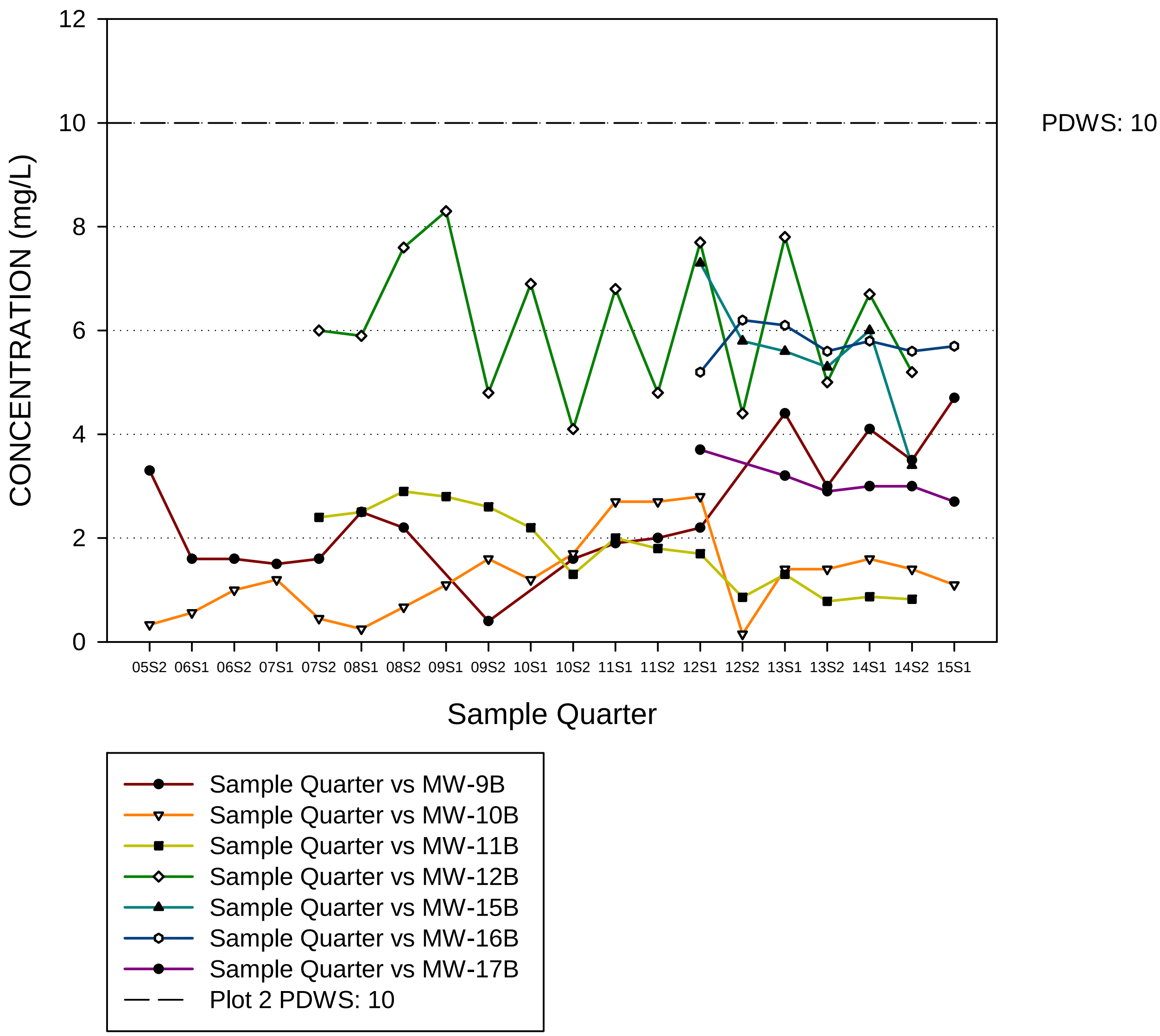
NITRATE AS NITROGEN

FLORIDAN AQUIFER



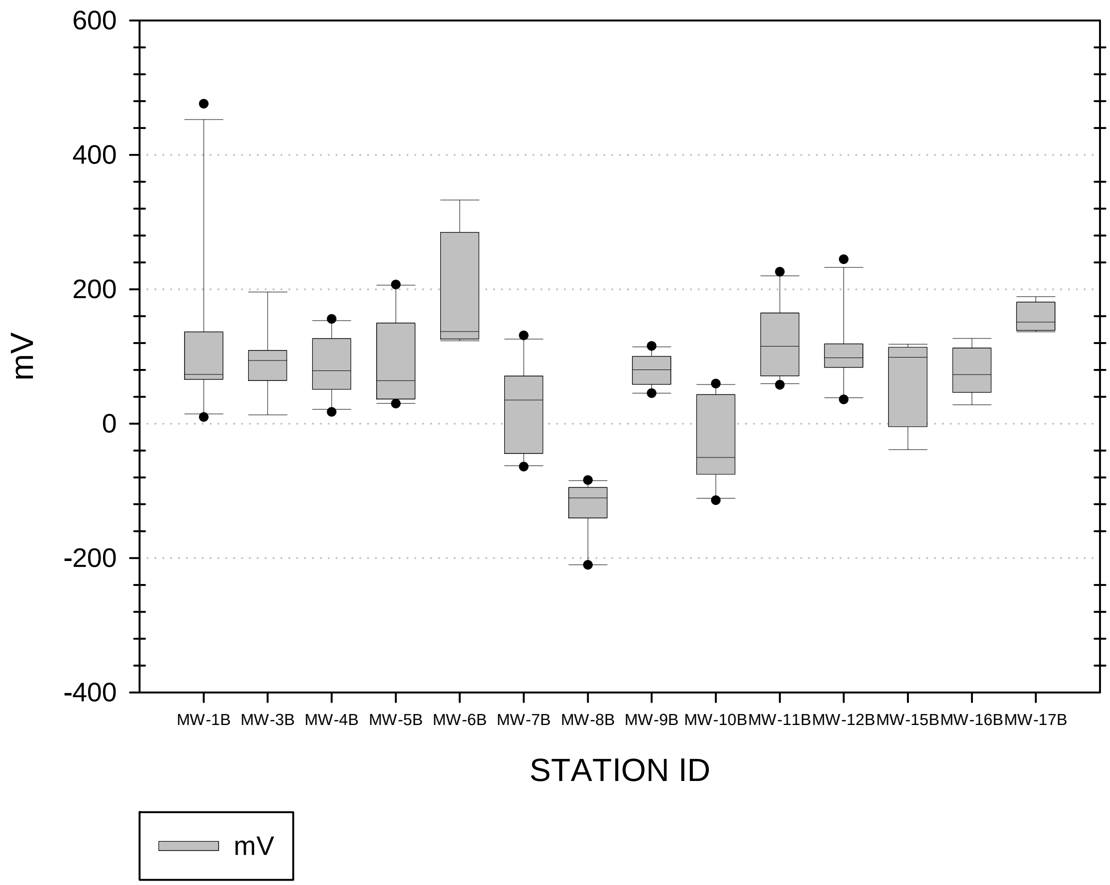
NITRATE AS NITROGEN

FLORIDAN AQUIFER



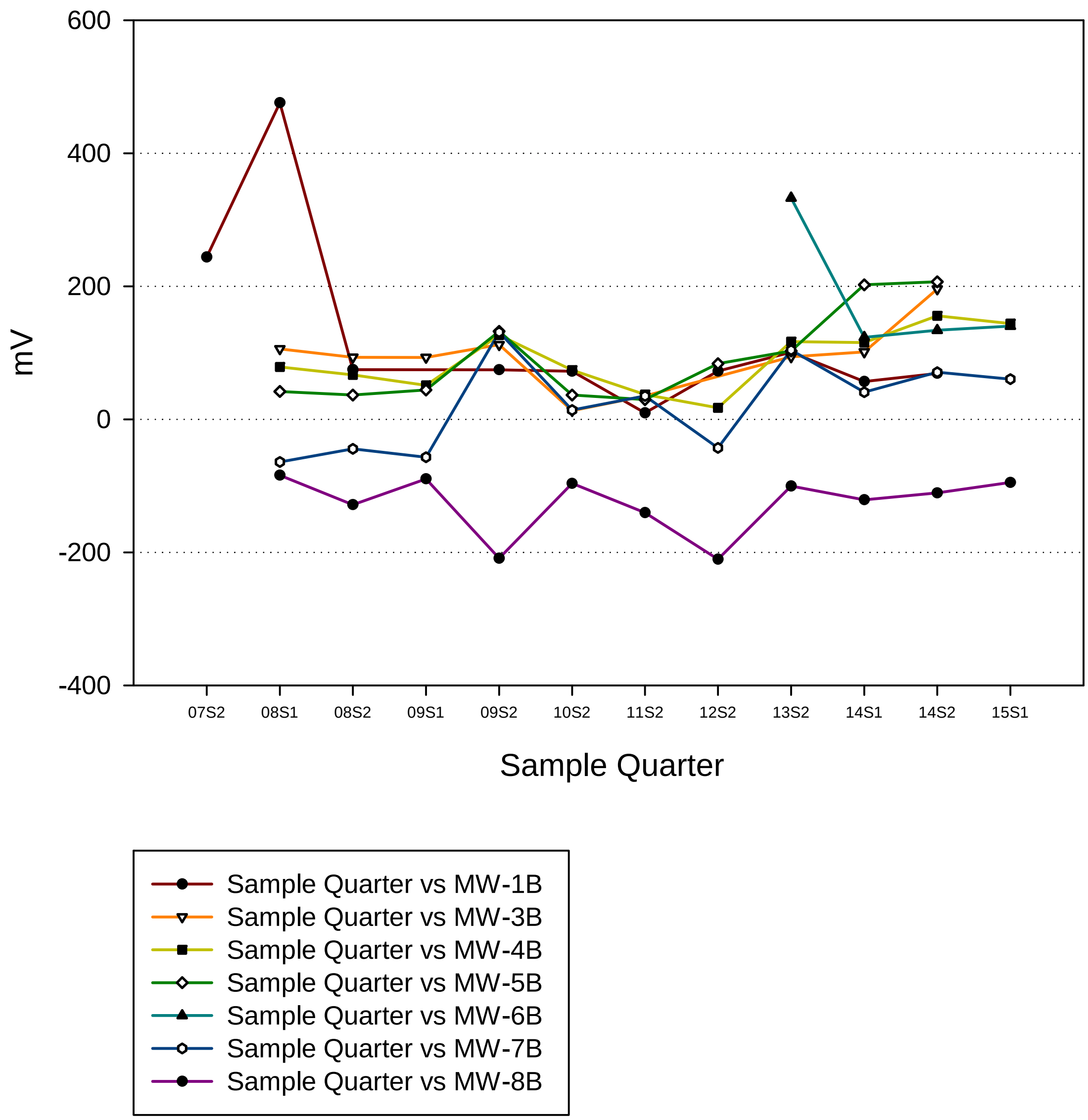
OXIDATION / REDUCTION POTENTIAL

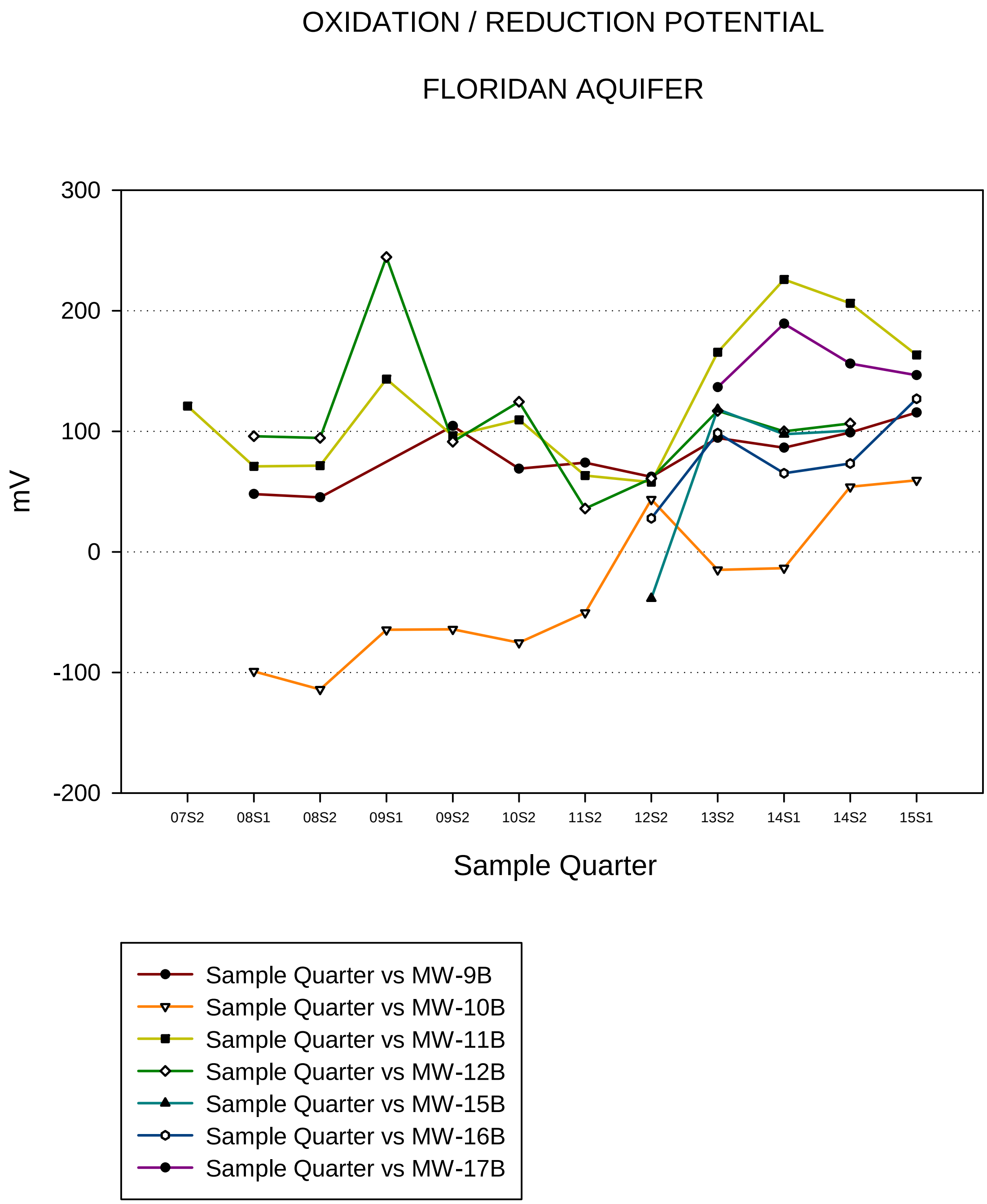
FLORIDAN AQUIFER



OXIDATION / REDUCTION POTENTIAL

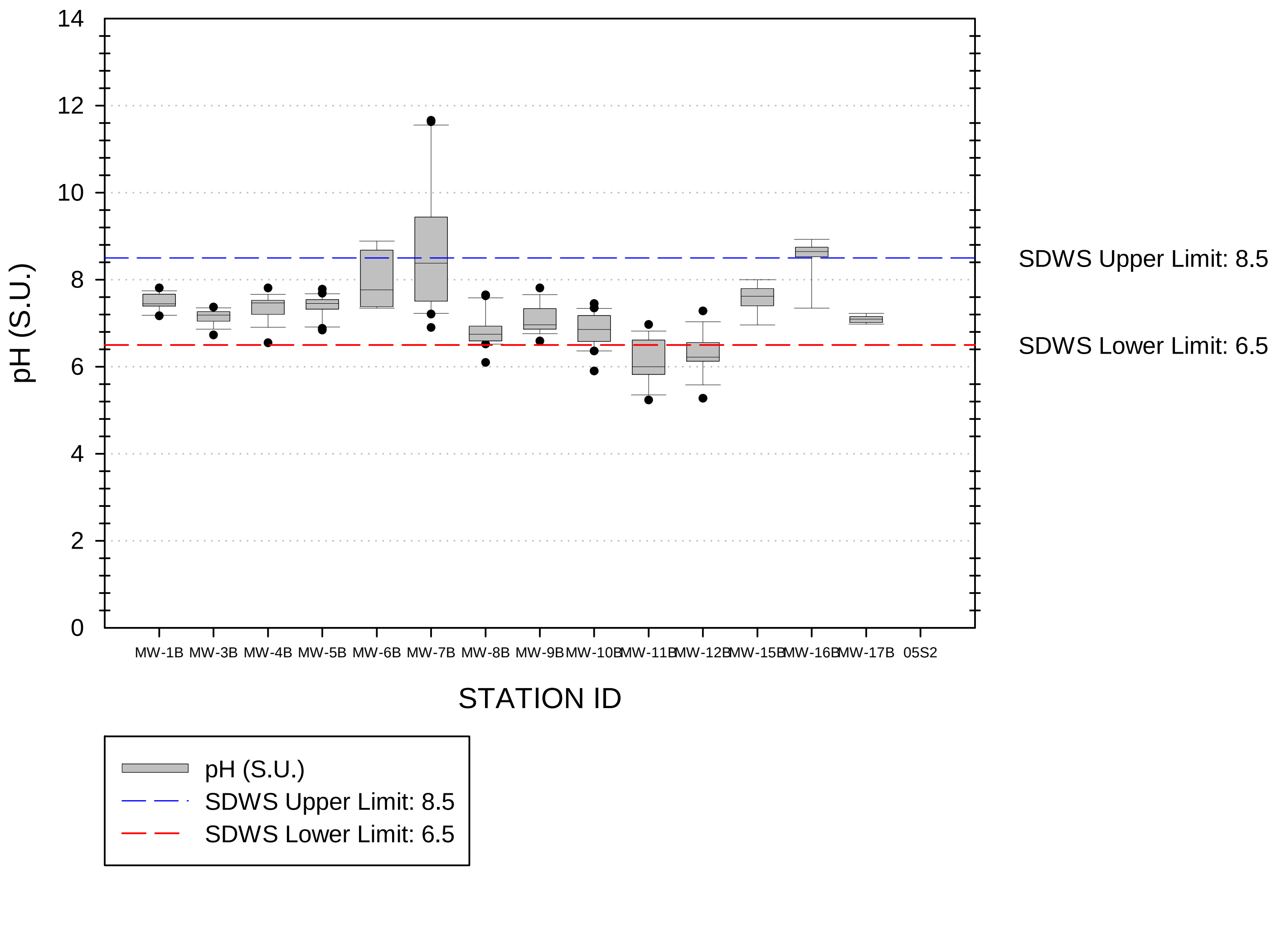
FLORIDAN AQUIFER

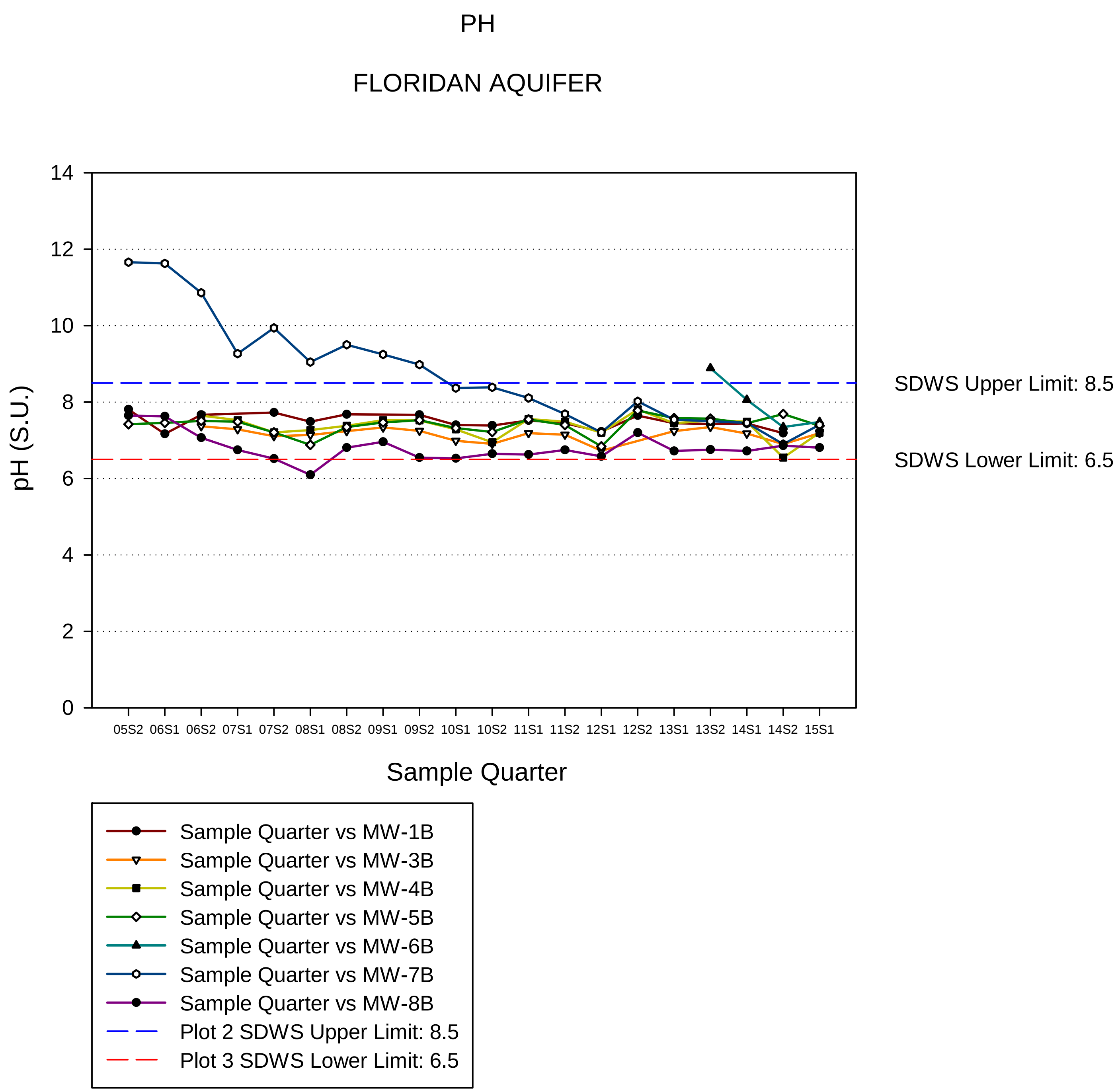



OXIDATION / REDUCTION POTENTIAL
FLORIDAN AQUIFER
300
200
100
0
-100
-200
mV
07S2
08S1
08S2
09S1
09S2
10S2
11S2
12S2
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-9B
Sample Quarter vs MW-10B
Sample Quarter vs MW-11B
Sample Quarter vs MW-12B
Sample Quarter vs MW-15B
Sample Quarter vs MW-16B
Sample Quarter vs MW-17B

PH

FLORIDAN AQUIFER

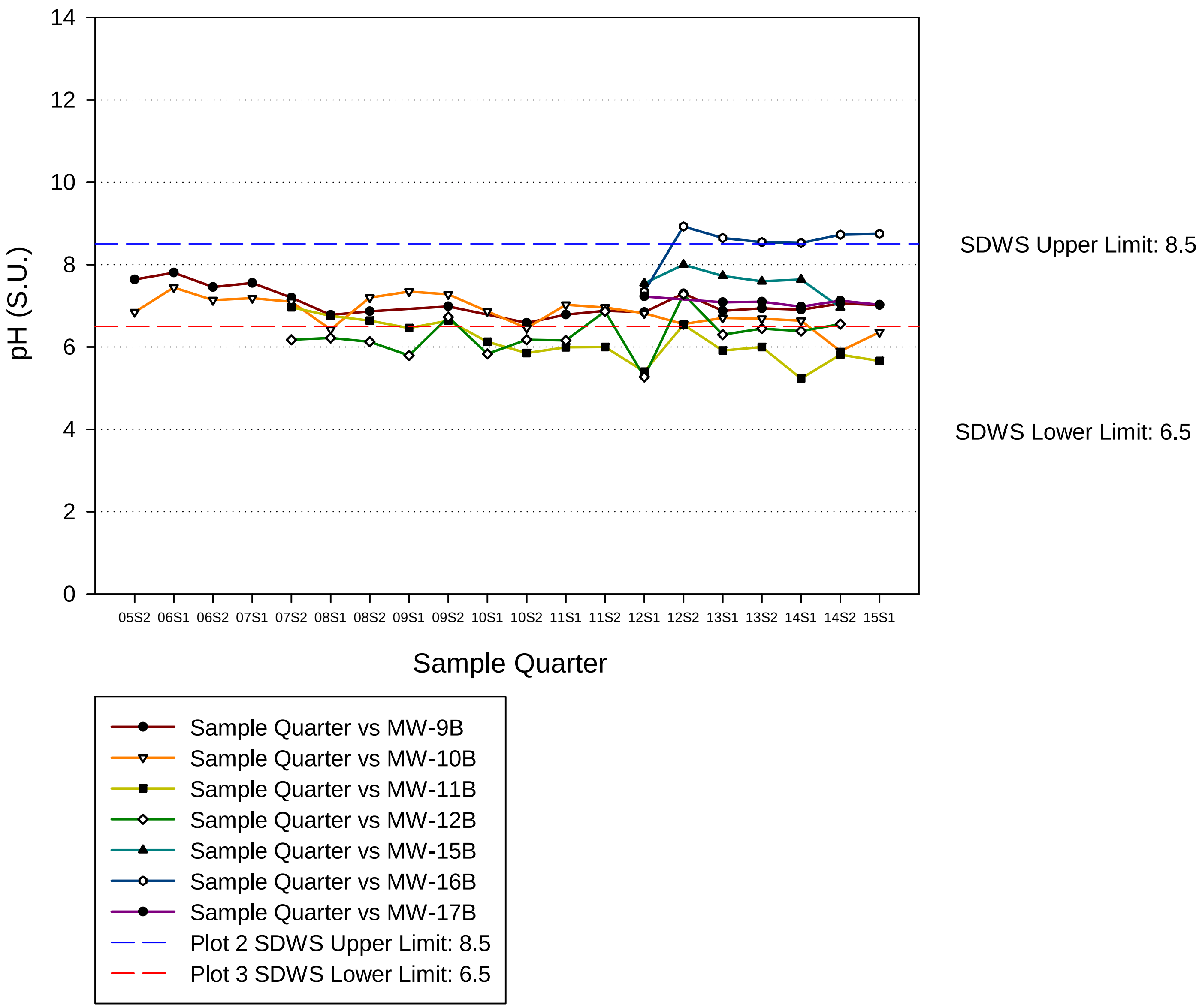




PH
FLORIDAN AQUIFER
pH (S.U.)
14
12
10
8
6
4
2
0
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
SDWS Upper Limit: 8.5
SDWS Lower Limit: 6.5
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 SDWS Upper Limit: 8.5
Plot 3 SDWS Lower Limit: 6.5

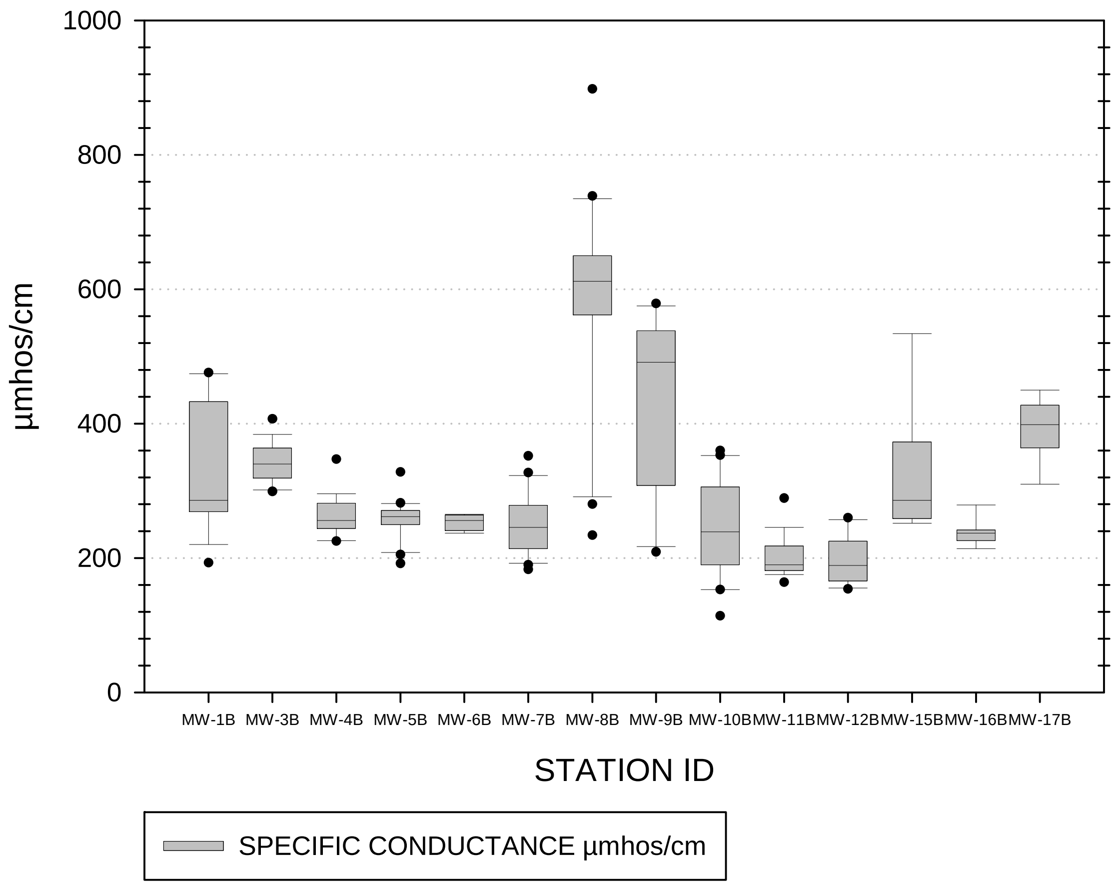
PH

FLORIDAN AQUIFER



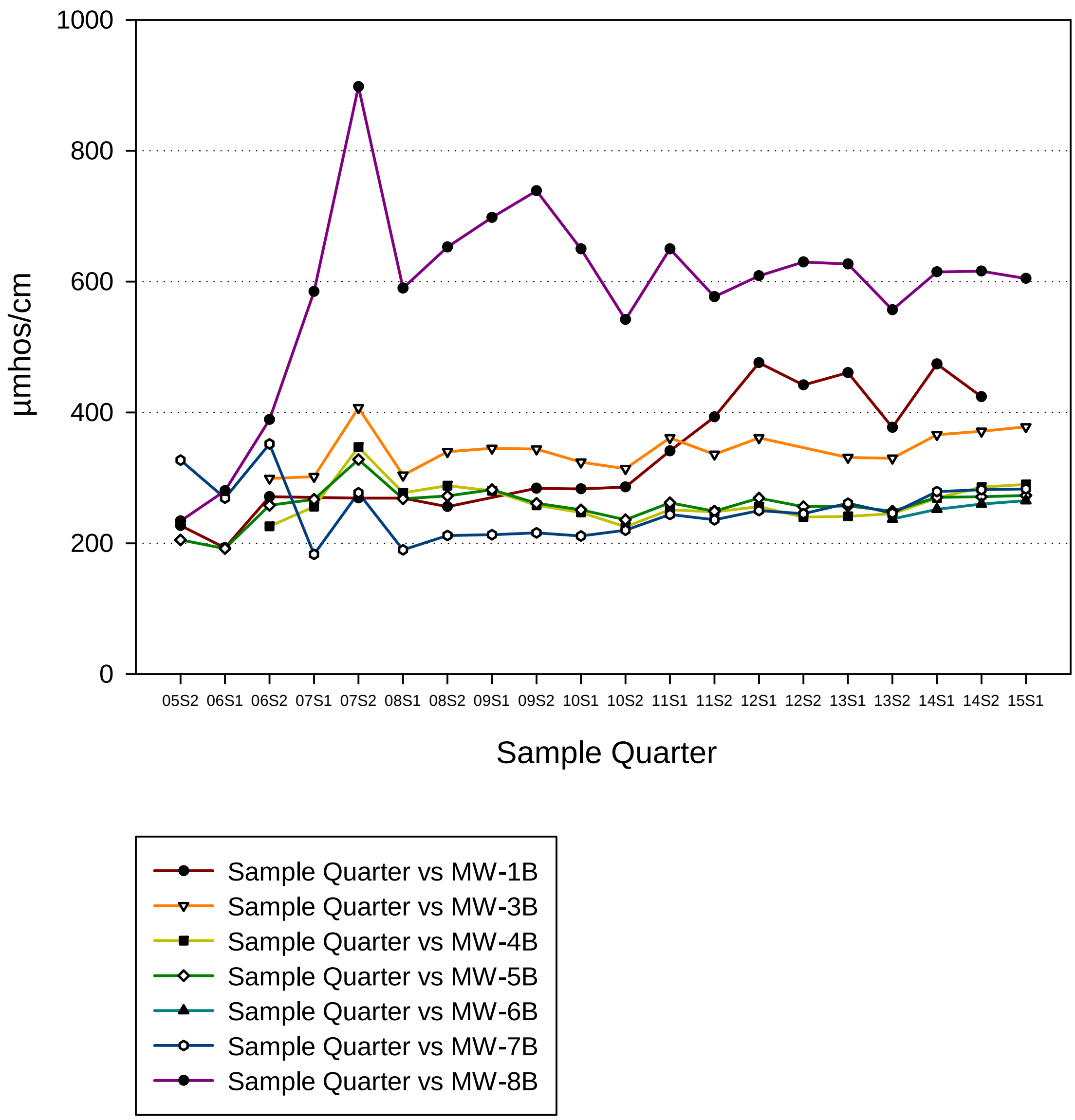
SPECIFIC CONDUCTANCE

FLORIDAN AQUIFER



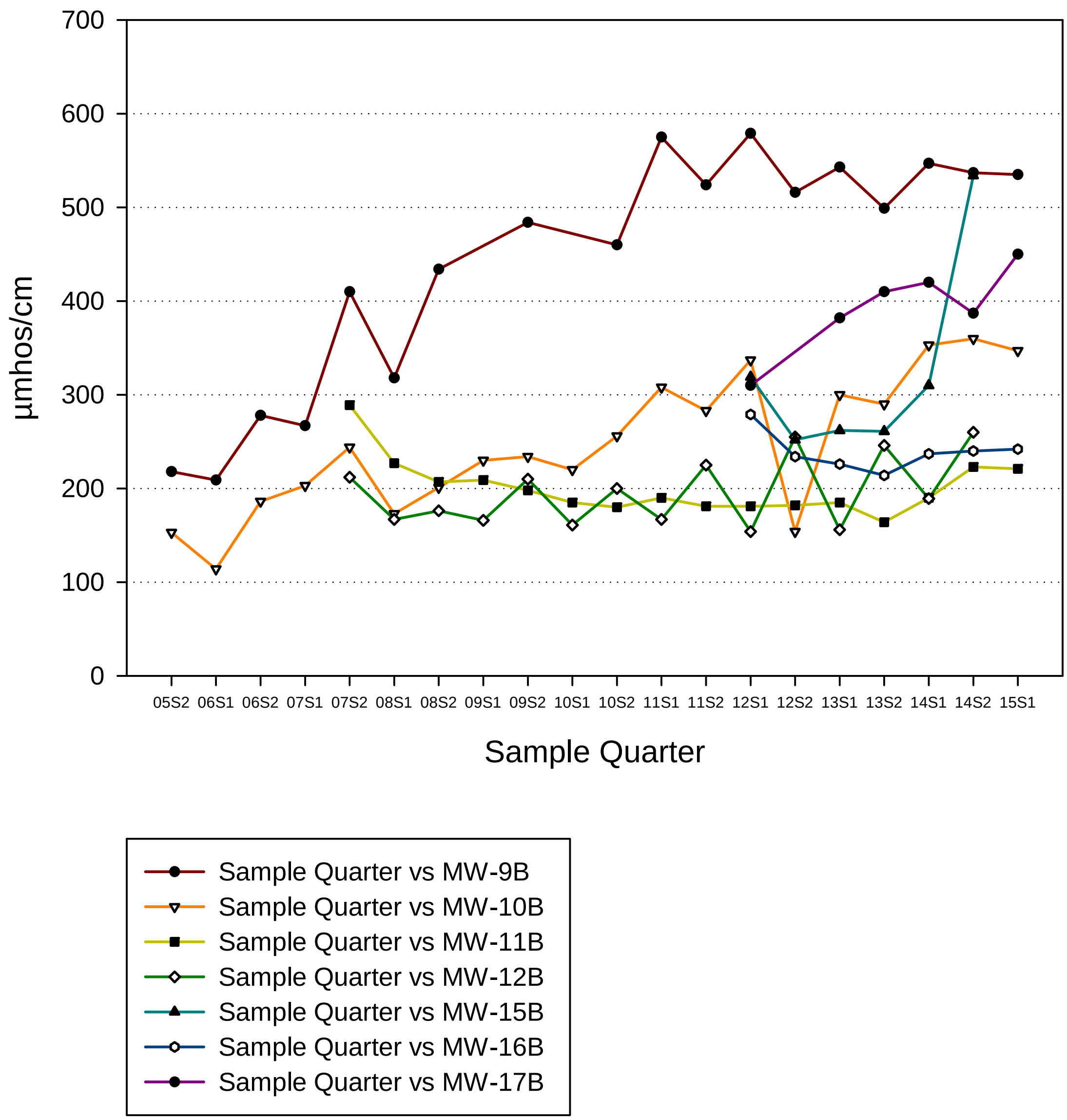
SPECIFIC CONDUCTANCE

FLORIDAN AQUIFER



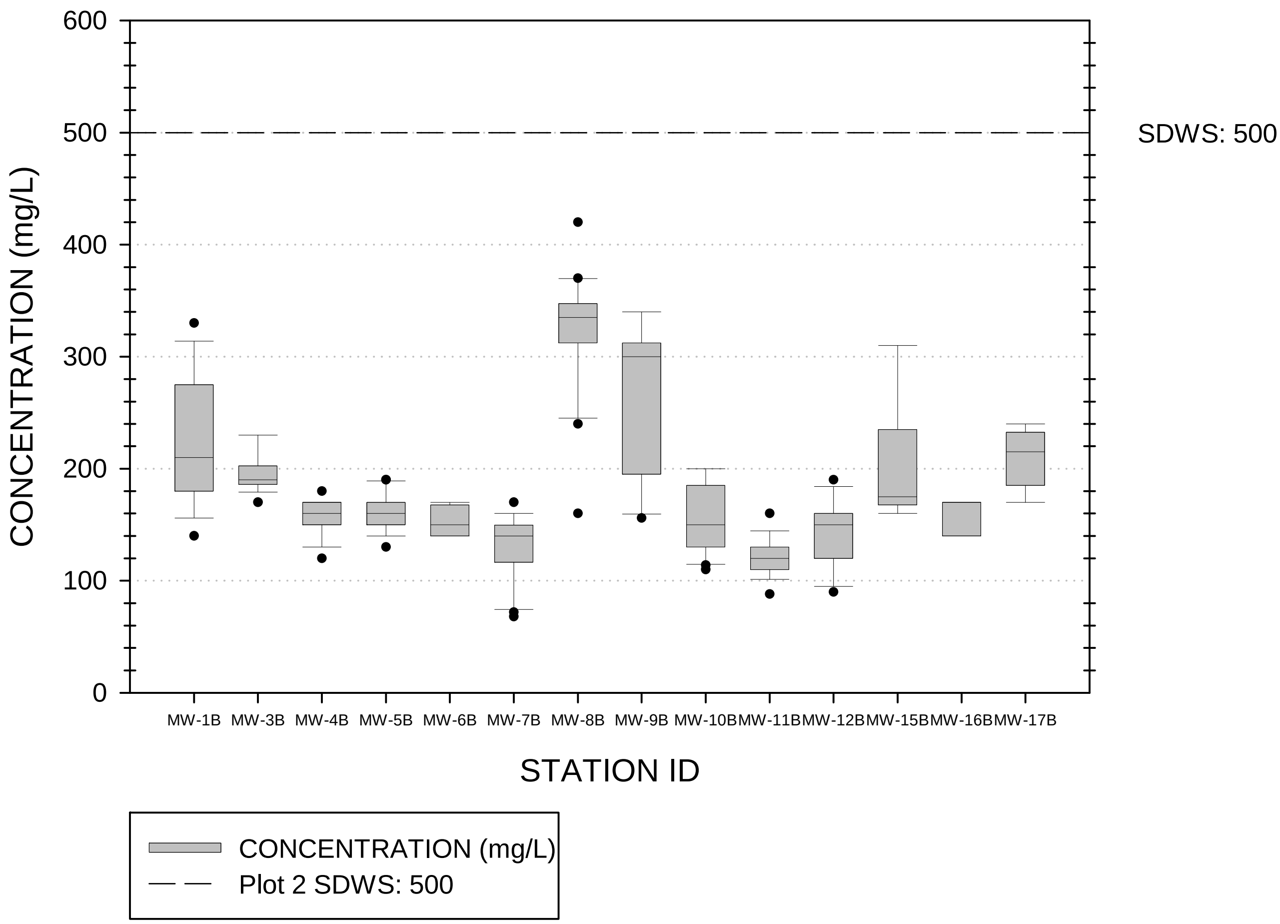
SPECIFIC CONDUCTANCE

FLORIDAN AQUIFER



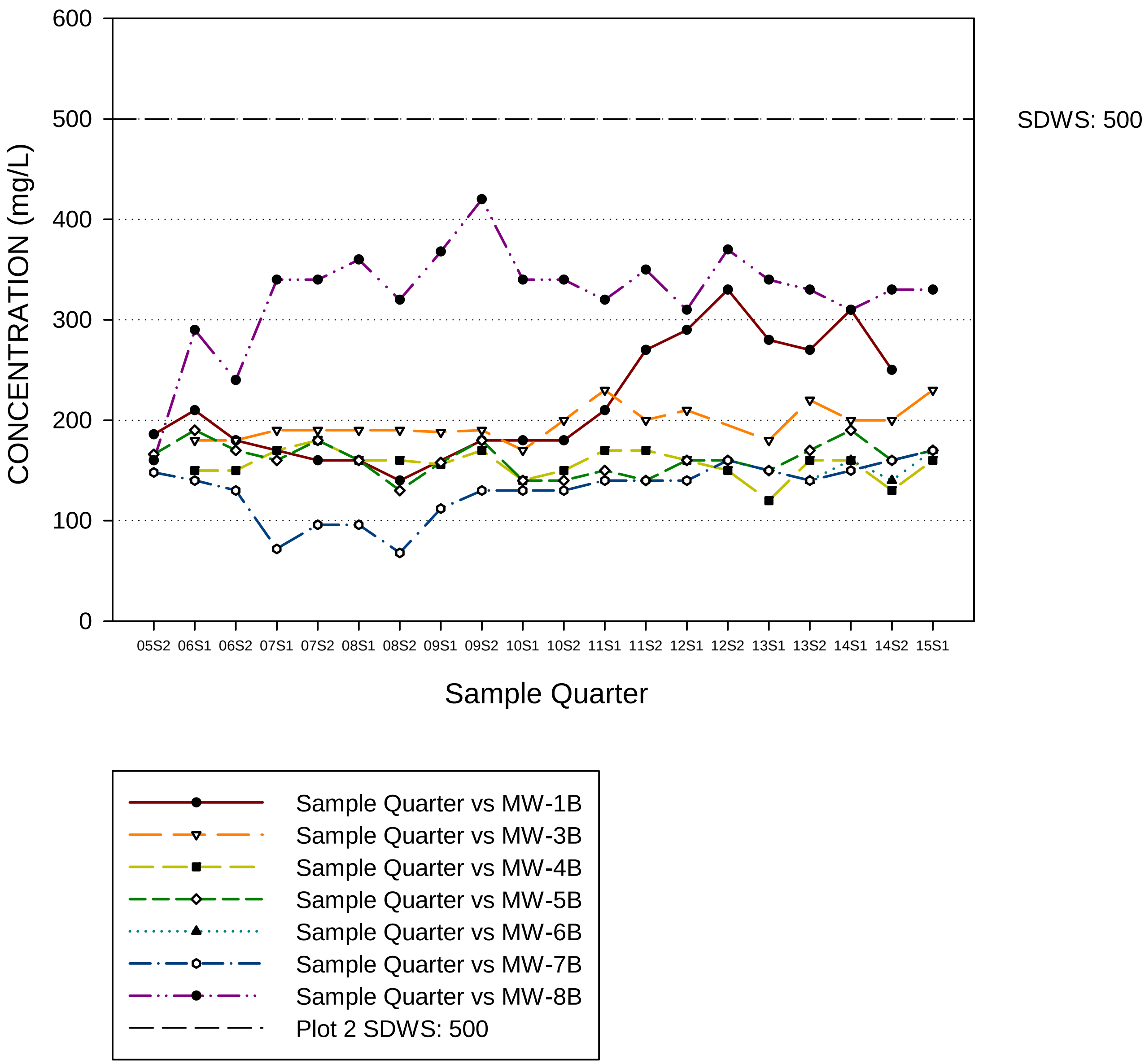
TOTAL DISSOLVED SOLIDS

FLORIDAN AQUIFER



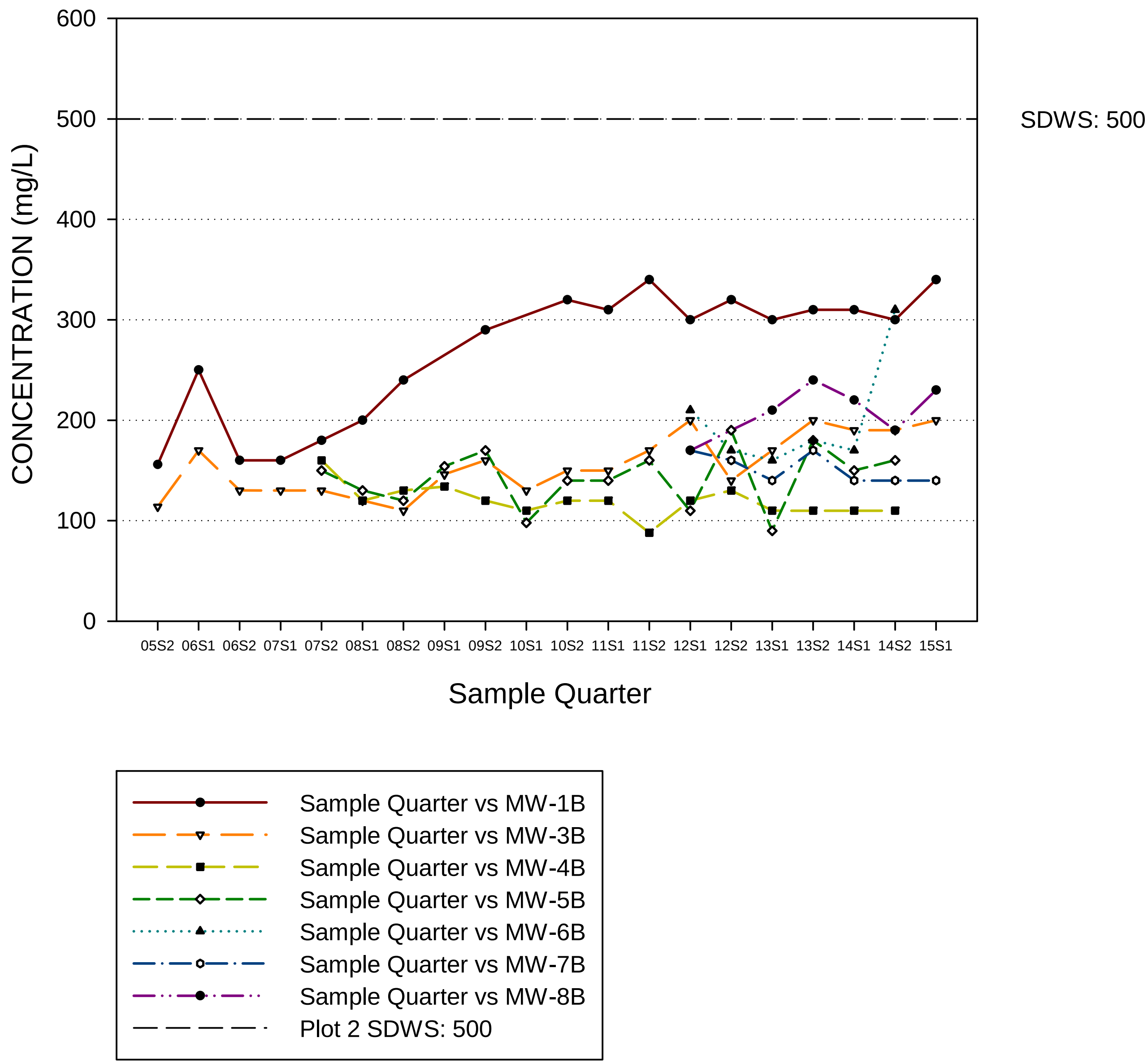
TOTAL DISSOLVED SOLIDS

FLORIDAN AQUIFER



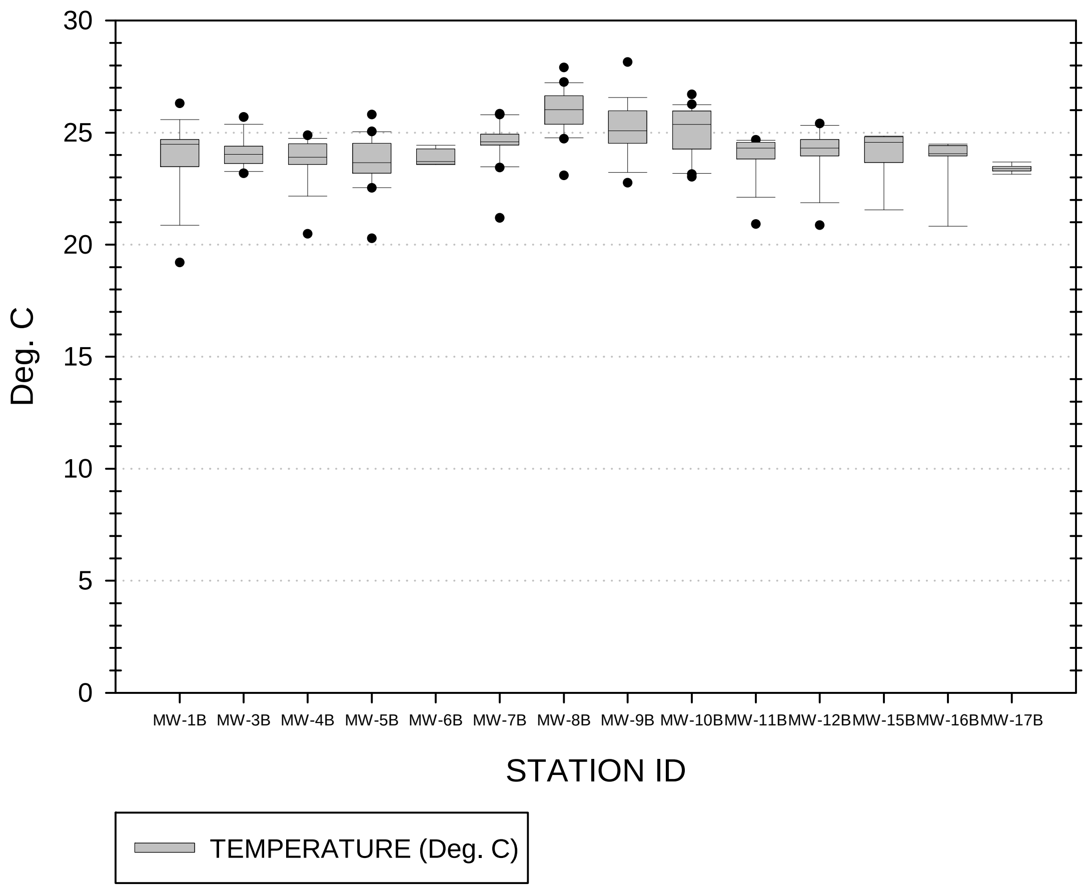
TOTAL DISSOLVED SOLIDS

FLORIDAN AQUIFER



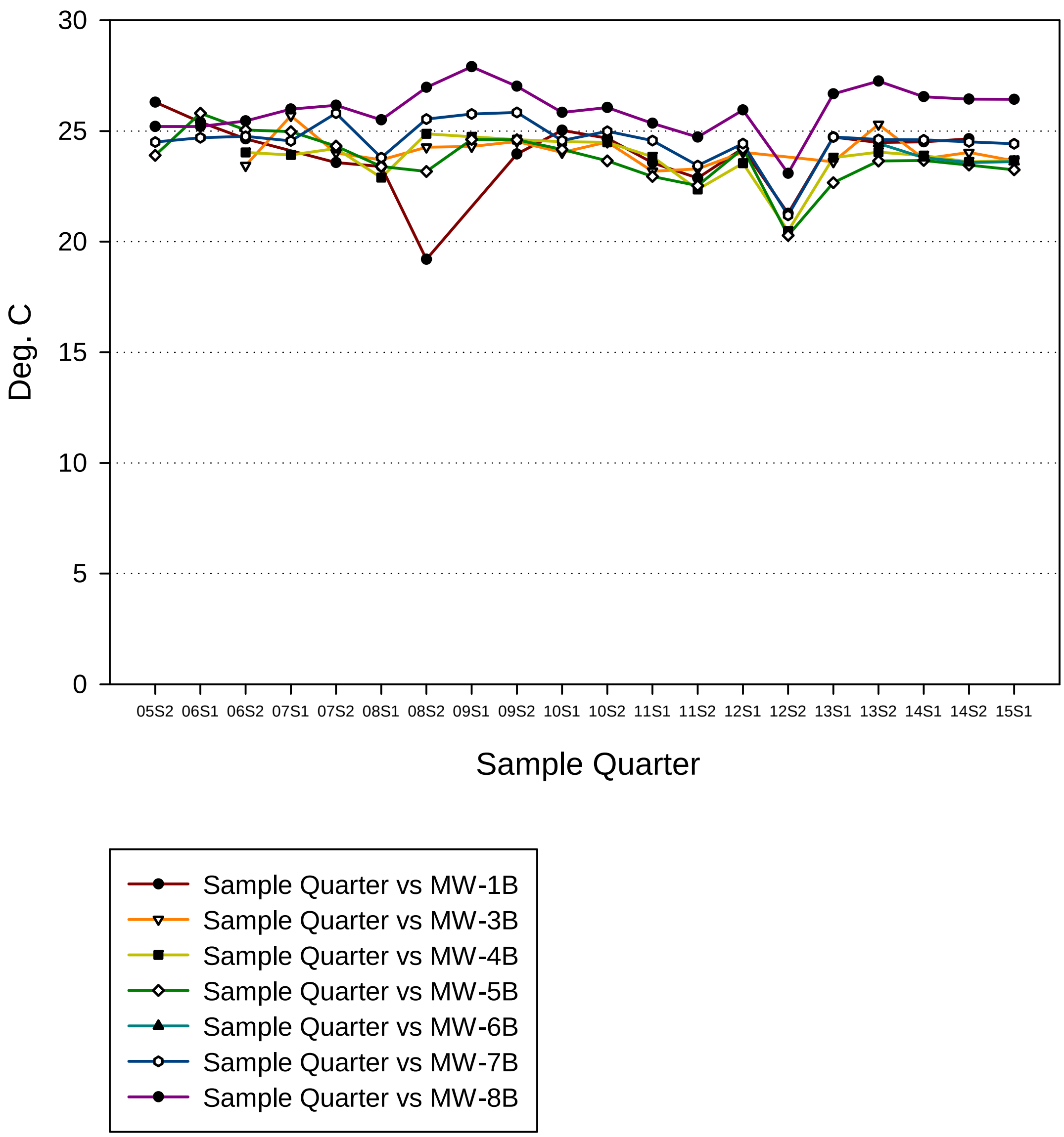
TEMPERATURE

FLORIDAN AQUIFER



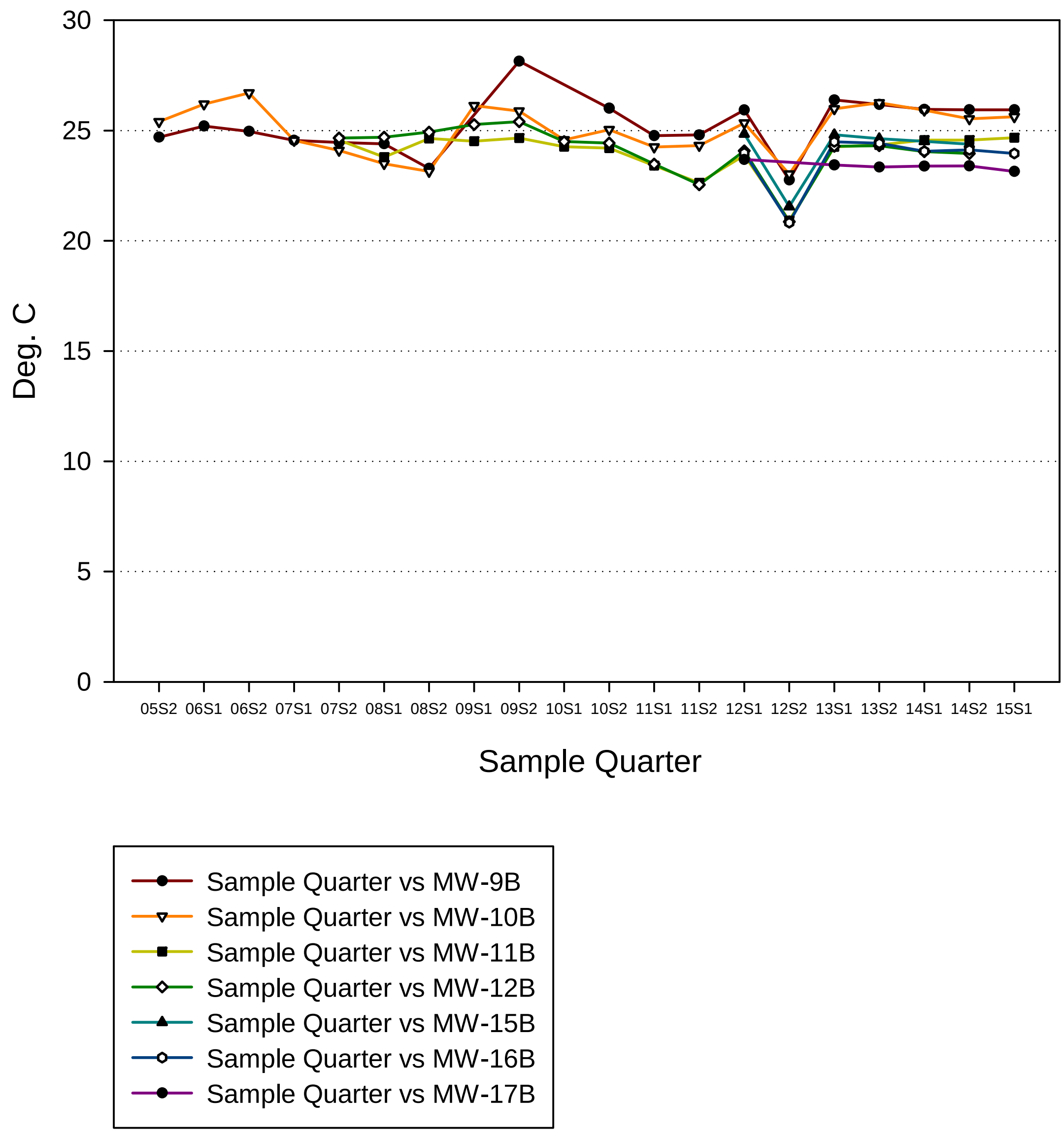
TEMPERATURE

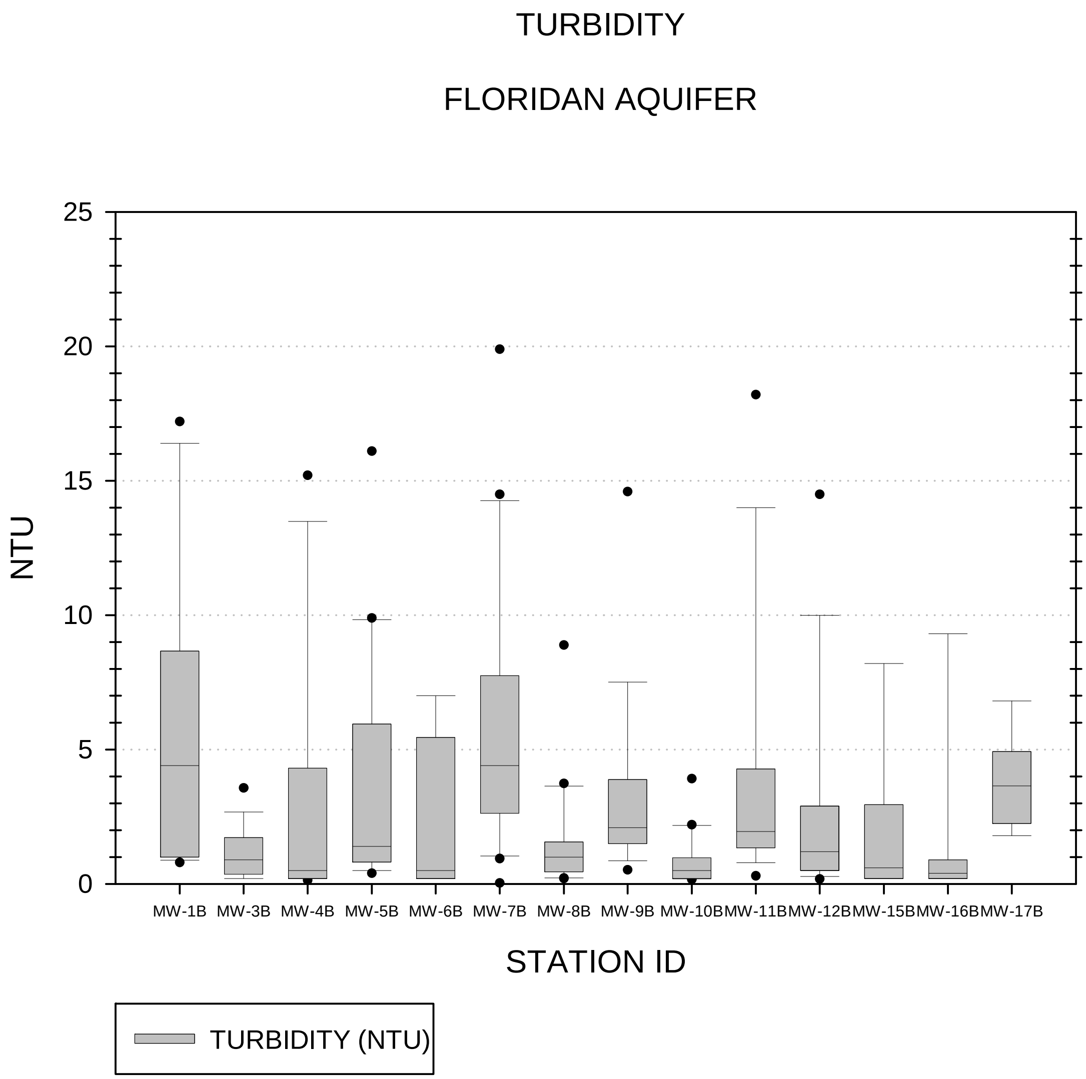
FLORIDAN AQUIFER

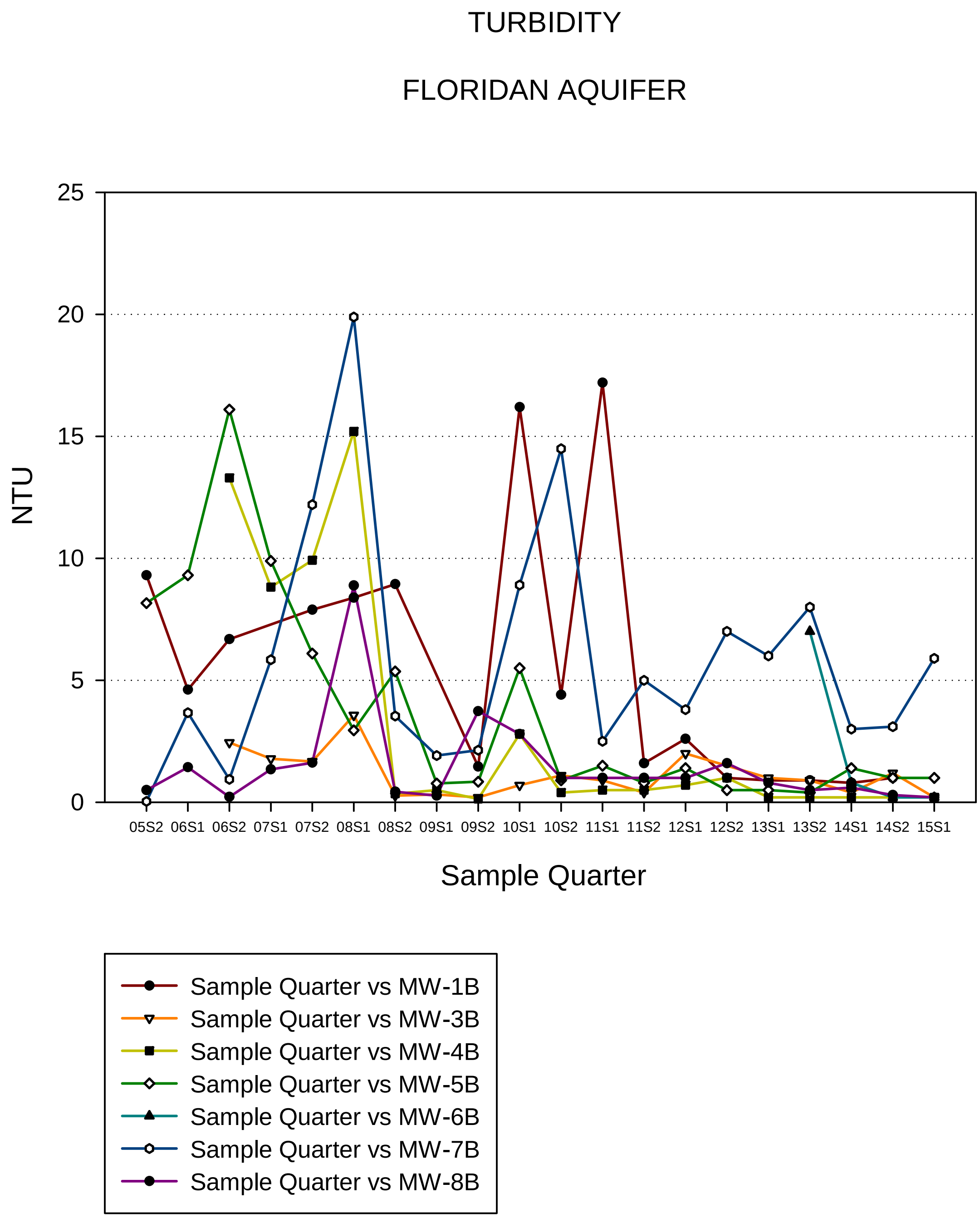


TEMPERATURE

FLORIDAN AQUIFER

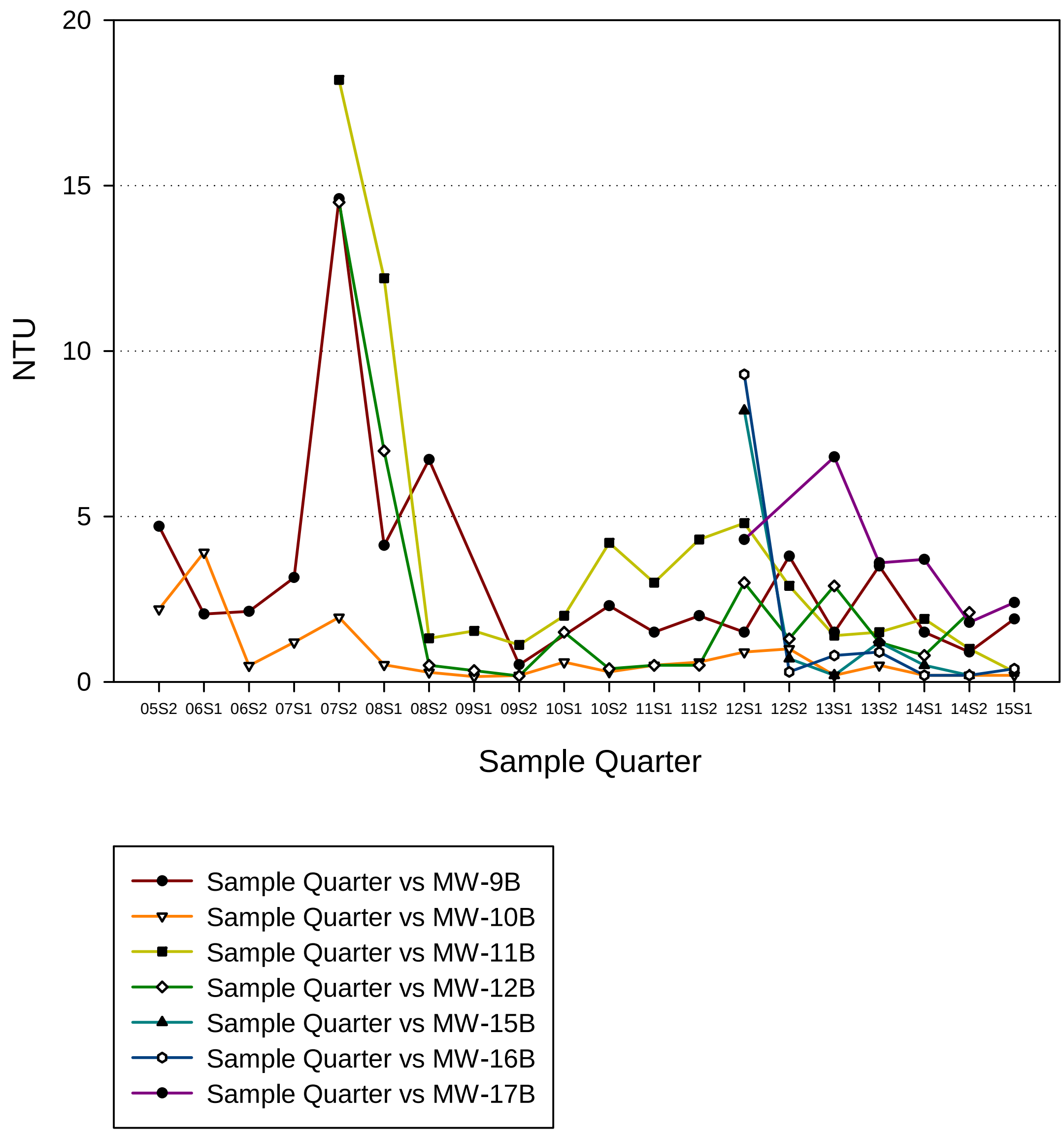


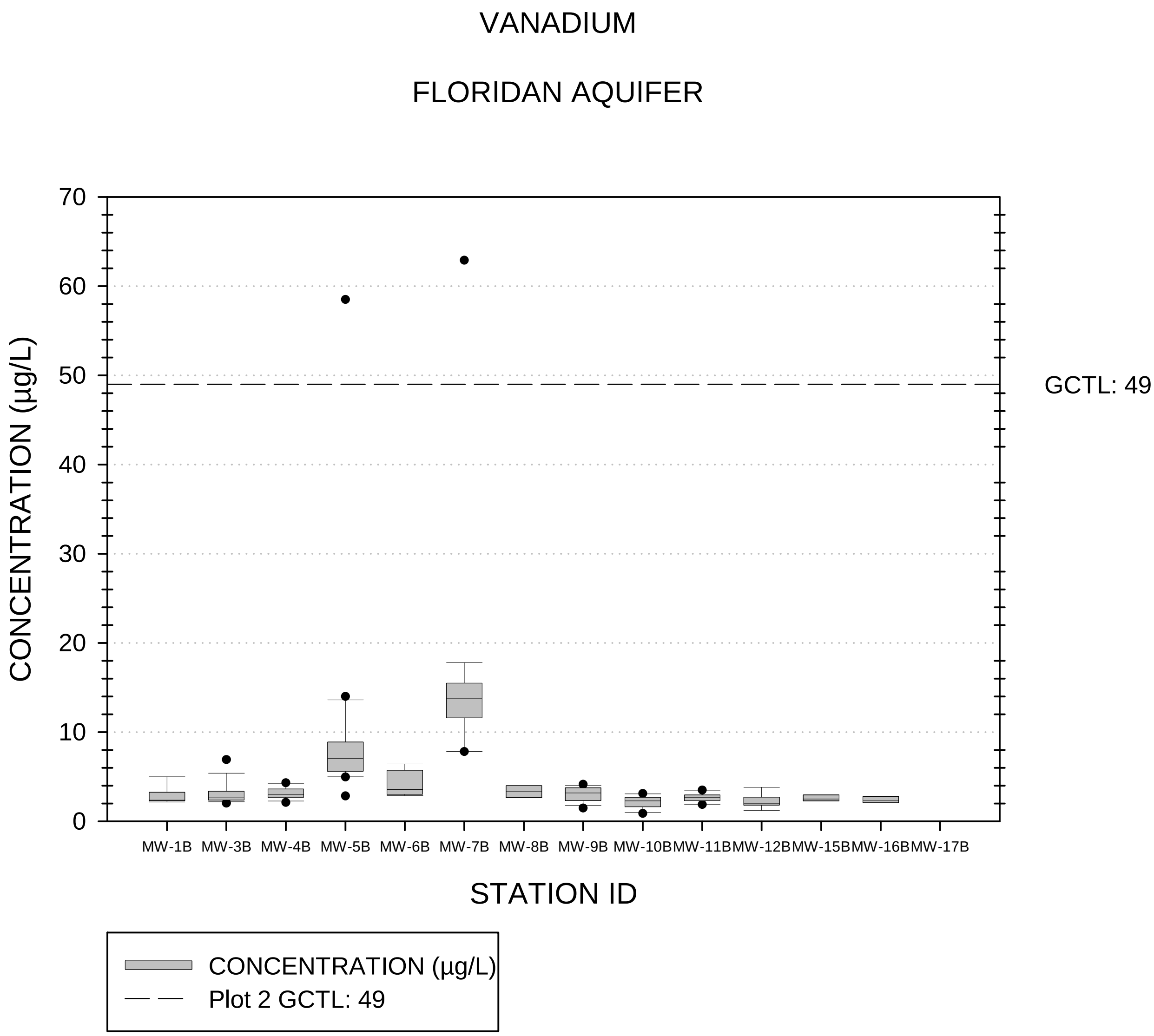

TURBIDITY
FLORIDAN AQUIFER
NTU
25
20
15
10
5
0
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
TURBIDITY (NTU)

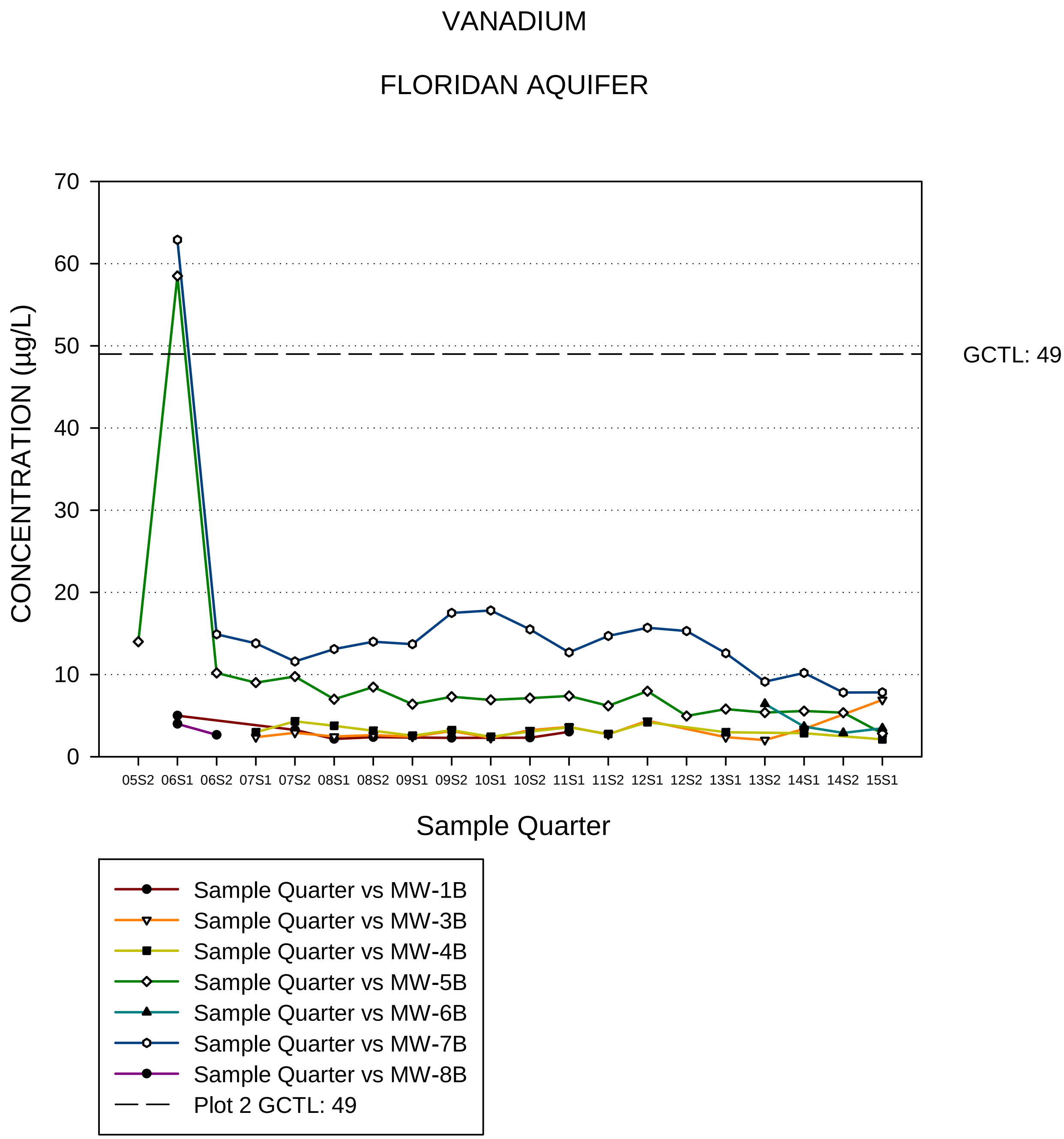

TURBIDITY
FLORIDAN AQUIFER
NTU
25
20
15
10
5
0
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B

TURBIDITY

FLORIDAN AQUIFER



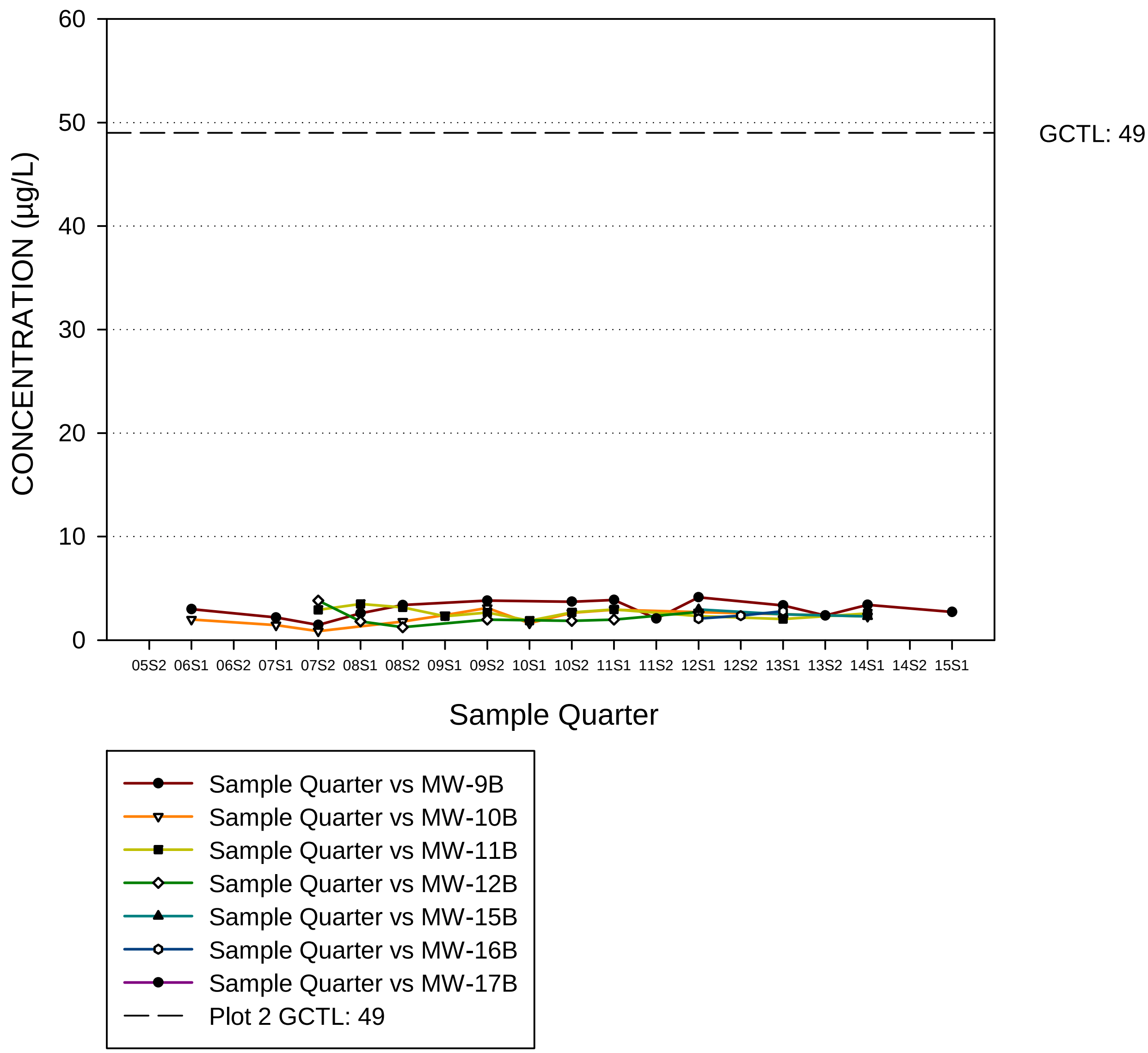

VANADIUM
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
70
60
50
40
30
20
10
0
GCTL: 49
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
CONCENTRATION (µg/L)
Plot 2 GCTL: 49



VANADIUM
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
0
10
20
30
40
50
60
70
GCTL: 49
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 GCTL: 49

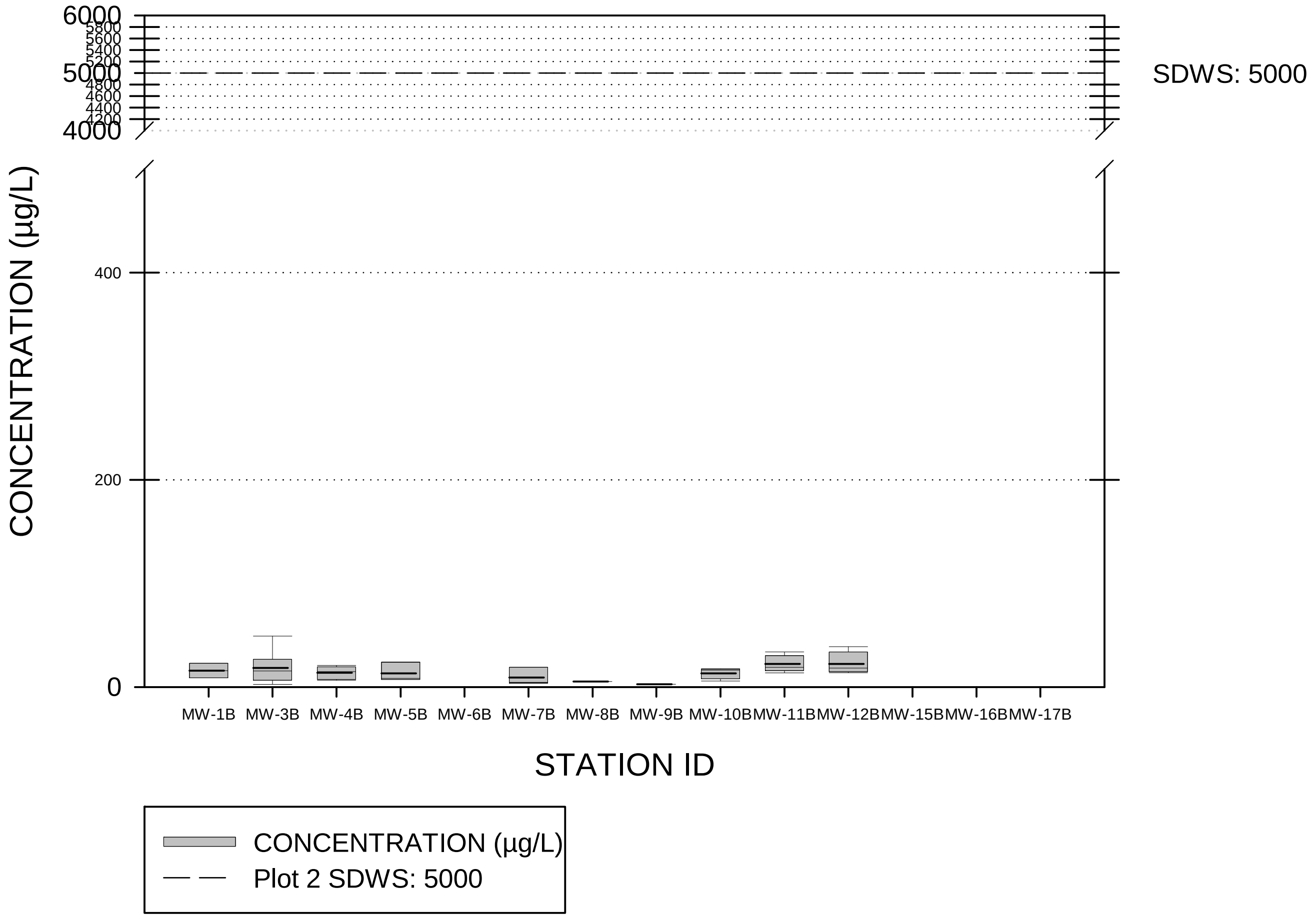
VANADIUM

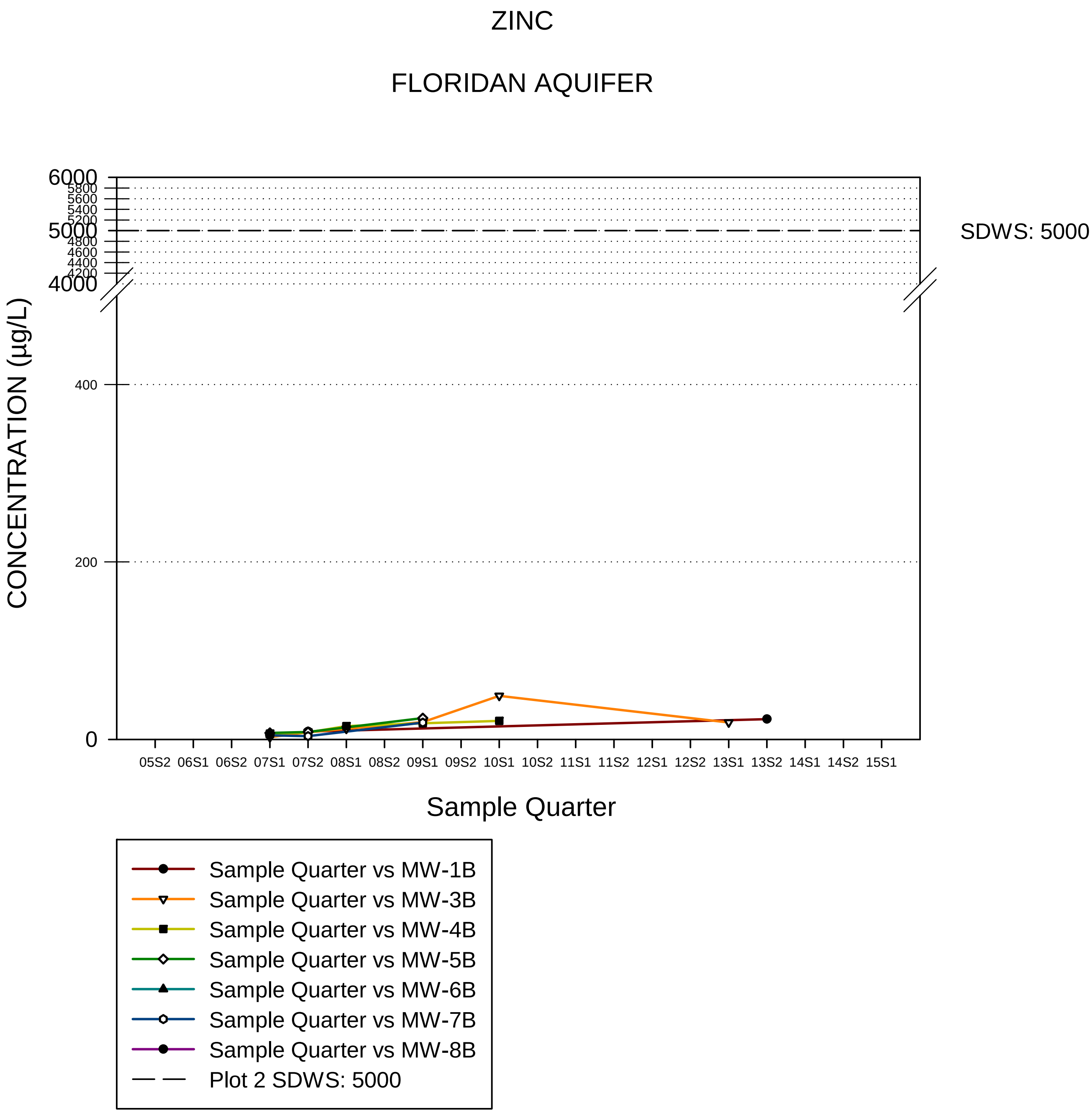
FLORIDAN AQUIFER



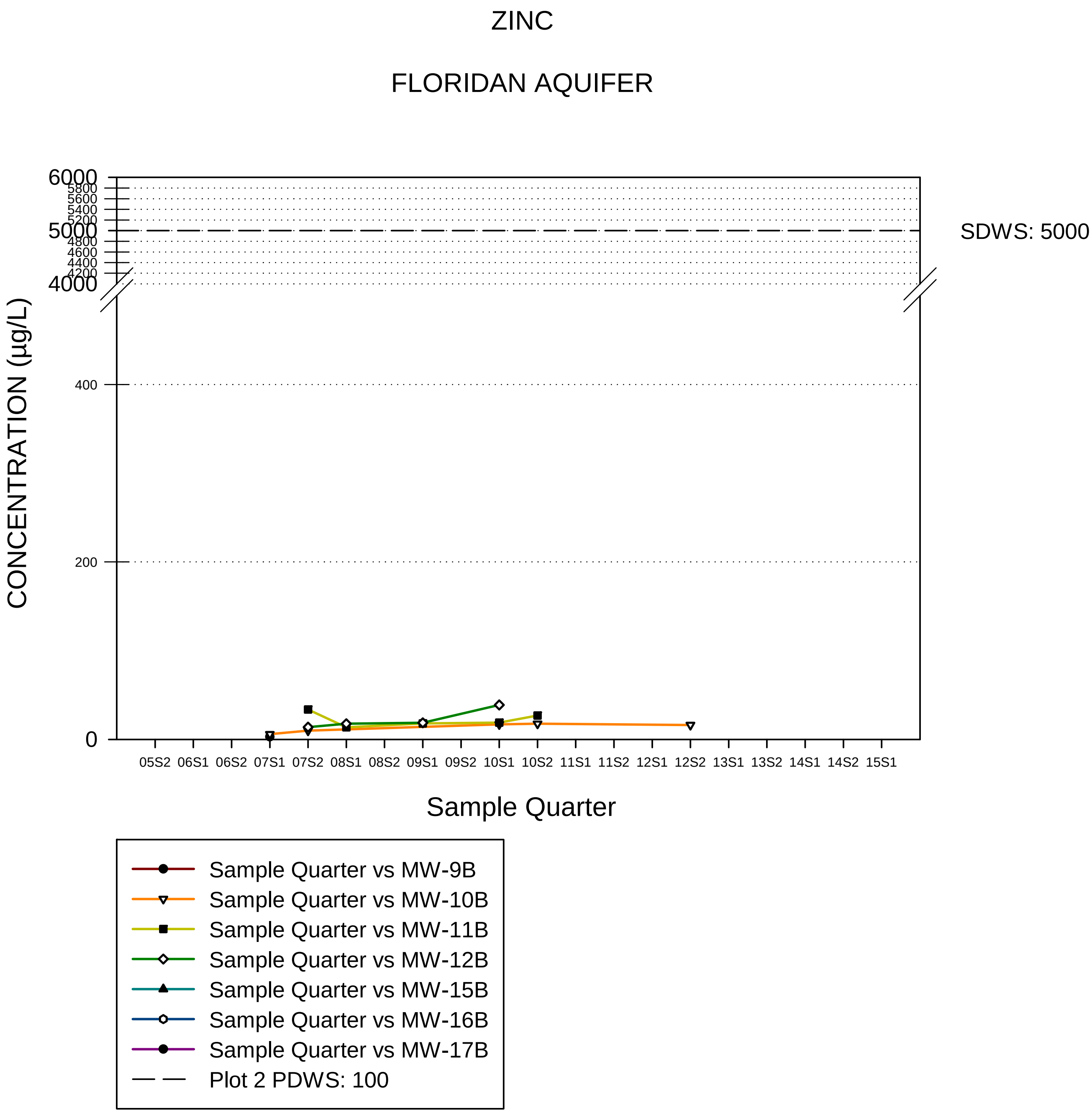
ZINC

FLORIDAN AQUIFER

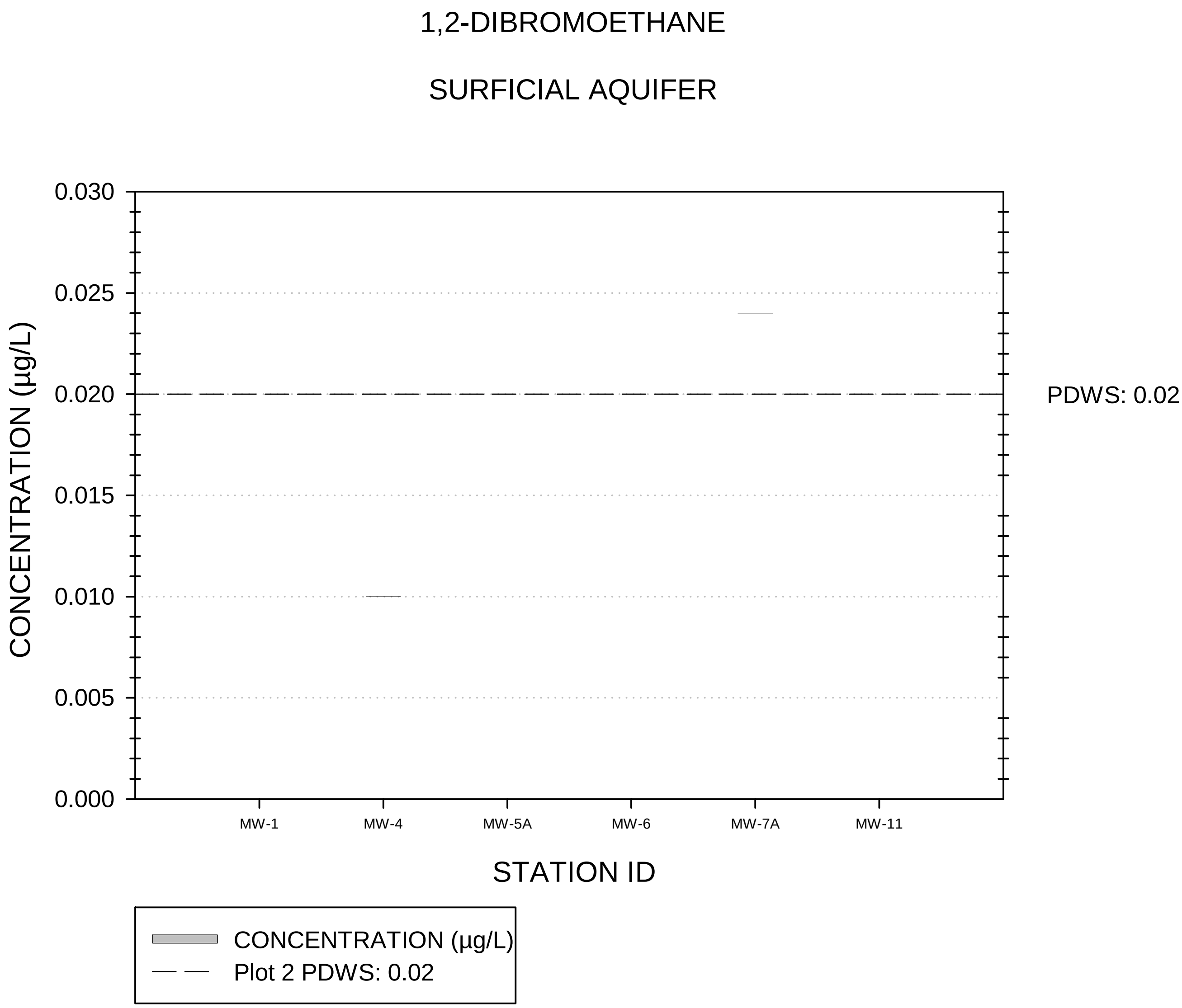




ZINC
FLORIDAN AQUIFER
6000
5800
5600
5400
5200
5000
4800
4600
4400
4200
4000
400
200
0
SDWS: 5000
CONCENTRATION (µg/L)
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 SDWS: 5000



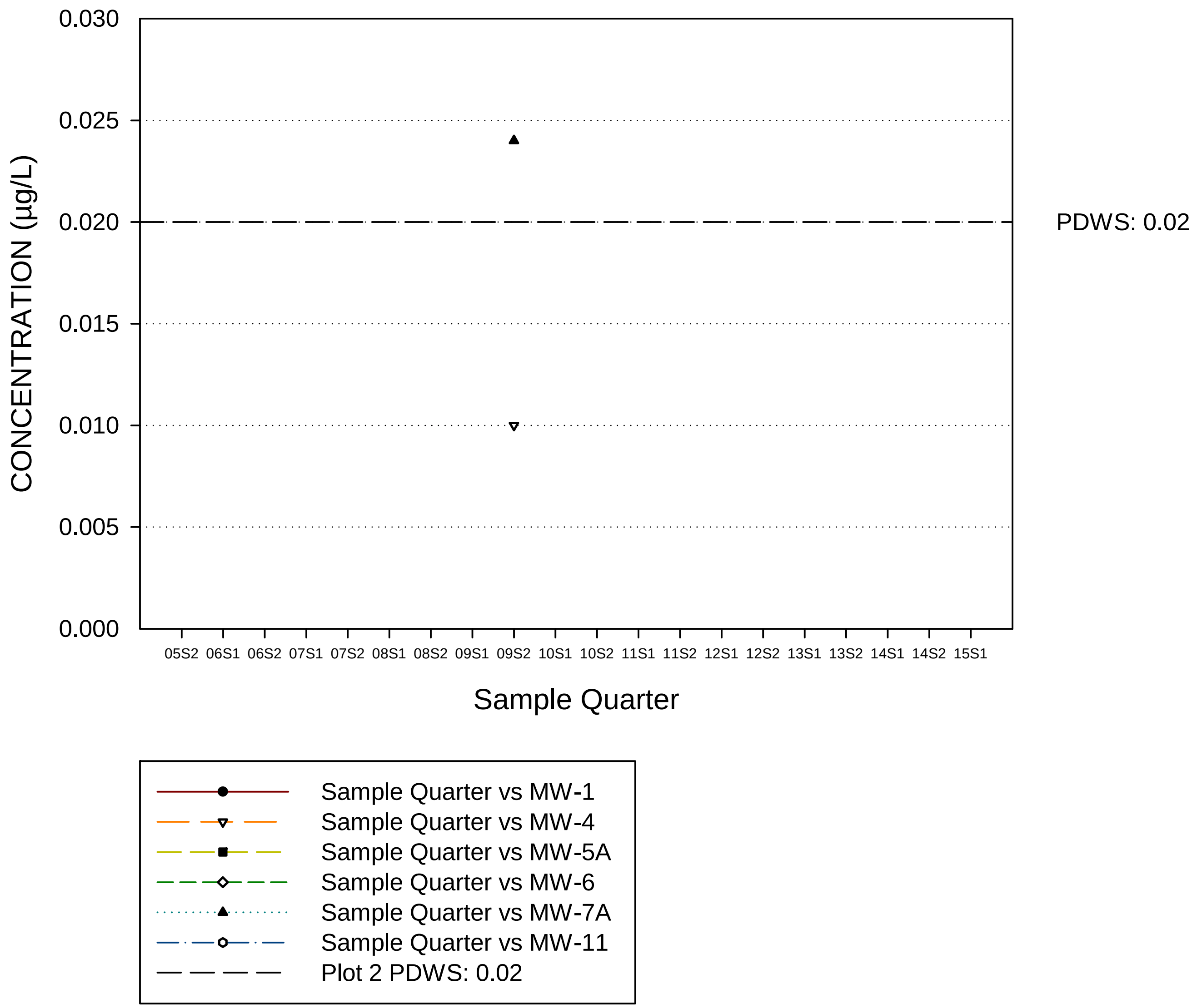
ZINC
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
6000
5800
5600
5400
5200
5000
4800
4600
4400
4200
4000
400
200
0
SDWS: 5000
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-9B
Sample Quarter vs MW-10B
Sample Quarter vs MW-11B
Sample Quarter vs MW-12B
Sample Quarter vs MW-15B
Sample Quarter vs MW-16B
Sample Quarter vs MW-17B
Plot 2 PDWS: 100



1,2-DIBROMOETHANE
SURFICIAL AQUIFER
CONCENTRATION (µg/L)
0.030
0.025
0.020
0.015
0.010
0.005
0.000
PDWS: 0.02
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 0.02

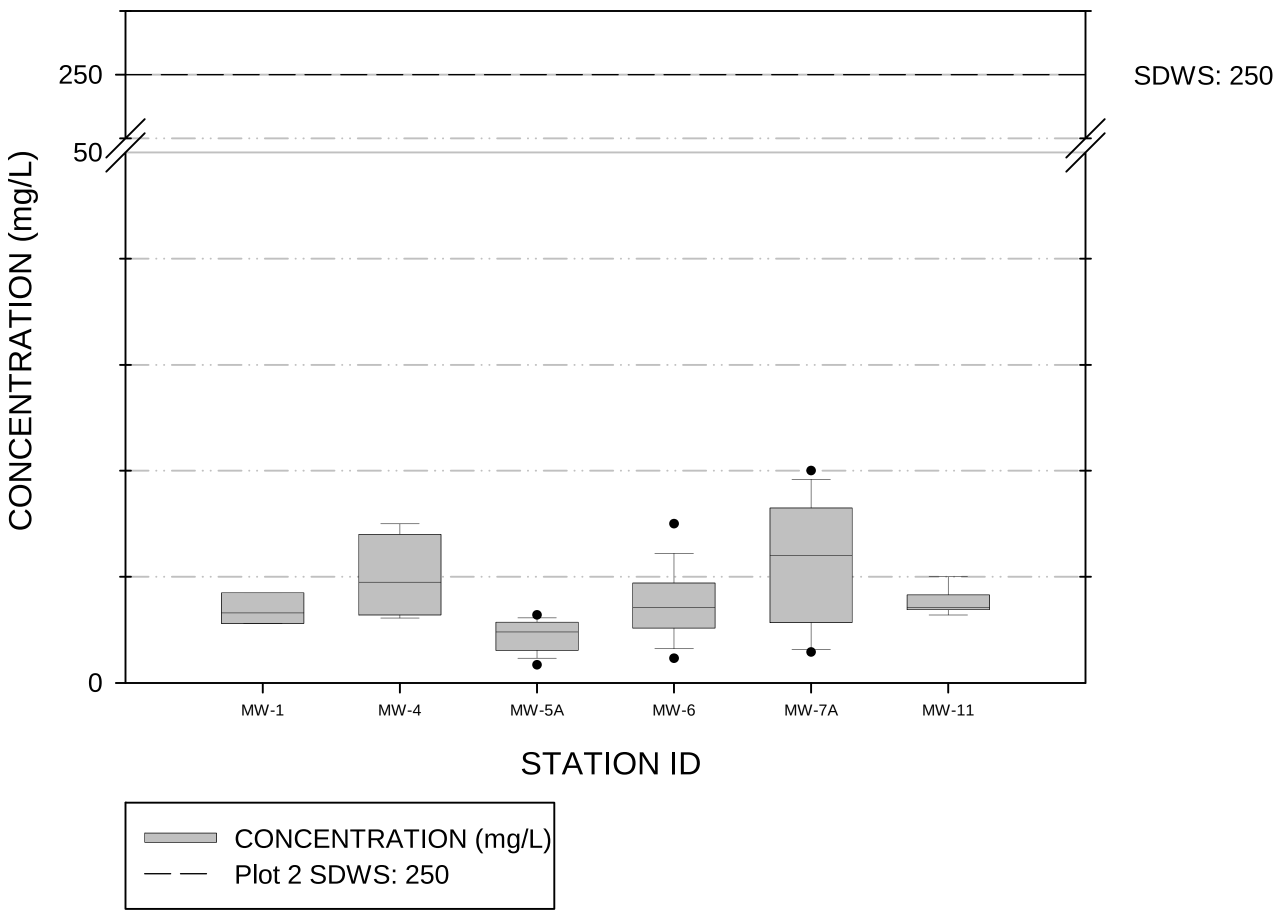
1,2-DIBROMOETHANE

SURFICIAL AQUIFER



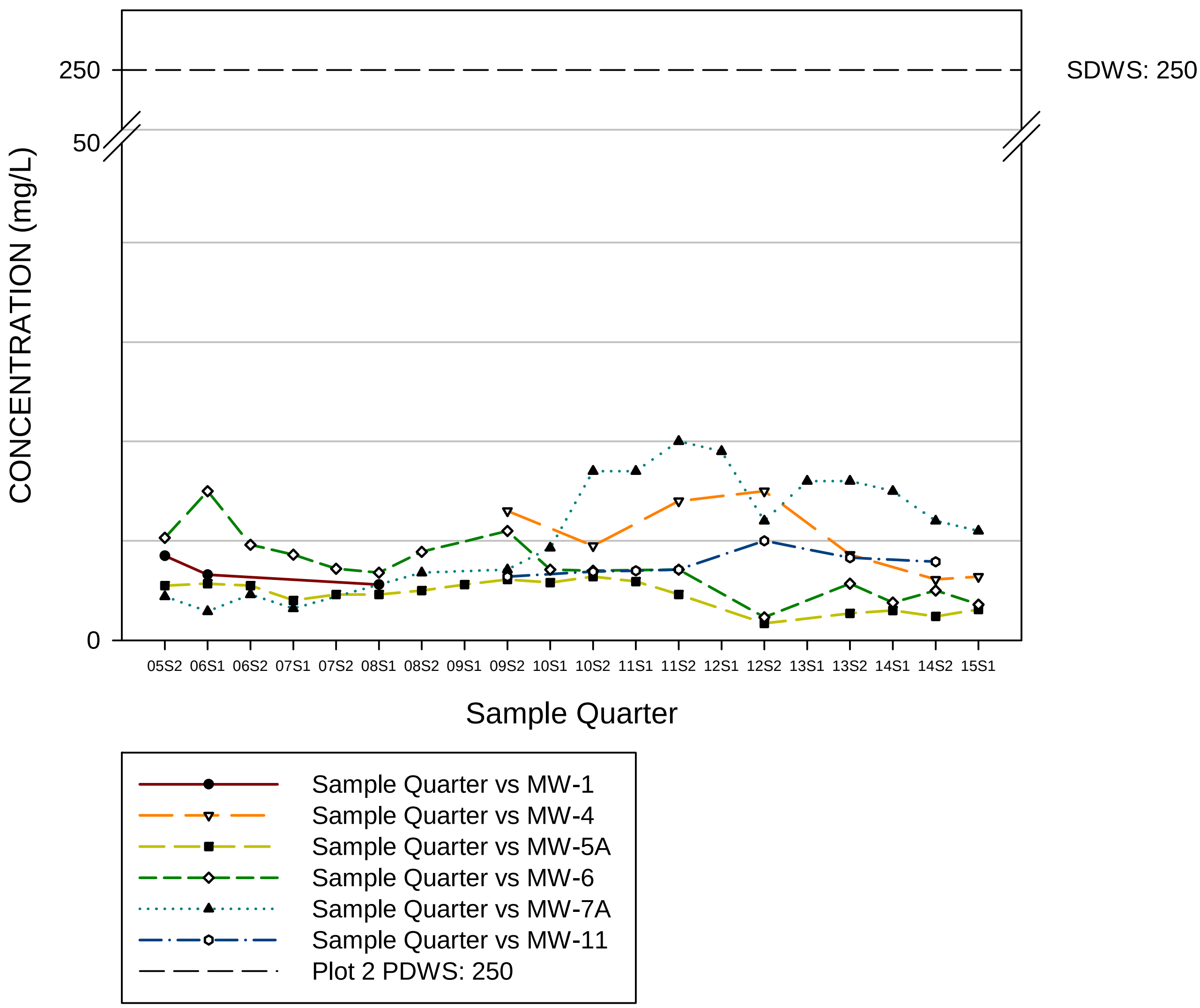
CHLORINE

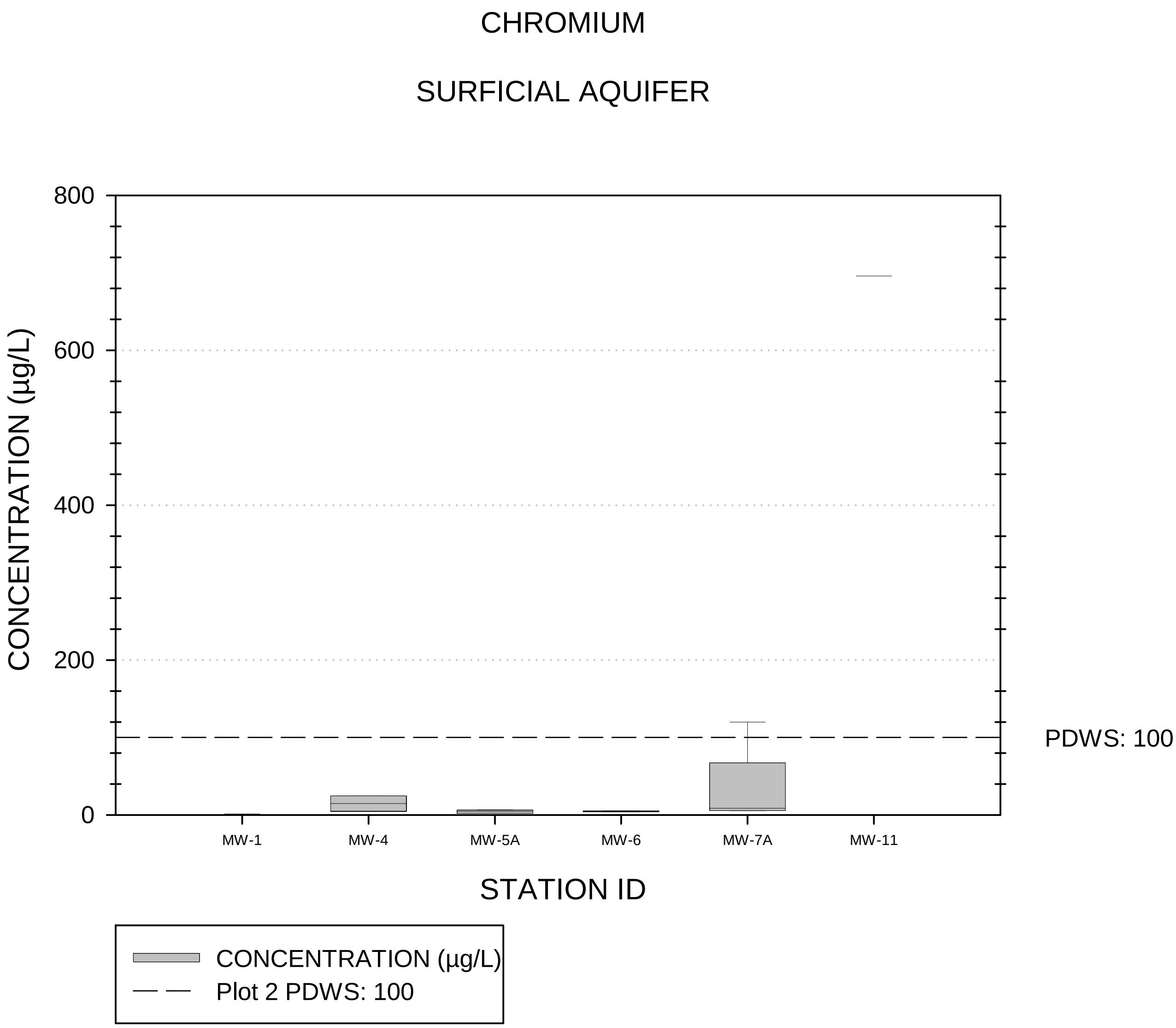
SURFICIAL AQUIFER



CHLORINE

SURFICIAL AQUIFER

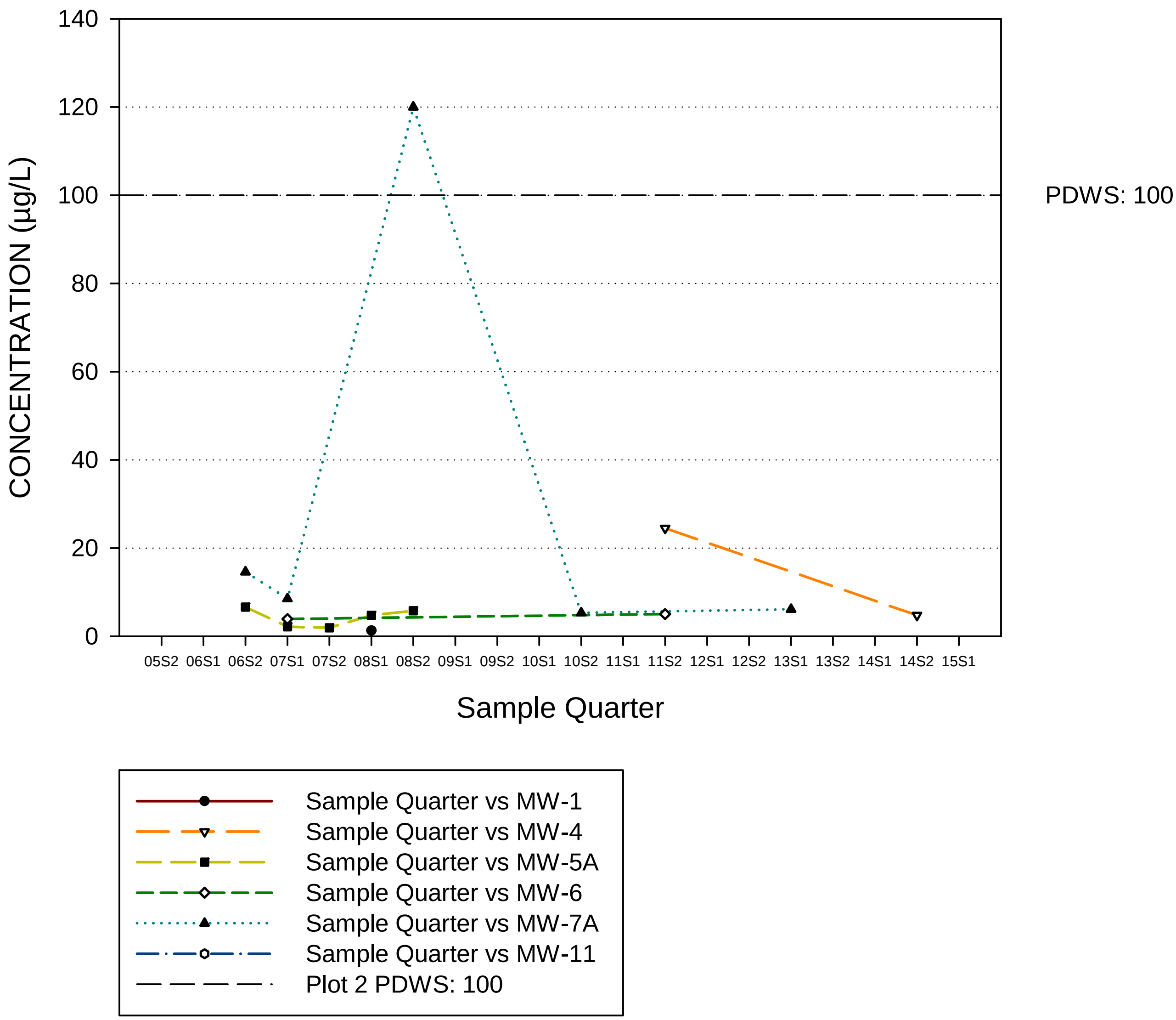




CHROMIUM
SURFICIAL AQUIFER
CONCENTRATION (µg/L)
800
600
400
200
0
PDWS: 100
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 100

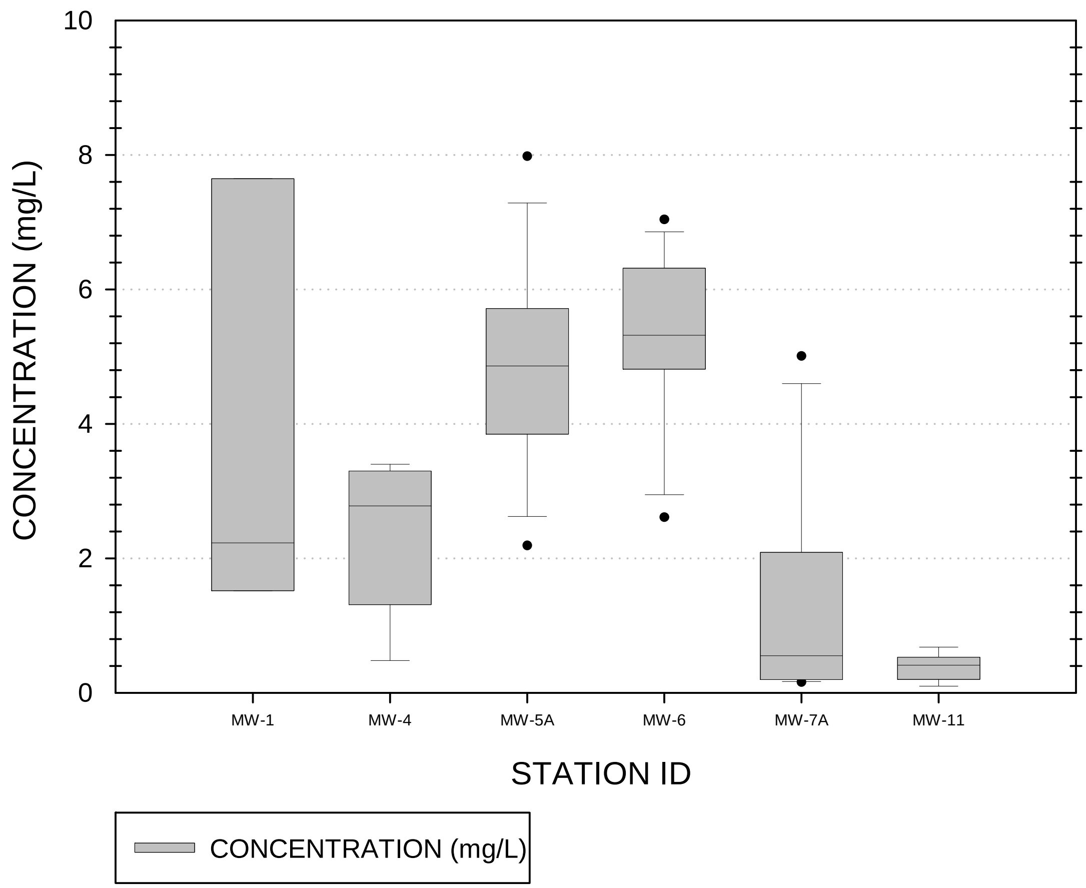
CHROMIUM

SURFICIAL AQUIFER



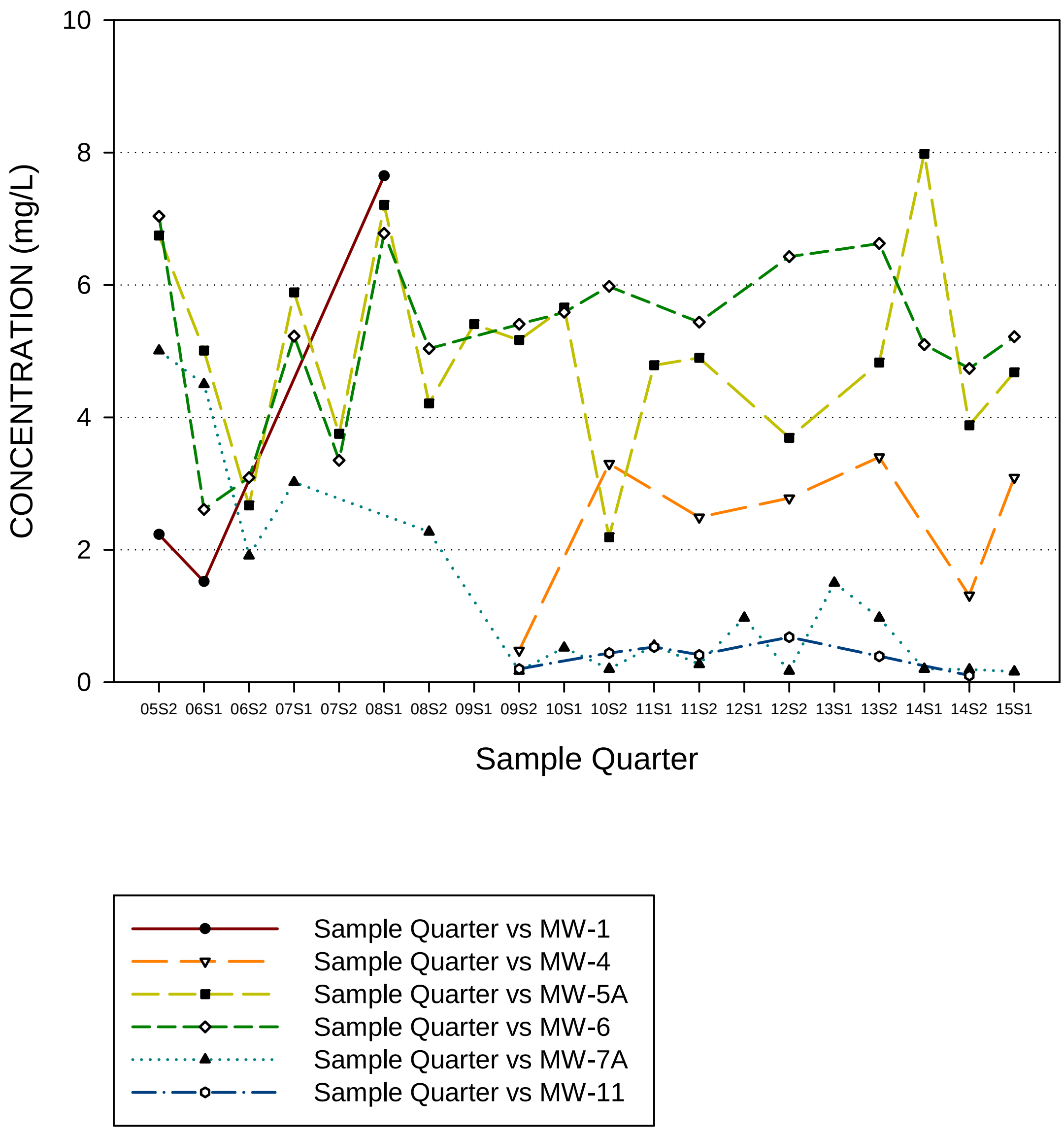
DISSOLVED OXYGEN

SURFICIAL AQUIFER



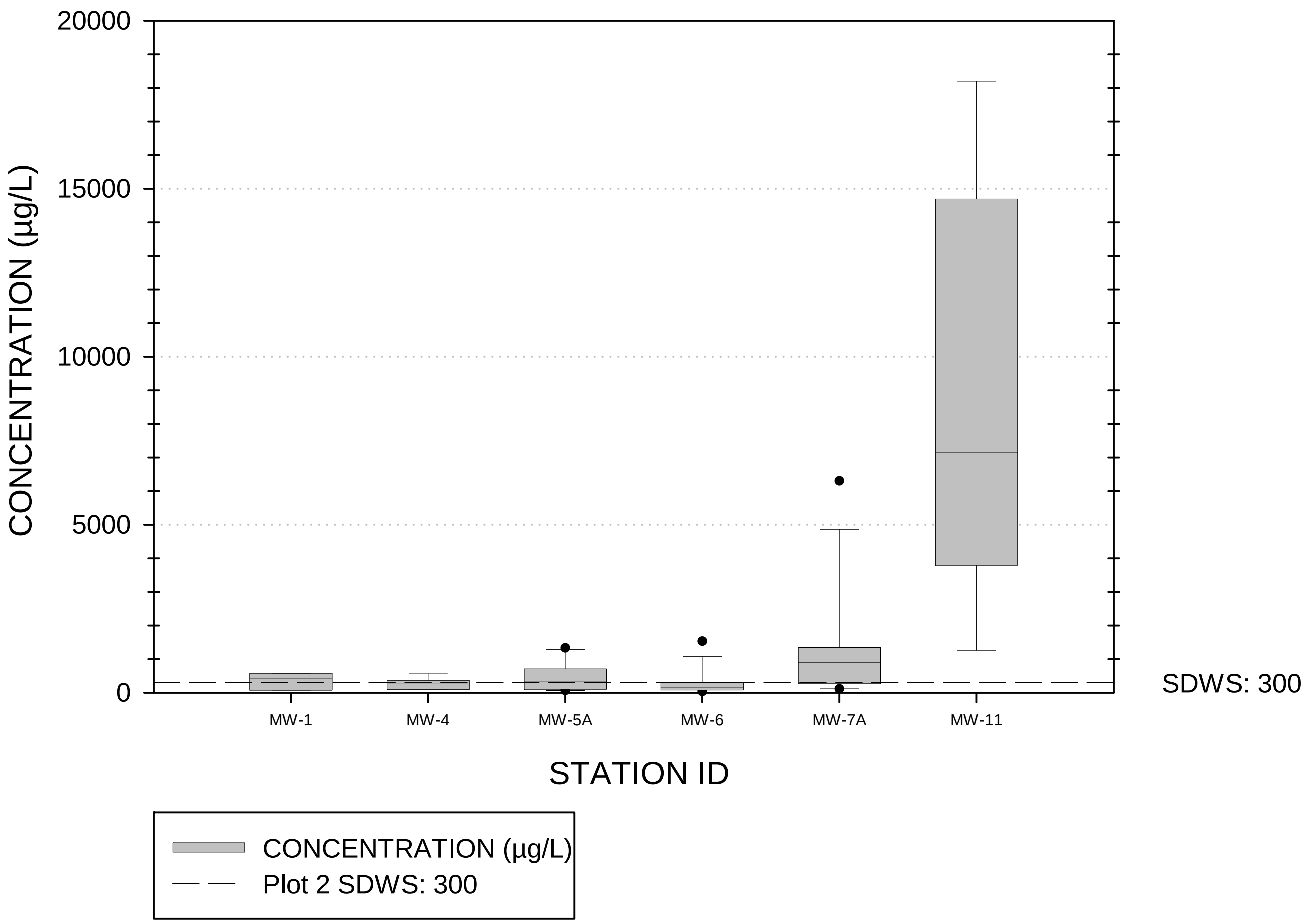
DISSOLVED OXYGEN

SURFICIAL AQUIFER



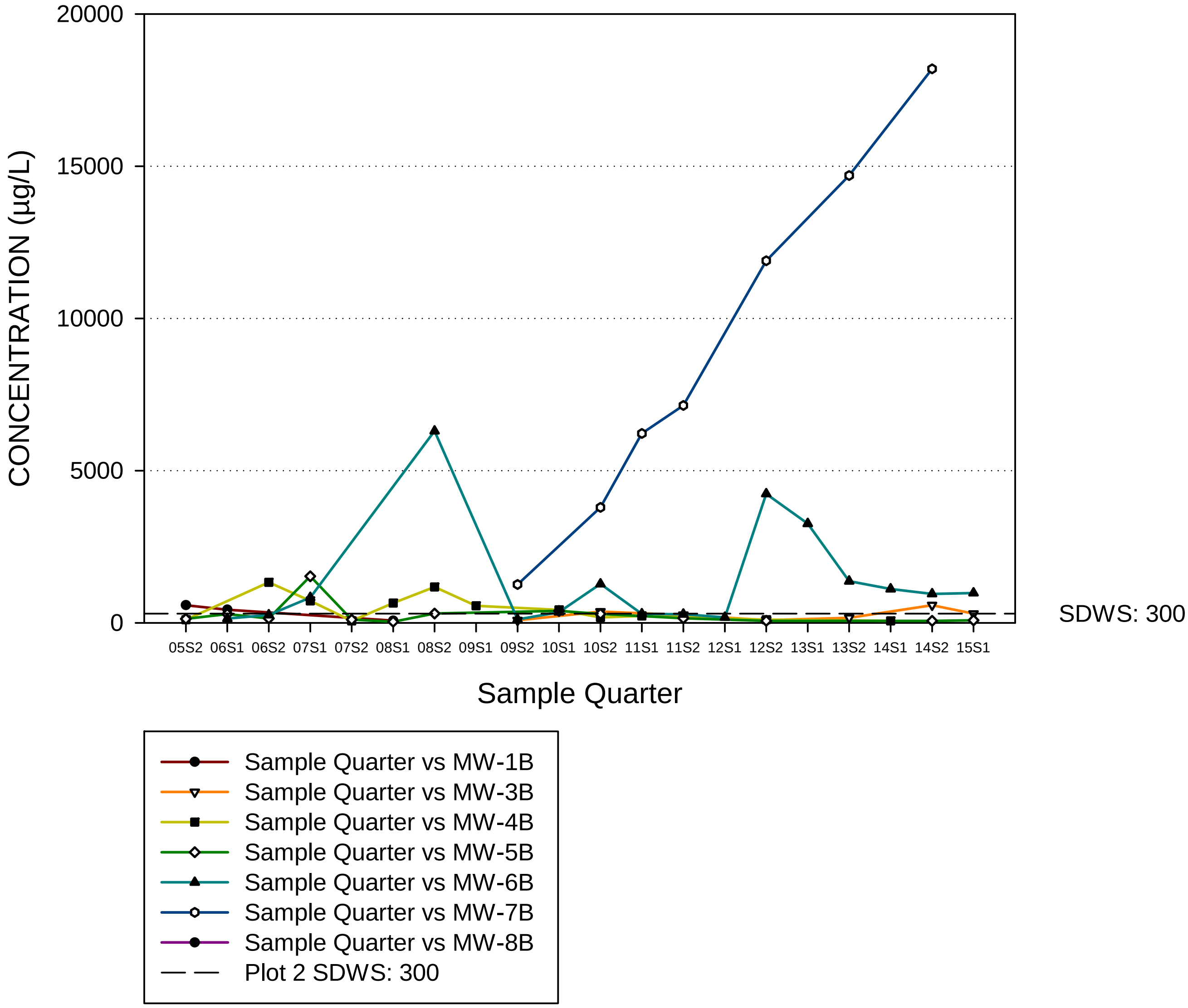
IRON

SURFICIAL AQUIFER



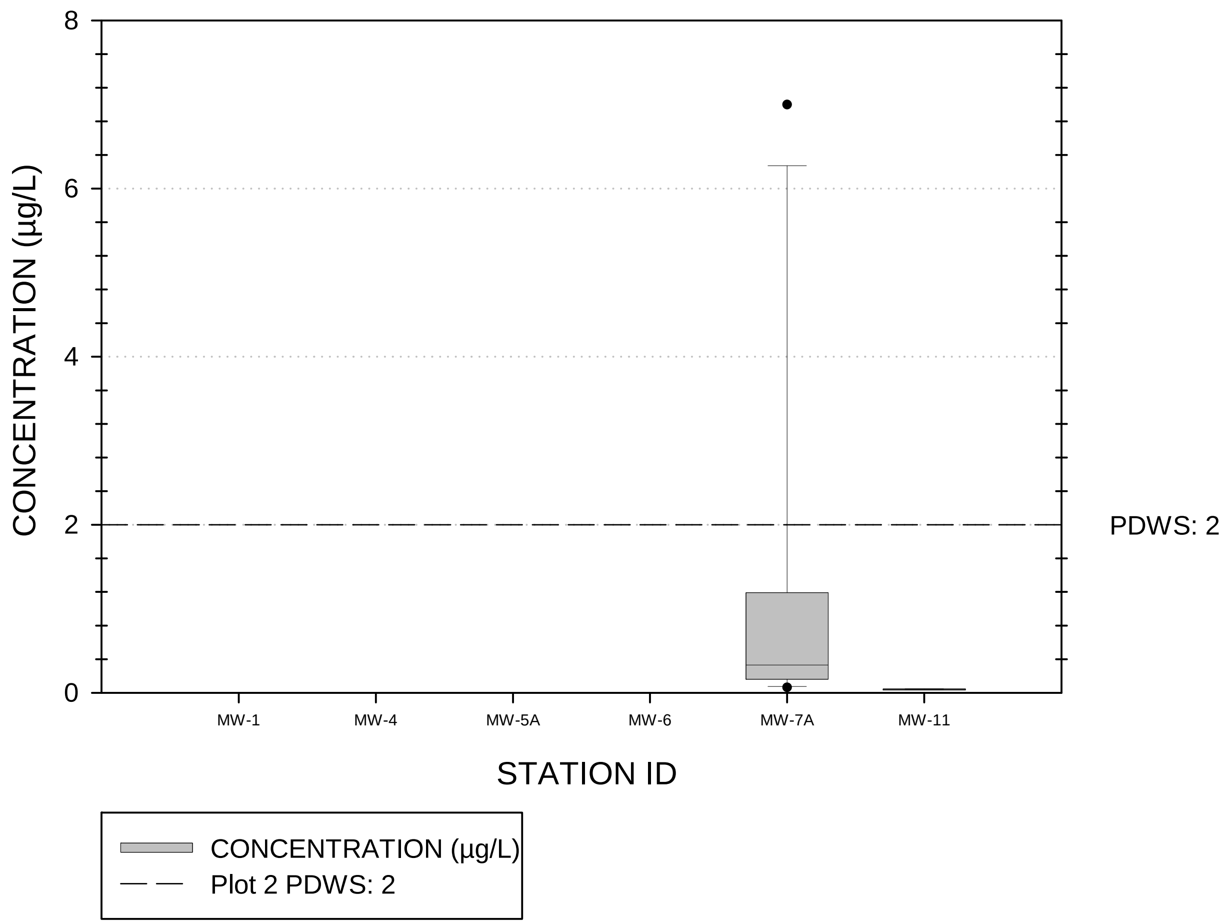
IRON

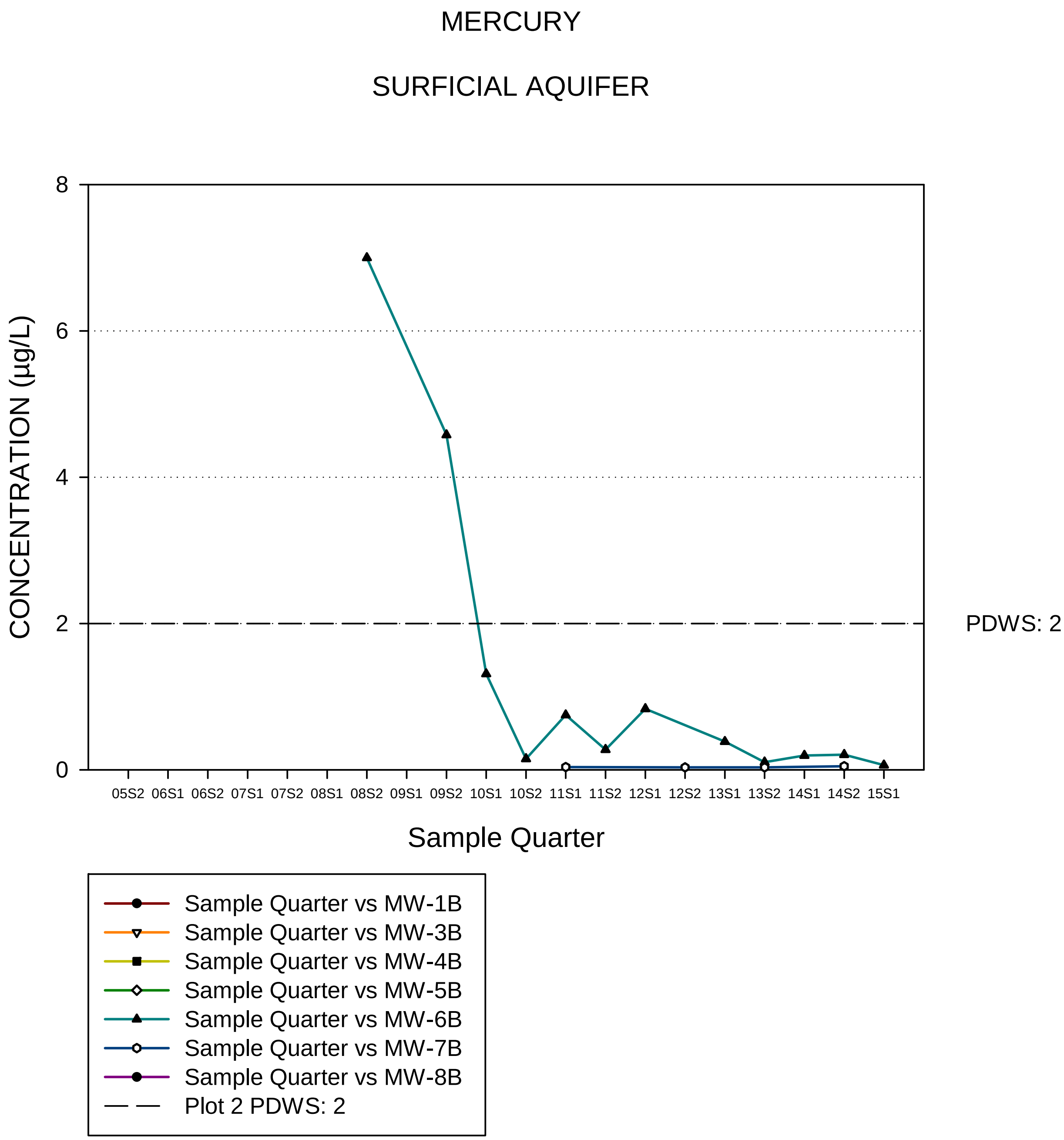
SURFICIAL AQUIFER



MERCURY

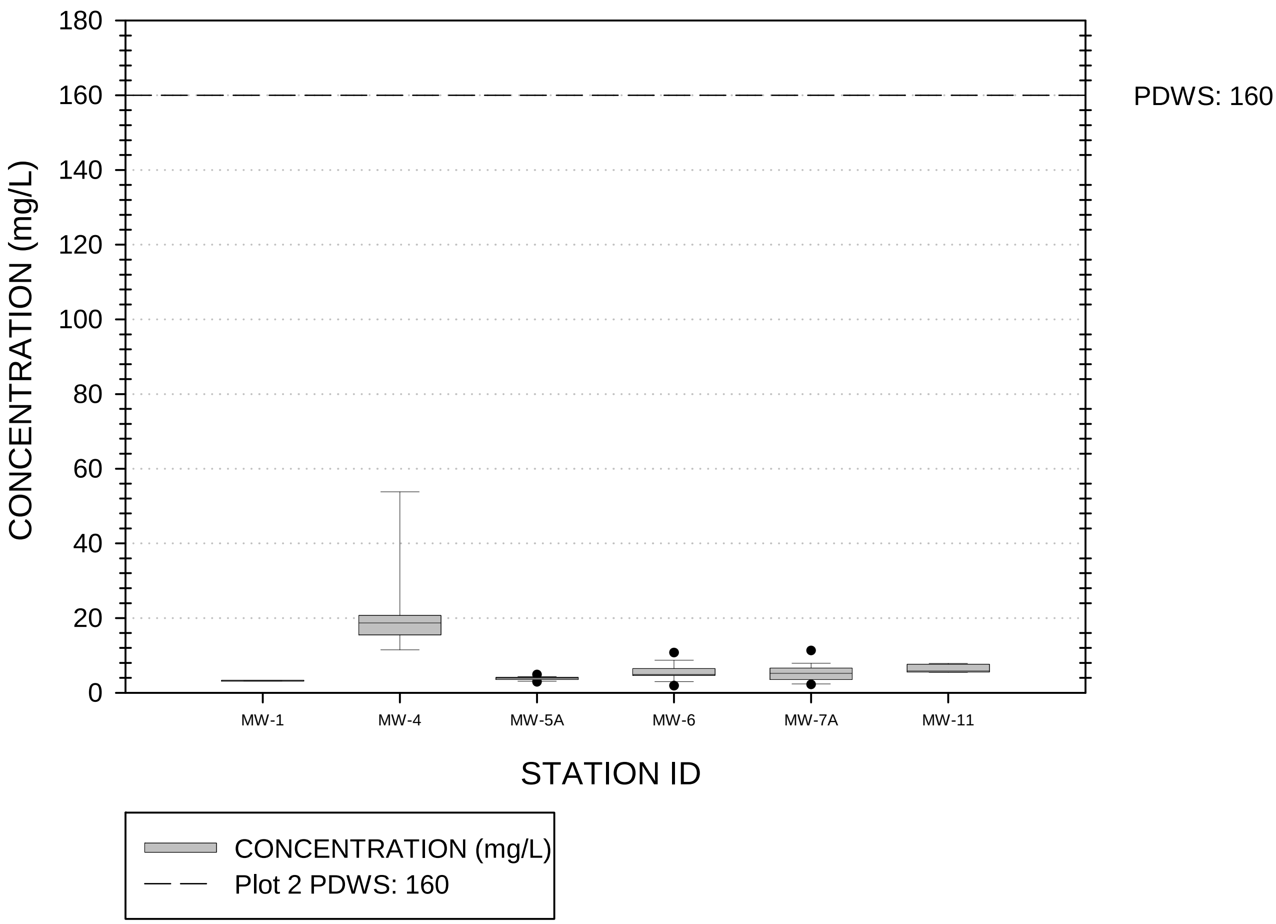
SURFICIAL AQUIFER




MERCURY
SURFICIAL AQUIFER
CONCENTRATION (µg/L)
0
2
4
6
8
PDWS: 2
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 2

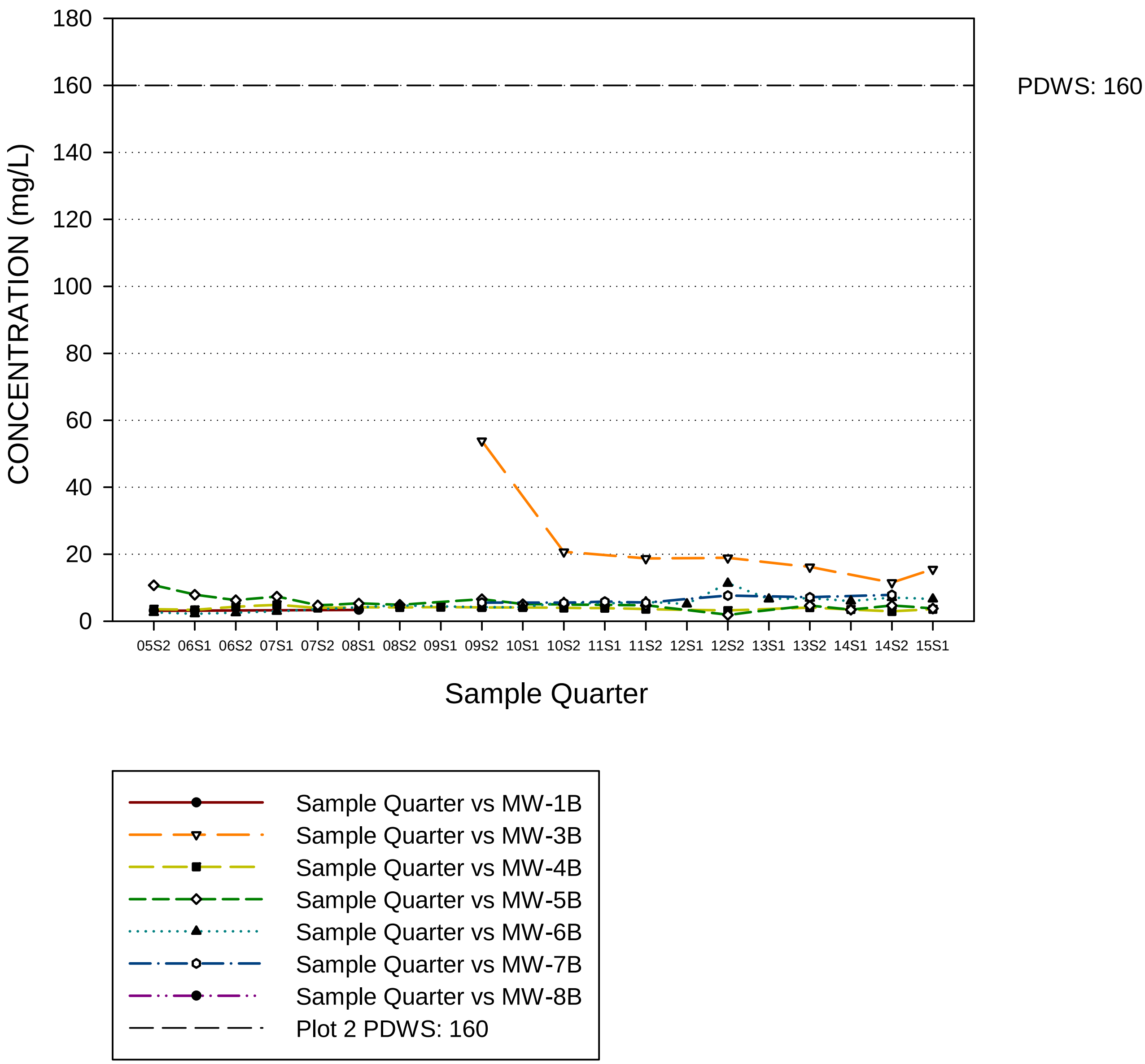
SODIUM

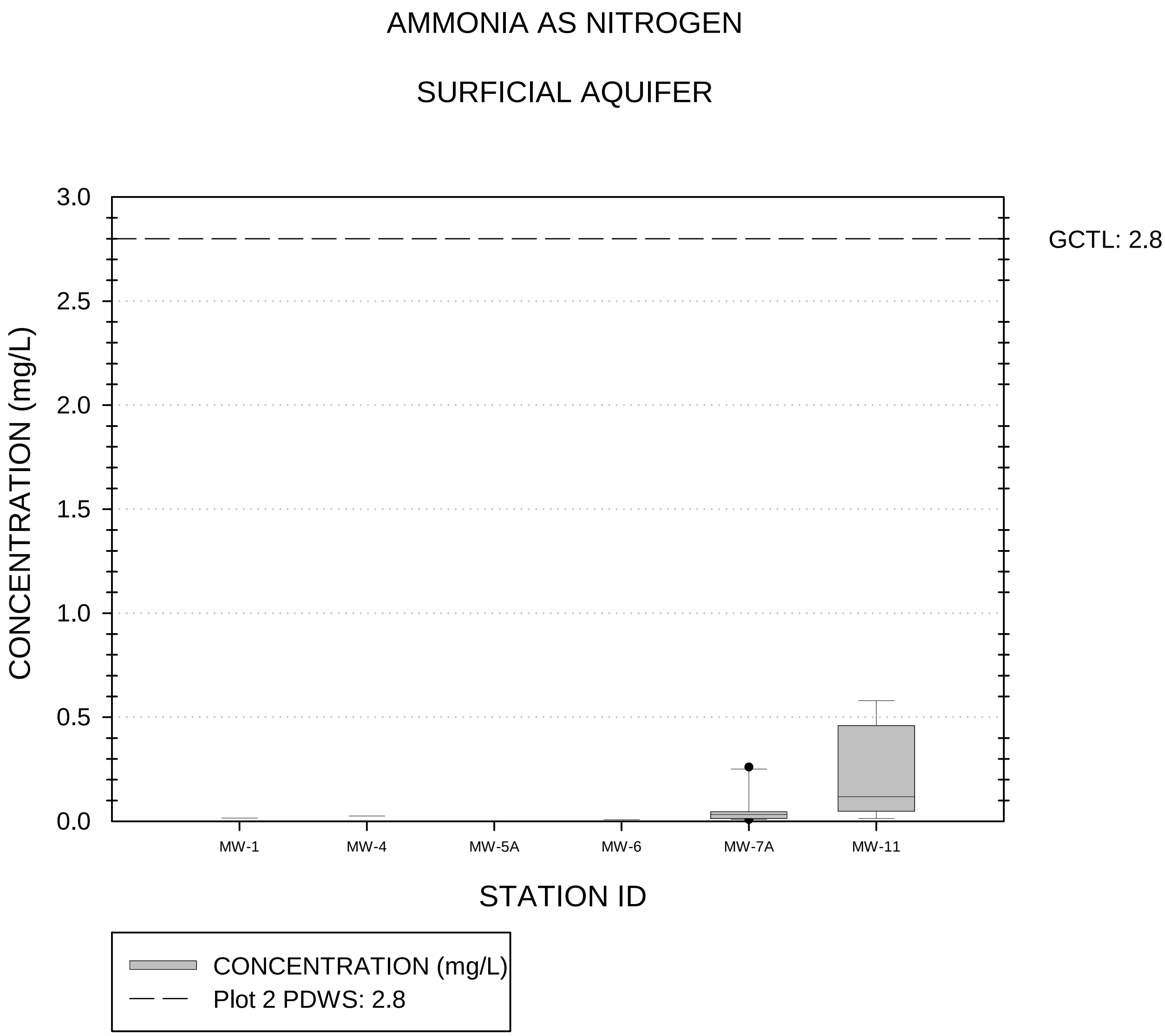
SURFICIAL AQUIFER



CHLORINE

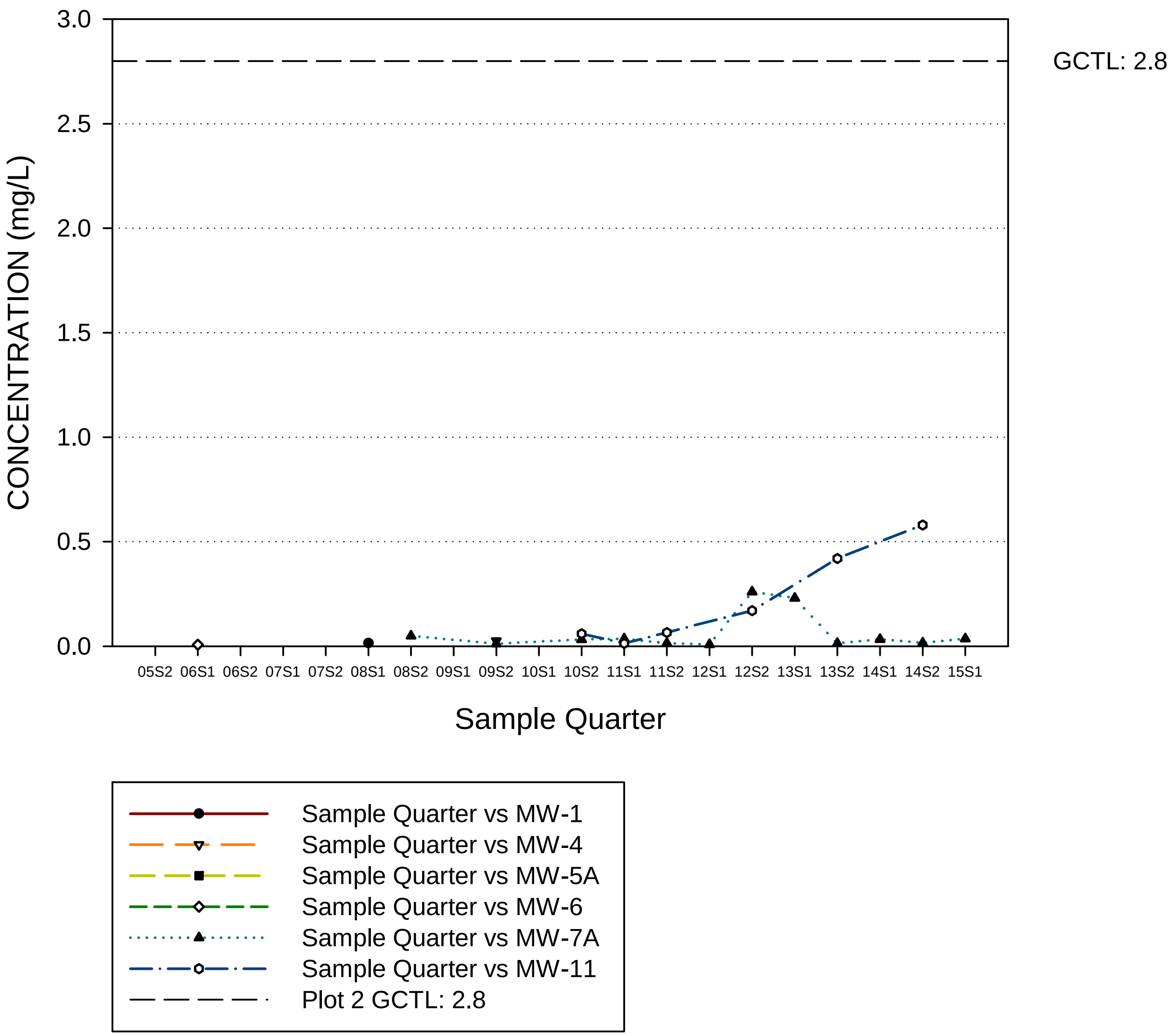
SURFICIAL AQUIFER




AMMONIA AS NITROGEN
SURFICIAL AQUIFER
3.0
2.5
2.0
1.5
1.0
0.5
0.0
GCTL: 2.8
CONCENTRATION (mg/L)
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (mg/L)
Plot 2 PDWS: 2.8

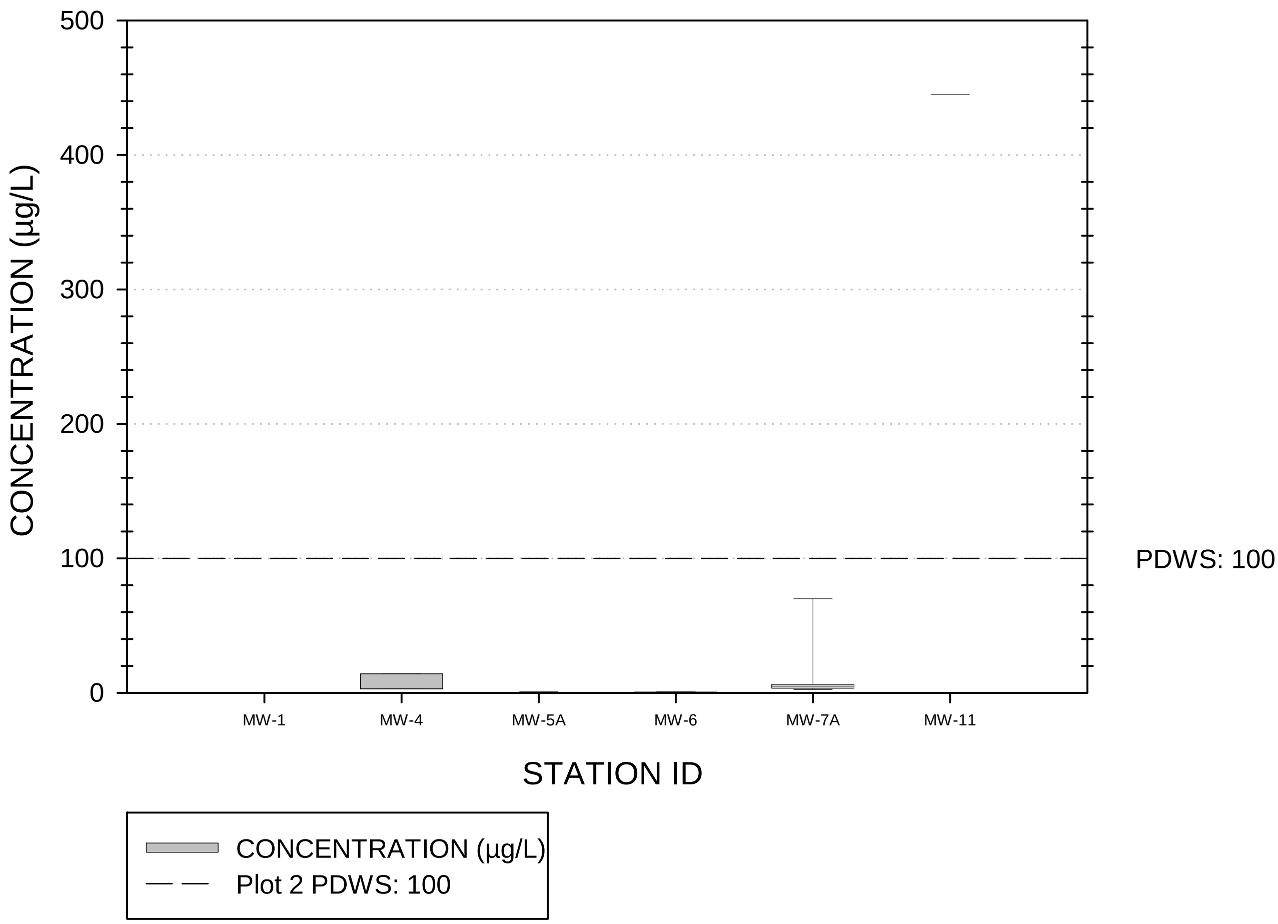
AMMONIA AS NITROGEN

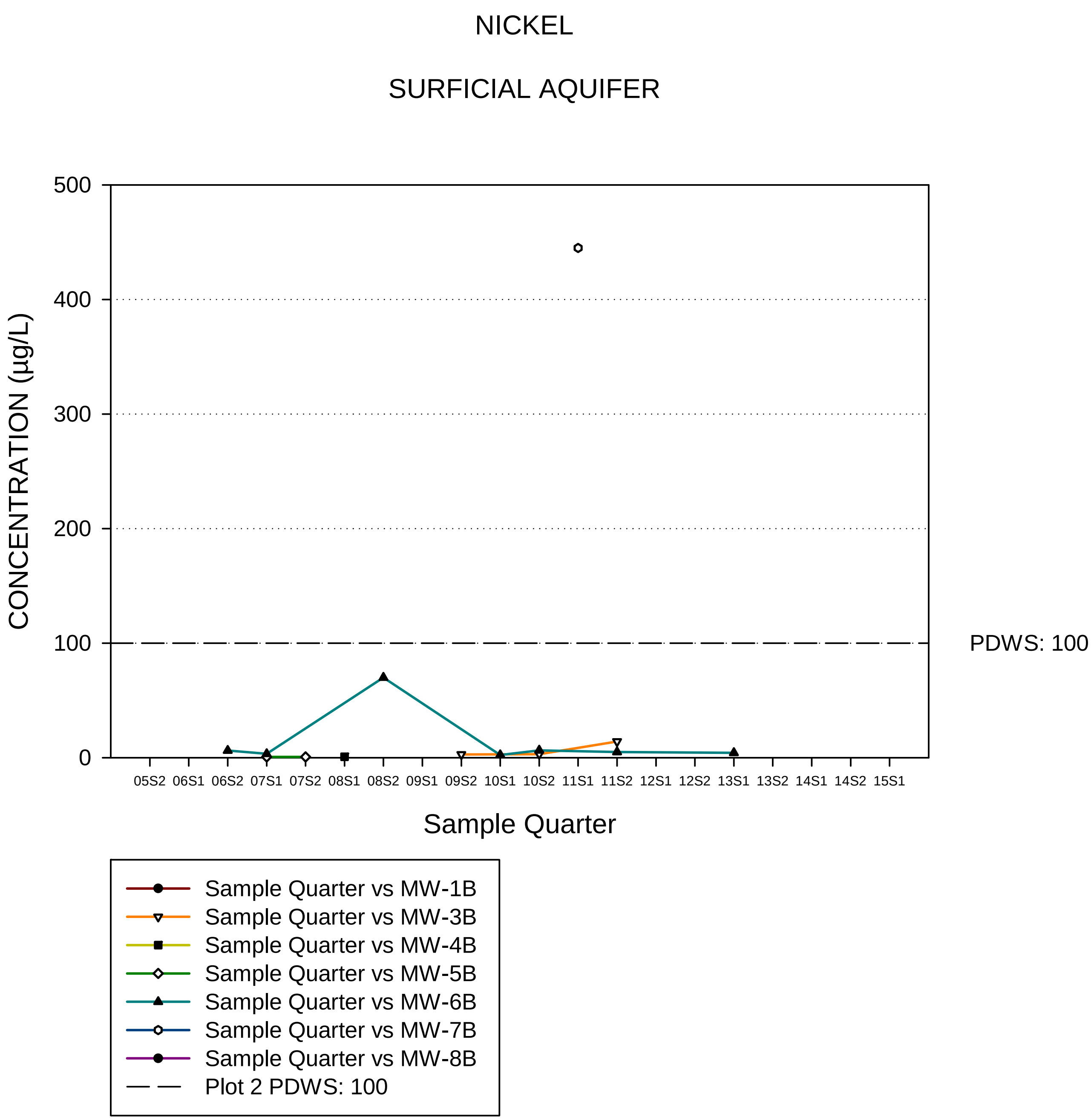
SURFICIAL AQUIFER



NICKEL

SURFICIAL AQUIFER

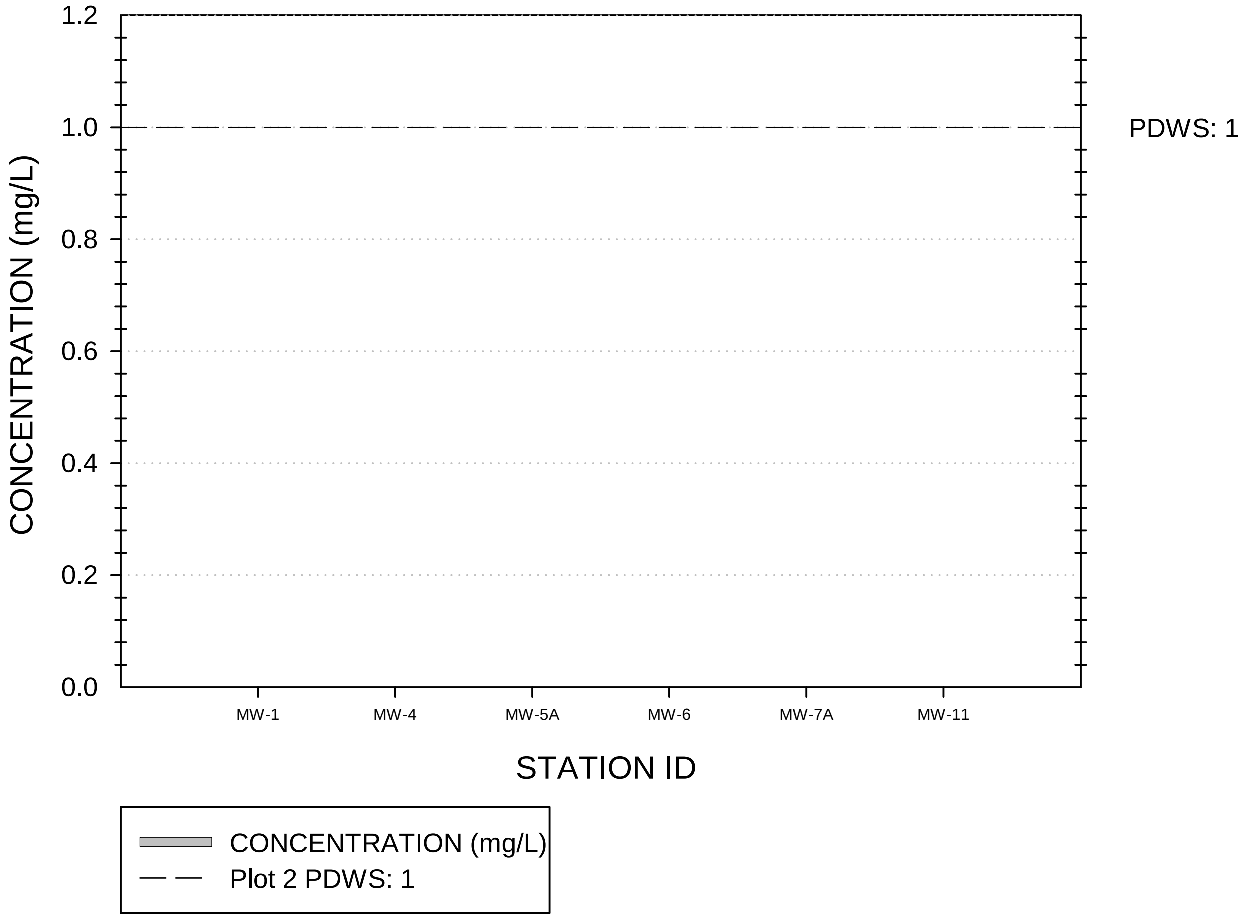


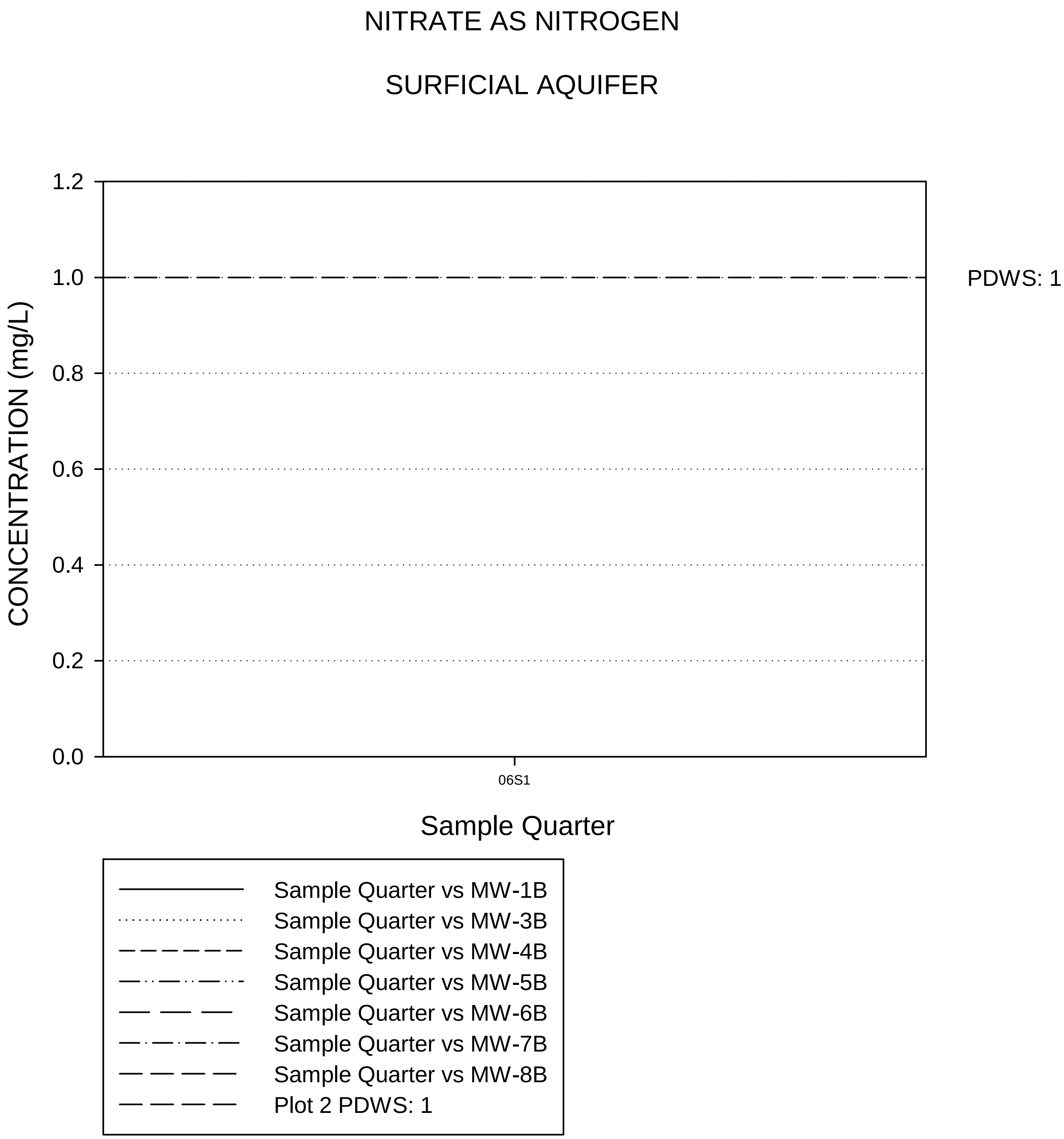


NICKEL
SURFICIAL AQUIFER
CONCENTRATION (µg/L)
500
400
300
200
100
0
PDWS: 100
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 100

NITRITE AS NITROGEN

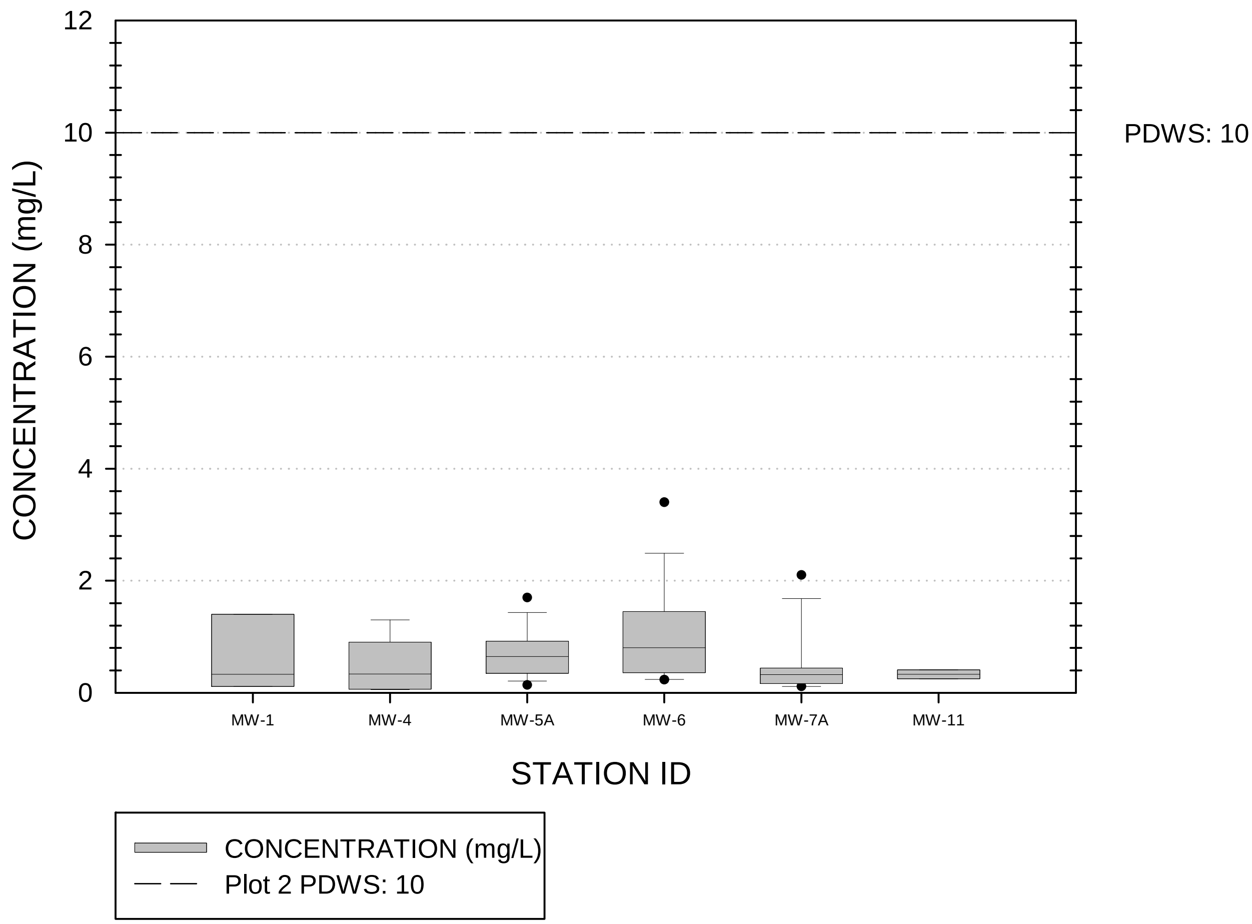
SURFICIAL AQUIFER




NITRATE AS NITROGEN
SURFICIAL AQUIFER
CONCENTRATION (mg/L)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
PDWS: 1
06S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 1

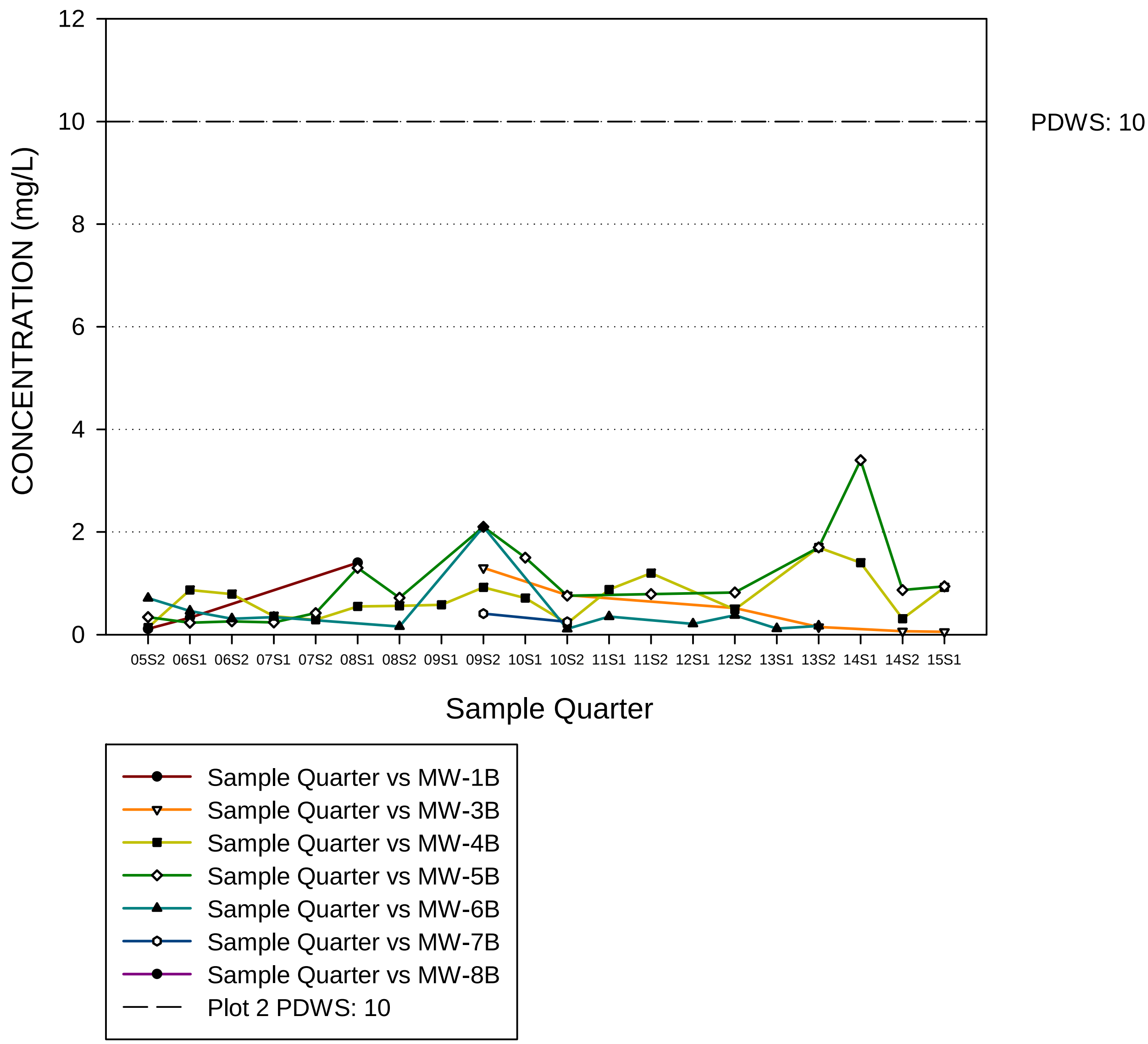
NITRATE AS NITROGEN

SURFICIAL AQUIFER



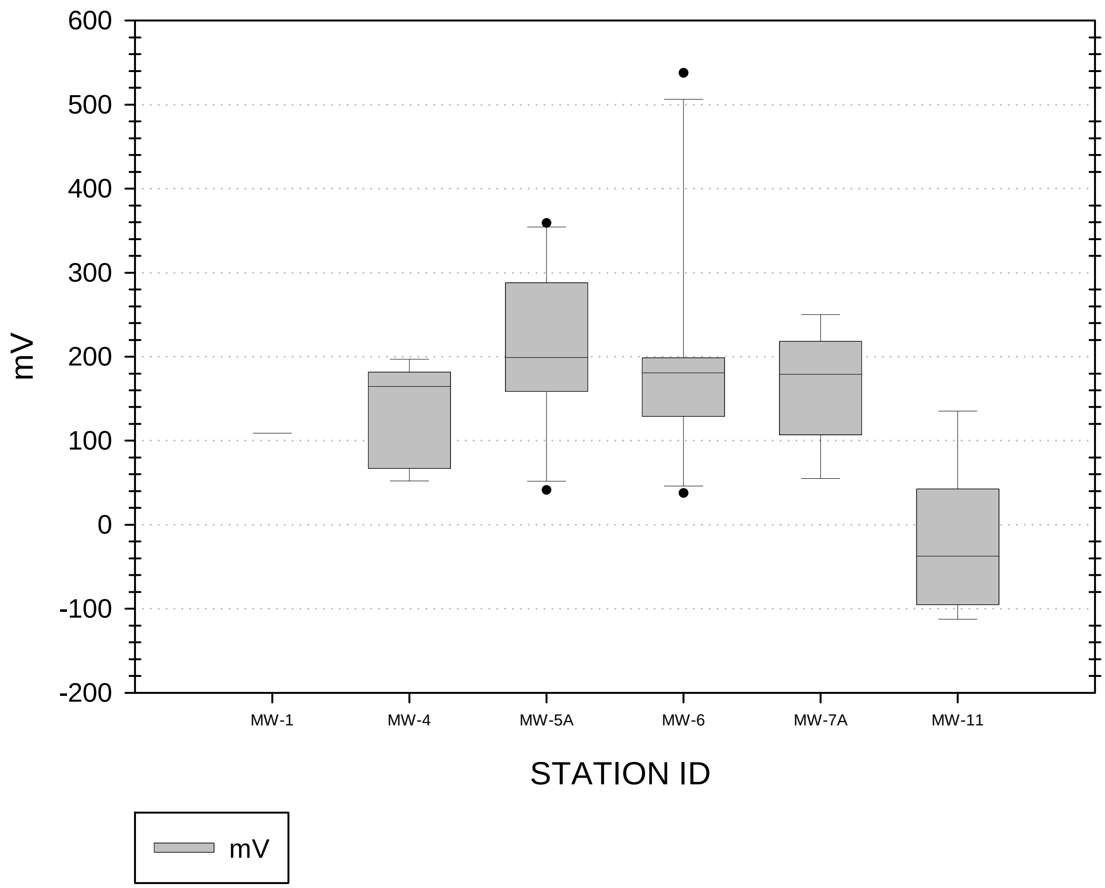
NITRATE AS NITROGEN

SURFICIAL AQUIFER



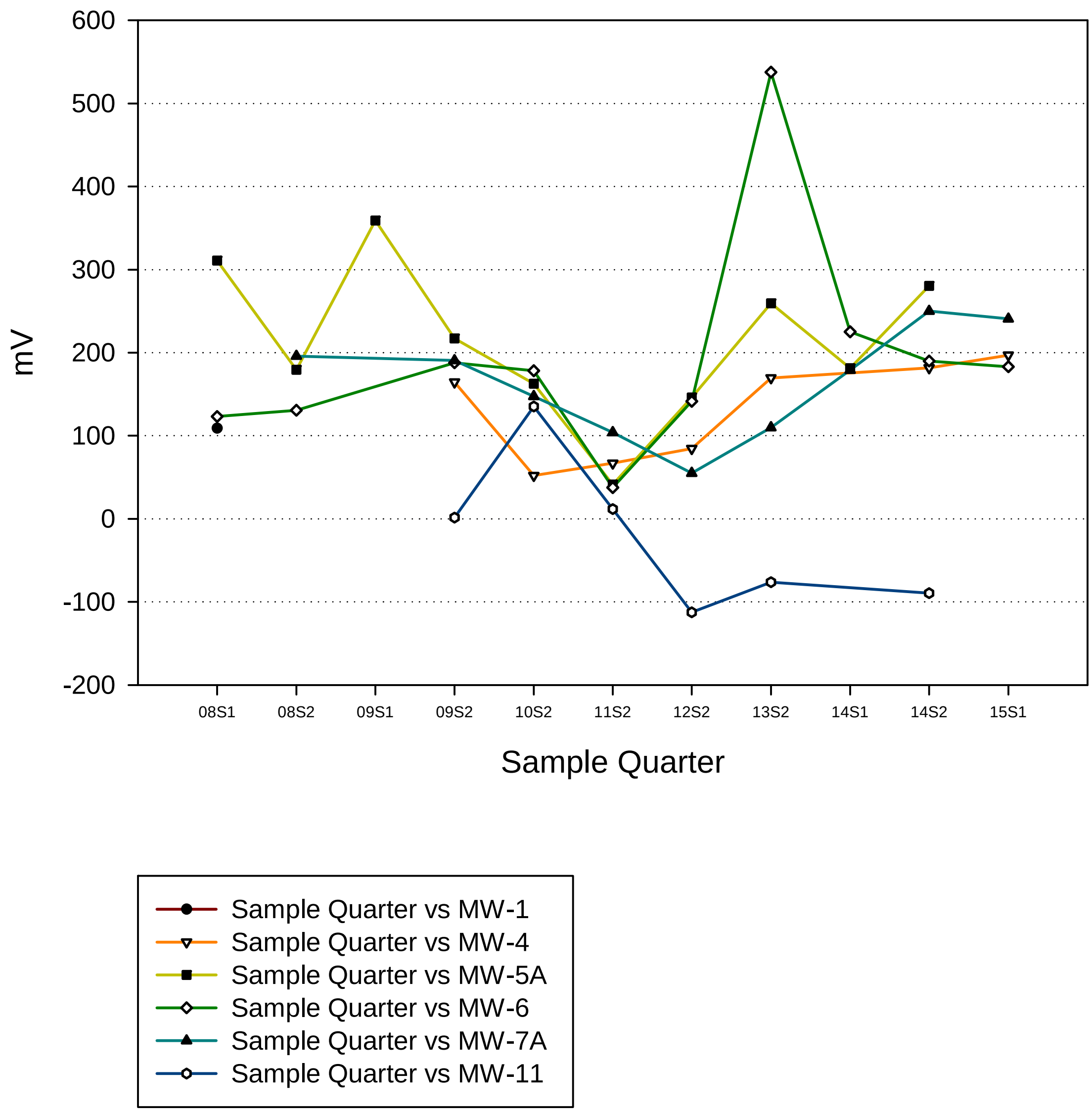
OXIDATION / REDUCTION POTENTIAL

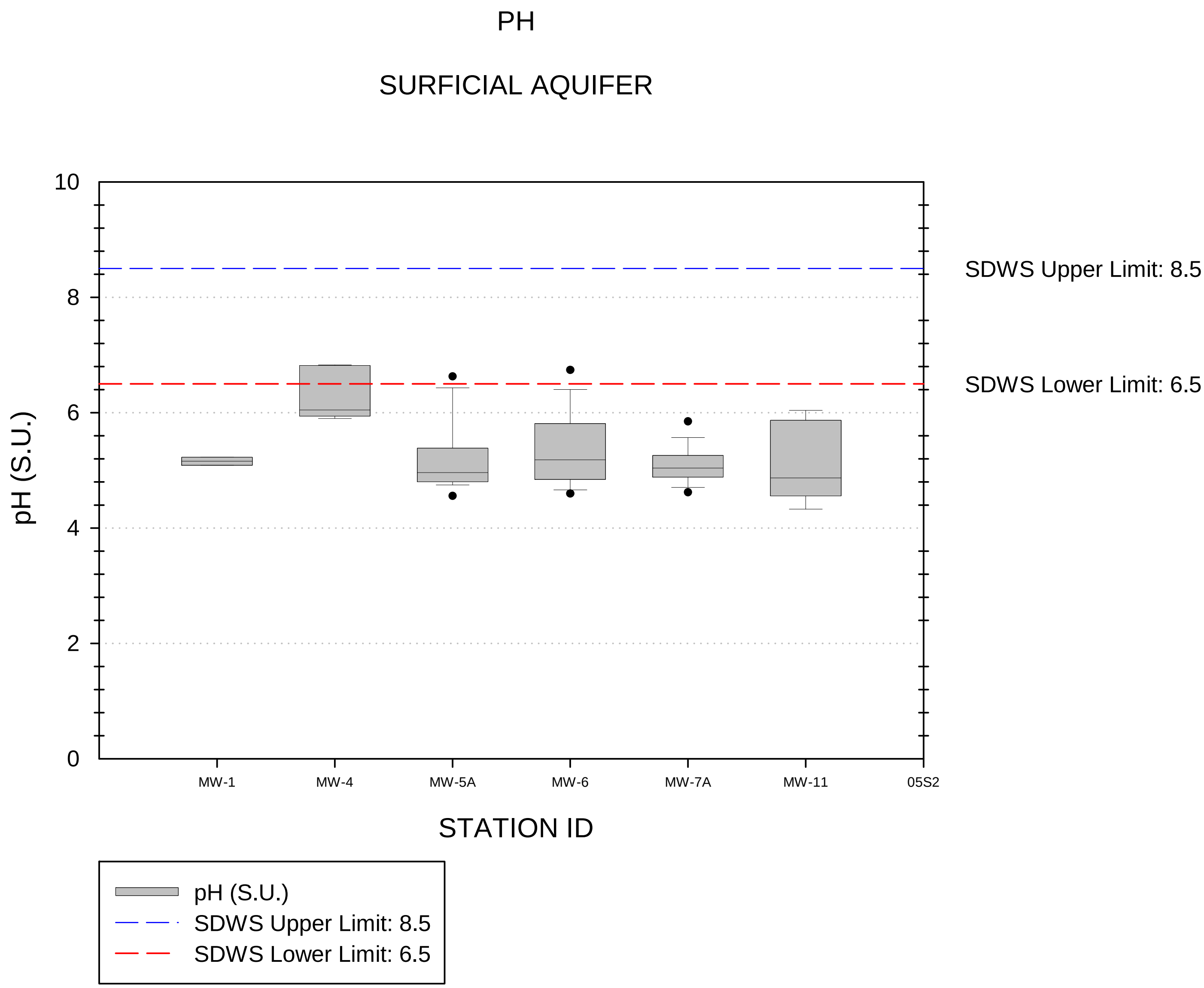
SURFICIAL AQUIFER



OXIDATION / REDUCTION POTENTIAL

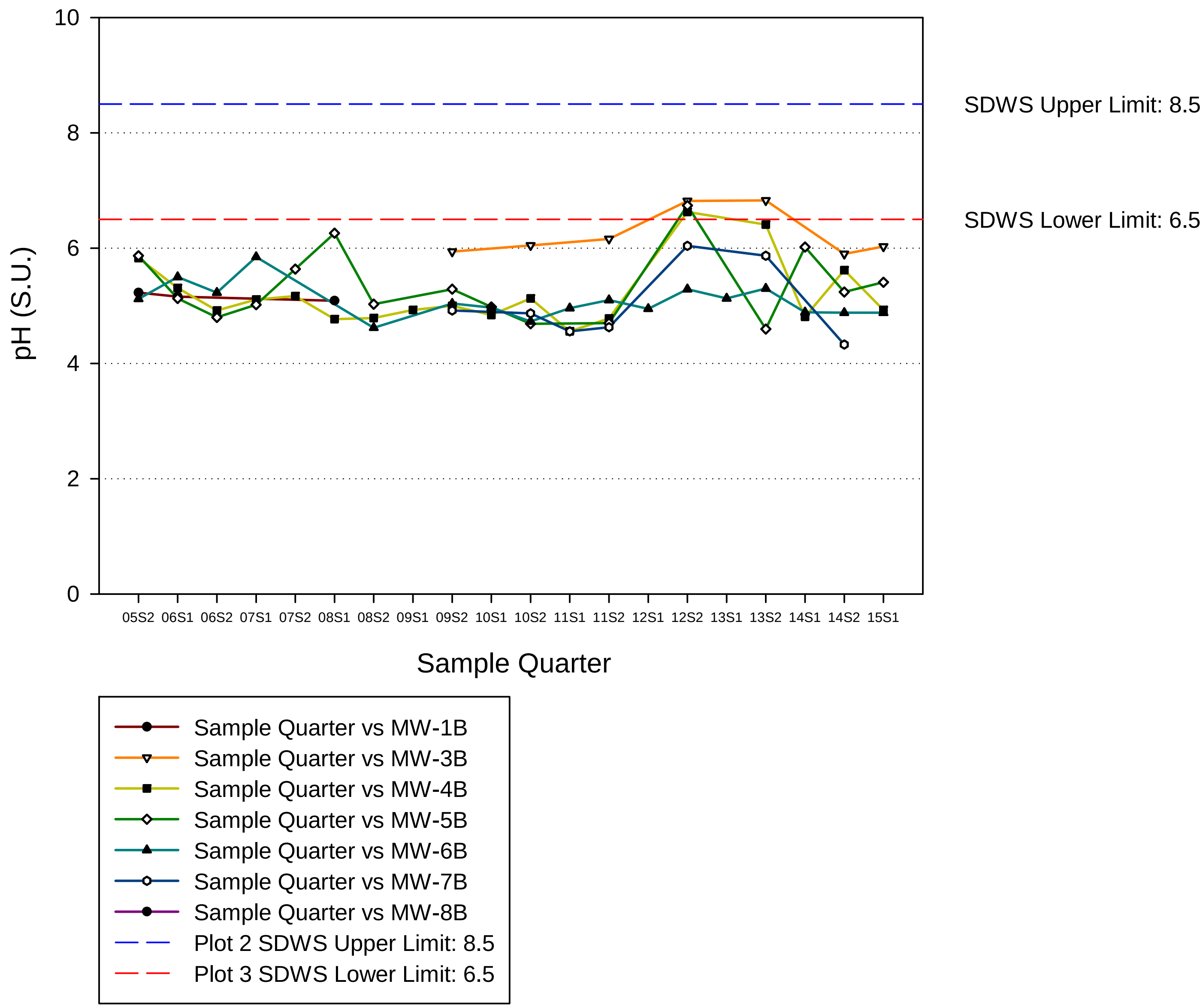
SURFICIAL AQUIFER




PH
SURFICIAL AQUIFER
10
8
6
4
2
0
pH (S.U.)
SDWS Upper Limit: 8.5
SDWS Lower Limit: 6.5
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
05S2
STATION ID
pH (S.U.)
SDWS Upper Limit: 8.5
SDWS Lower Limit: 6.5

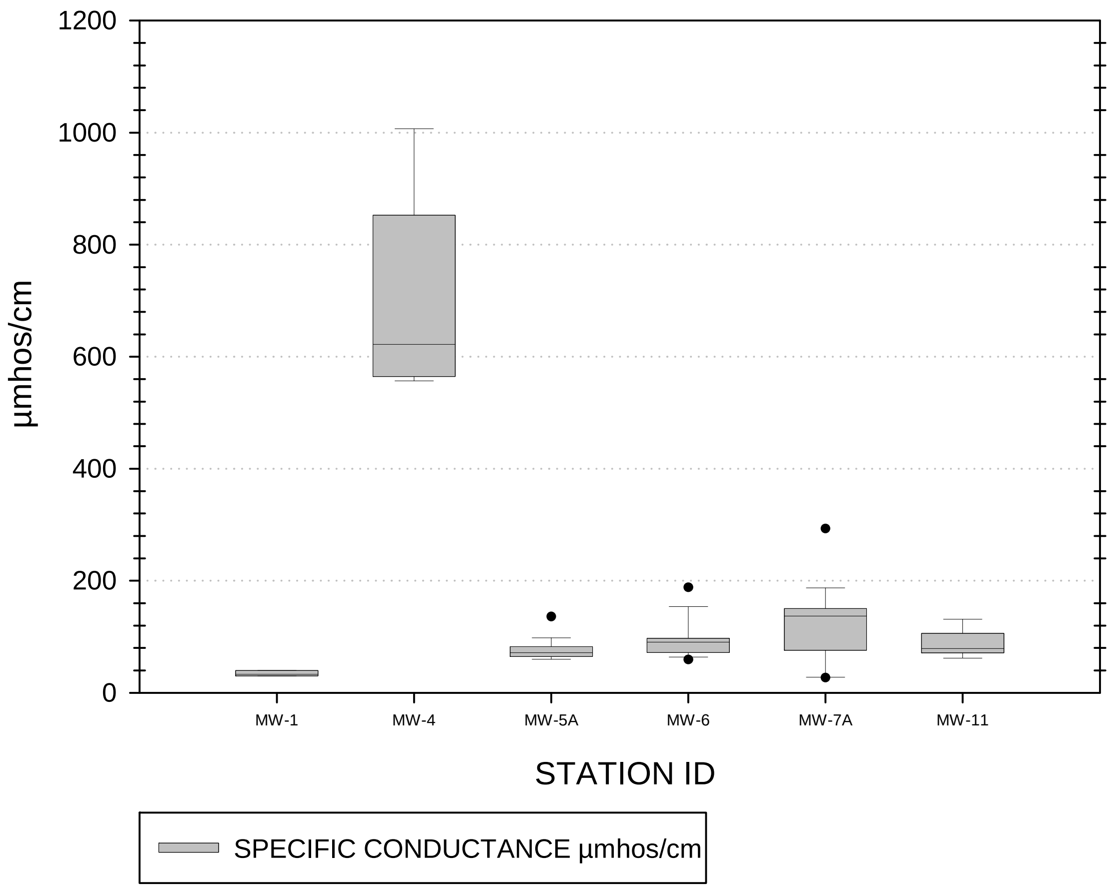
PH

SURFICIAL AQUIFER



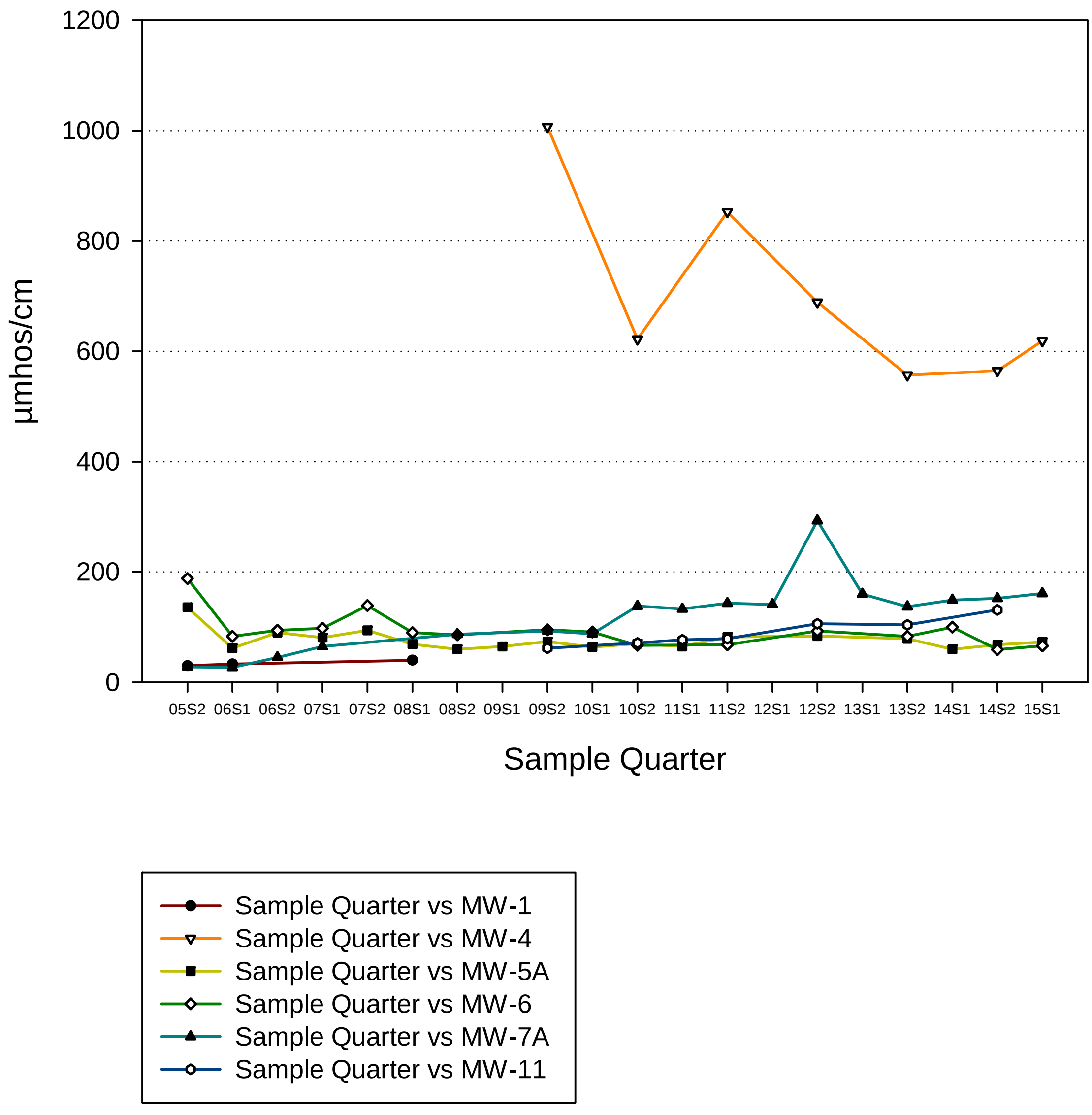
SPECIFIC CONDUCTANCE

SURFICIAL AQUIFER



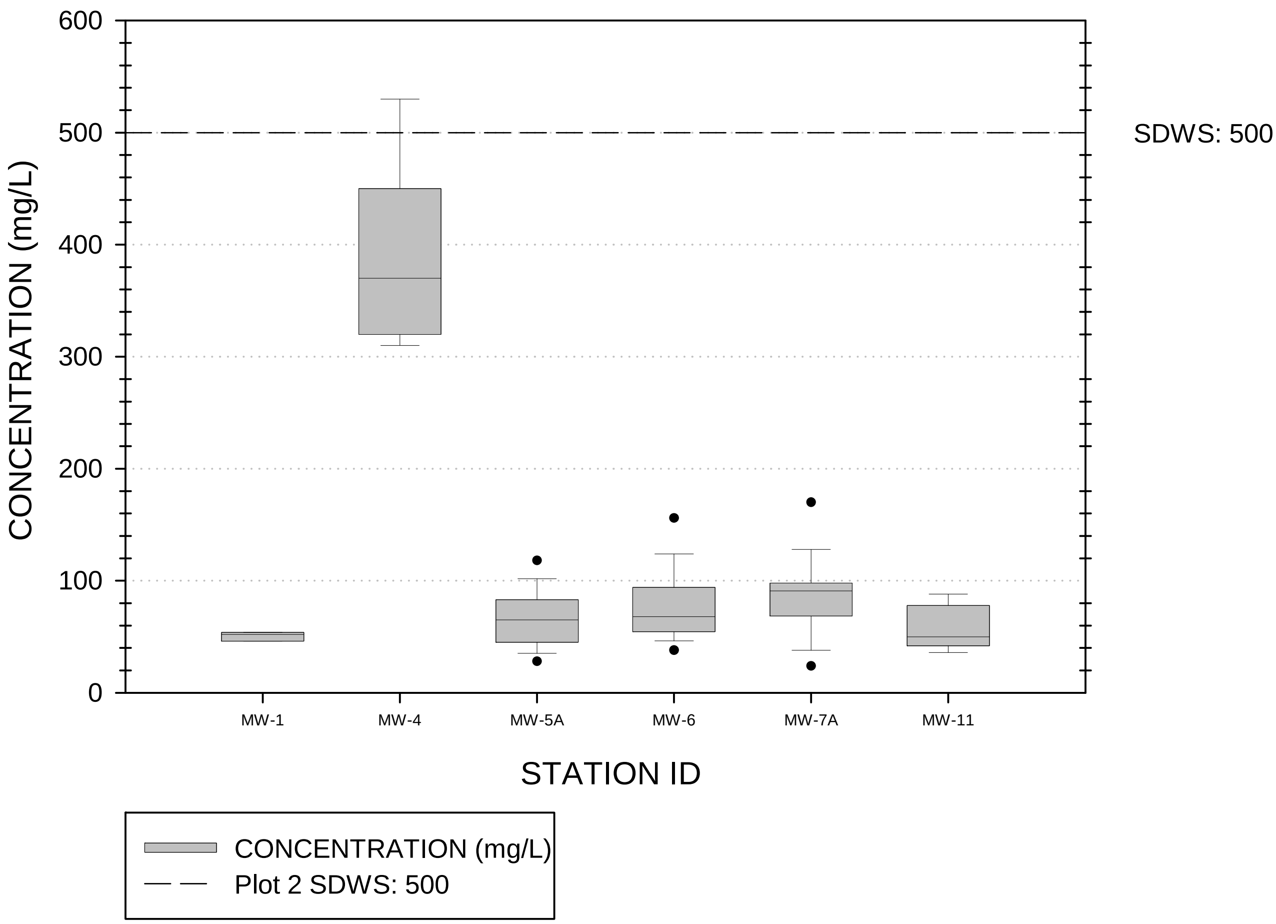
SPECIFIC CONDUCTANCE

SURFICIAL AQUIFER



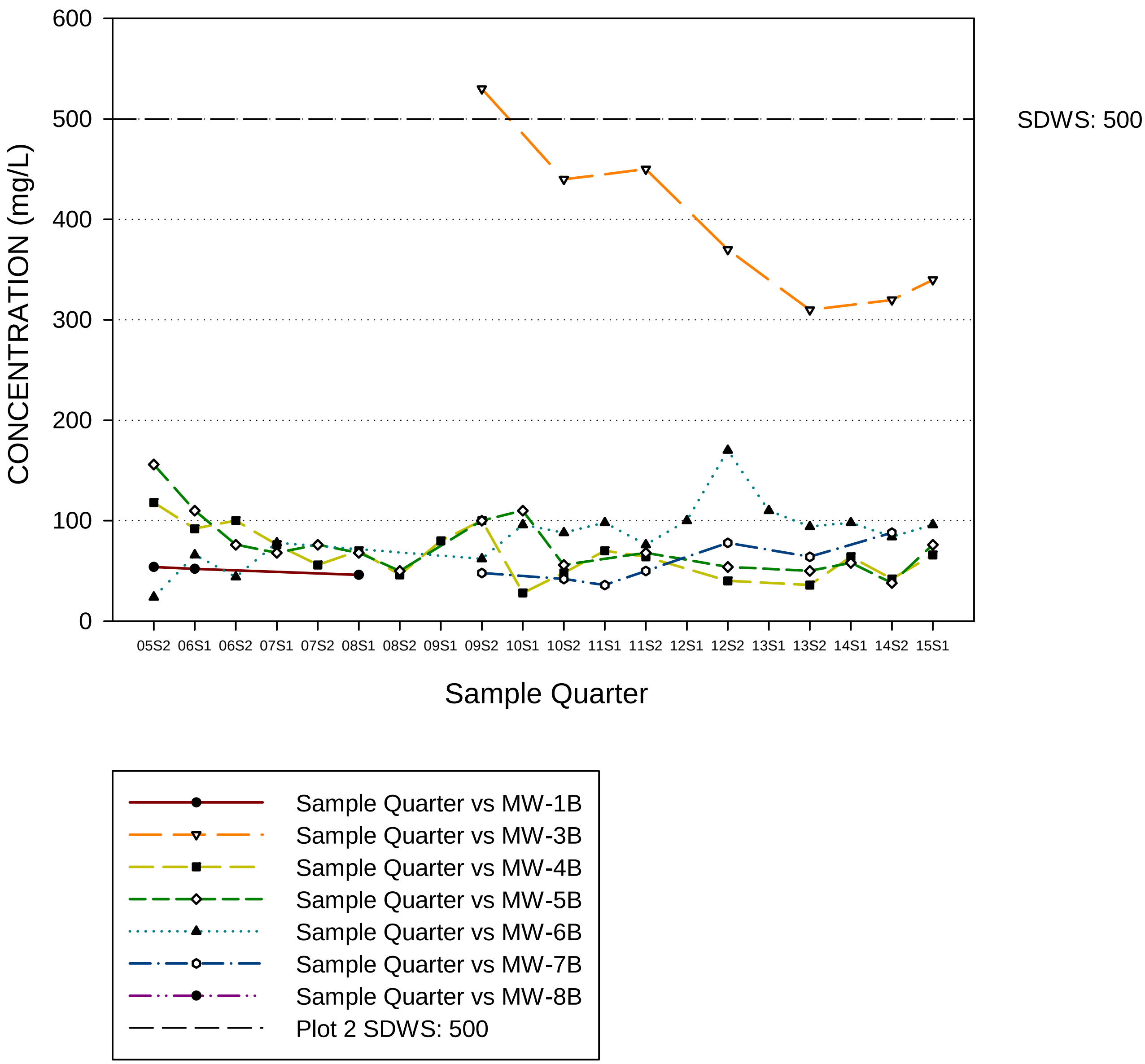
TOTAL DISSOLVED SOLIDS

SURFICIAL AQUIFER



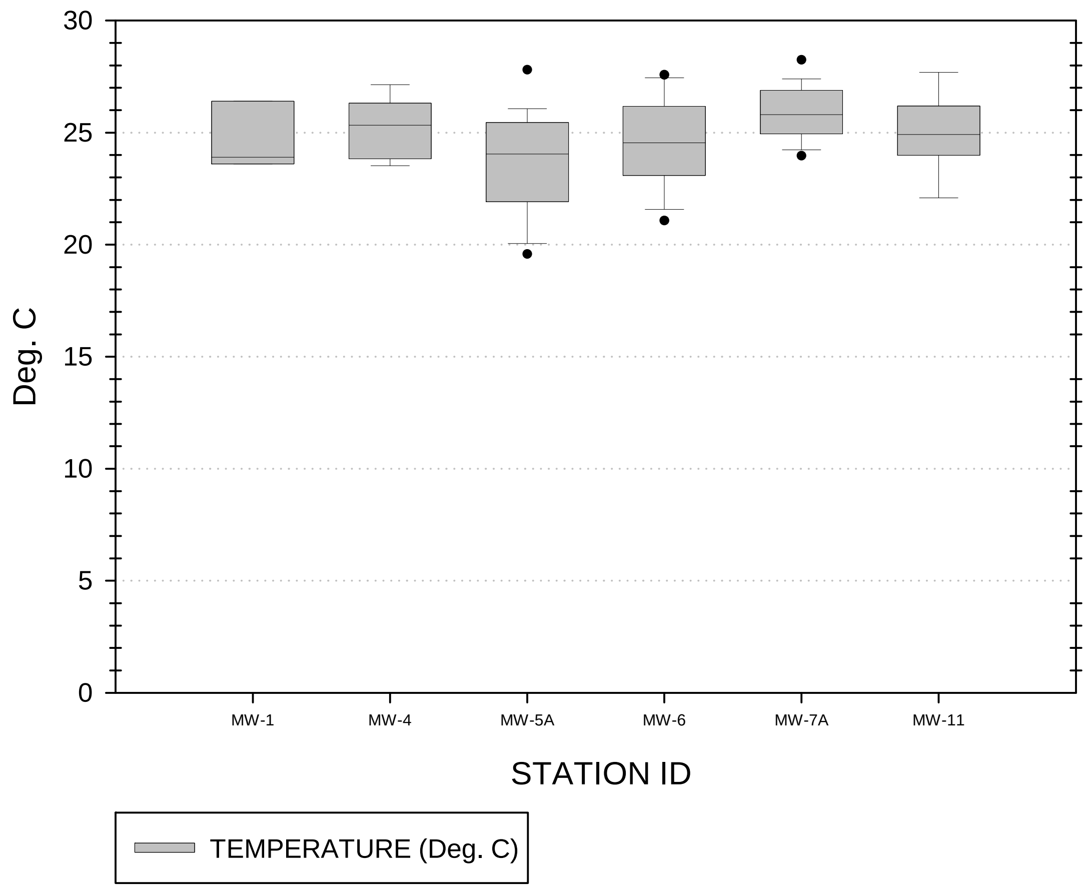
TOTAL DISSOLVED SOLIDS

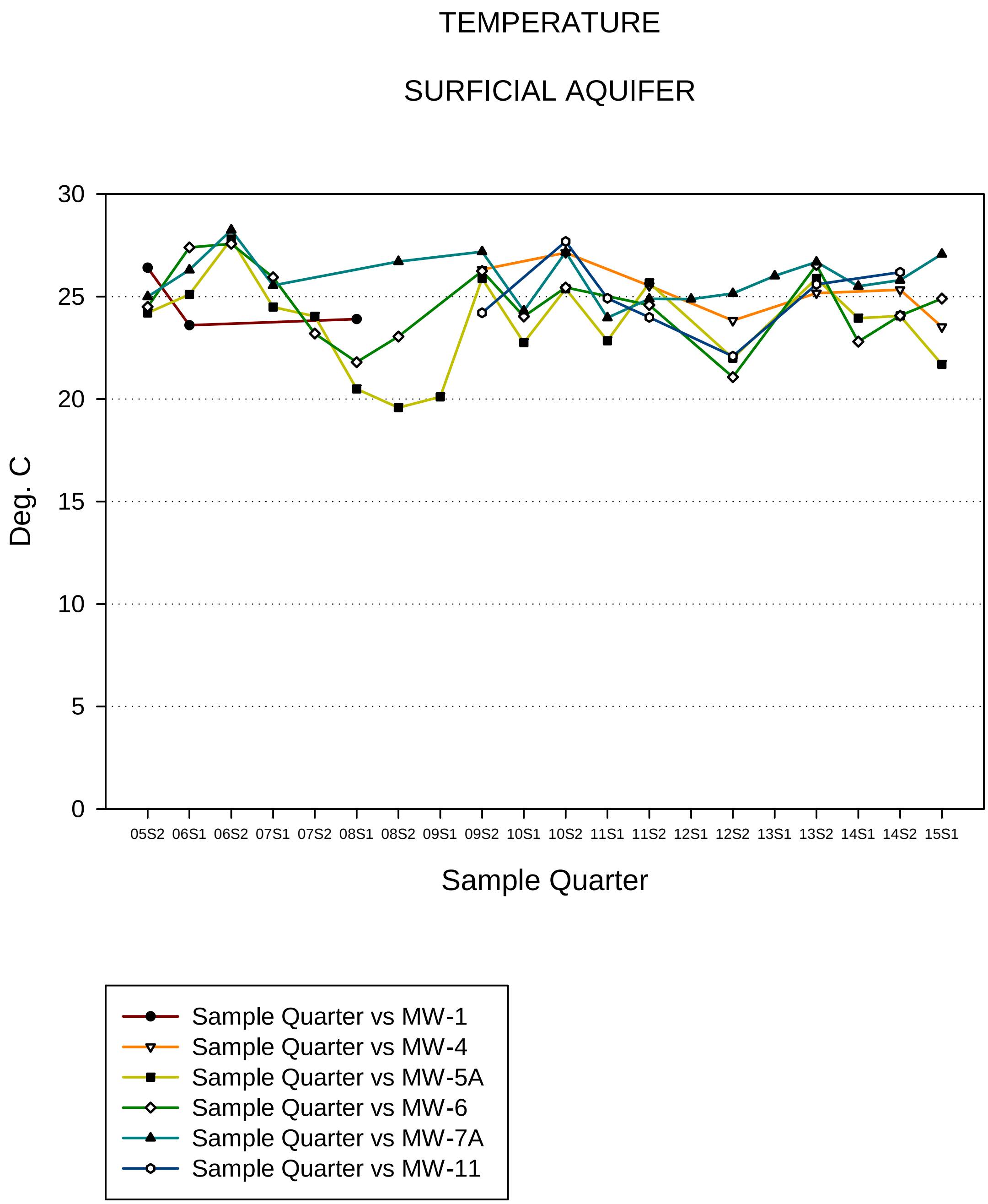
SURFICIAL AQUIFER



TEMPERATURE

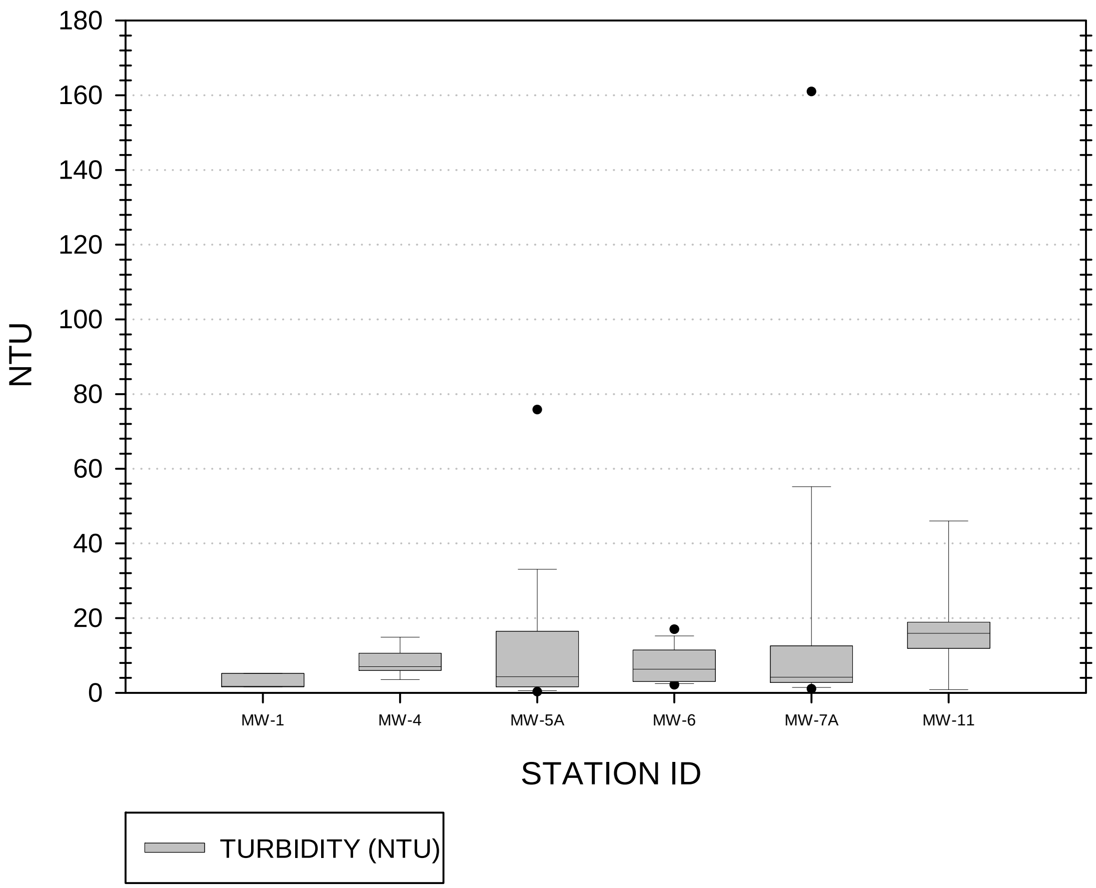
SURFICIAL AQUIFER

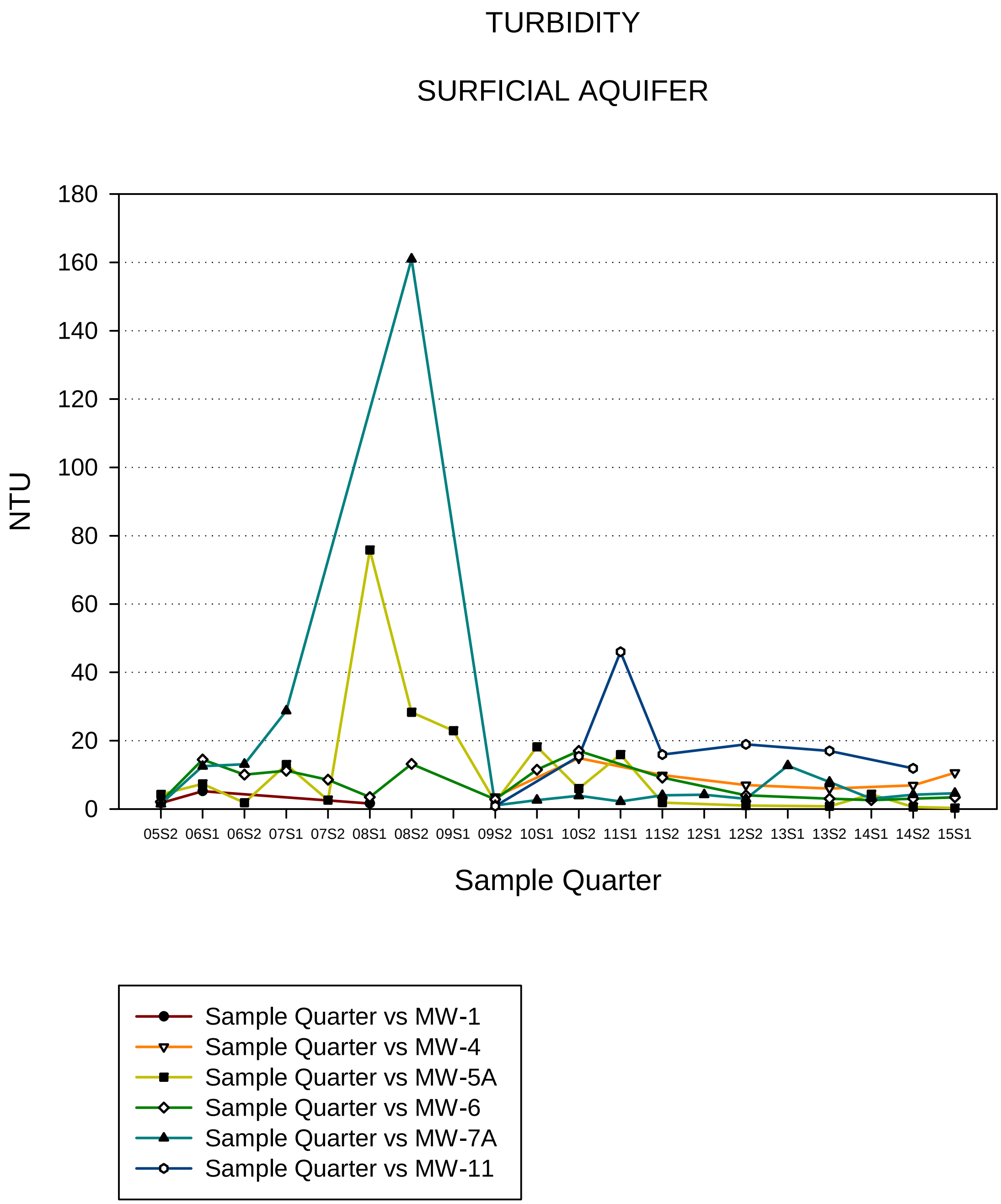



TEMPERATURE
SURFICIAL AQUIFER
Deg. C
30
25
20
15
10
5
0
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-1
Sample Quarter vs MW-4
Sample Quarter vs MW-5A
Sample Quarter vs MW-6
Sample Quarter vs MW-7A
Sample Quarter vs MW-11

TURBIDITY

SURFICIAL AQUIFER

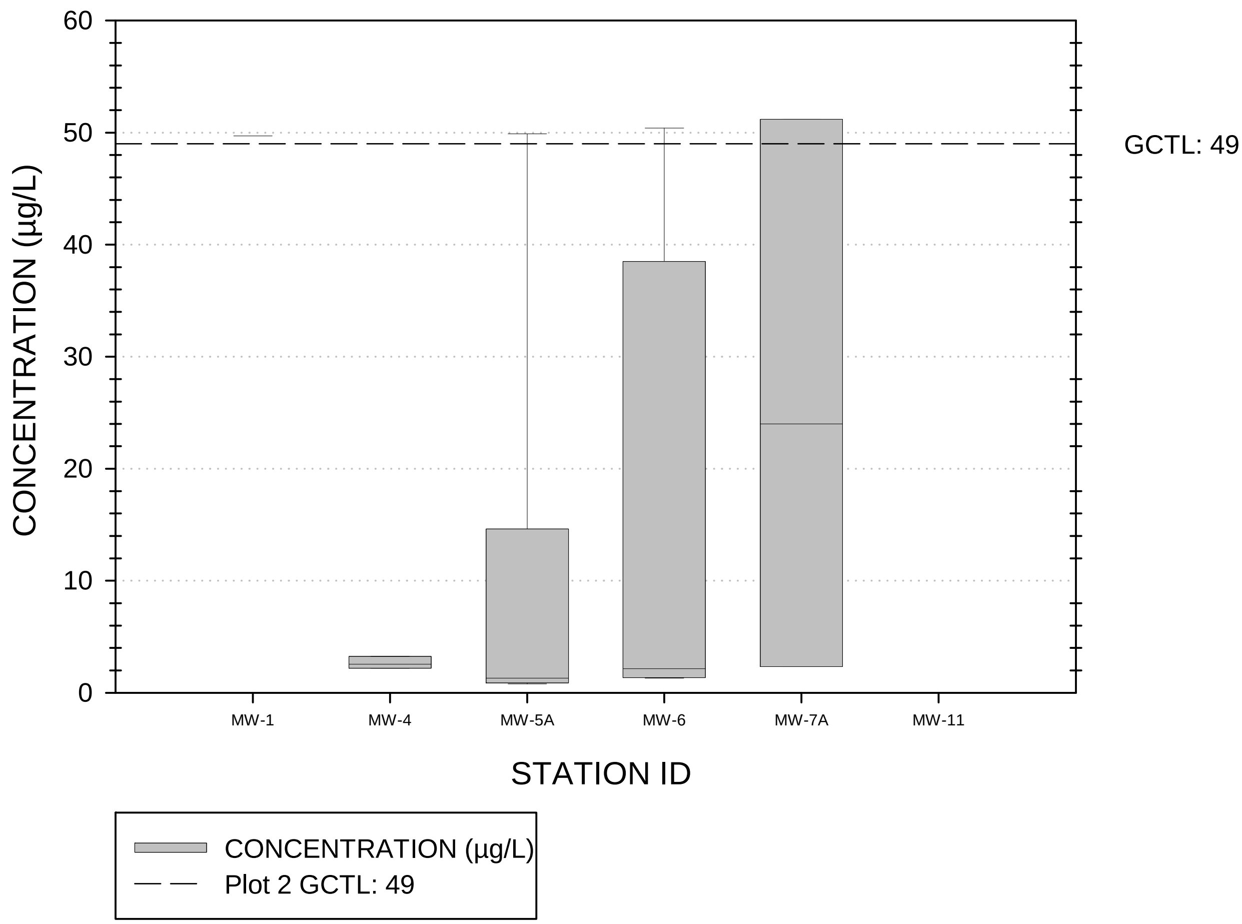




TURBIDITY
SURFICIAL AQUIFER
NTU
0
20
40
60
80
100
120
140
160
180
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs MW-1
Sample Quarter vs MW-4
Sample Quarter vs MW-5A
Sample Quarter vs MW-6
Sample Quarter vs MW-7A
Sample Quarter vs MW-11

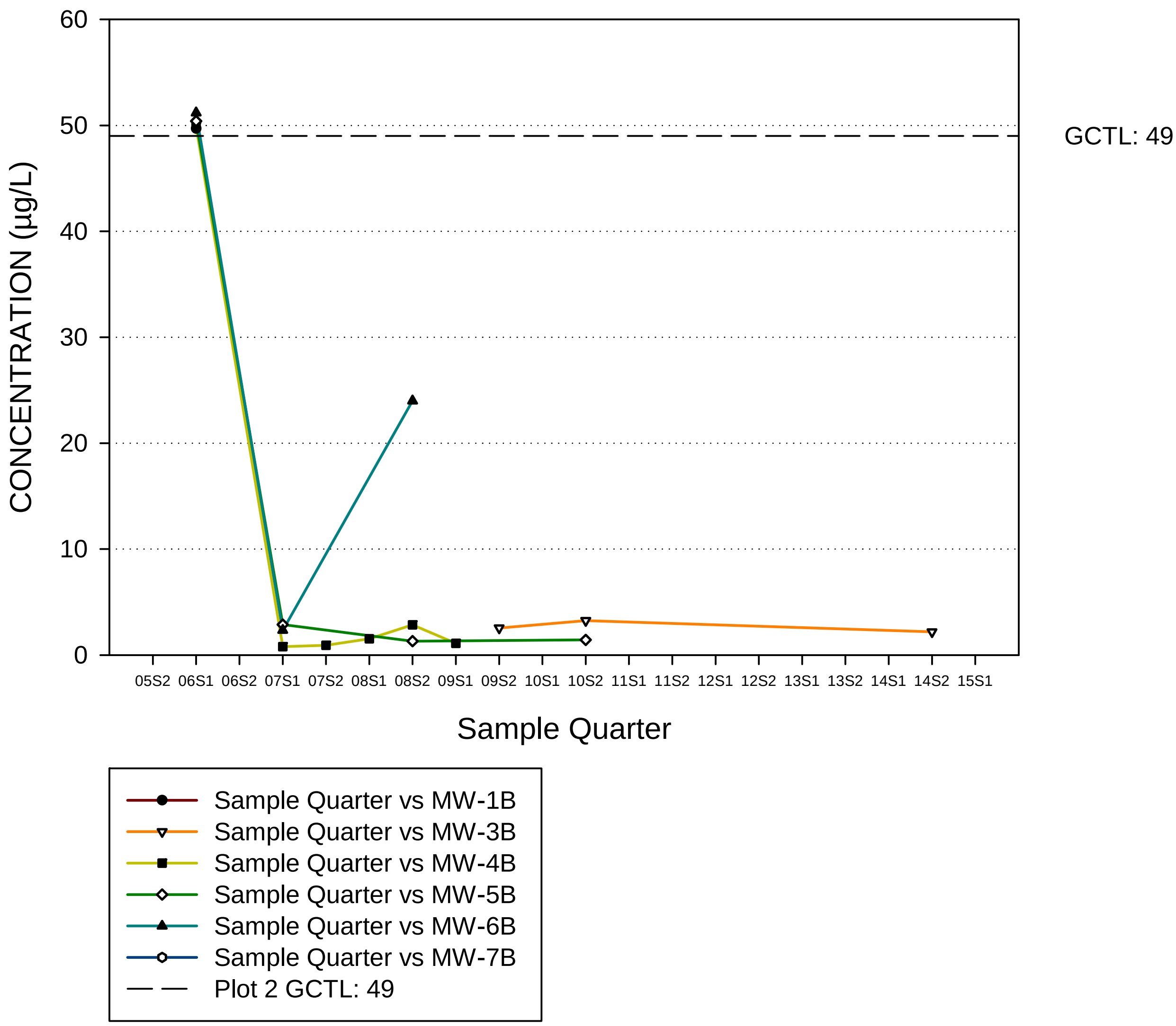
VANADIUM

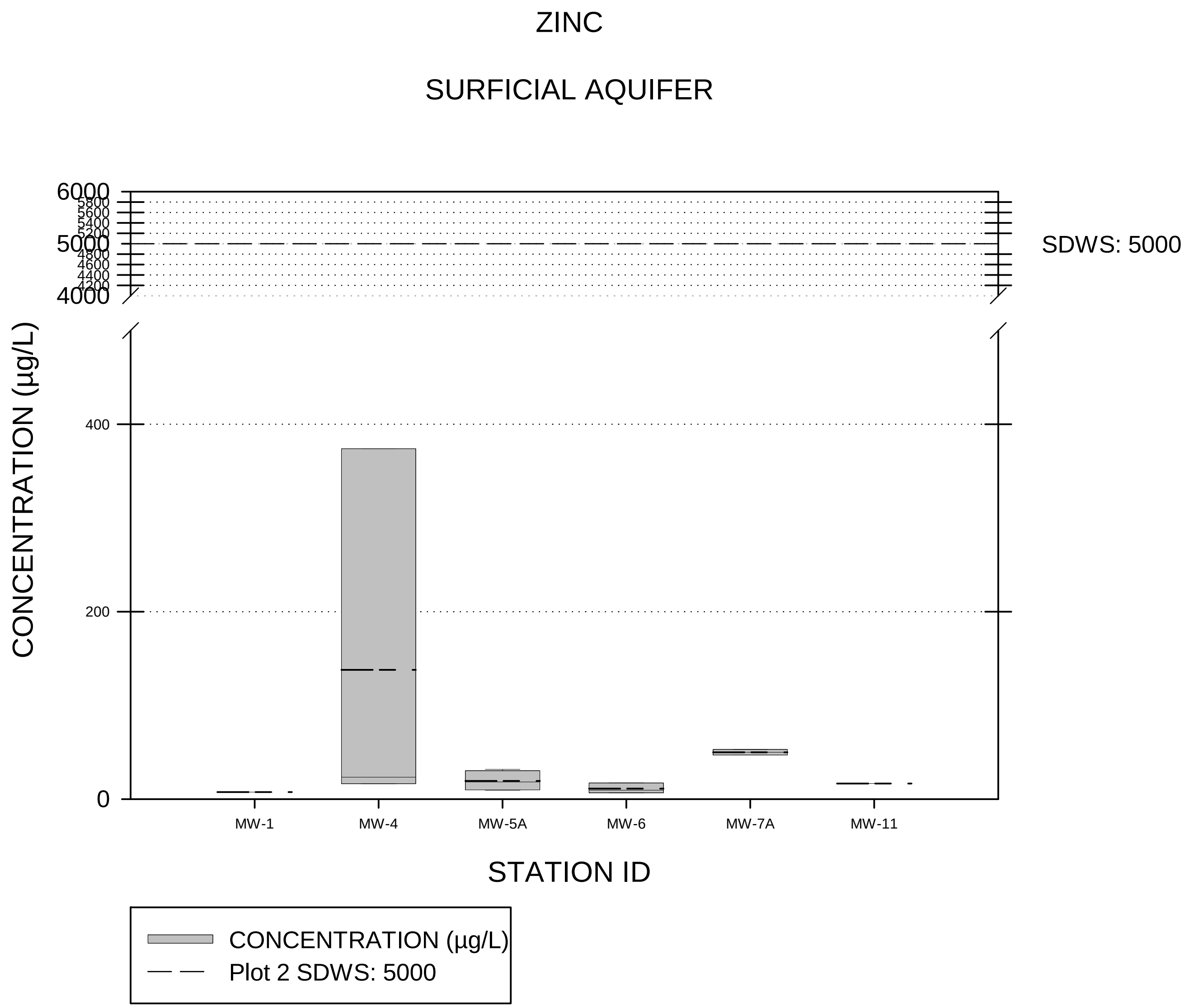
SURFICIAL AQUIFER



VANADIUM

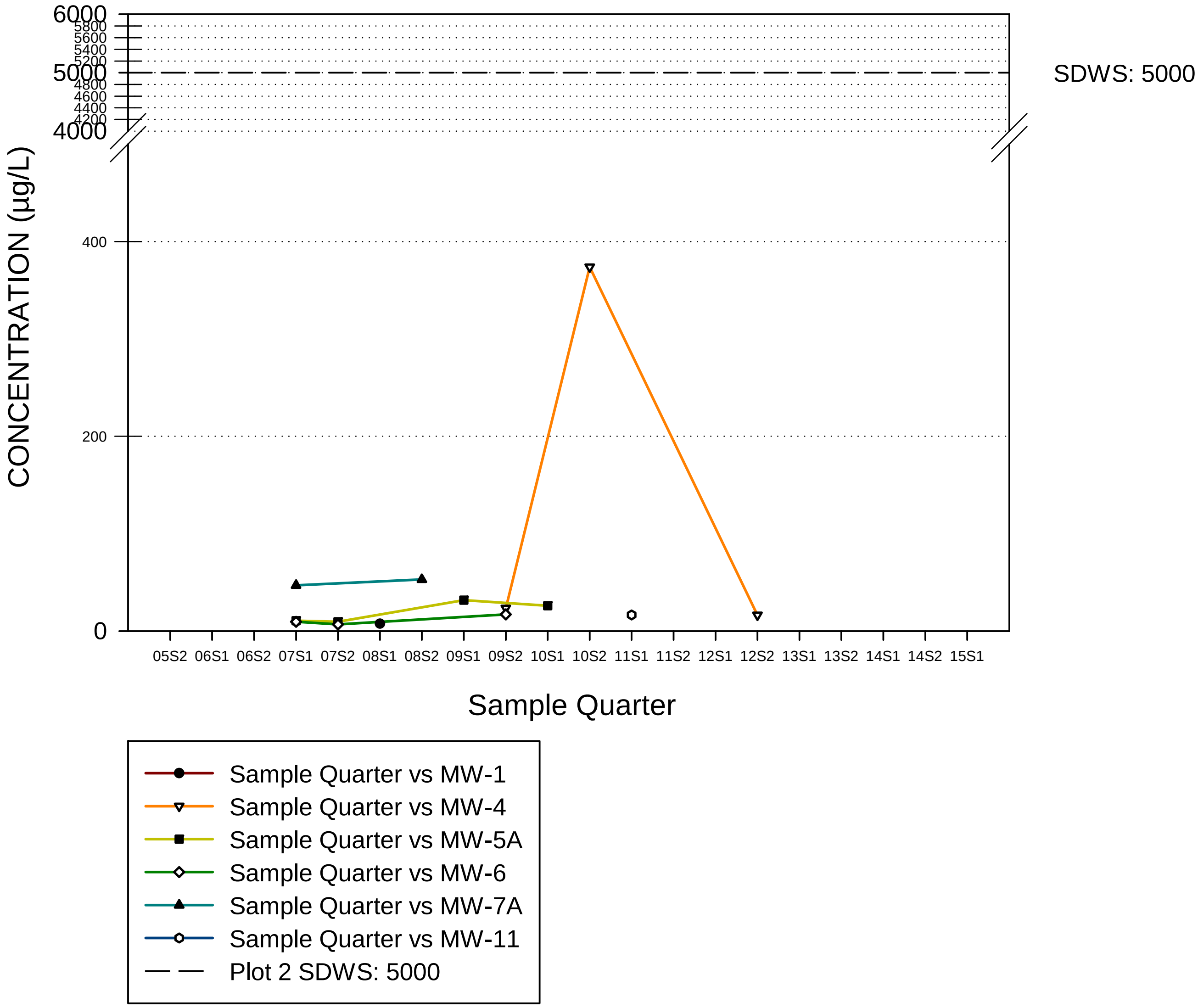
SURFICIAL AQUIFER




ZINC
SURFICIAL AQUIFER
6000
5800
5600
5400
5200
5000
4800
4600
4400
4200
4000
400
200
0
SDWS: 5000
CONCENTRATION (µg/L)
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (µg/L)
Plot 2 SDWS: 5000

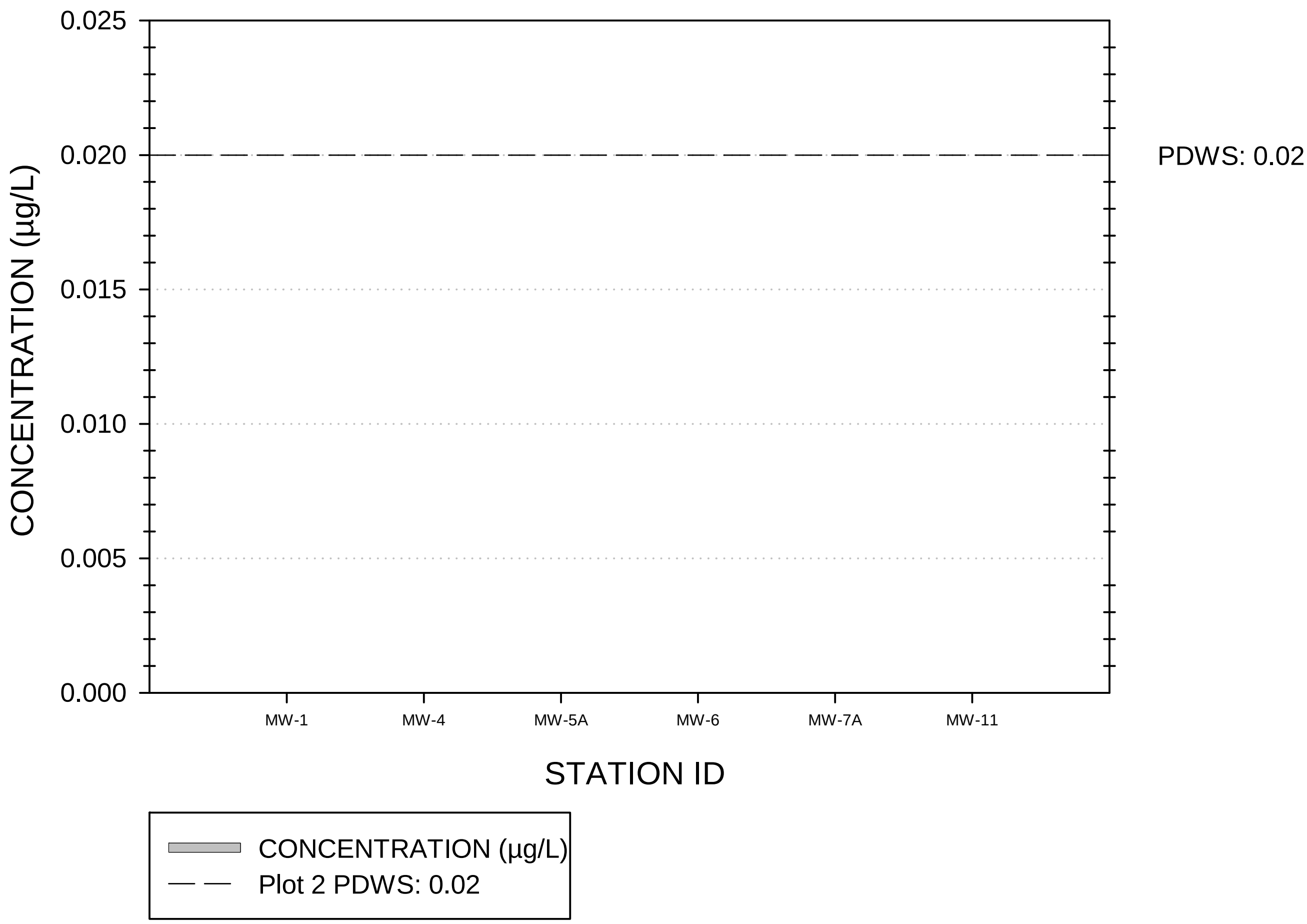
ZINC

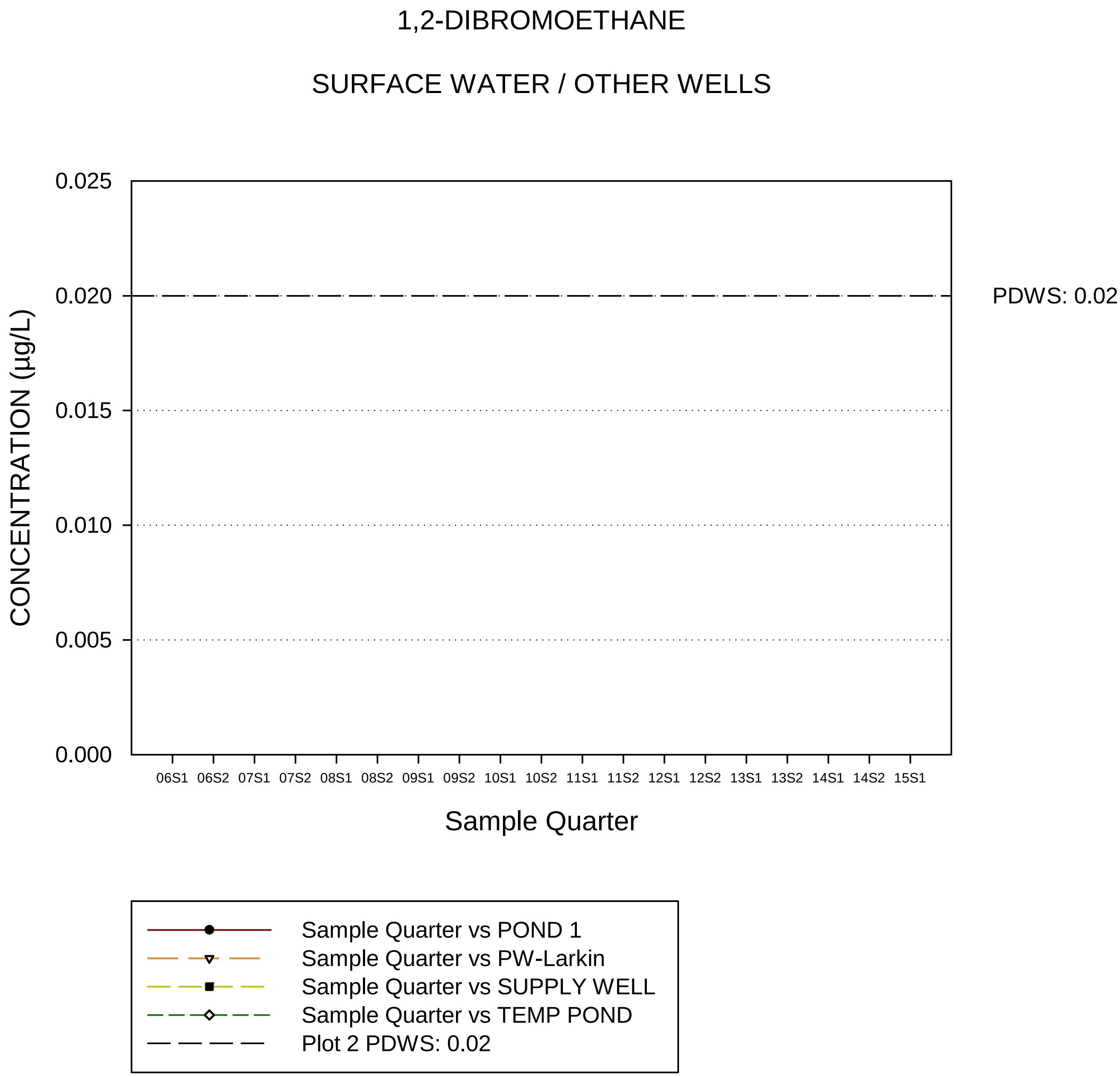
SURFICIAL AQUIFER

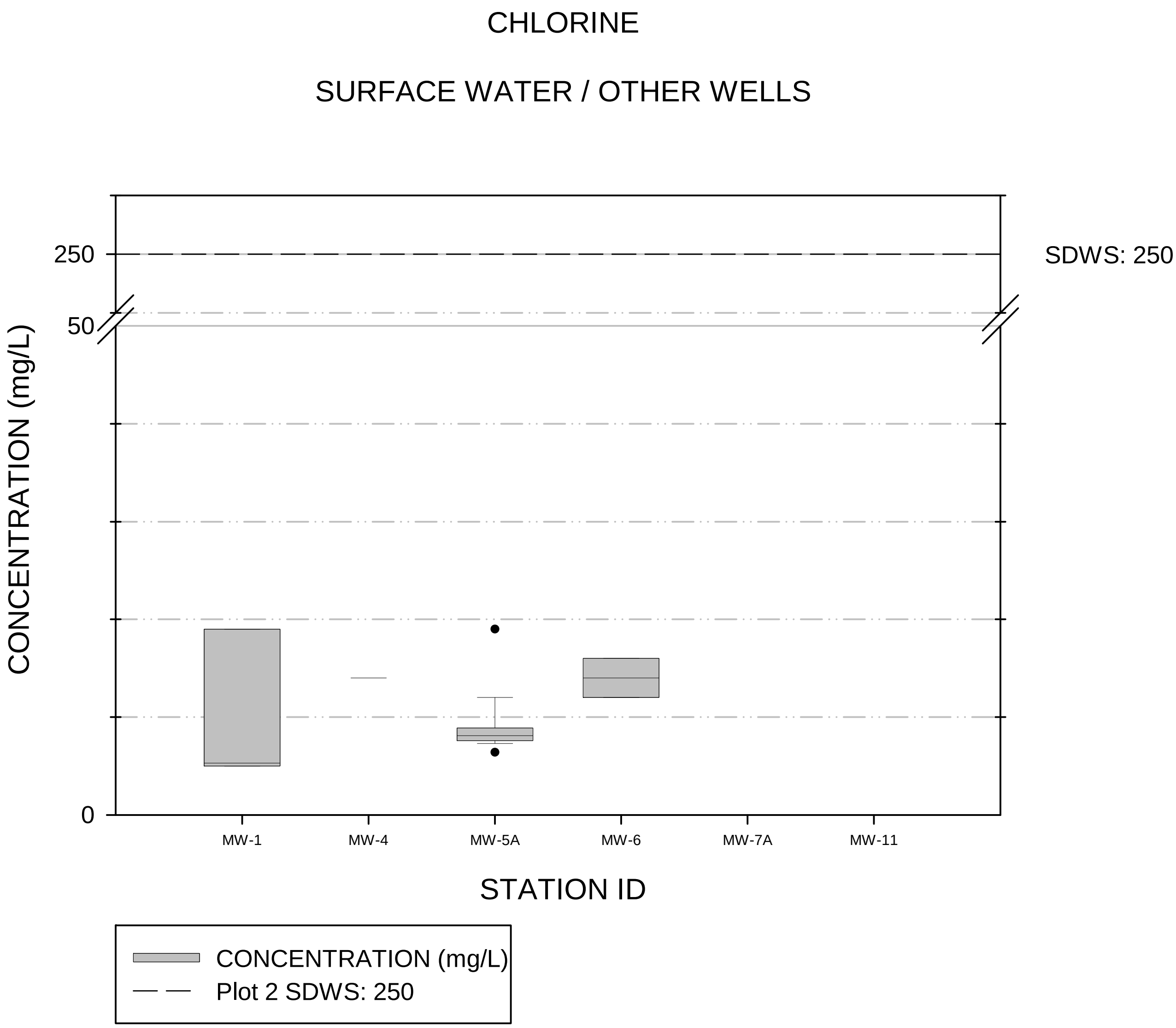


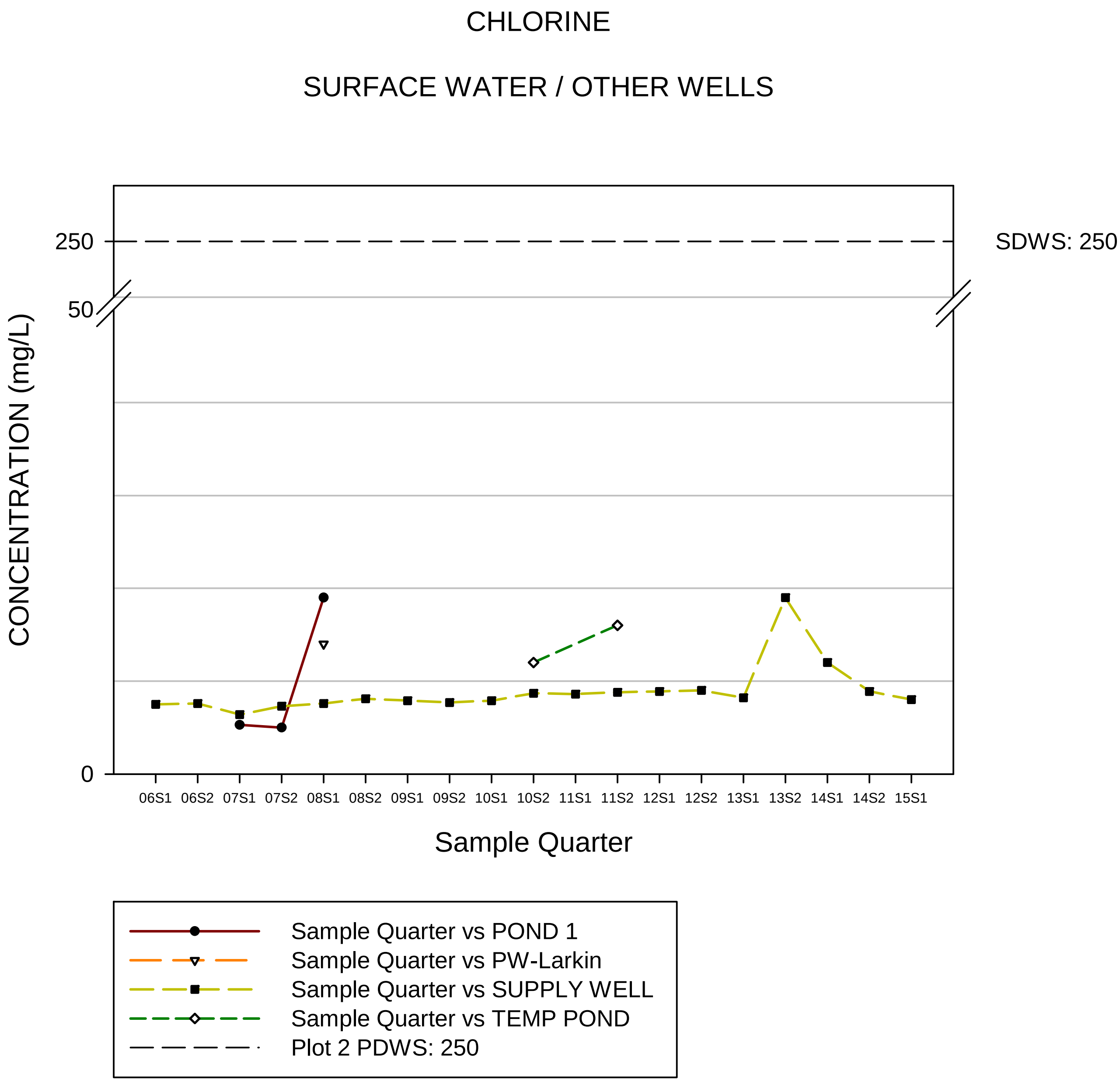
1,2-DIBROMOETHANE

SURFACE WATER / OTHER WELLS



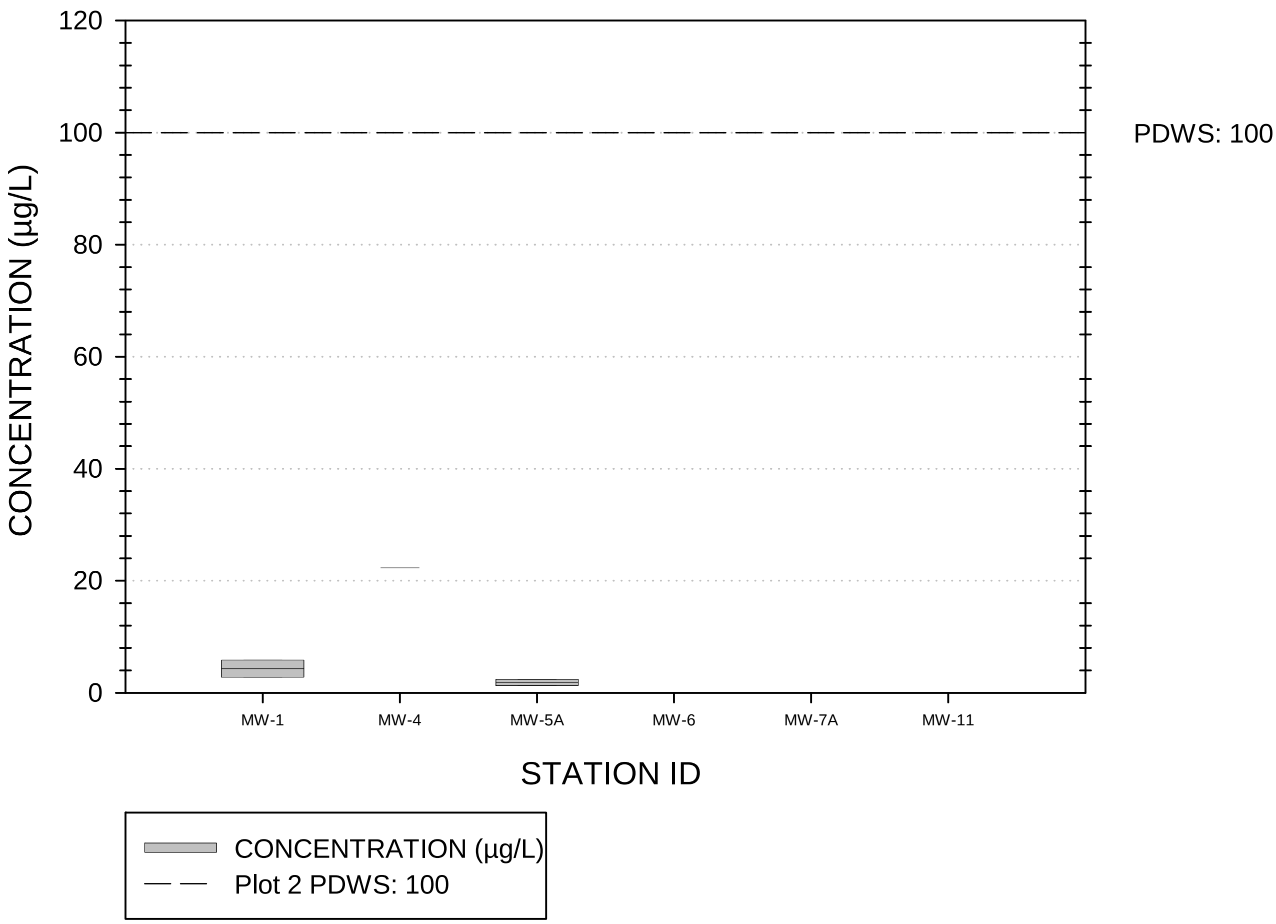

1,2-DIBROMOETHANE
SURFACE WATER / OTHER WELLS
0.025
0.020
0.015
0.010
0.005
0.000
CONCENTRATION (µg/L)
PDWS: 0.02
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Plot 2 PDWS: 0.02


CHLORINE
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
250
50
0
SDWS: 250
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (mg/L)
Plot 2 SDWS: 250


CHLORINE
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
250
50
0
SDWS: 250
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Plot 2 PDWS: 250

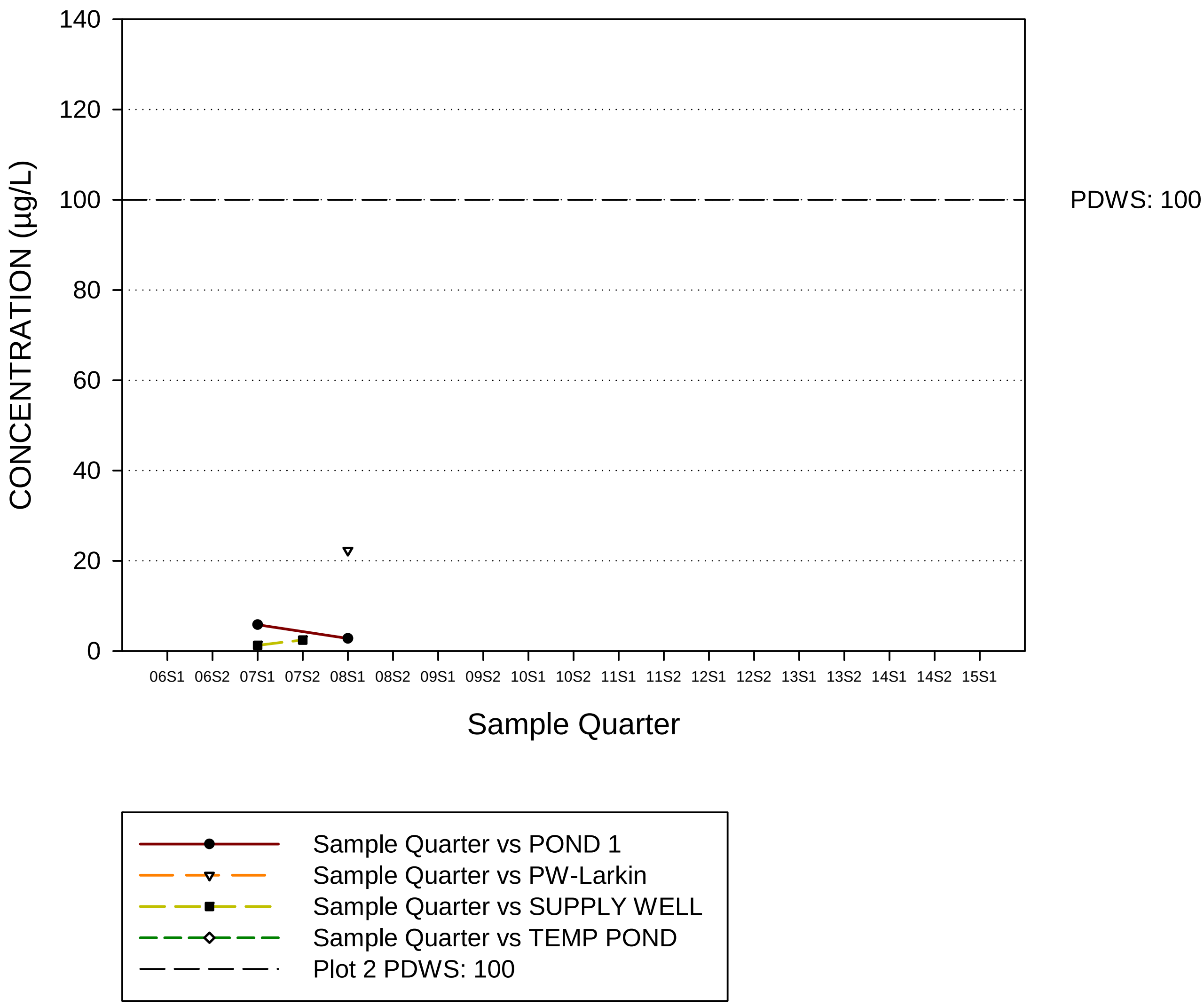
CHROMIUM

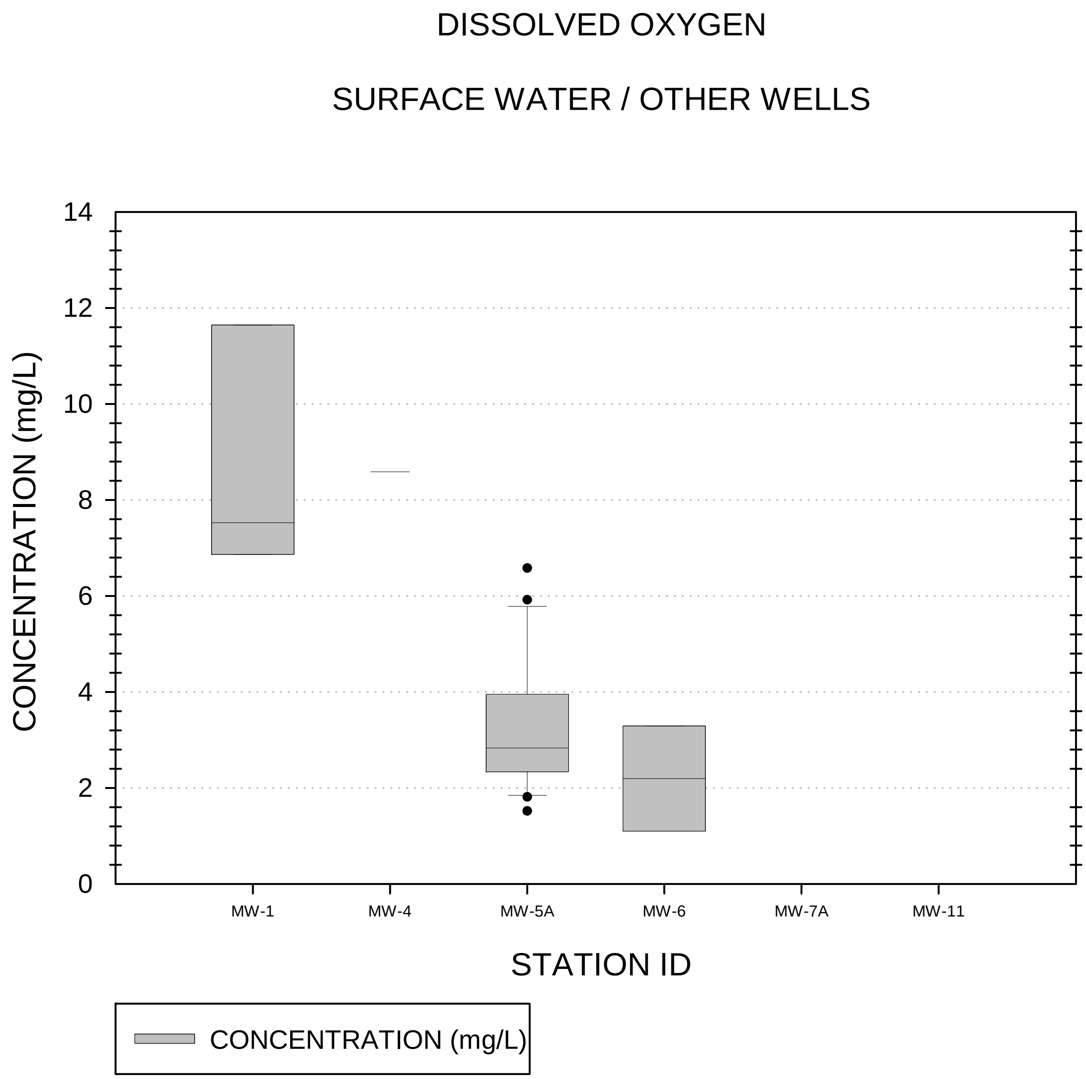
SURFACE WATER / OTHER WELLS



CHROMIUM

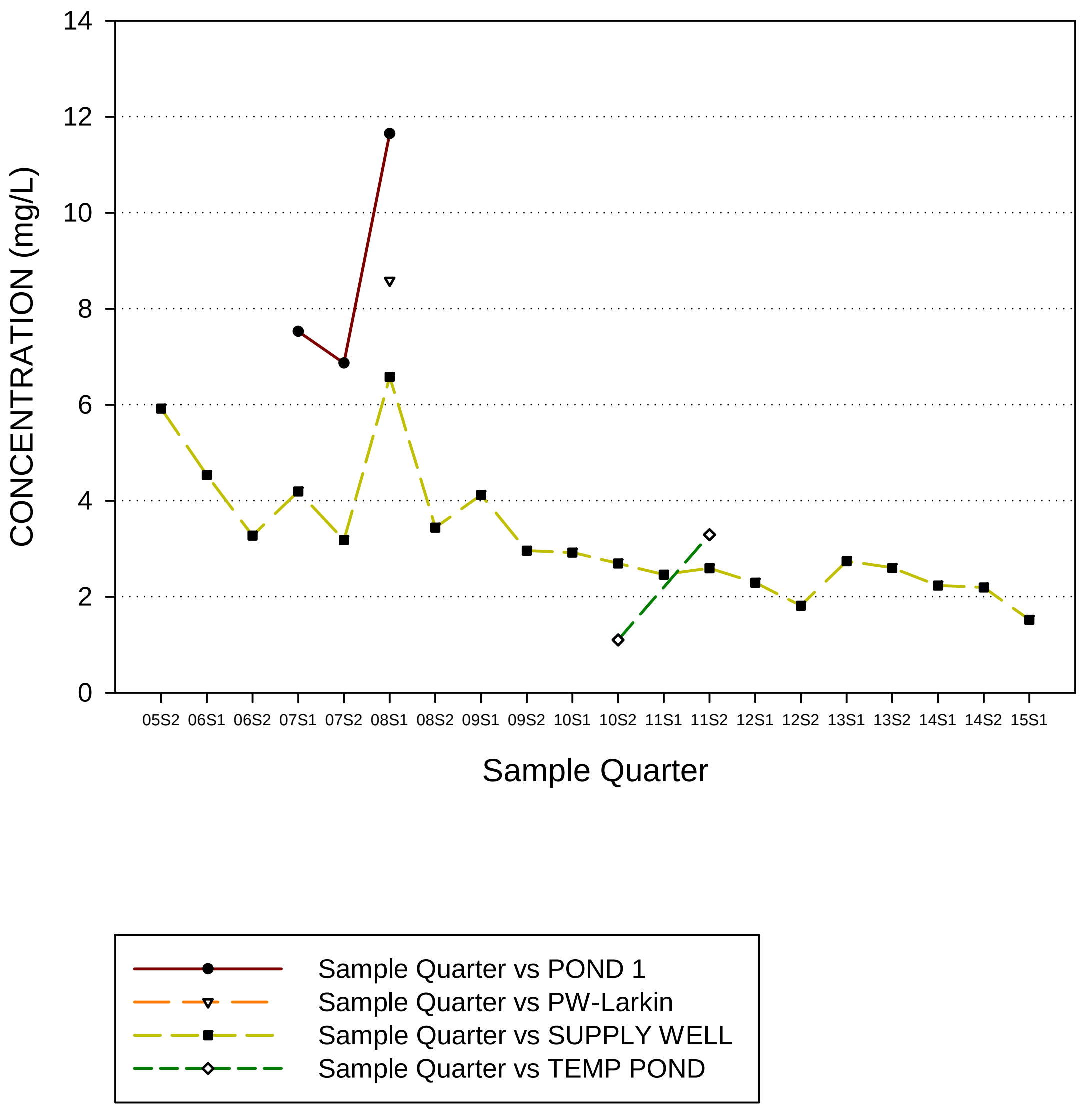
SURFACE WATER / OTHER WELLS




DISSOLVED OXYGEN
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
0
2
4
6
8
10
12
14
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (mg/L)

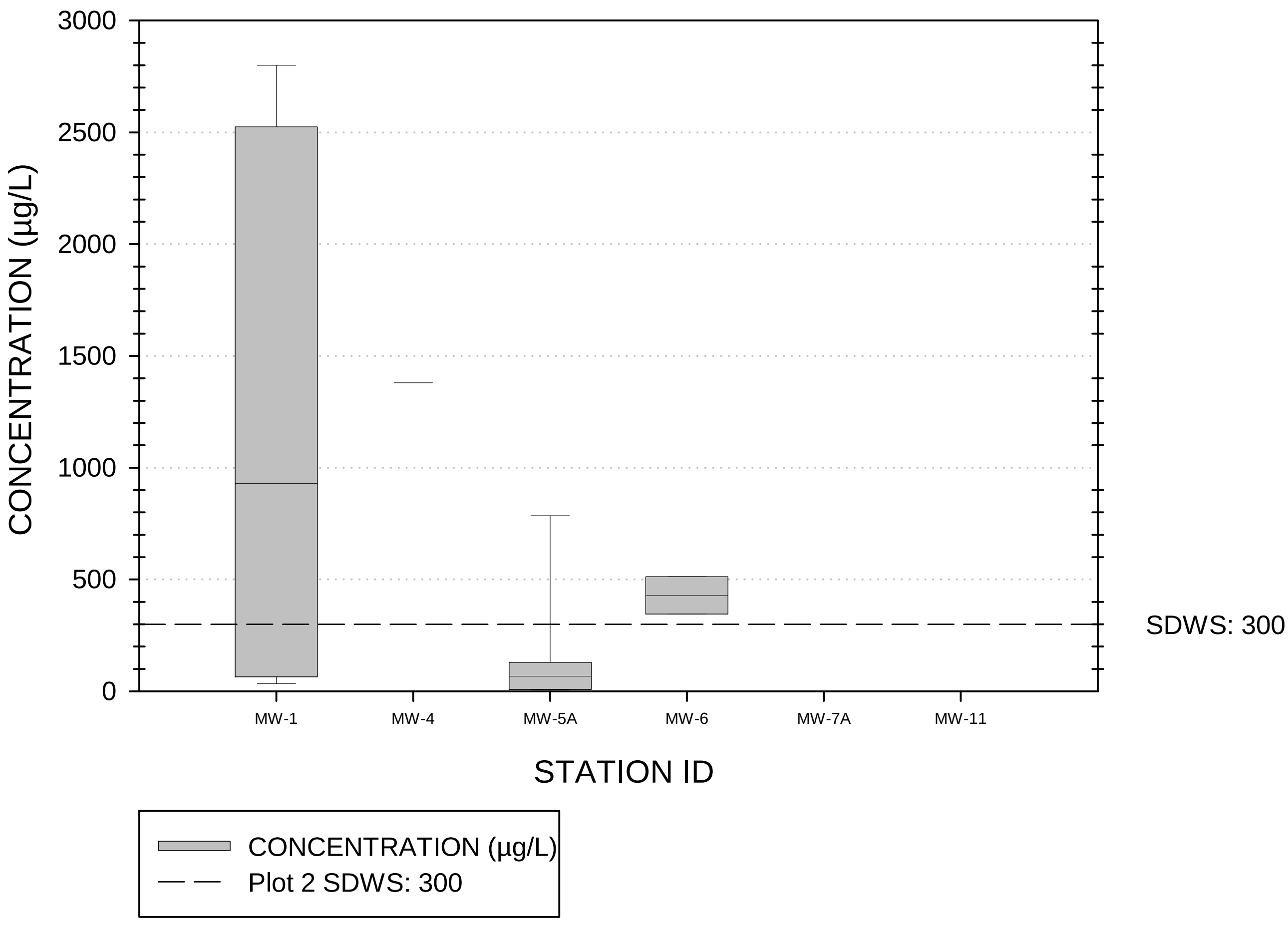
DISSOLVED OXYGEN

SURFACE WATER / OTHER WELLS



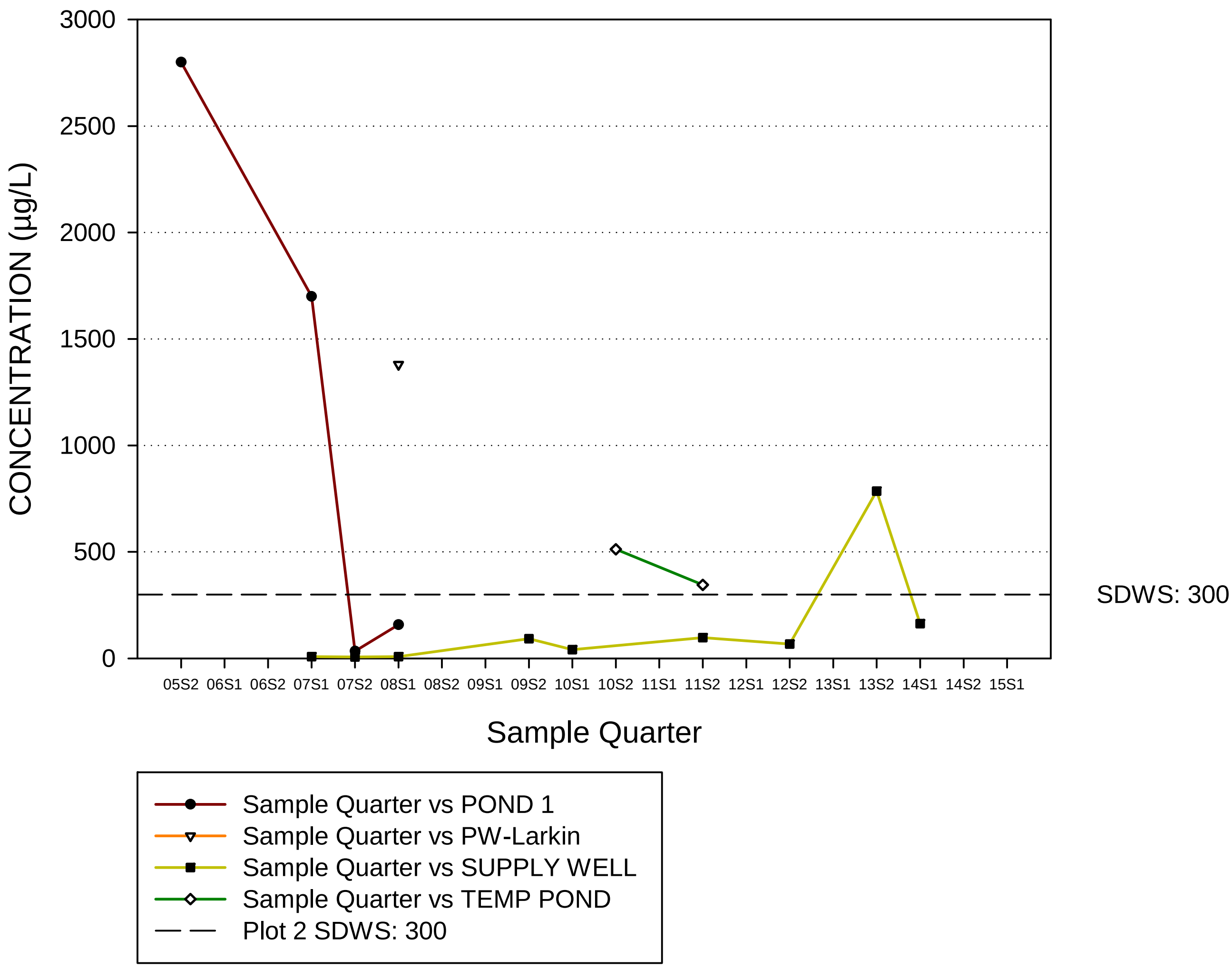
IRON

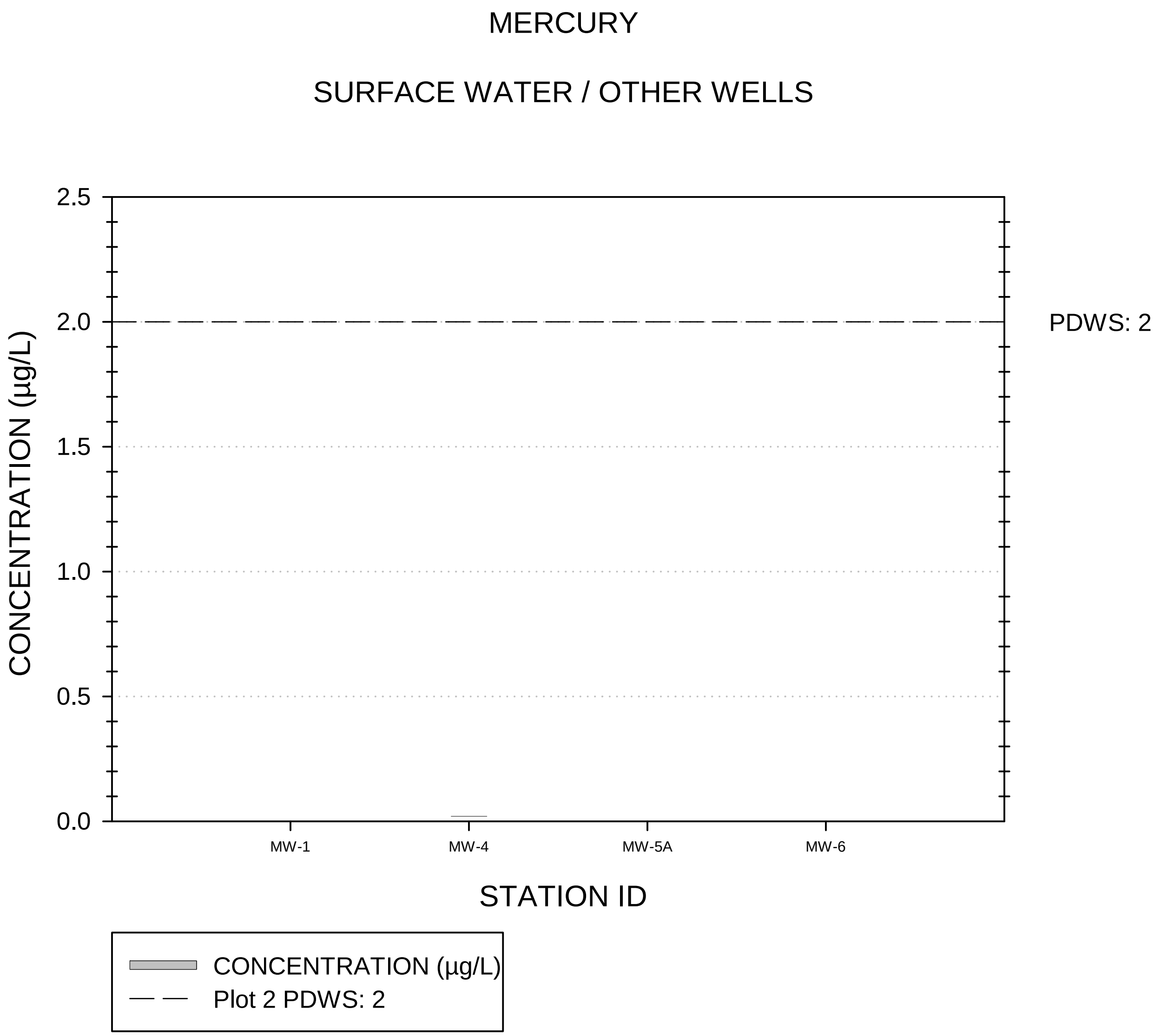
SURFACE WATER / OTHER WELLS

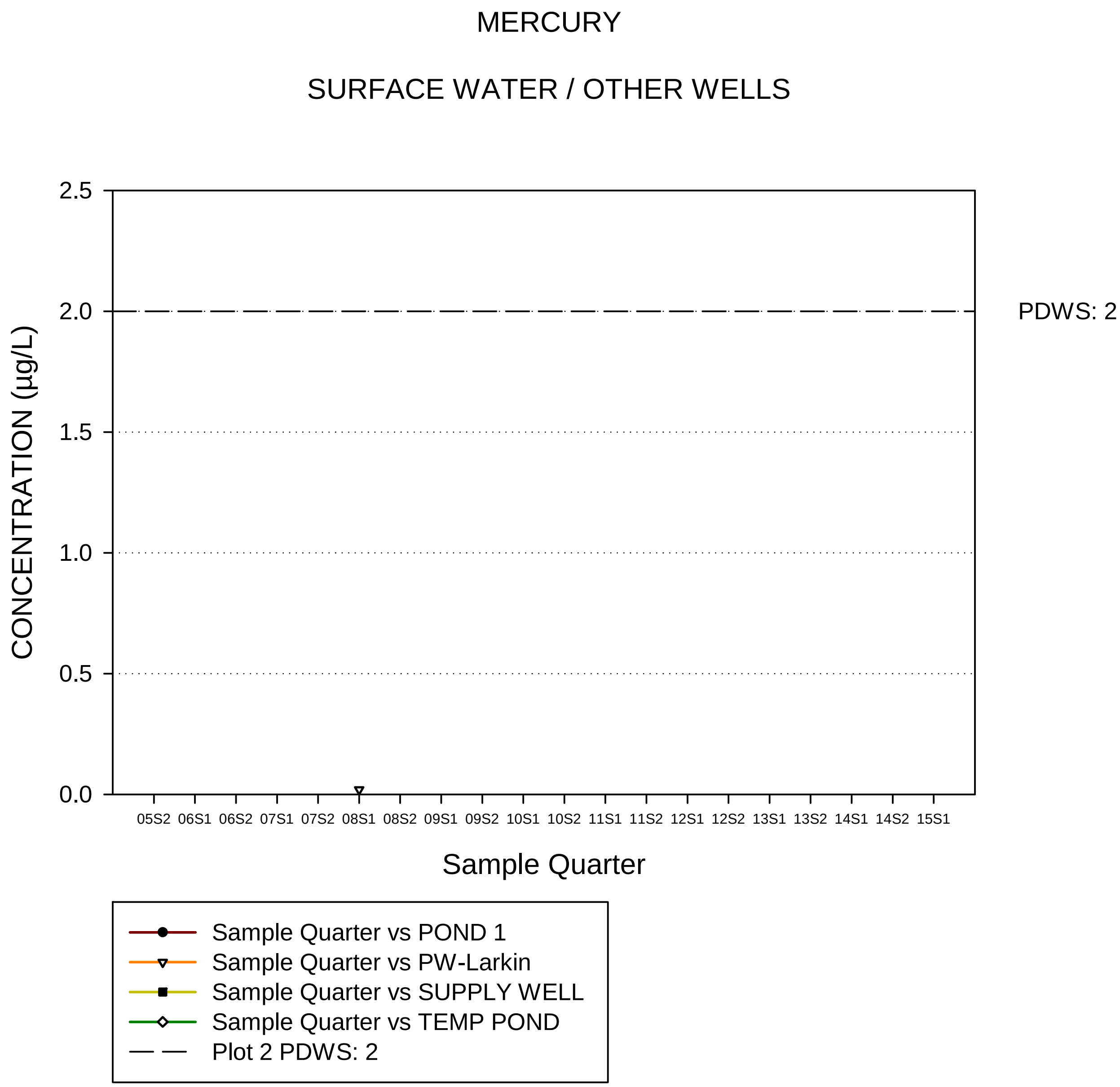


IRON

SURFACE WATER / OTHER WELLS

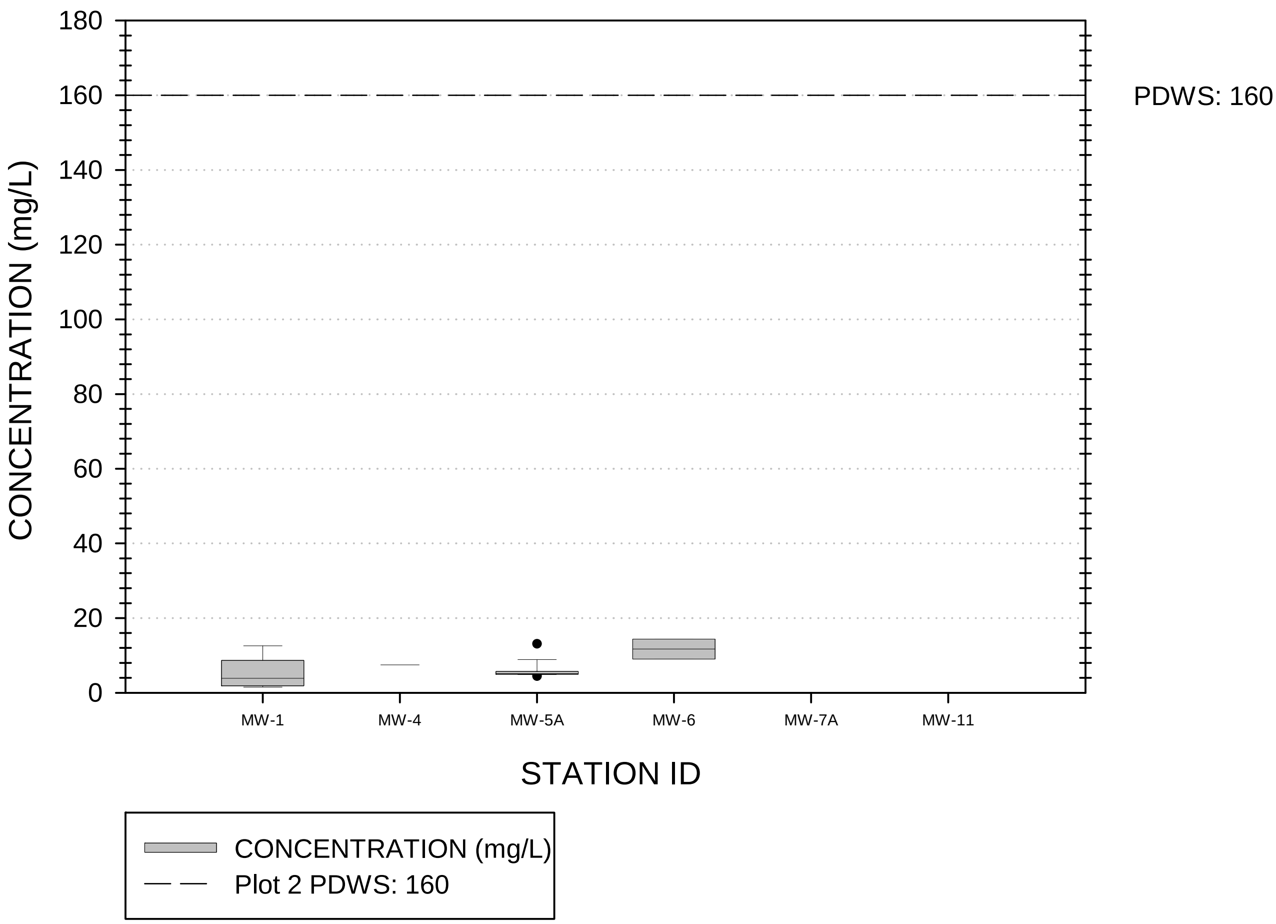



MERCURY
SURFACE WATER / OTHER WELLS
2.5
2.0
1.5
1.0
0.5
0.0
CONCENTRATION (µg/L)
PDWS: 2
MW-1
MW-4
MW-5A
MW-6
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 2


MERCURY
SURFACE WATER / OTHER WELLS
CONCENTRATION (µg/L)
2.5
2.0
1.5
1.0
0.5
0.0
PDWS: 2
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Plot 2 PDWS: 2

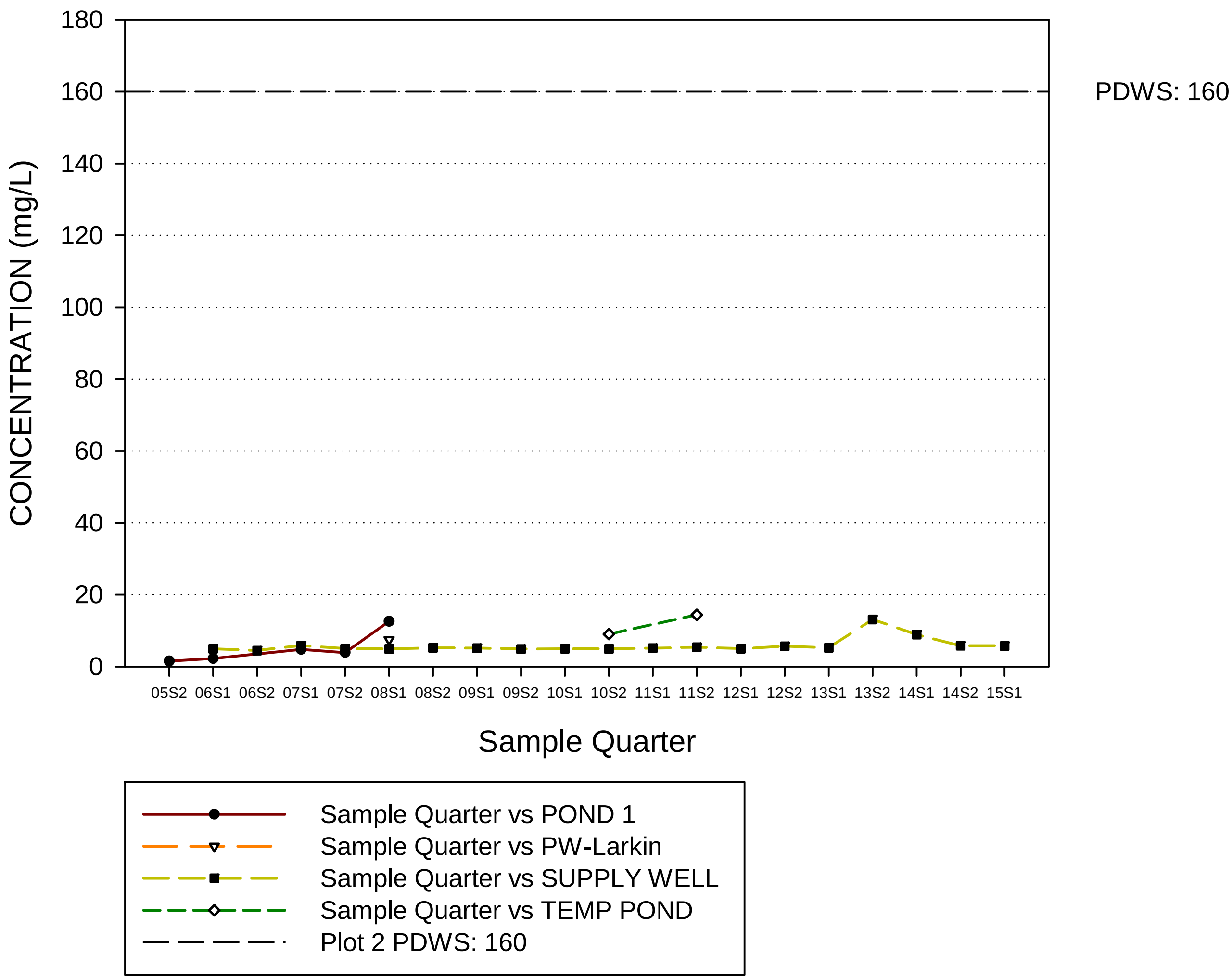
SODIUM

SURFACE WATER / OTHER WELLS



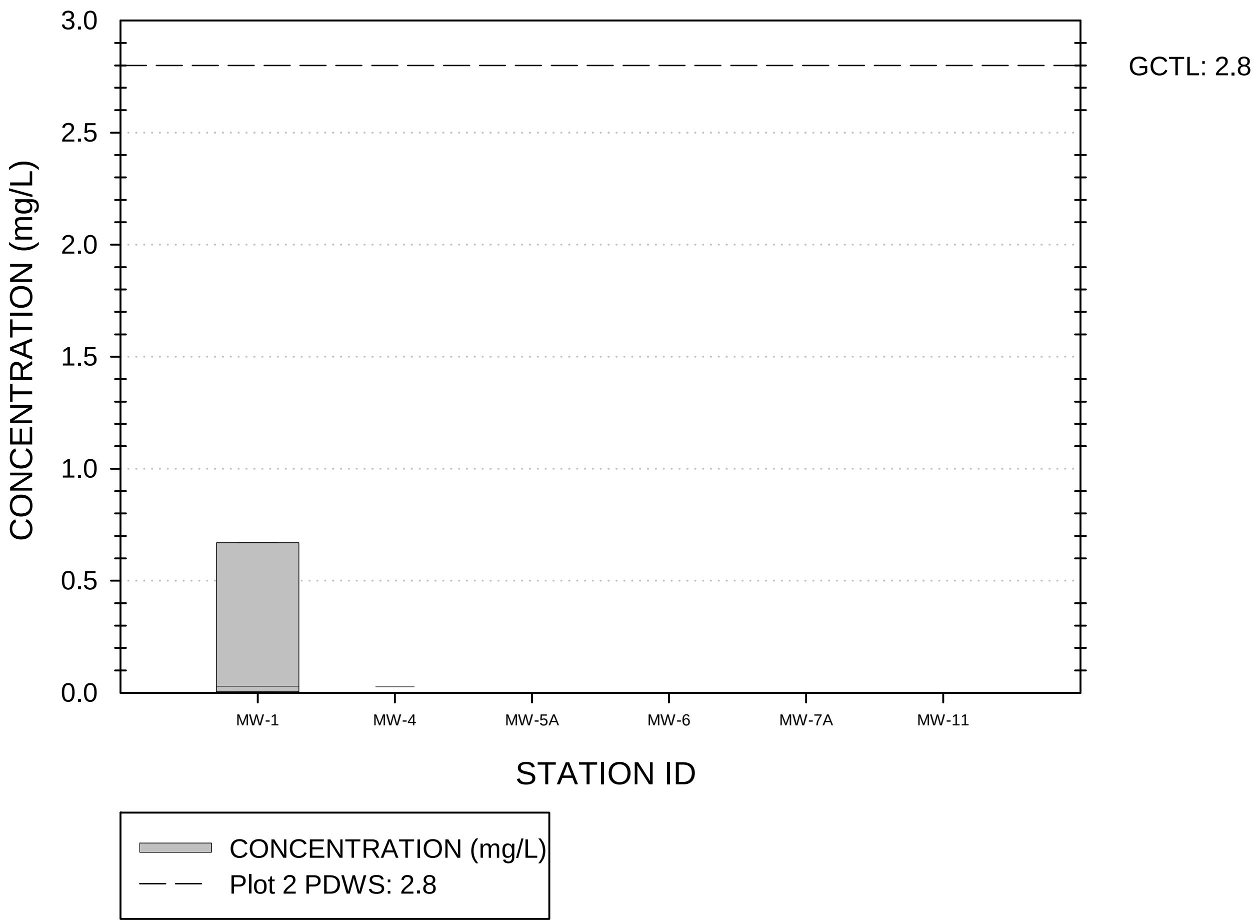
CHLORINE

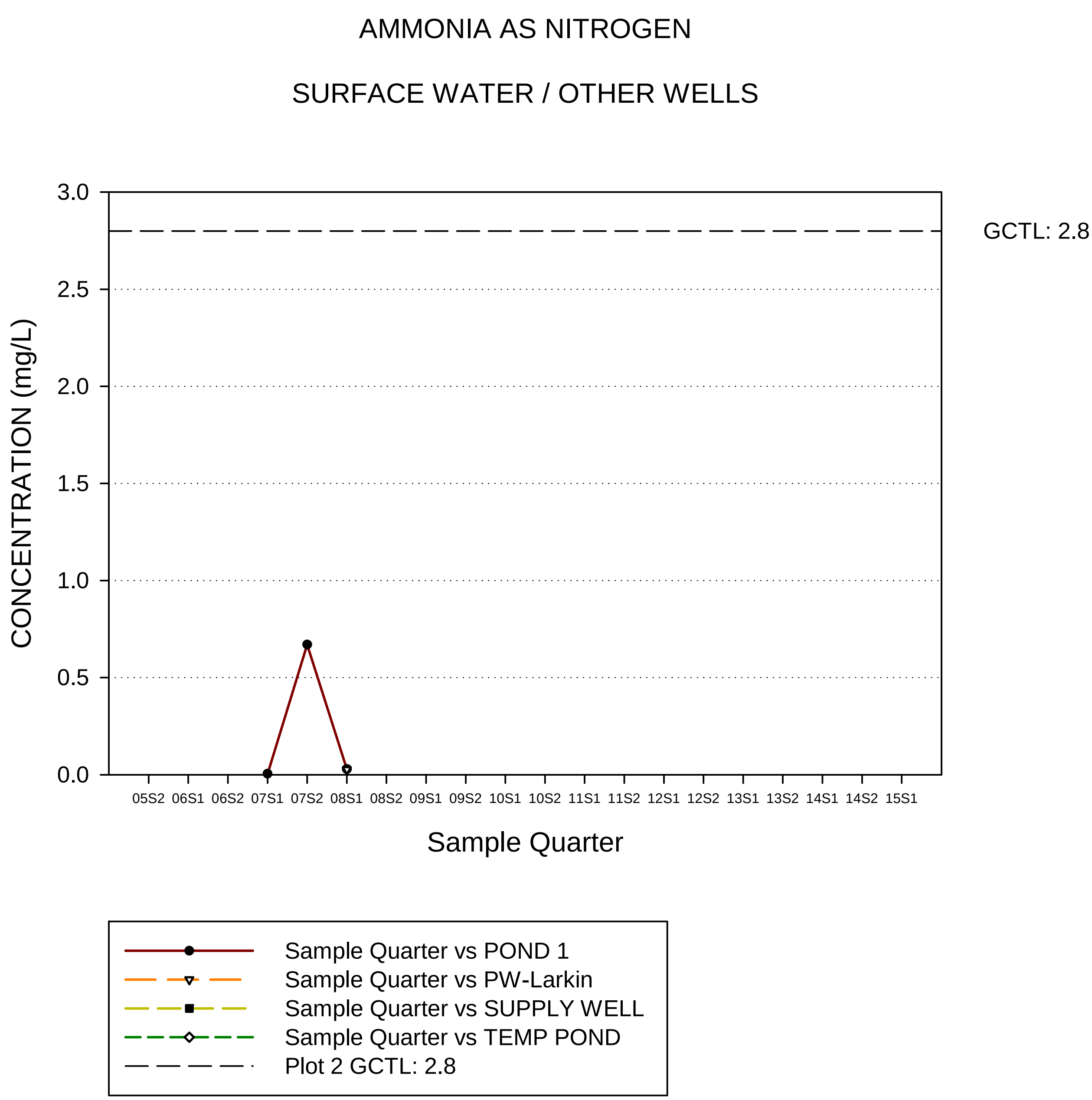
SURFACE WATER / OTHER WELLS



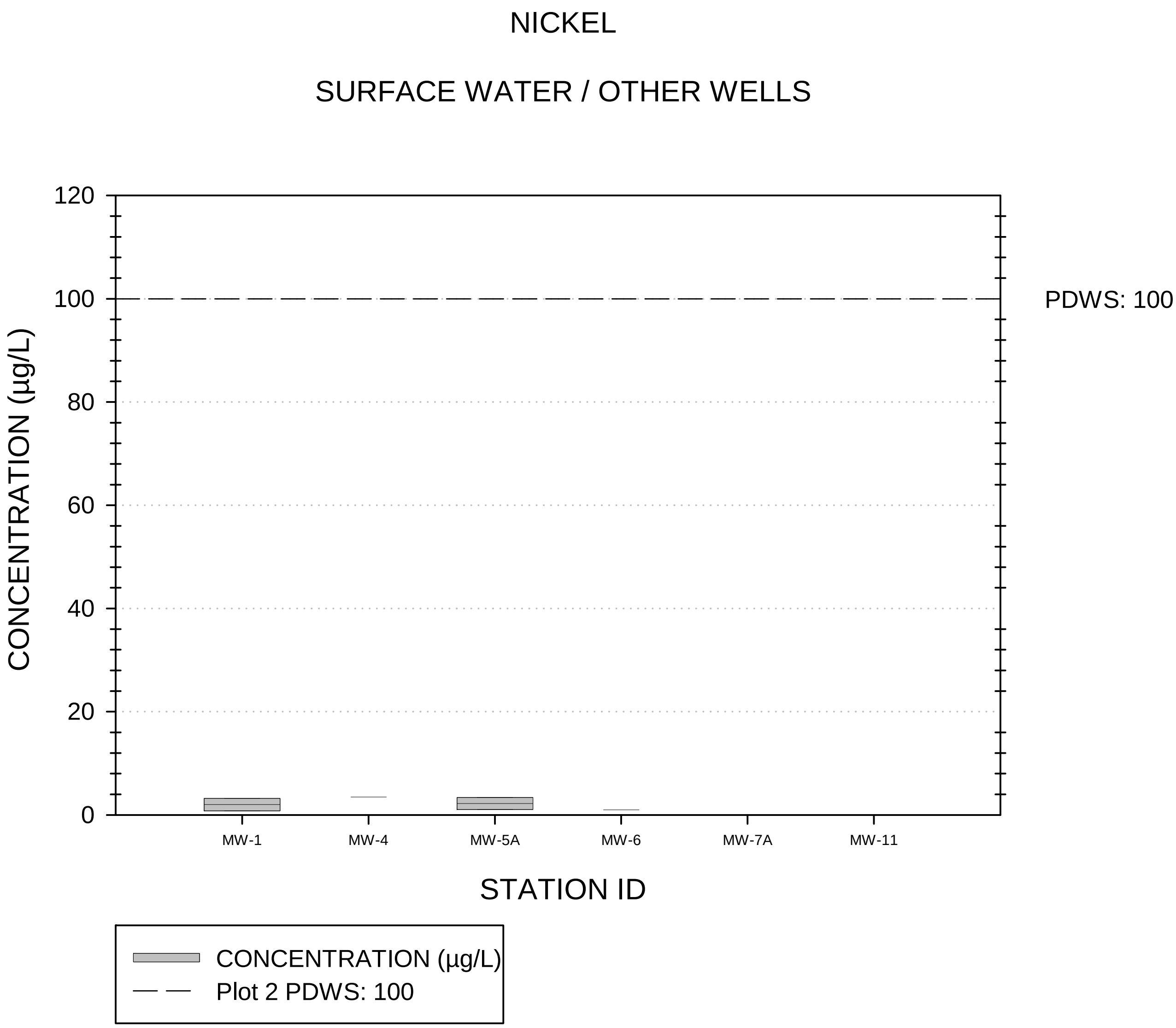
AMMONIA AS NITROGEN

SURFACE WATER / OTHER WELLS



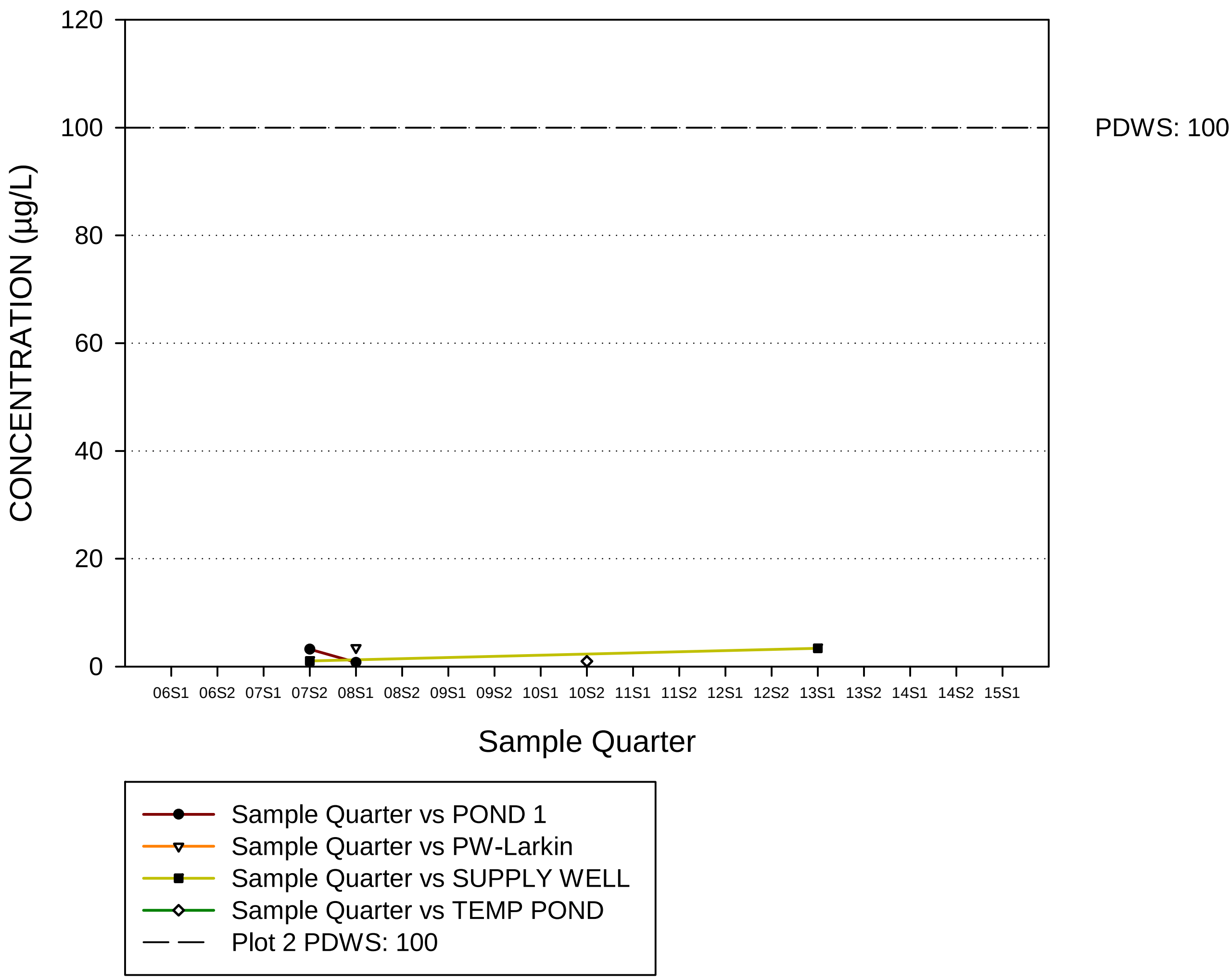


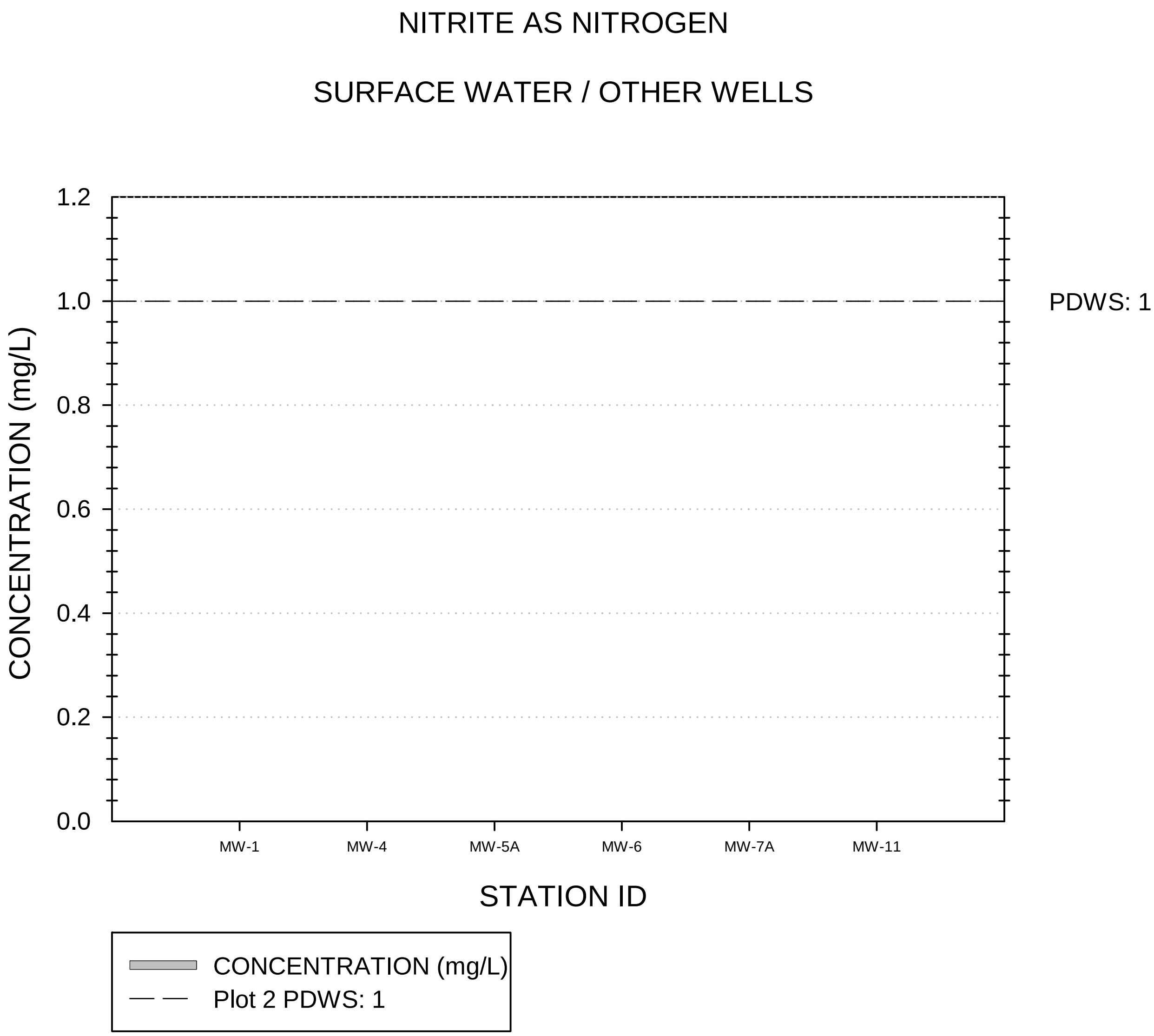
AMMONIA AS NITROGEN
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
GCTL: 2.8
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Plot 2 GCTL: 2.8

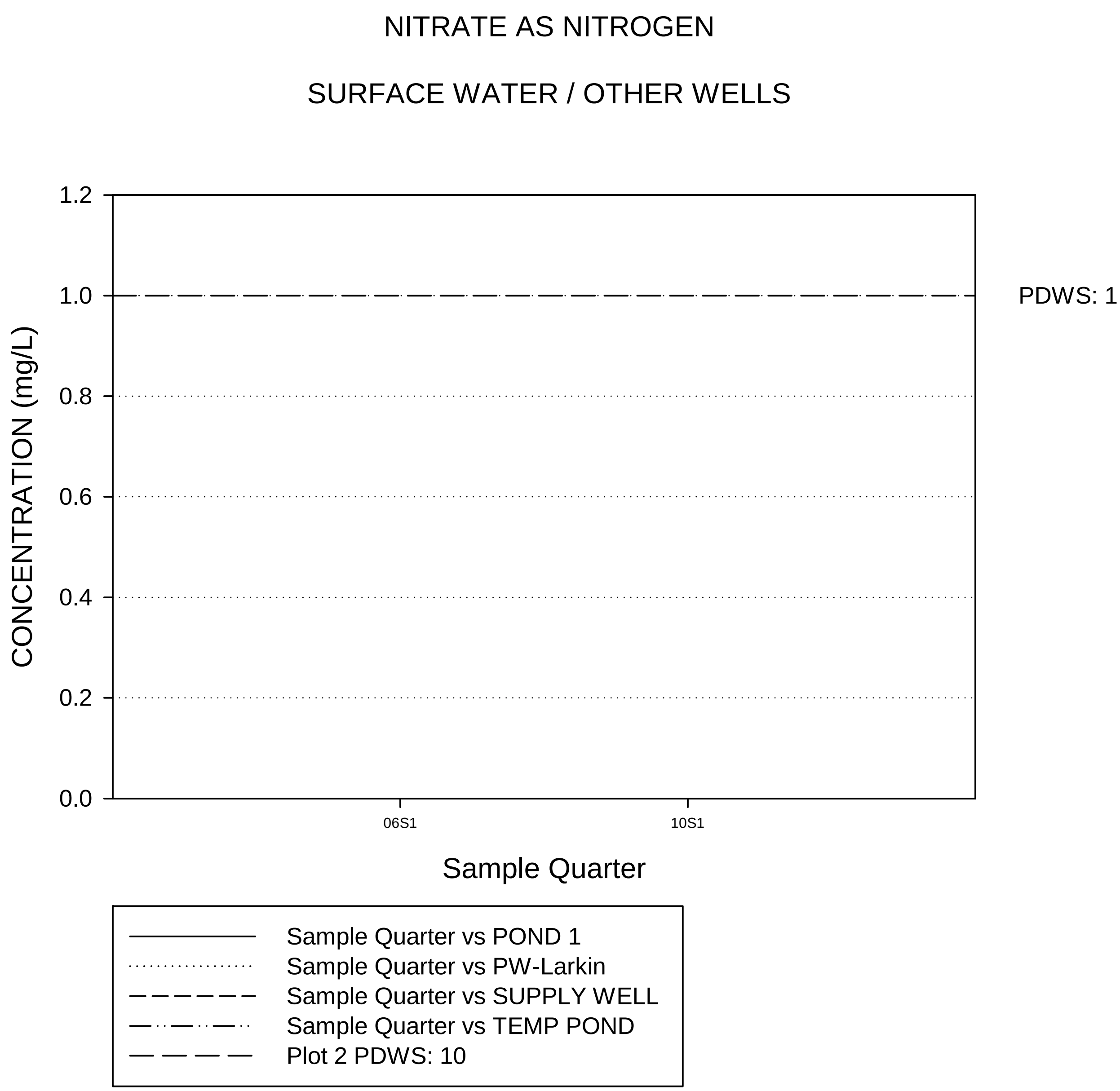

NICKEL
SURFACE WATER / OTHER WELLS
CONCENTRATION (µg/L)
120
100
80
60
40
20
0
PDWS: 100
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 100

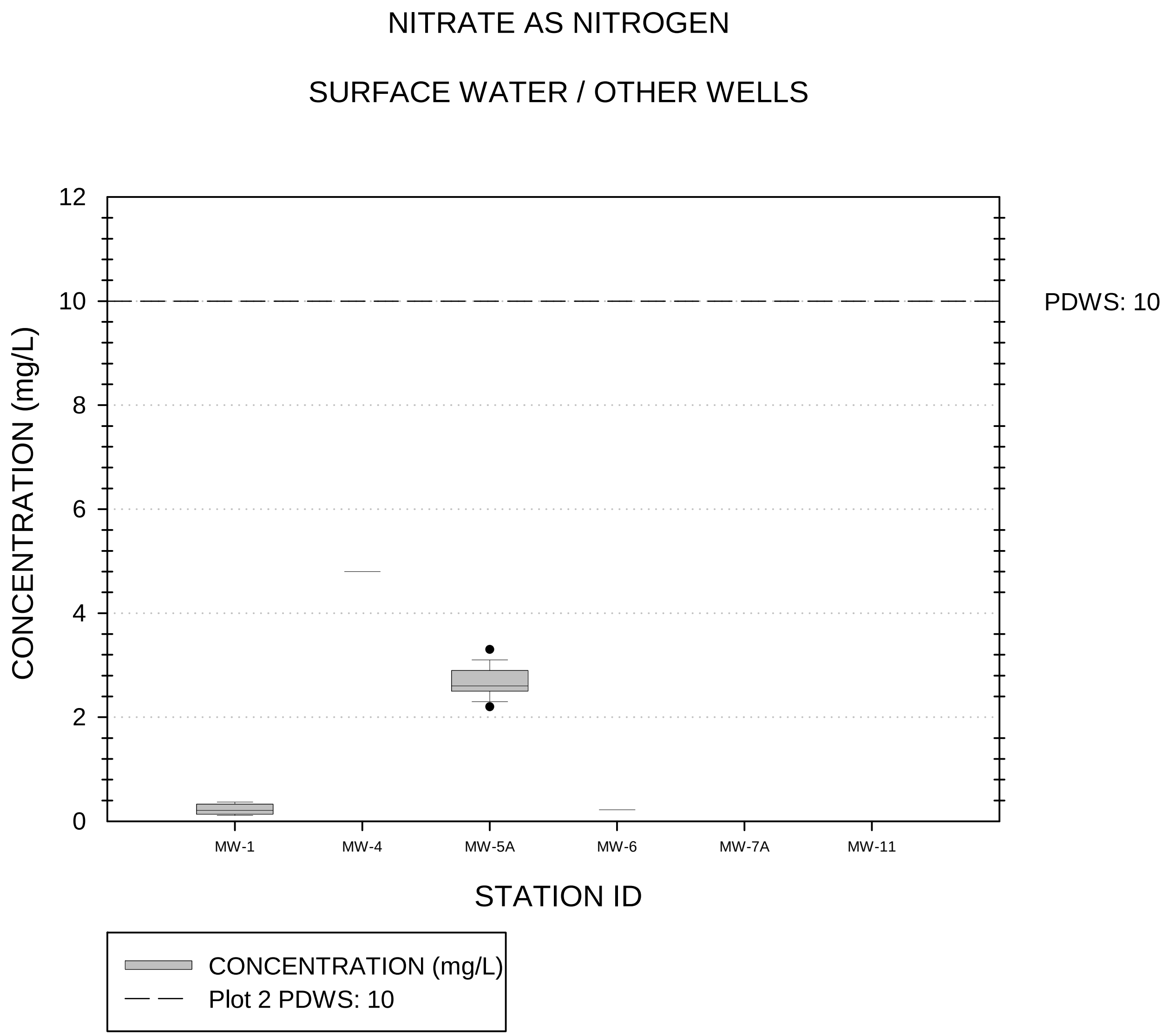
NICKEL

SURFACE WATER / OTHER WELLS




NITRITE AS NITROGEN
SURFACE WATER / OTHER WELLS
1.2
1.0
0.8
0.6
0.4
0.2
0.0
CONCENTRATION (mg/L)
PDWS: 1
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (mg/L)
Plot 2 PDWS: 1

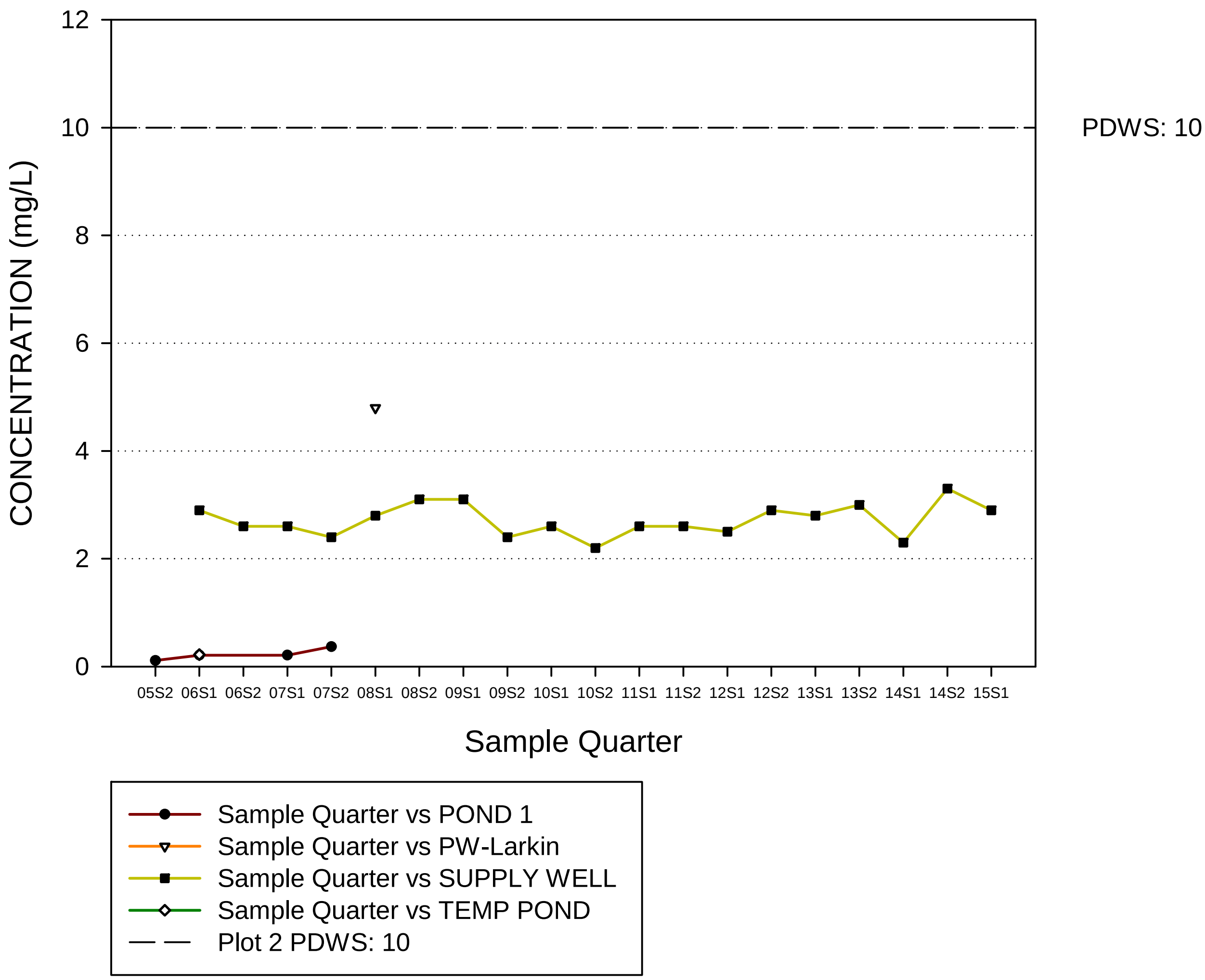

NITRATE AS NITROGEN
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
PDWS: 1
06S1
10S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Plot 2 PDWS: 10



NITRATE AS NITROGEN
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
12
10
8
6
4
2
0
PDWS: 10
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (mg/L)
Plot 2 PDWS: 10

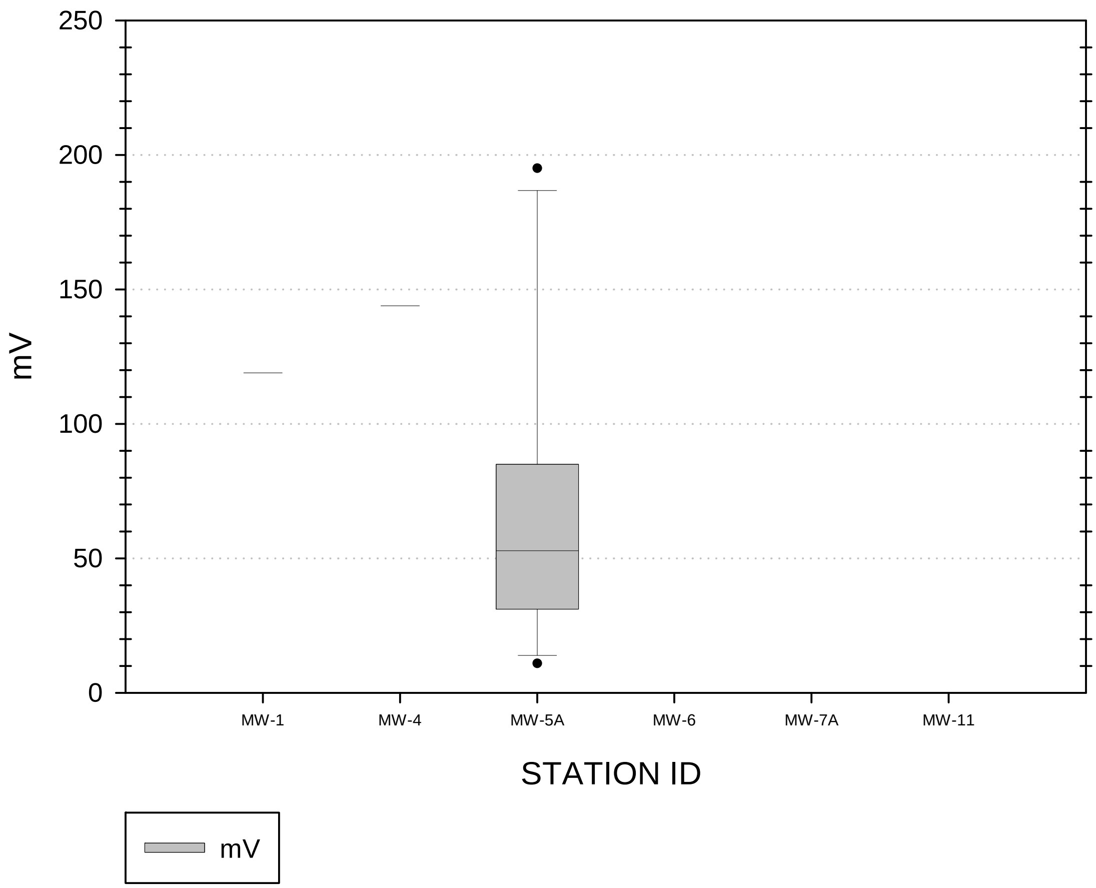
NITRATE AS NITROGEN

SURFACE WATER / OTHER WELLS



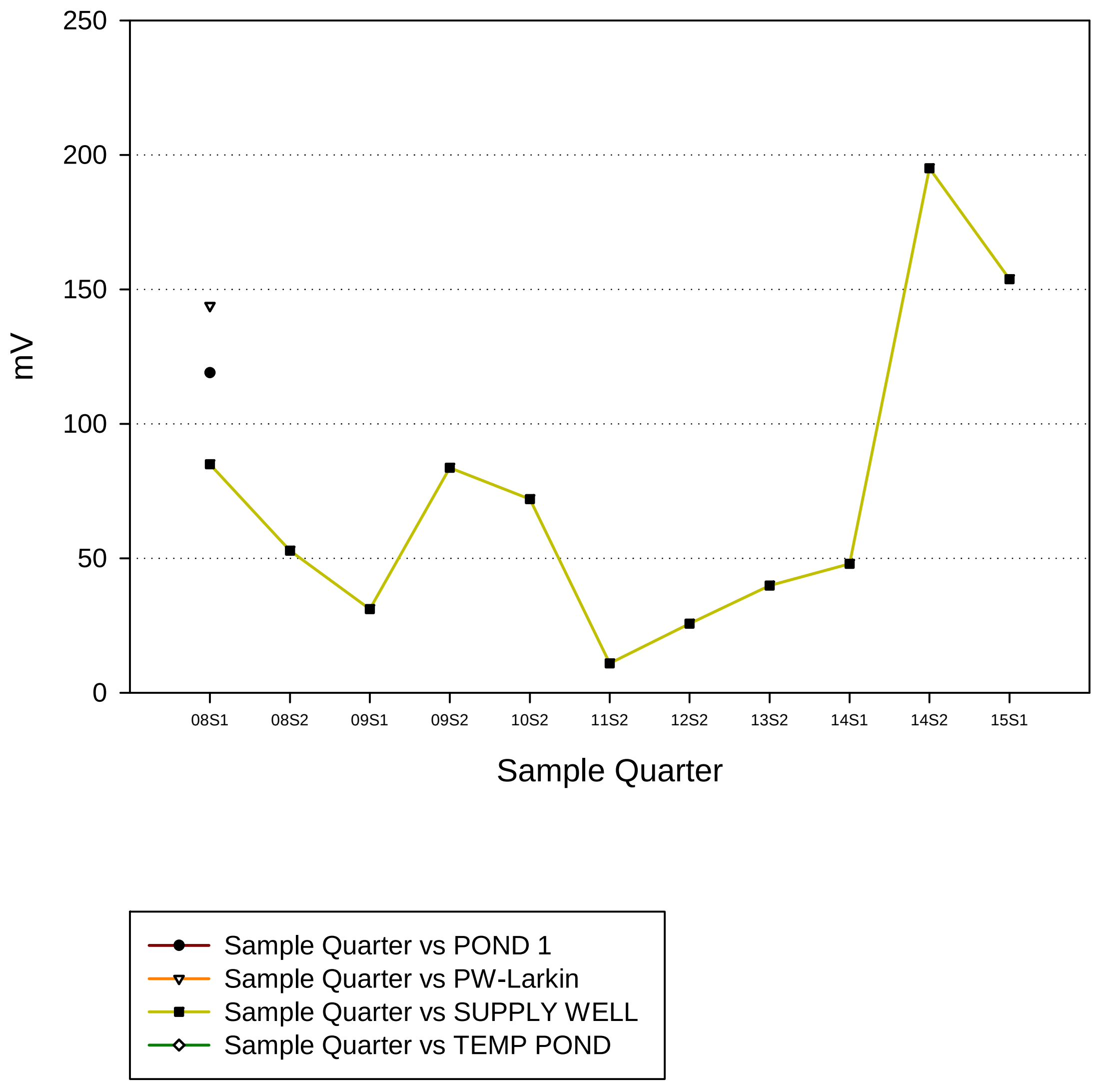
OXIDATION / REDUCTION POTENTIAL

SURFACE WATER / OTHER WELLS



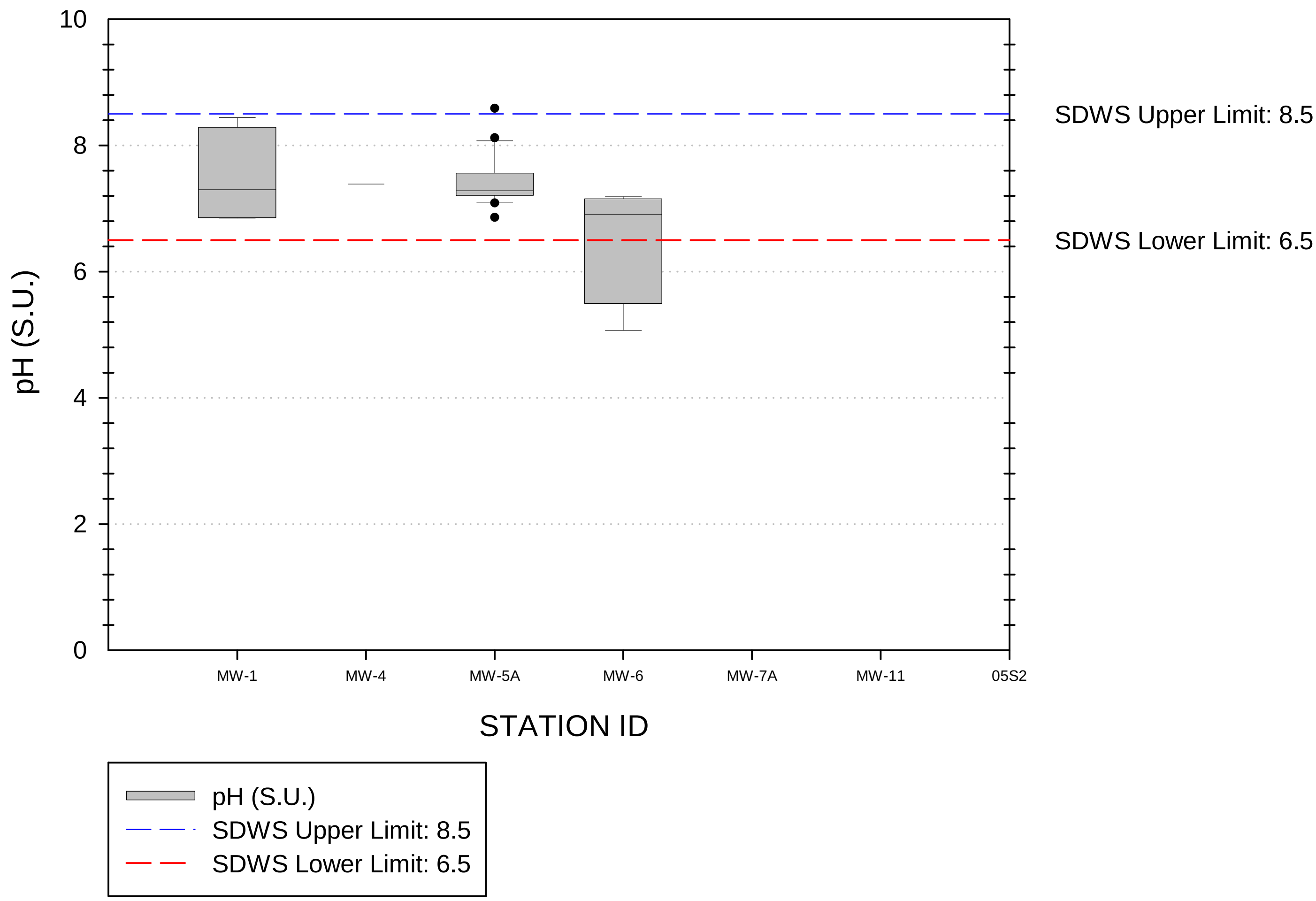
OXIDATION / REDUCTION POTENTIAL

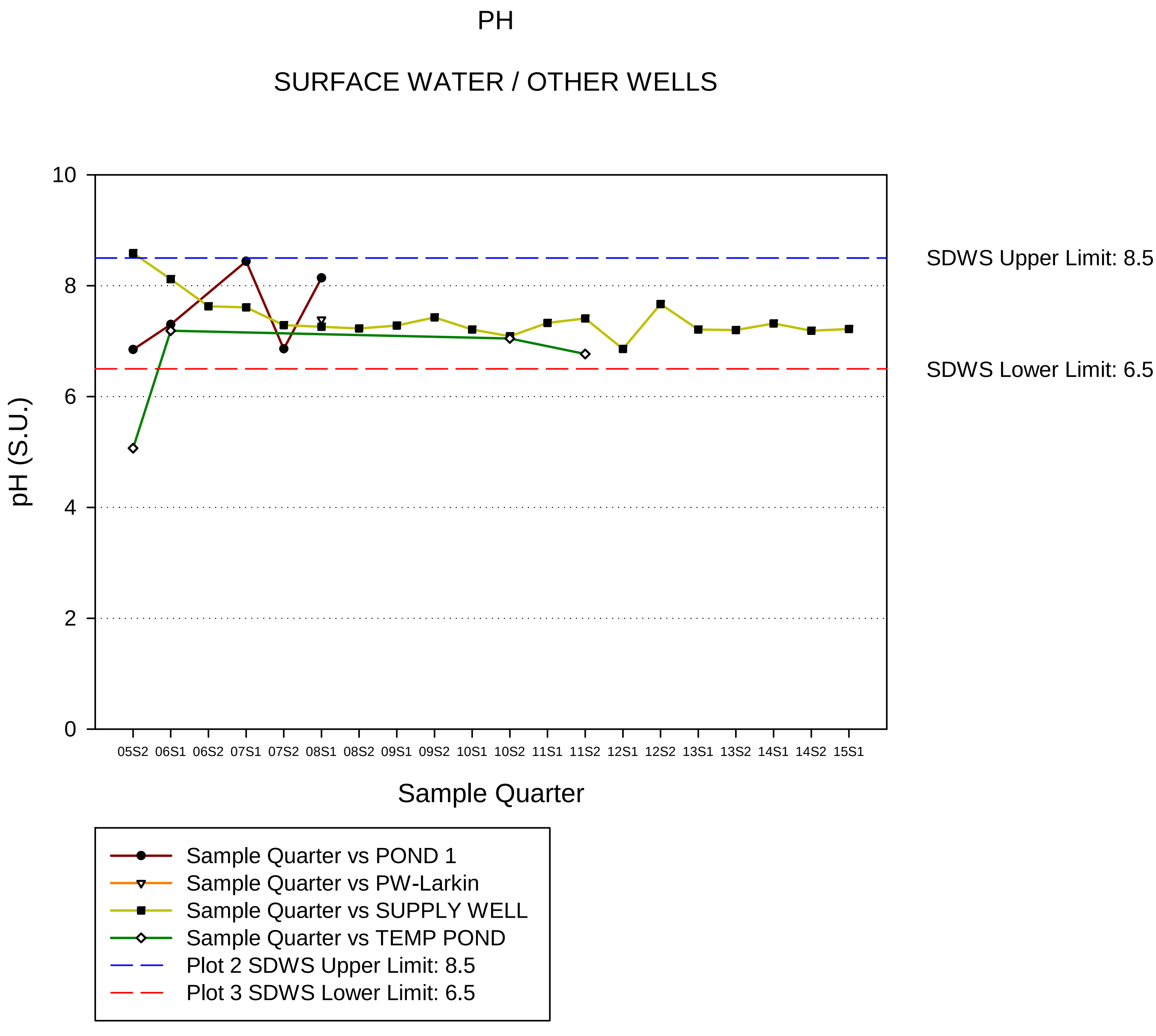
SURFACE WATER / OTHER WELLS



PH

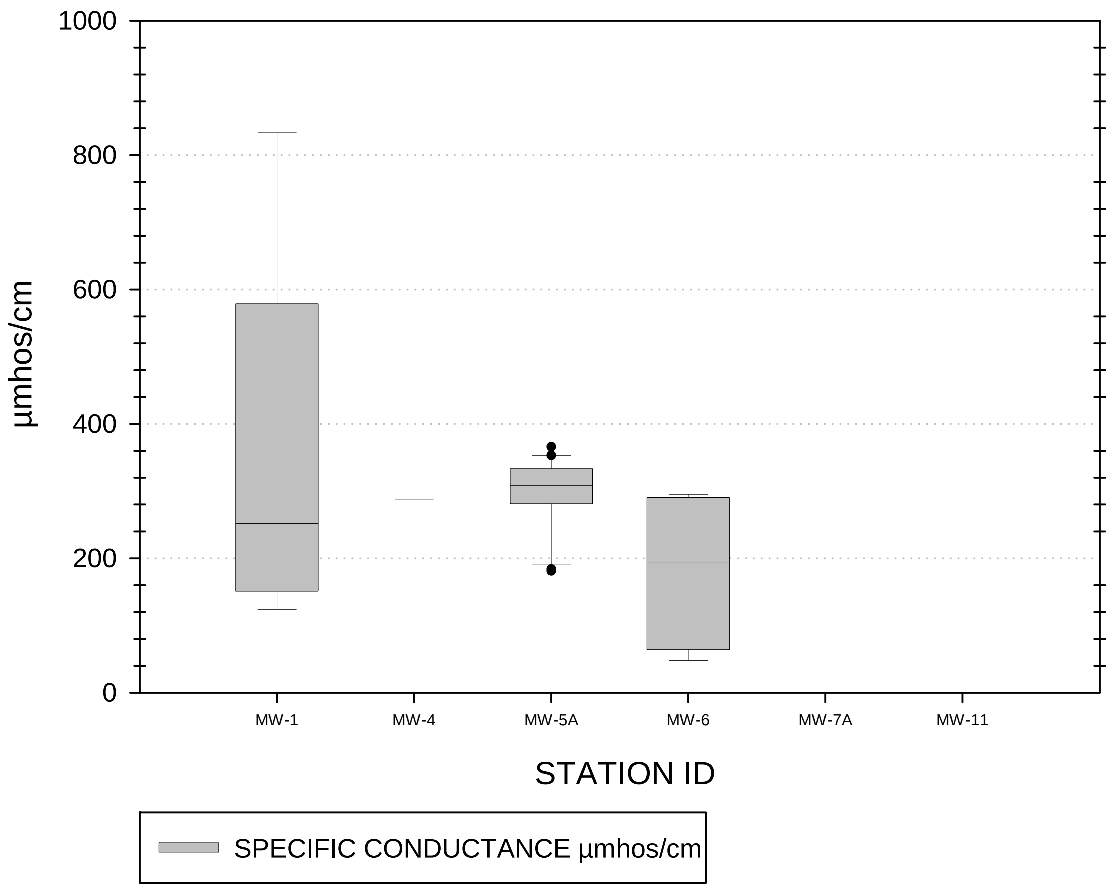
SURFACE WATER / OTHER WELLS




PH
SURFACE WATER / OTHER WELLS
pH (S.U.)
0
2
4
6
8
10
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
SDWS Upper Limit: 8.5
SDWS Lower Limit: 6.5
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Plot 2 SDWS Upper Limit: 8.5
Plot 3 SDWS Lower Limit: 6.5

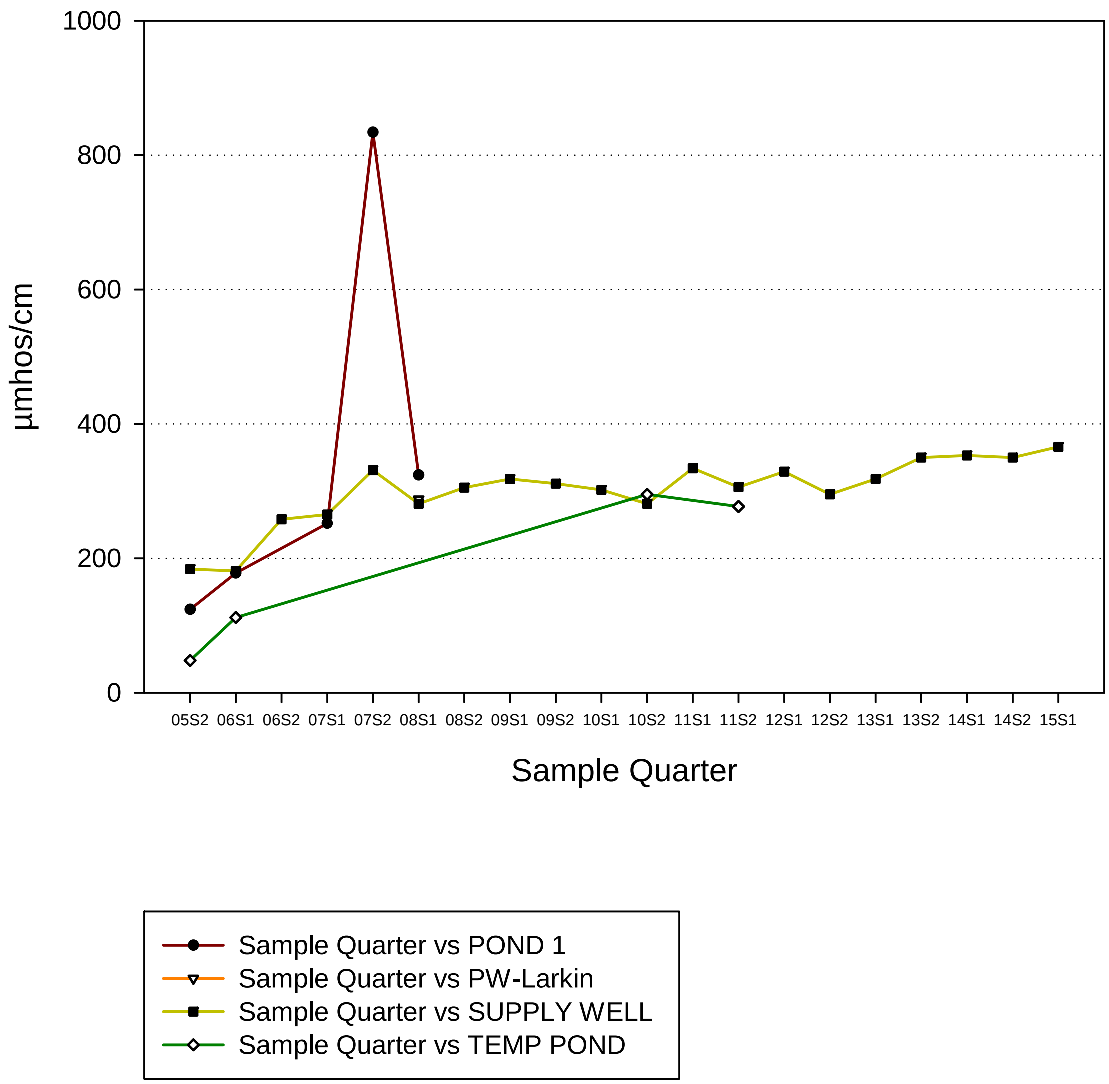
SPECIFIC CONDUCTANCE

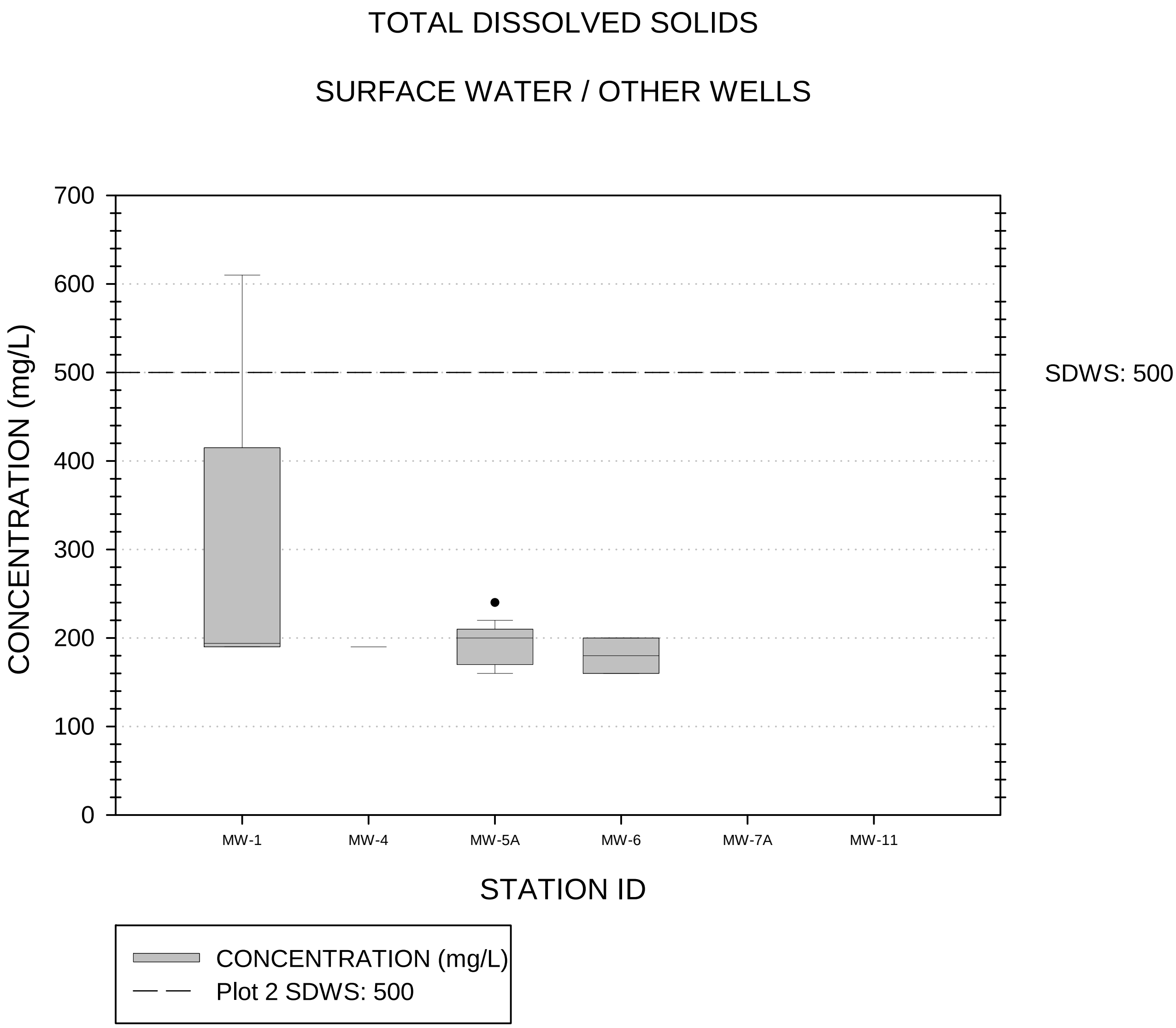
SURFACE WATER / OTHER WELLS



SPECIFIC CONDUCTANCE

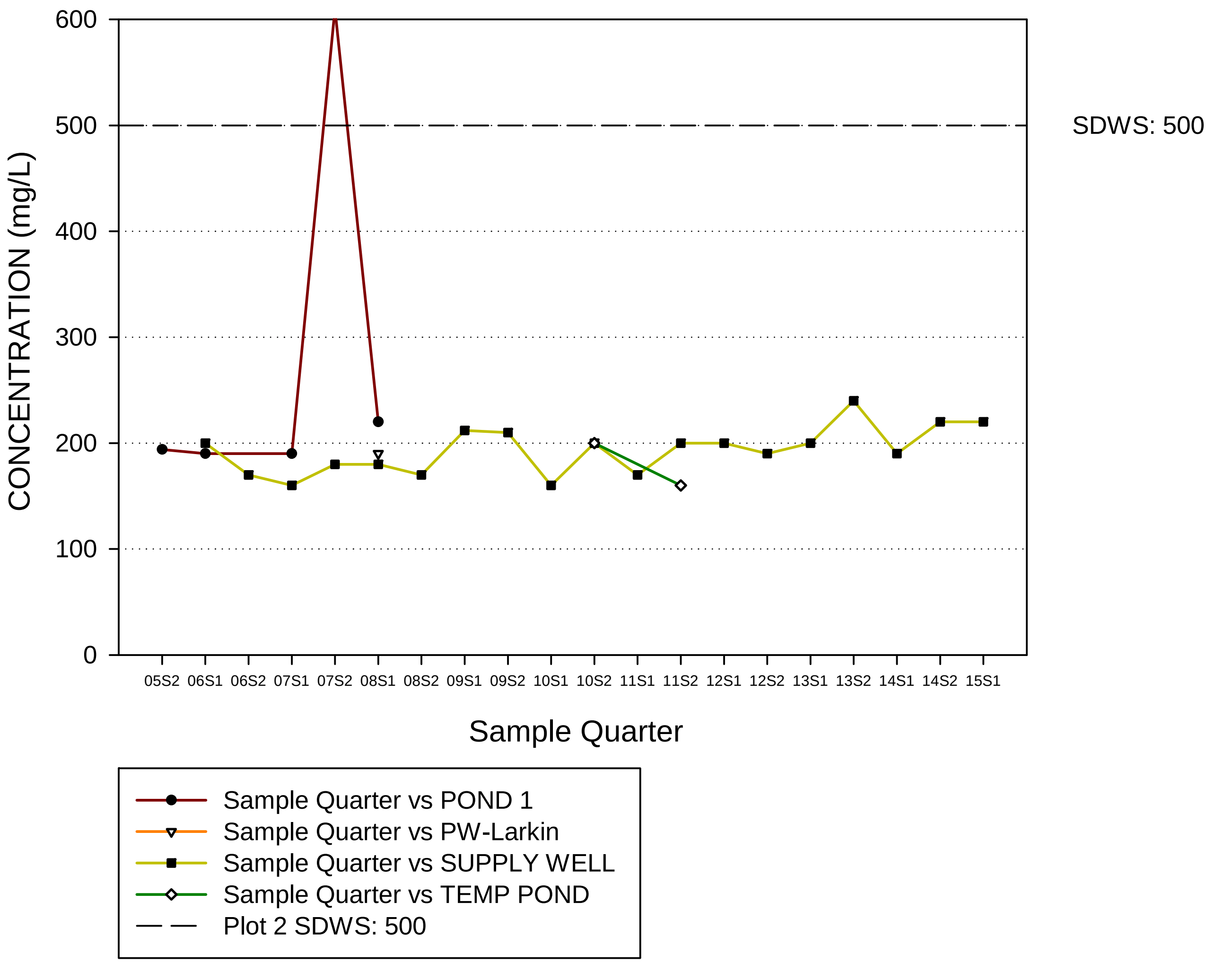
SURFACE WATER / OTHER WELLS




TOTAL DISSOLVED SOLIDS
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
0
100
200
300
400
500
600
700
SDWS: 500
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (mg/L)
Plot 2 SDWS: 500

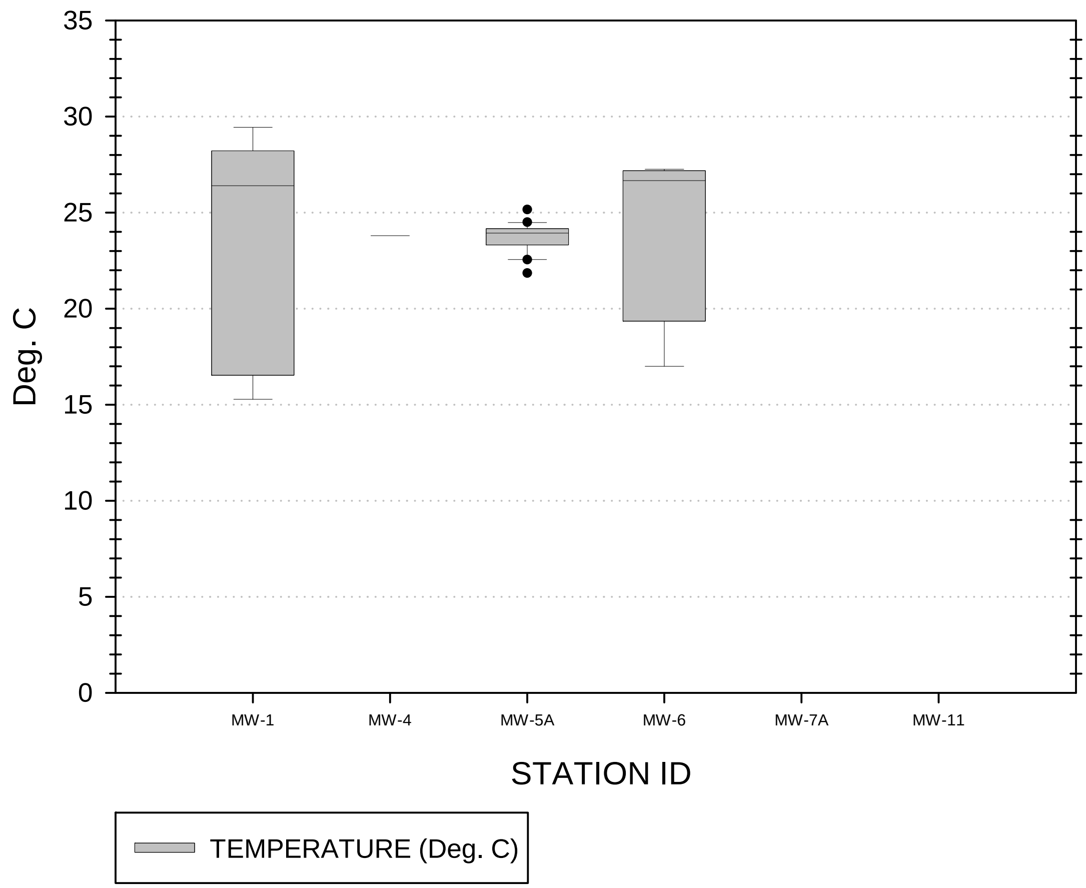
TOTAL DISSOLVED SOLIDS

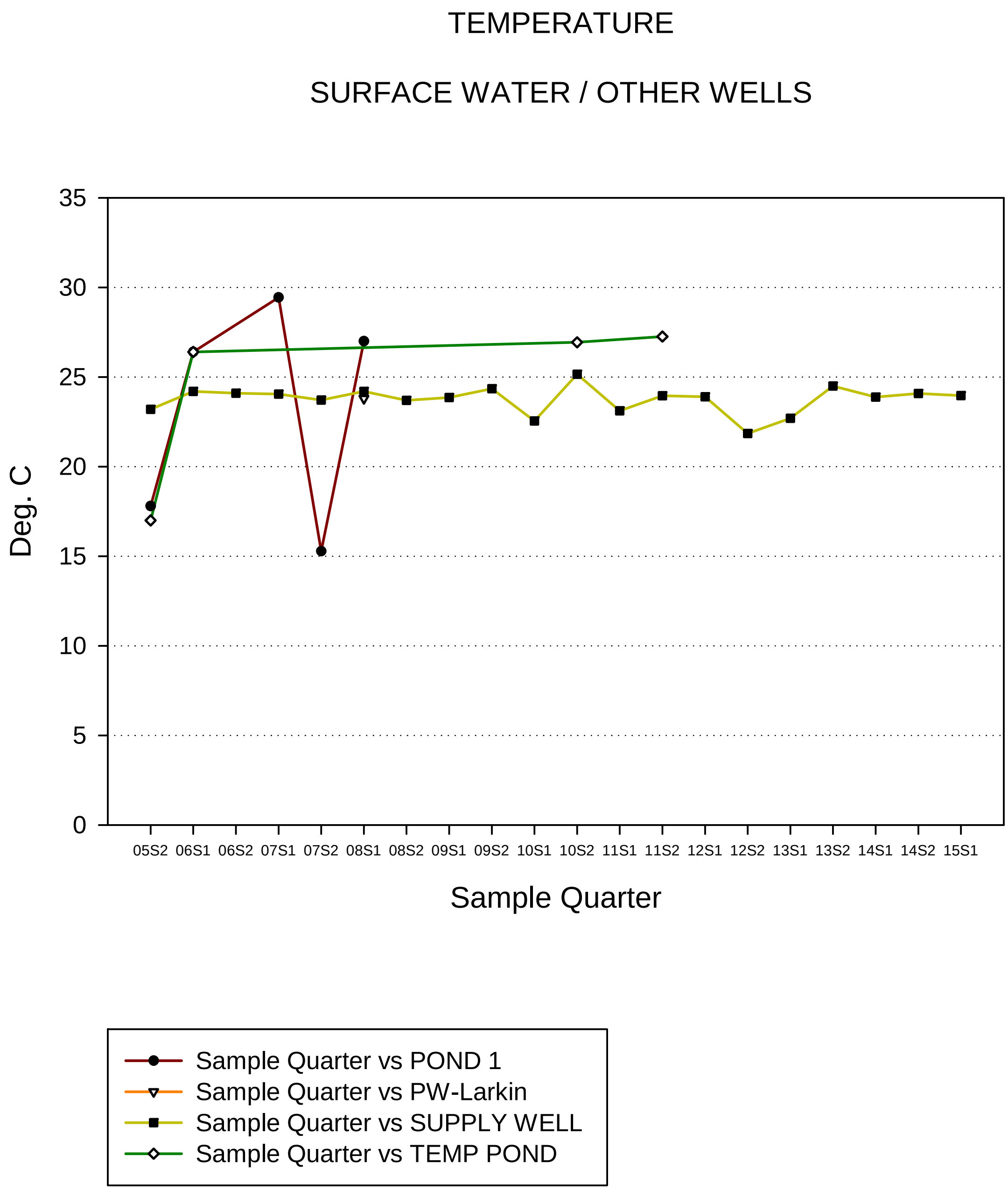
SURFACE WATER / OTHER WELLS

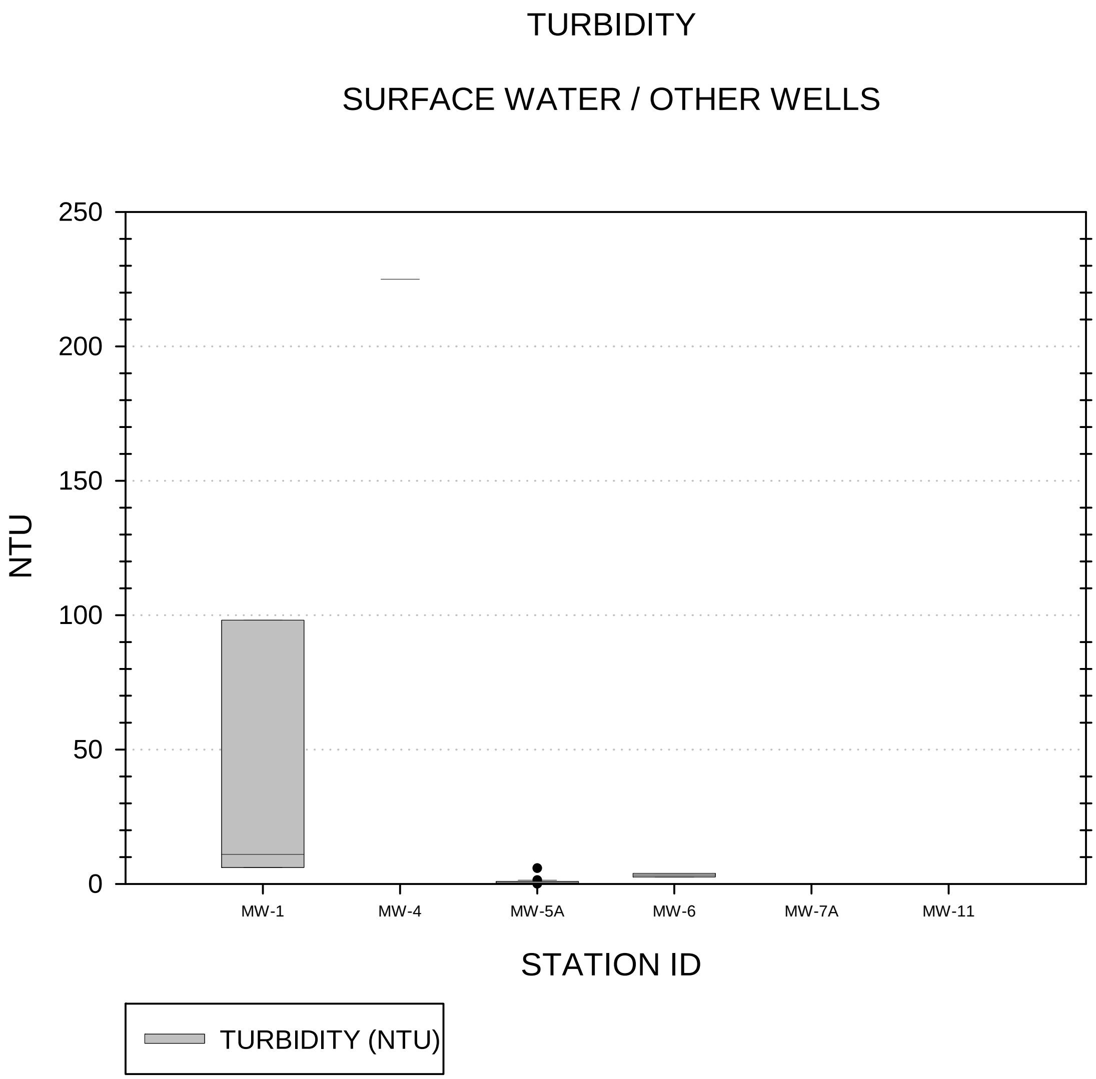


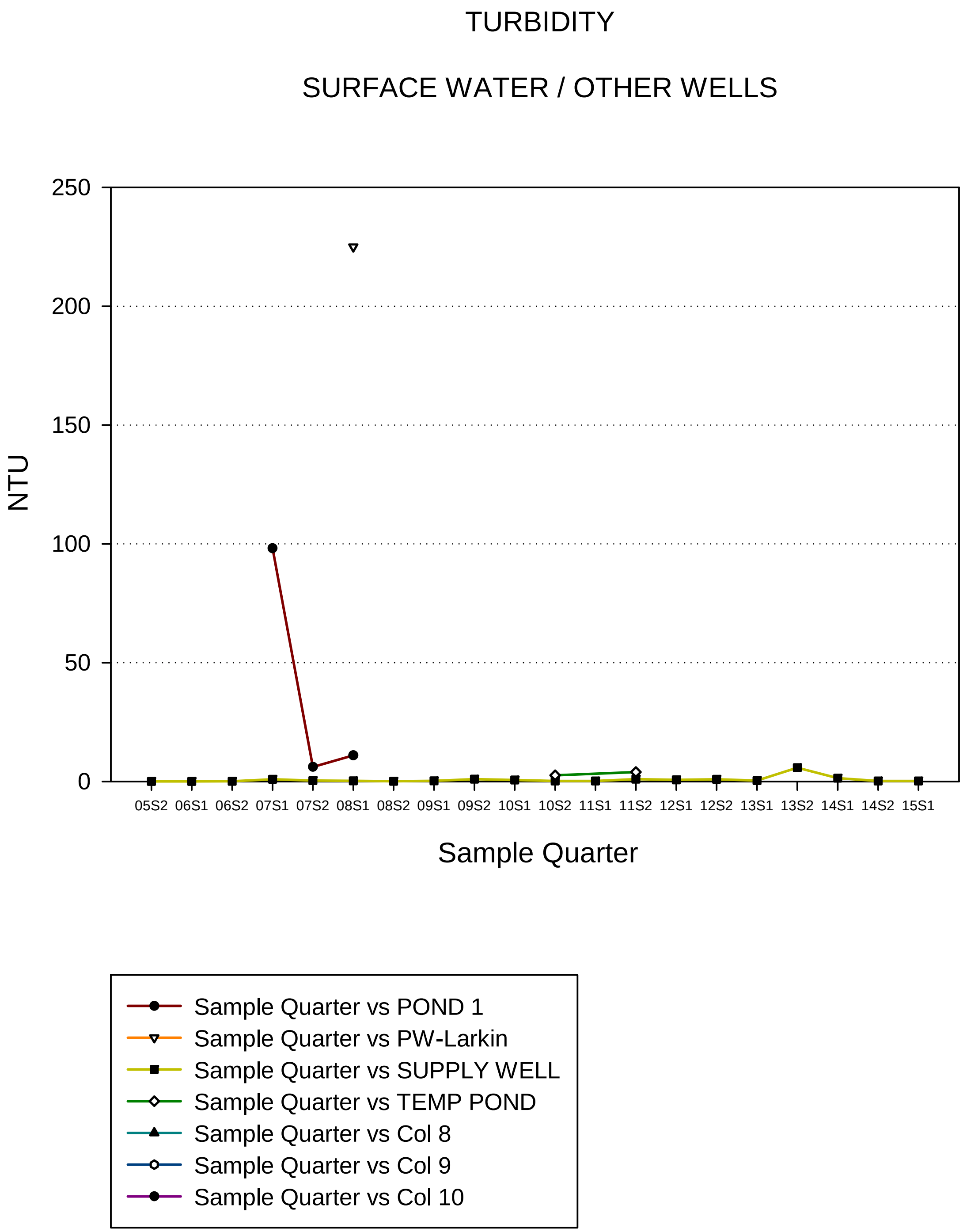
TEMPERATURE

SURFACE WATER / OTHER WELLS




TEMPERATURE
SURFACE WATER / OTHER WELLS
Deg. C
35
30
25
20
15
10
5
0
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND

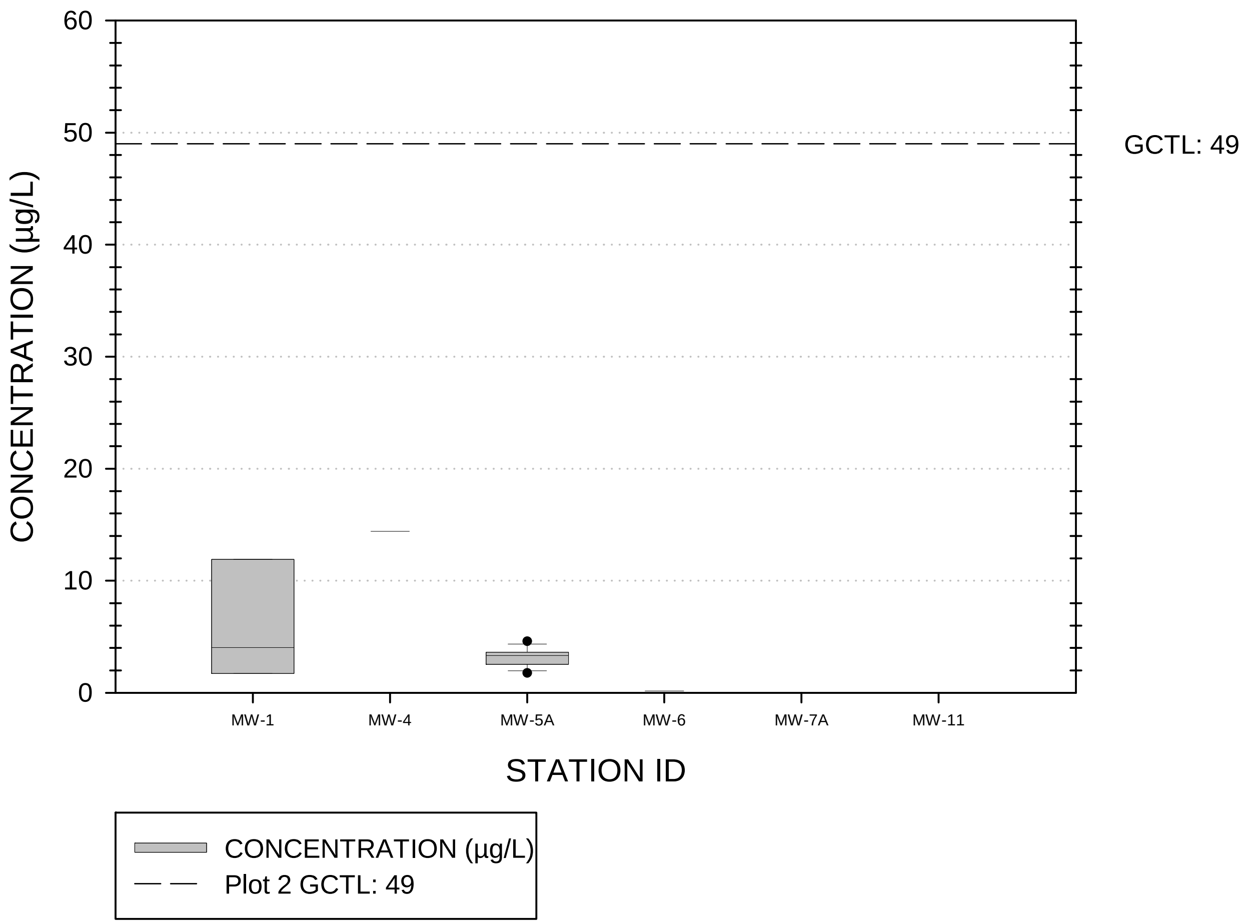

TURBIDITY
SURFACE WATER / OTHER WELLS
250
200
150
100
50
0
NTU
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
TURBIDITY (NTU)

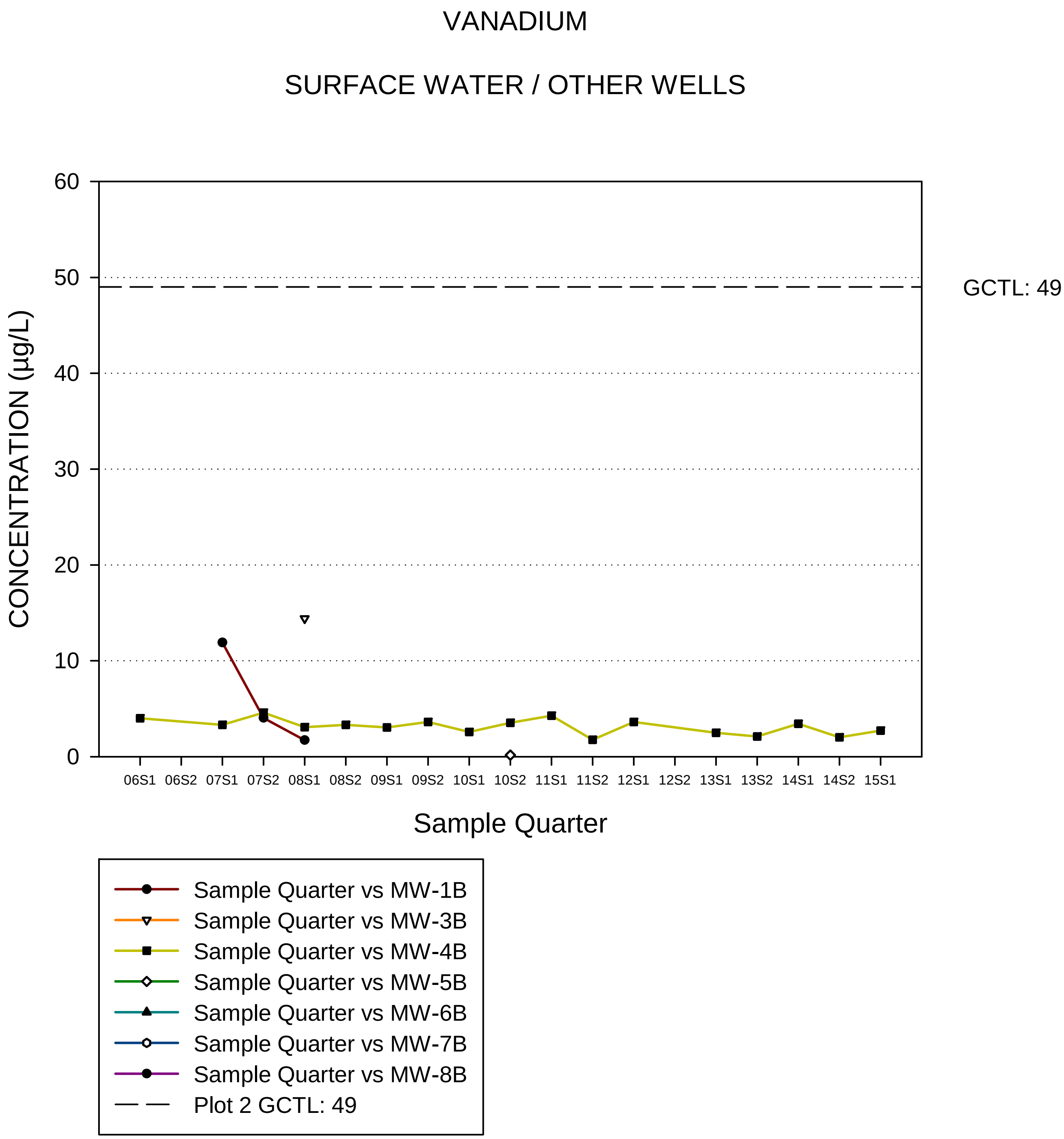


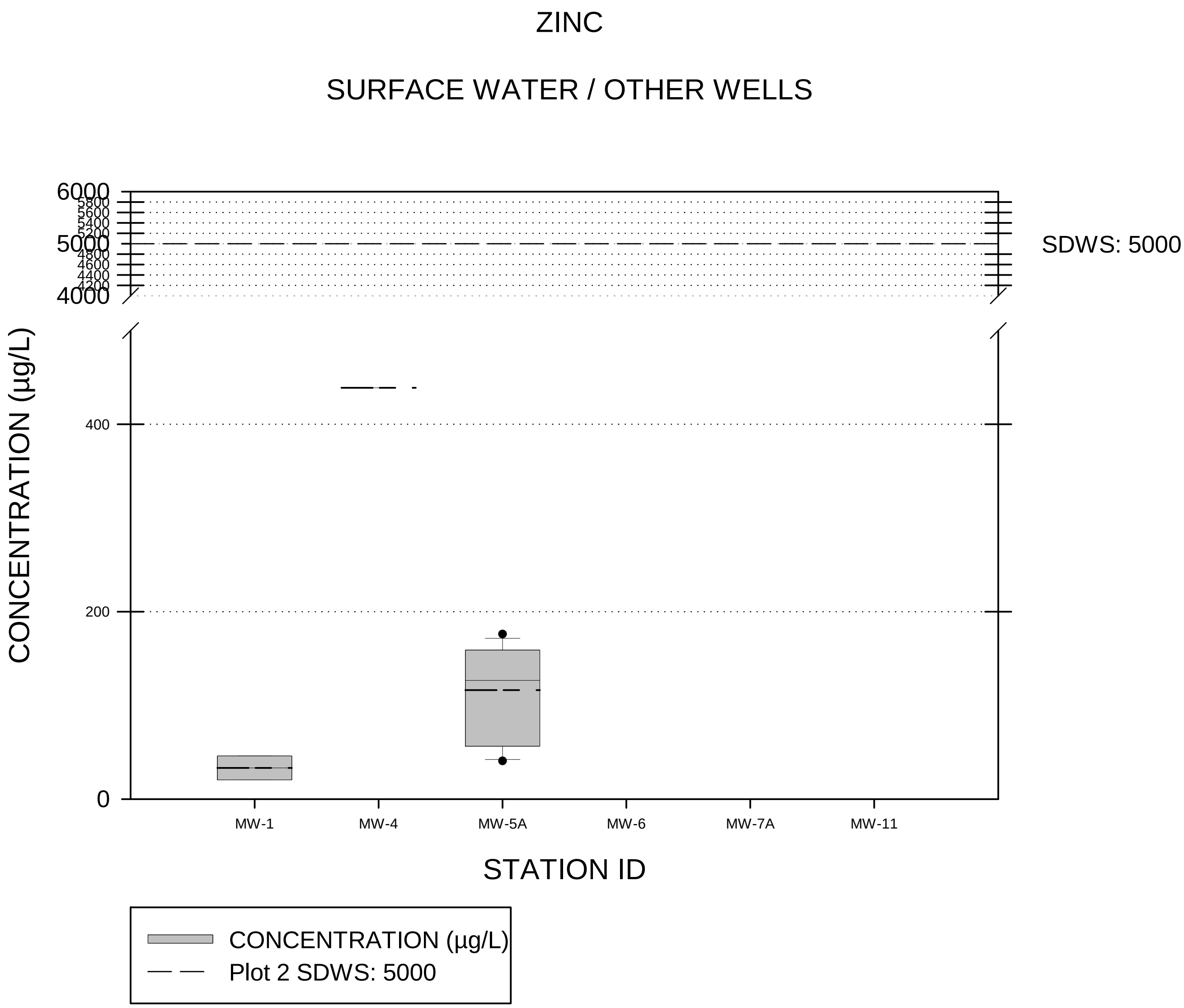
TURBIDITY
SURFACE WATER / OTHER WELLS
NTU
250
200
150
100
50
0
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Sample Quarter vs Col 8
Sample Quarter vs Col 9
Sample Quarter vs Col 10

VANADIUM

SURFACE WATER / OTHER WELLS

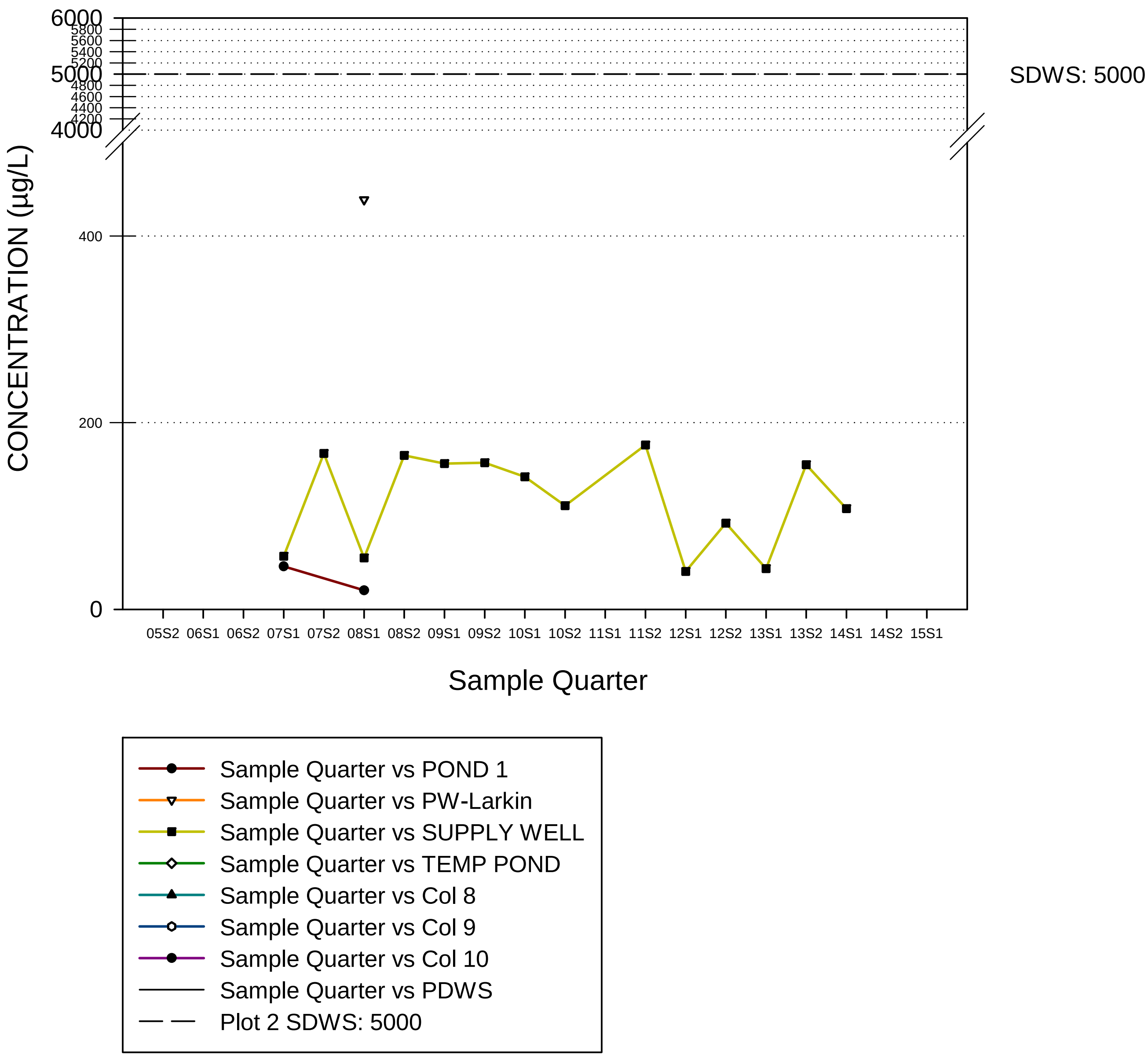



VANADIUM
SURFACE WATER / OTHER WELLS
CONCENTRATION (µg/L)
0
10
20
30
40
50
60
GCTL: 49
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 GCTL: 49


ZINC
SURFACE WATER / OTHER WELLS
6000
5800
5600
5400
5200
5000
4800
4600
4400
4200
4000
SDWS: 5000
400
200
0
CONCENTRATION (µg/L)
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (µg/L)
Plot 2 SDWS: 5000

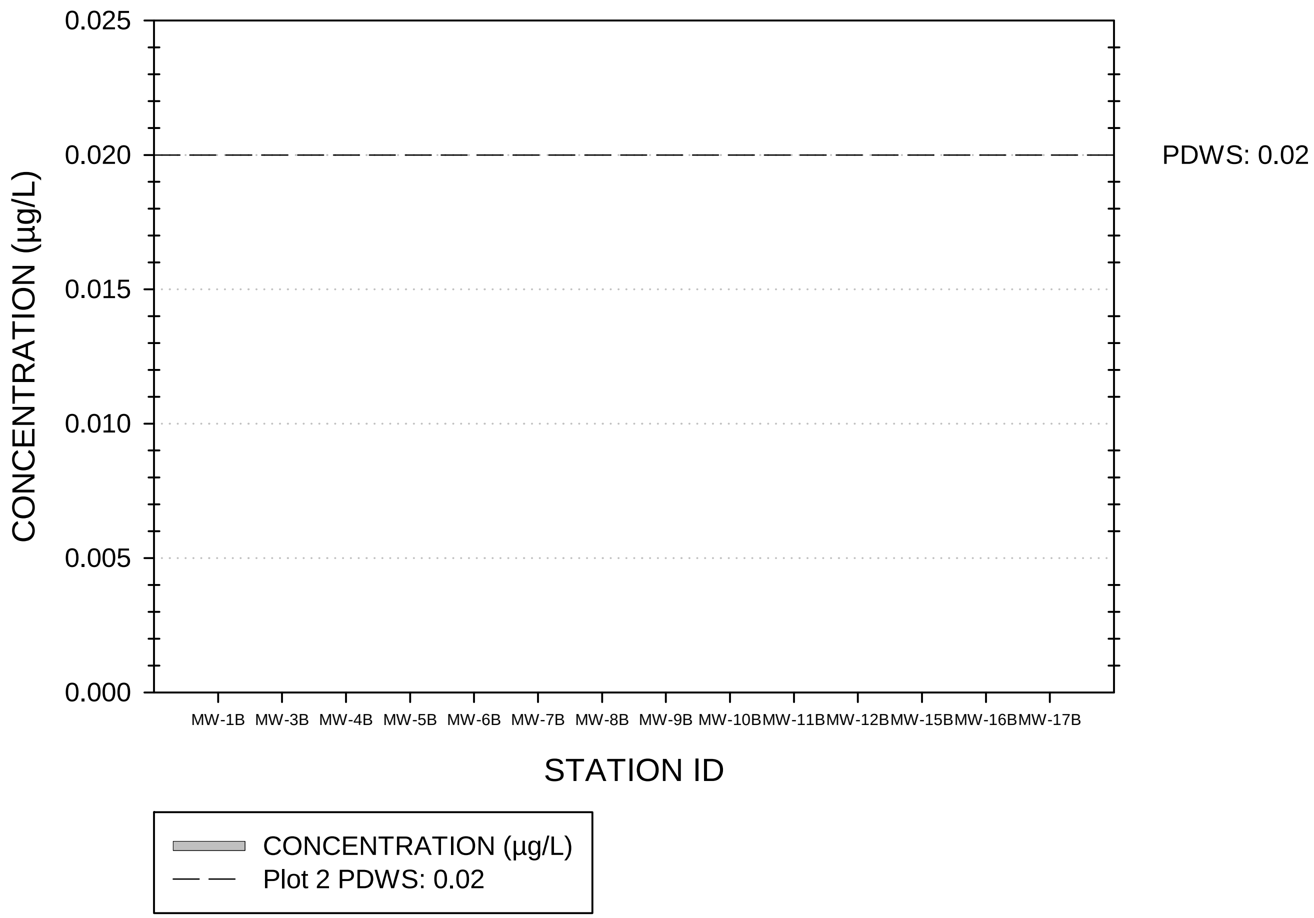
ZINC

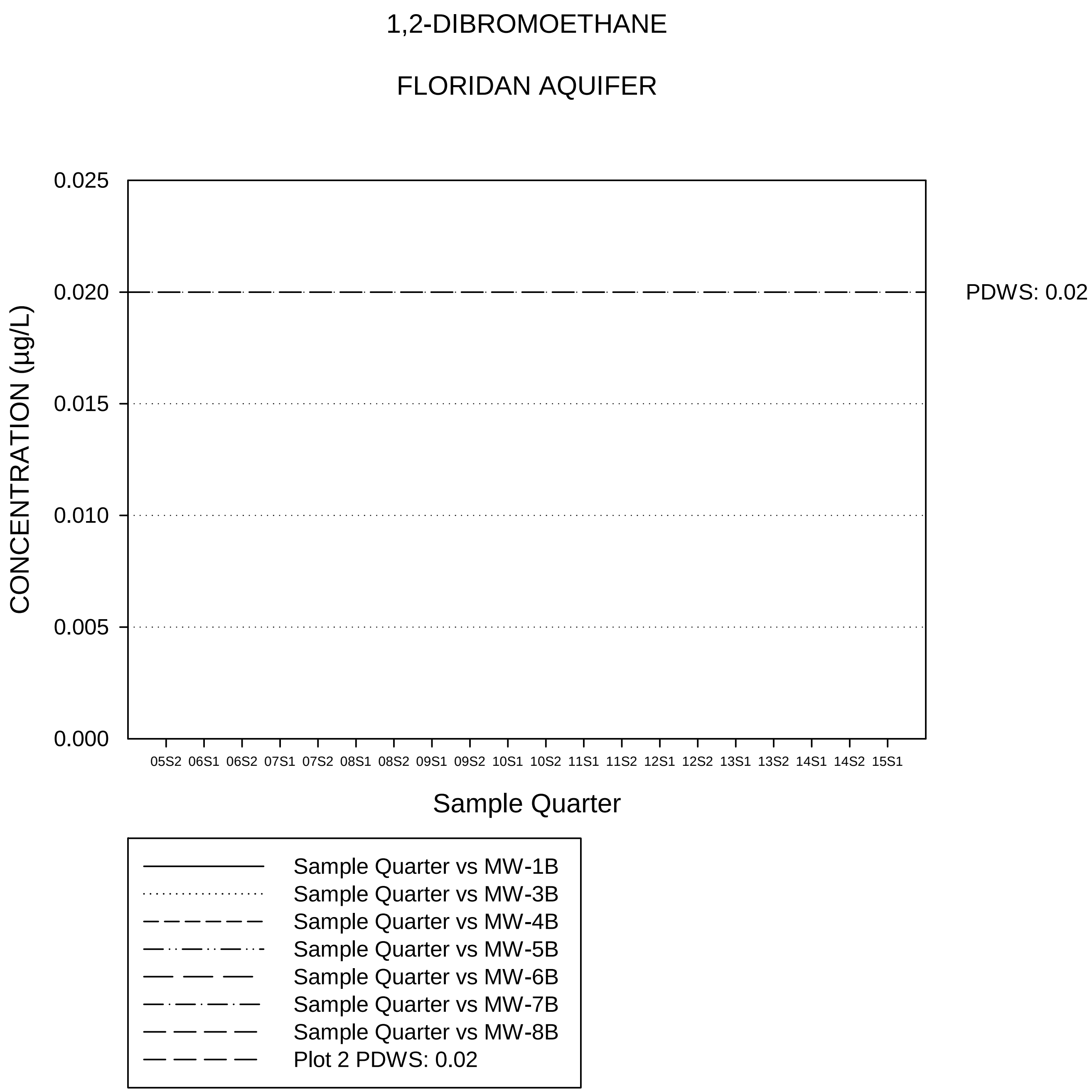
SURFACE WATER / OTHER WELLS



1,2-DIBROMOETHANE

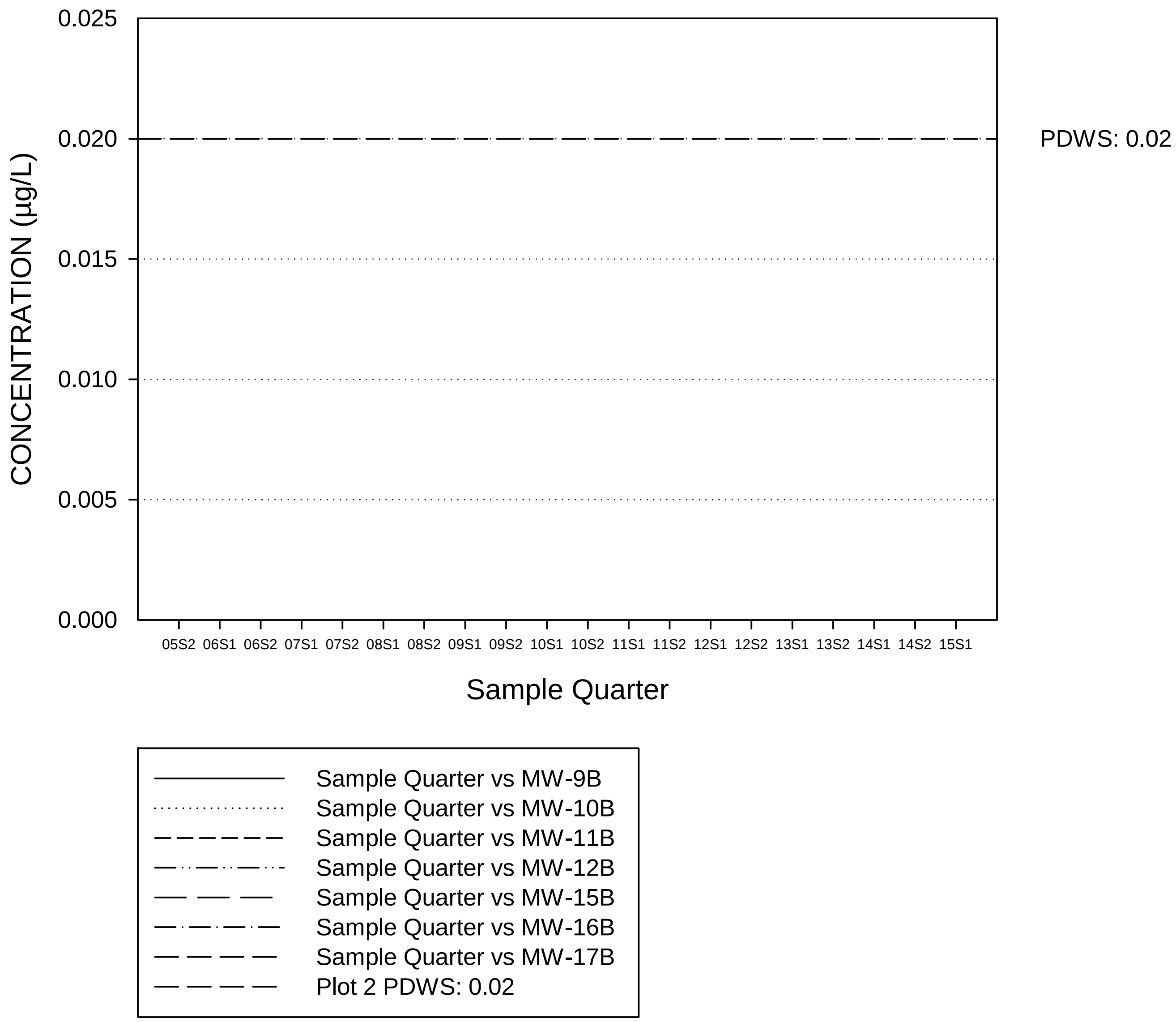
FLORIDAN AQUIFER




1,2-DIBROMOETHANE
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
0.025
0.020
0.015
0.010
0.005
0.000
PDWS: 0.02
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 0.02

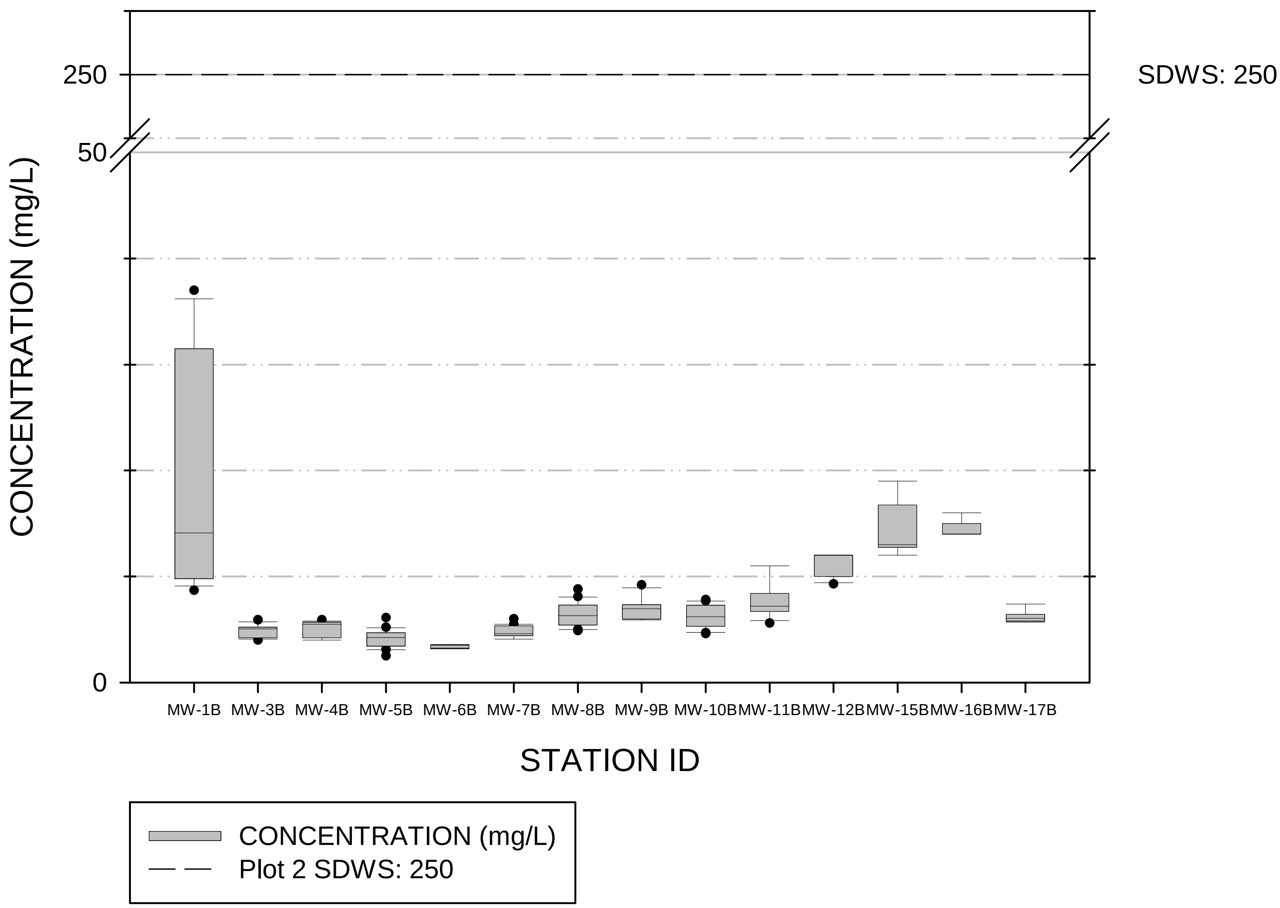
1,2-DIBROMOETHANE

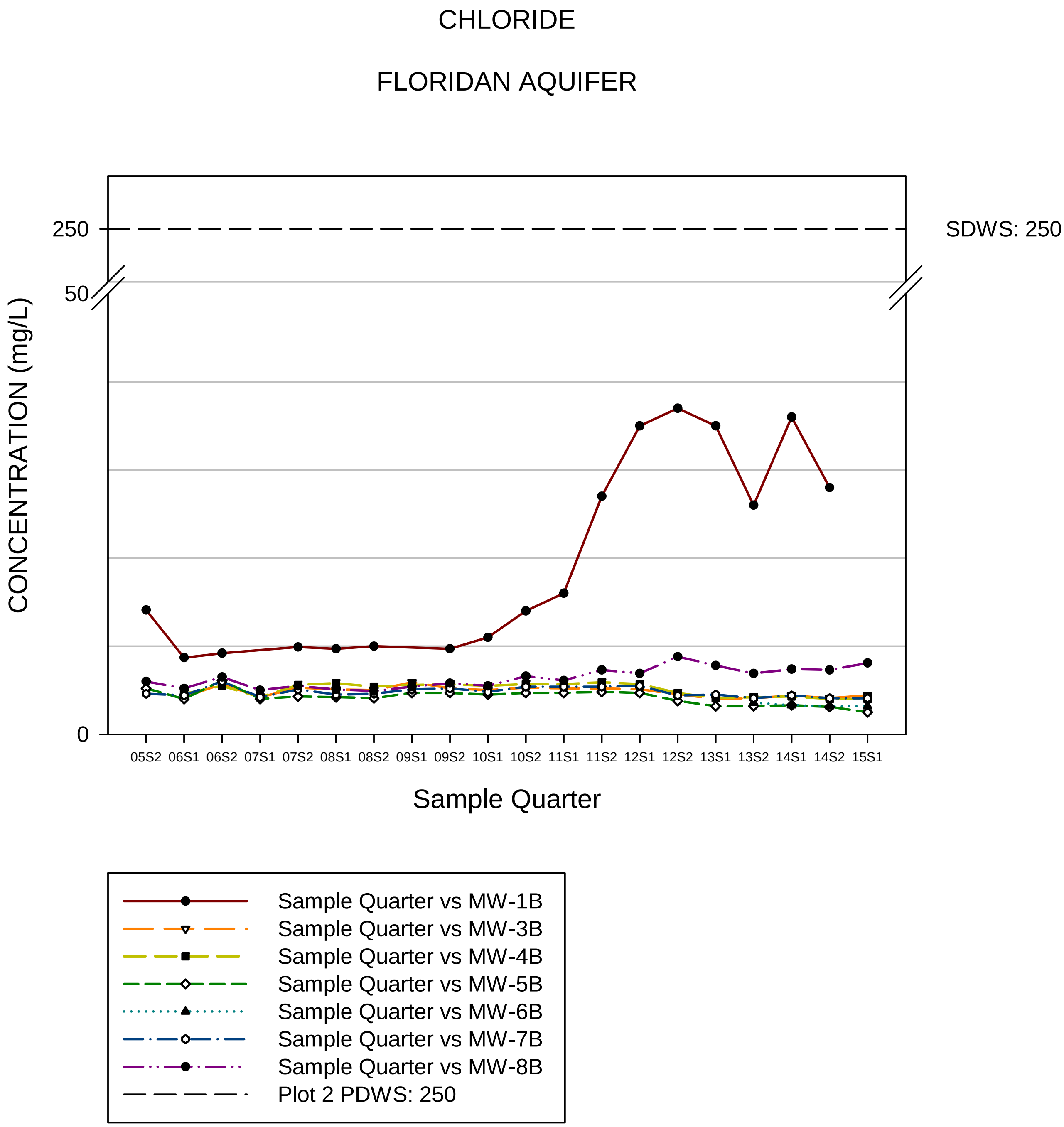
FLORIDAN AQUIFER



CHLORIDE

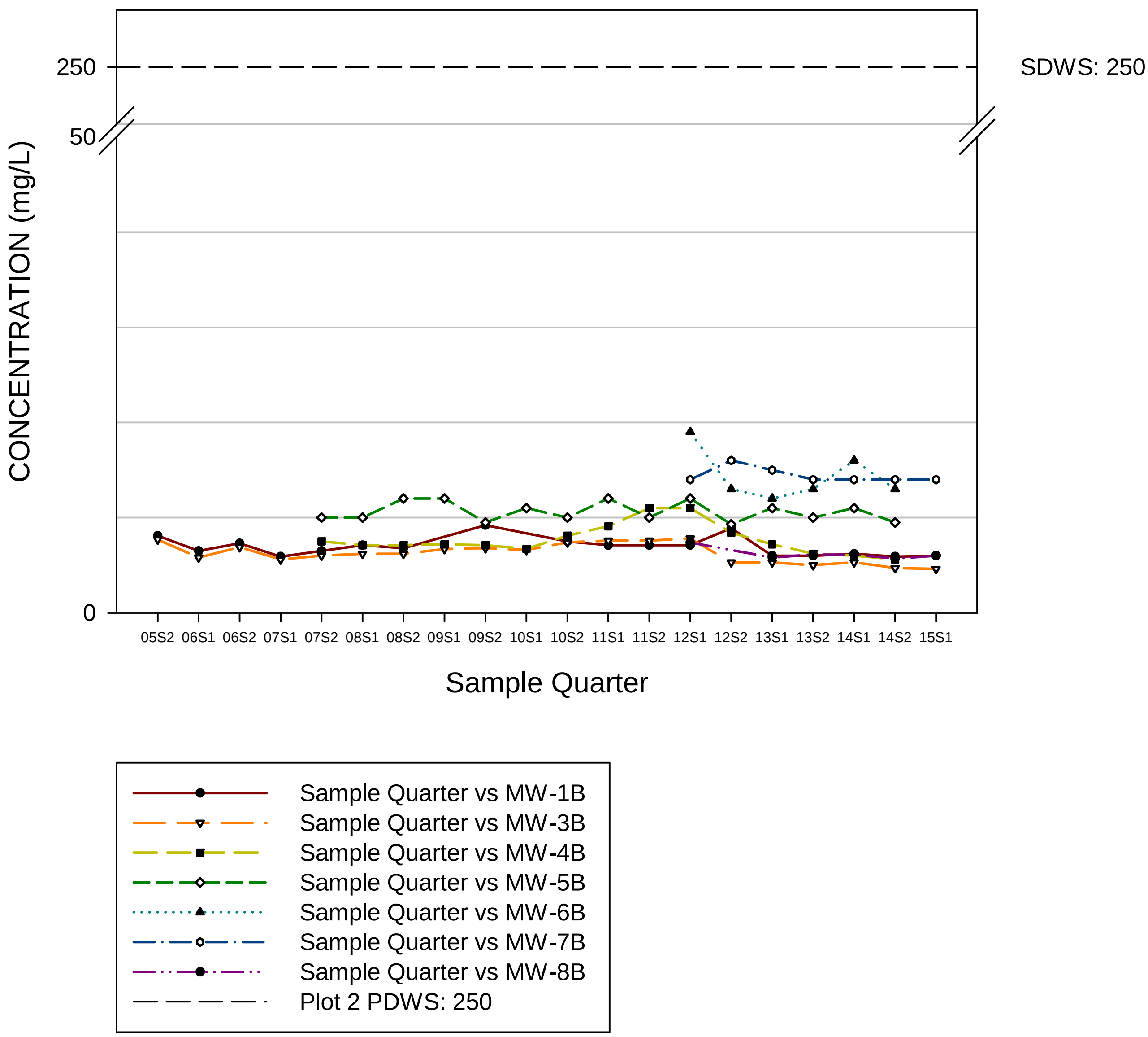
FLORIDAN AQUIFER

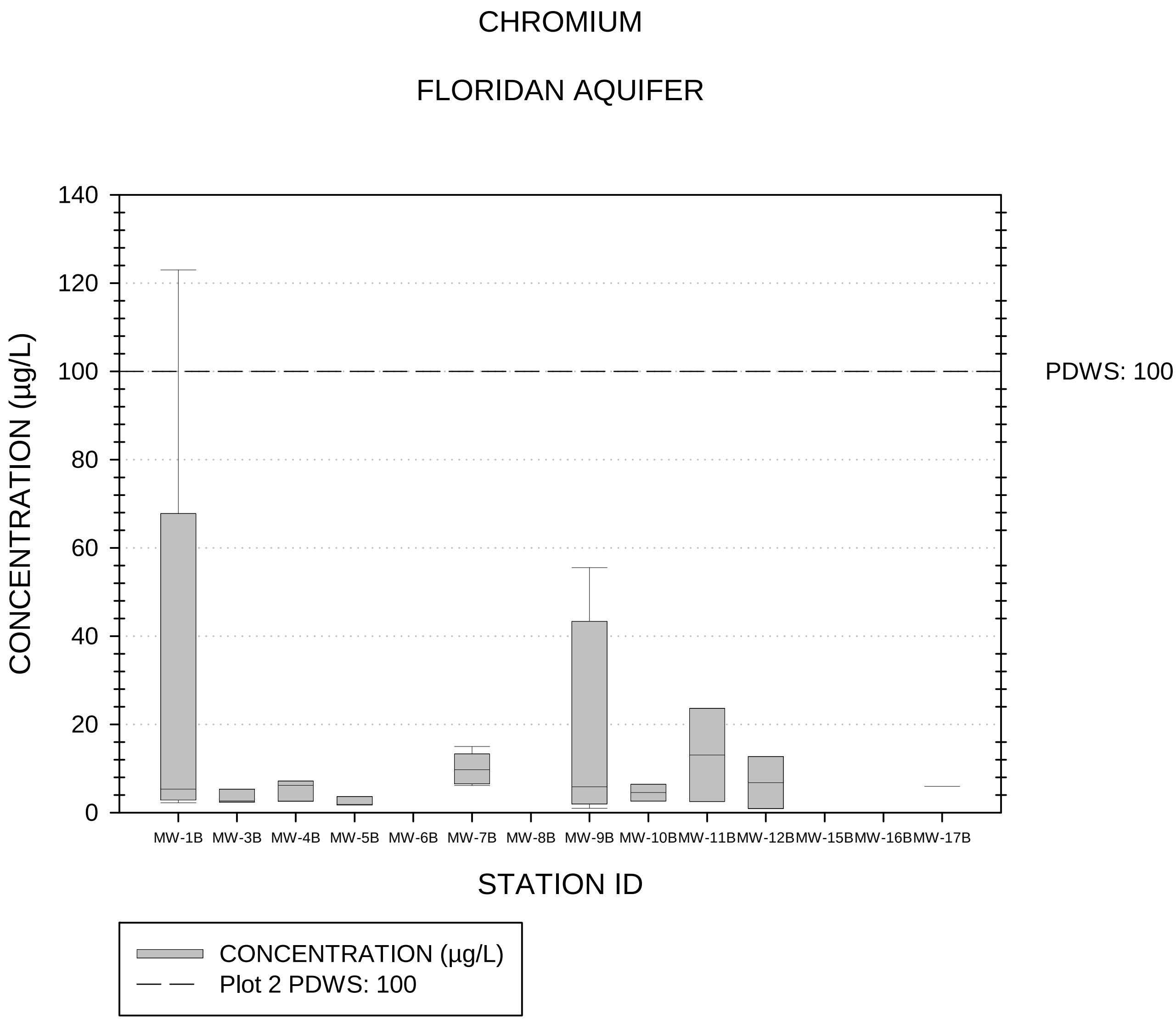



CHLORIDE
FLORIDAN AQUIFER
CONCENTRATION (mg/L)
250
50
0
SDWS: 250
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 250

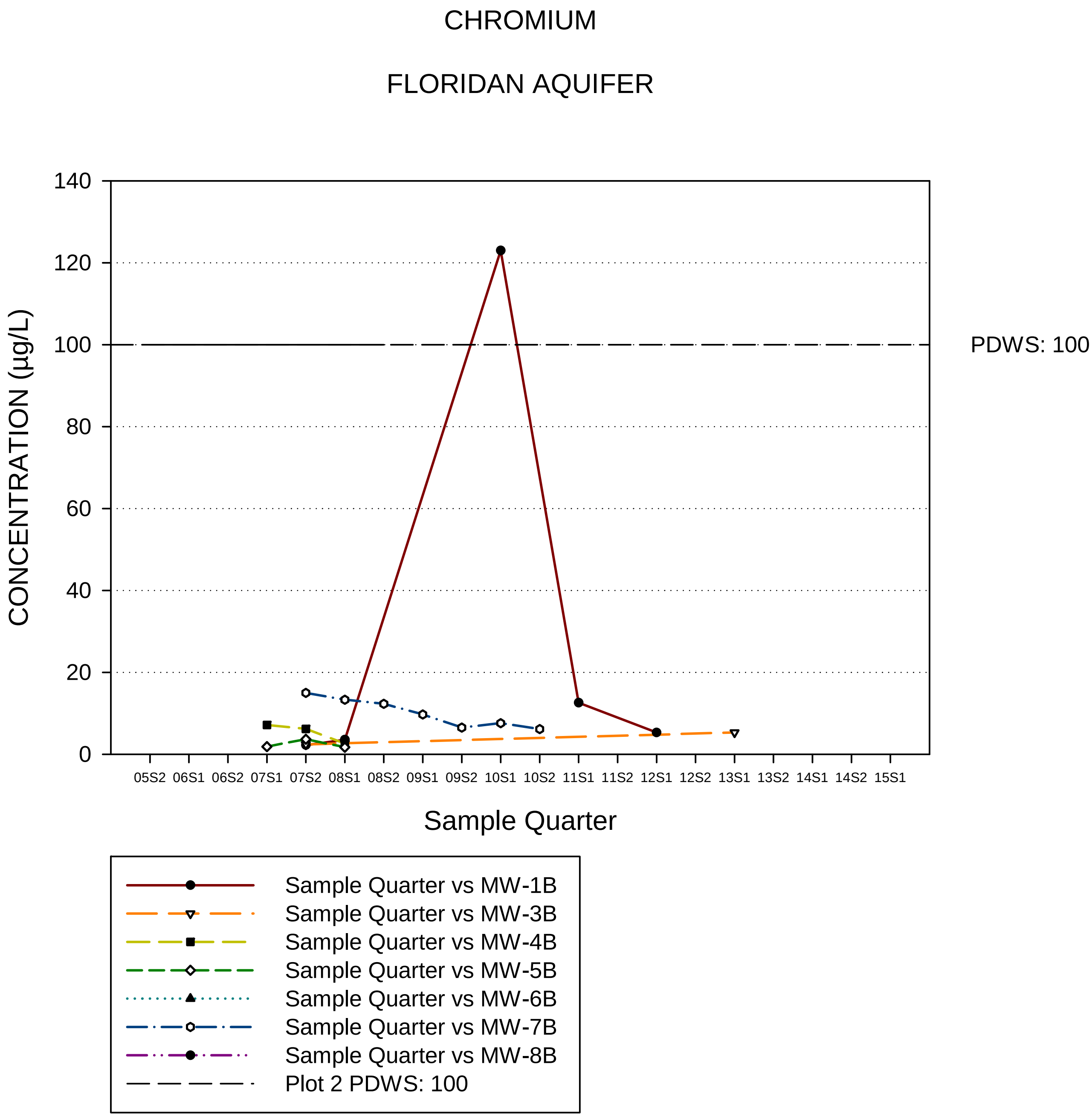
CHLORIDE

FLORIDAN AQUIFER





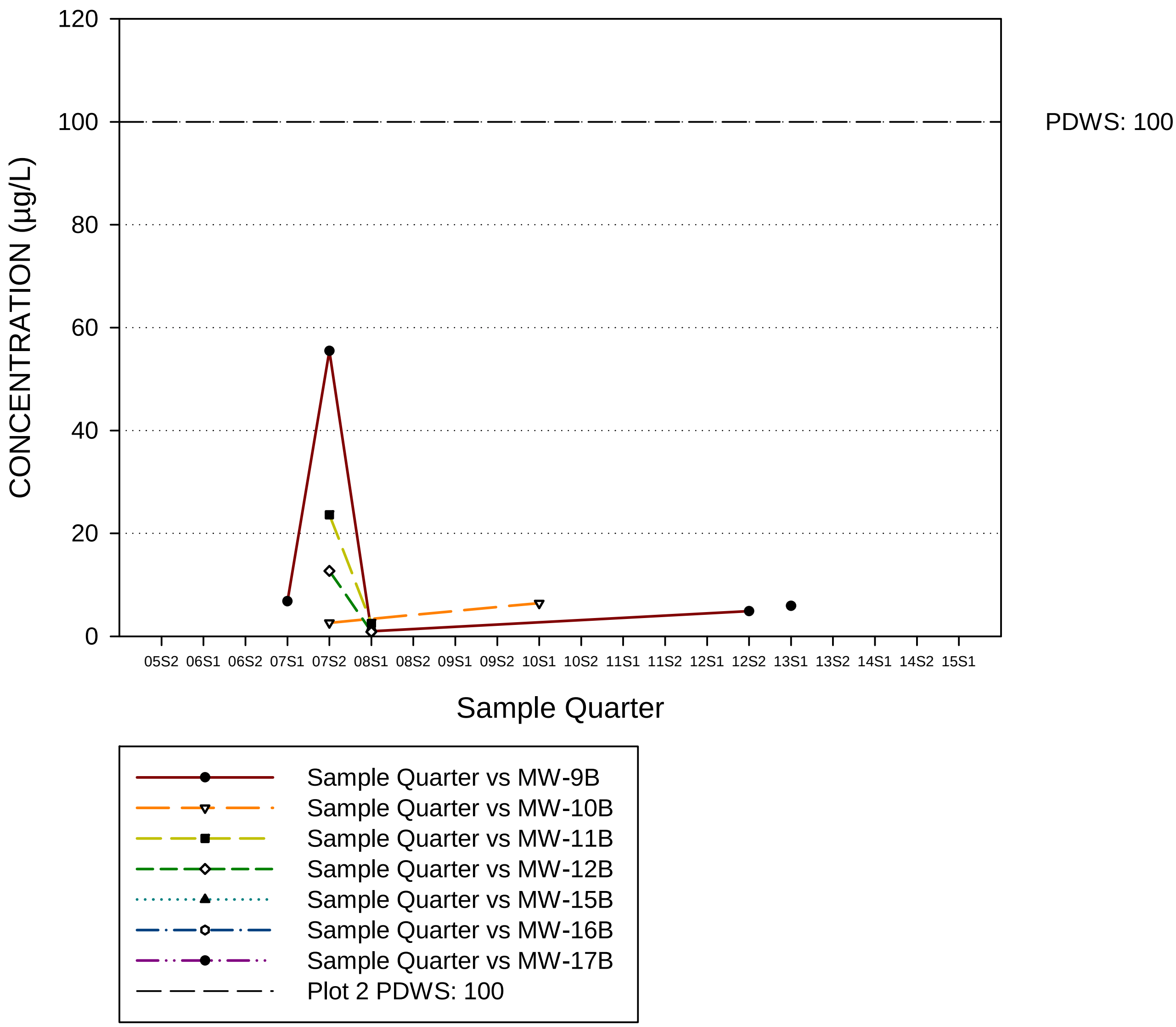
CHROMIUM
FLORIDAN AQUIFER
140
120
100
80
60
40
20
0
CONCENTRATION (µg/L)
PDWS: 100
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 100



CHROMIUM
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
0
20
40
60
80
100
120
140
PDWS: 100
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 100

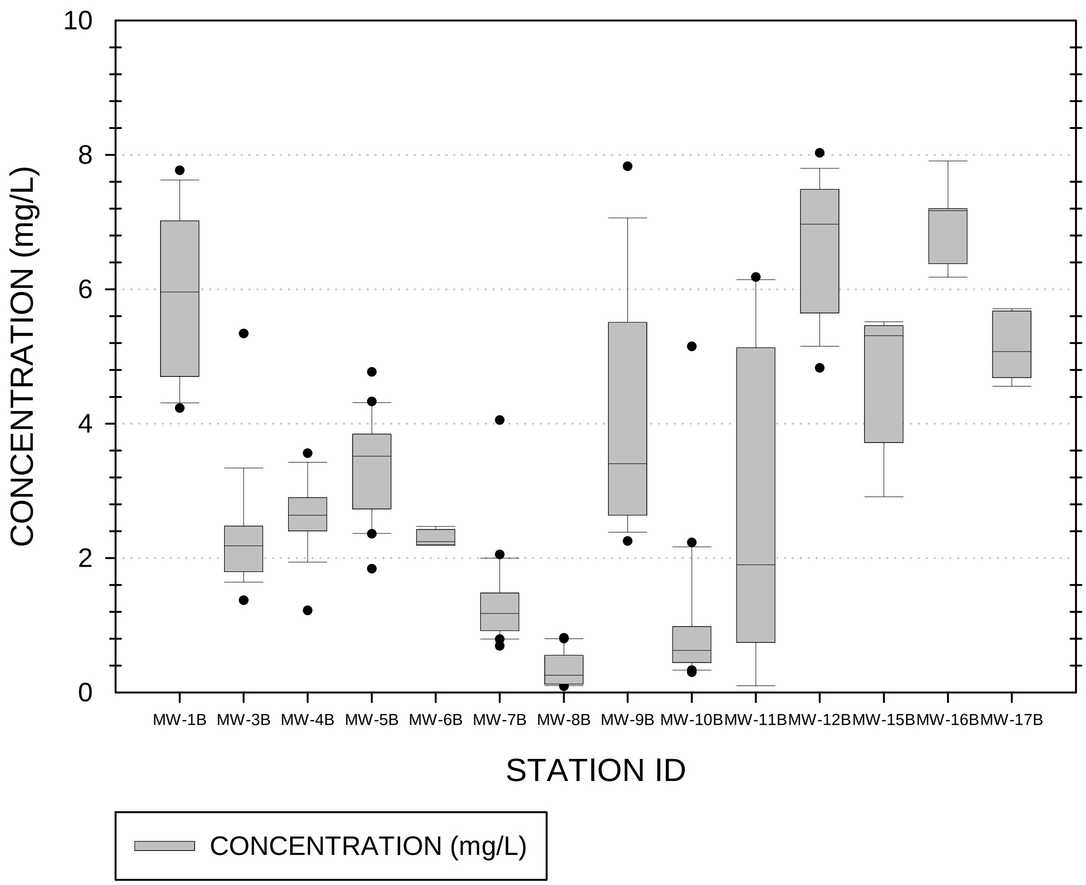
CHROMIUM

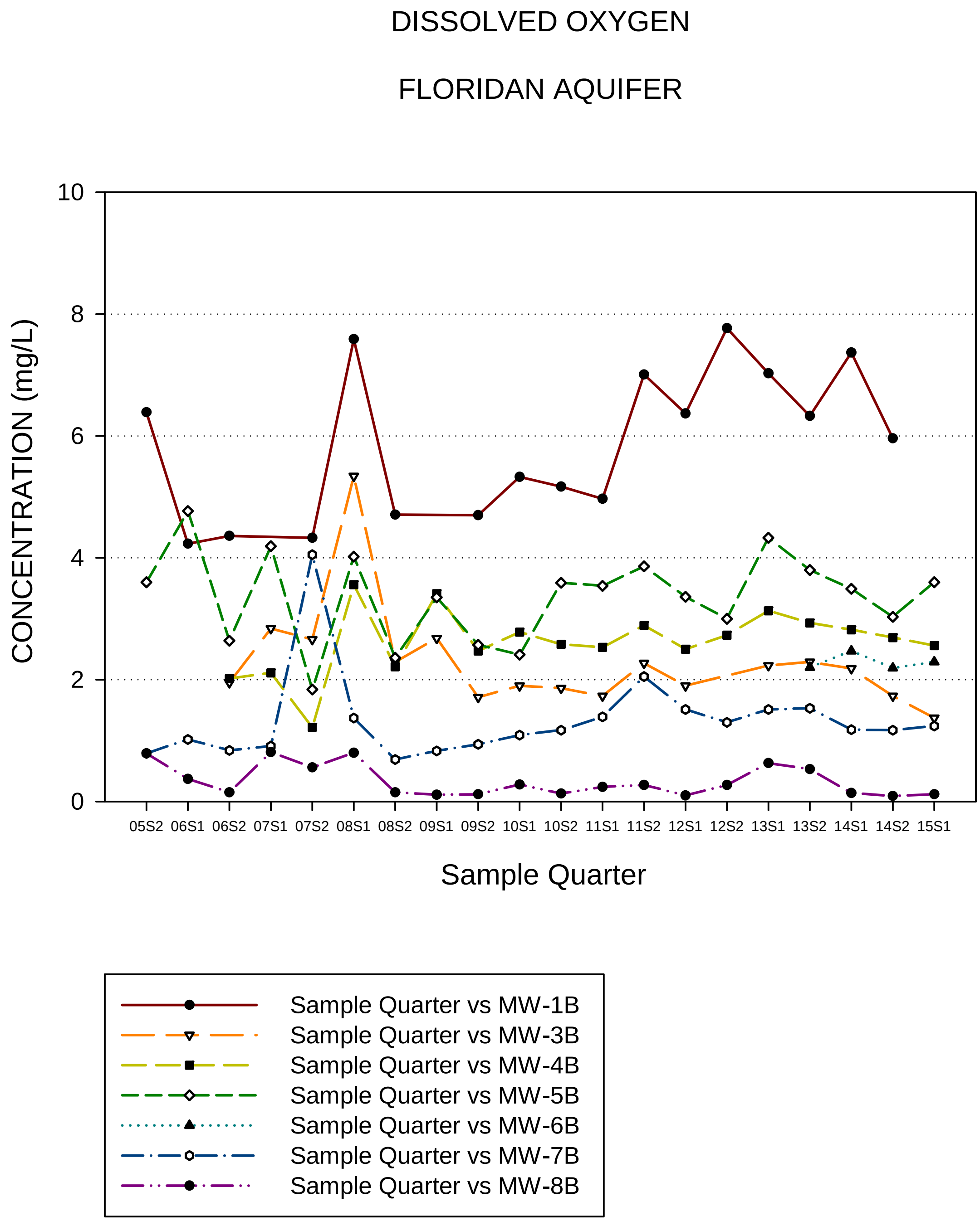
FLORIDAN AQUIFER

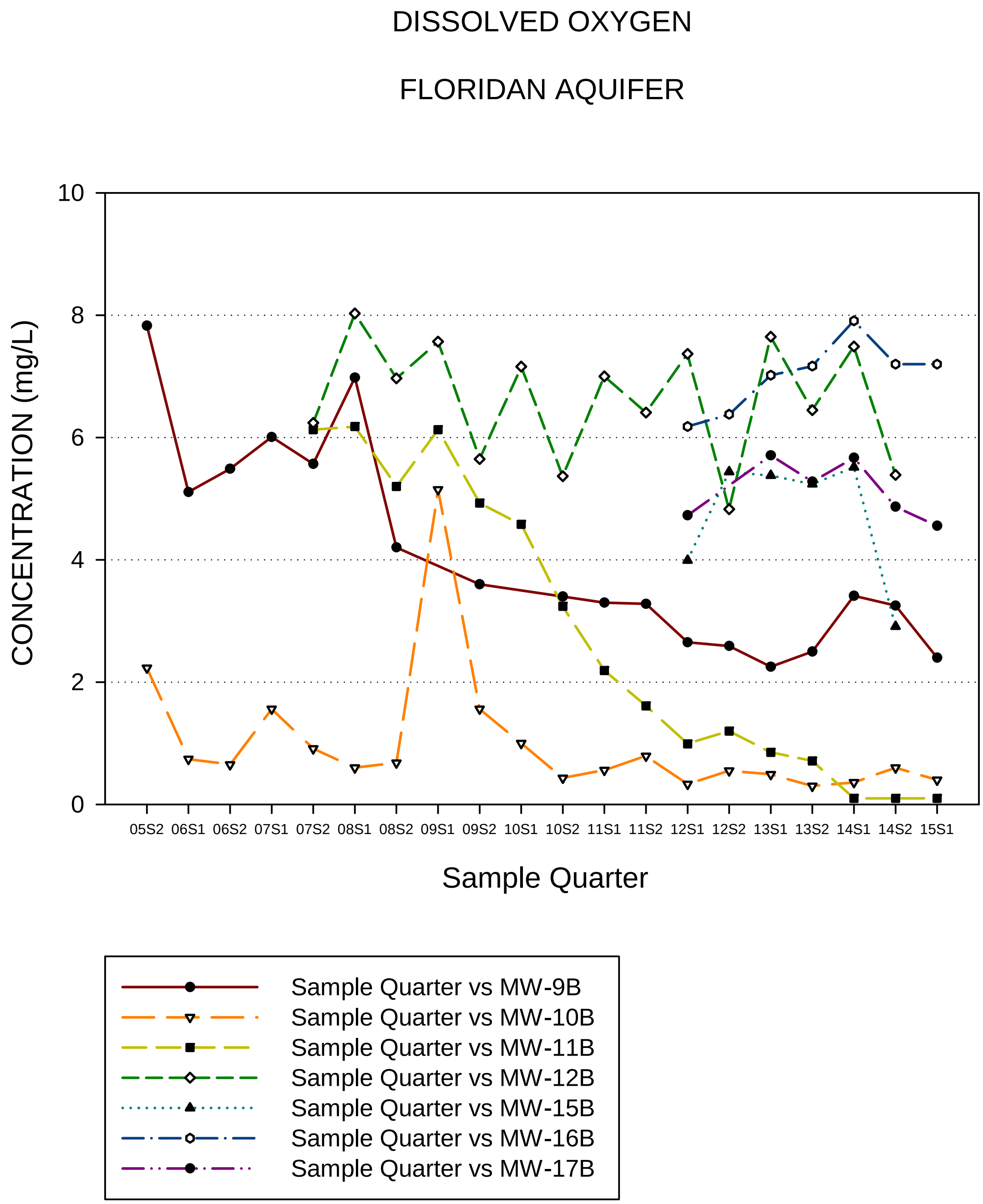


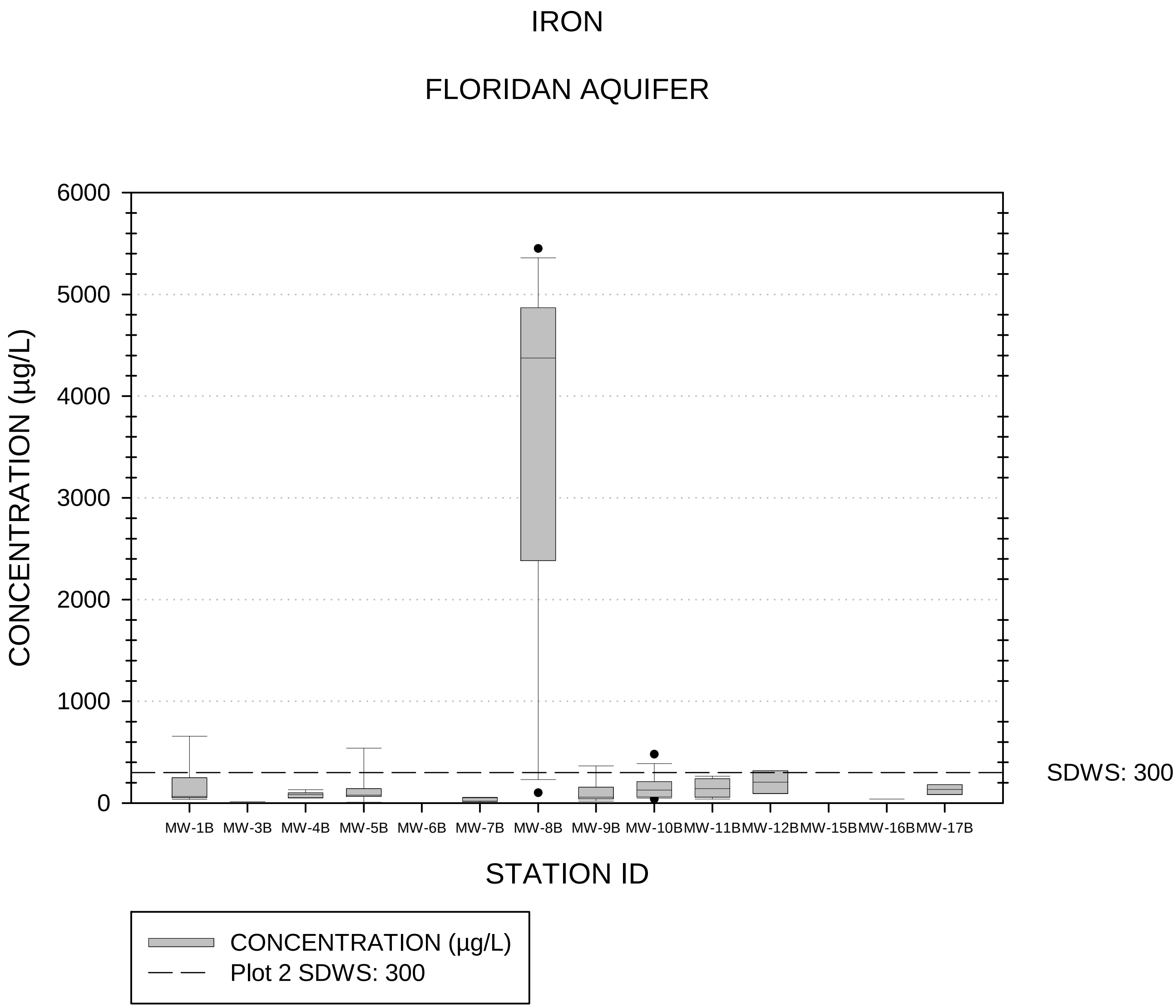
DISSOLVED OXYGEN

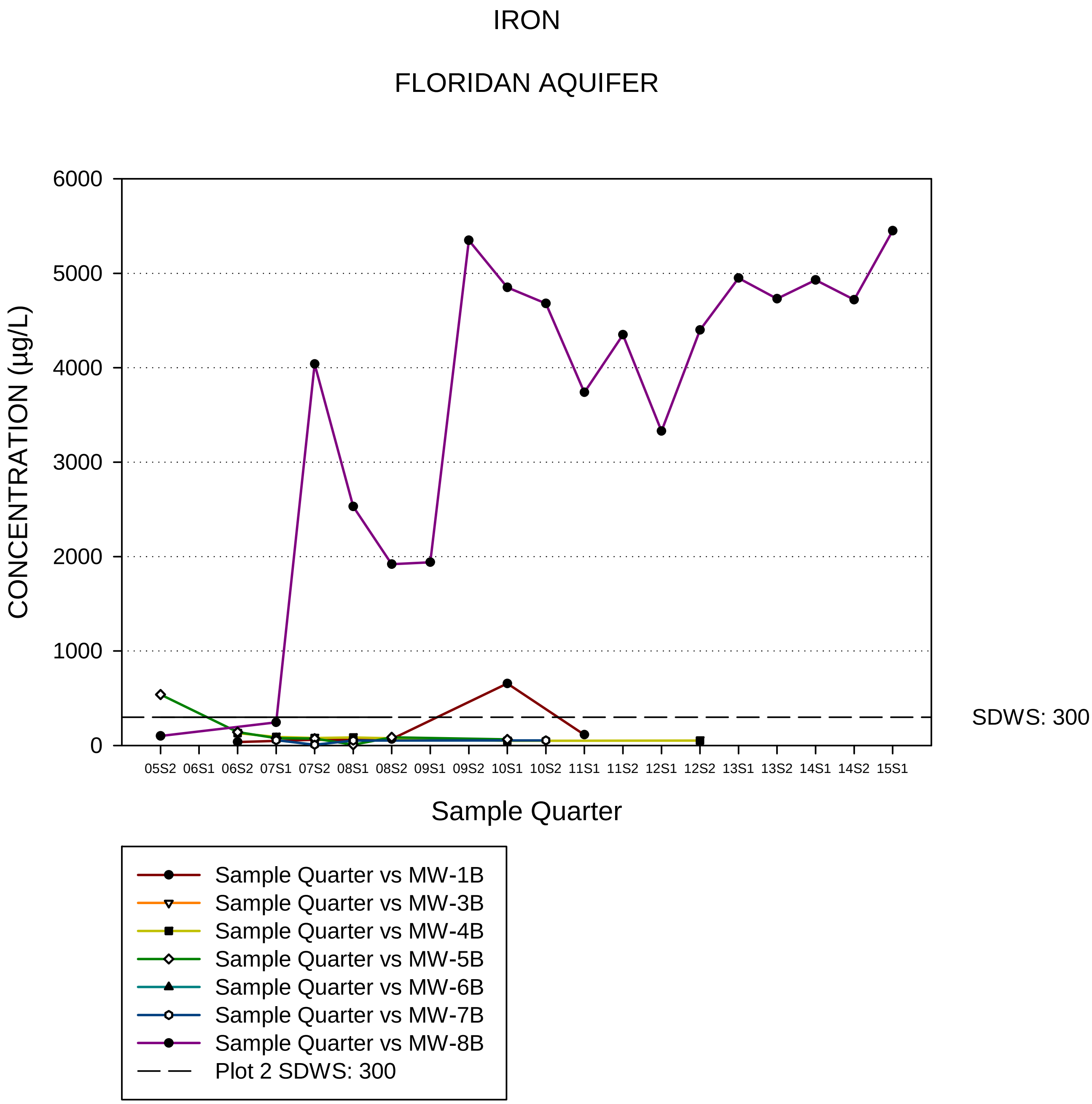
FLORIDAN AQUIFER




DISSOLVED OXYGEN
FLORIDAN AQUIFER
CONCENTRATION (mg/L)
0
2
4
6
8
10
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B


DISSOLVED OXYGEN
FLORIDAN AQUIFER
CONCENTRATION (mg/L)
0
2
4
6
8
10
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-9B
Sample Quarter vs MW-10B
Sample Quarter vs MW-11B
Sample Quarter vs MW-12B
Sample Quarter vs MW-15B
Sample Quarter vs MW-16B
Sample Quarter vs MW-17B

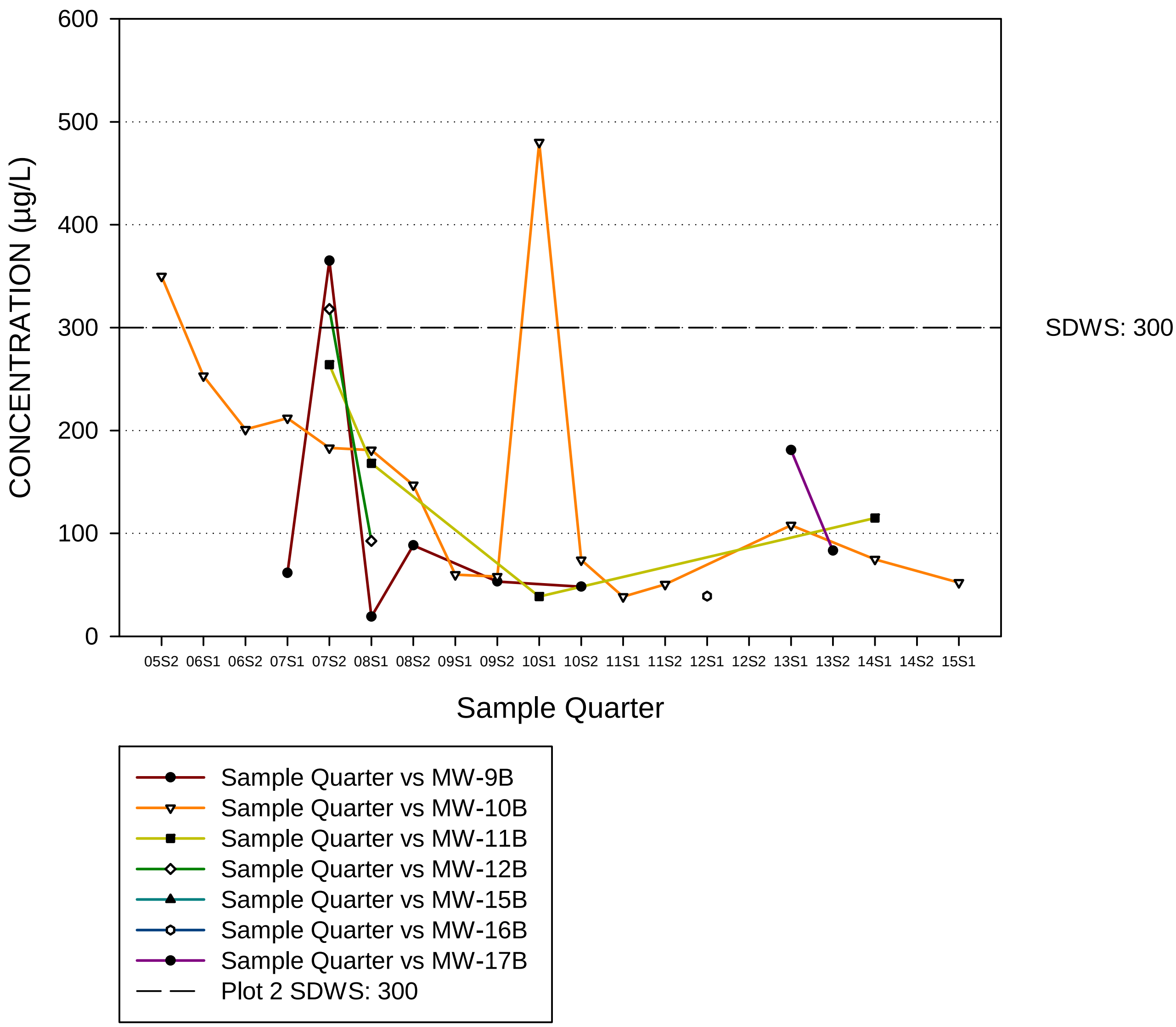

IRON
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
6000
5000
4000
3000
2000
1000
0
SDWS: 300
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
CONCENTRATION (µg/L)
Plot 2 SDWS: 300



IRON
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
6000
5000
4000
3000
2000
1000
0
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
SDWS: 300
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 SDWS: 300

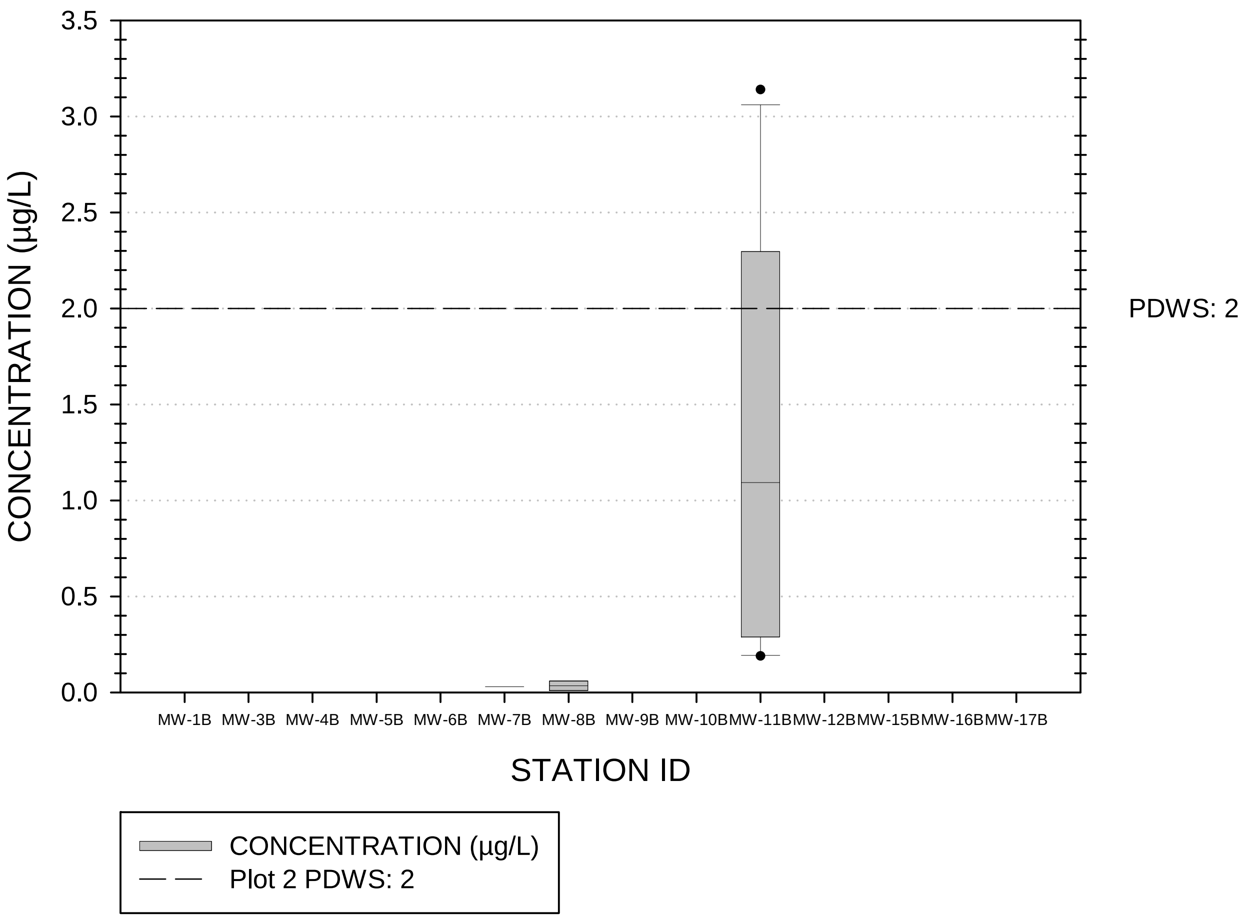
IRON

FLORIDAN AQUIFER



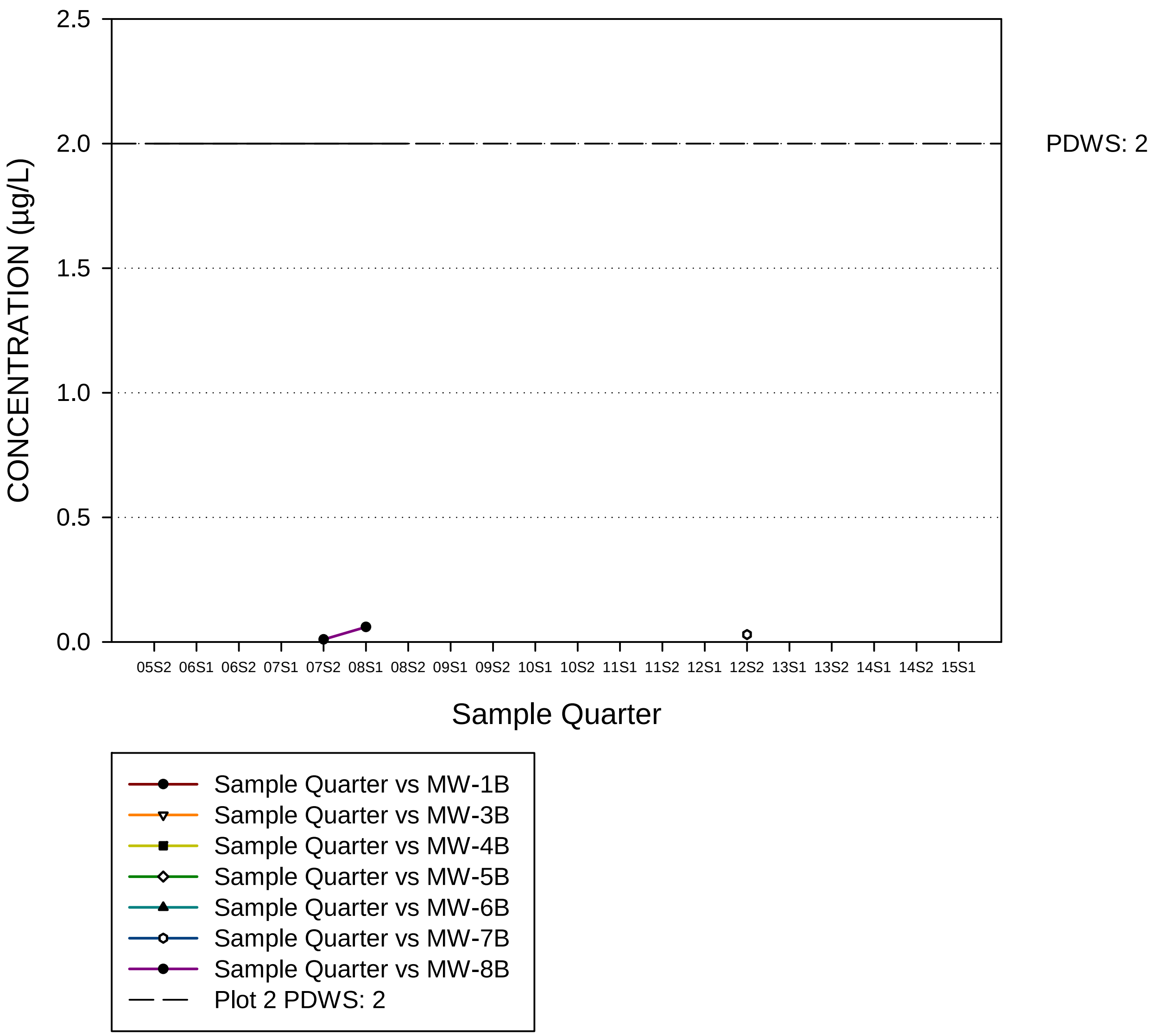
MERCURY

FLORIDAN AQUIFER



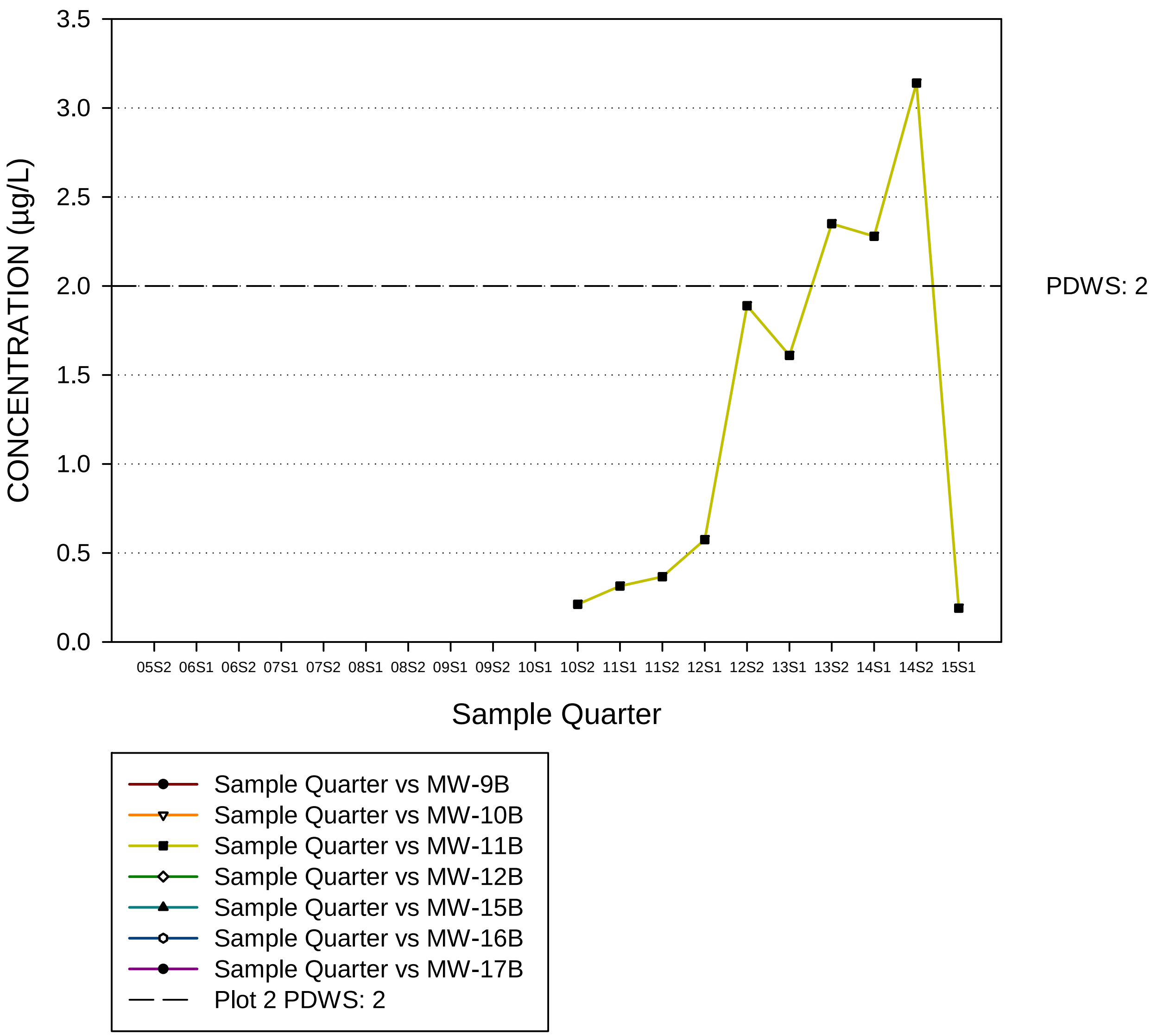
MERCURY

FLORIDAN AQUIFER



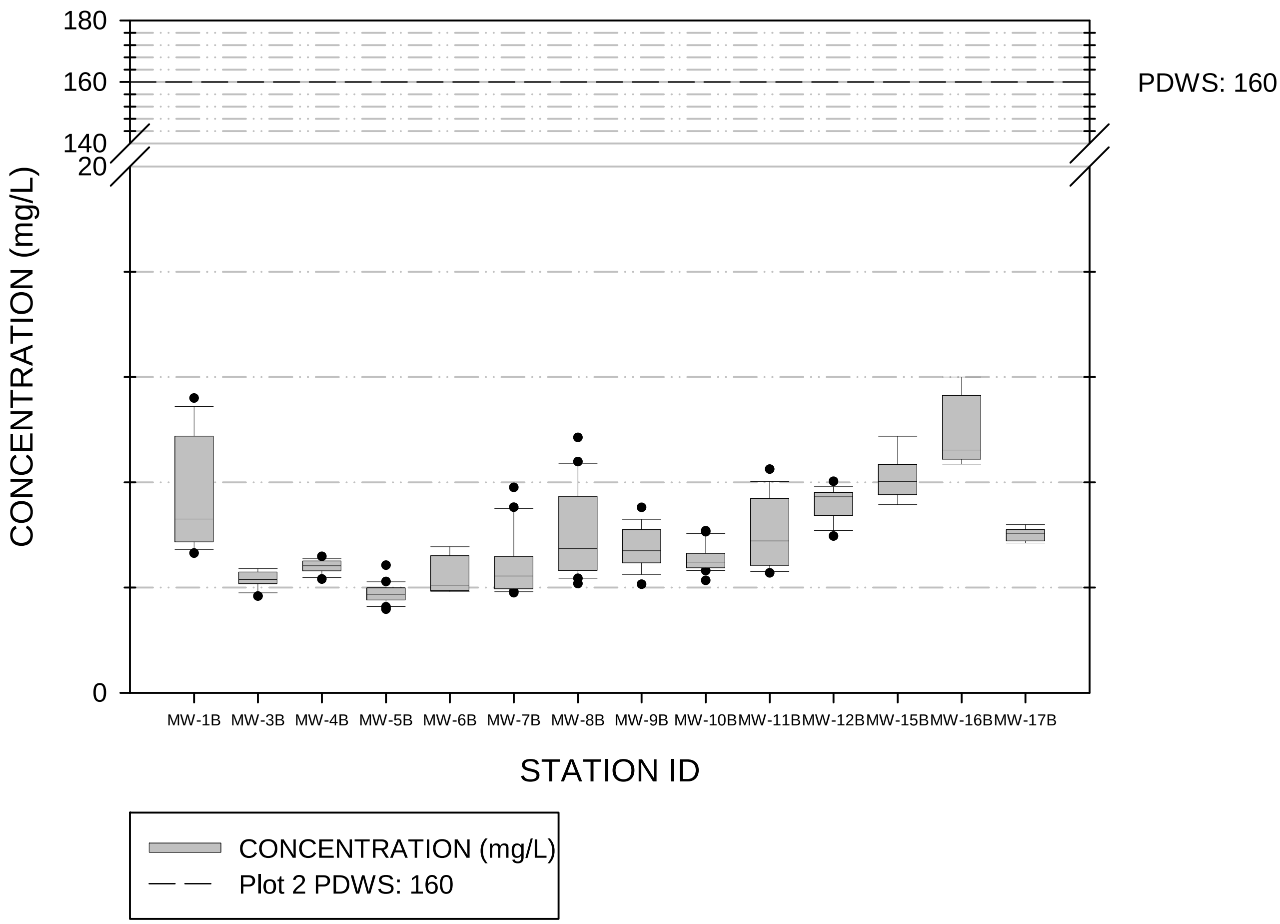
MERCURY

FLORIDAN AQUIFER



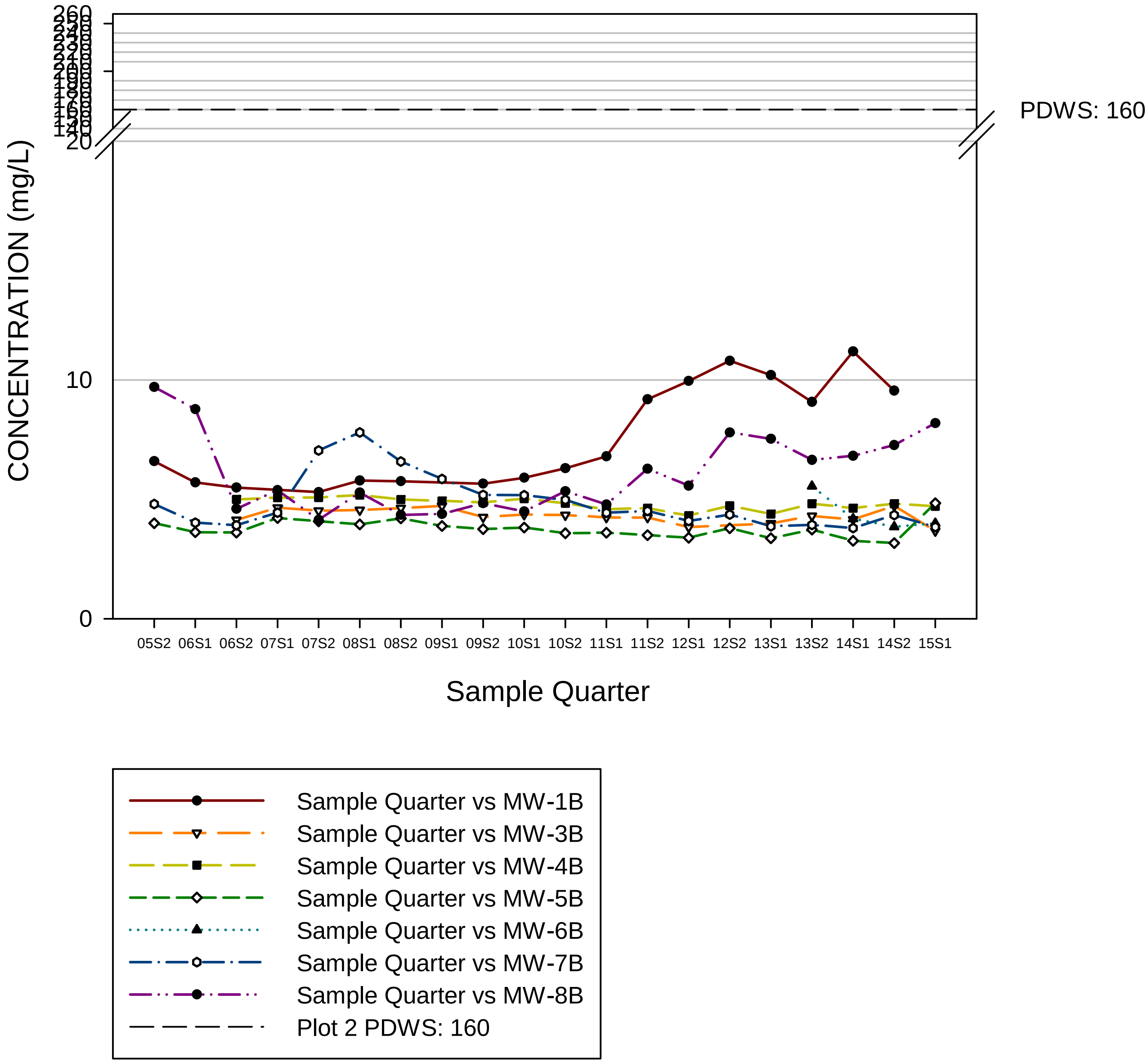
SODIUM

FLORIDAN AQUIFER



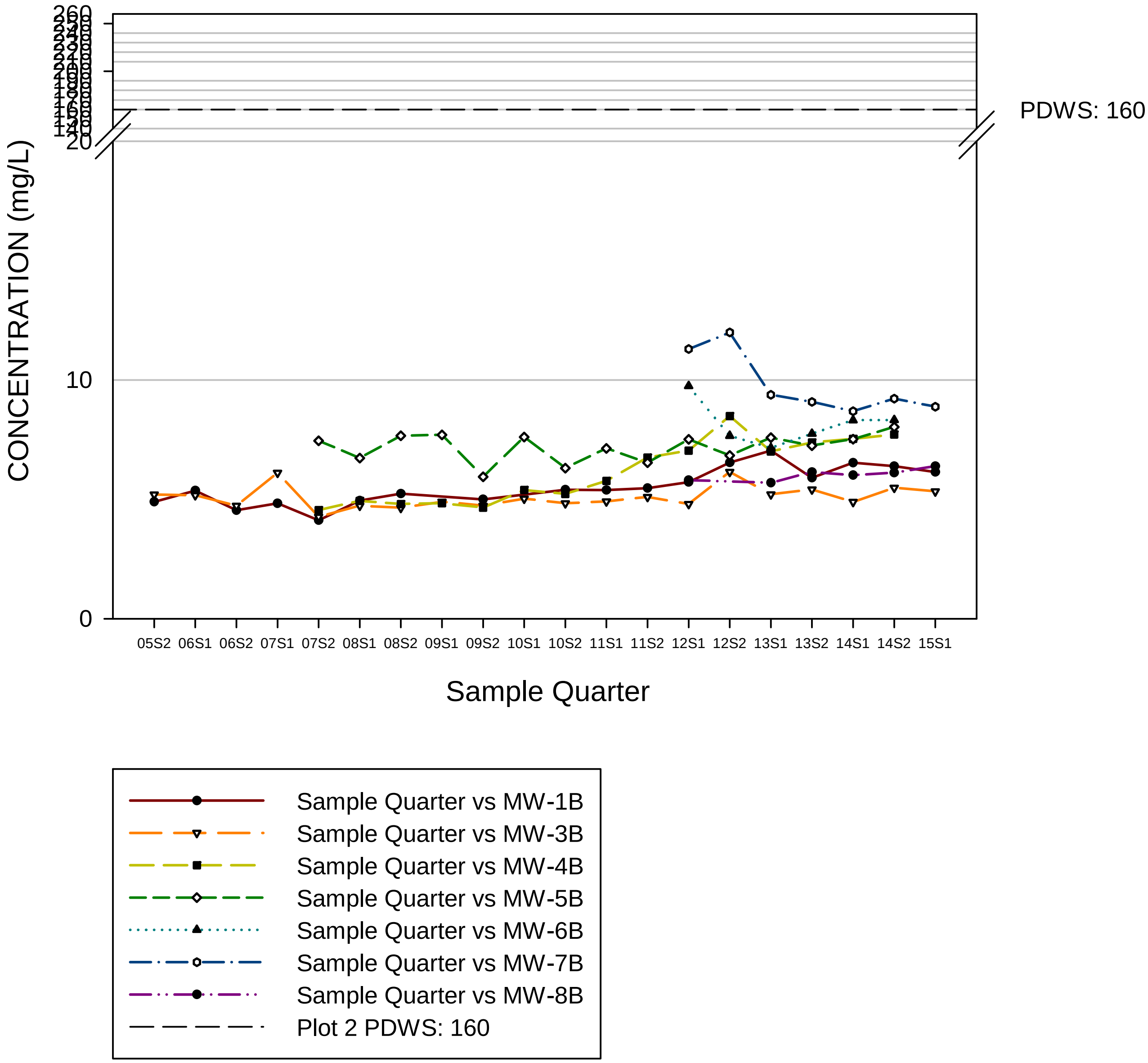
CHLORINE

FLORIDAN AQUIFER



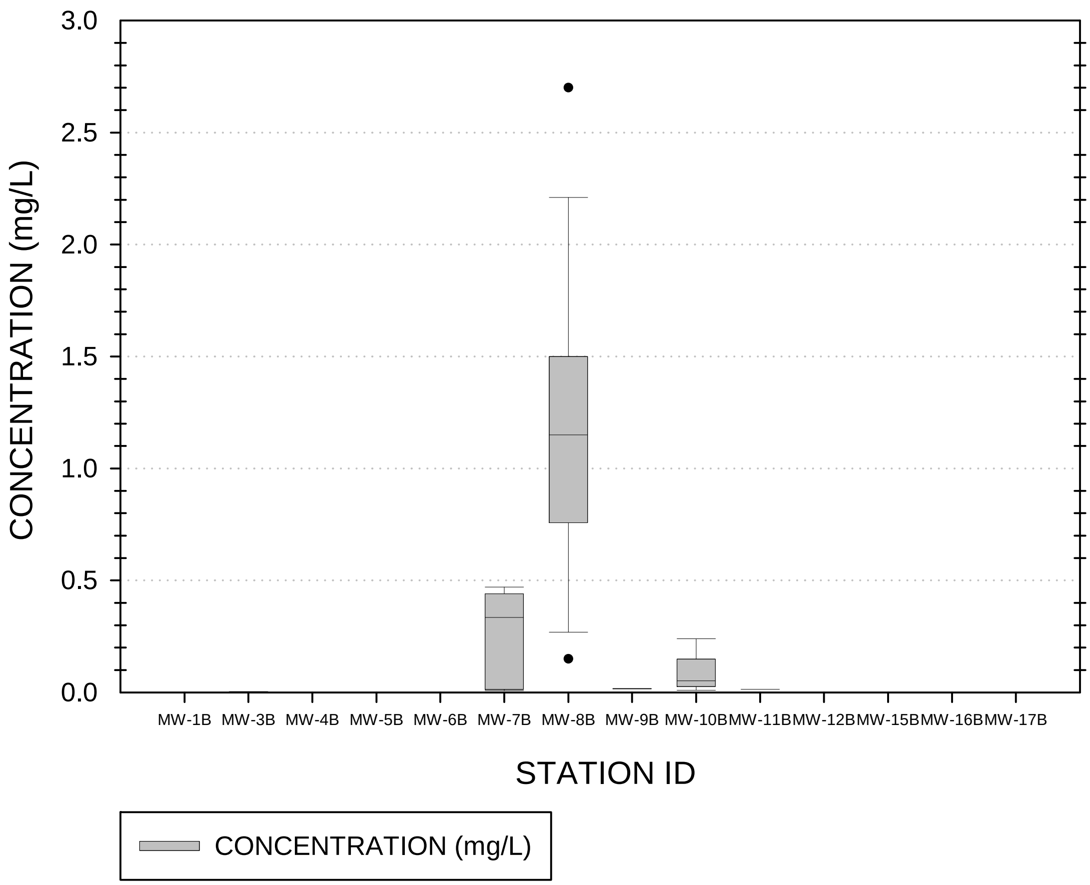
SODIUM

FLORIDAN AQUIFER



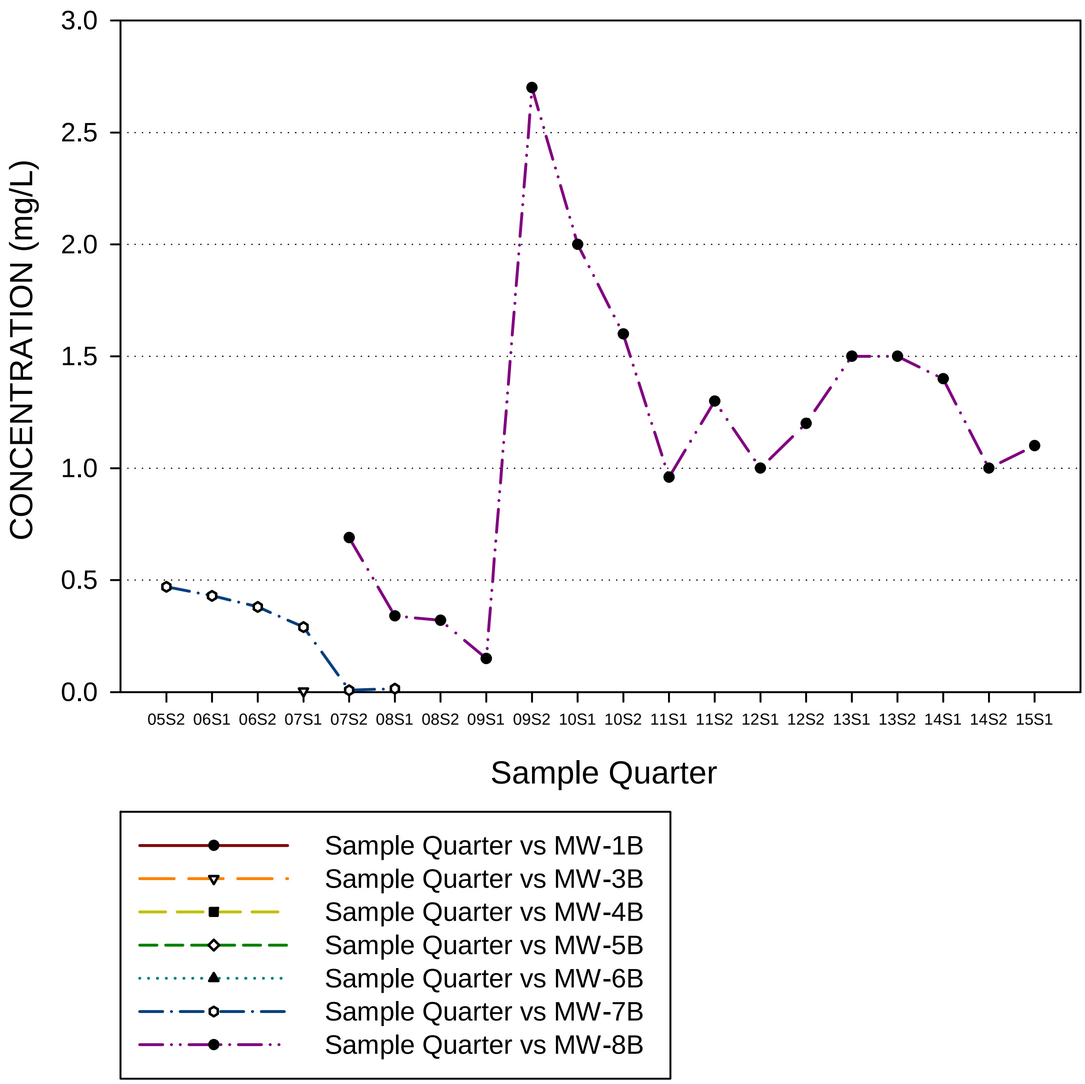
AMMONIA AS NITROGEN

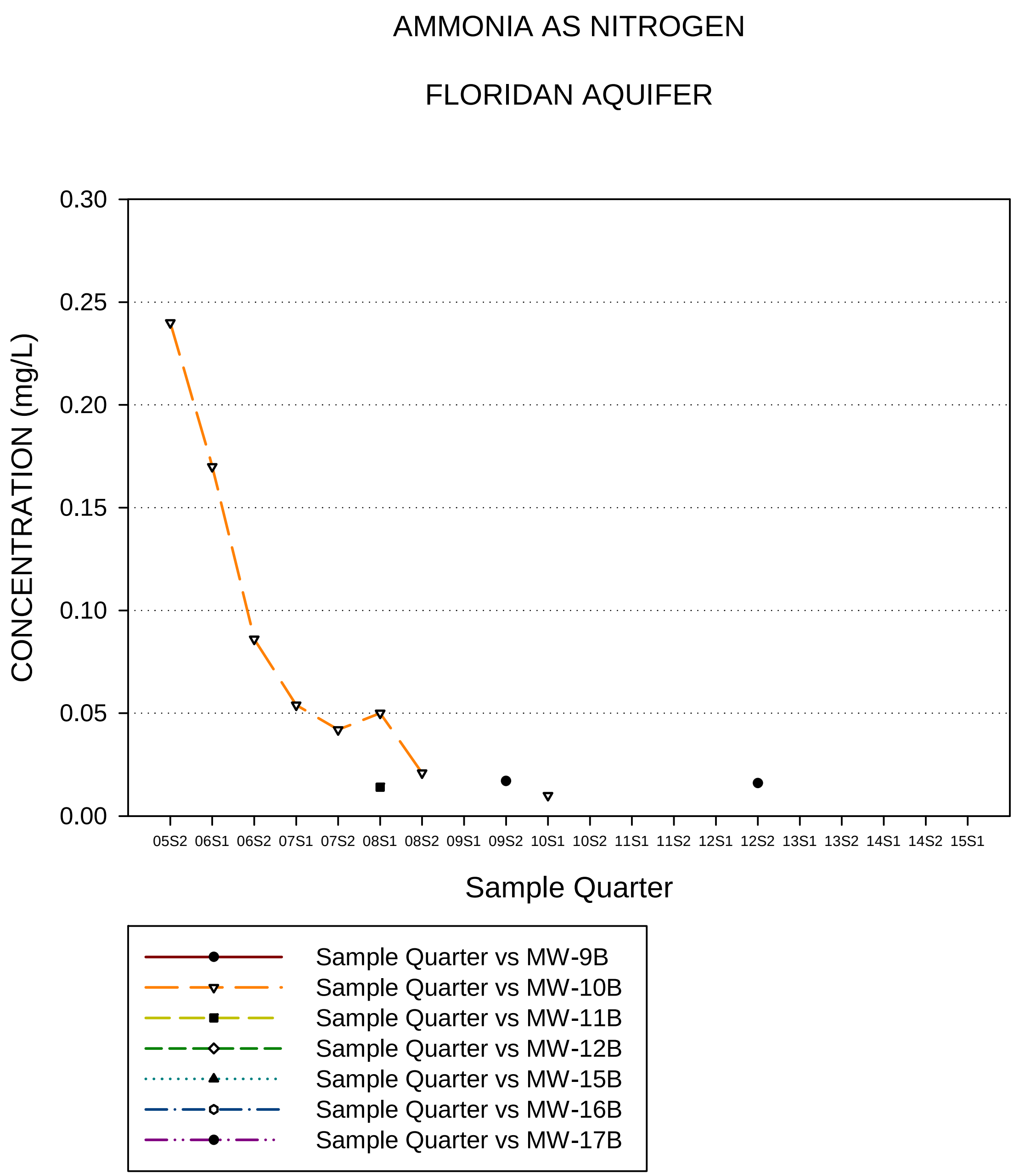
FLORIDAN AQUIFER



AMMONIA AS NITROGEN

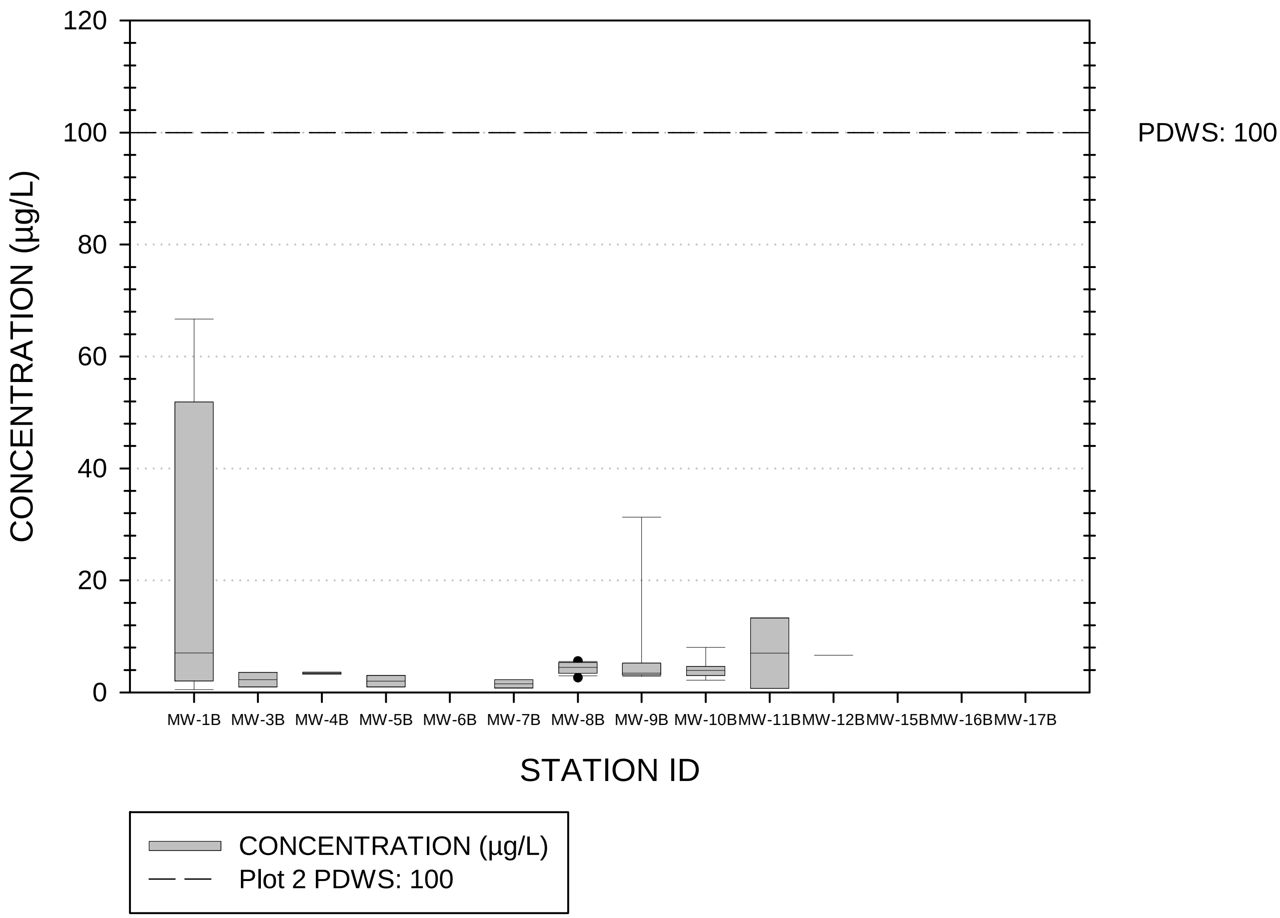
FLORIDAN AQUIFER

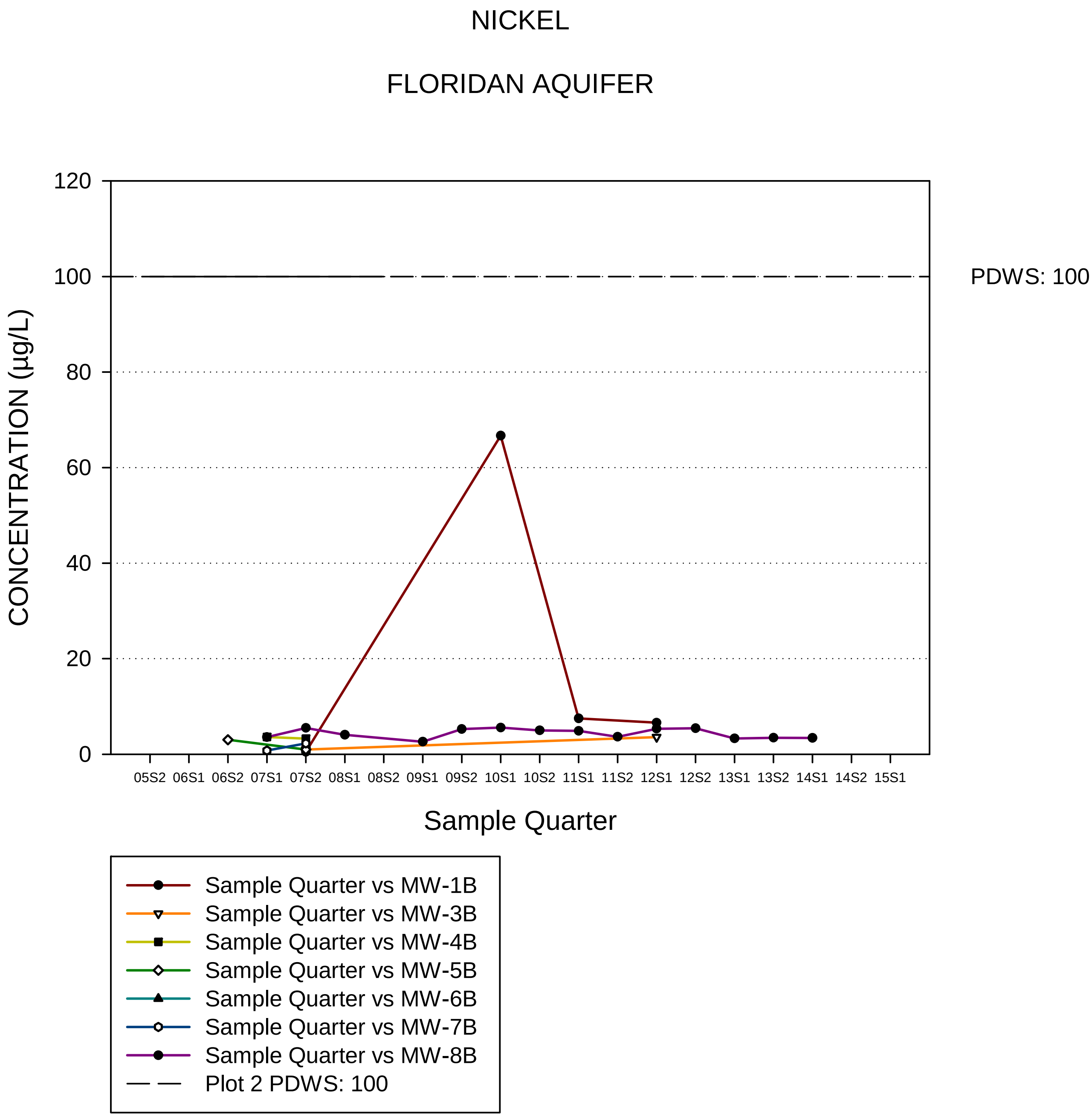



AMMONIA AS NITROGEN
FLORIDAN AQUIFER
CONCENTRATION (mg/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs MW-9B
Sample Quarter vs MW-10B
Sample Quarter vs MW-11B
Sample Quarter vs MW-12B
Sample Quarter vs MW-15B
Sample Quarter vs MW-16B
Sample Quarter vs MW-17B

NICKEL

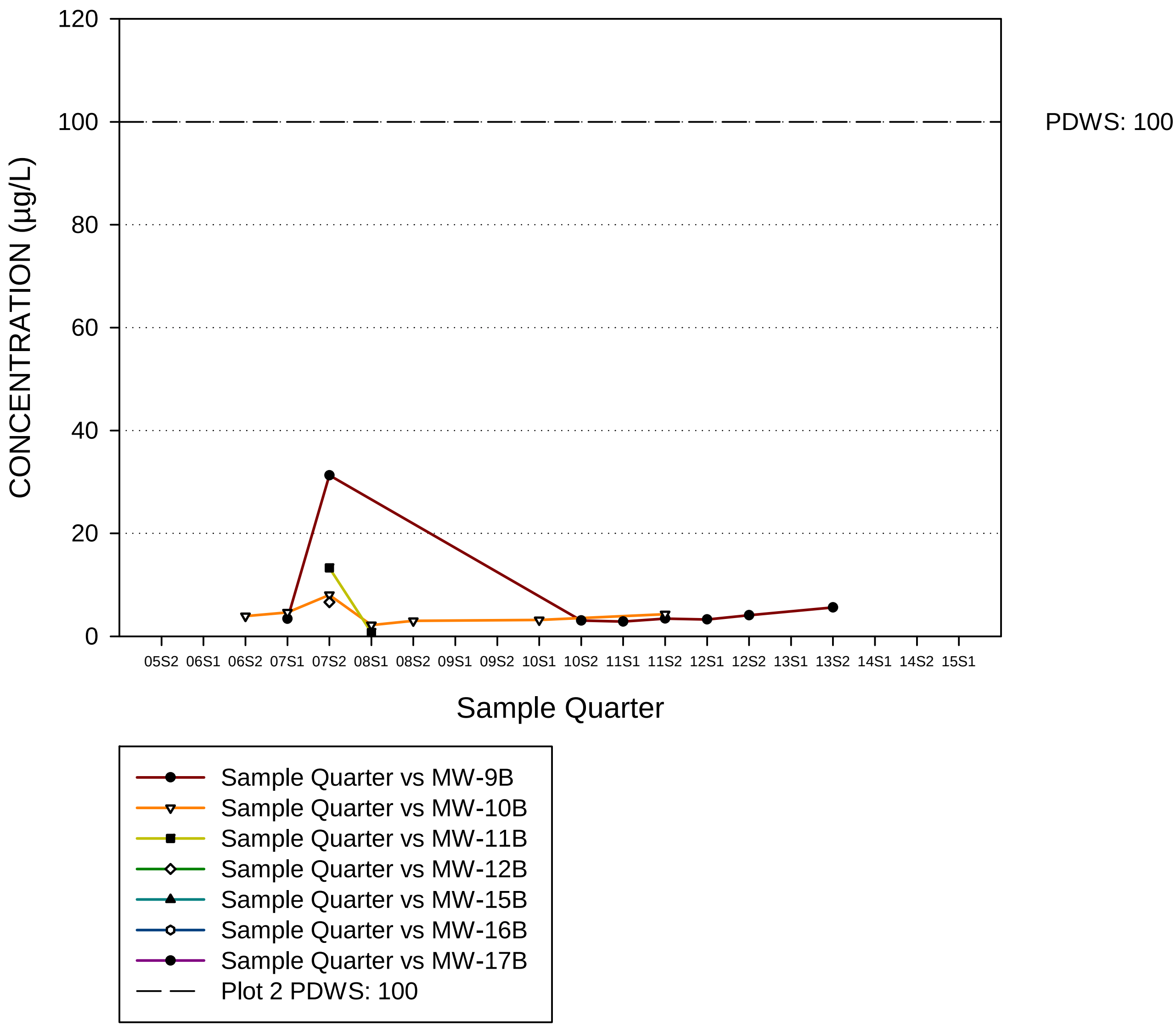
FLORIDAN AQUIFER

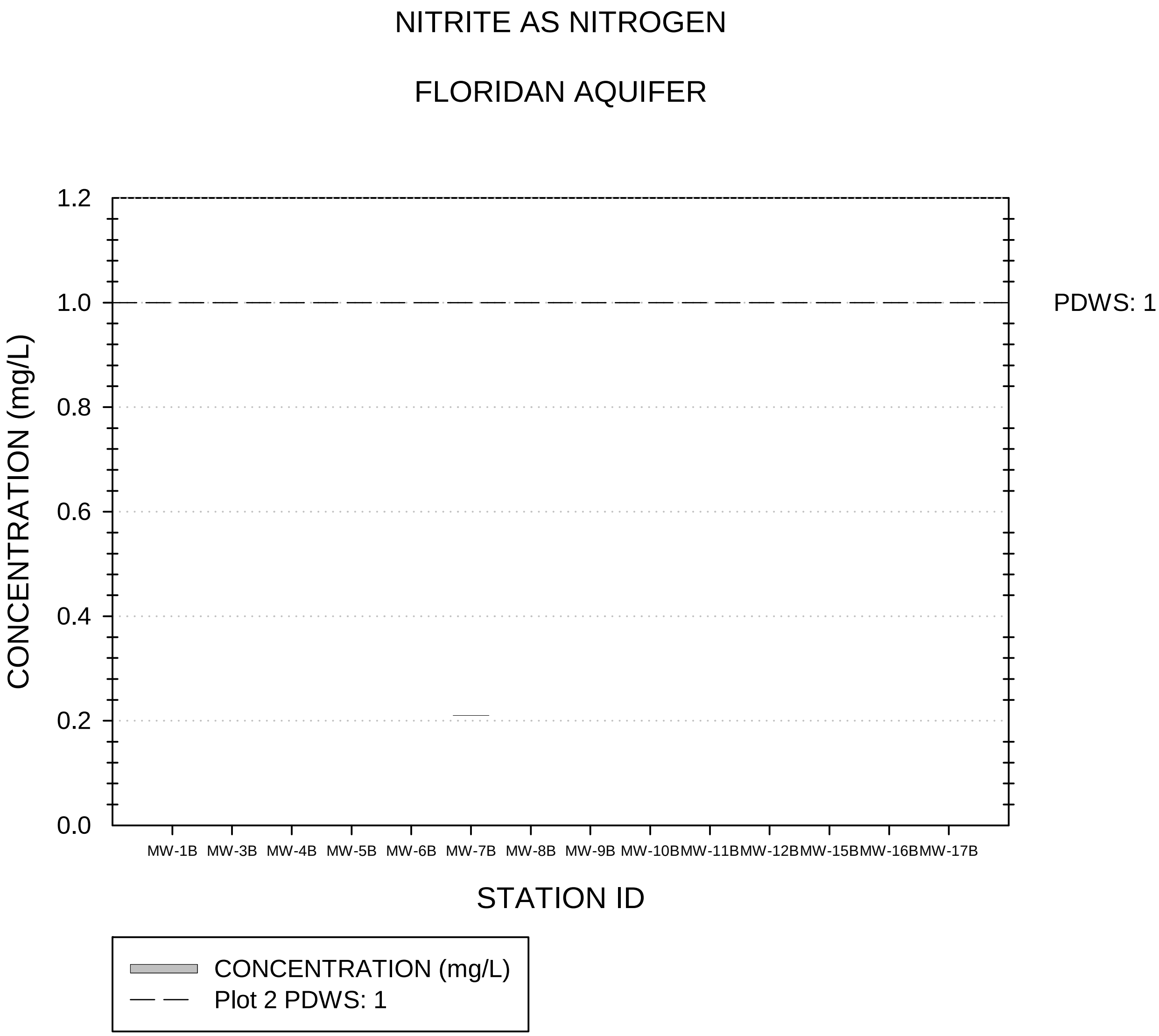



NICKEL
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
0
20
40
60
80
100
120
PDWS: 100
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 100

NICKEL

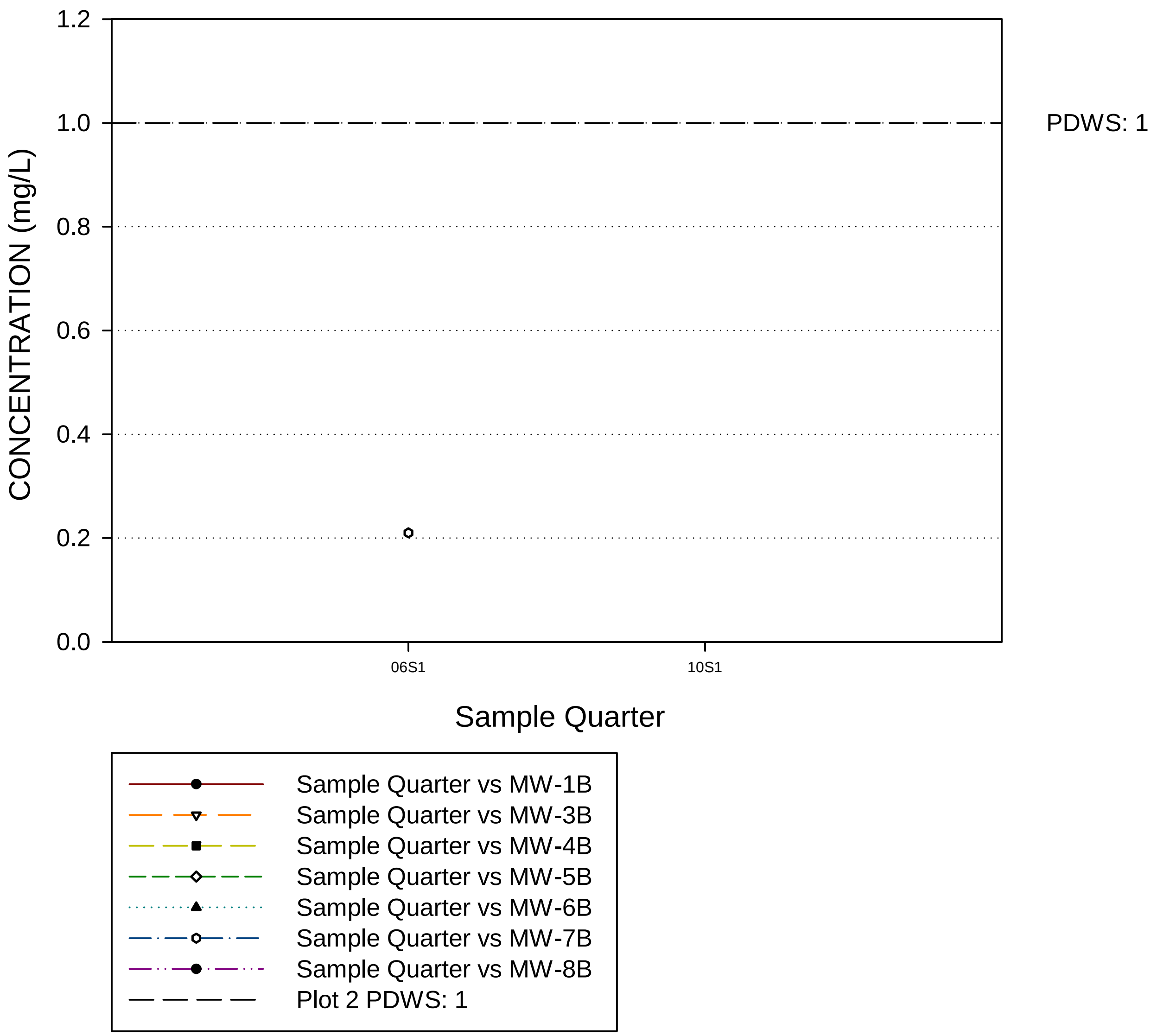
FLORIDAN AQUIFER




NITRITE AS NITROGEN
FLORIDAN AQUIFER
CONCENTRATION (mg/L)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
PDWS: 1
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
CONCENTRATION (mg/L)
Plot 2 PDWS: 1

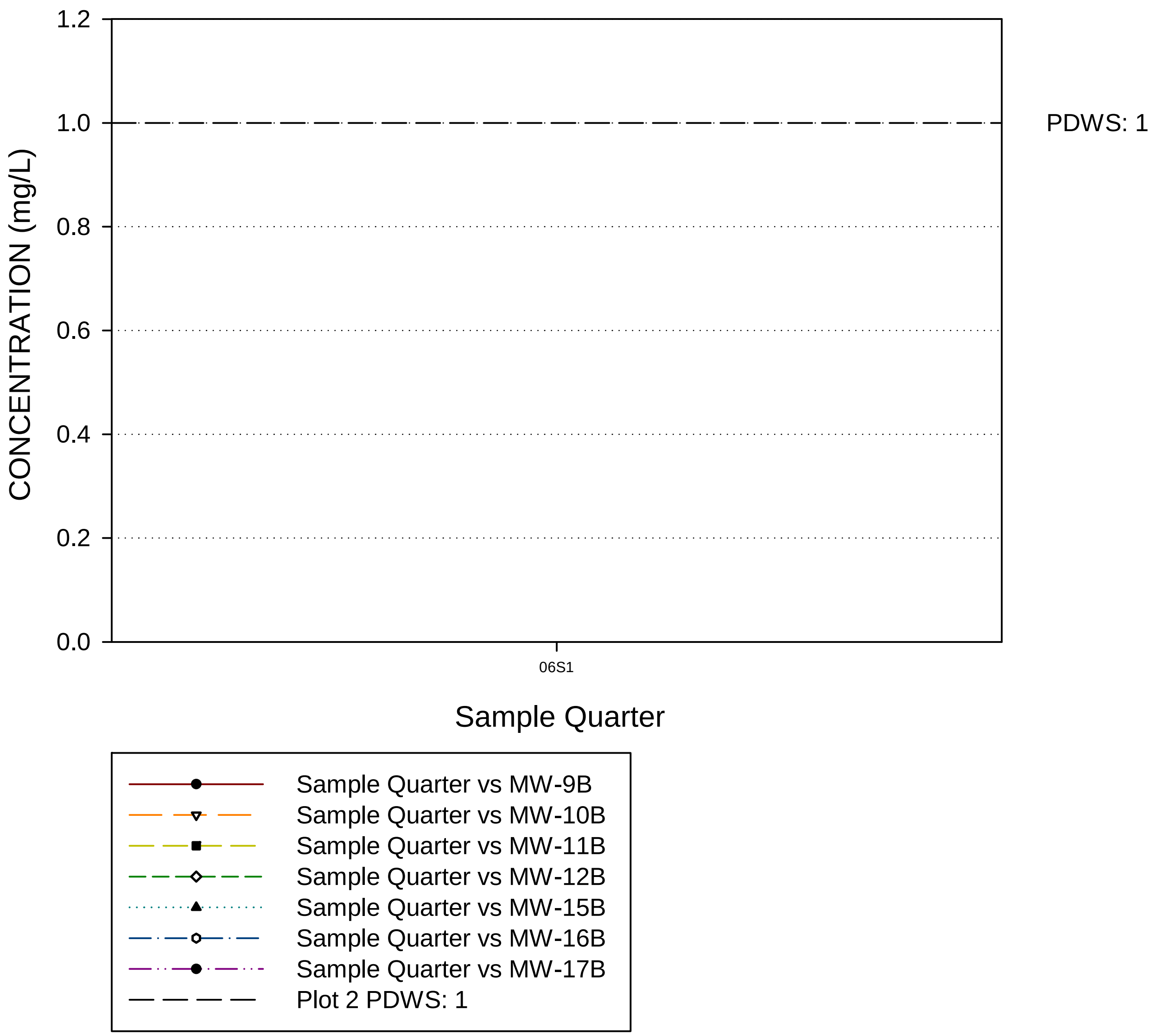
NITRITE AS NITROGEN

FLORIDAN AQUIFER



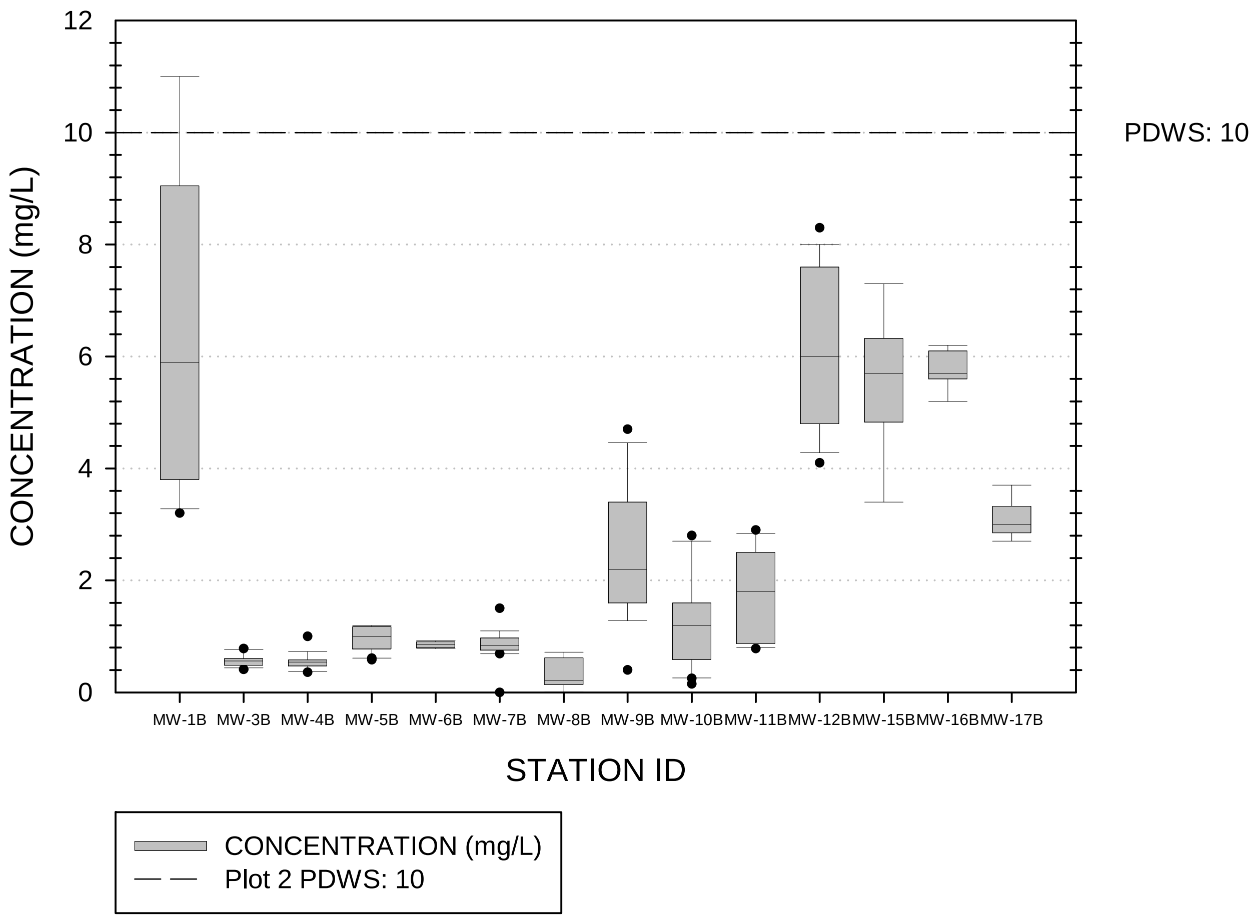
NITRITE AS NITROGEN

FLORIDAN AQUIFER



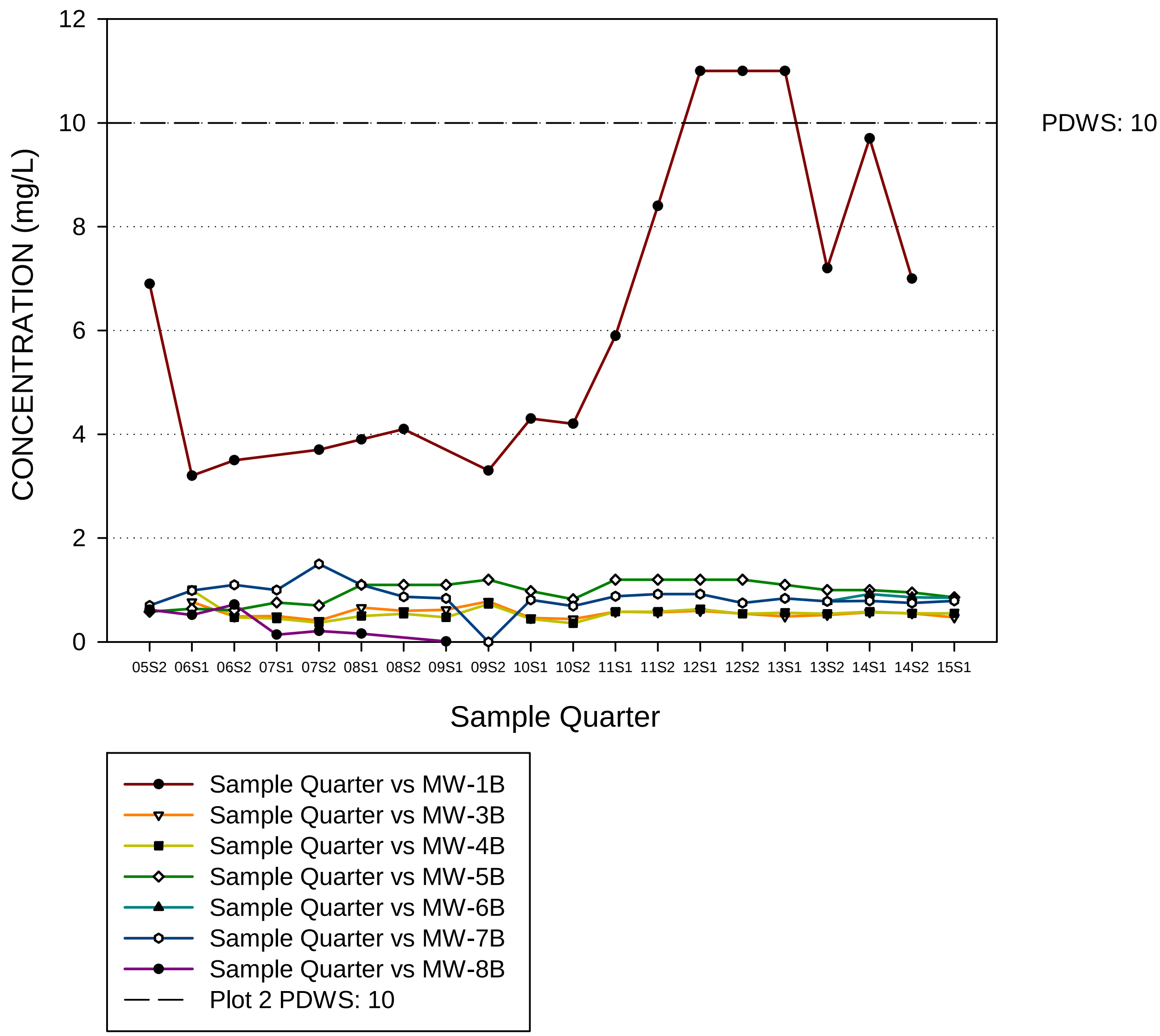
NITRATE AS NITROGEN

FLORIDAN AQUIFER



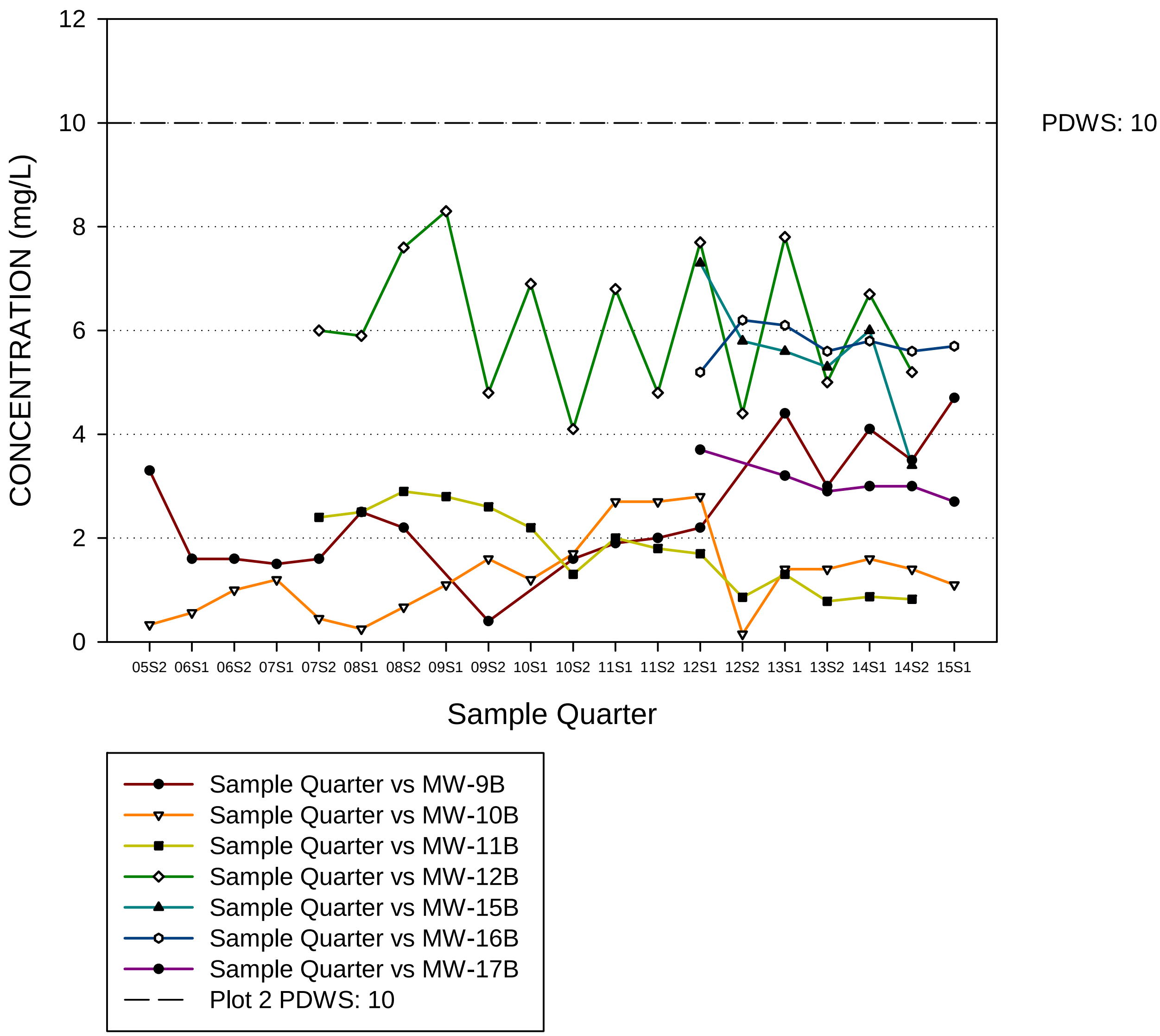
NITRATE AS NITROGEN

FLORIDAN AQUIFER



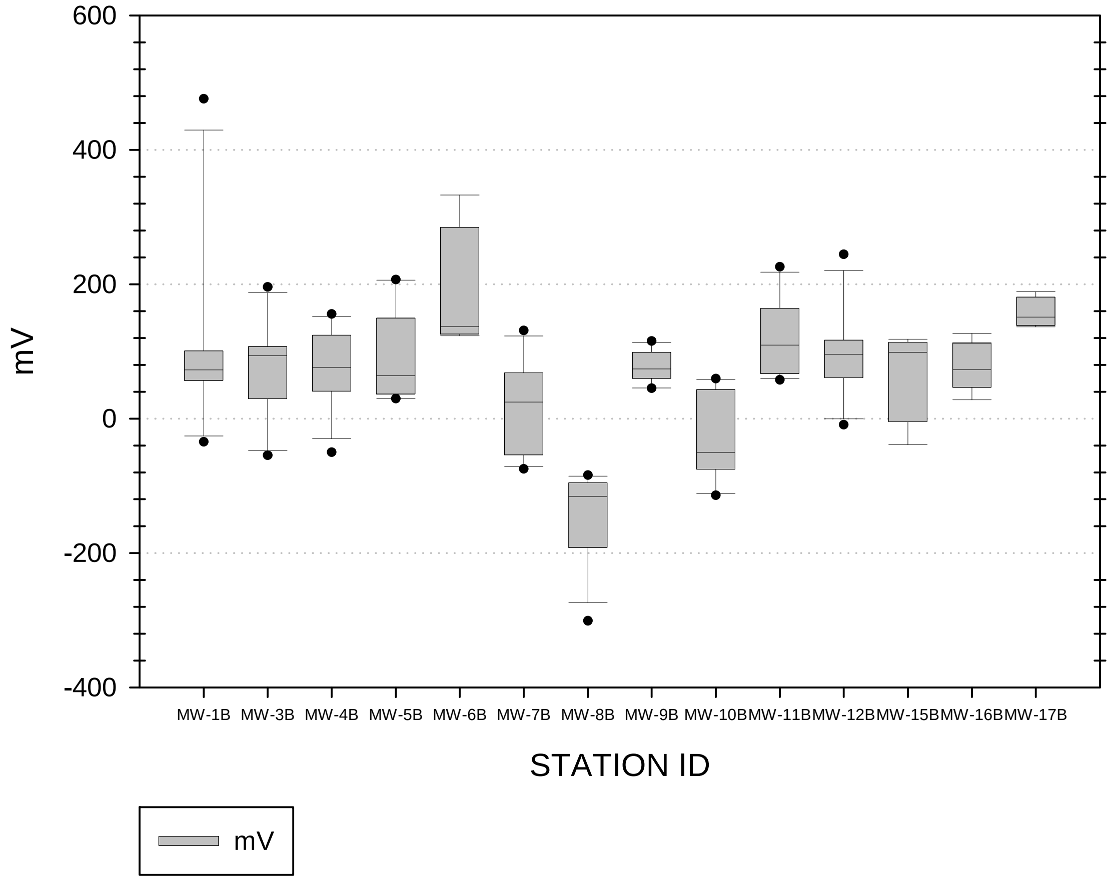
NITRATE AS NITROGEN

FLORIDAN AQUIFER



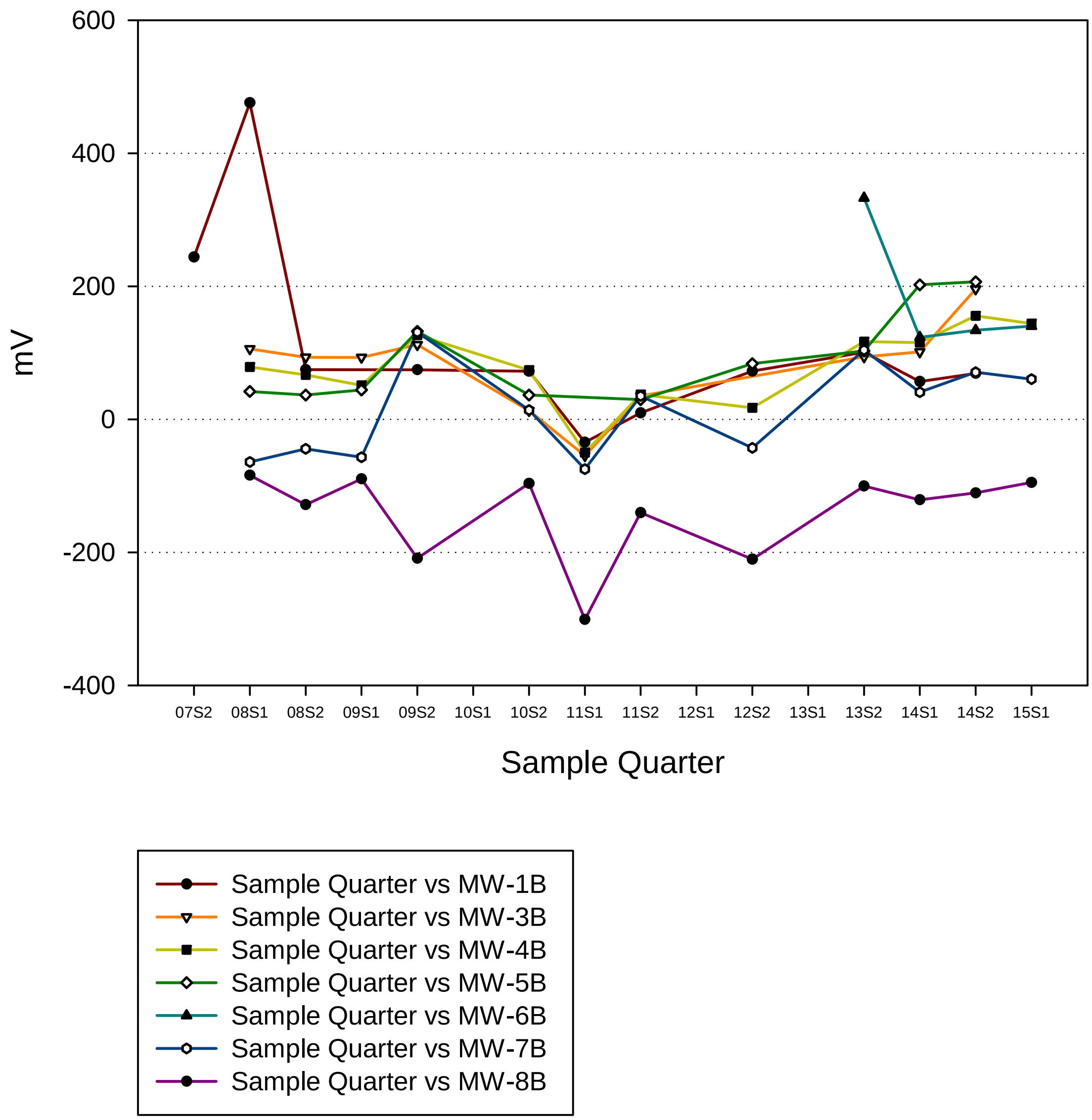
OXIDATION / REDUCTION POTENTIAL

FLORIDAN AQUIFER



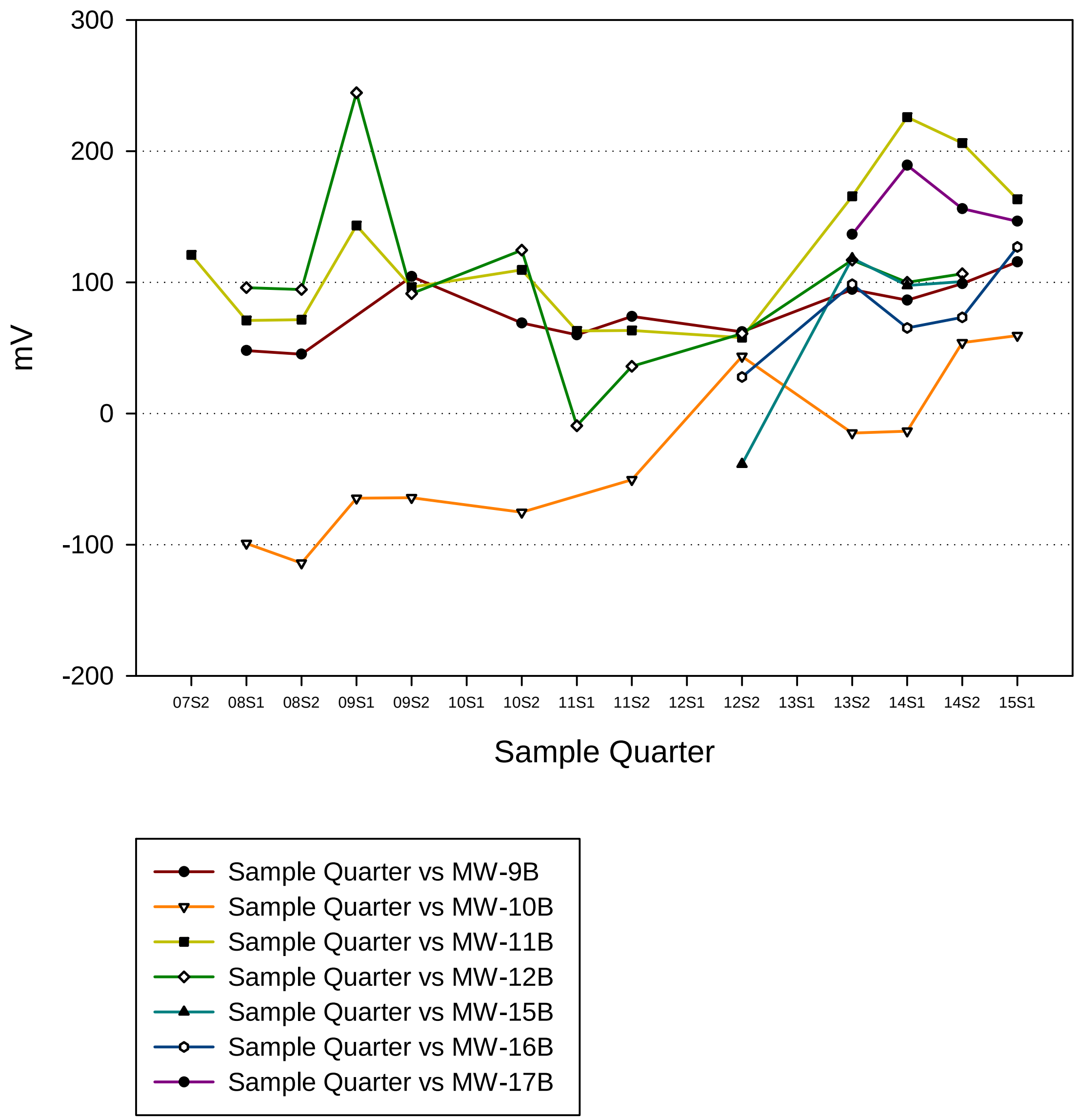
OXIDATION / REDUCTION POTENTIAL

FLORIDAN AQUIFER



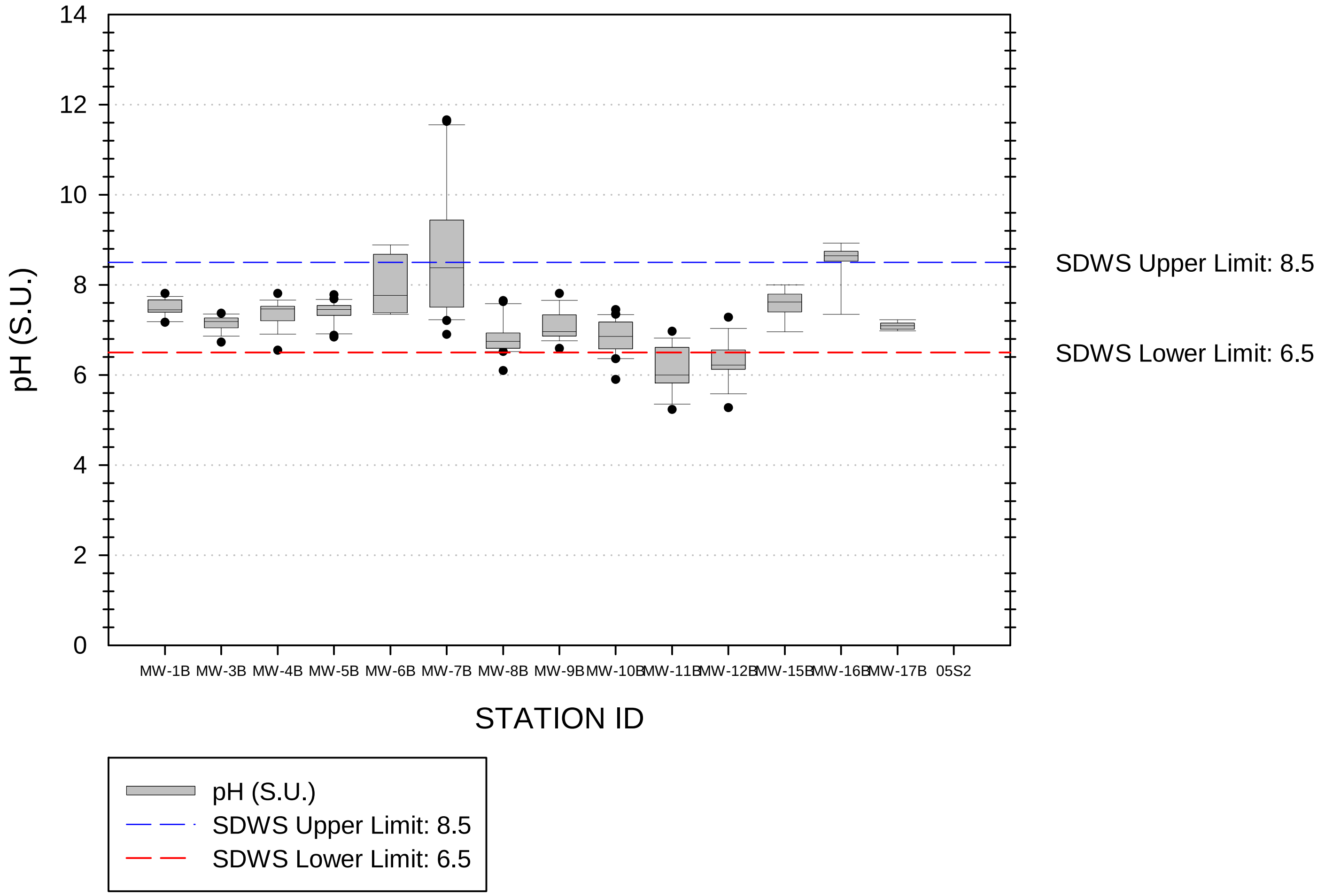
OXIDATION / REDUCTION POTENTIAL

FLORIDAN AQUIFER



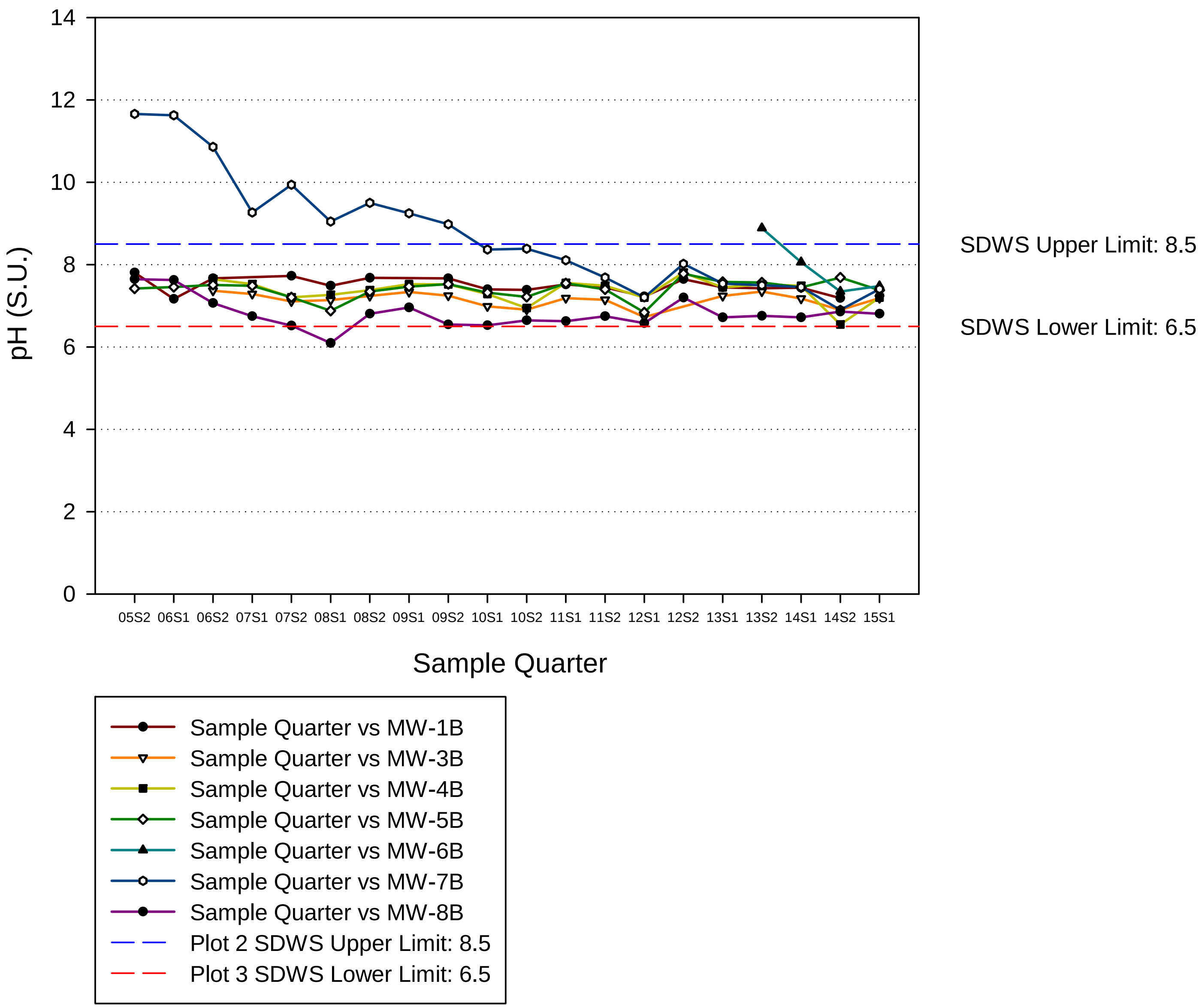
PH

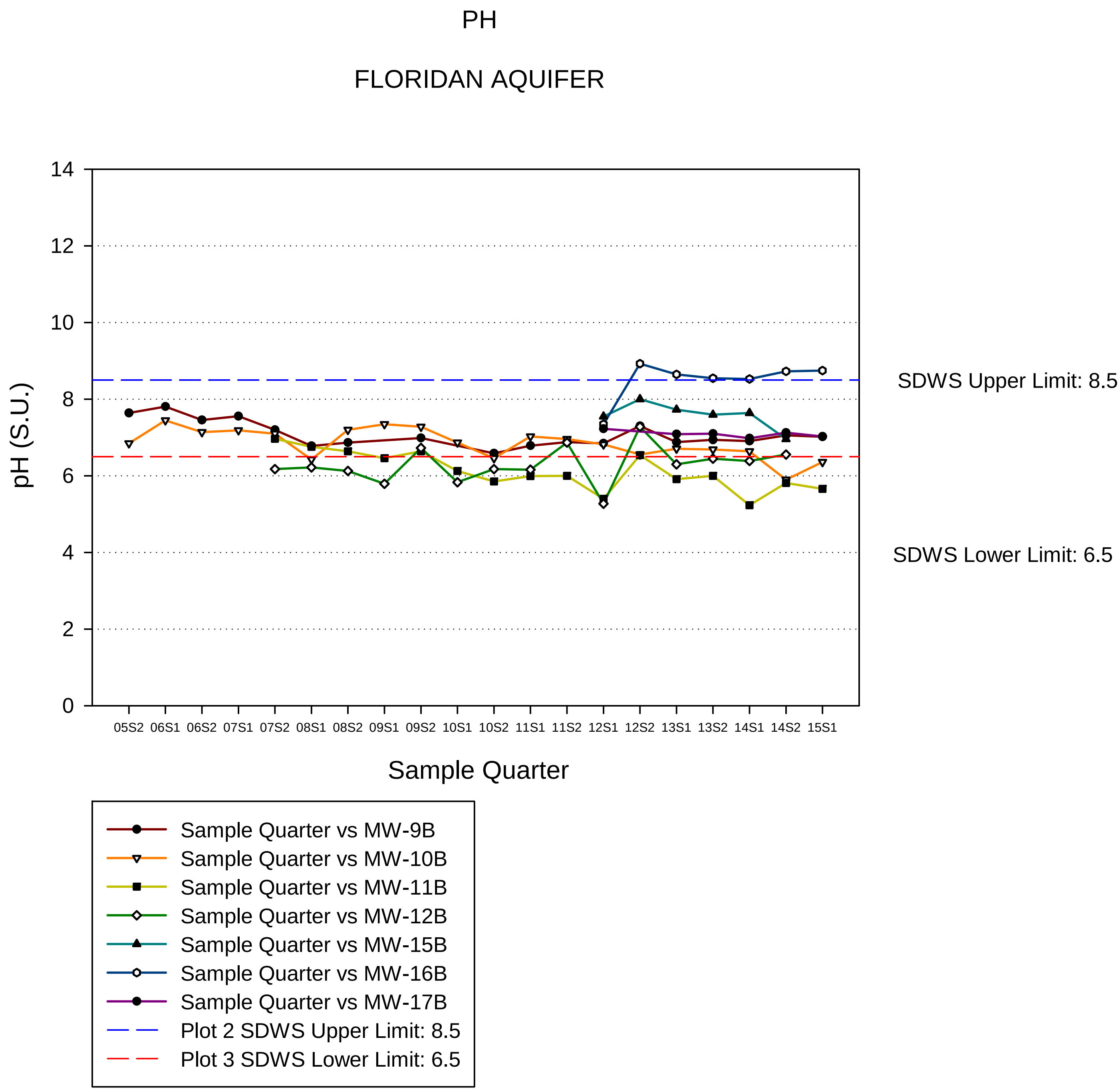
FLORIDAN AQUIFER



PH

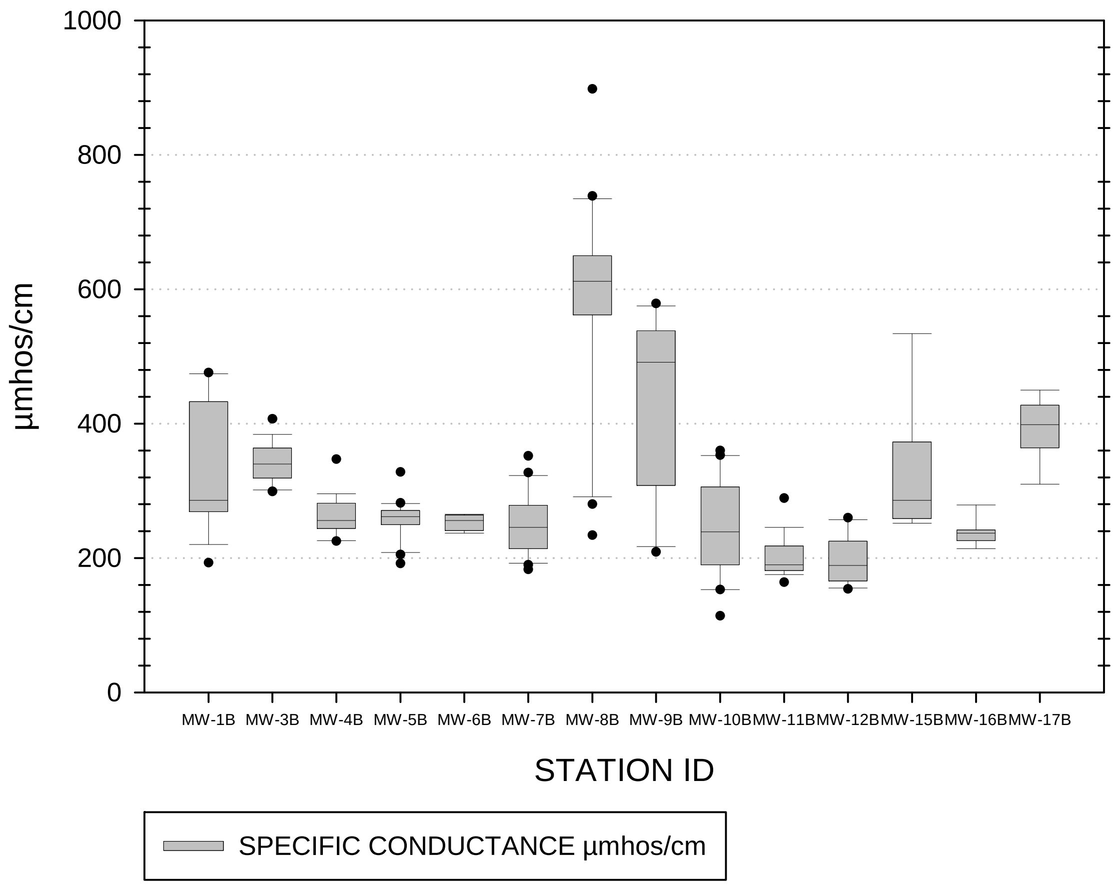
FLORIDAN AQUIFER

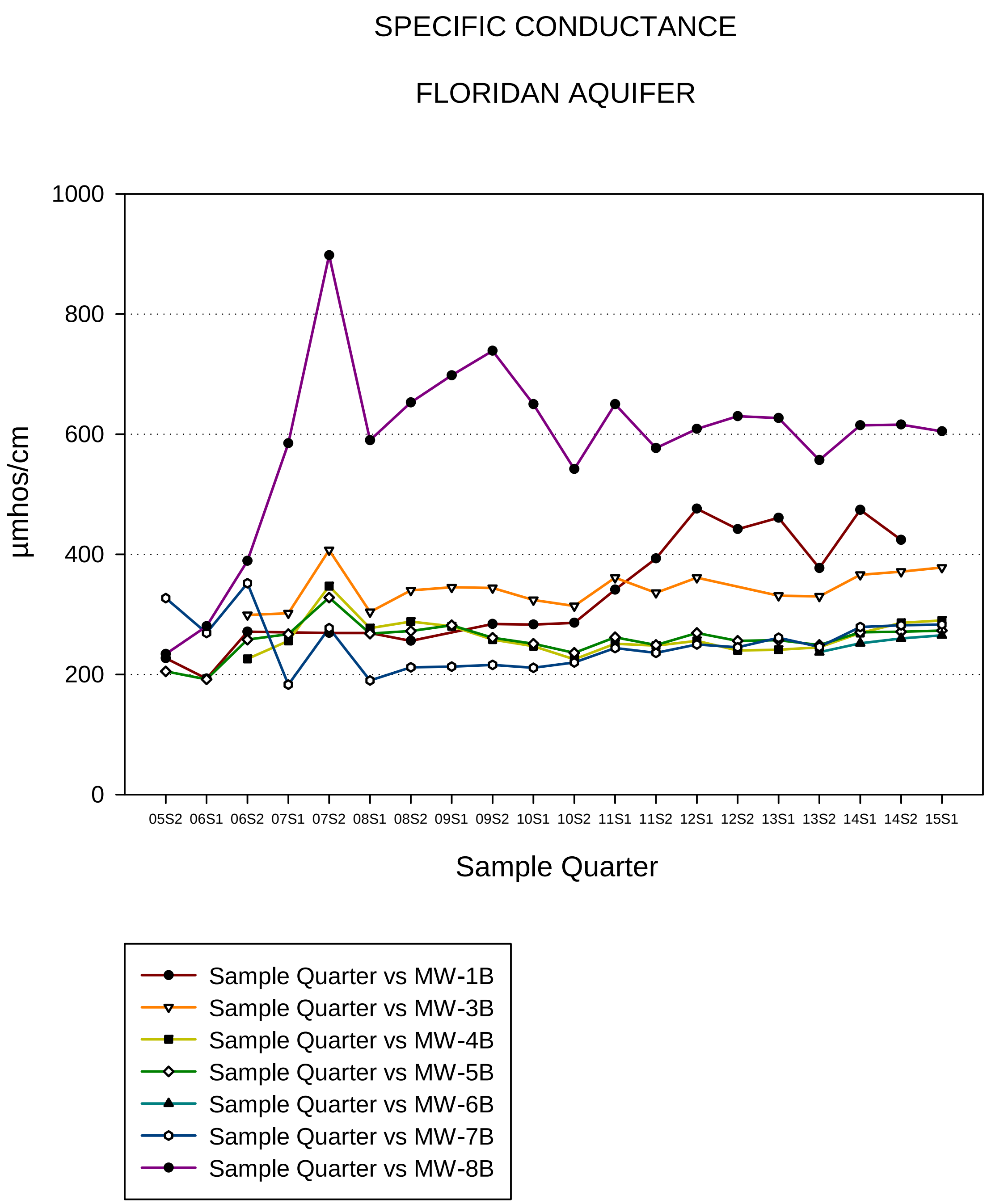



PH
FLORIDAN AQUIFER
pH (S.U.)
14
12
10
8
6
4
2
0
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
SDWS Upper Limit: 8.5
SDWS Lower Limit: 6.5
Sample Quarter vs MW-9B
Sample Quarter vs MW-10B
Sample Quarter vs MW-11B
Sample Quarter vs MW-12B
Sample Quarter vs MW-15B
Sample Quarter vs MW-16B
Sample Quarter vs MW-17B
Plot 2 SDWS Upper Limit: 8.5
Plot 3 SDWS Lower Limit: 6.5

SPECIFIC CONDUCTANCE

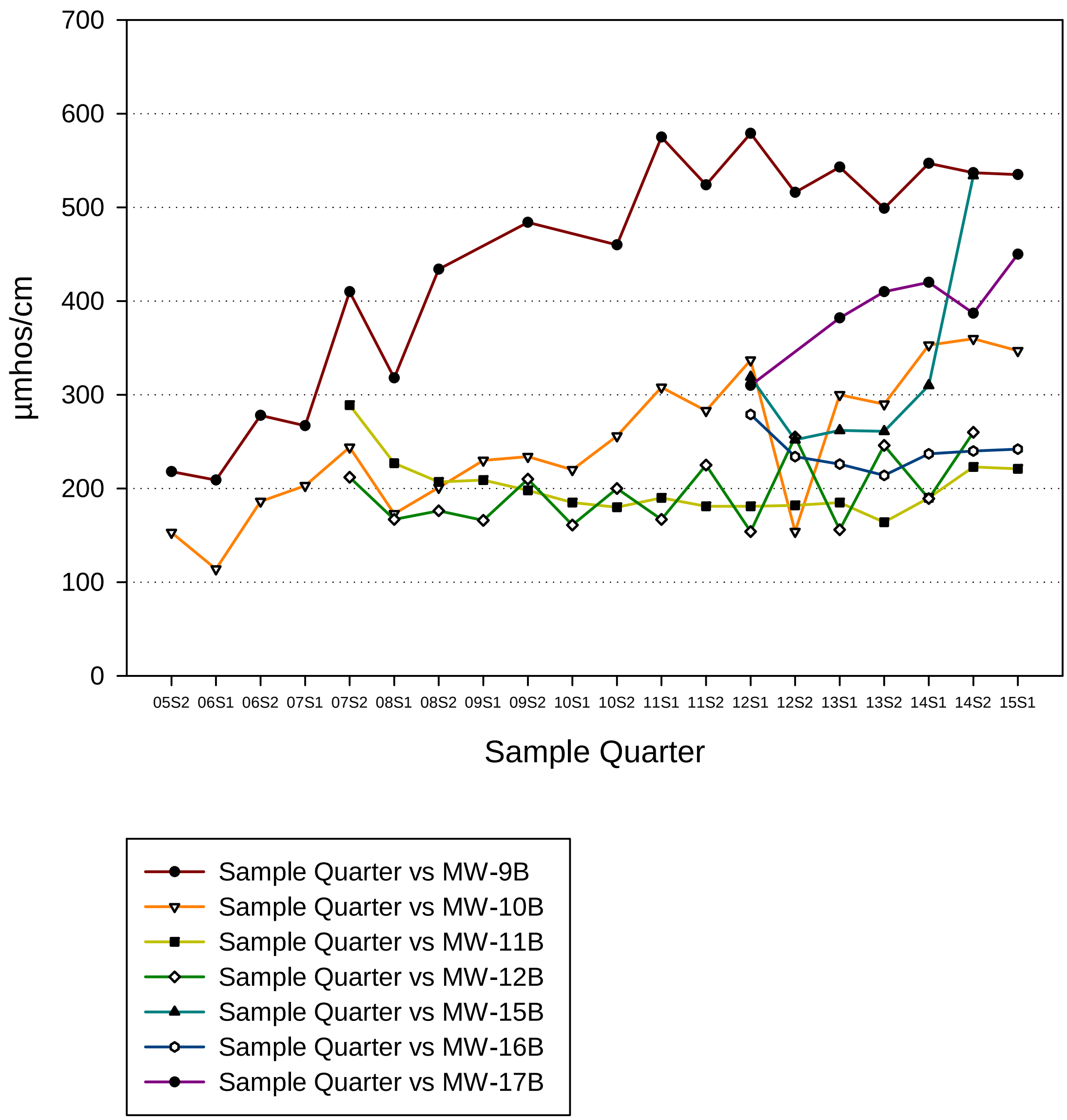
FLORIDAN AQUIFER




SPECIFIC CONDUCTANCE
FLORIDAN AQUIFER
µmhos/cm
0
200
400
600
800
1000
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B

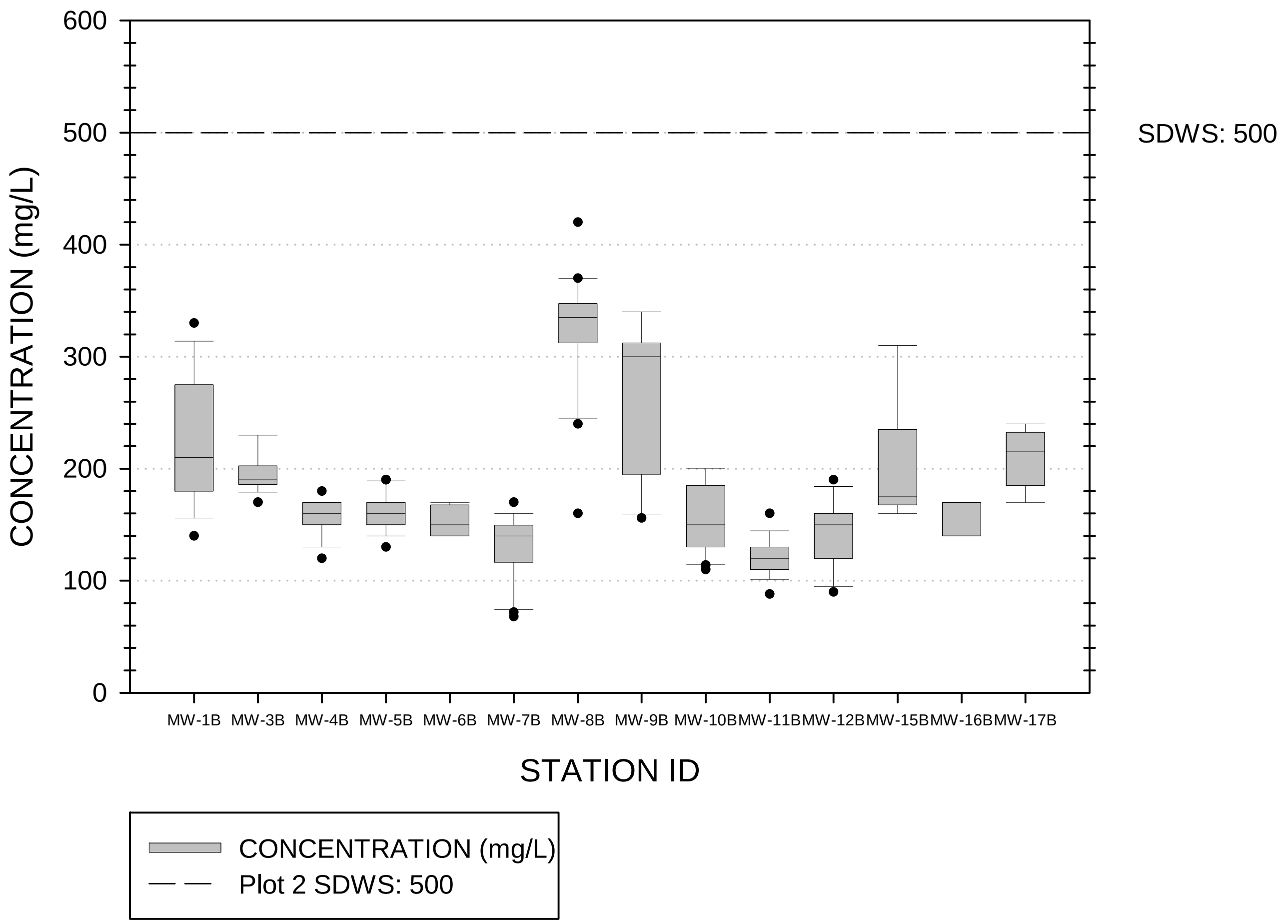
SPECIFIC CONDUCTANCE

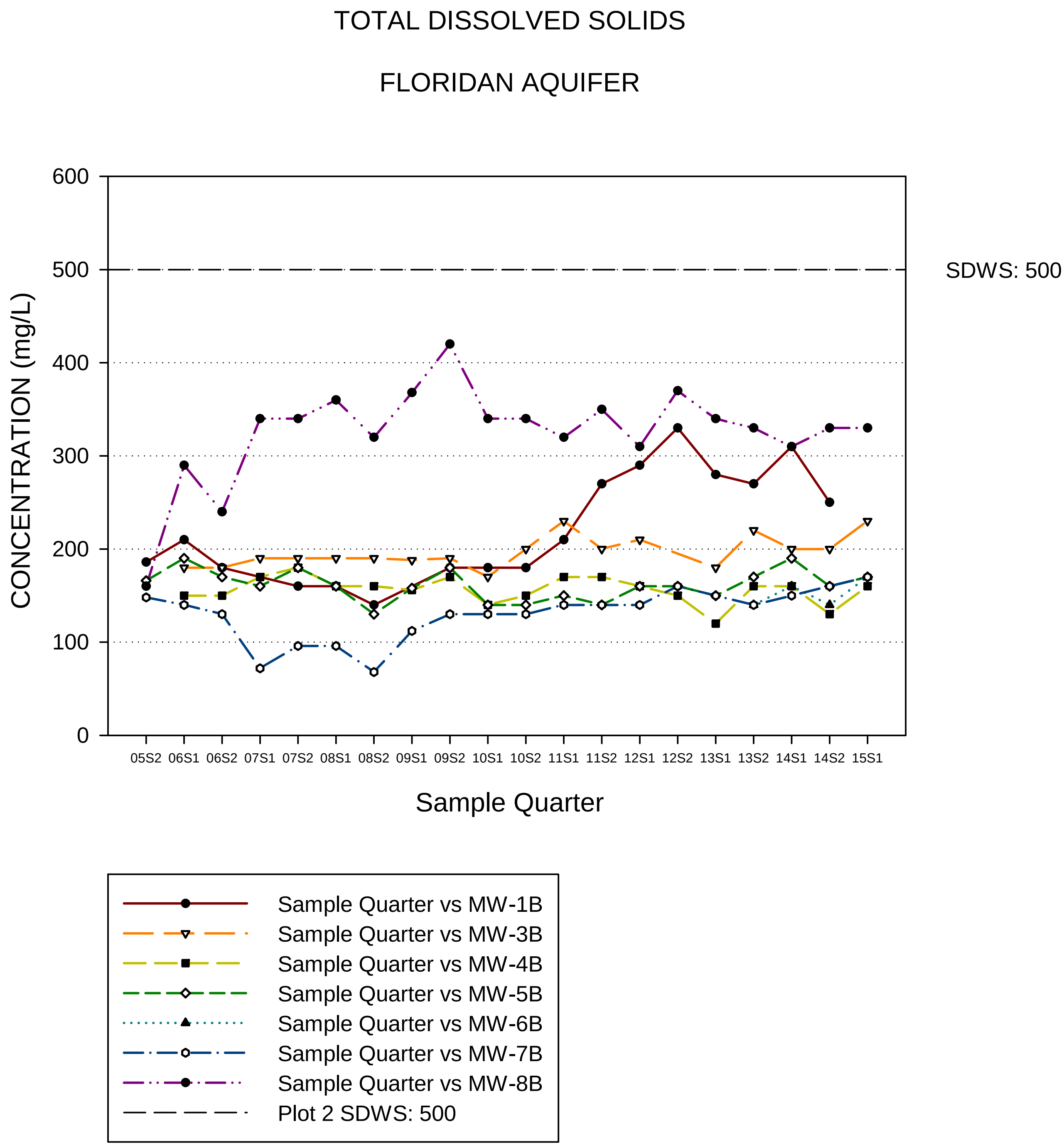
FLORIDAN AQUIFER



TOTAL DISSOLVED SOLIDS

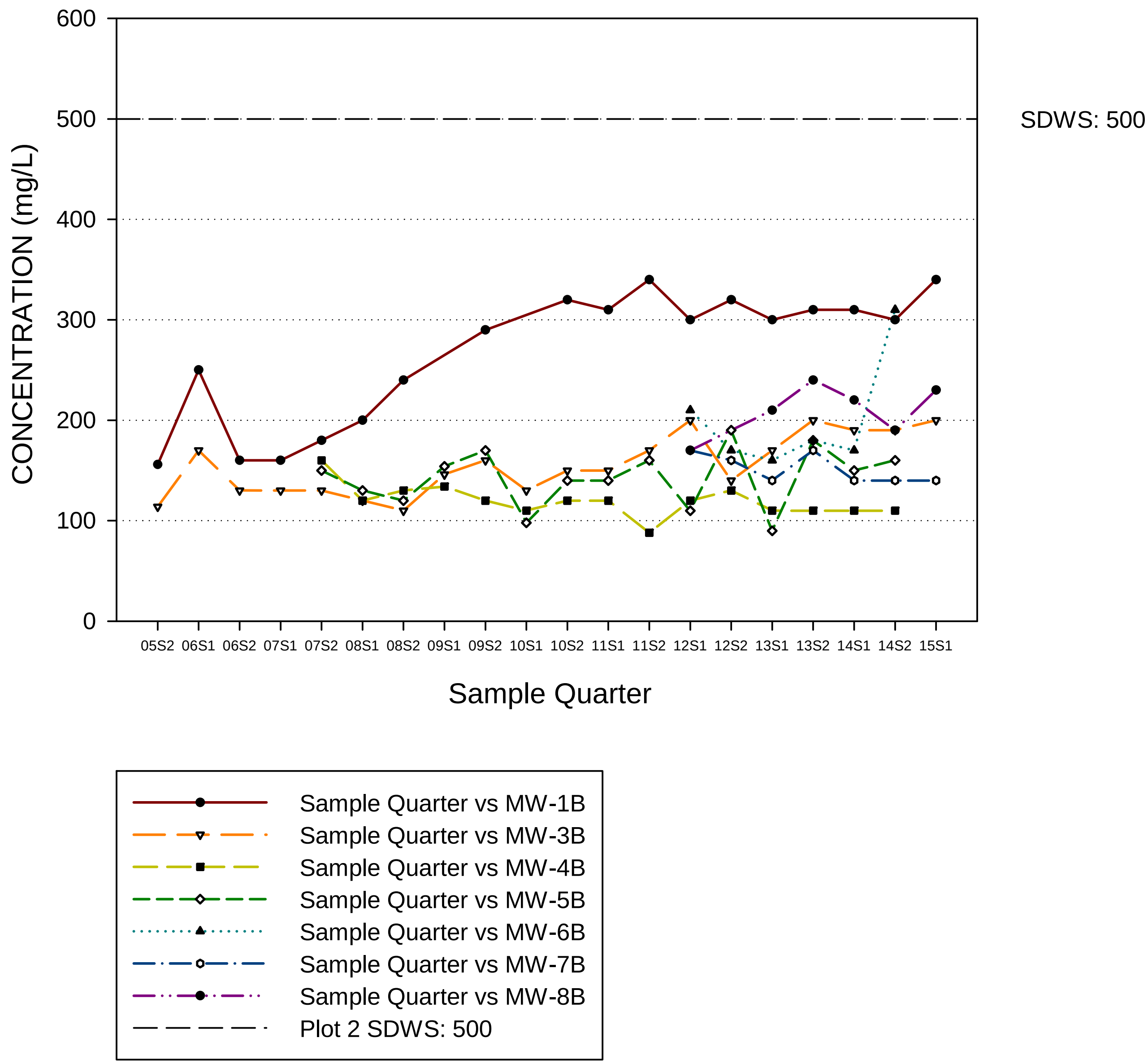
FLORIDAN AQUIFER




TOTAL DISSOLVED SOLIDS
FLORIDAN AQUIFER
CONCENTRATION (mg/L)
0
100
200
300
400
500
600
SDWS: 500
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 SDWS: 500

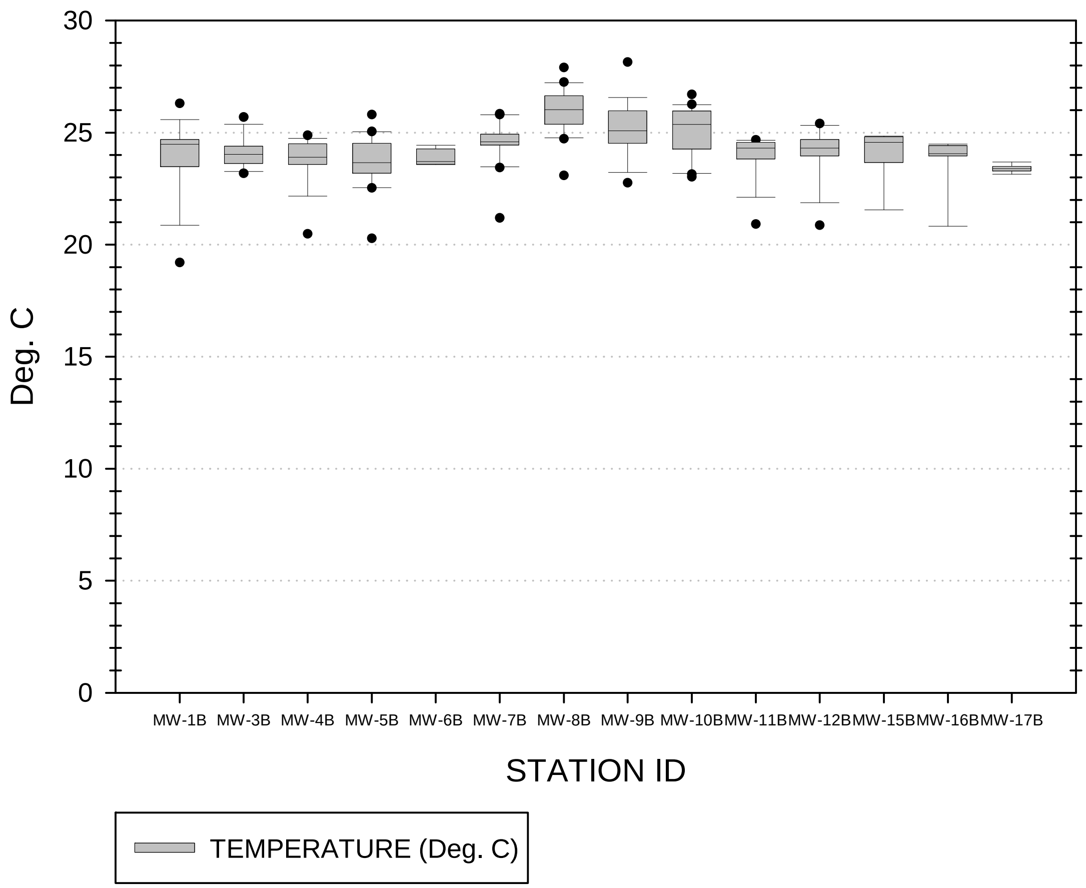
TOTAL DISSOLVED SOLIDS

FLORIDAN AQUIFER



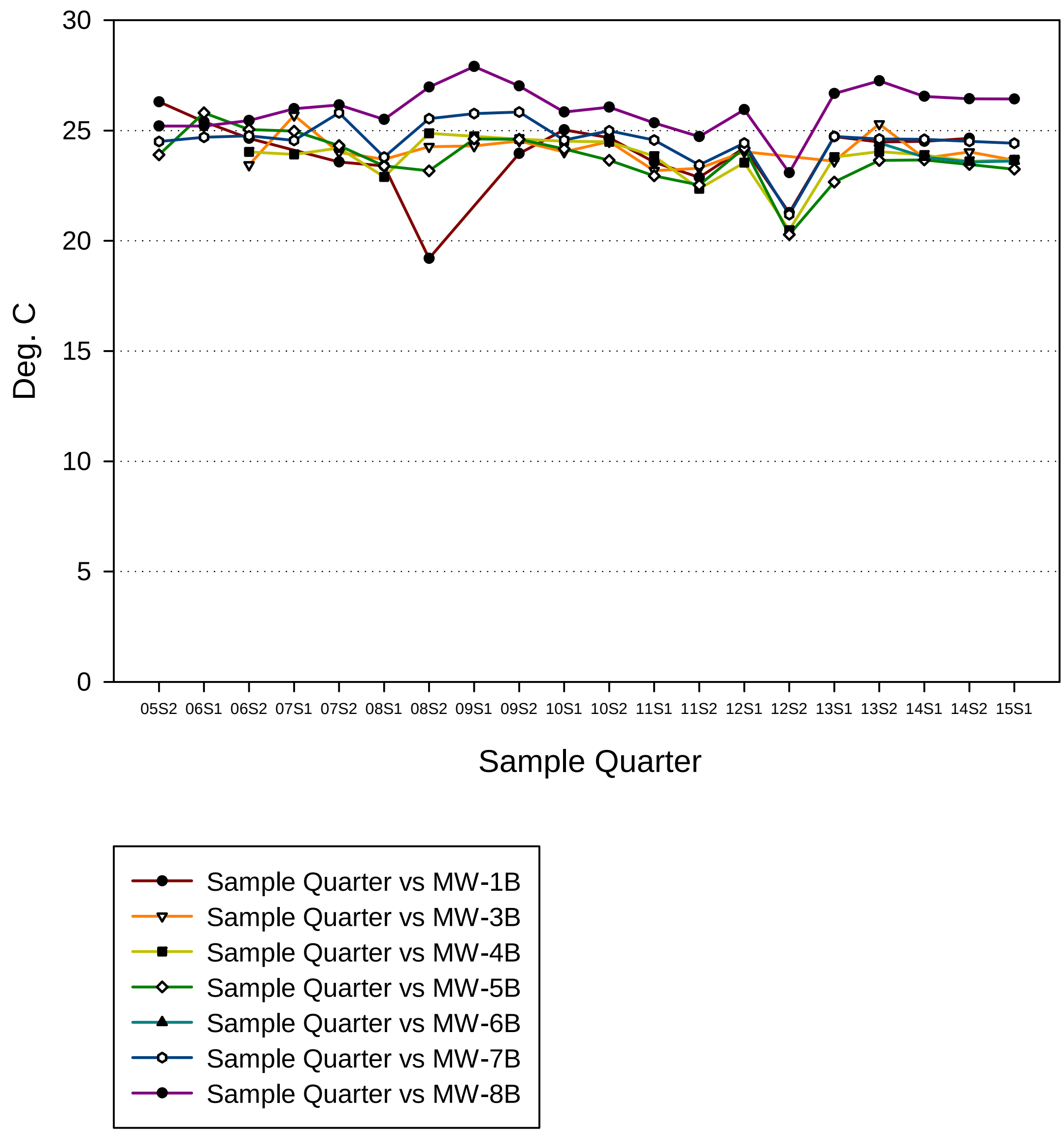
TEMPERATURE

FLORIDAN AQUIFER



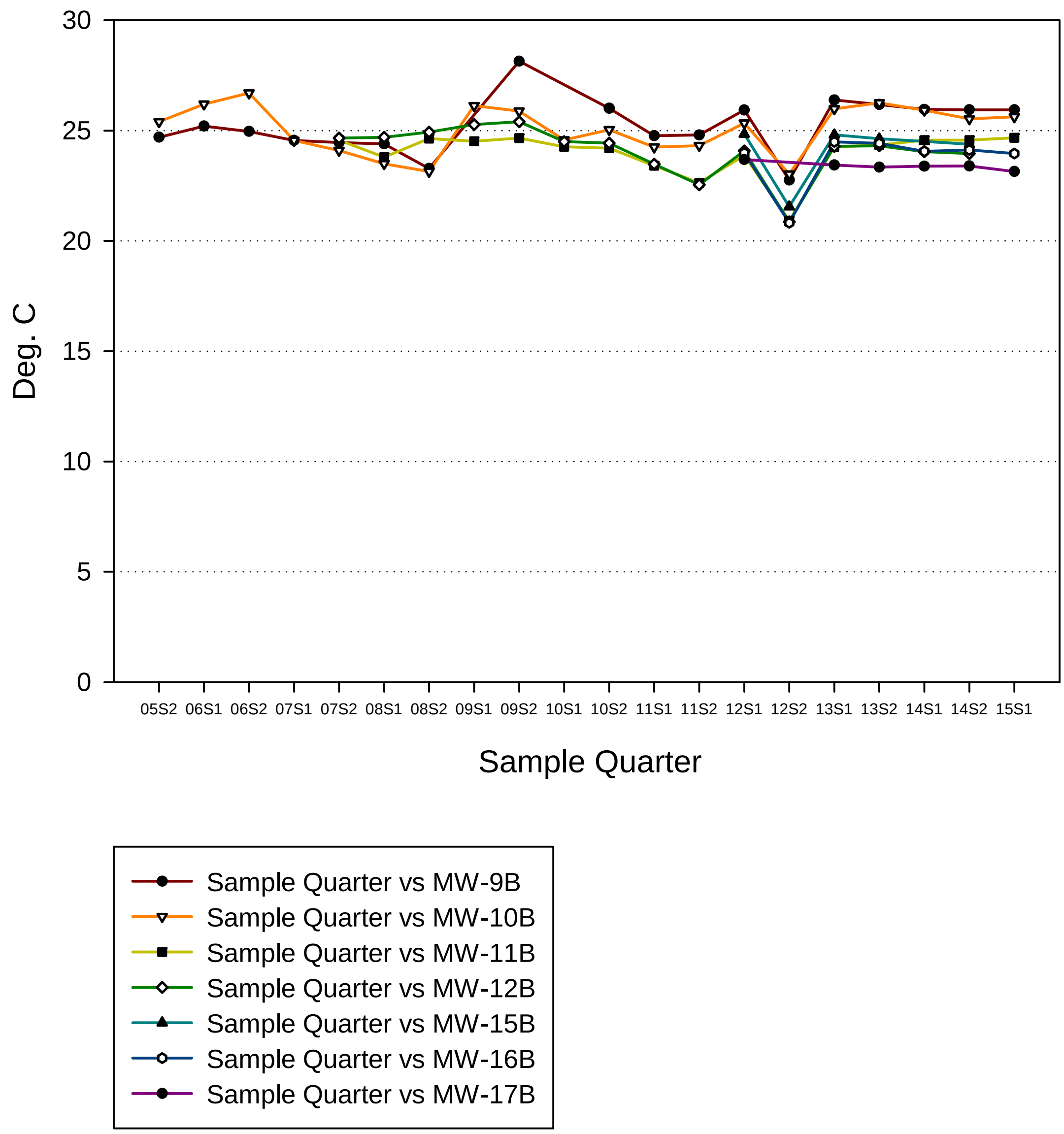
TEMPERATURE

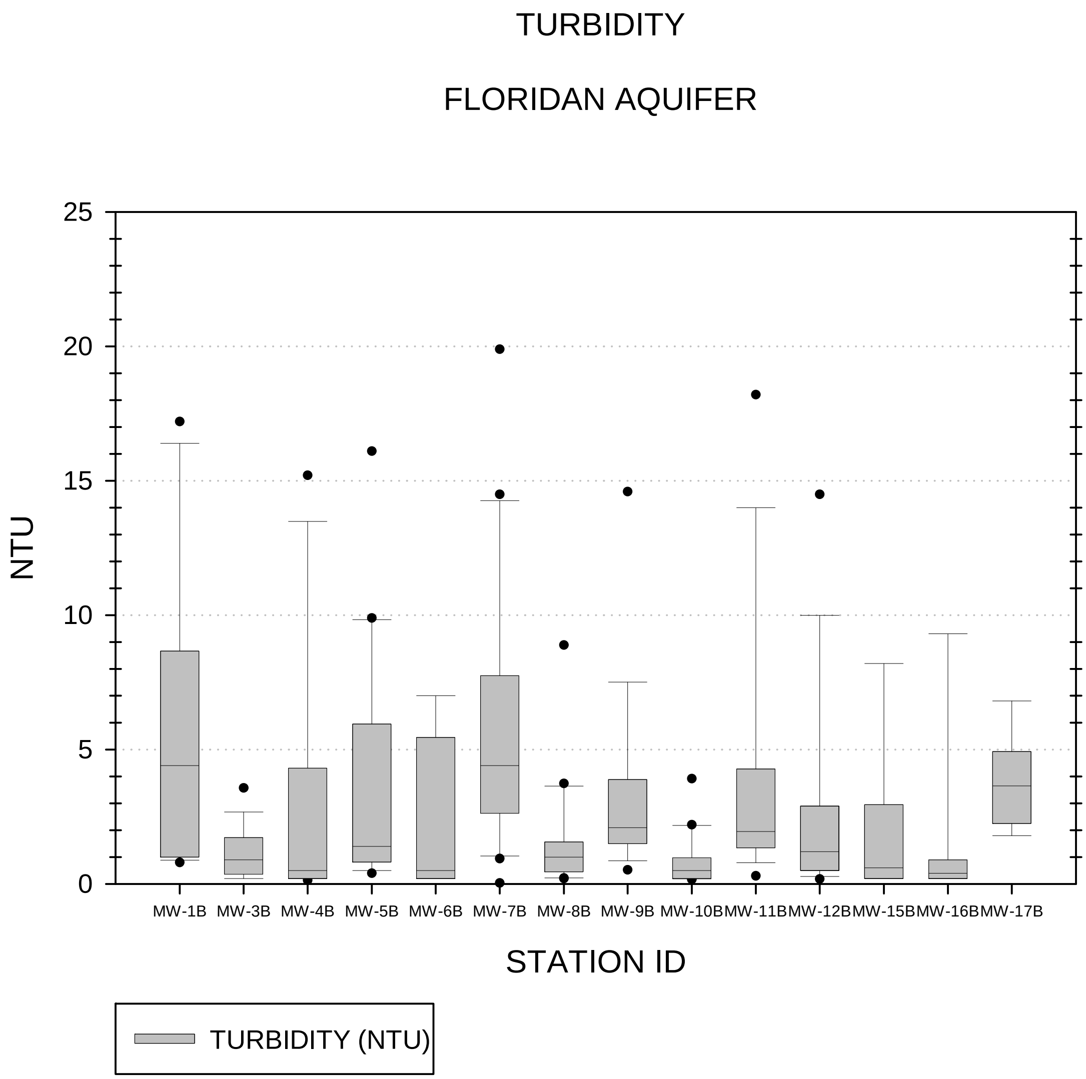
FLORIDAN AQUIFER



TEMPERATURE

FLORIDAN AQUIFER

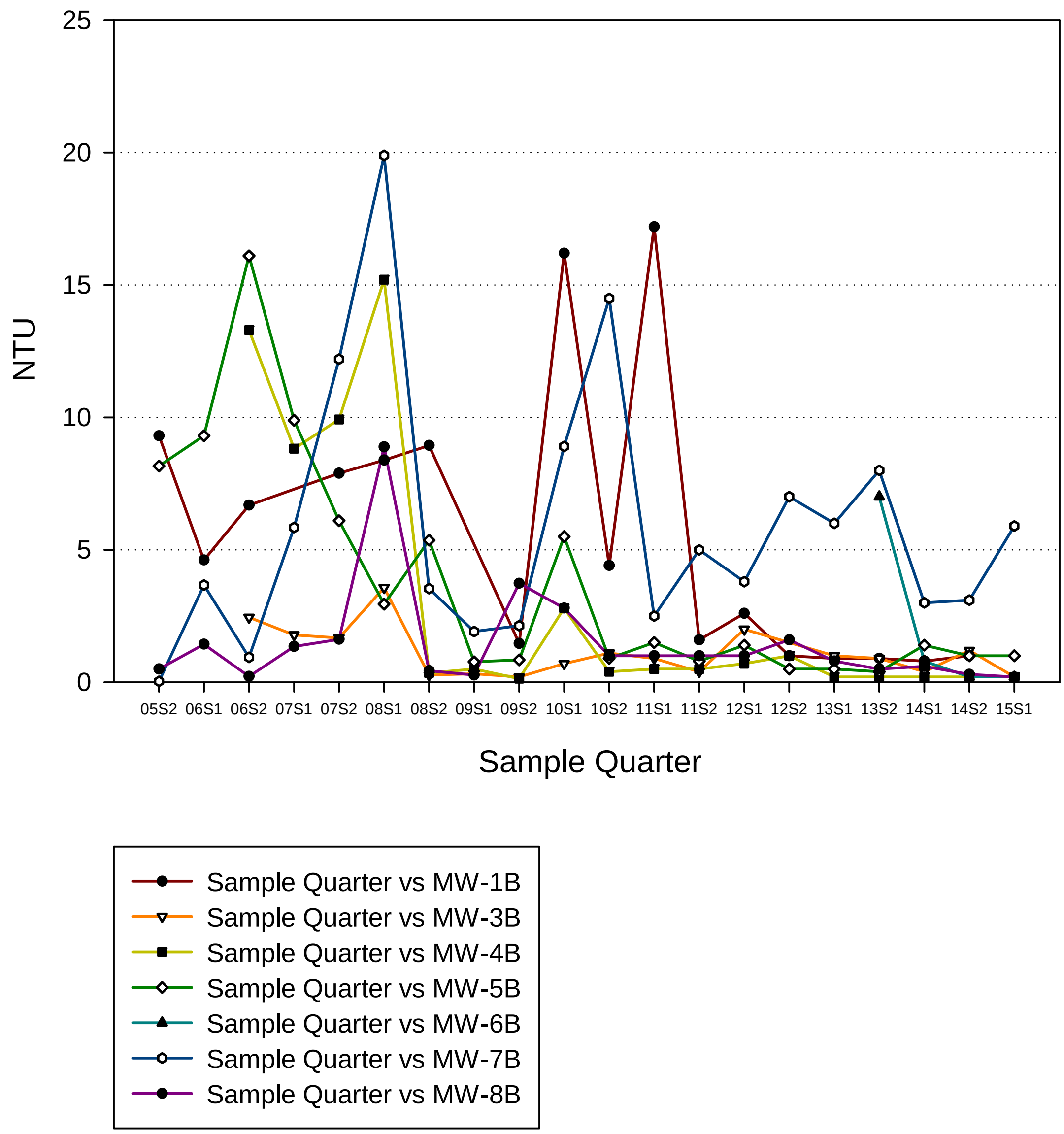




TURBIDITY
FLORIDAN AQUIFER
NTU
25
20
15
10
5
0
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
TURBIDITY (NTU)

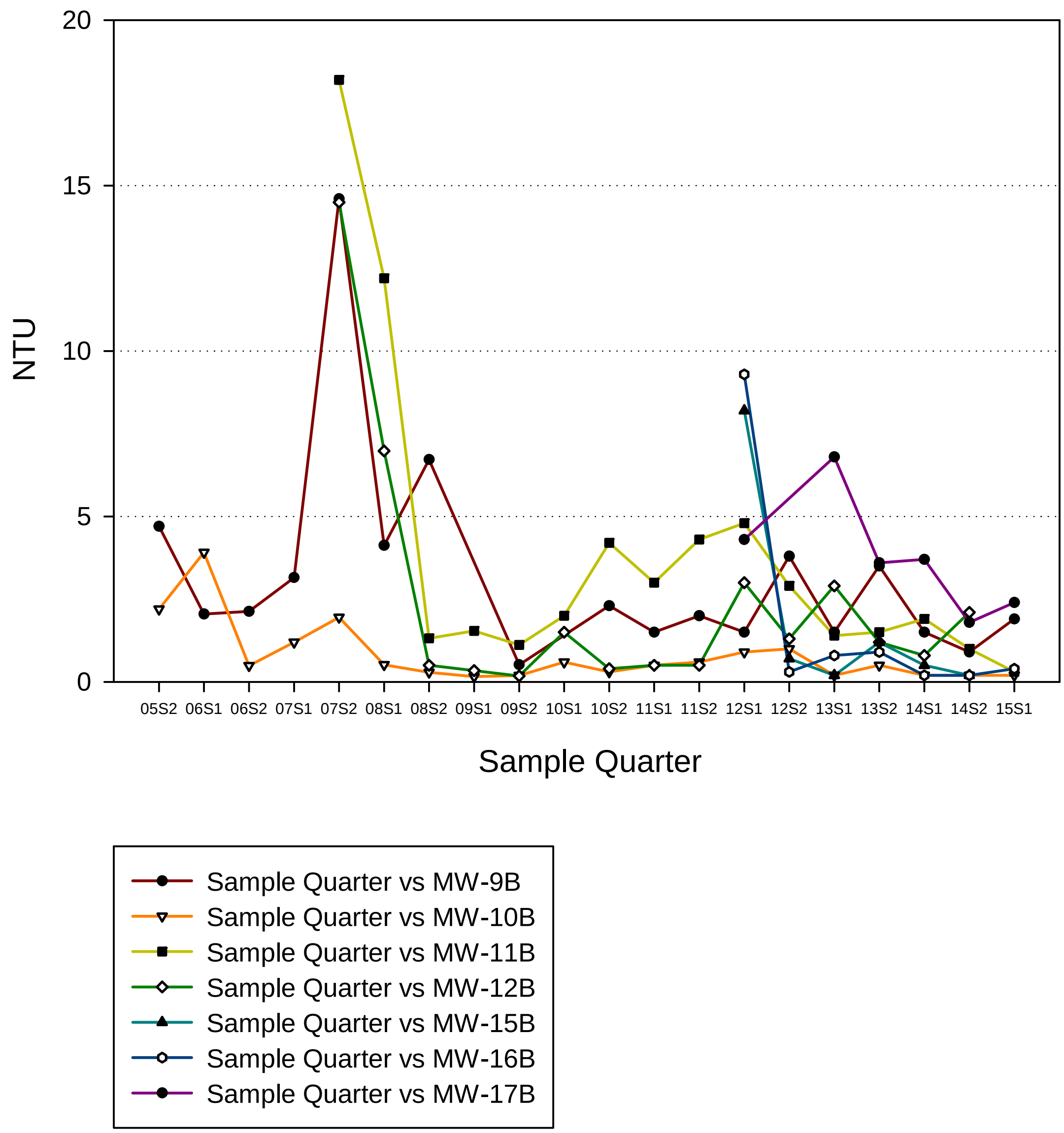
TURBIDITY

FLORIDAN AQUIFER



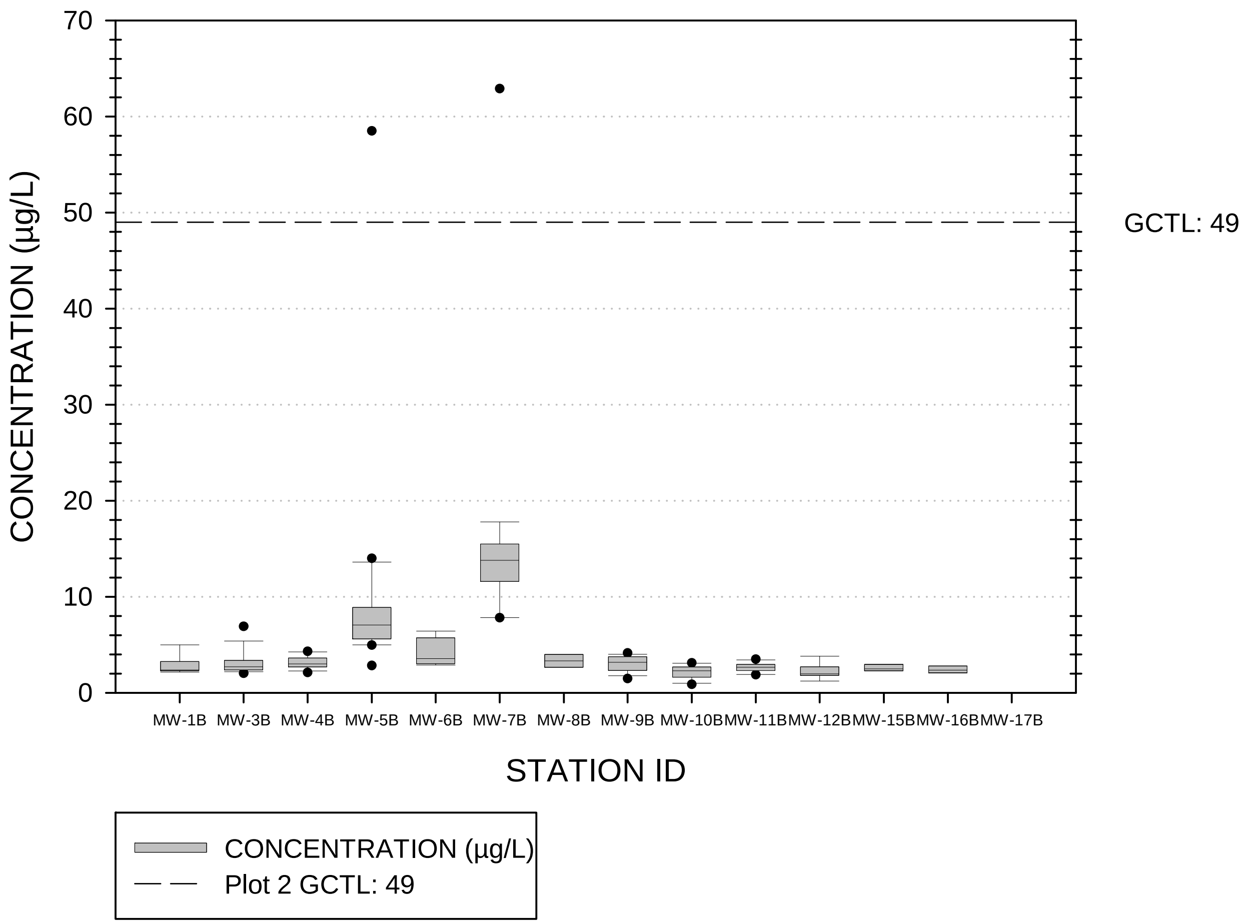
TURBIDITY

FLORIDAN AQUIFER



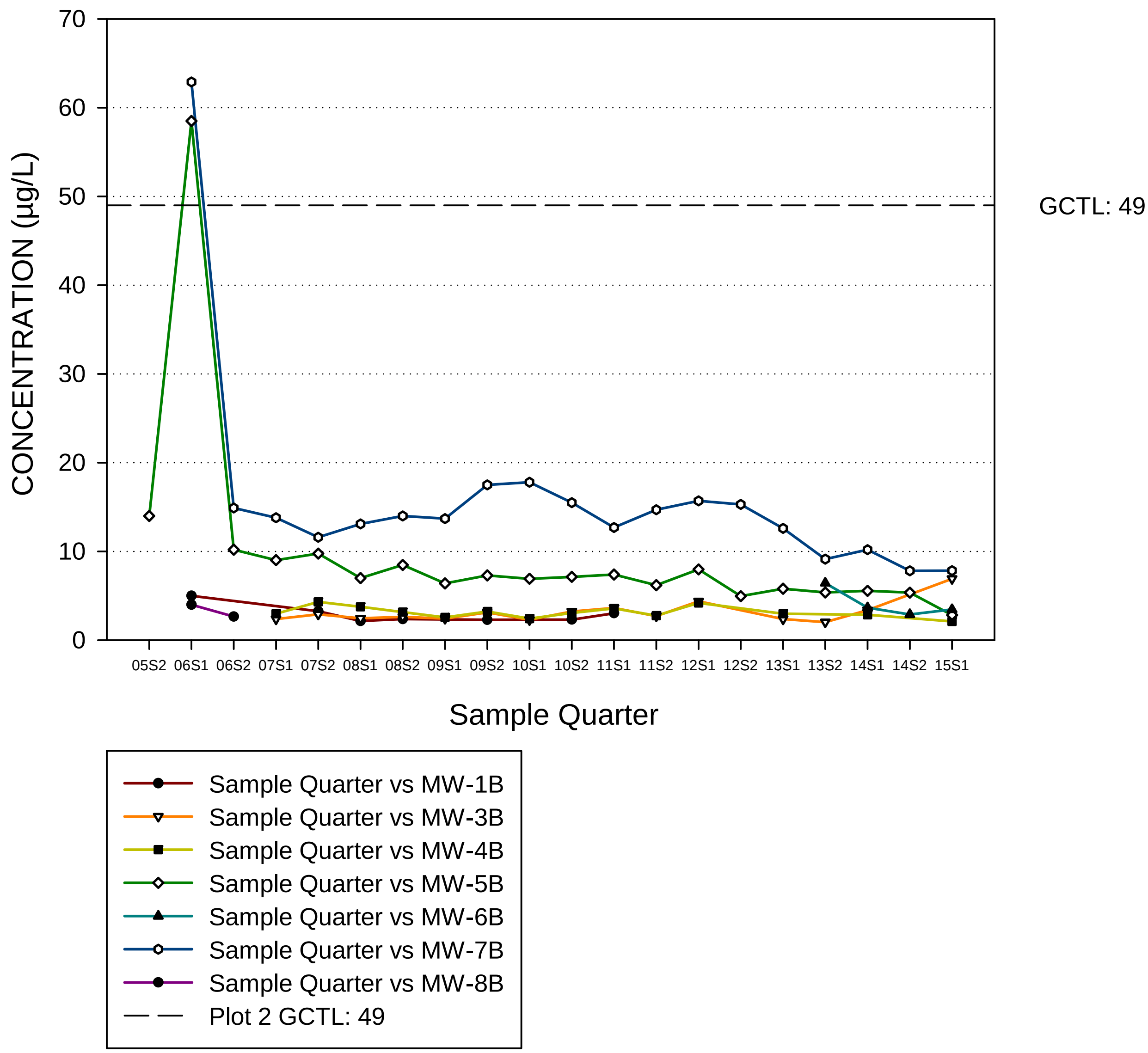
VANADIUM

FLORIDAN AQUIFER



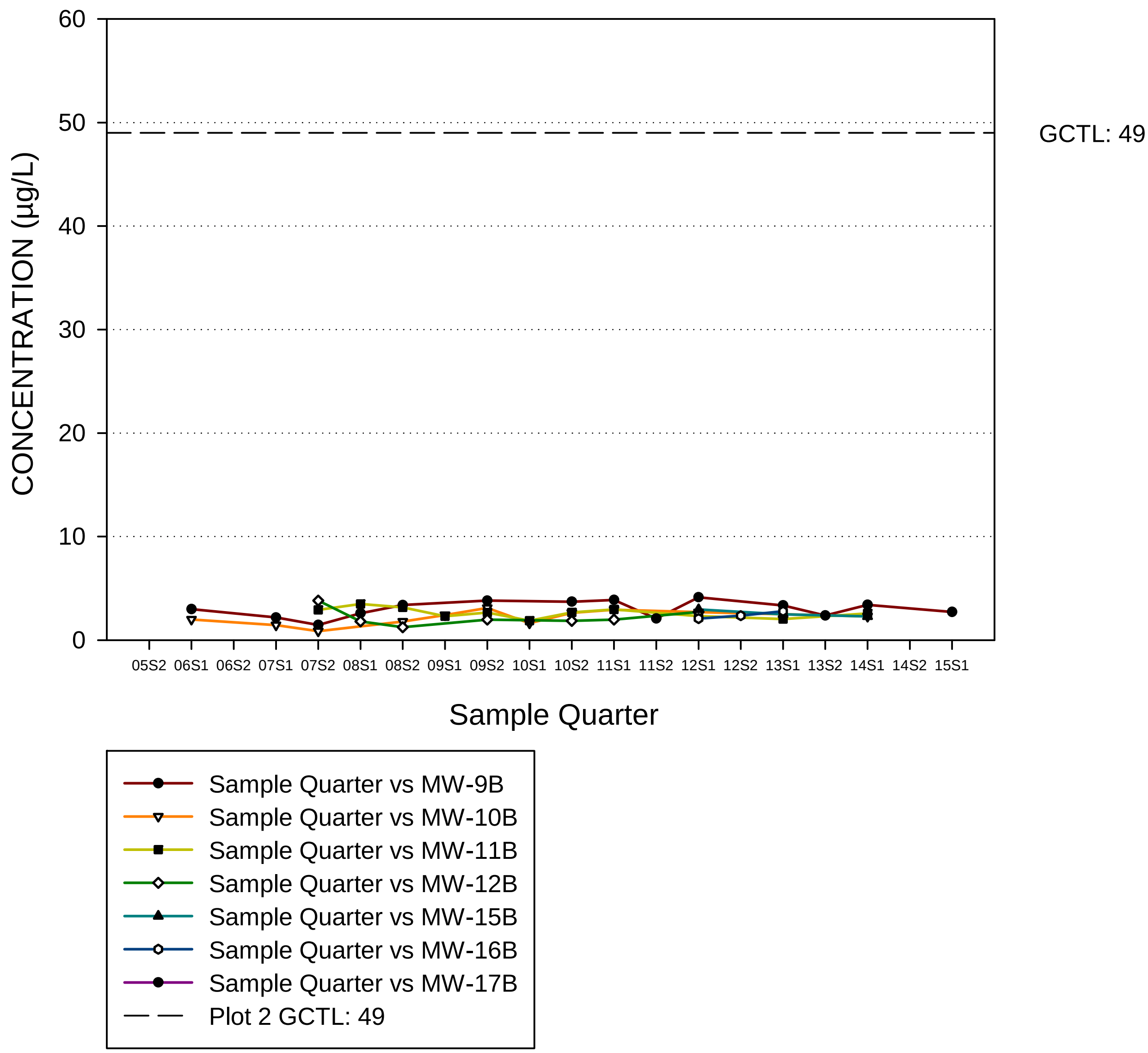
VANADIUM

FLORIDAN AQUIFER



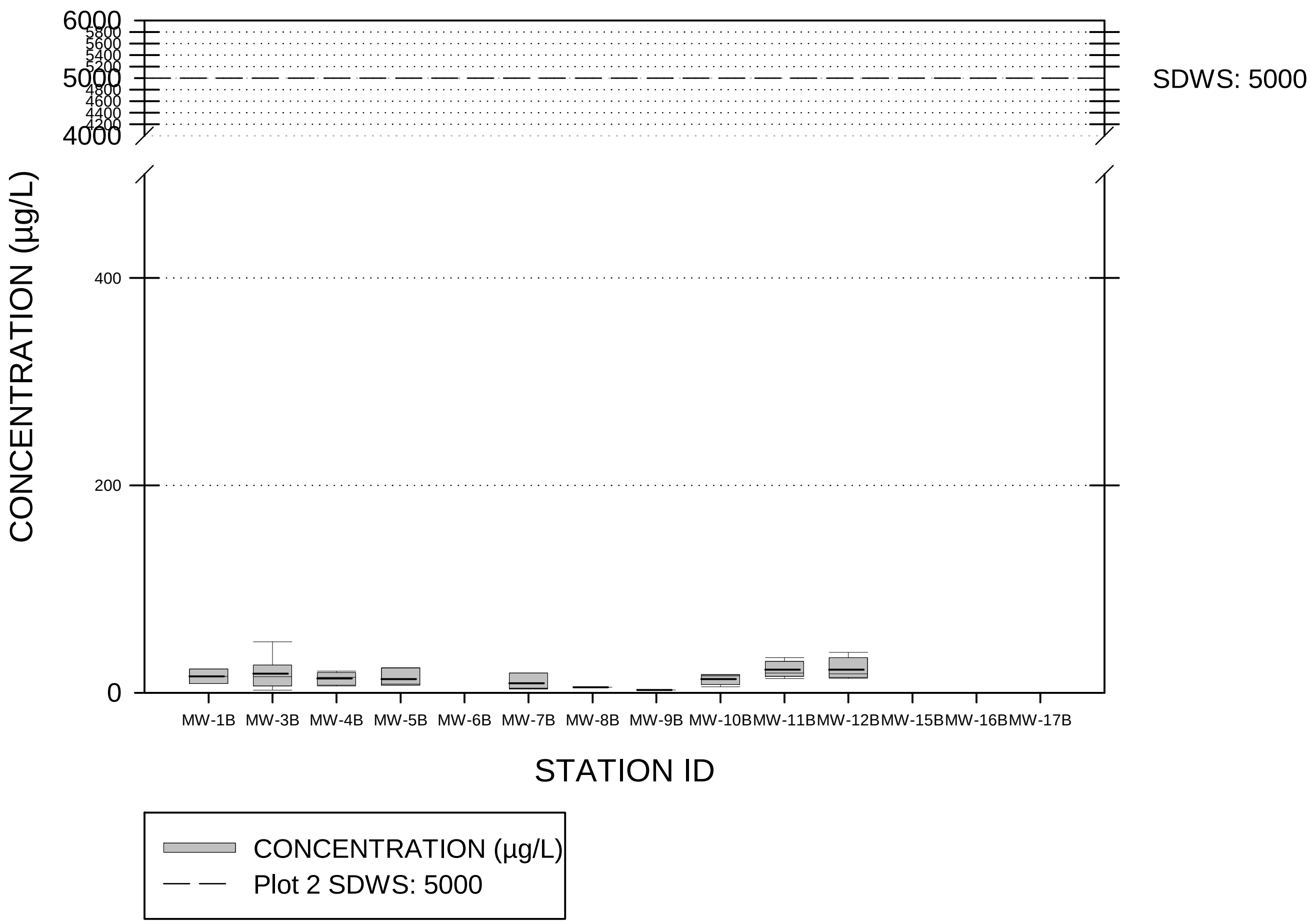
VANADIUM

FLORIDAN AQUIFER



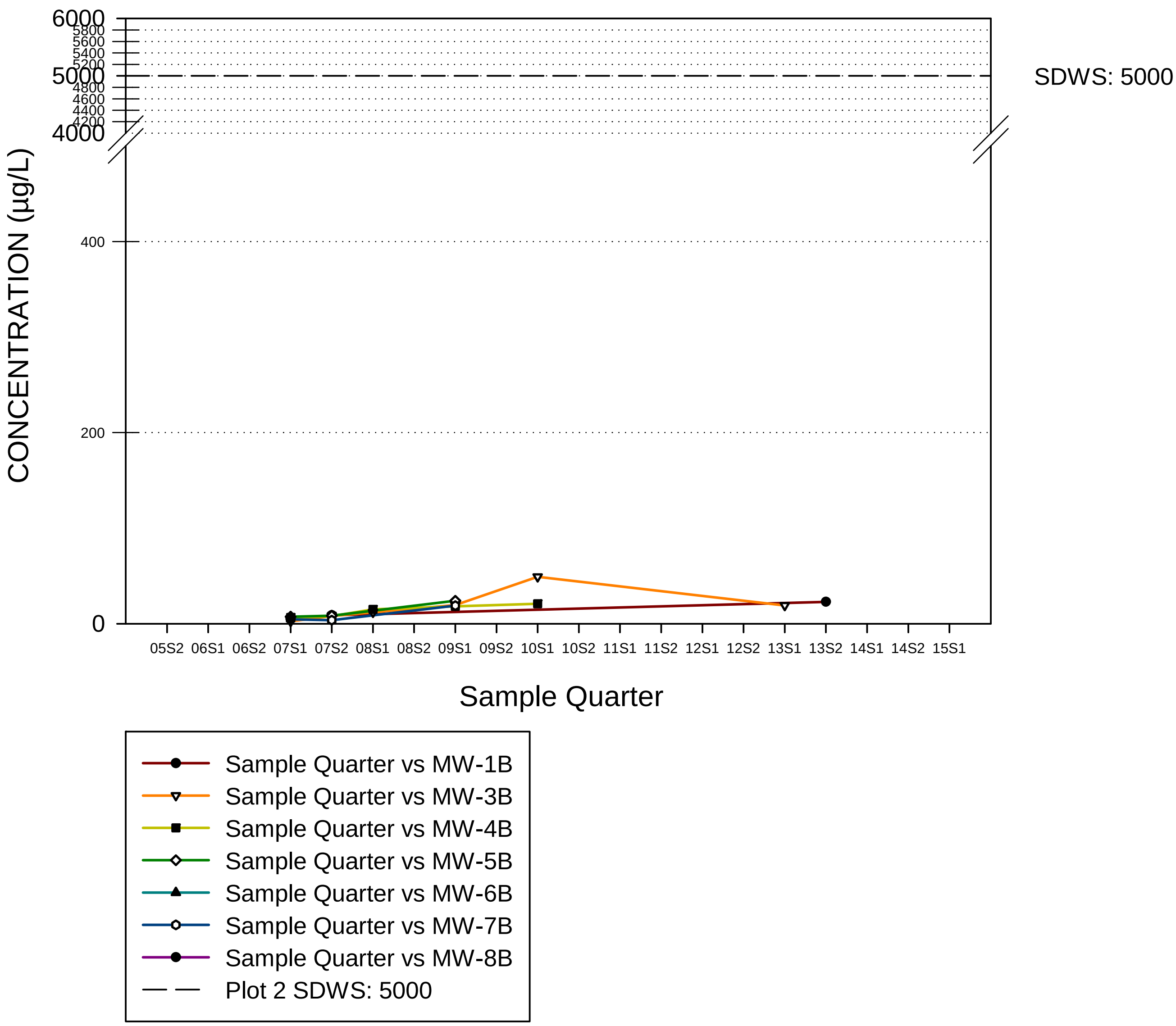
ZINC

FLORIDAN AQUIFER



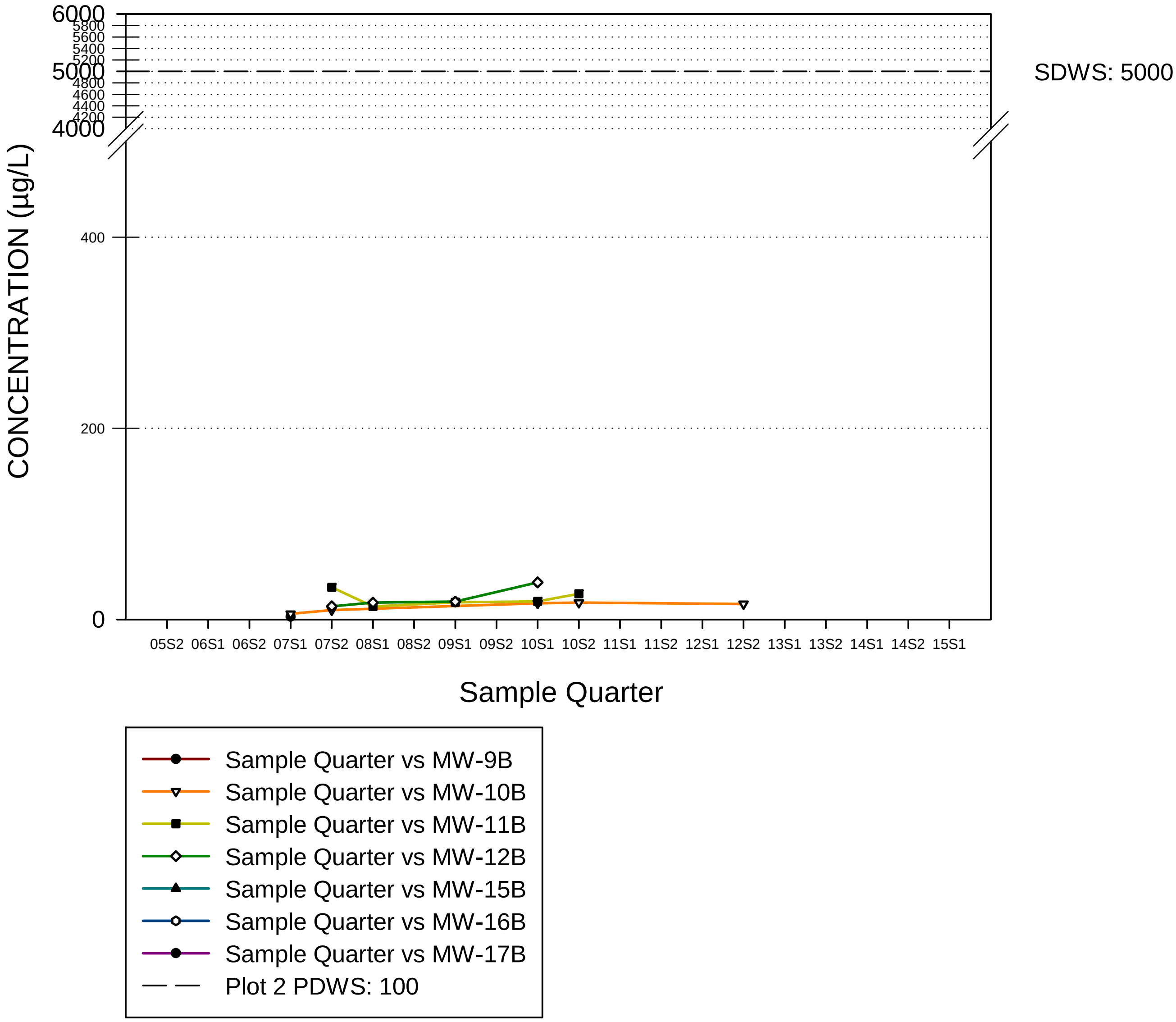
ZINC

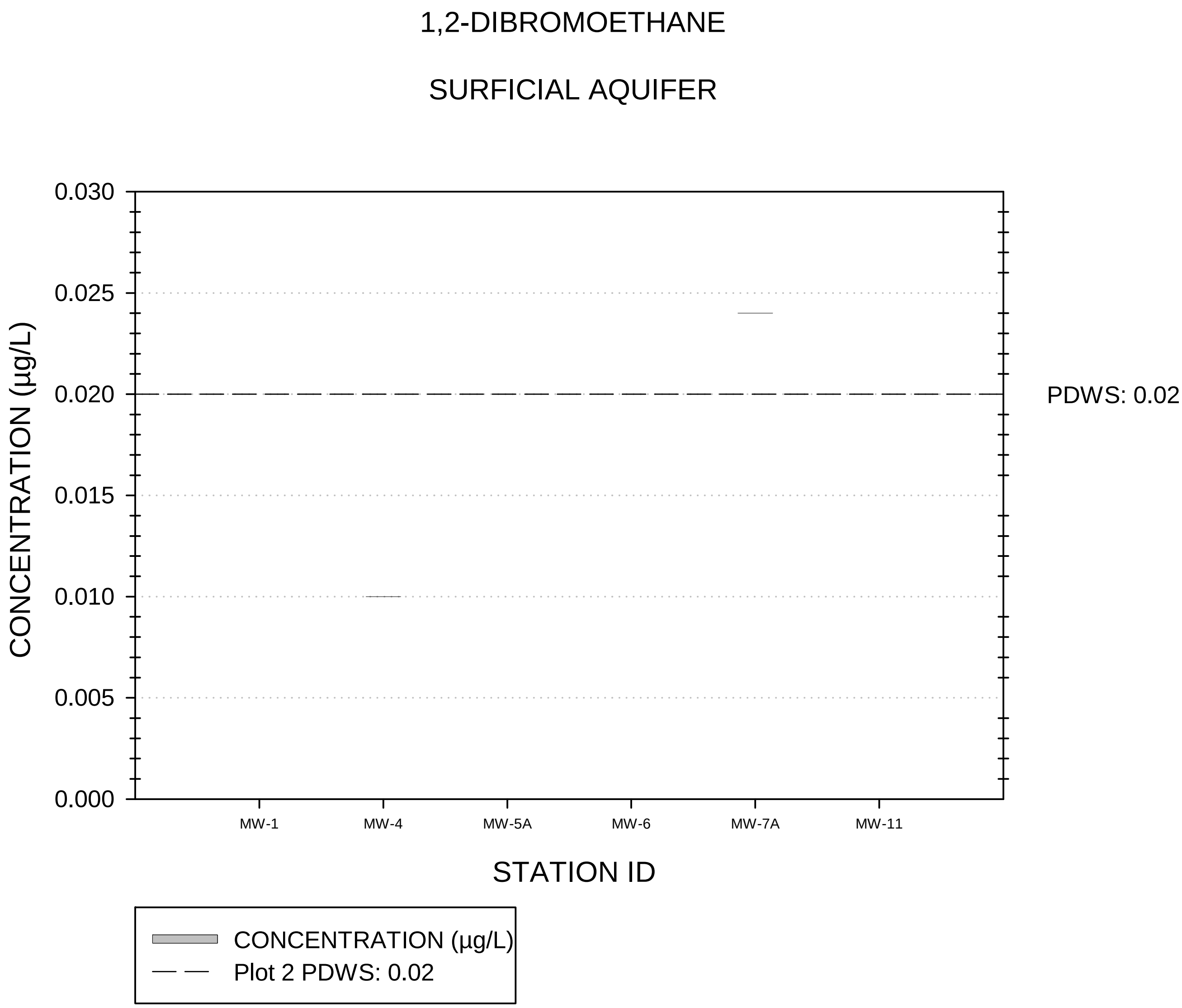
FLORIDAN AQUIFER



ZINC

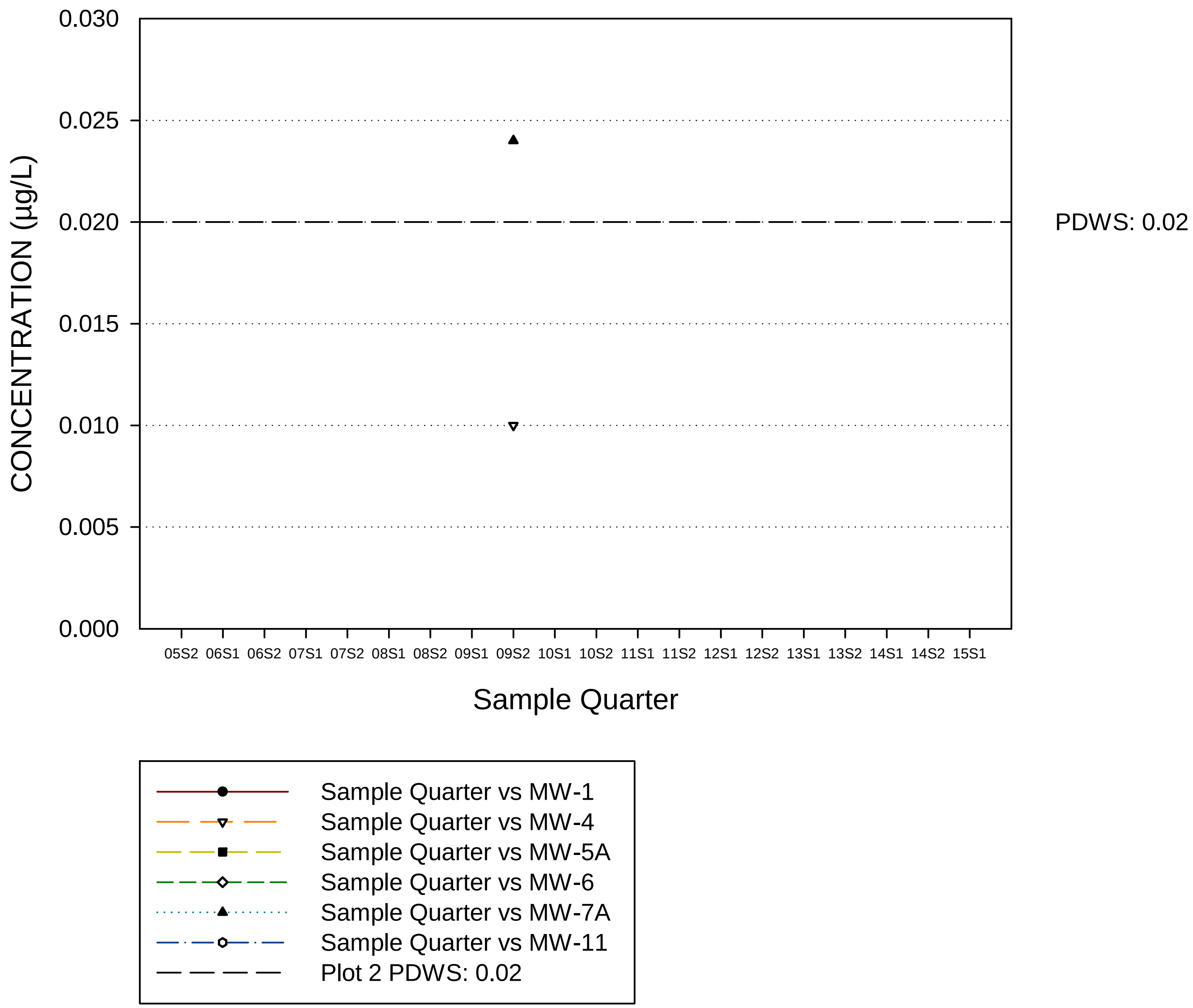
FLORIDAN AQUIFER




1,2-DIBROMOETHANE
SURFICIAL AQUIFER
0.030
0.025
0.020
0.015
0.010
0.005
0.000
CONCENTRATION (µg/L)
PDWS: 0.02
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 0.02

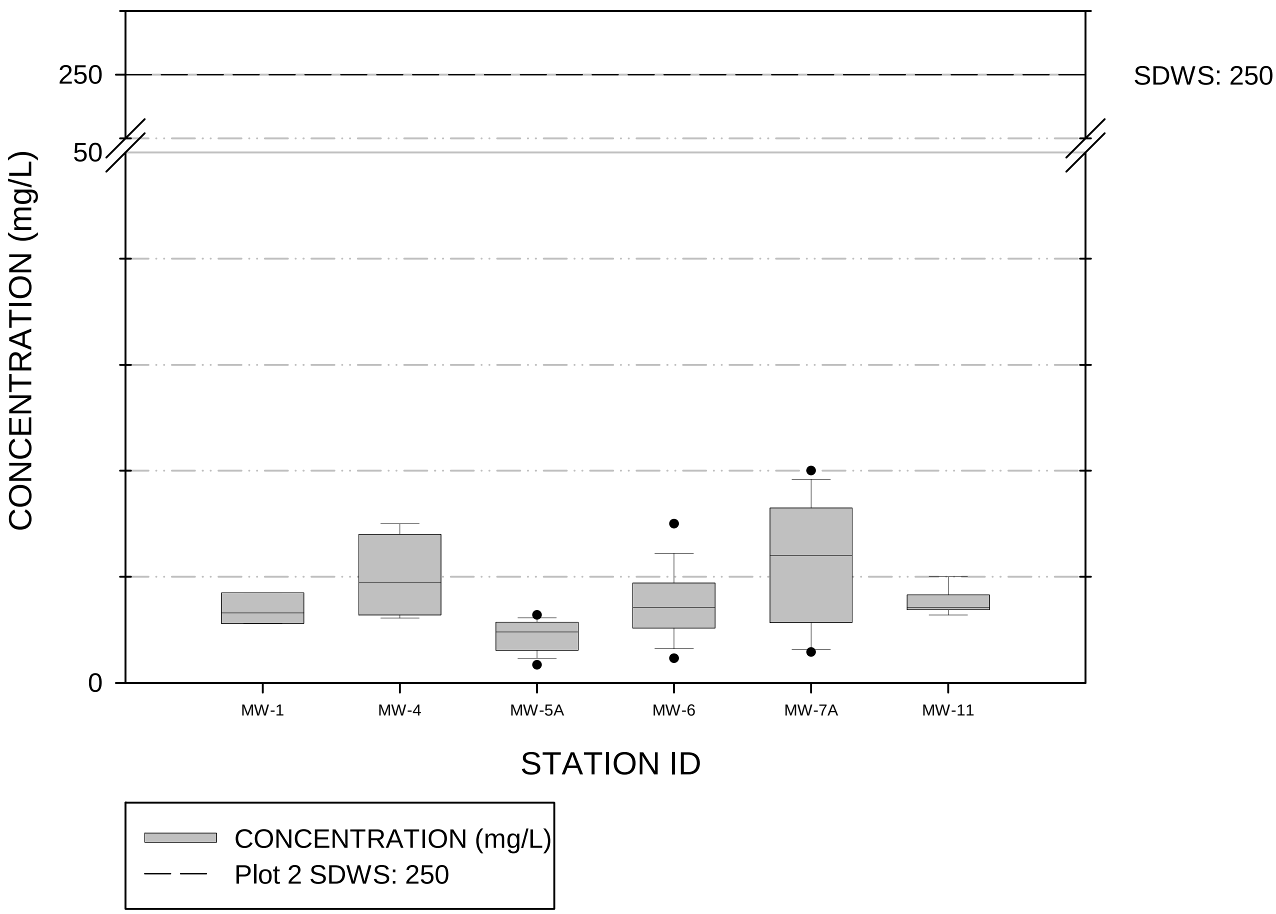
1,2-DIBROMOETHANE

SURFICIAL AQUIFER



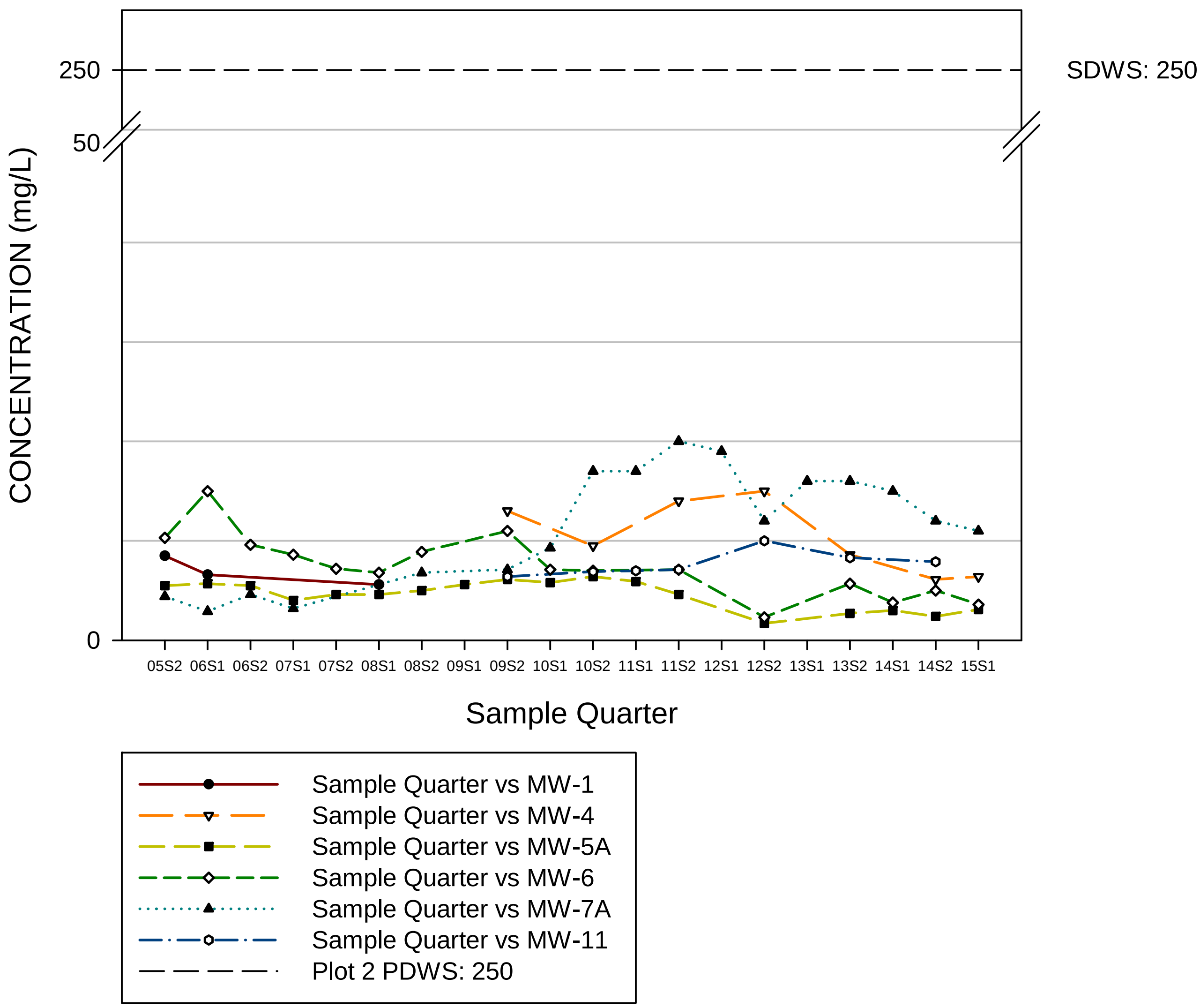
CHLORIDE

SURFICIAL AQUIFER



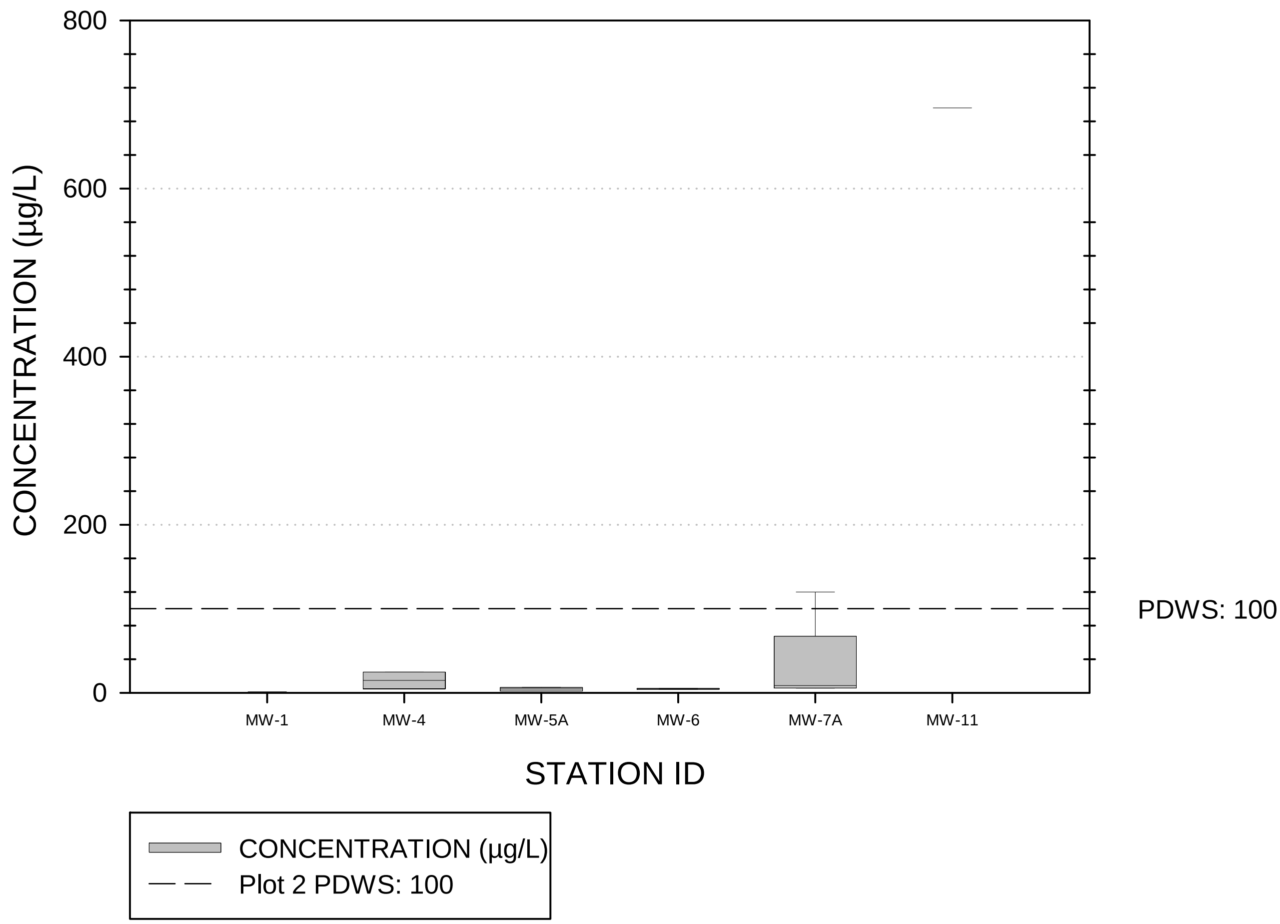
CHLORIDE

SURFICIAL AQUIFER



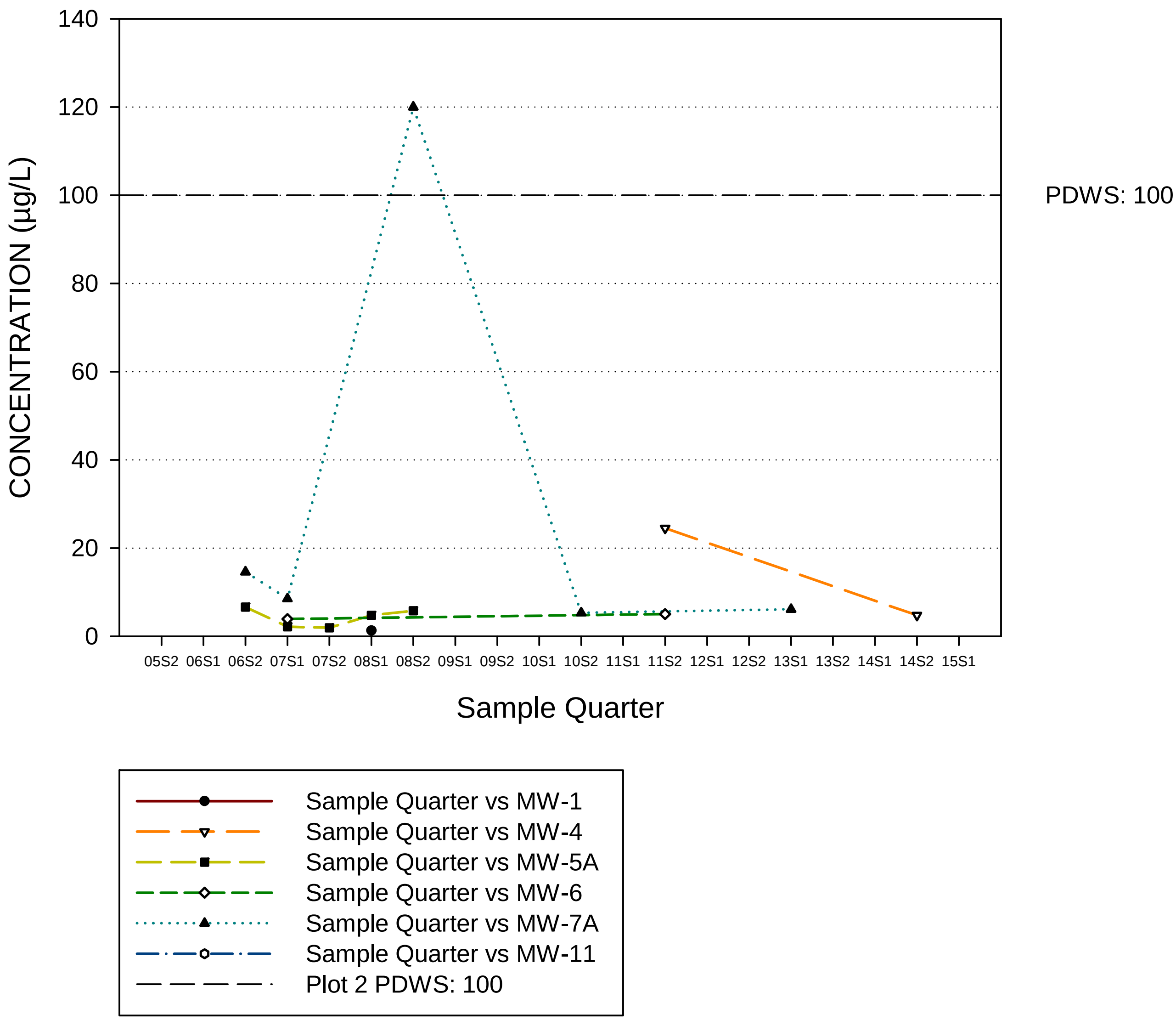
CHROMIUM

SURFICIAL AQUIFER



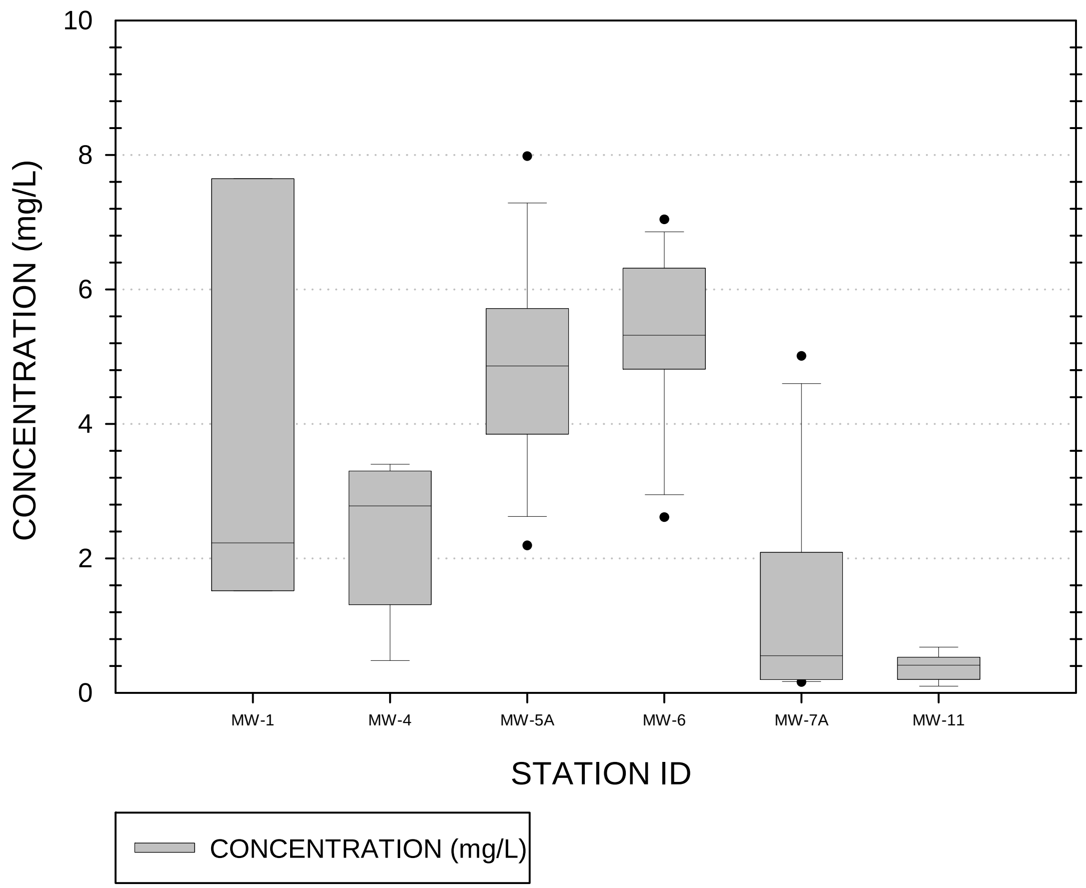
CHROMIUM

SURFICIAL AQUIFER



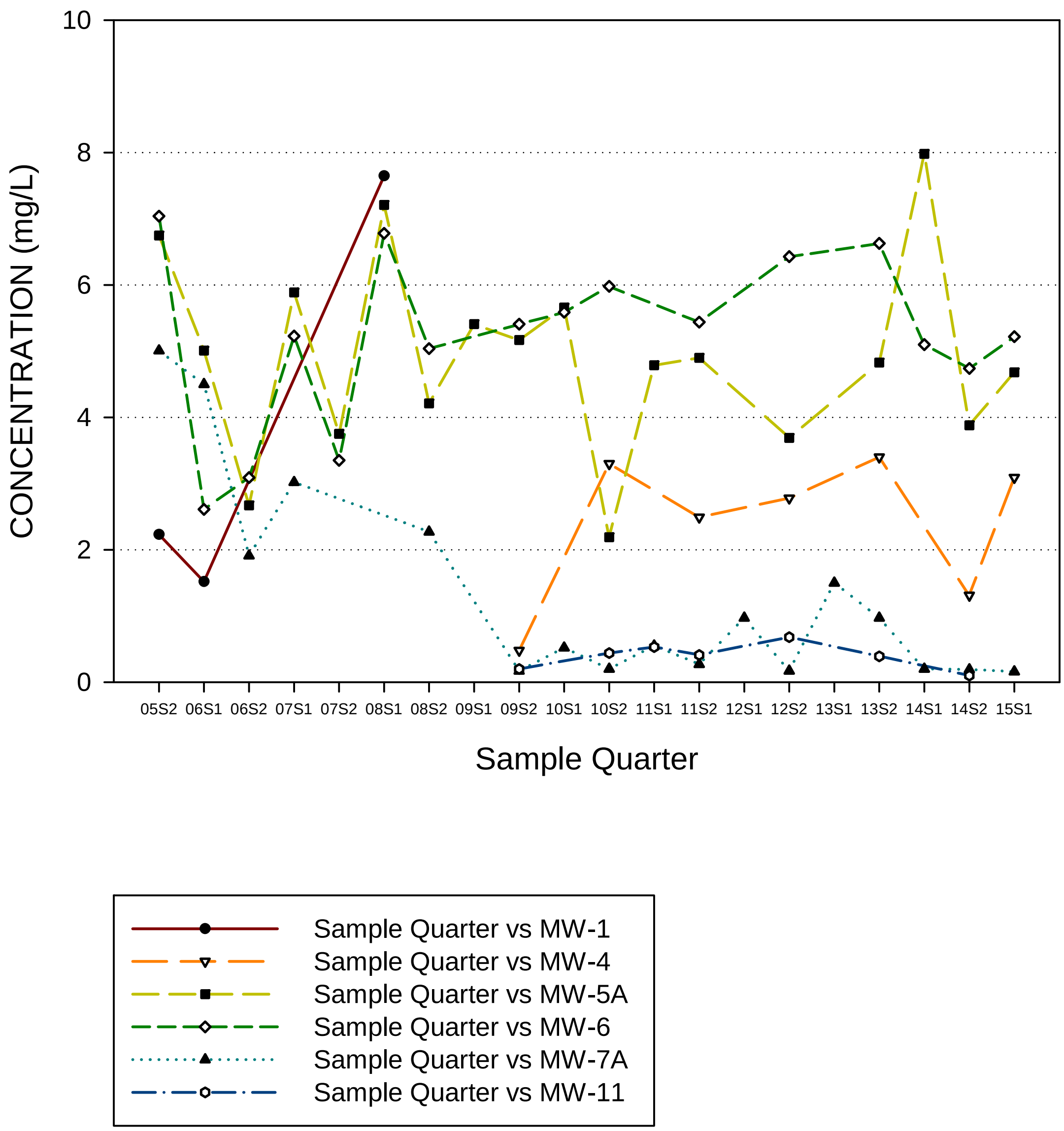
DISSOLVED OXYGEN

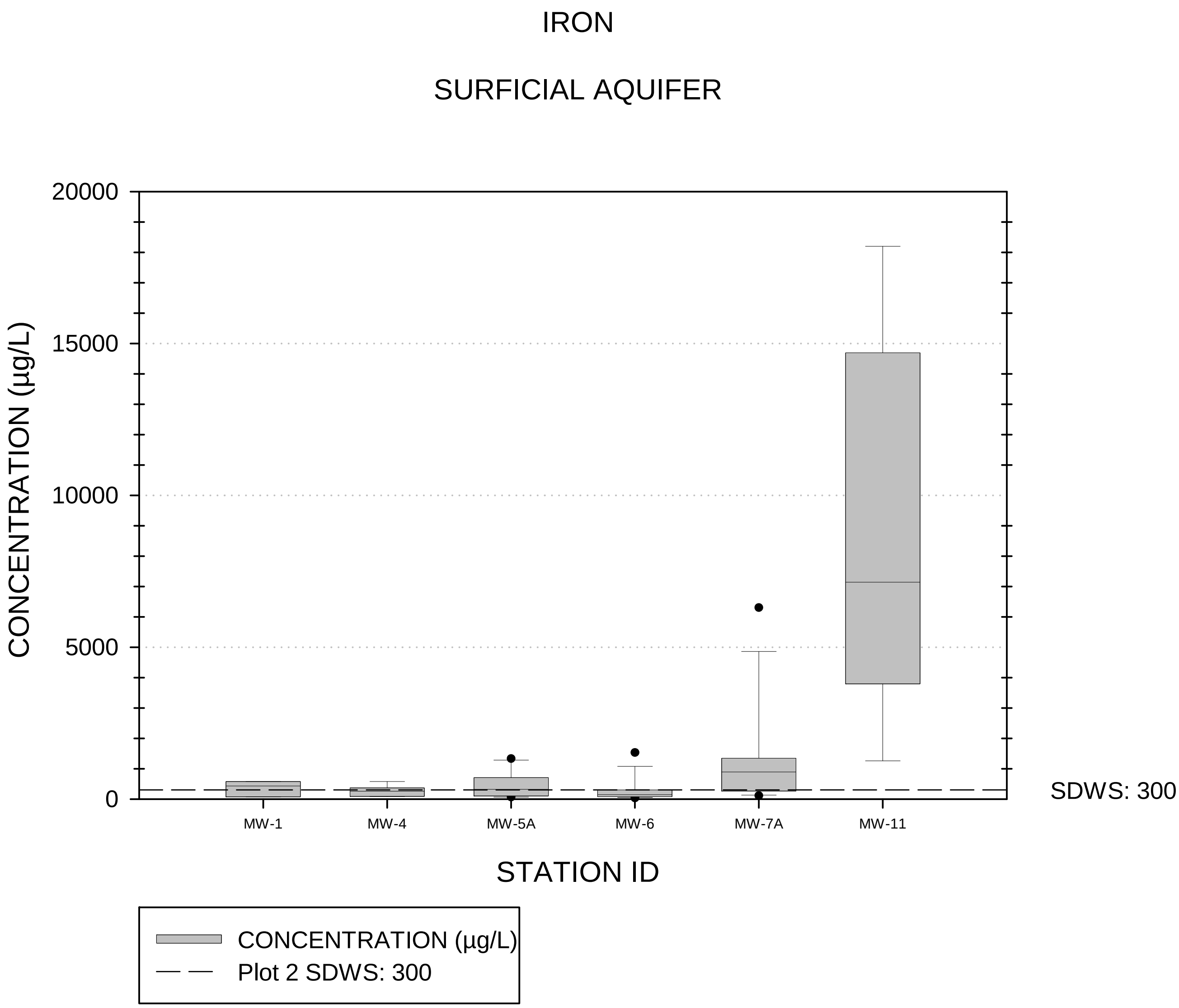
SURFICIAL AQUIFER



DISSOLVED OXYGEN

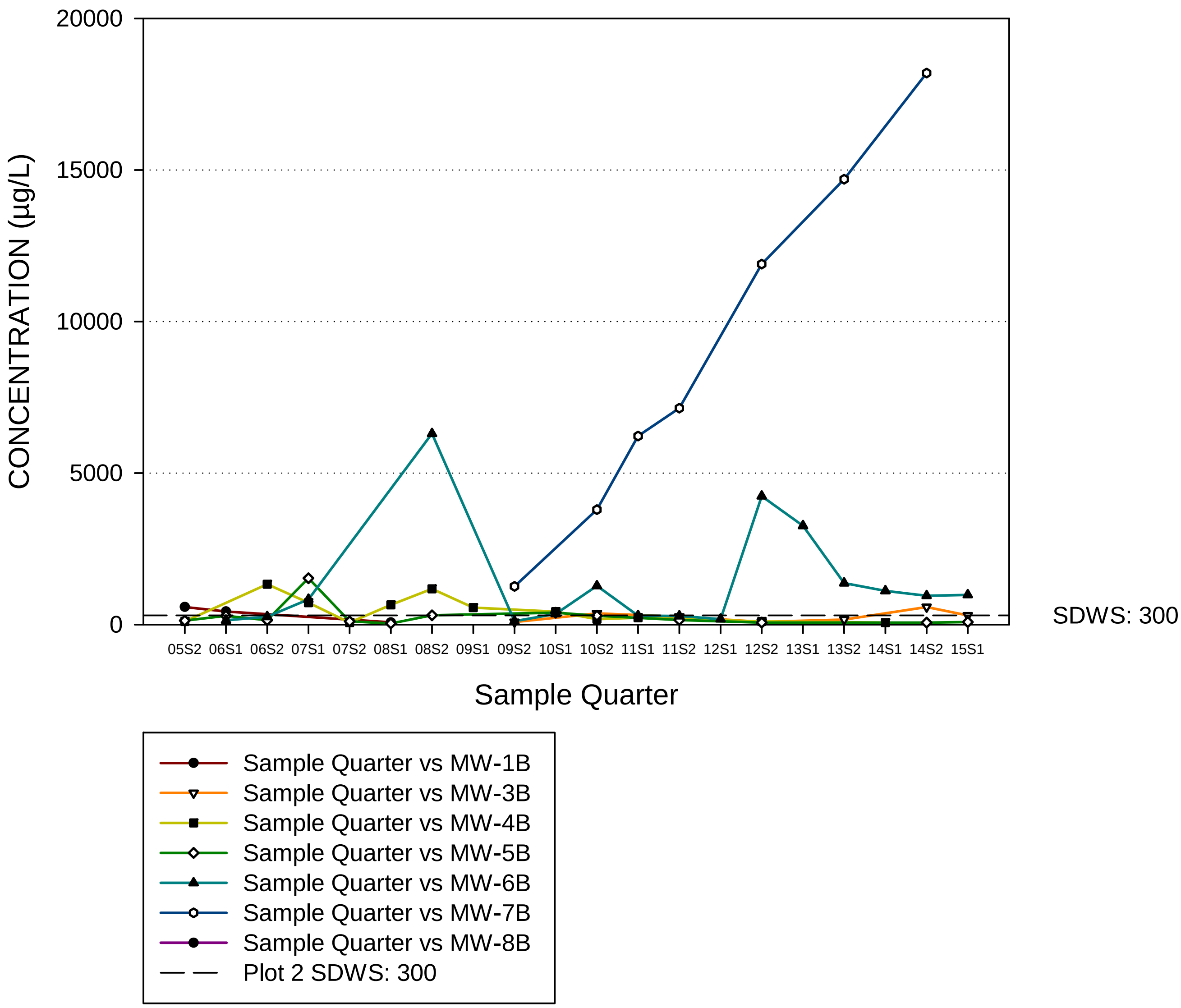
SURFICIAL AQUIFER




IRON
SURFICIAL AQUIFER
20000
15000
10000
5000
0
CONCENTRATION (µg/L)
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
SDWS: 300
CONCENTRATION (µg/L)
Plot 2 SDWS: 300

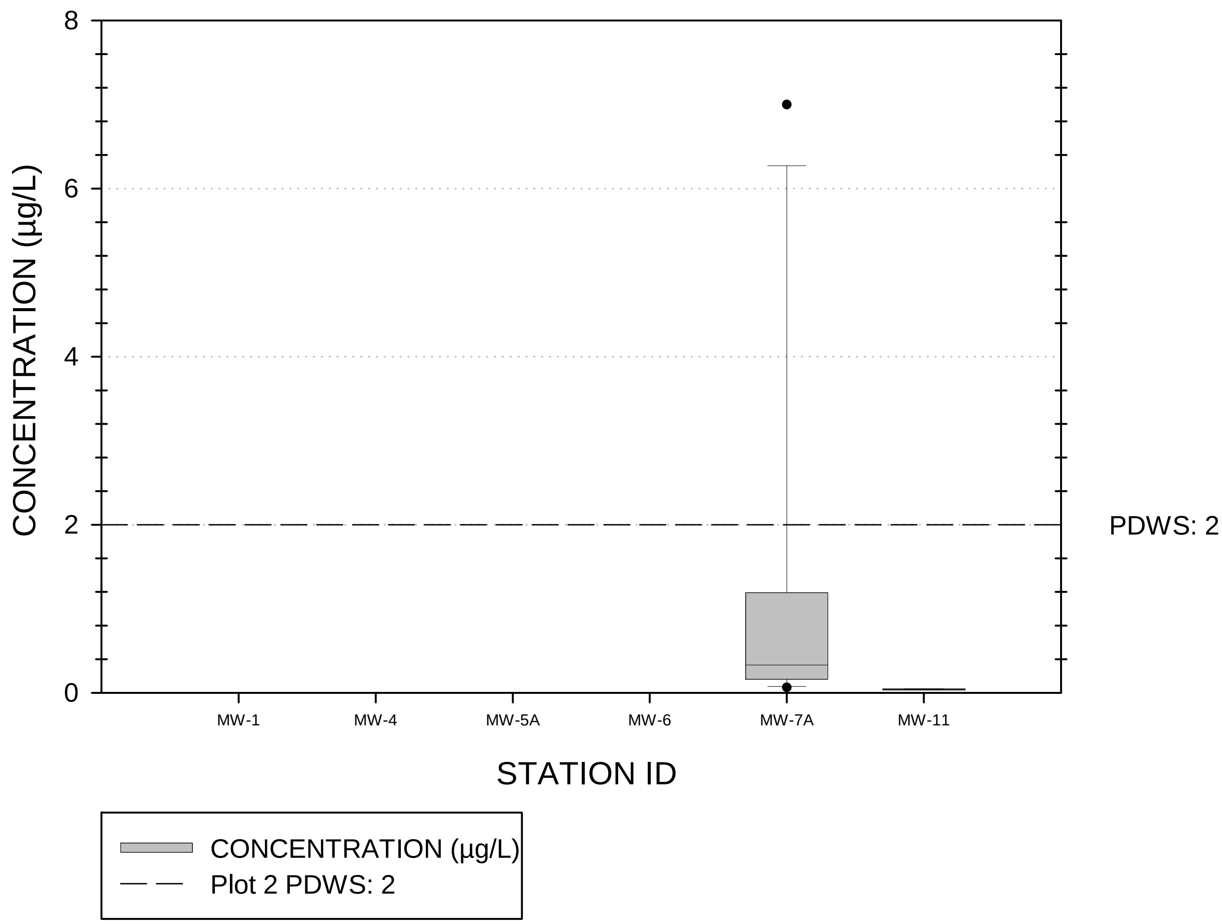
IRON

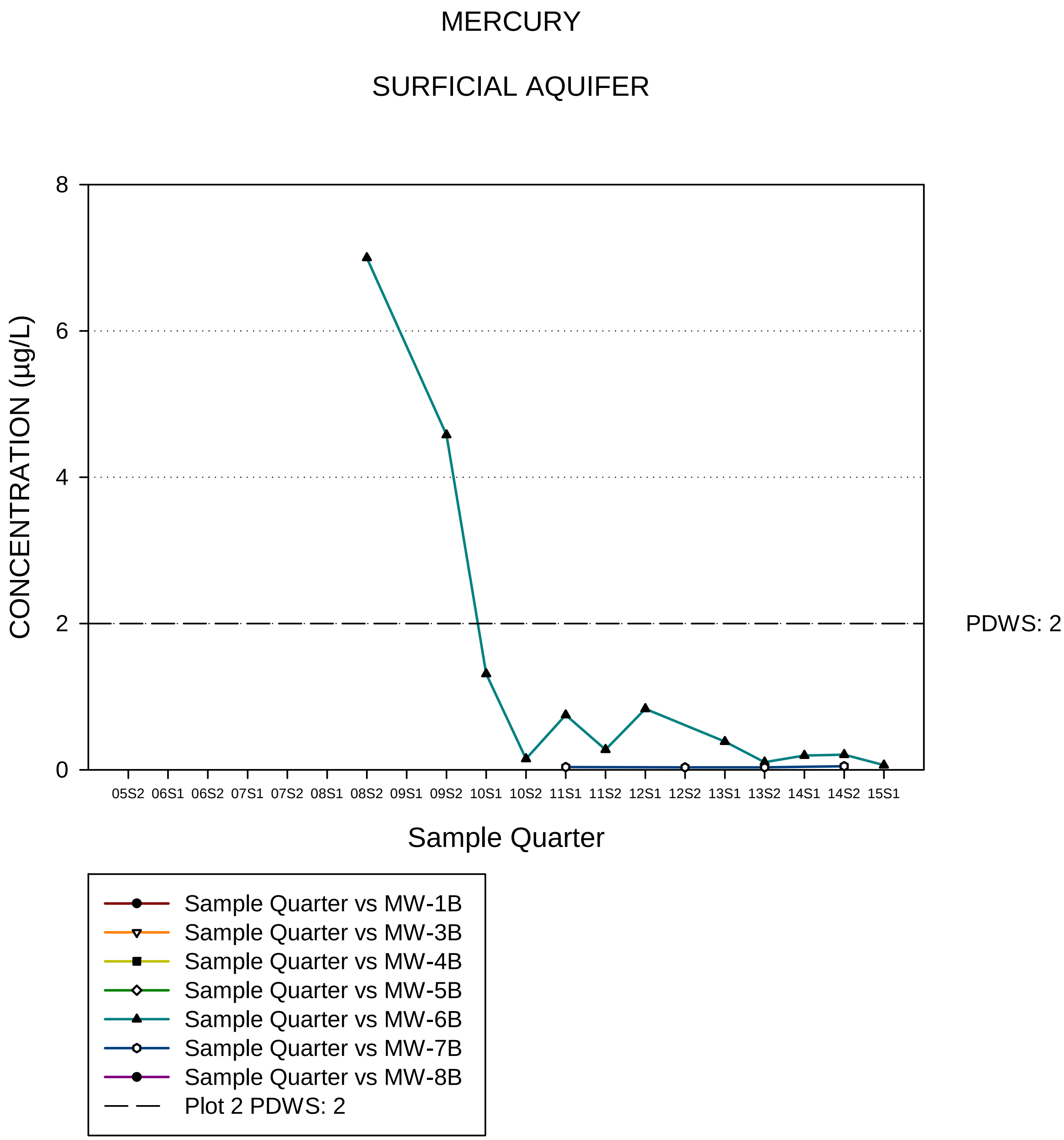
SURFICIAL AQUIFER



MERCURY

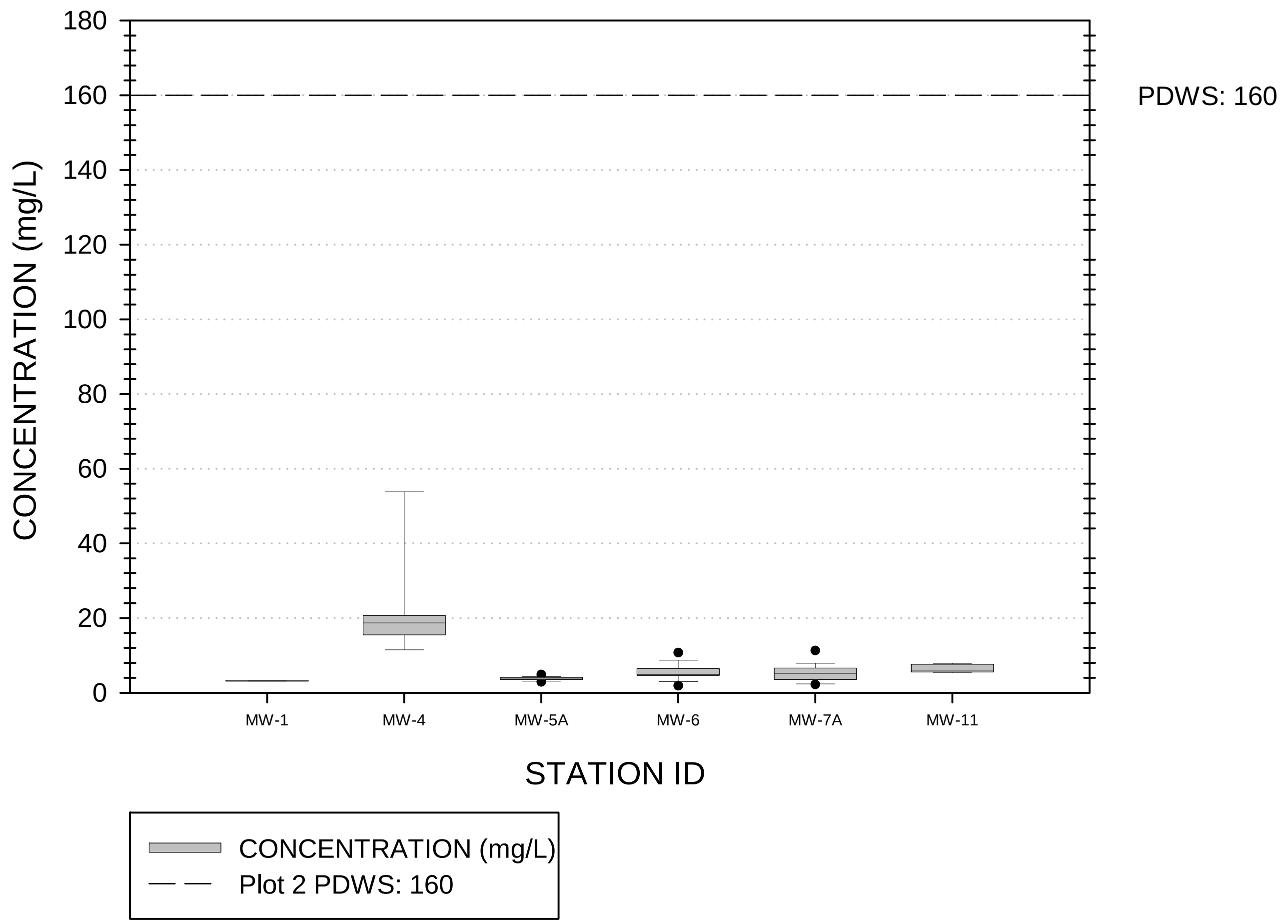
SURFICIAL AQUIFER

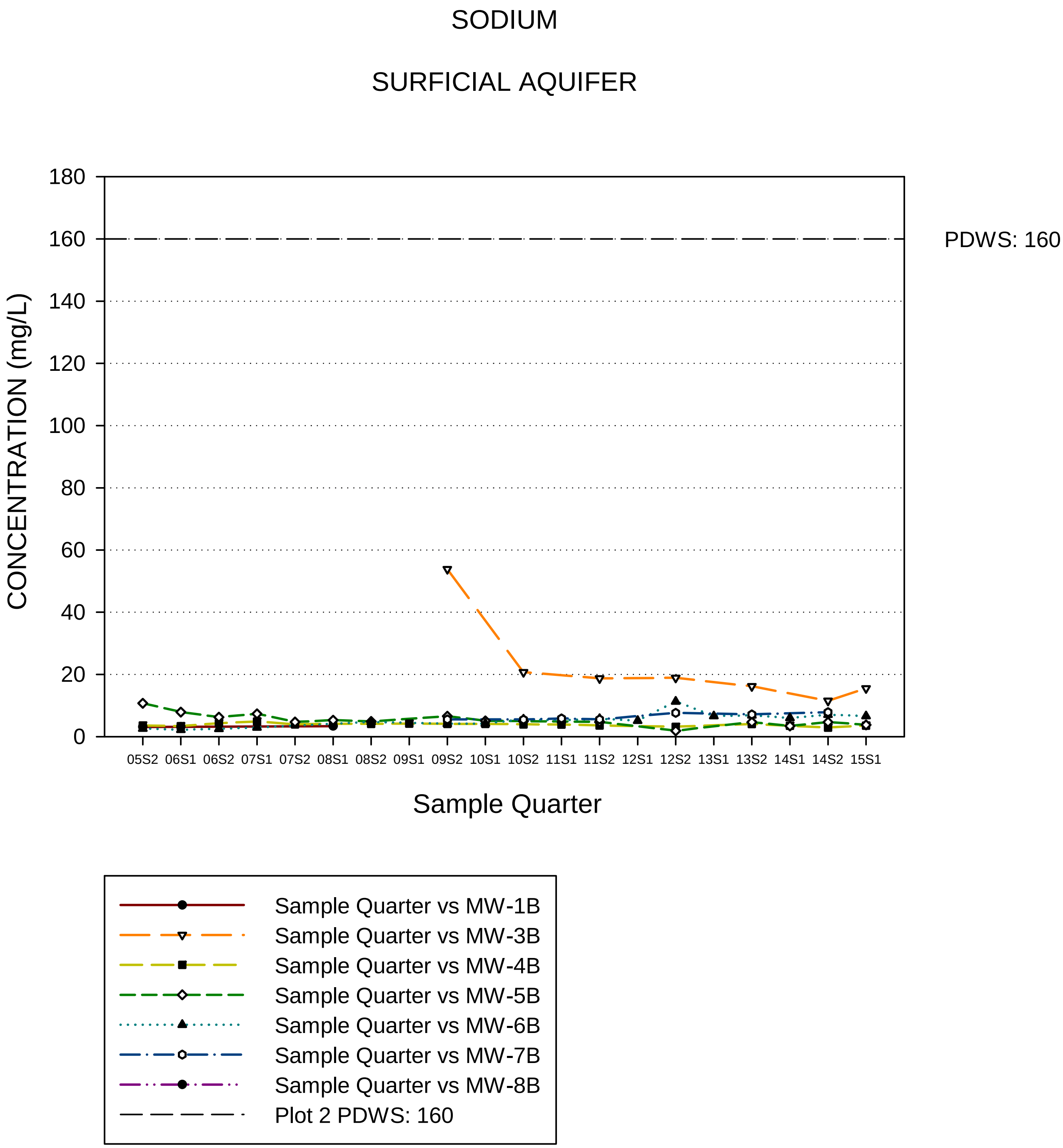



MERCURY
SURFICIAL AQUIFER
CONCENTRATION (µg/L)
8
6
4
2
0
PDWS: 2
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 2

SODIUM

SURFICIAL AQUIFER

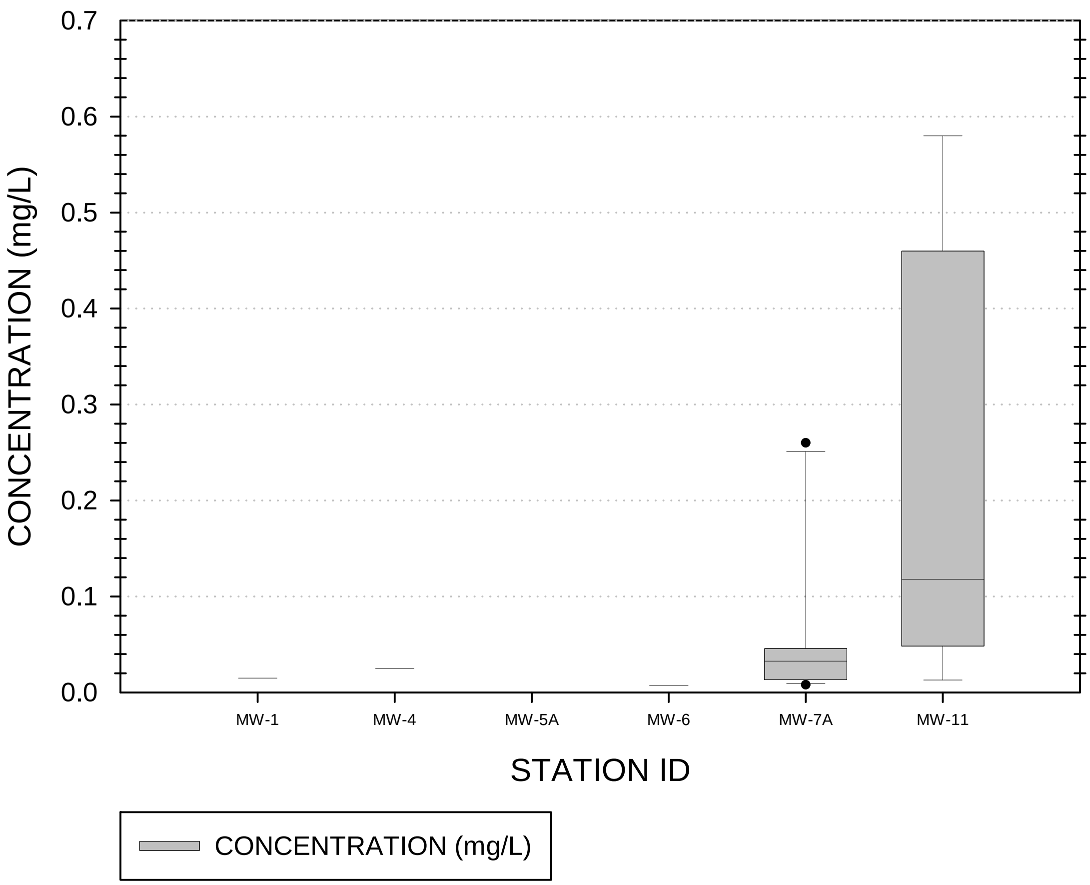




SODIUM
SURFICIAL AQUIFER
CONCENTRATION (mg/L)
0
20
40
60
80
100
120
140
160
180
PDWS: 160
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 160

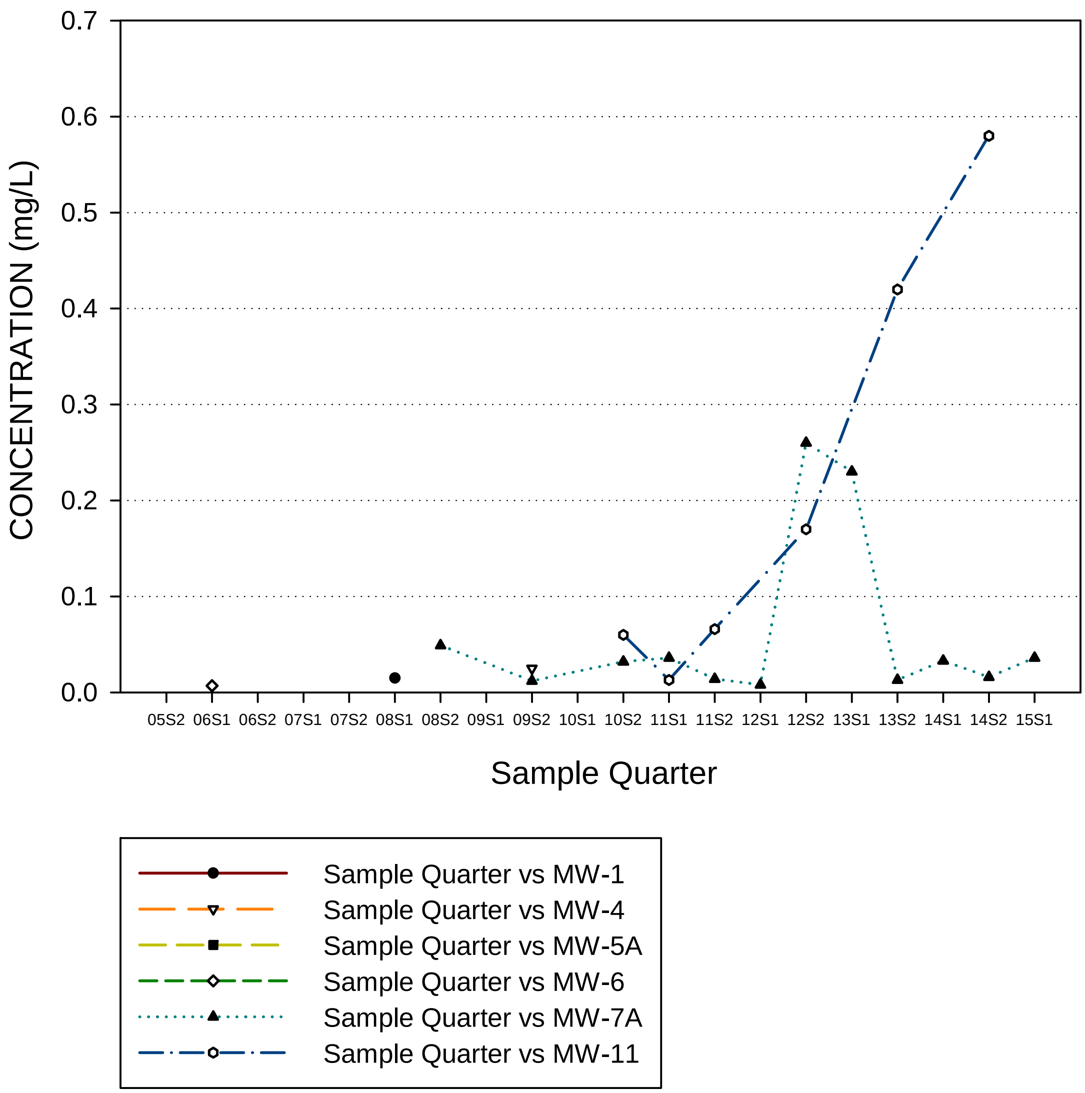
AMMONIA AS NITROGEN

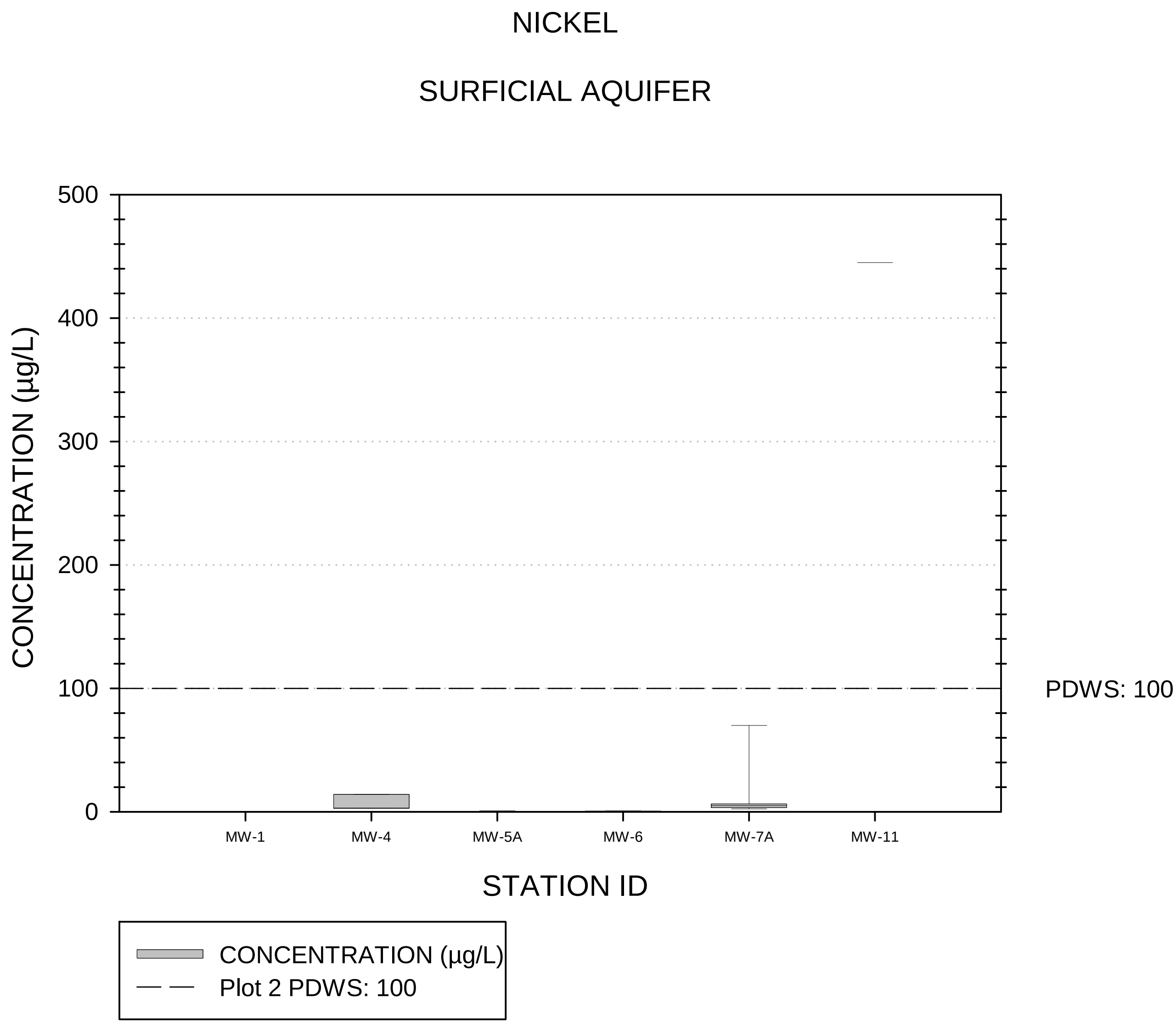
SURFICIAL AQUIFER



AMMONIA AS NITROGEN

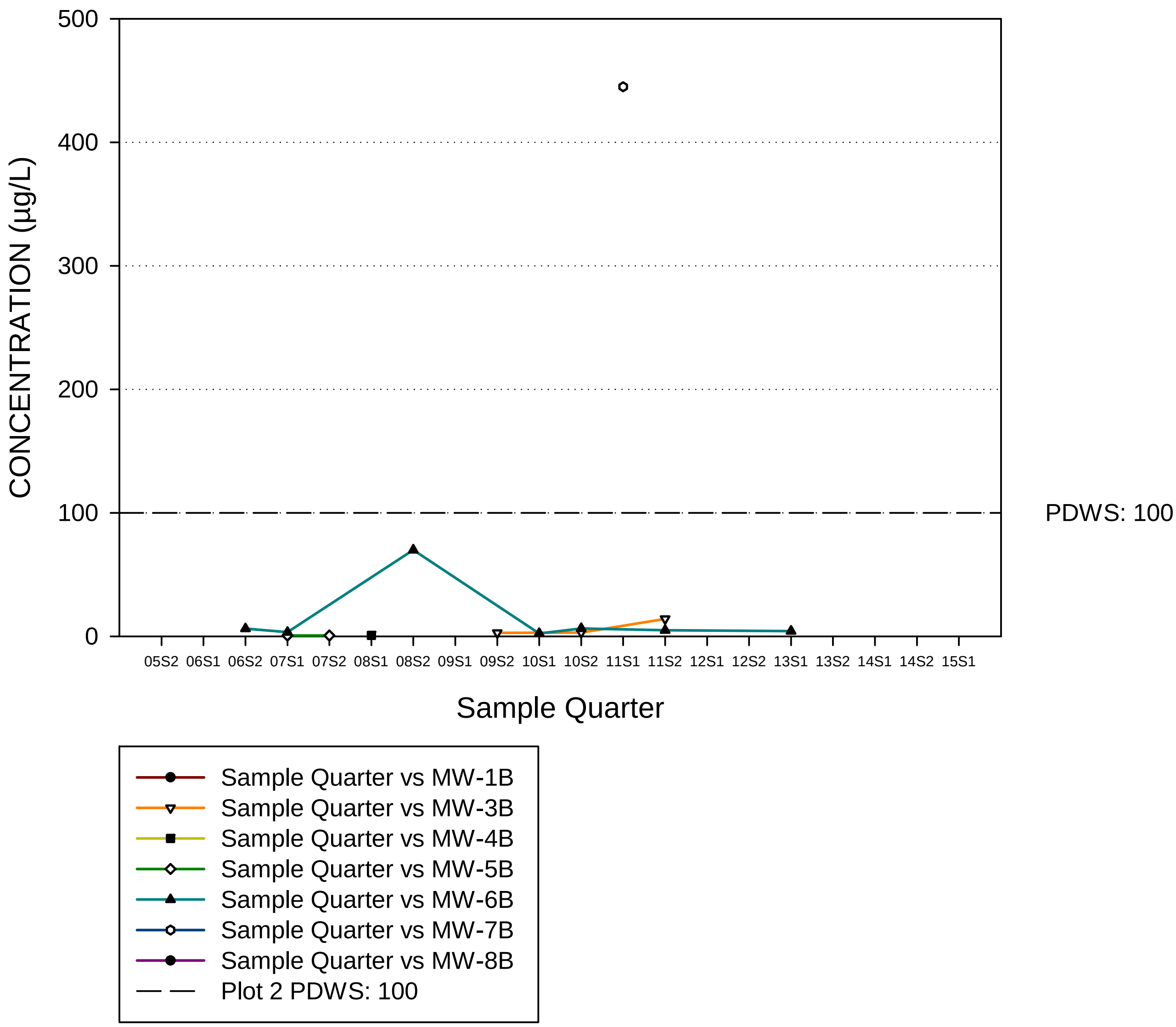
SURFICIAL AQUIFER

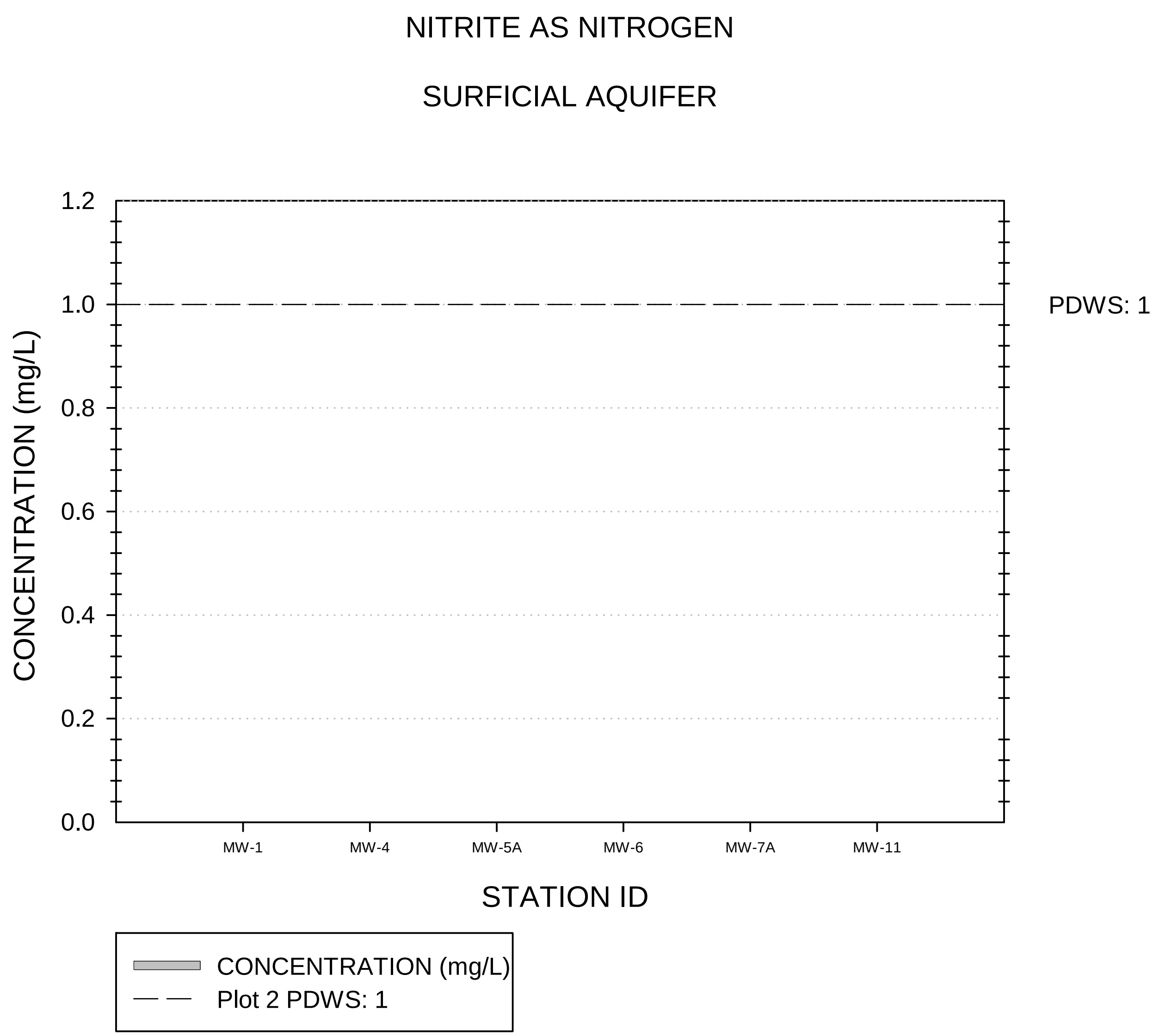


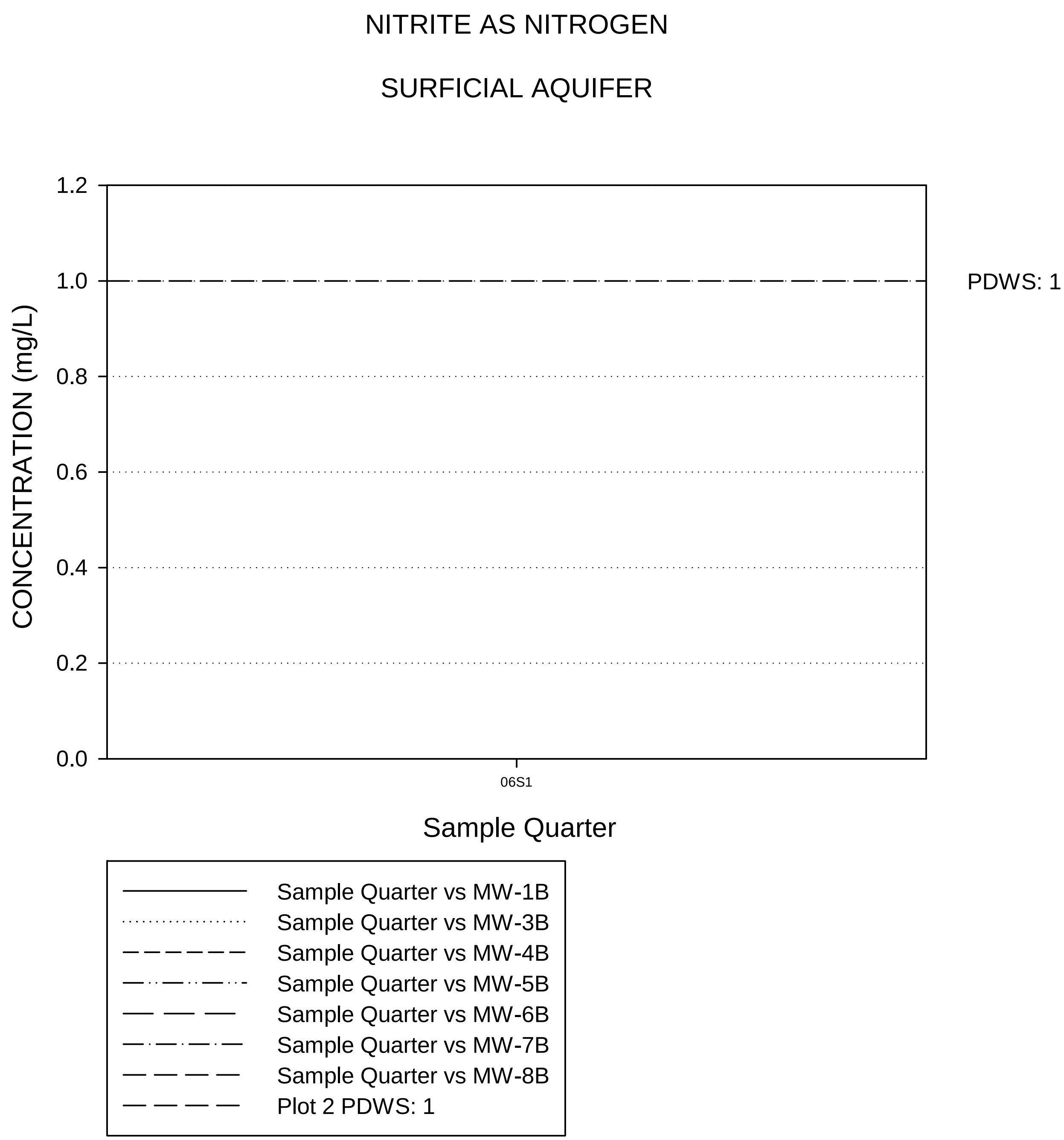

NICKEL
SURFICIAL AQUIFER
CONCENTRATION (µg/L)
500
400
300
200
100
0
PDWS: 100
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 100

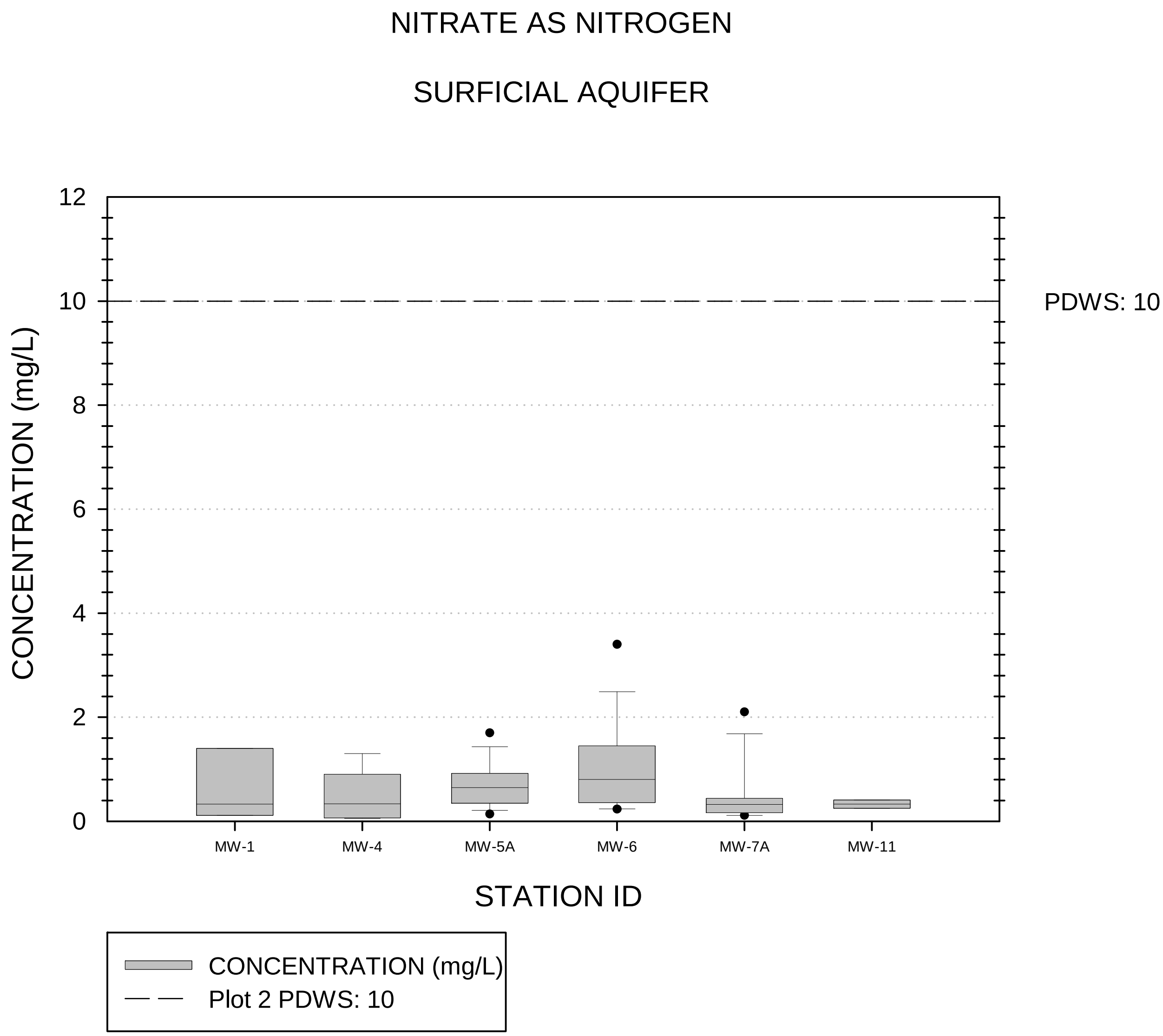
NICKEL

SURFICIAL AQUIFER

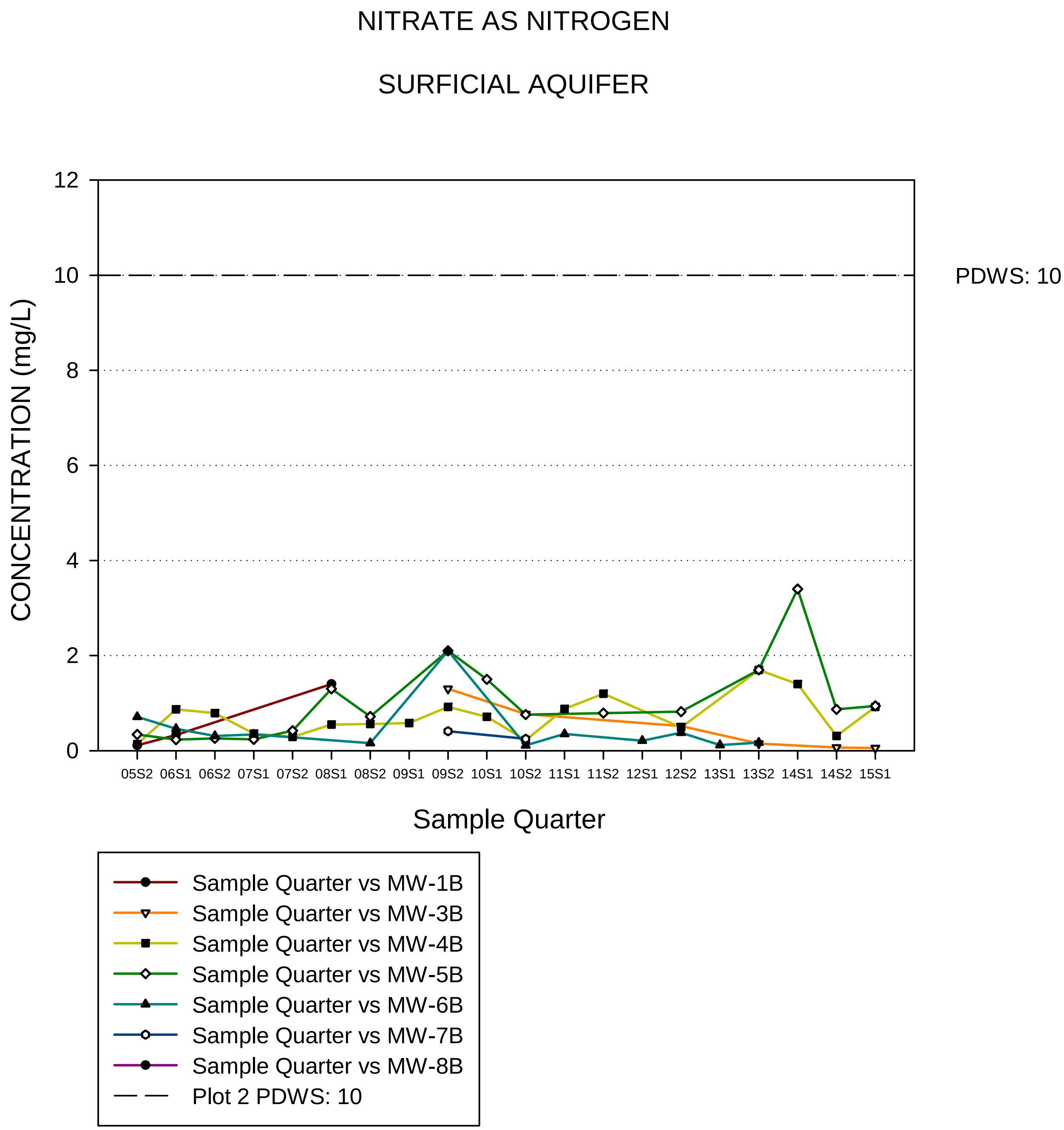



NITRITE AS NITROGEN
SURFICIAL AQUIFER
CONCENTRATION (mg/L)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
PDWS: 1
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (mg/L)
Plot 2 PDWS: 1


NITRITE AS NITROGEN
SURFICIAL AQUIFER
1.2
1.0
0.8
0.6
0.4
0.2
0.0
CONCENTRATION (mg/L)
PDWS: 1
06S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 1

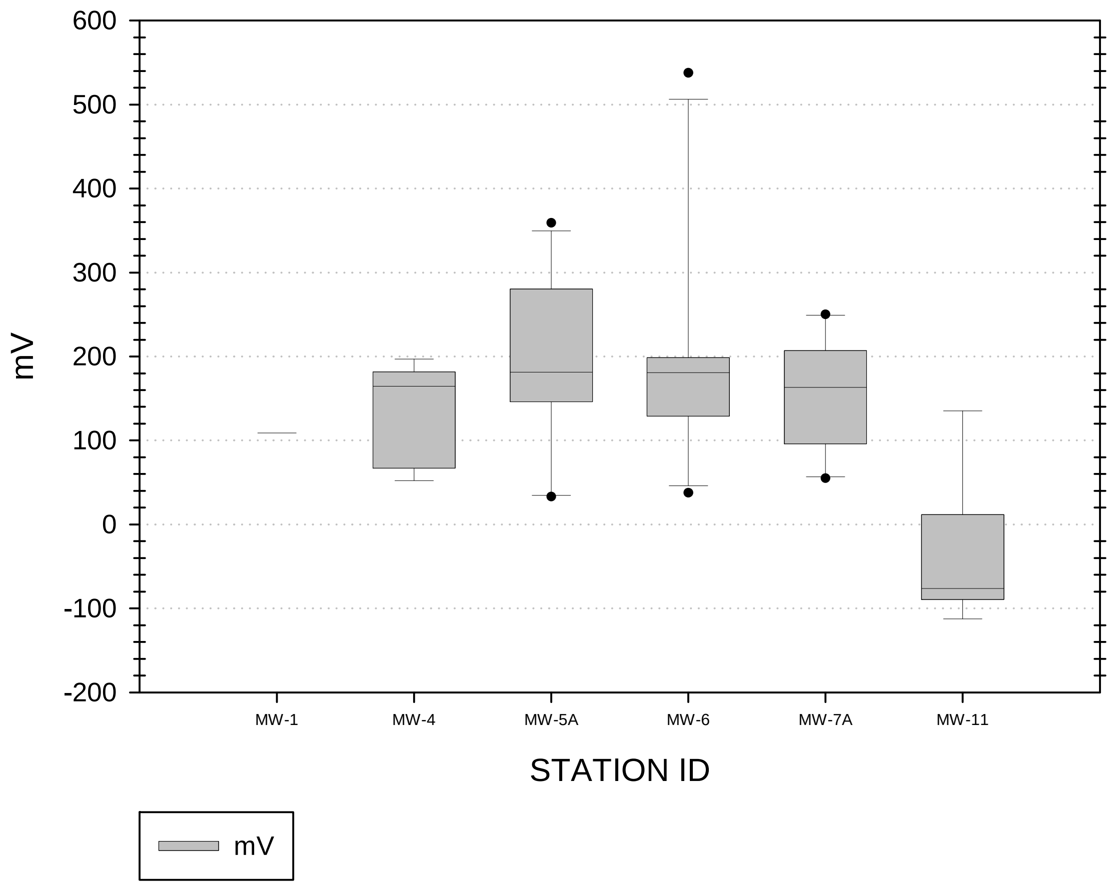


NITRATE AS NITROGEN
SURFICIAL AQUIFER
CONCENTRATION (mg/L)
0
2
4
6
8
10
12
PDWS: 10
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (mg/L)
Plot 2 PDWS: 10


NITRATE AS NITROGEN
SURFICIAL AQUIFER
CONCENTRATION (mg/L)
0
2
4
6
8
10
12
PDWS: 10
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs MW-1B
Sample Quarter vs MW-3B
Sample Quarter vs MW-4B
Sample Quarter vs MW-5B
Sample Quarter vs MW-6B
Sample Quarter vs MW-7B
Sample Quarter vs MW-8B
Plot 2 PDWS: 10

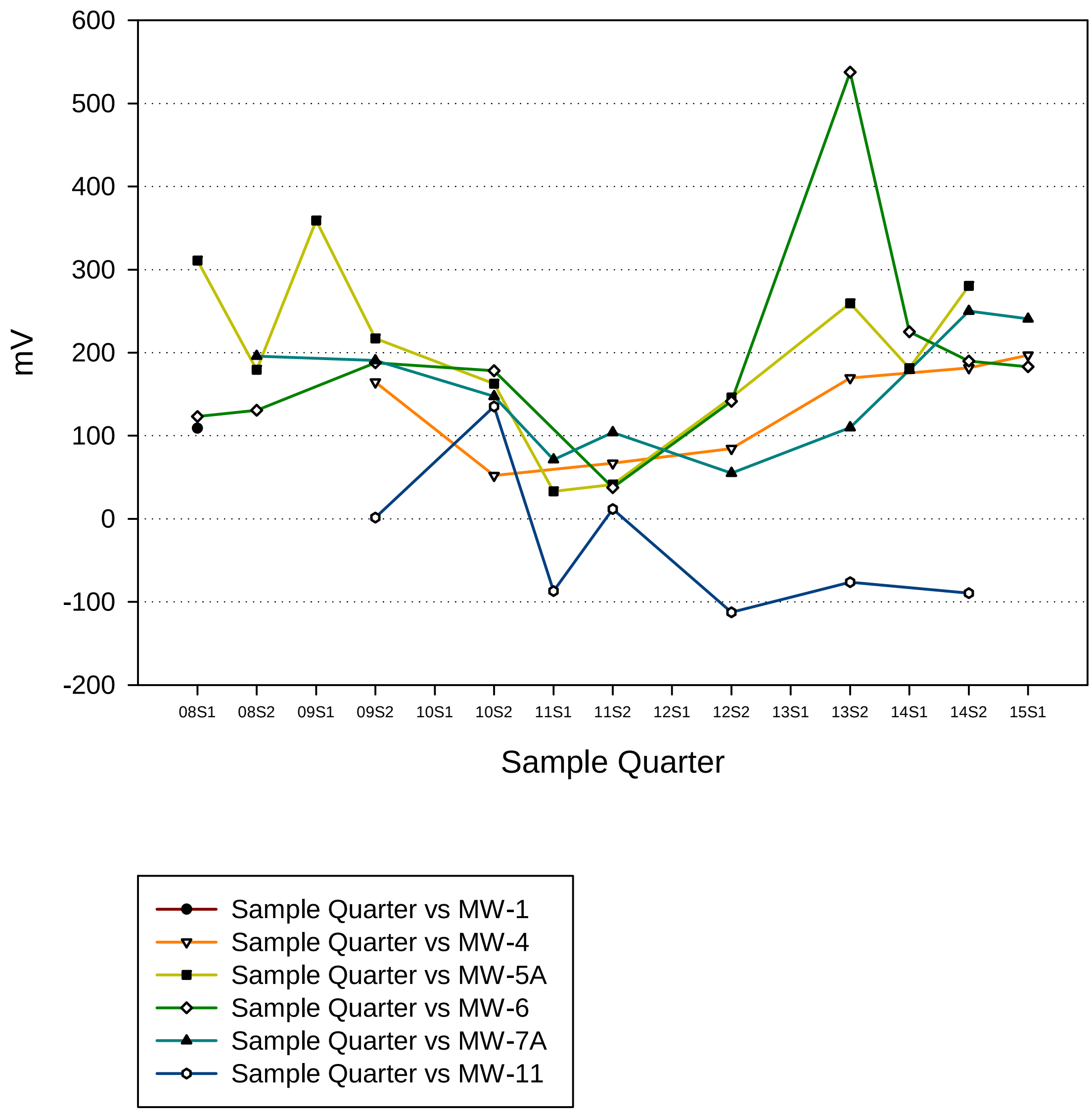
OXIDATION / REDUCTION POTENTIAL

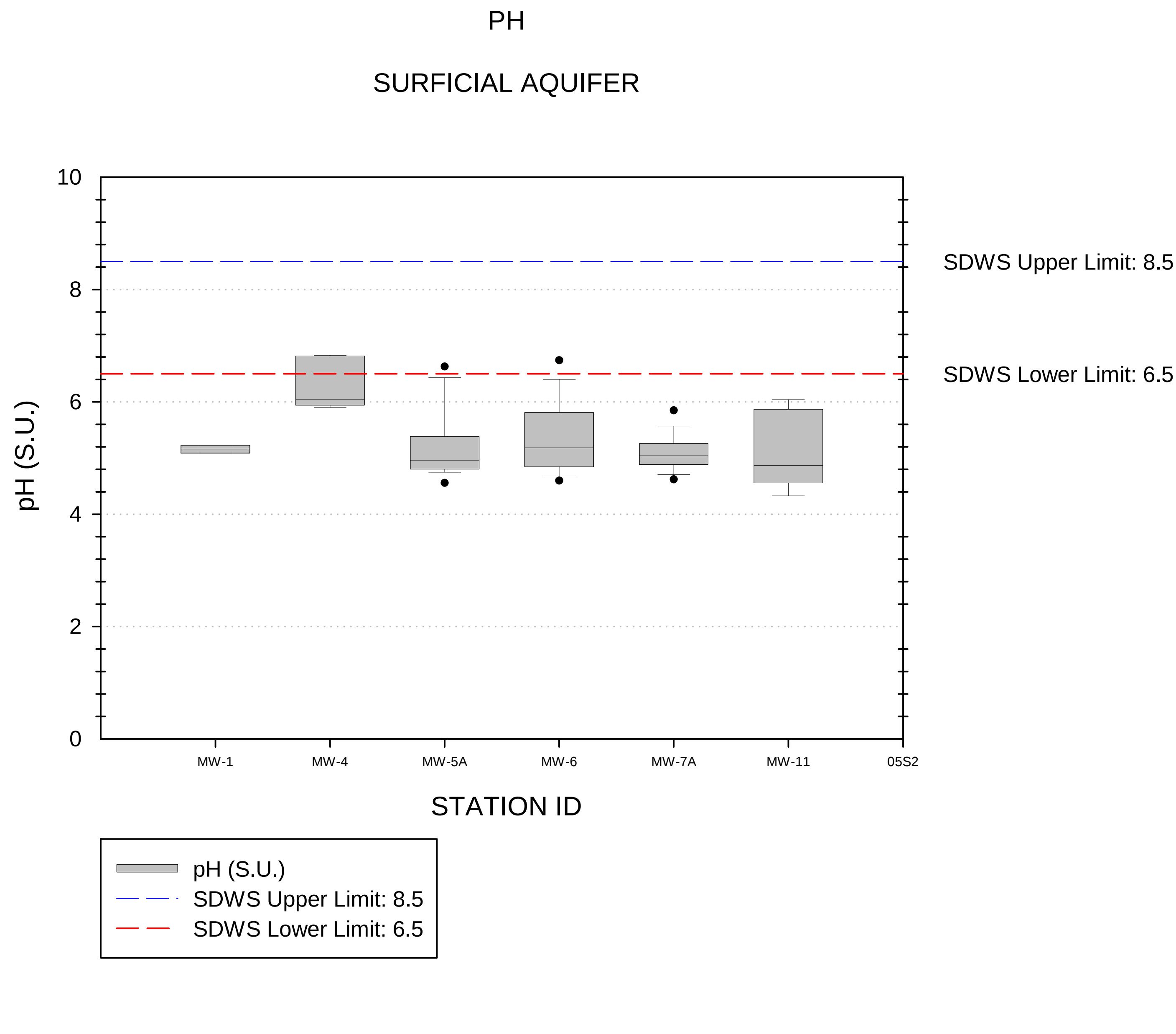
SURFICIAL AQUIFER



OXIDATION / REDUCTION POTENTIAL

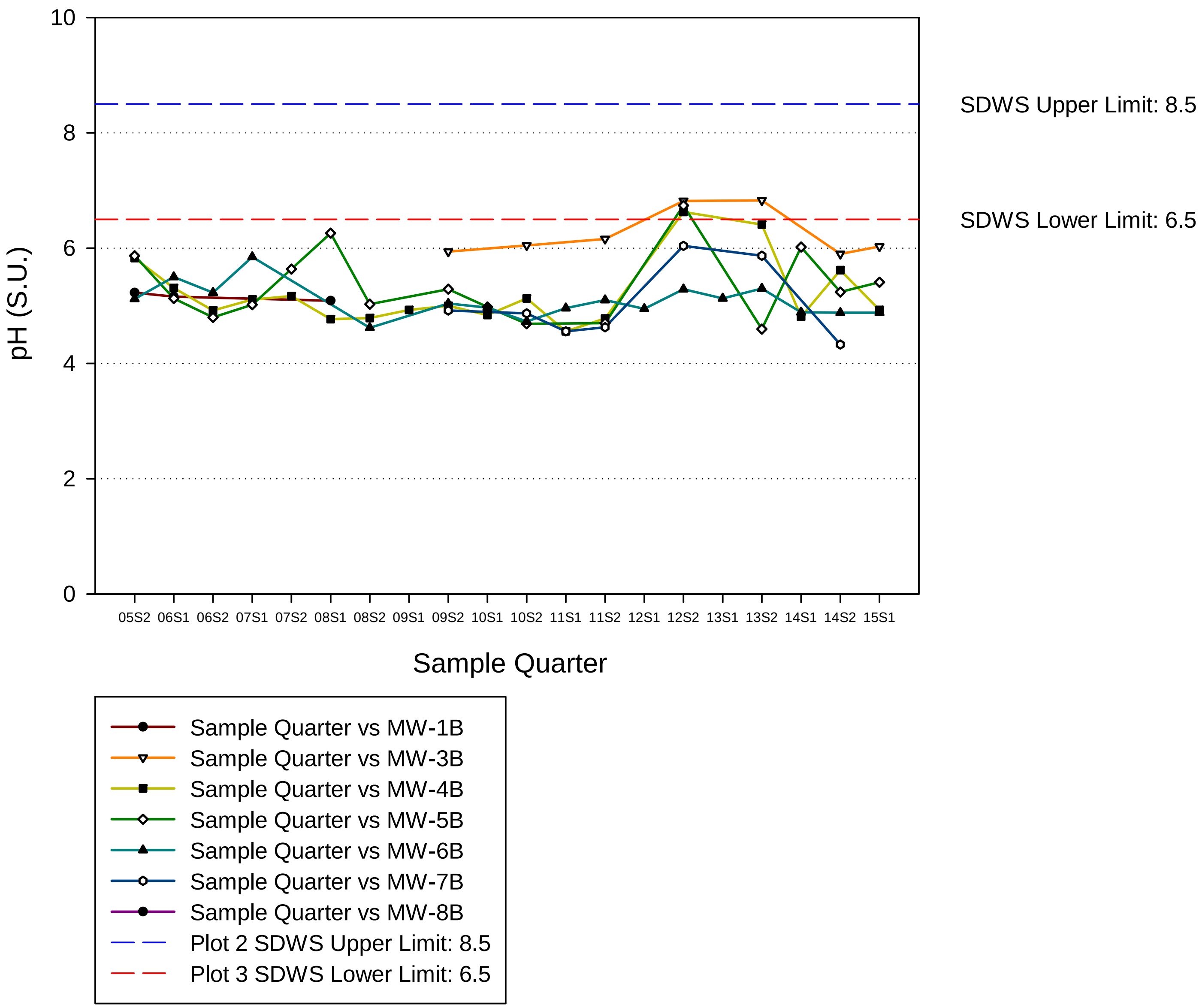
SURFICIAL AQUIFER

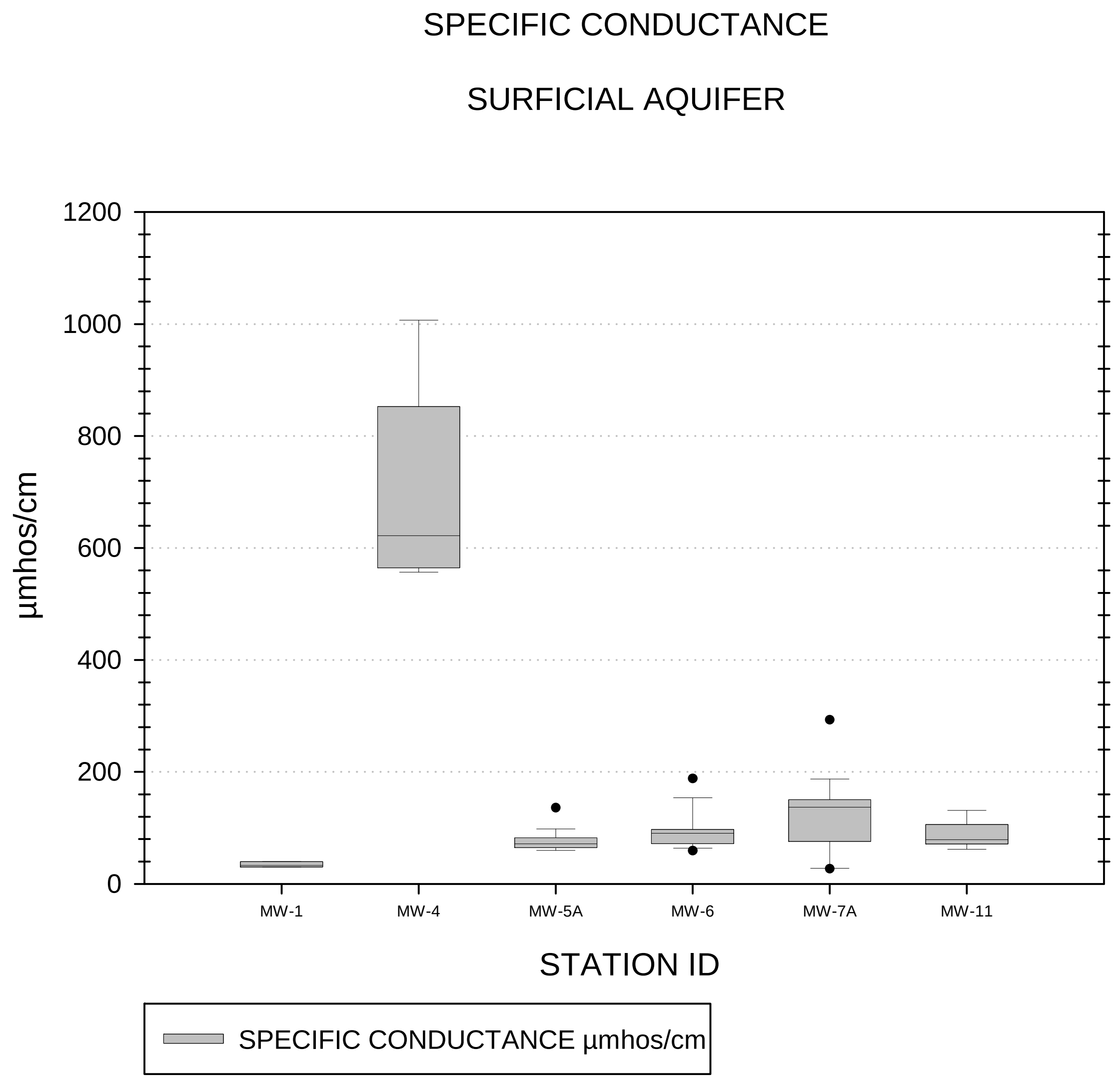



PH
SURFICIAL AQUIFER
10
8
6
4
2
0
pH (S.U.)
SDWS Upper Limit: 8.5
SDWS Lower Limit: 6.5
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
05S2
STATION ID
pH (S.U.)
SDWS Upper Limit: 8.5
SDWS Lower Limit: 6.5

PH

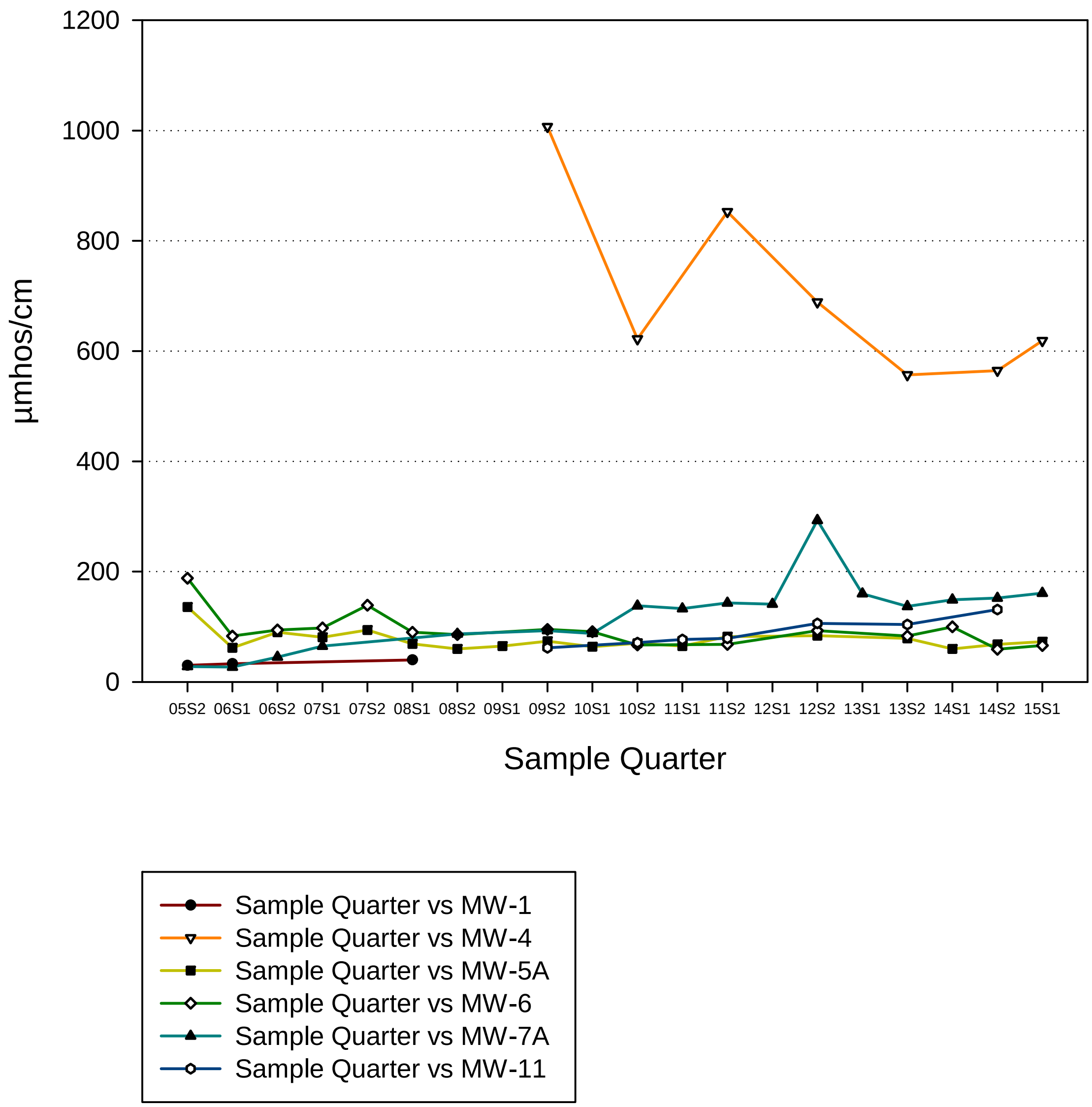
SURFICIAL AQUIFER




SPECIFIC CONDUCTANCE
SURFICIAL AQUIFER
µmhos/cm
1200
1000
800
600
400
200
0
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
SPECIFIC CONDUCTANCE µmhos/cm

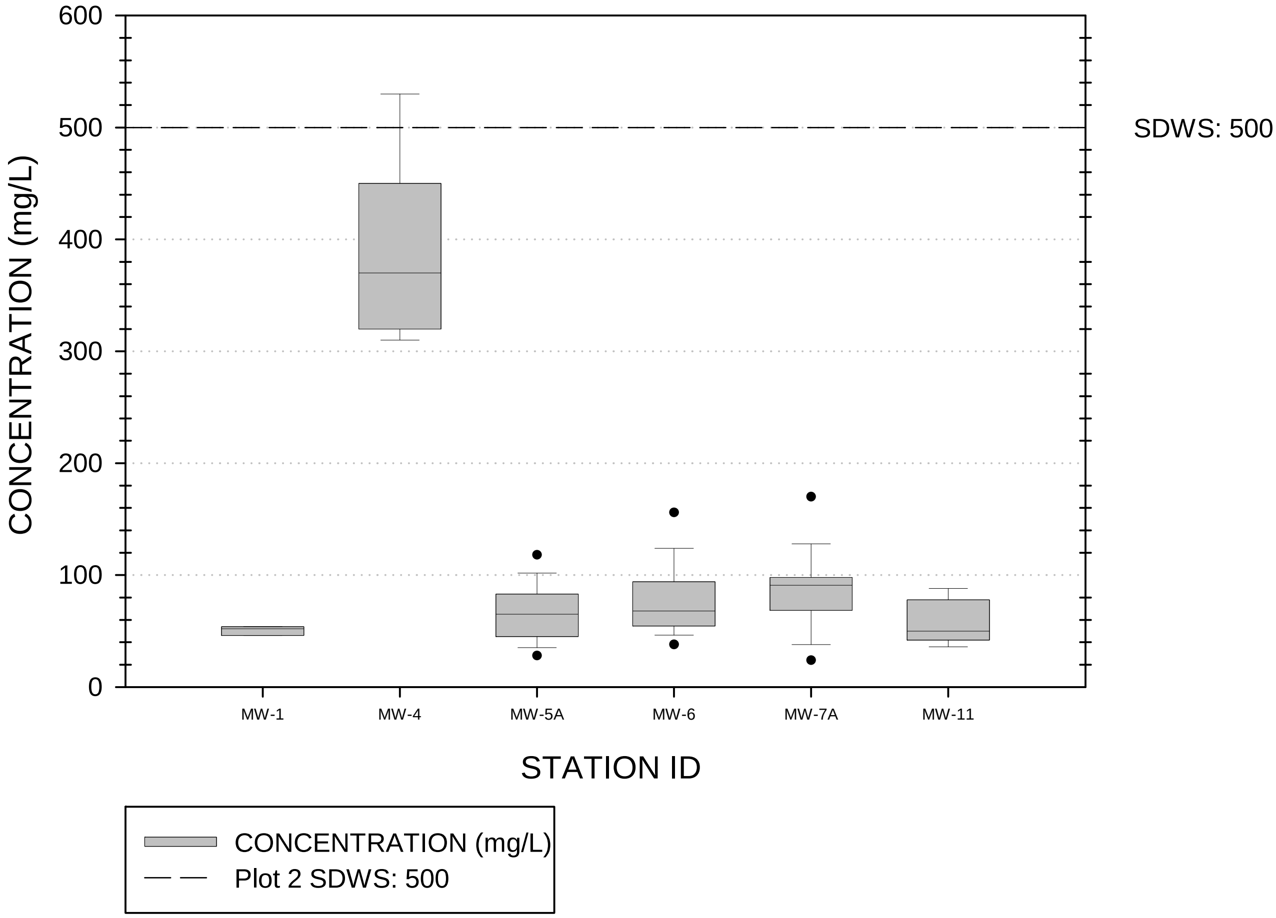
SPECIFIC CONDUCTANCE

SURFICIAL AQUIFER



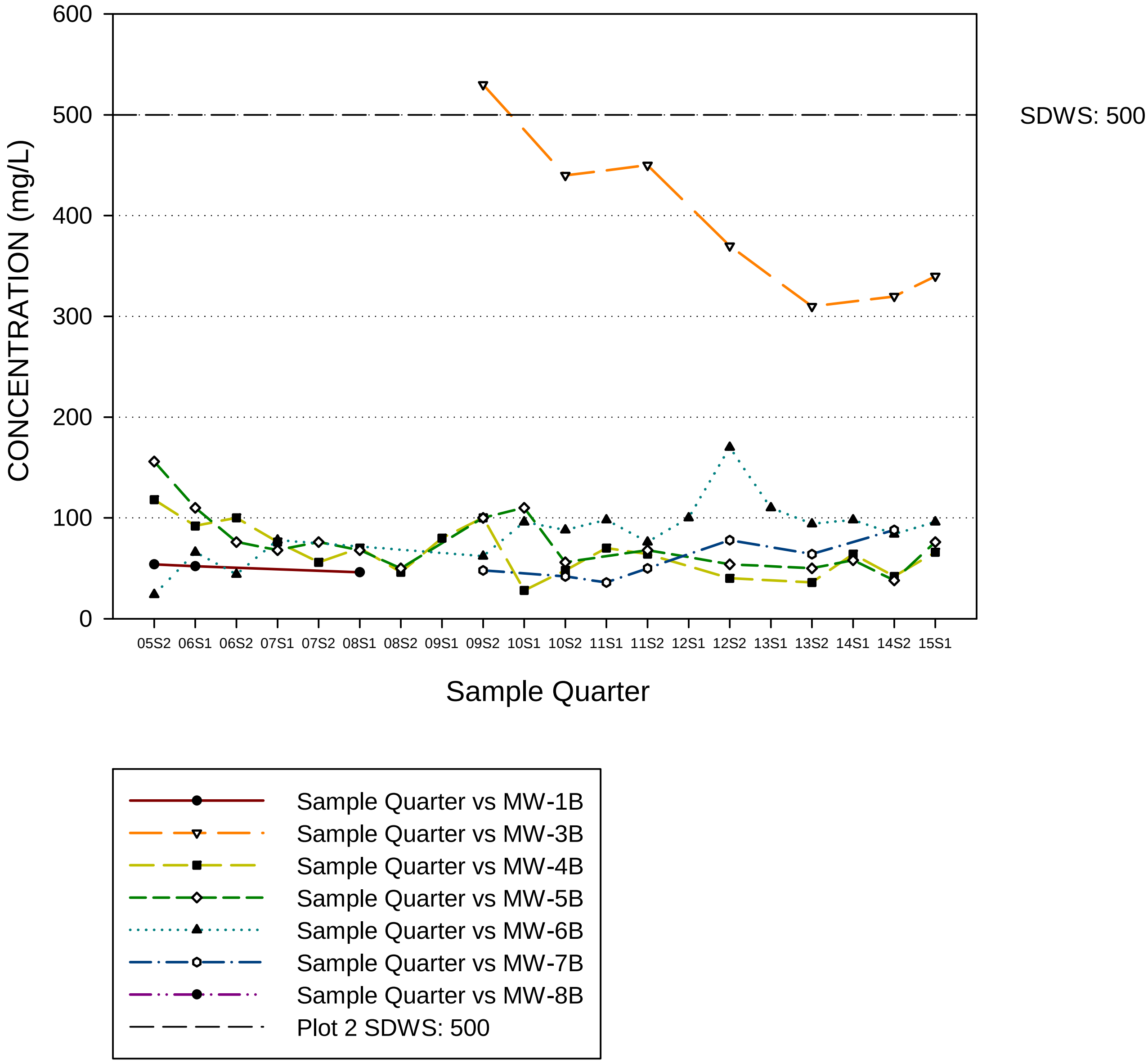
TOTAL DISSOLVED SOLIDS

SURFICIAL AQUIFER



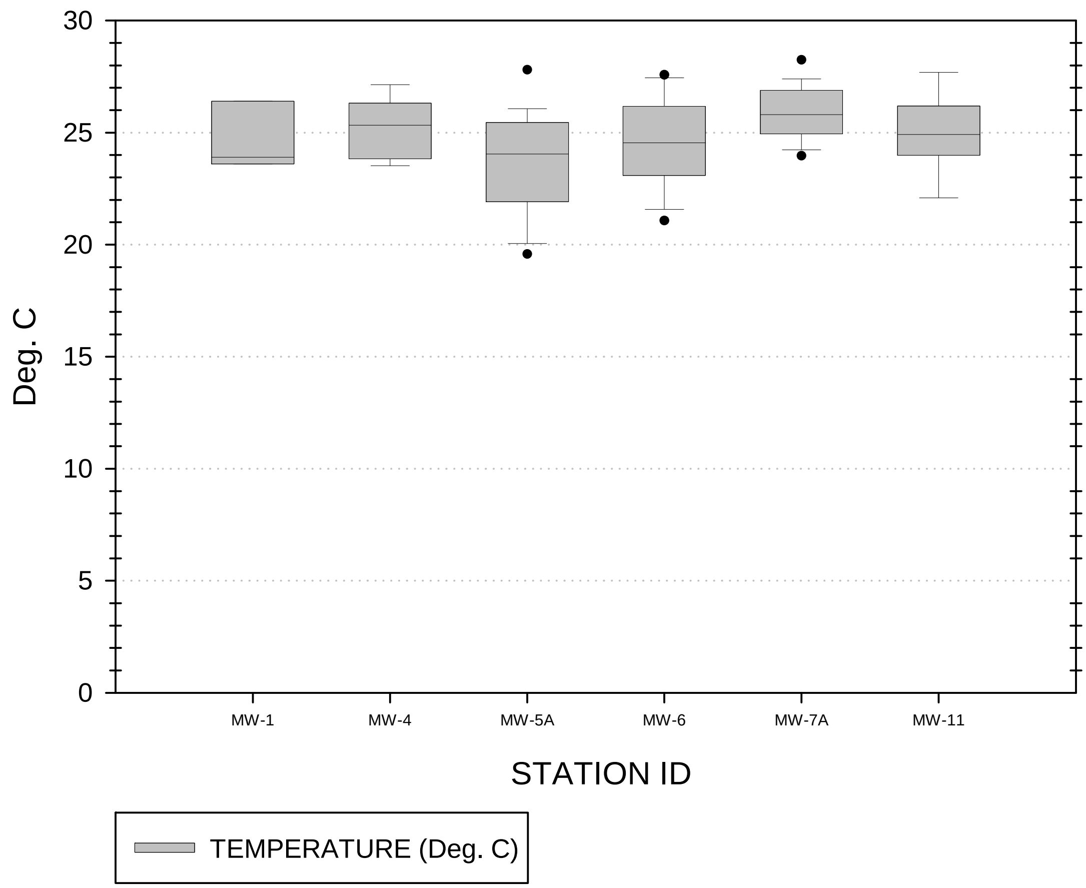
TOTAL DISSOLVED SOLIDS

SURFICIAL AQUIFER



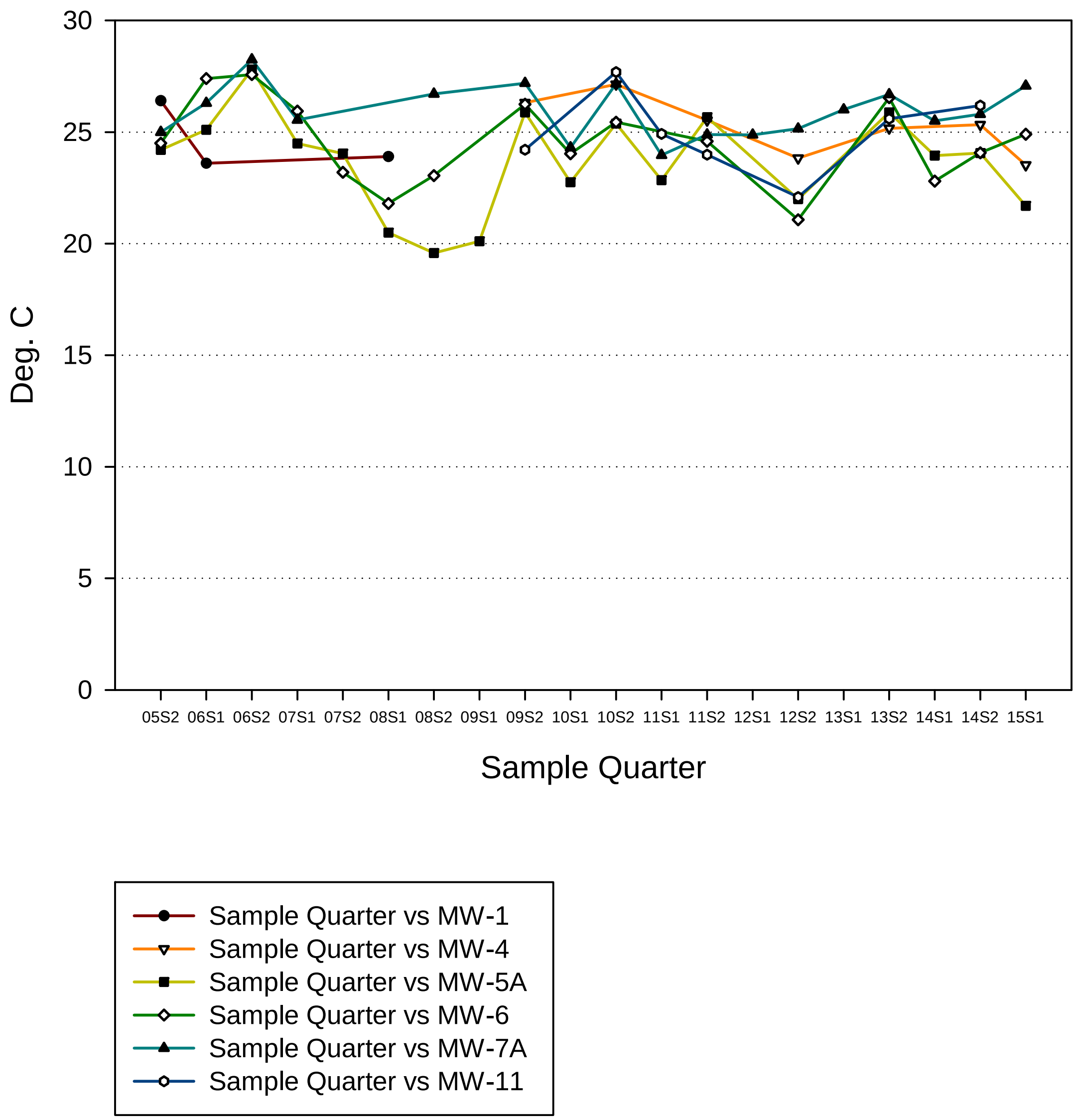
TEMPERATURE

SURFICIAL AQUIFER



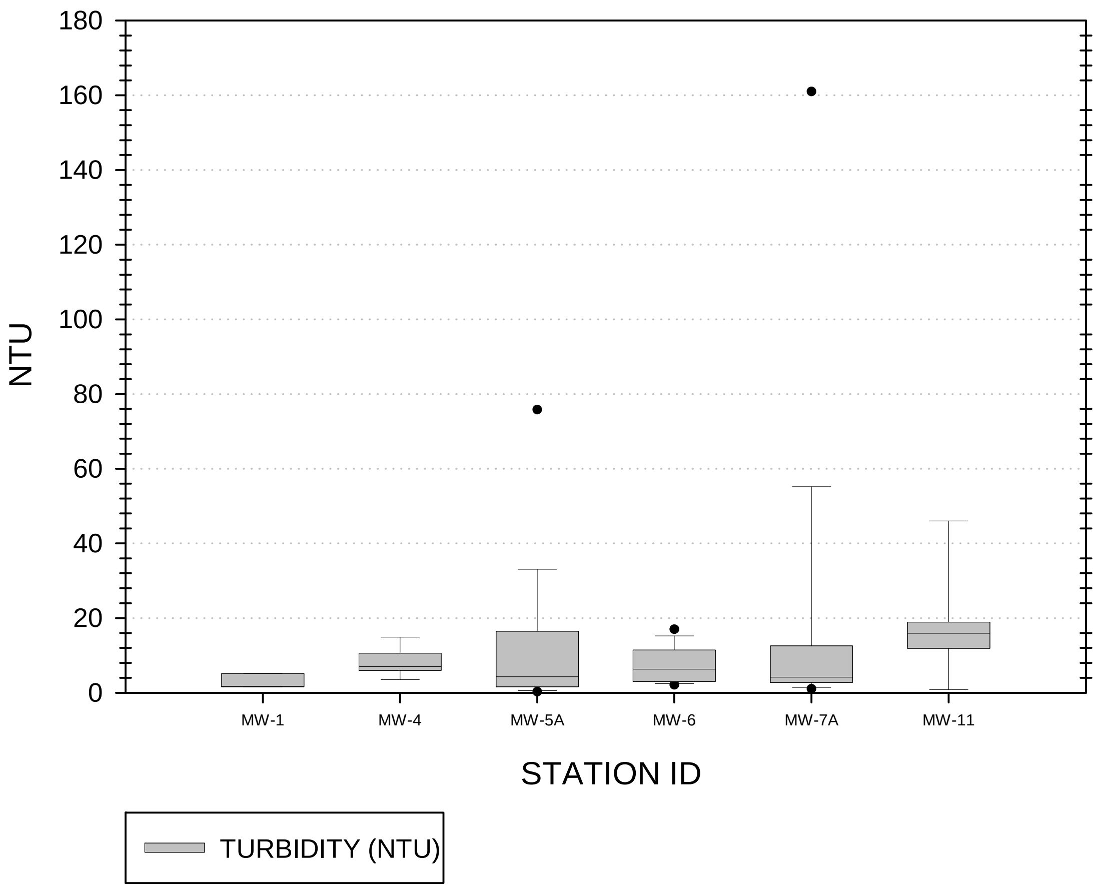
TEMPERATURE

SURFICIAL AQUIFER



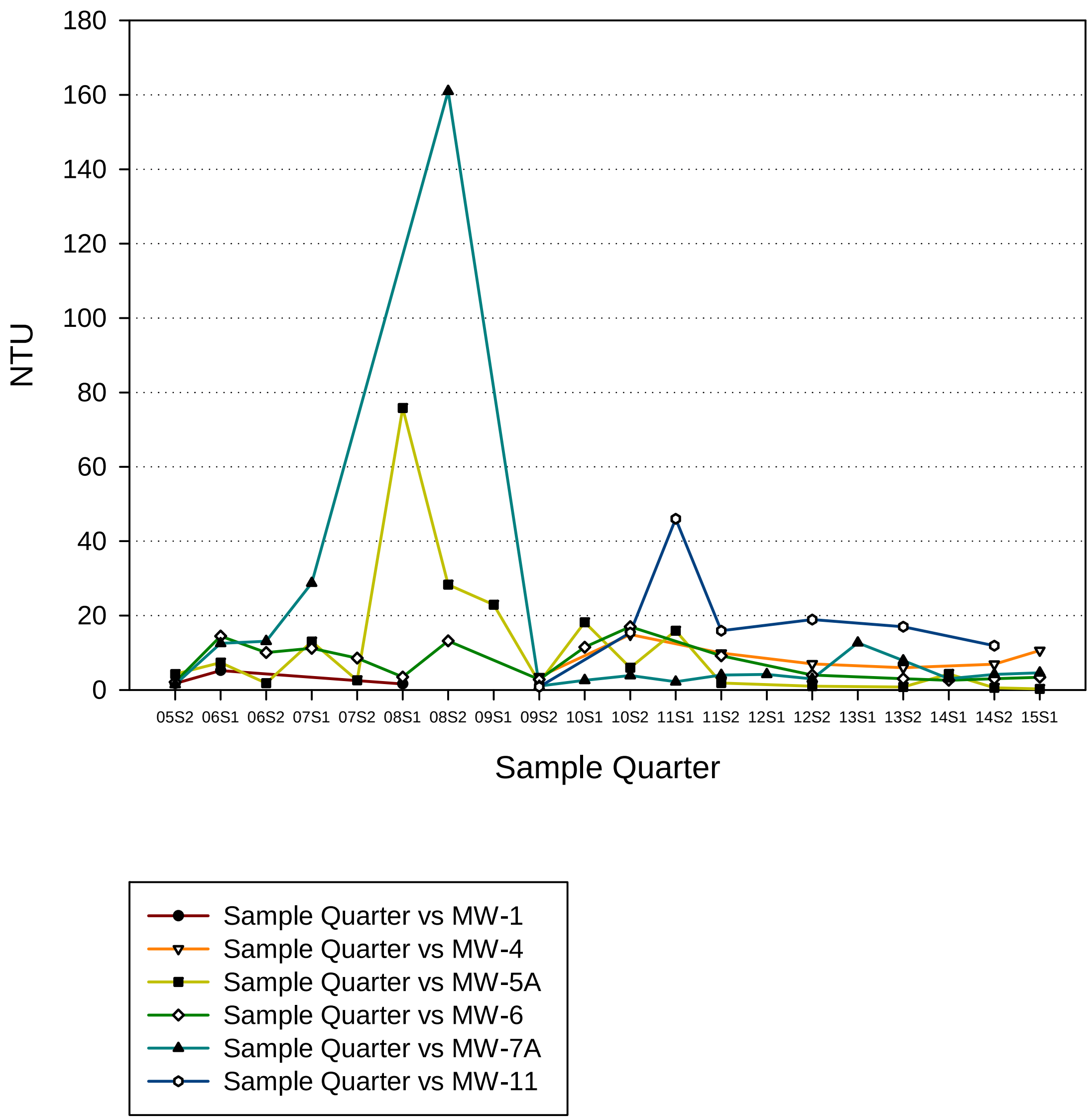
TURBIDITY

SURFICIAL AQUIFER



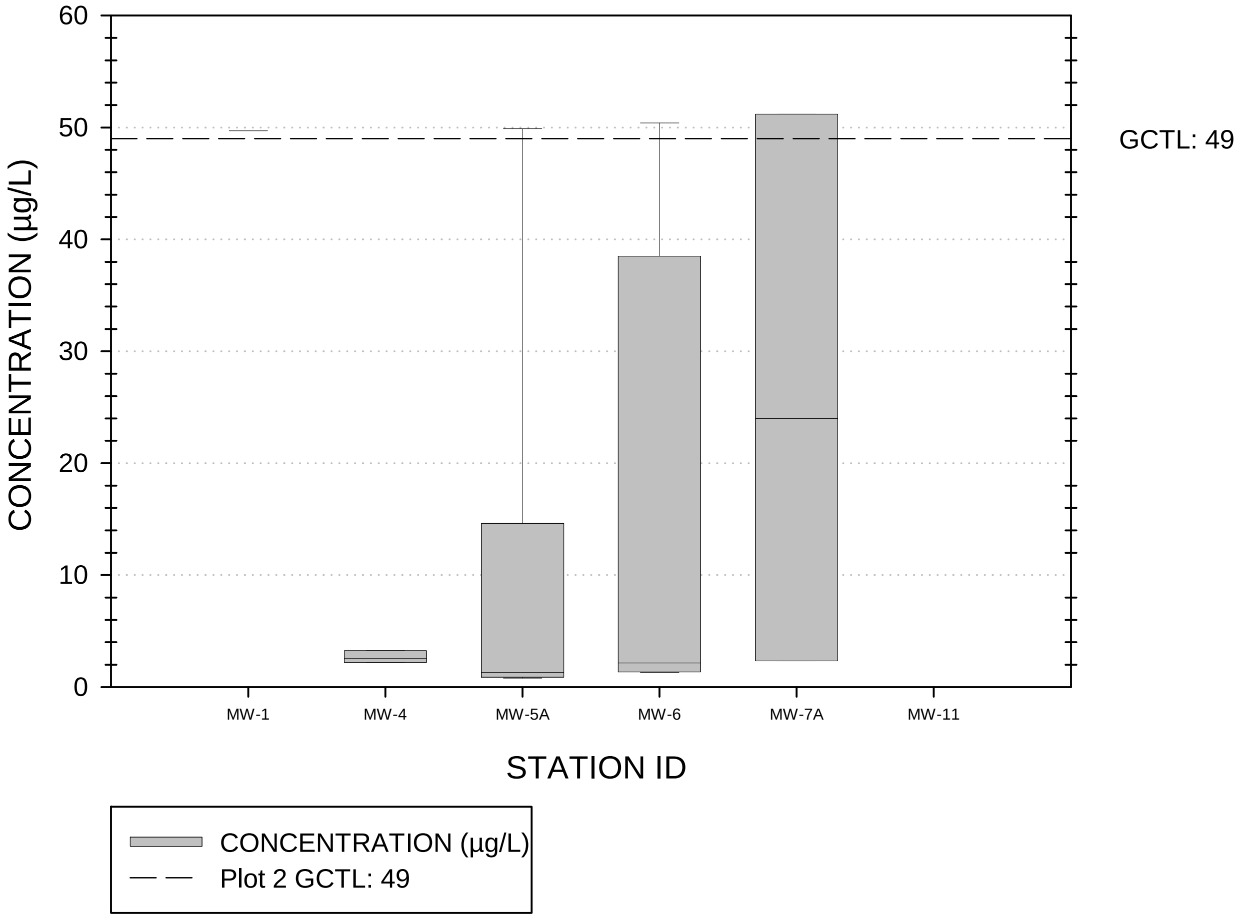
TURBIDITY

SURFICIAL AQUIFER



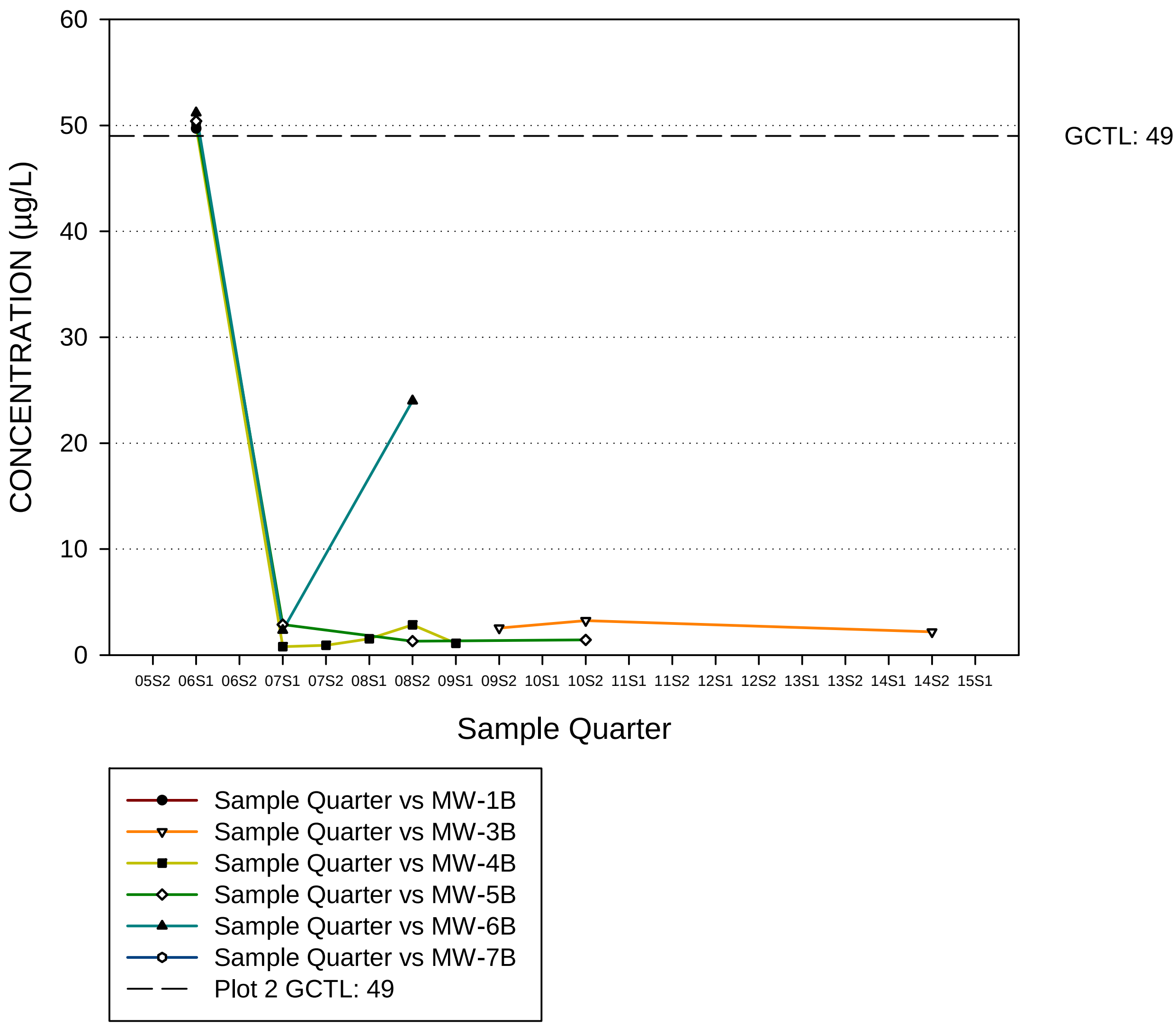
VANADIUM

SURFICIAL AQUIFER



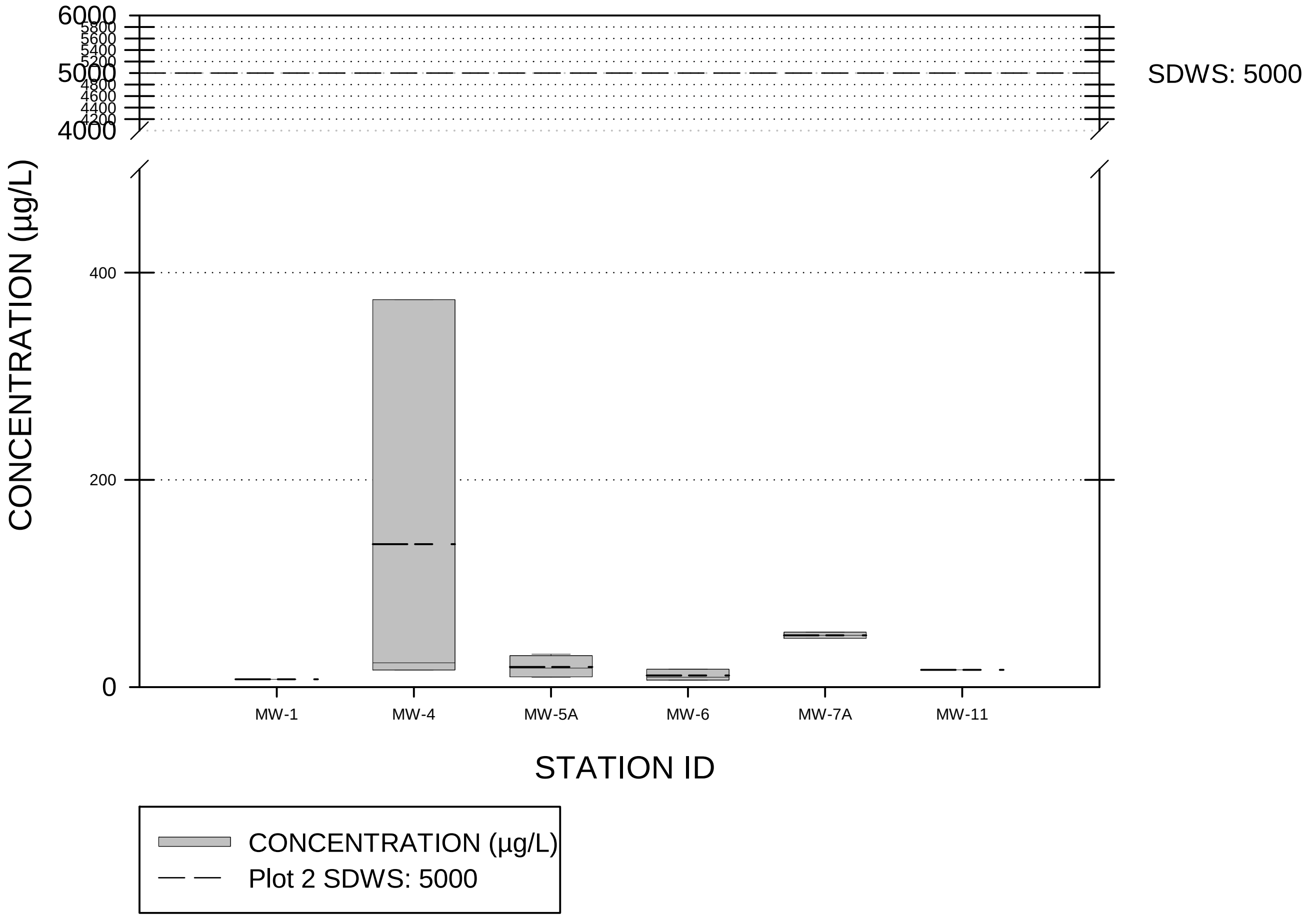
VANADIUM

SURFICIAL AQUIFER



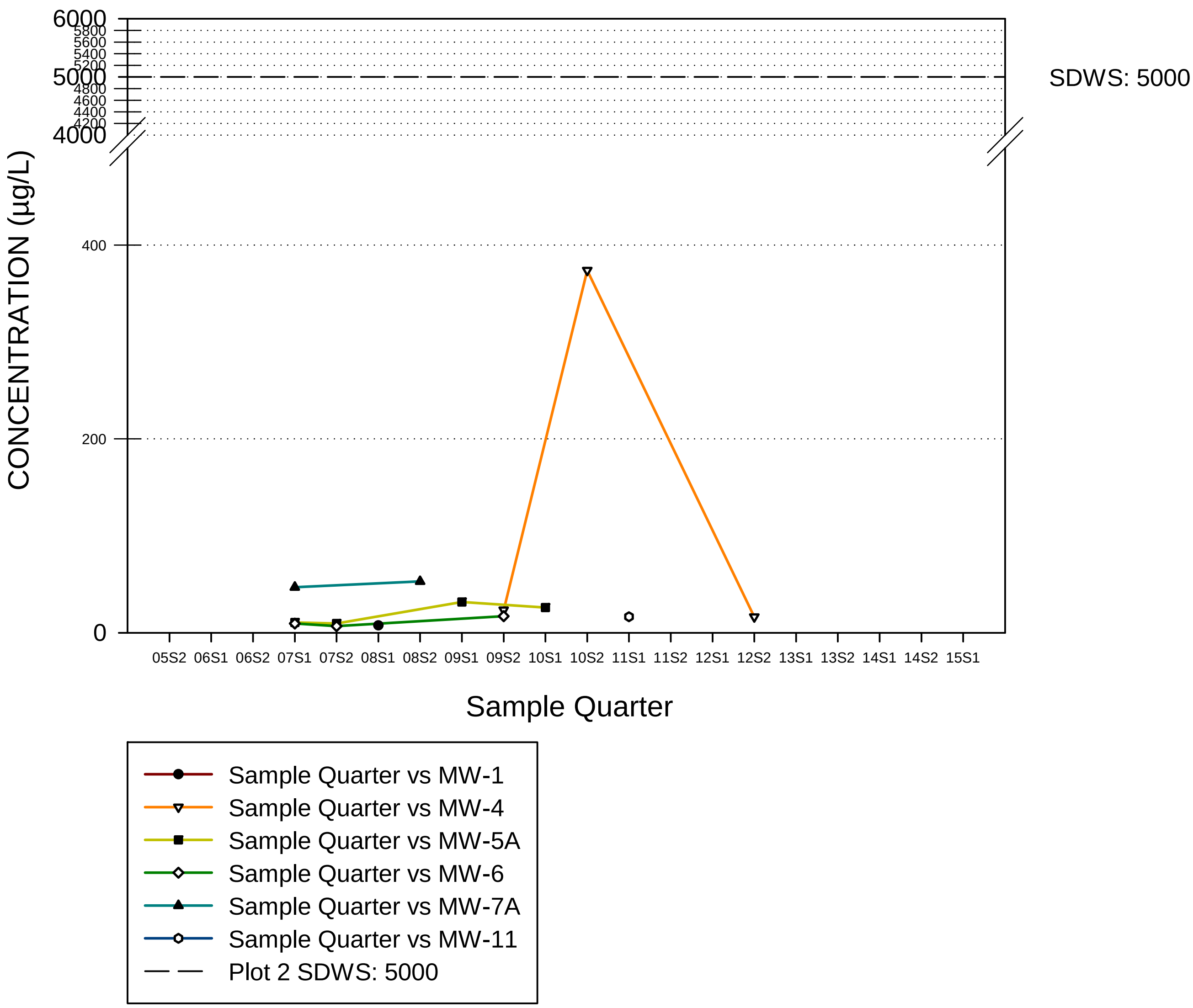
ZINC

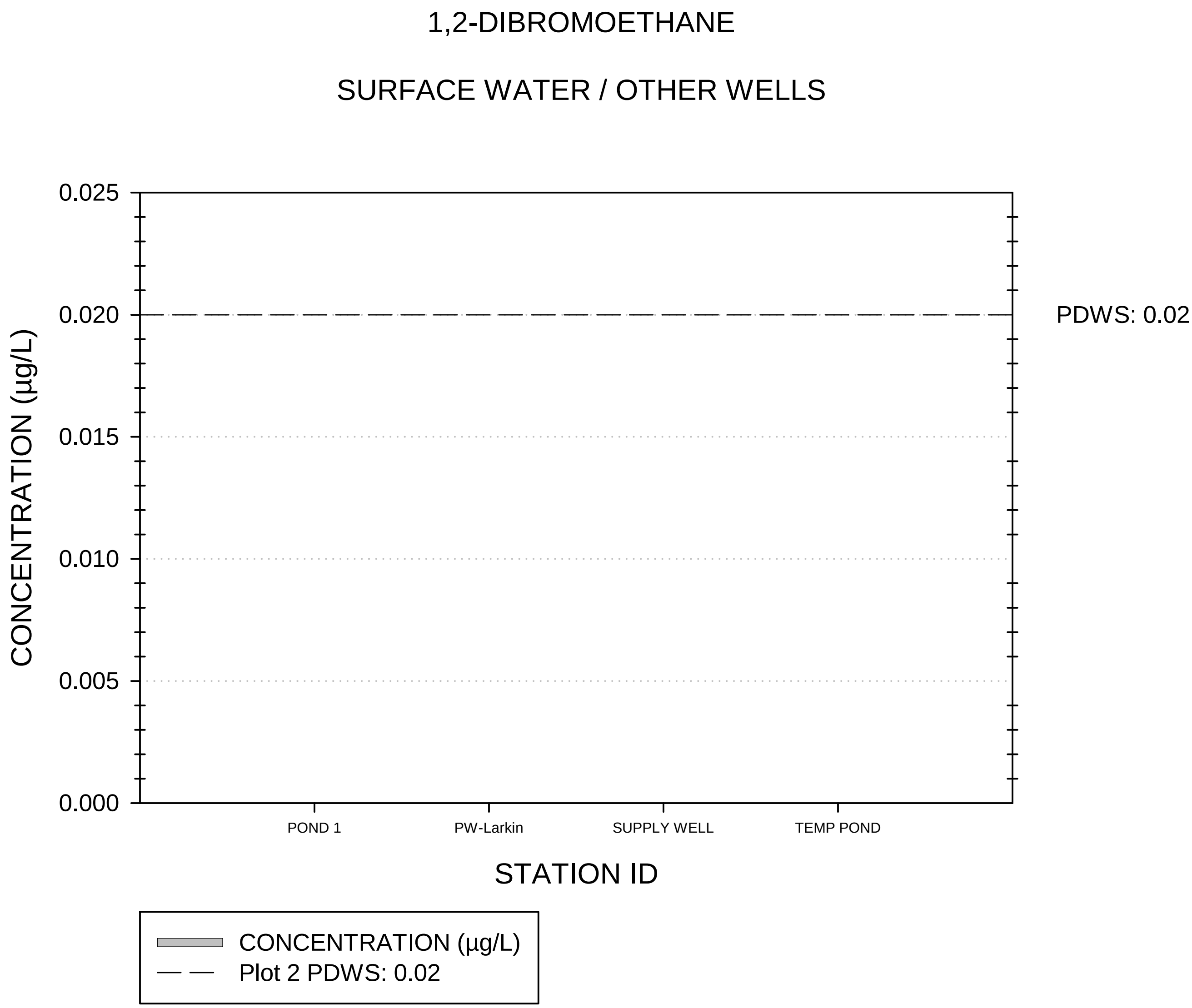
SURFICIAL AQUIFER



ZINC

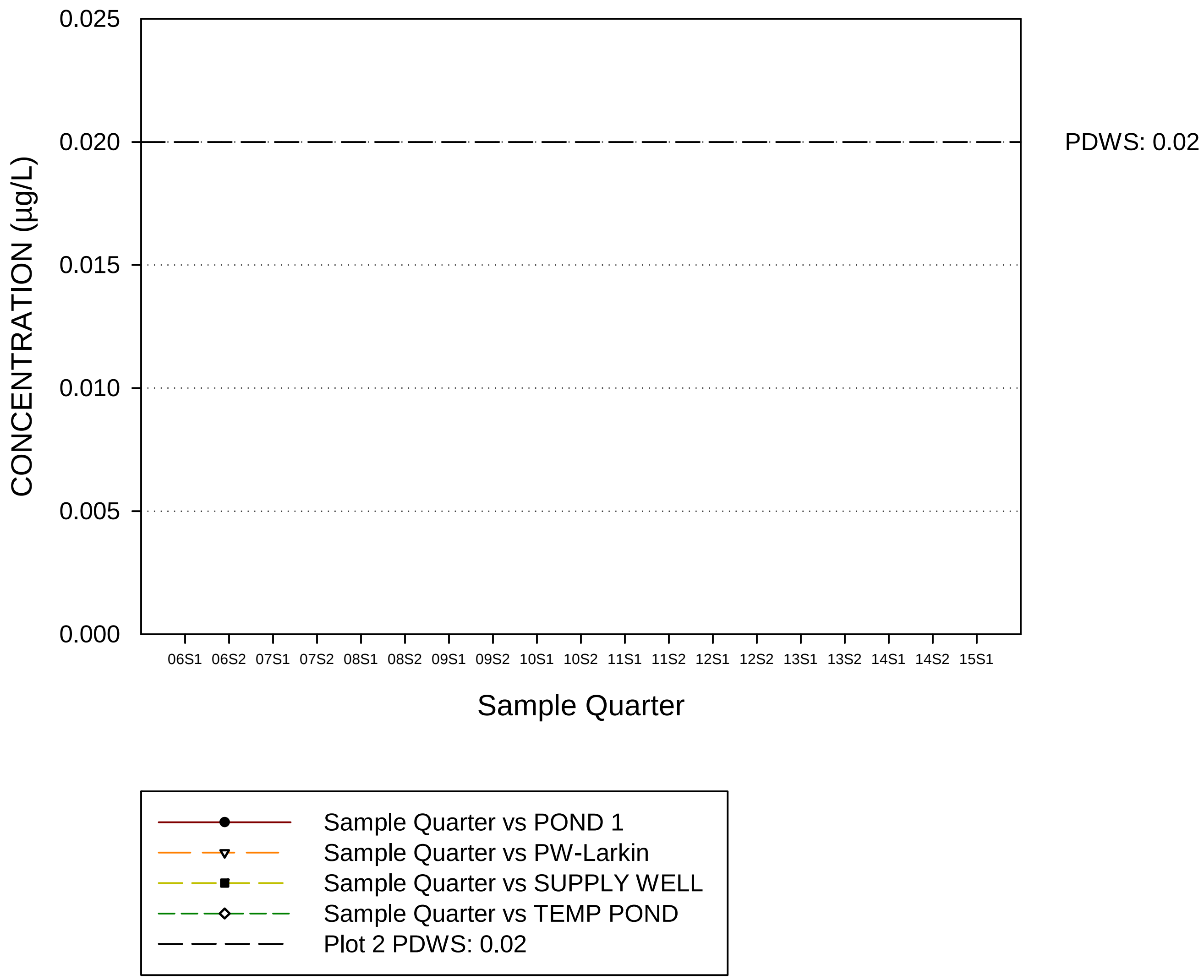
SURFICIAL AQUIFER

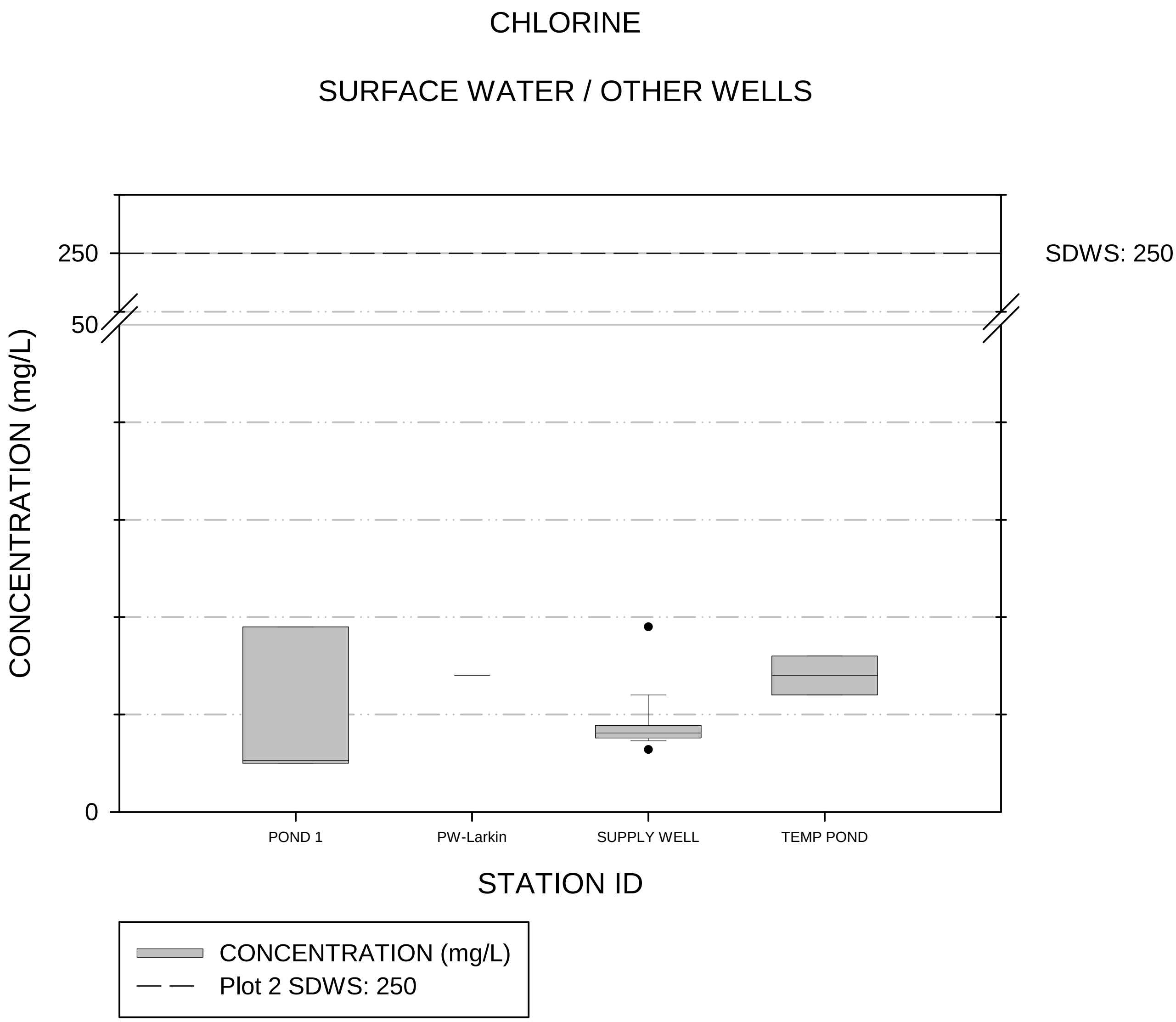


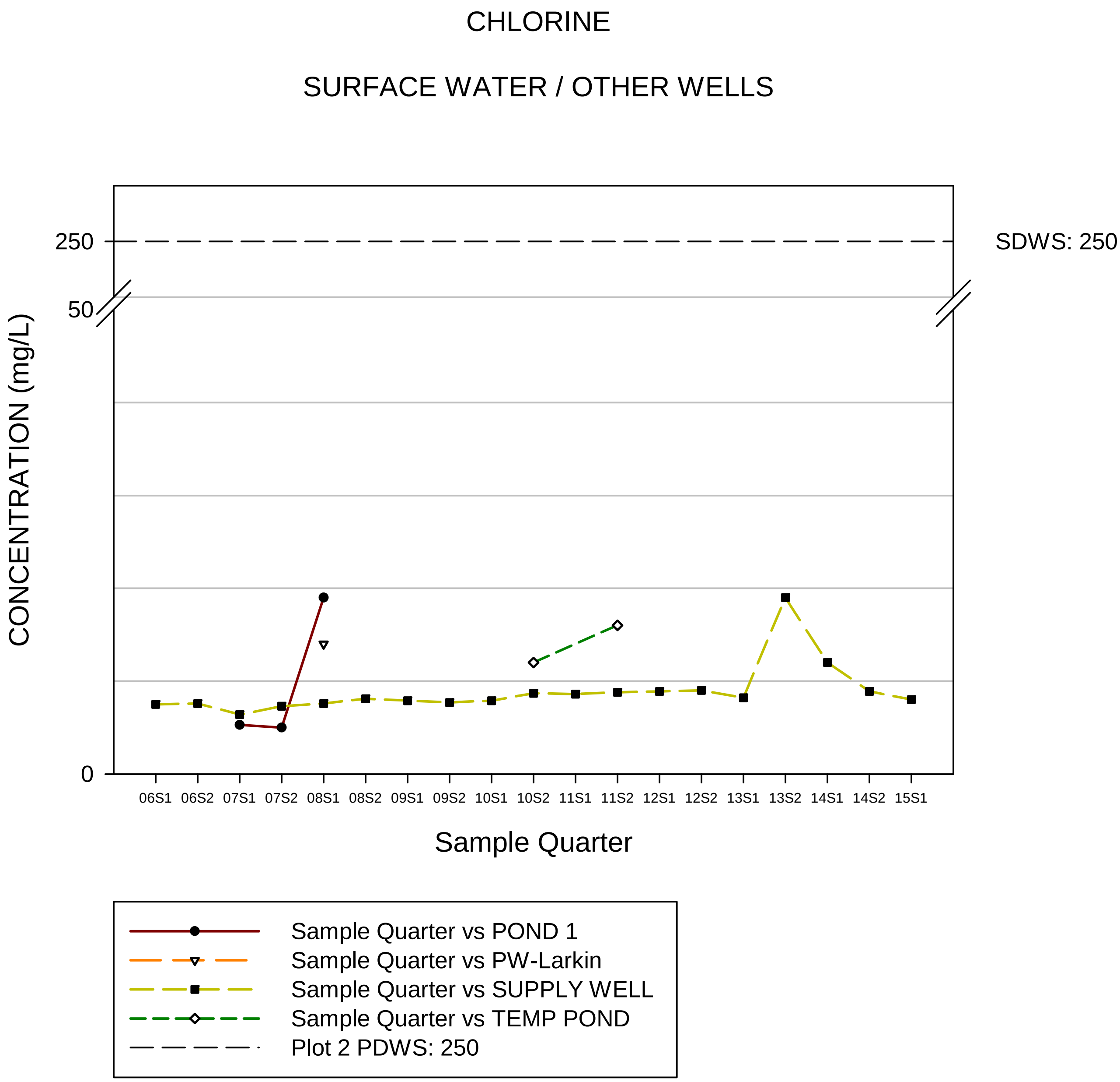

1,2-DIBROMOETHANE
SURFACE WATER / OTHER WELLS
CONCENTRATION (µg/L)
0.025
0.020
0.015
0.010
0.005
0.000
PDWS: 0.02
POND 1
PW-Larkin
SUPPLY WELL
TEMP POND
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 0.02

1,2-DIBROMOETHANE

SURFACE WATER / OTHER WELLS

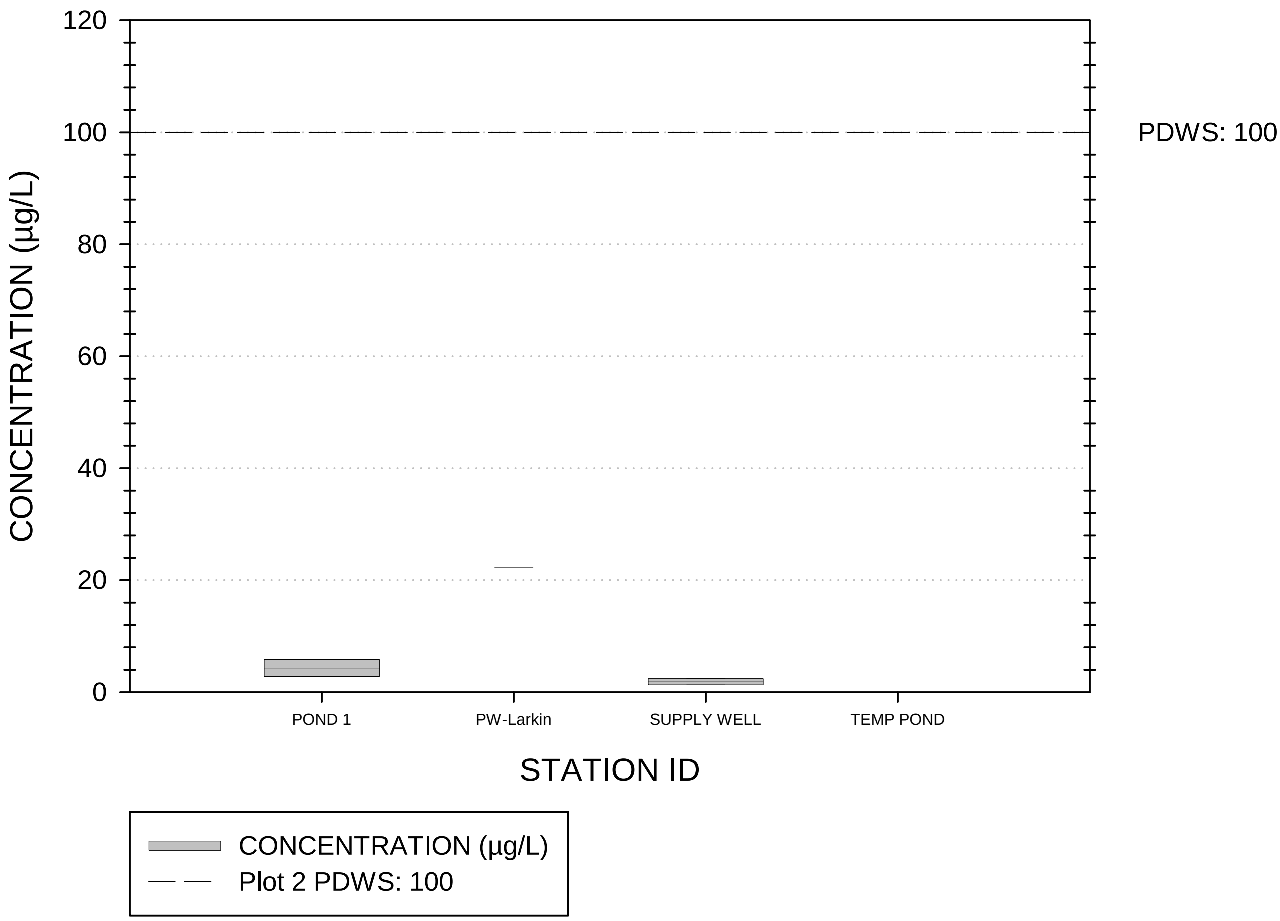


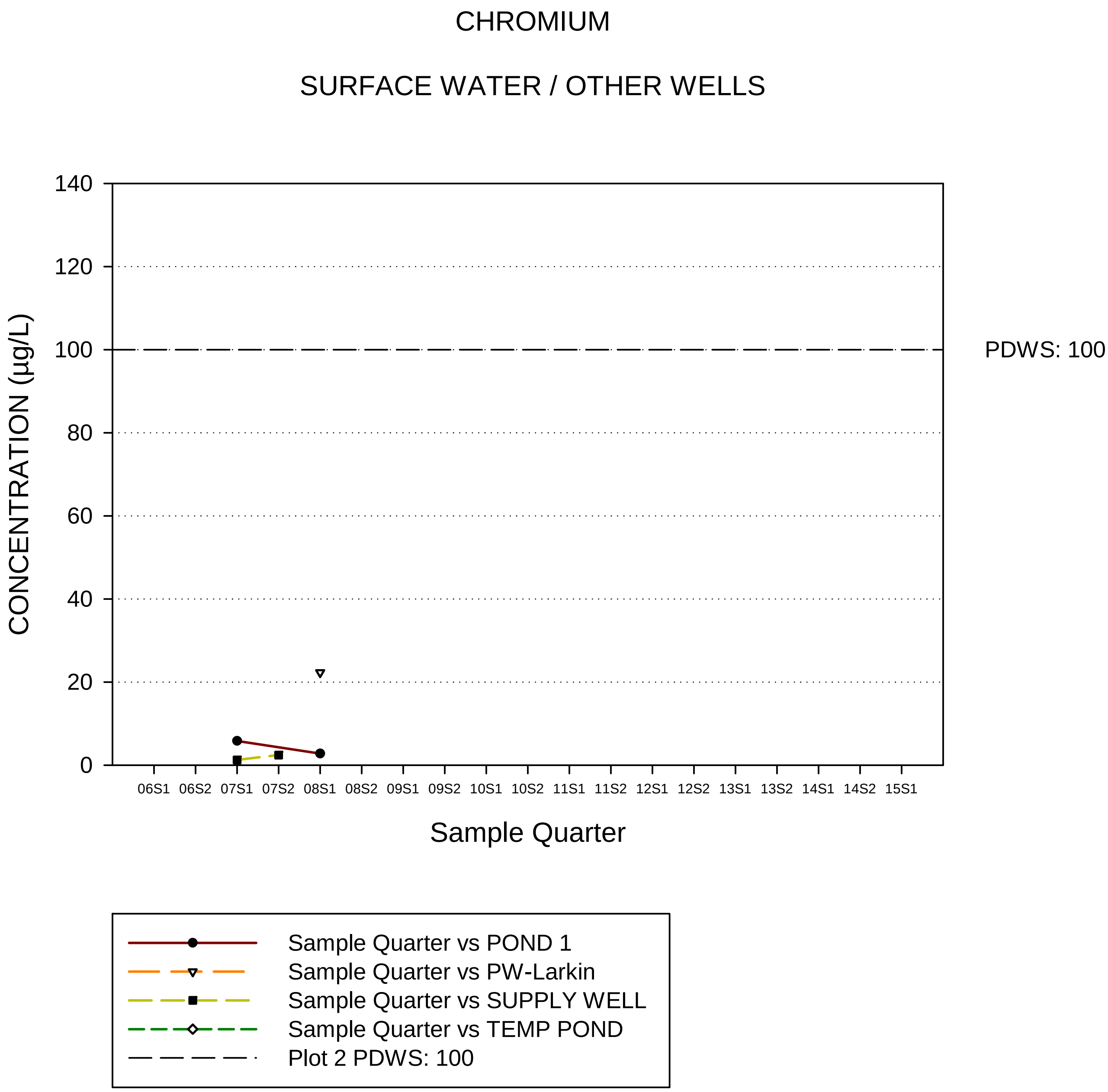

CHLORINE
SURFACE WATER / OTHER WELLS
250
50
0
SDWS: 250
CONCENTRATION (mg/L)
POND 1
PW-Larkin
SUPPLY WELL
TEMP POND
STATION ID
CONCENTRATION (mg/L)
Plot 2 SDWS: 250


CHLORINE
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
250
50
0
SDWS: 250
06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Plot 2 PDWS: 250

CHROMIUM

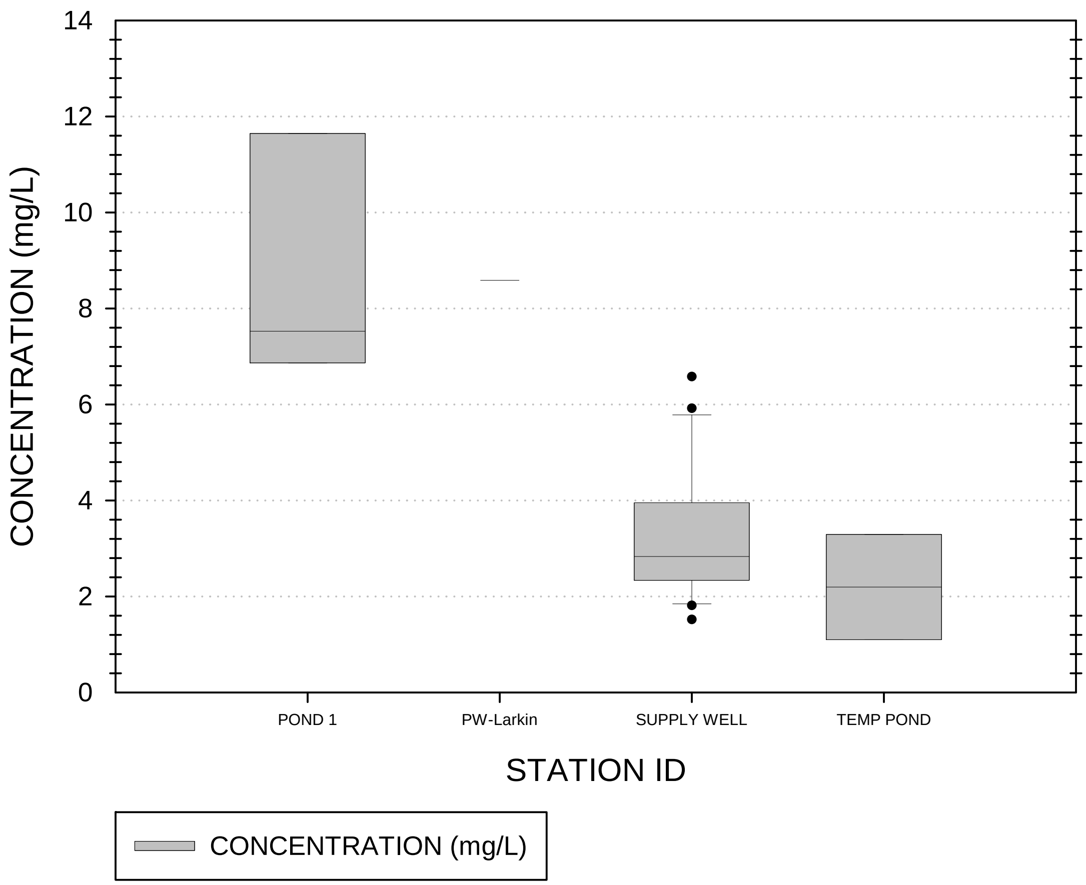
SURFACE WATER / OTHER WELLS

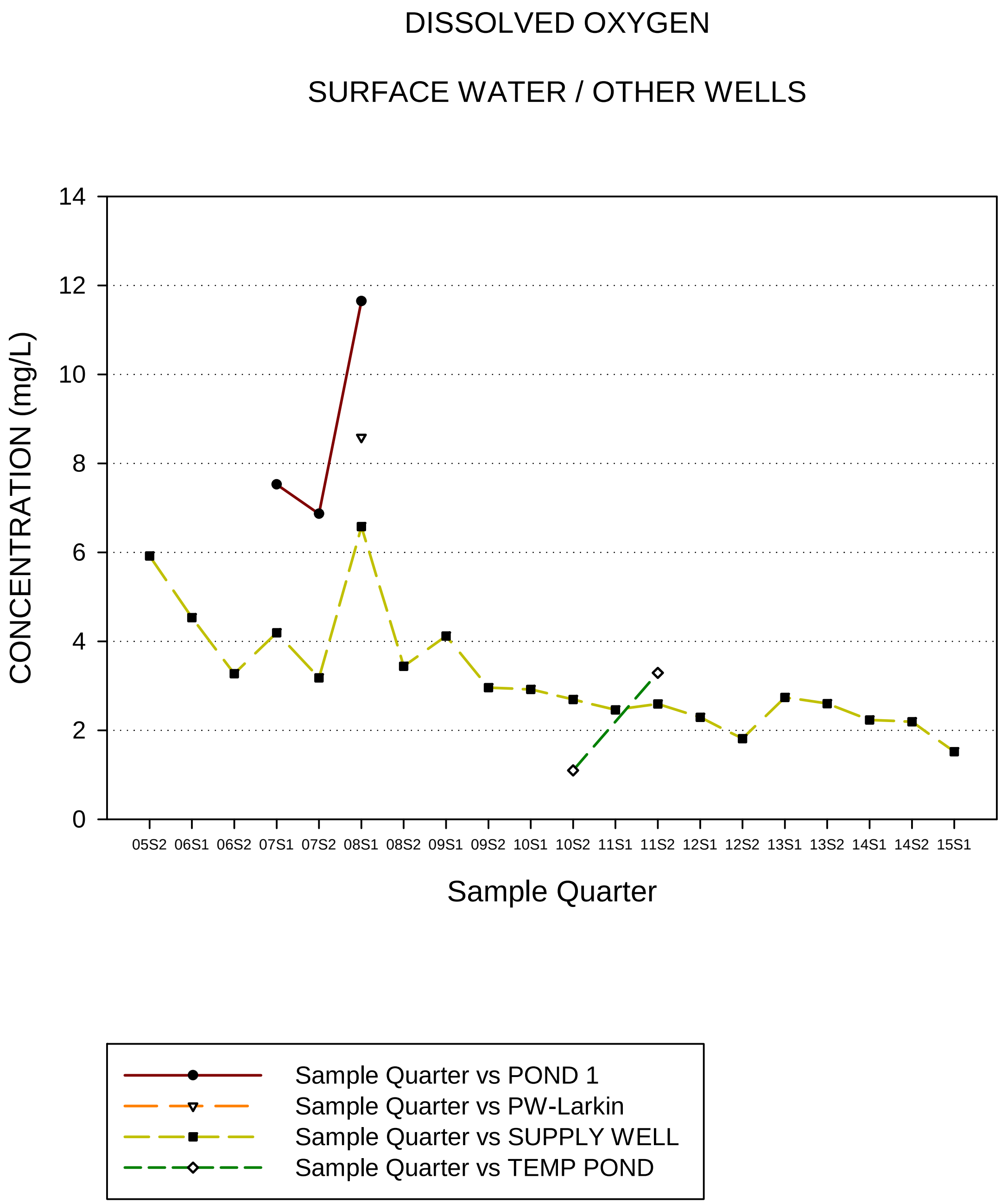


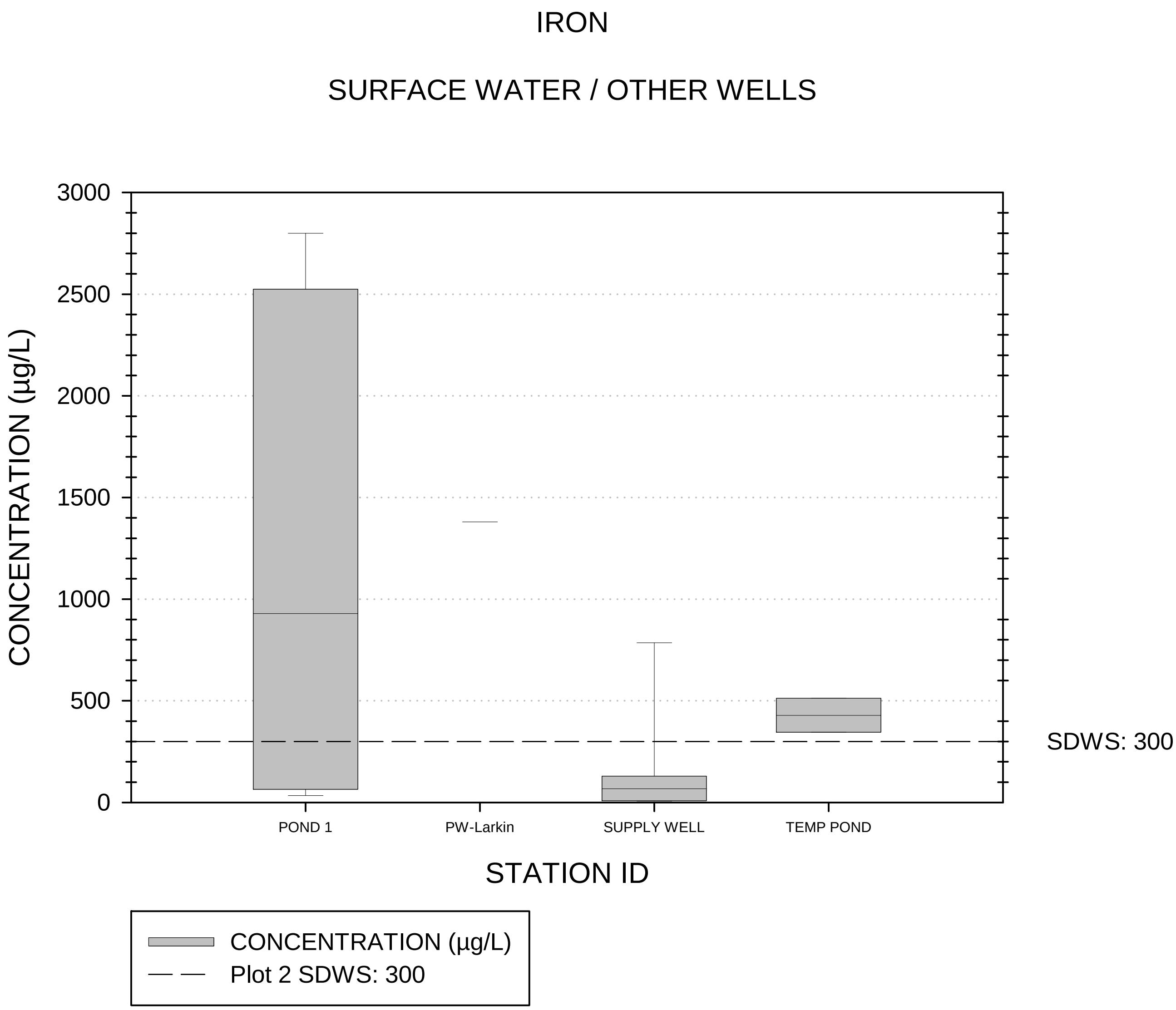

CHROMIUM
SURFACE WATER / OTHER WELLS
CONCENTRATION (µg/L)
140
120
100
80
60
40
20
0
PDWS: 100
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Plot 2 PDWS: 100

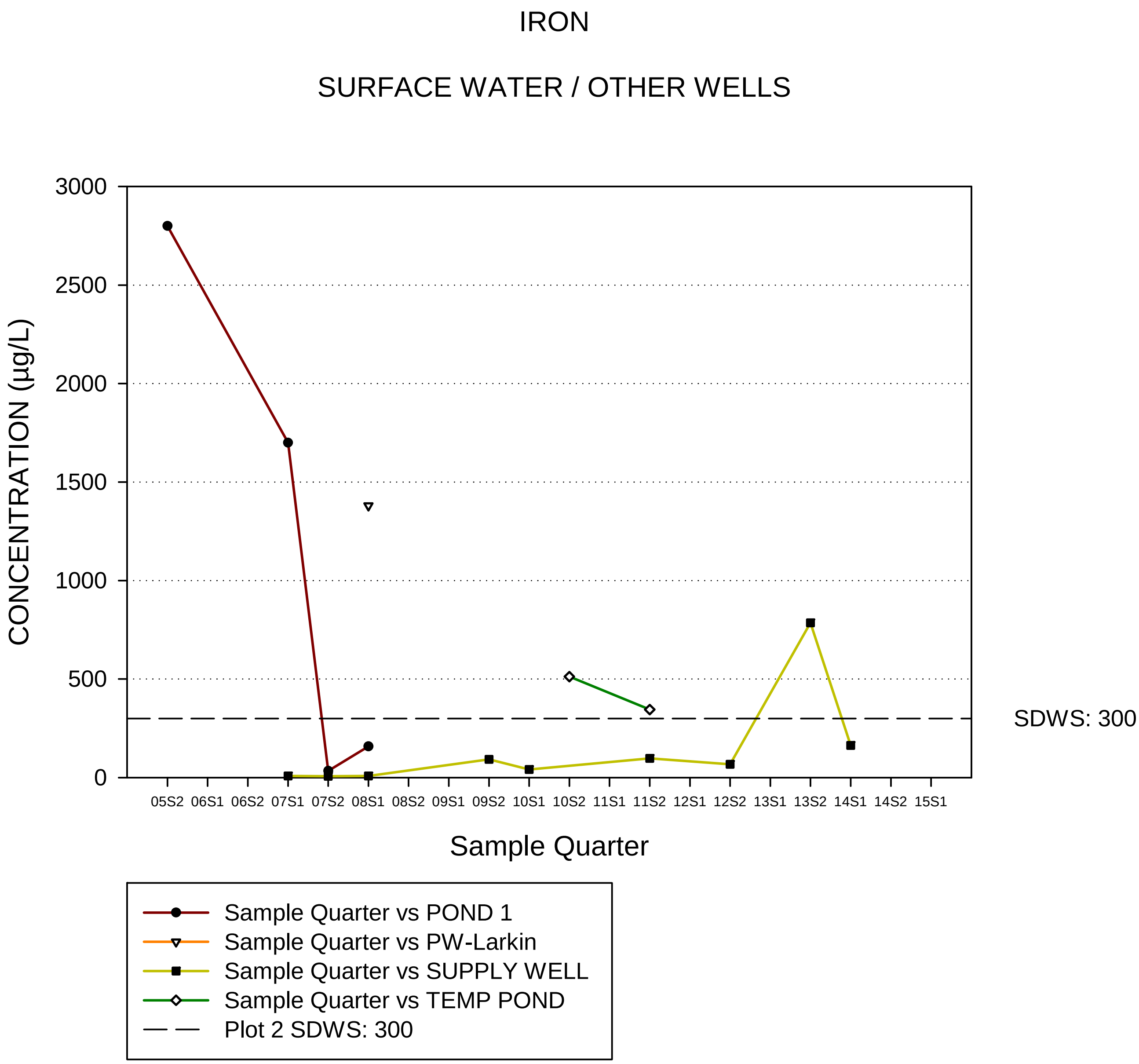
DISSOLVED OXYGEN

SURFACE WATER / OTHER WELLS




DISSOLVED OXYGEN
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
0
2
4
6
8
10
12
14
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND

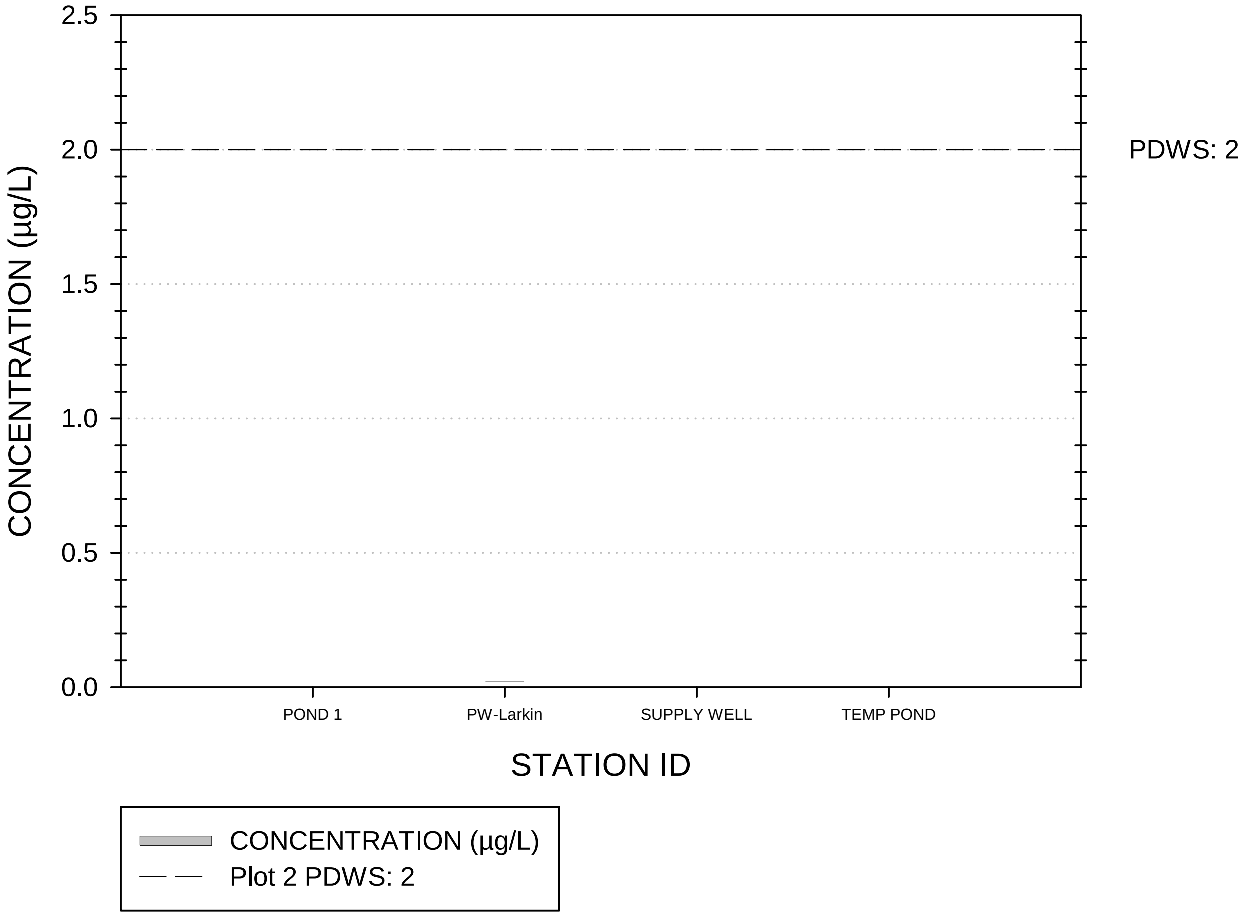

IRON
SURFACE WATER / OTHER WELLS
3000
2500
2000
1500
1000
500
0
CONCENTRATION (µg/L)
SDWS: 300
POND 1
PW-Larkin
SUPPLY WELL
TEMP POND
STATION ID
CONCENTRATION (µg/L)
Plot 2 SDWS: 300

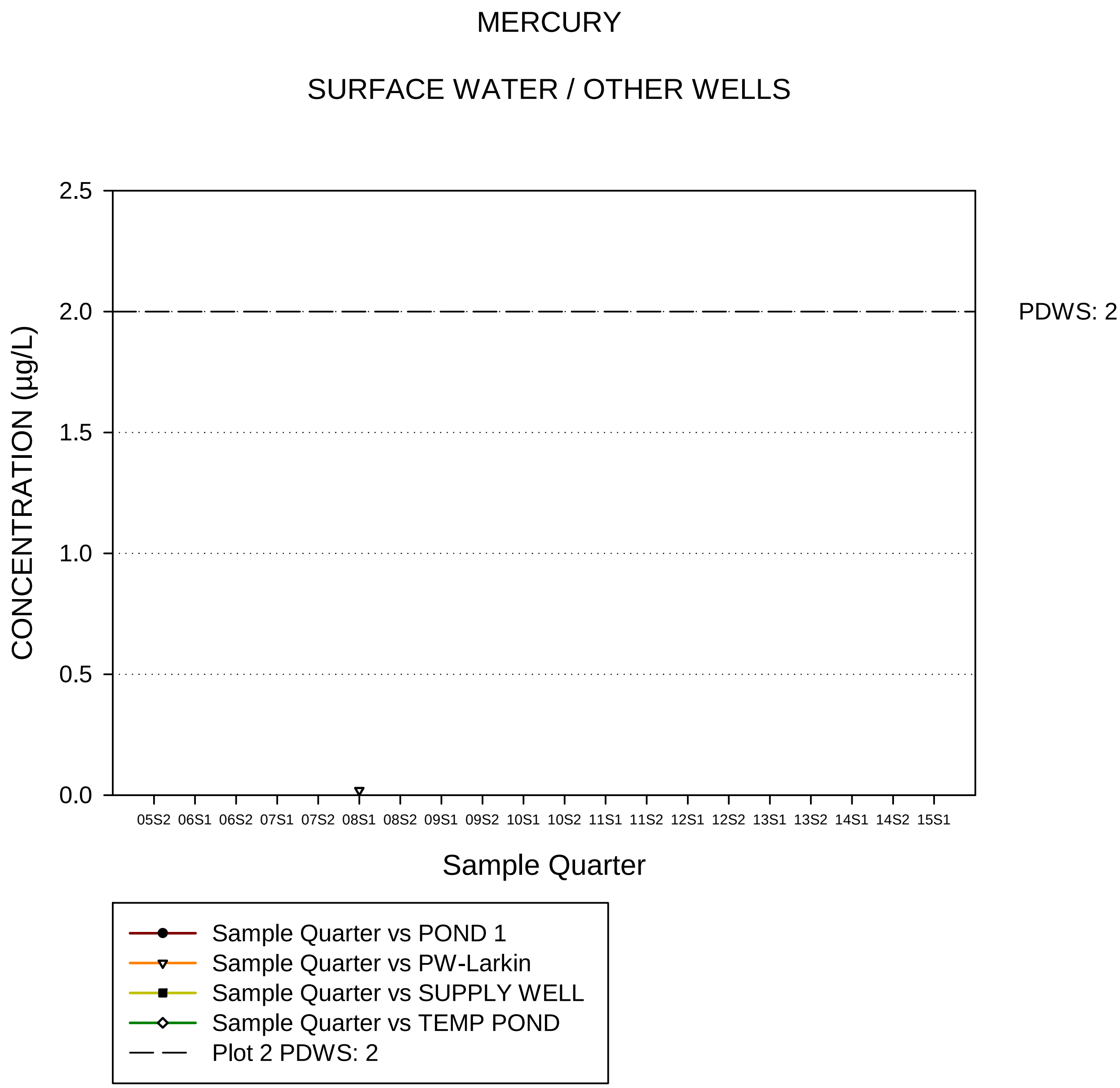


IRON
SURFACE WATER / OTHER WELLS
CONCENTRATION (µg/L)
3000
2500
2000
1500
1000
500
0
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
SDWS: 300
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Plot 2 SDWS: 300

MERCURY

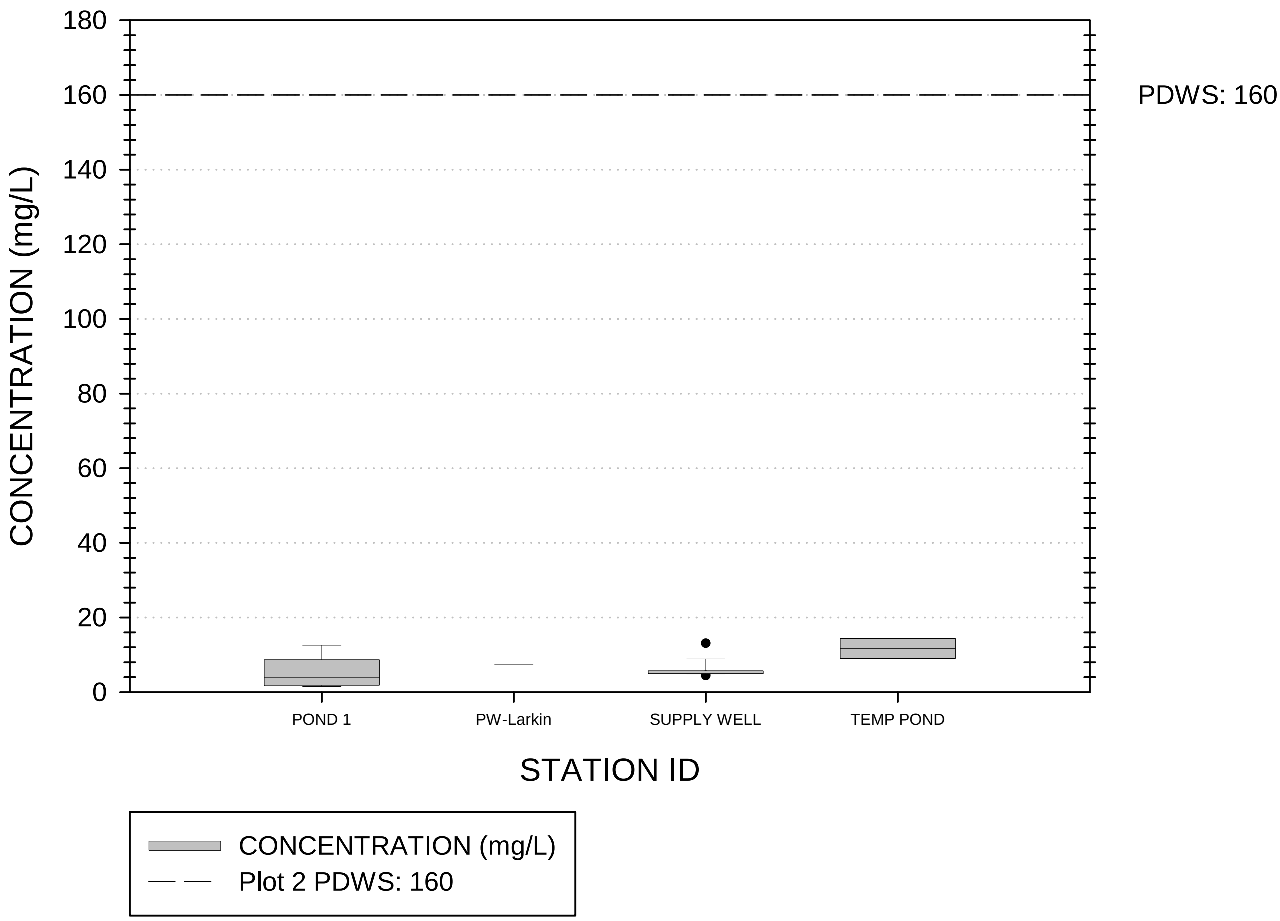
SURFACE WATER / OTHER WELLS




MERCURY
SURFACE WATER / OTHER WELLS
CONCENTRATION (µg/L)
2.5
2.0
1.5
1.0
0.5
0.0
PDWS: 2
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Plot 2 PDWS: 2

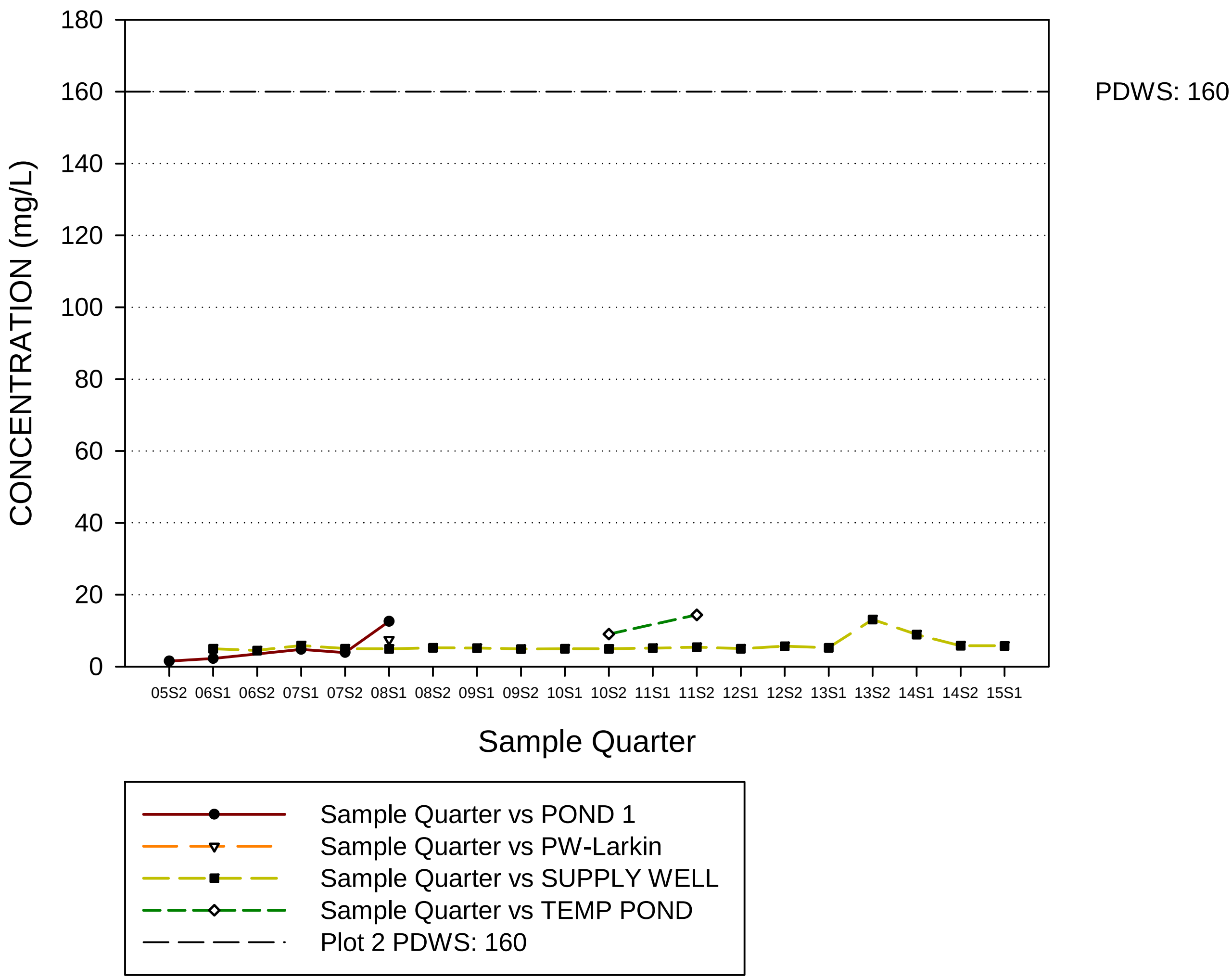
SODIUM

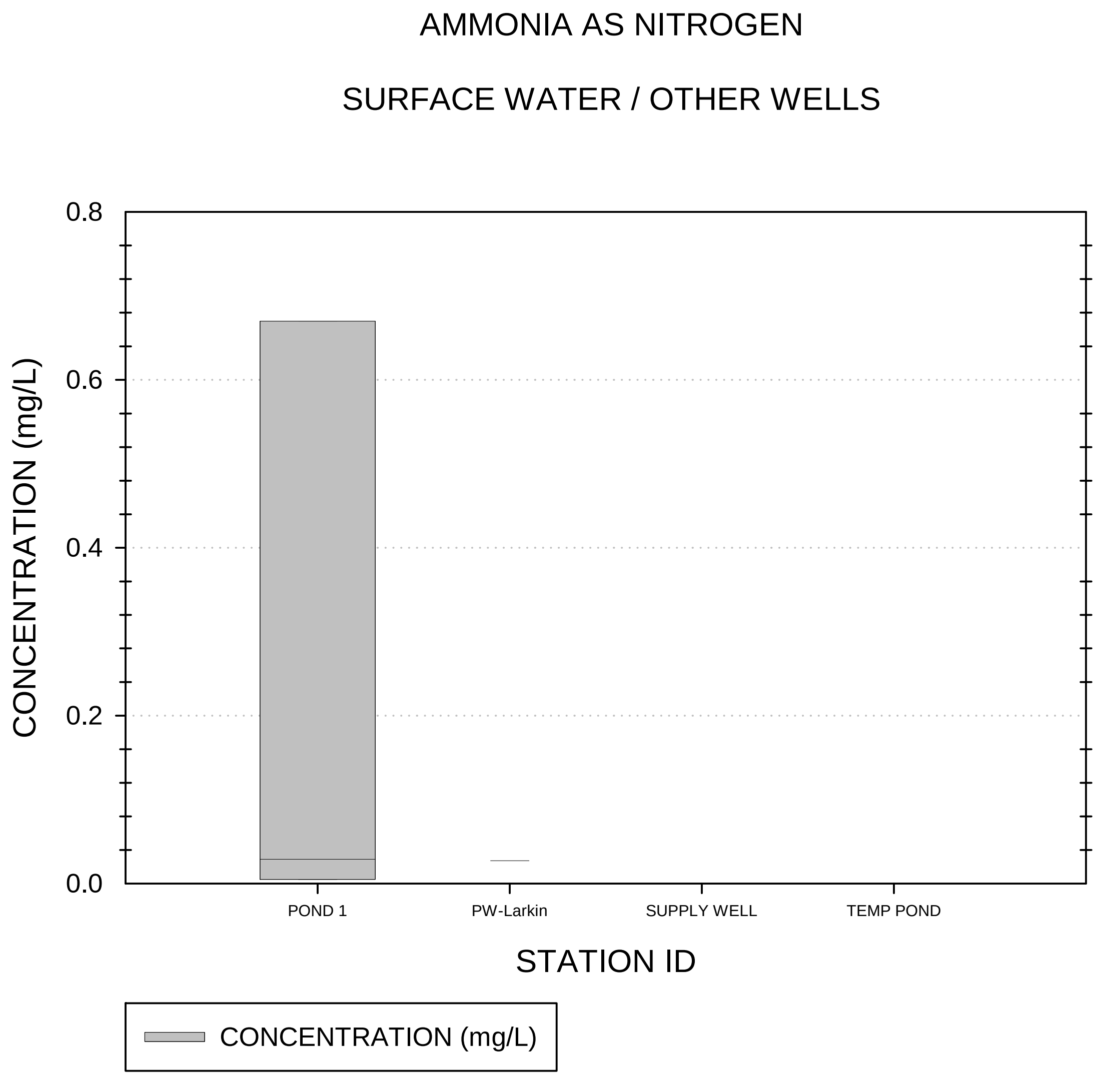
SURFACE WATER / OTHER WELLS

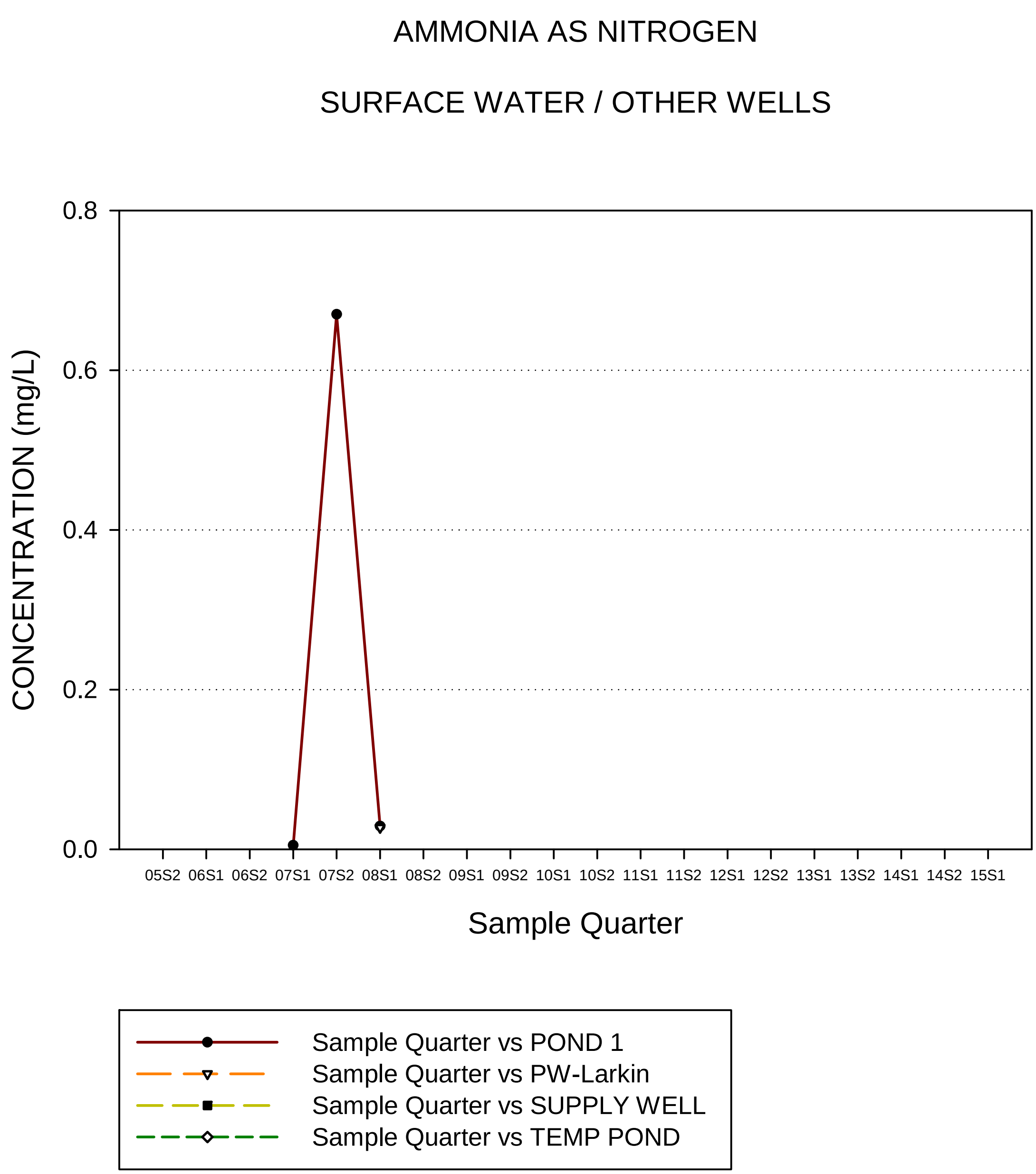


SODIUM

SURFACE WATER / OTHER WELLS

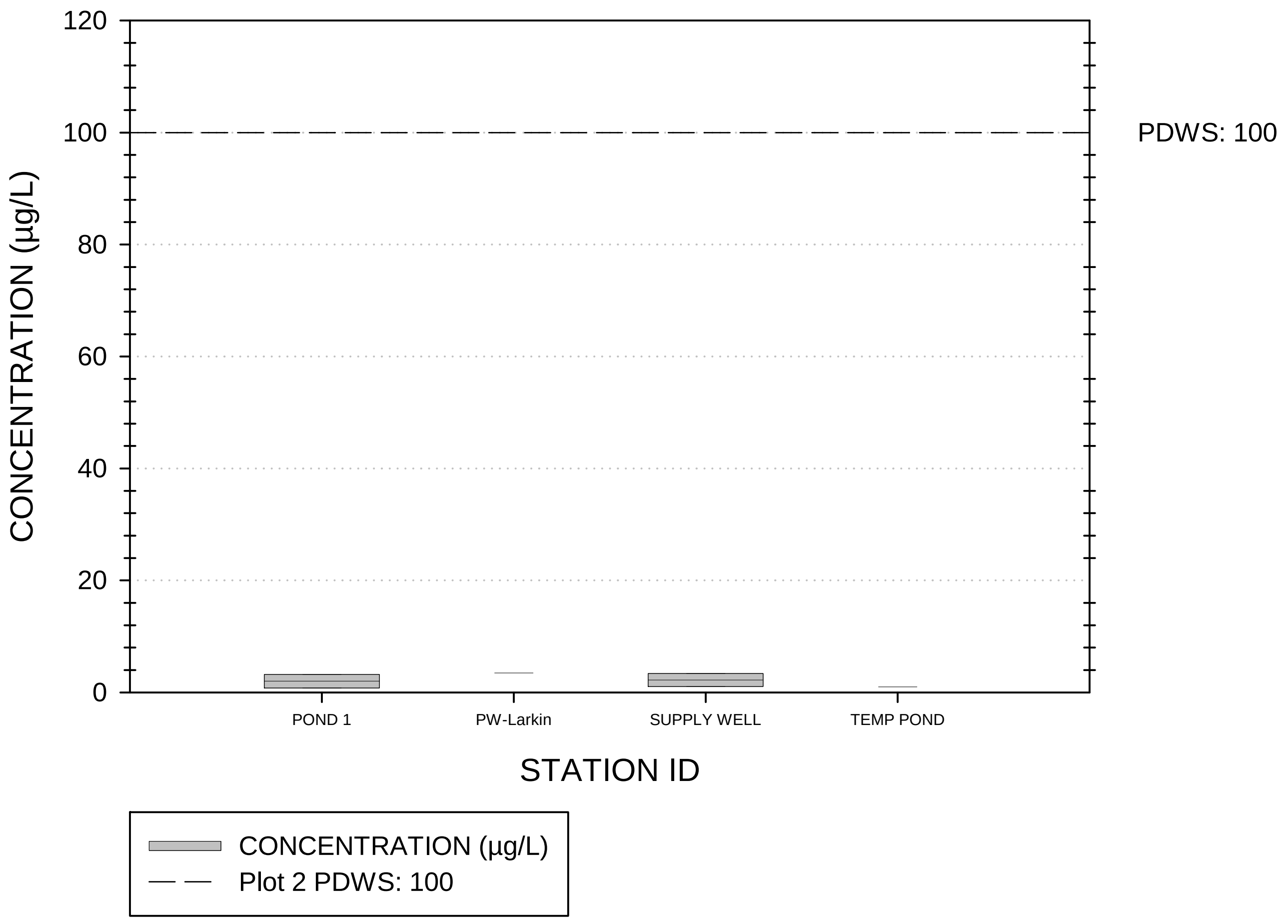



AMMONIA AS NITROGEN
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
0.8
0.6
0.4
0.2
0.0
POND 1
PW-Larkin
SUPPLY WELL
TEMP POND
STATION ID
CONCENTRATION (mg/L)


AMMONIA AS NITROGEN
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
0.0
0.2
0.4
0.6
0.8
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND

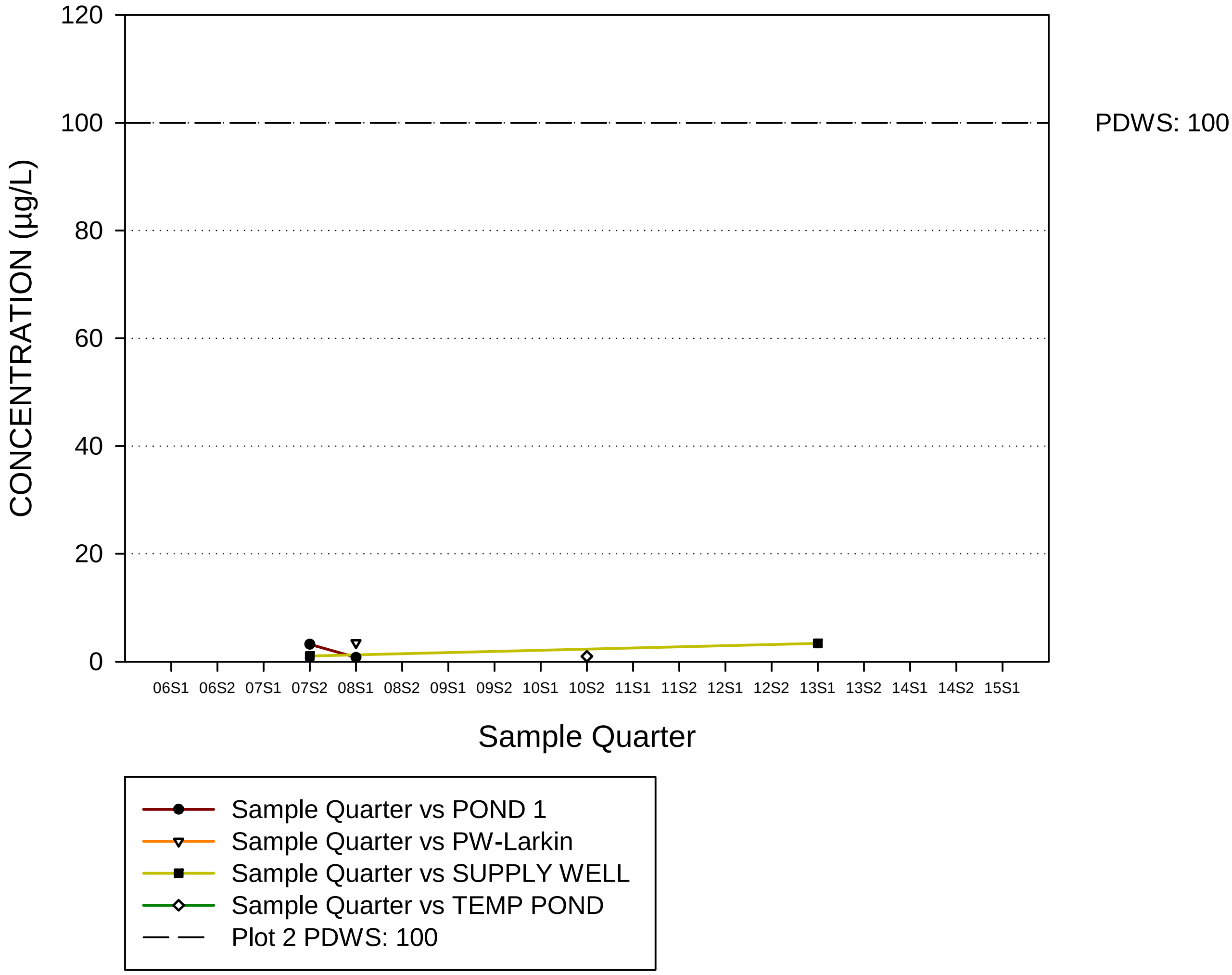
NICKEL

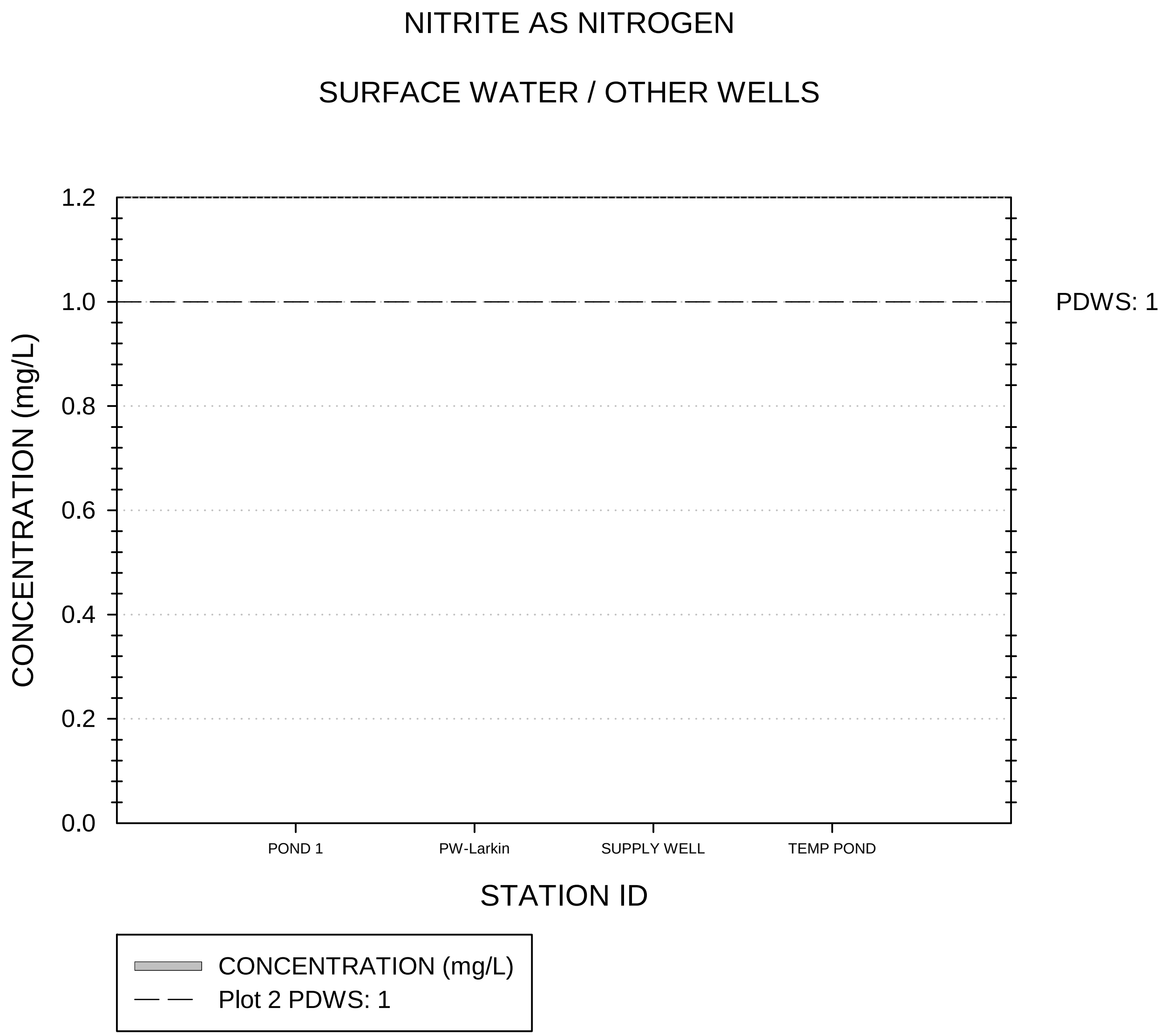
SURFACE WATER / OTHER WELLS



NICKEL

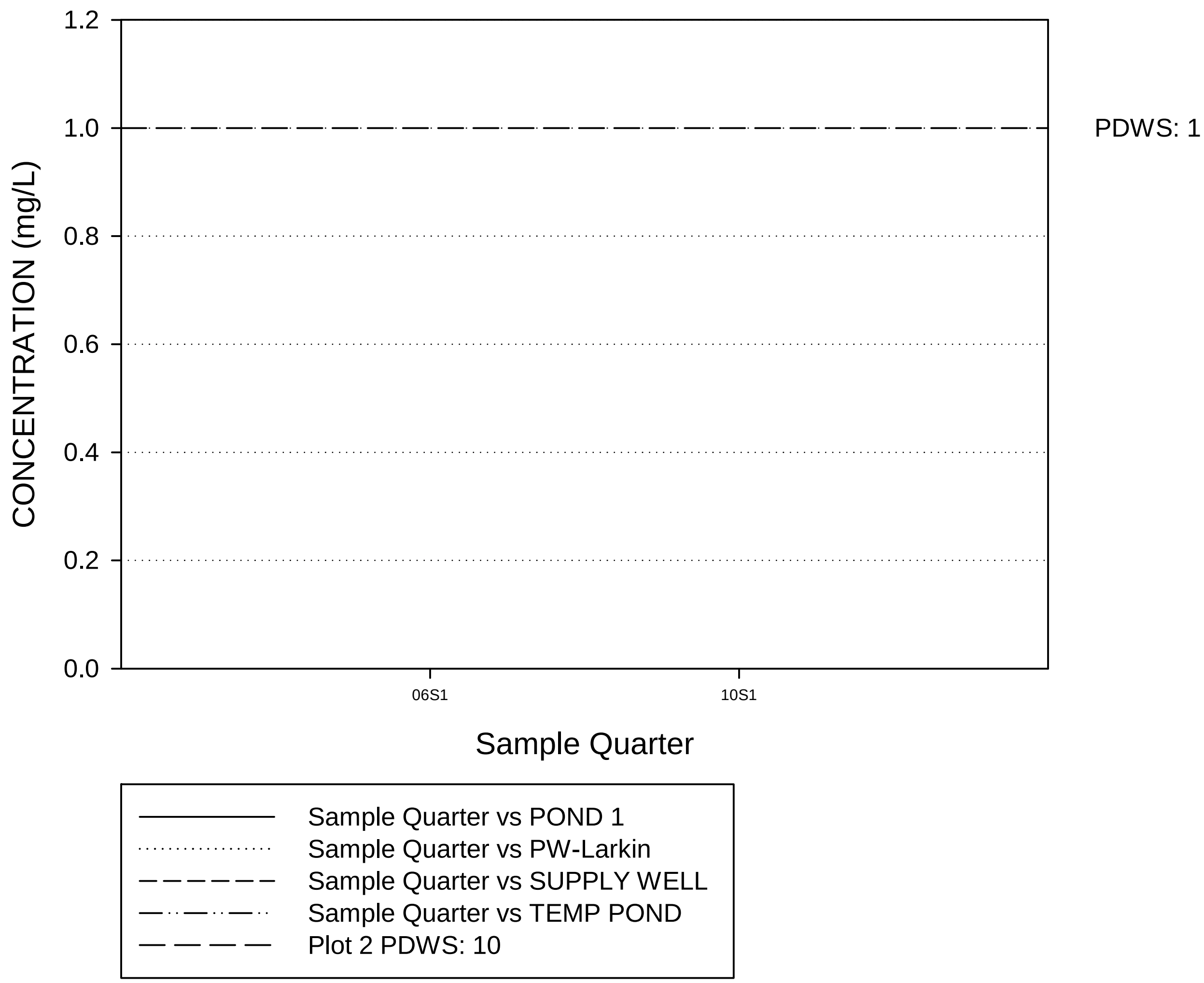
SURFACE WATER / OTHER WELLS

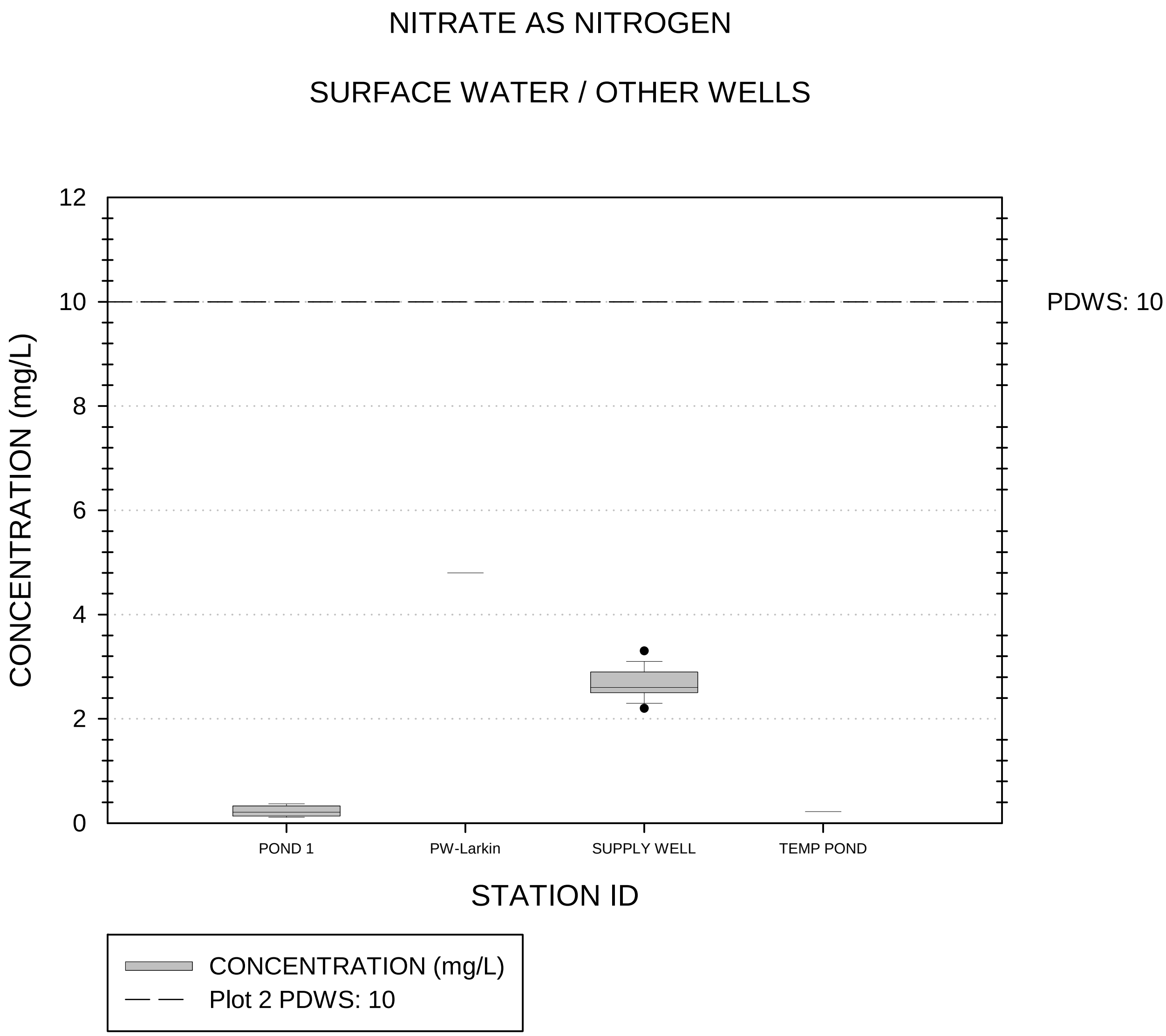


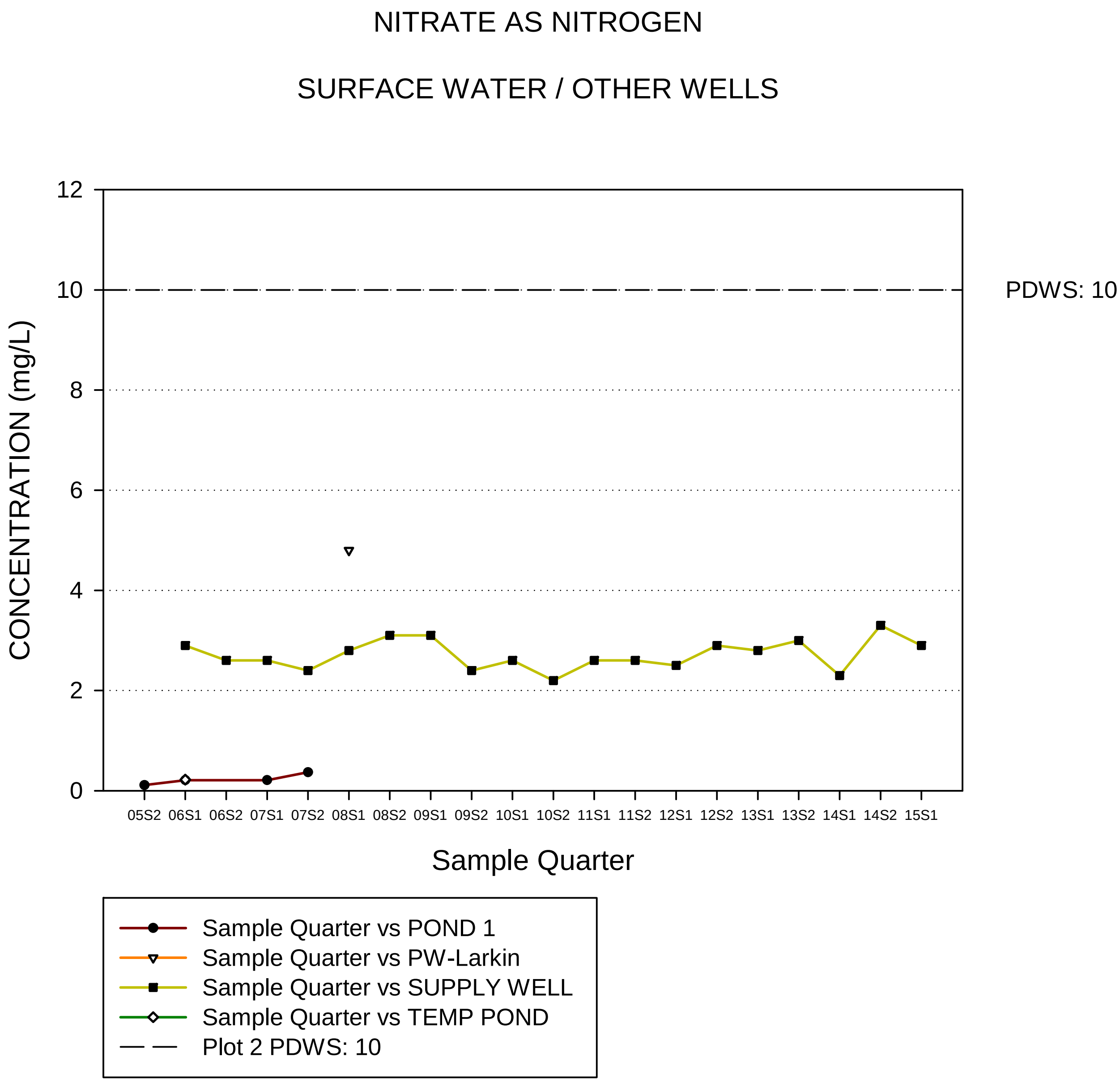

NITRITE AS NITROGEN
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
PDWS: 1
POND 1
PW-Larkin
SUPPLY WELL
TEMP POND
STATION ID
CONCENTRATION (mg/L)
Plot 2 PDWS: 1

NITRITE AS NITROGEN

SURFACE WATER / OTHER WELLS



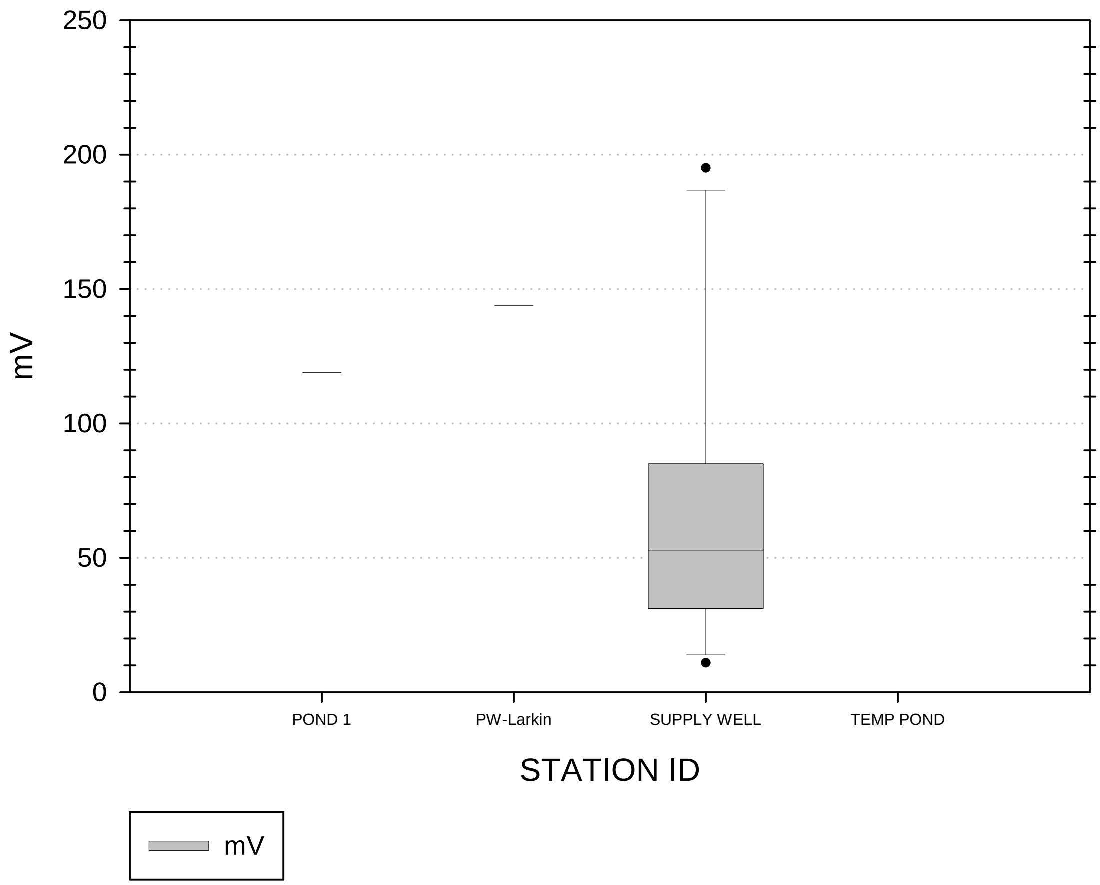

NITRATE AS NITROGEN
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
0
2
4
6
8
10
12
PDWS: 10
POND 1
PW-Larkin
SUPPLY WELL
TEMP POND
STATION ID
CONCENTRATION (mg/L)
Plot 2 PDWS: 10



NITRATE AS NITROGEN
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
0
2
4
6
8
10
12
PDWS: 10
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Plot 2 PDWS: 10

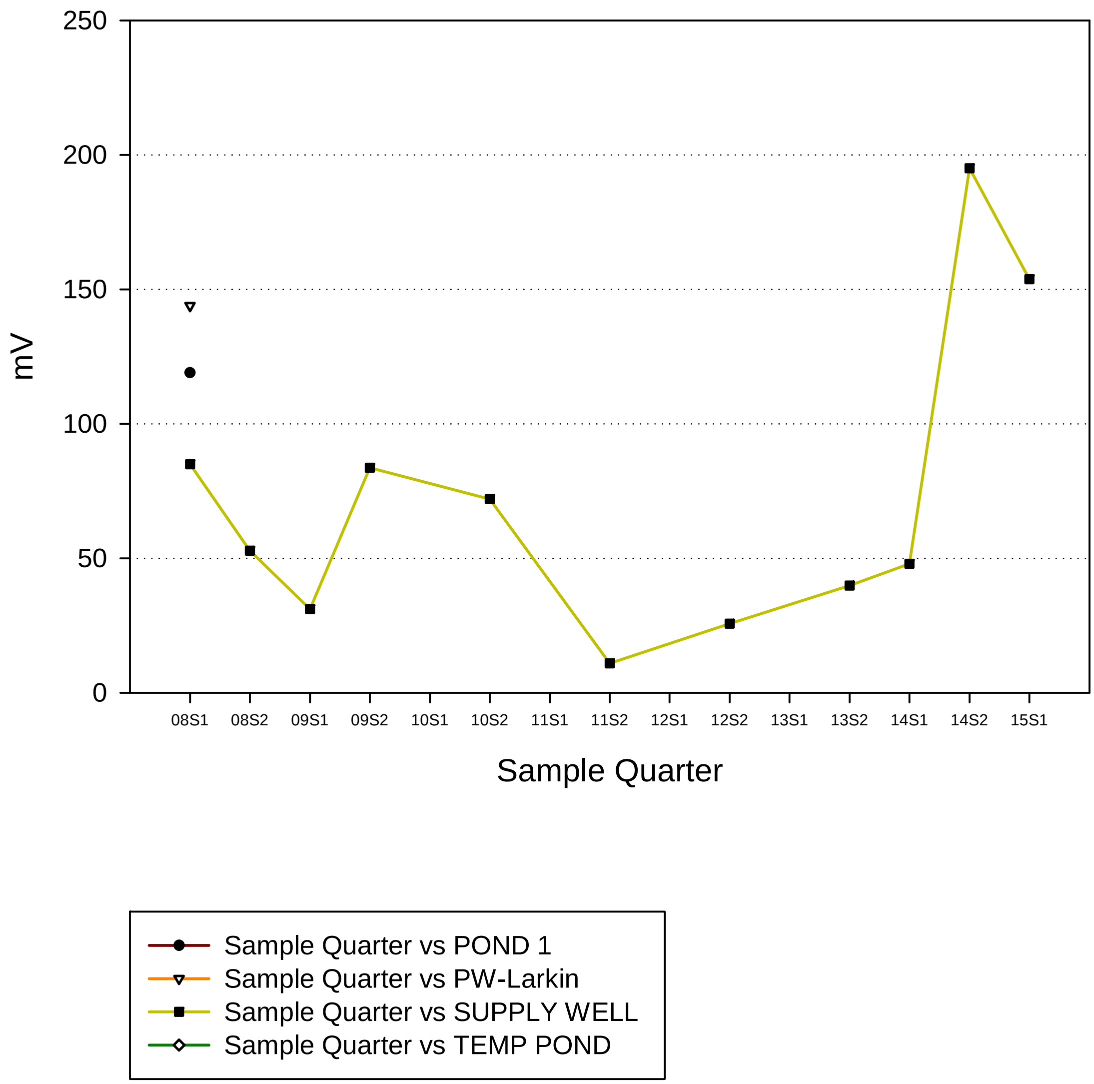
OXIDATION / REDUCTION POTENTIAL

SURFACE WATER / OTHER WELLS



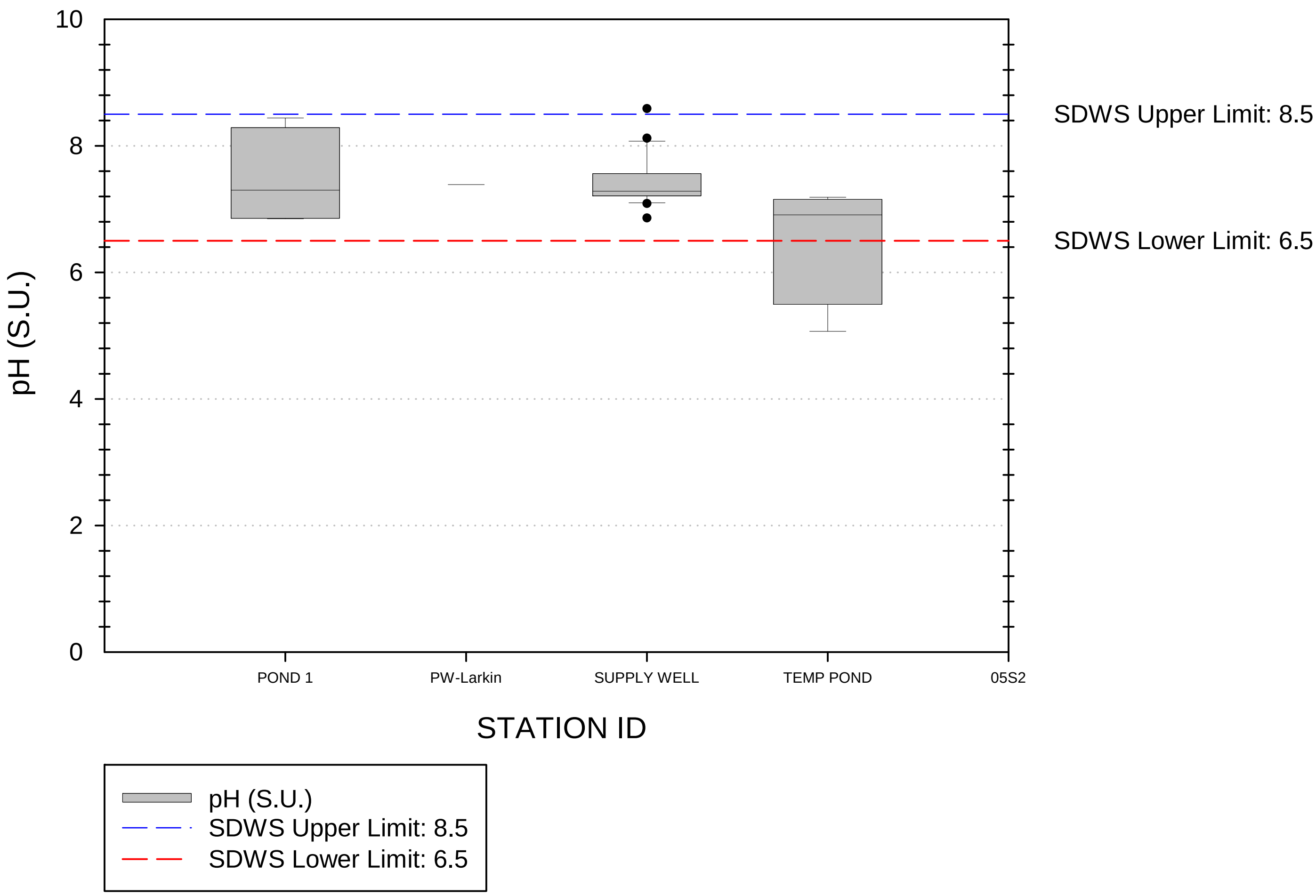
OXIDATION / REDUCTION POTENTIAL

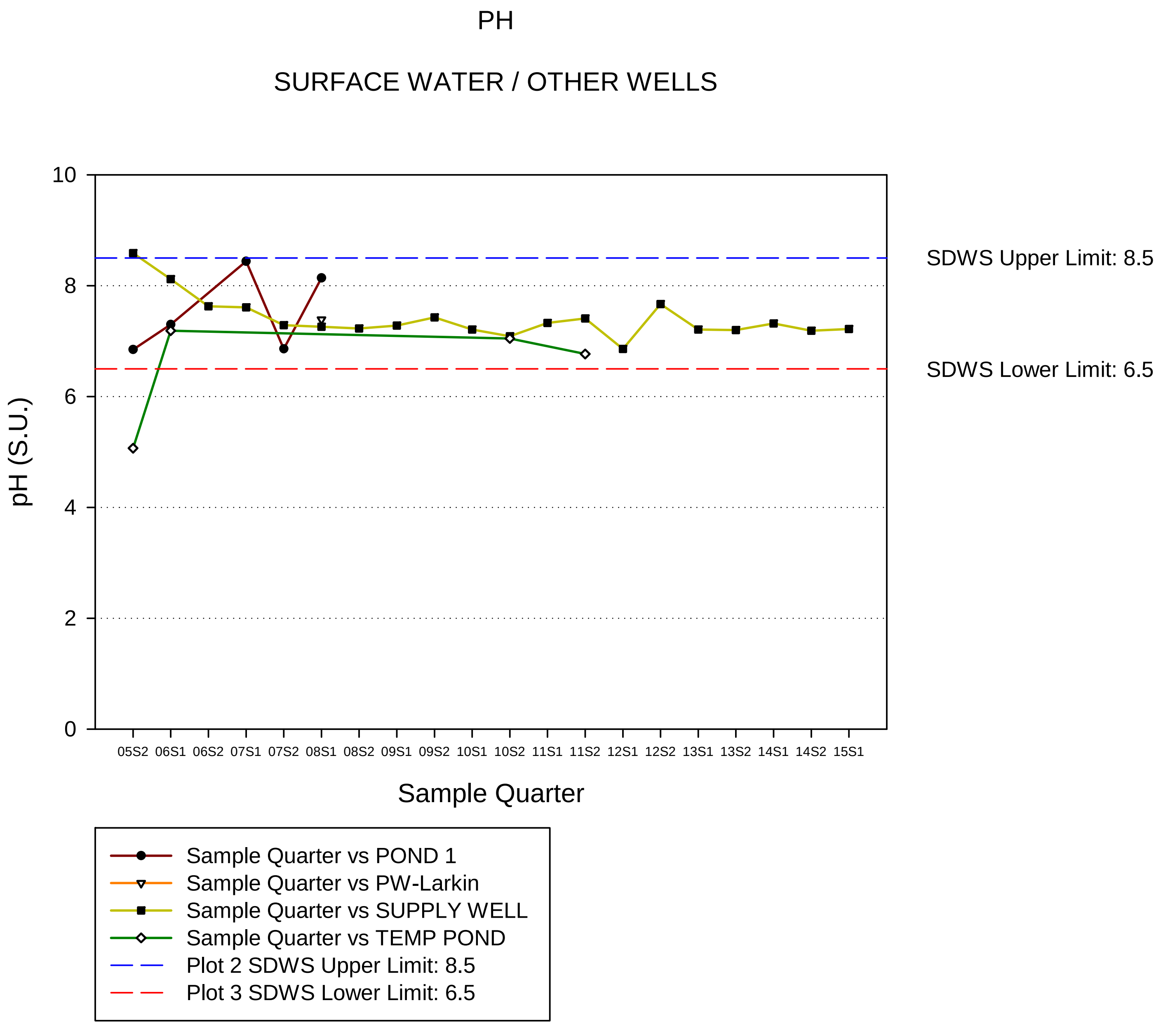
SURFACE WATER / OTHER WELLS

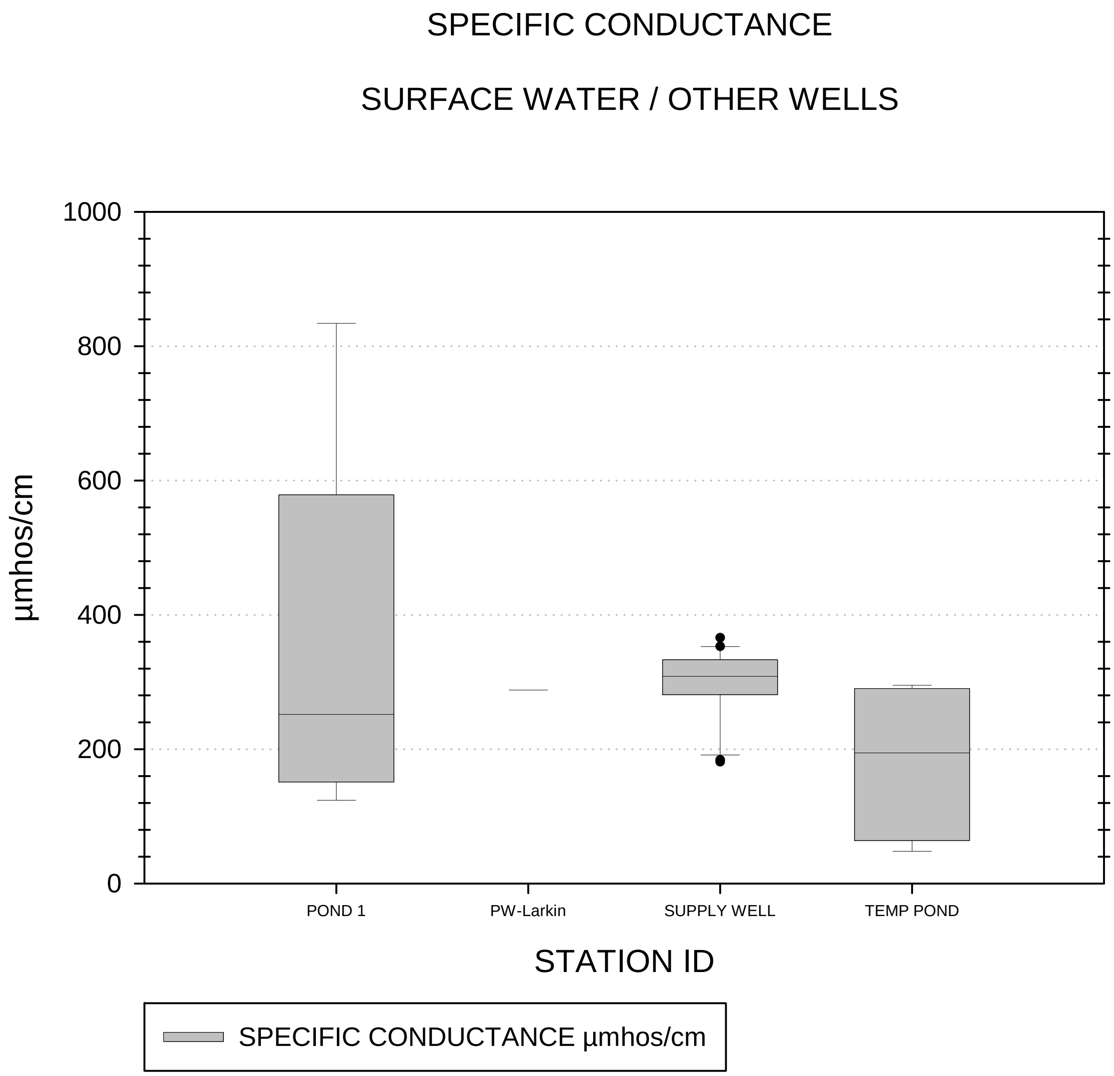


PH

SURFACE WATER / OTHER WELLS

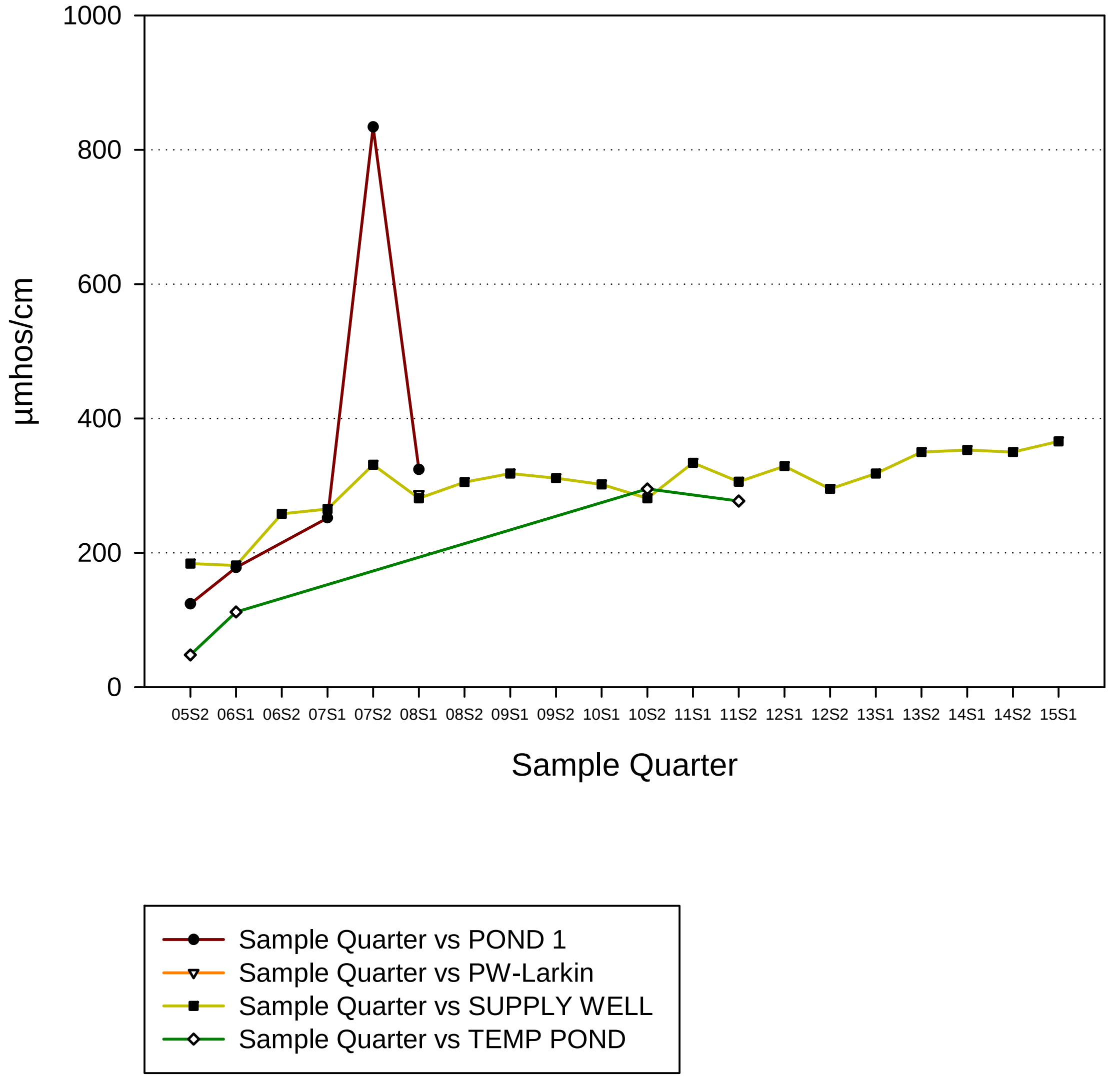


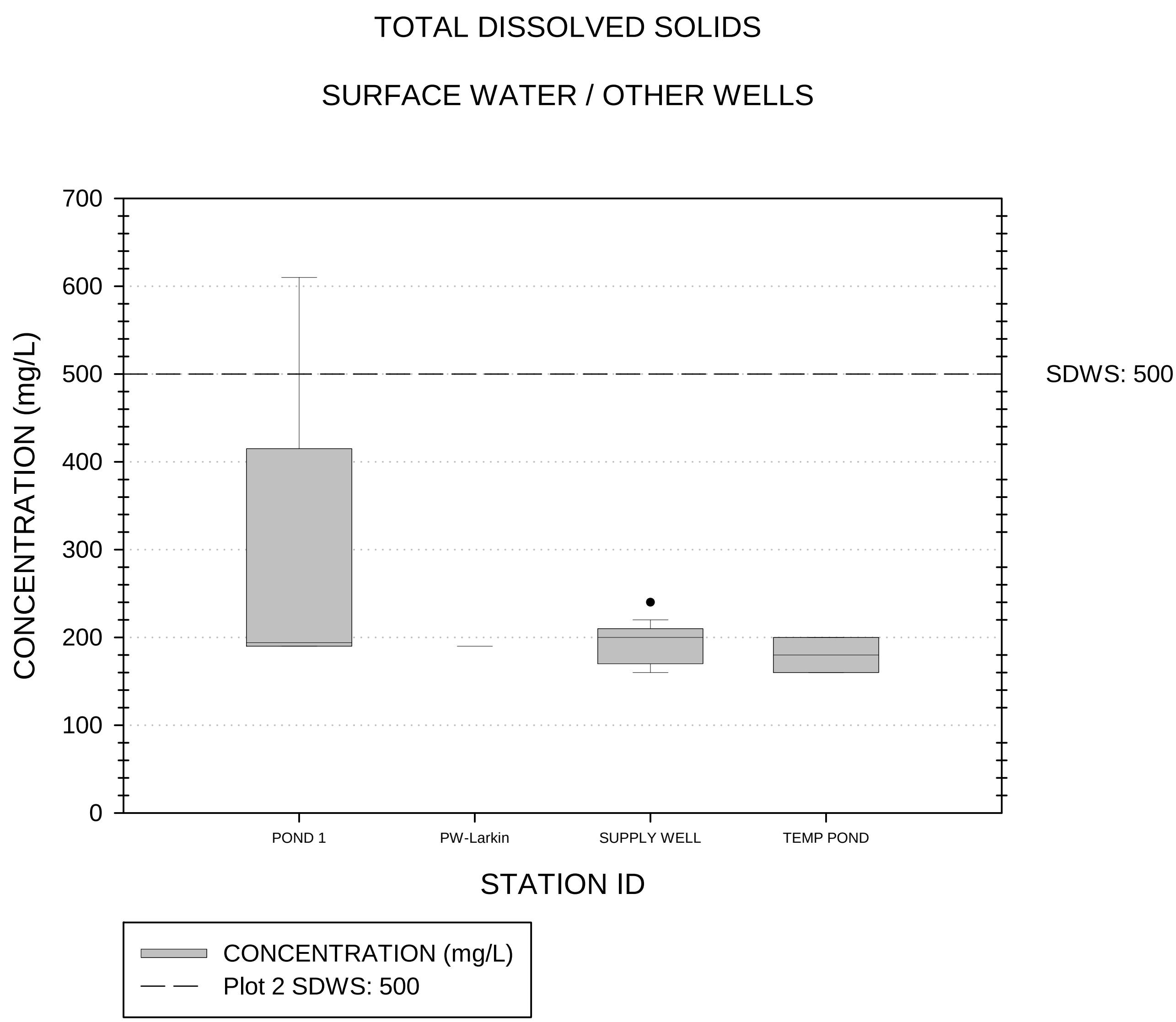

PH
SURFACE WATER / OTHER WELLS
10
8
6
4
2
0
pH (S.U.)
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
SDWS Upper Limit: 8.5
SDWS Lower Limit: 6.5
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Plot 2 SDWS Upper Limit: 8.5
Plot 3 SDWS Lower Limit: 6.5


SPECIFIC CONDUCTANCE
SURFACE WATER / OTHER WELLS
µmhos/cm
1000
800
600
400
200
0
POND 1
PW-Larkin
SUPPLY WELL
TEMP POND
STATION ID
SPECIFIC CONDUCTANCE µmhos/cm

SPECIFIC CONDUCTANCE

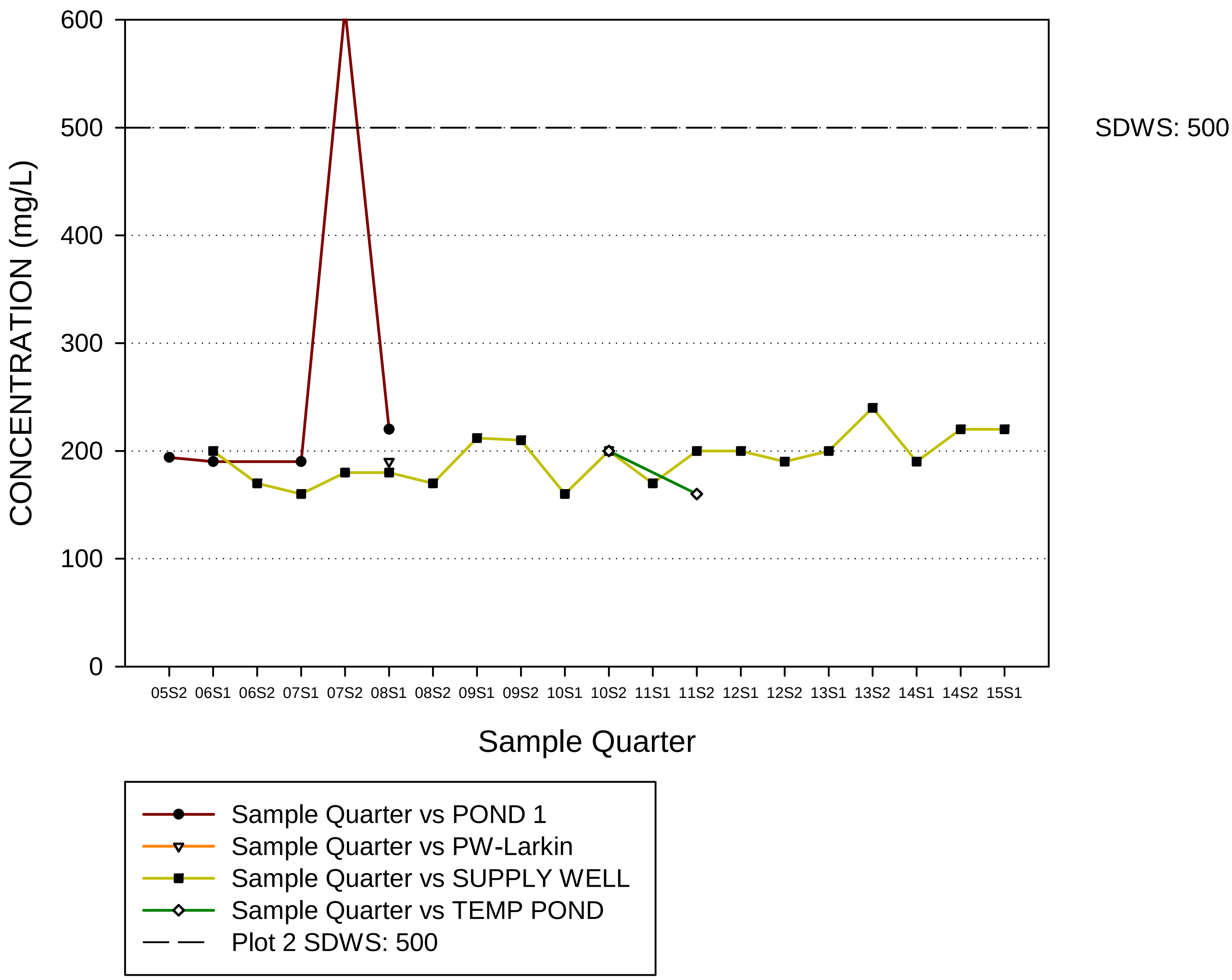
SURFACE WATER / OTHER WELLS




TOTAL DISSOLVED SOLIDS
SURFACE WATER / OTHER WELLS
CONCENTRATION (mg/L)
0
100
200
300
400
500
600
700
SDWS: 500
POND 1
PW-Larkin
SUPPLY WELL
TEMP POND
STATION ID
CONCENTRATION (mg/L)
Plot 2 SDWS: 500

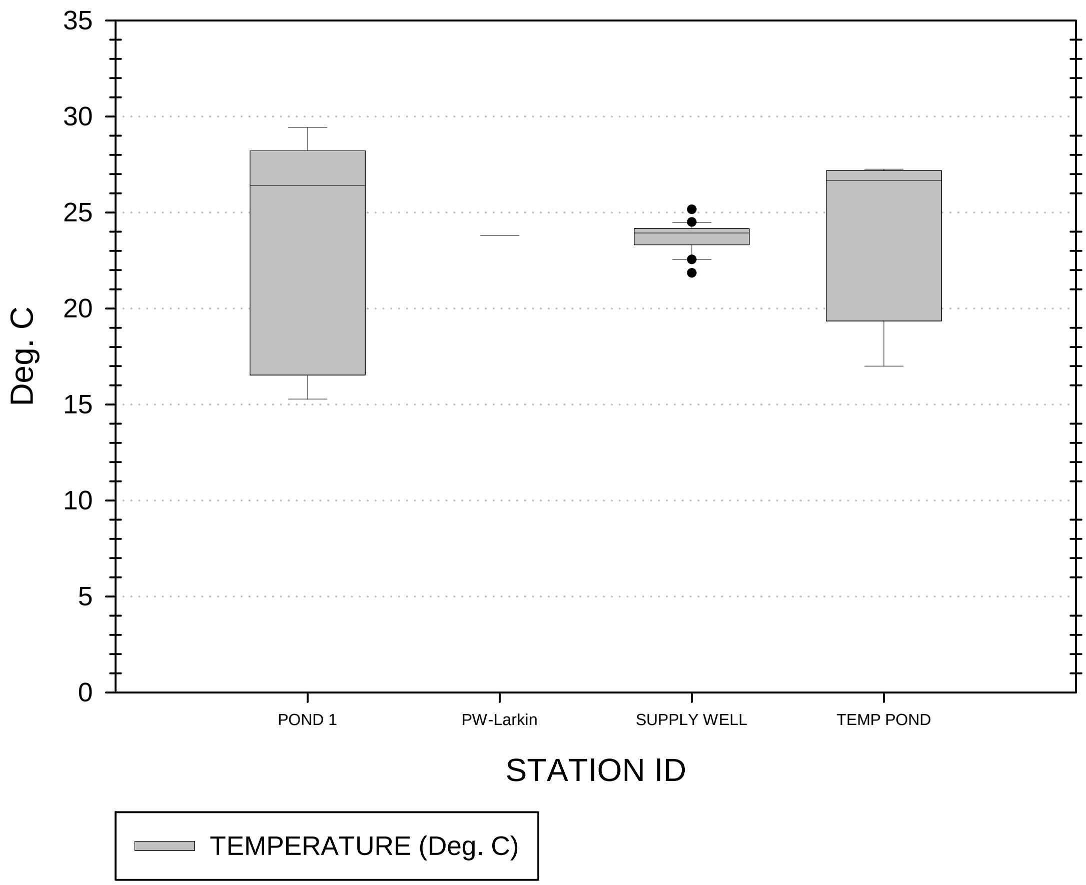
TOTAL DISSOLVED SOLIDS

SURFACE WATER / OTHER WELLS



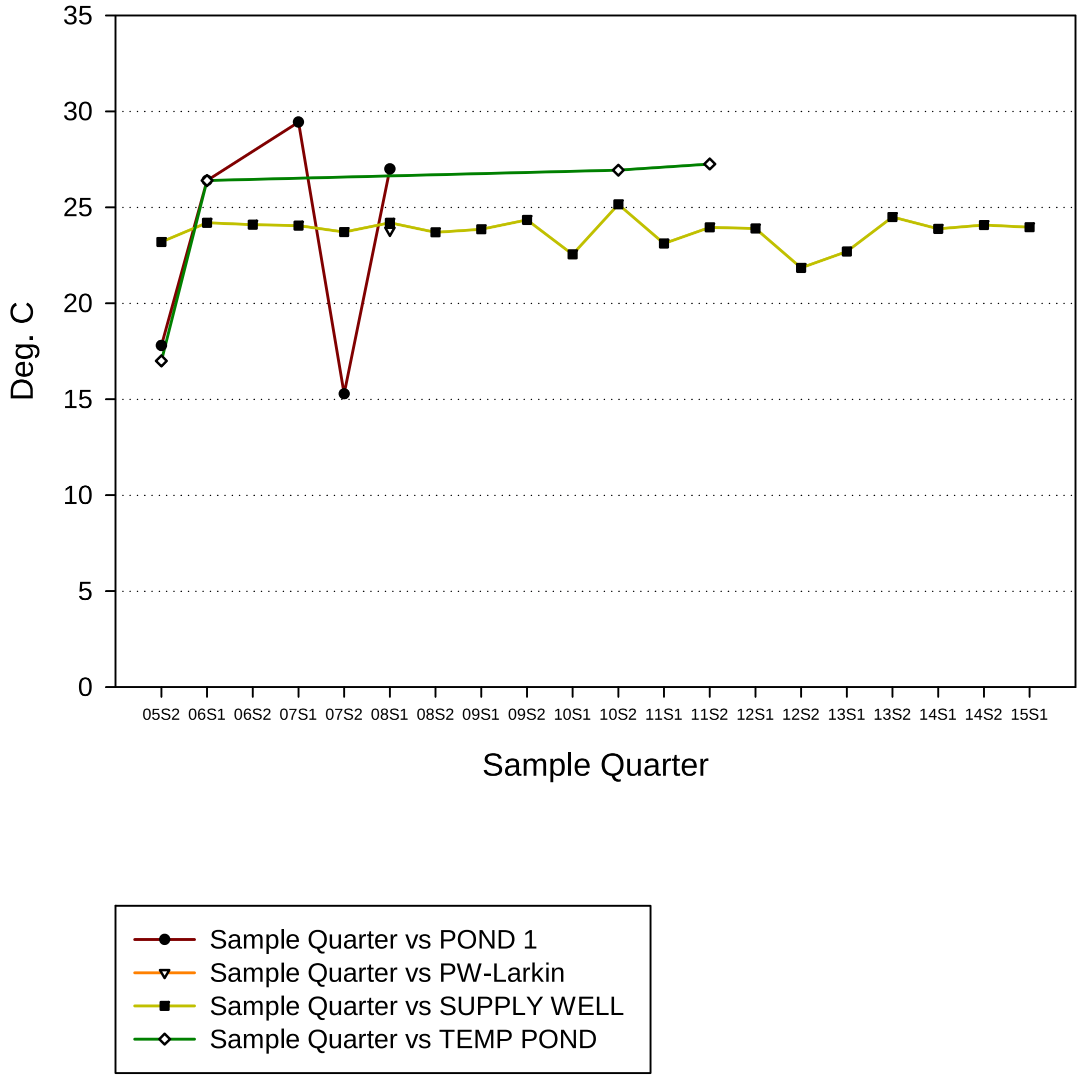
TEMPERATURE

SURFACE WATER / OTHER WELLS



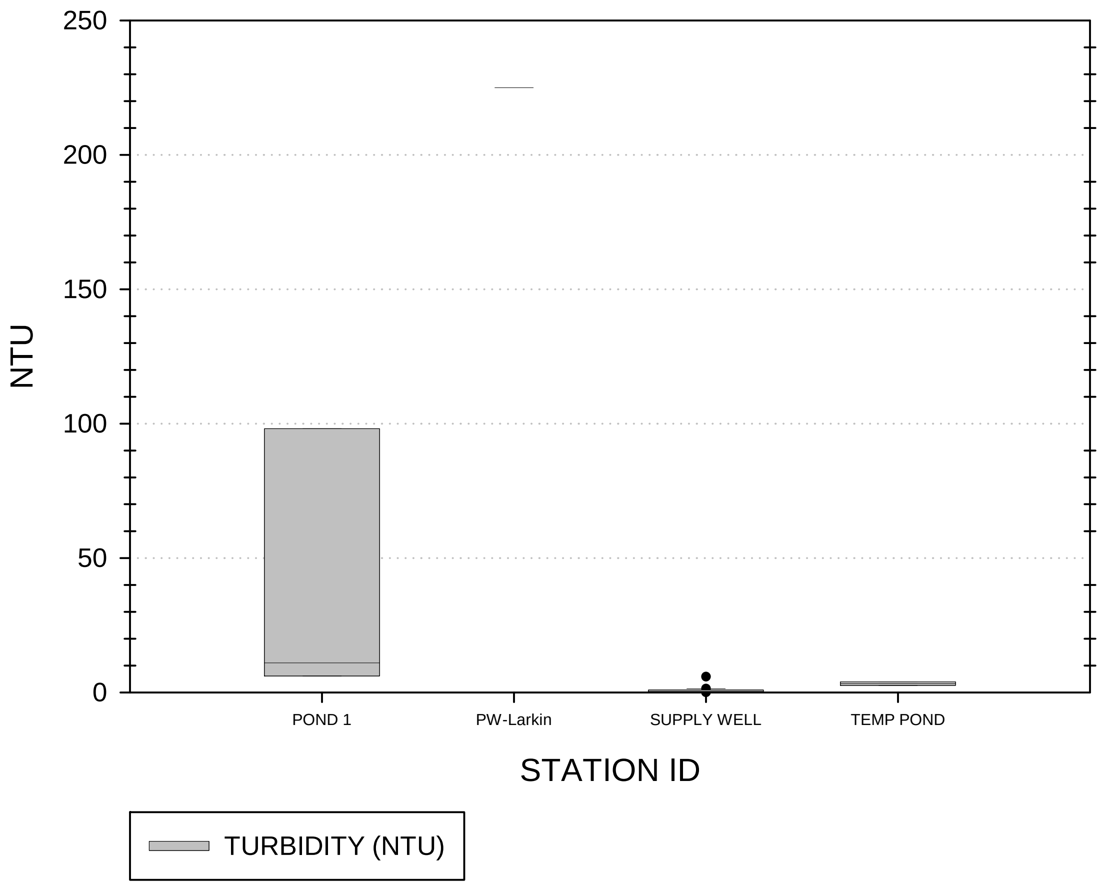
TEMPERATURE

SURFACE WATER / OTHER WELLS



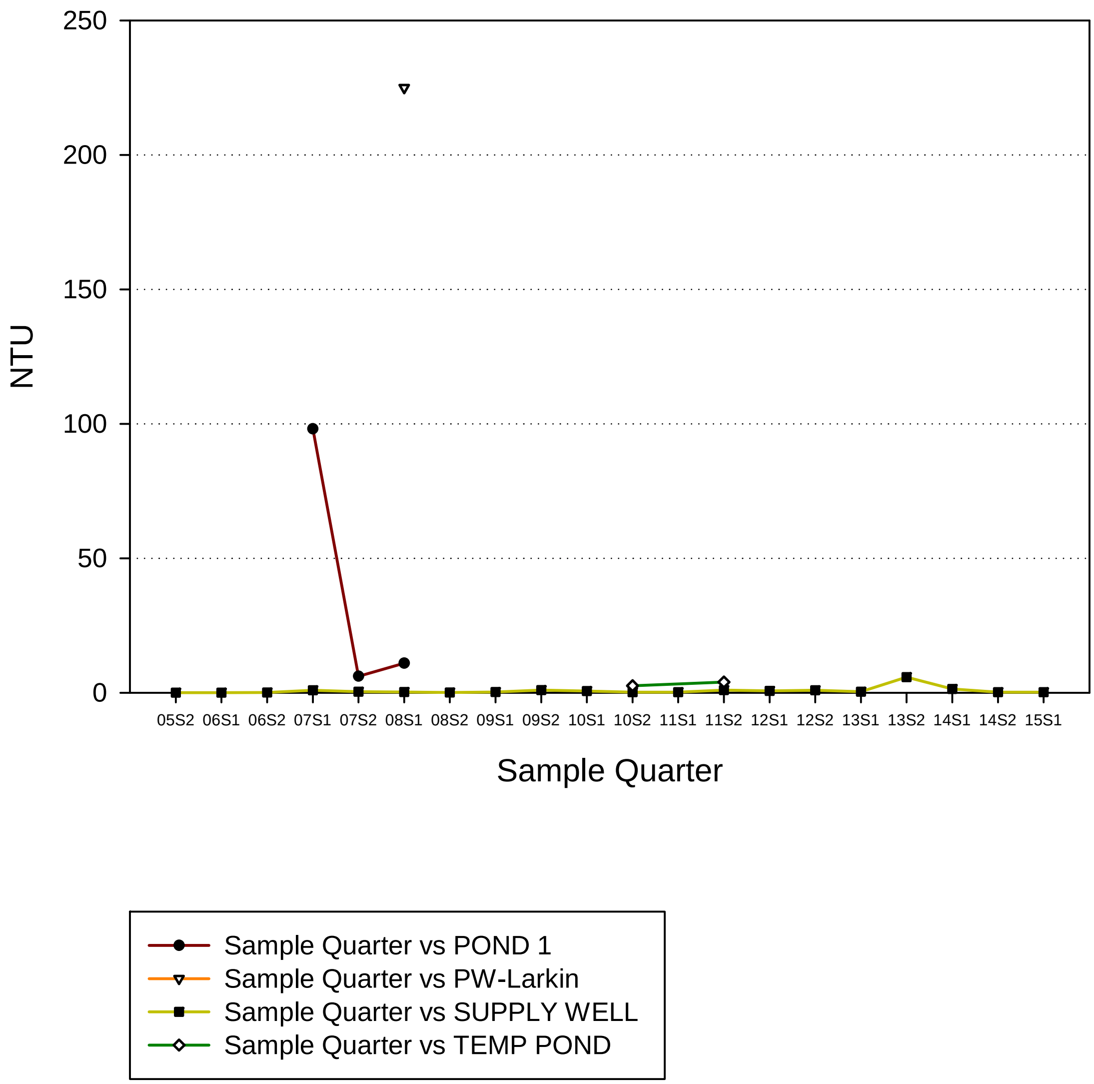
TURBIDITY

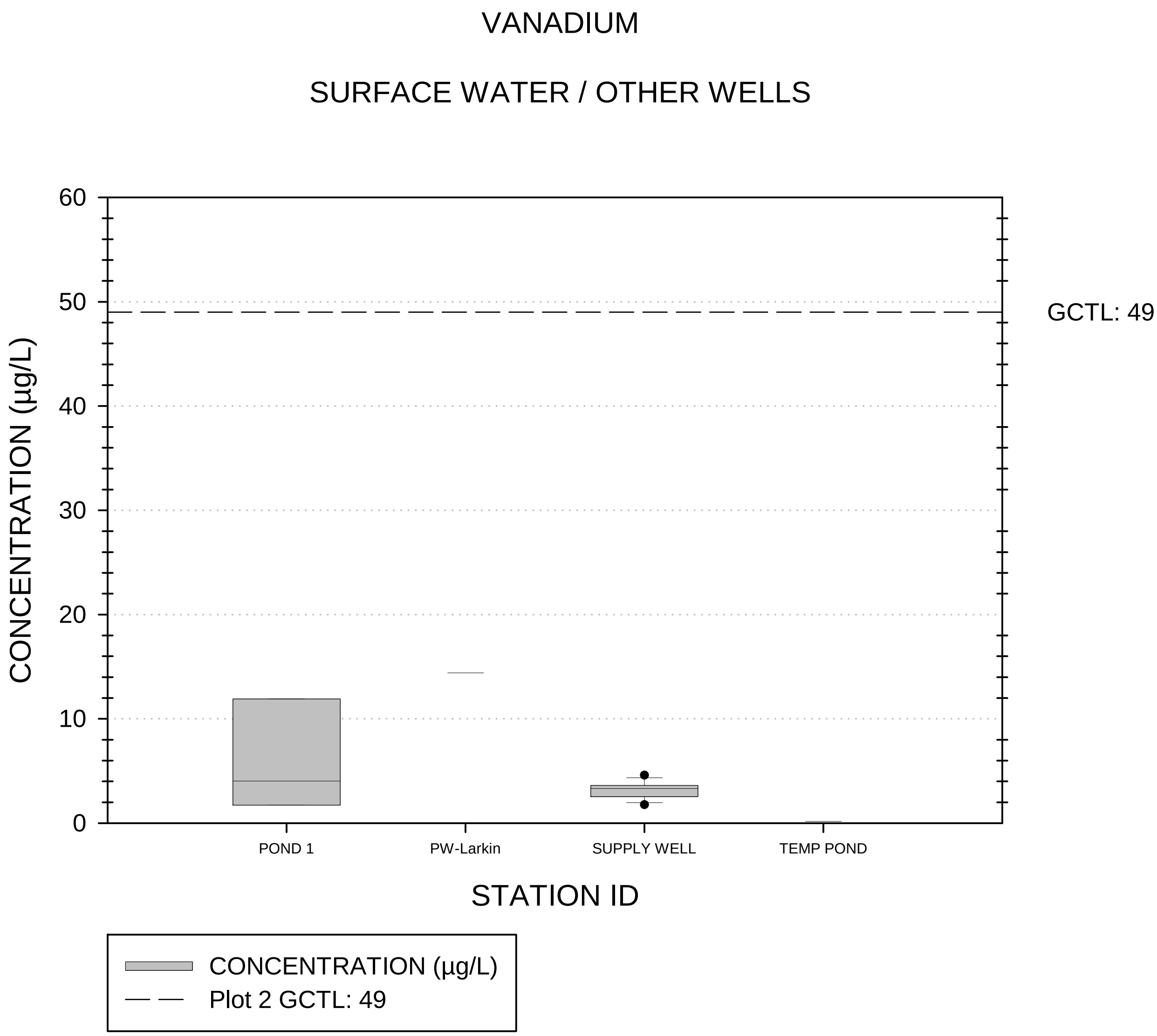
SURFACE WATER / OTHER WELLS

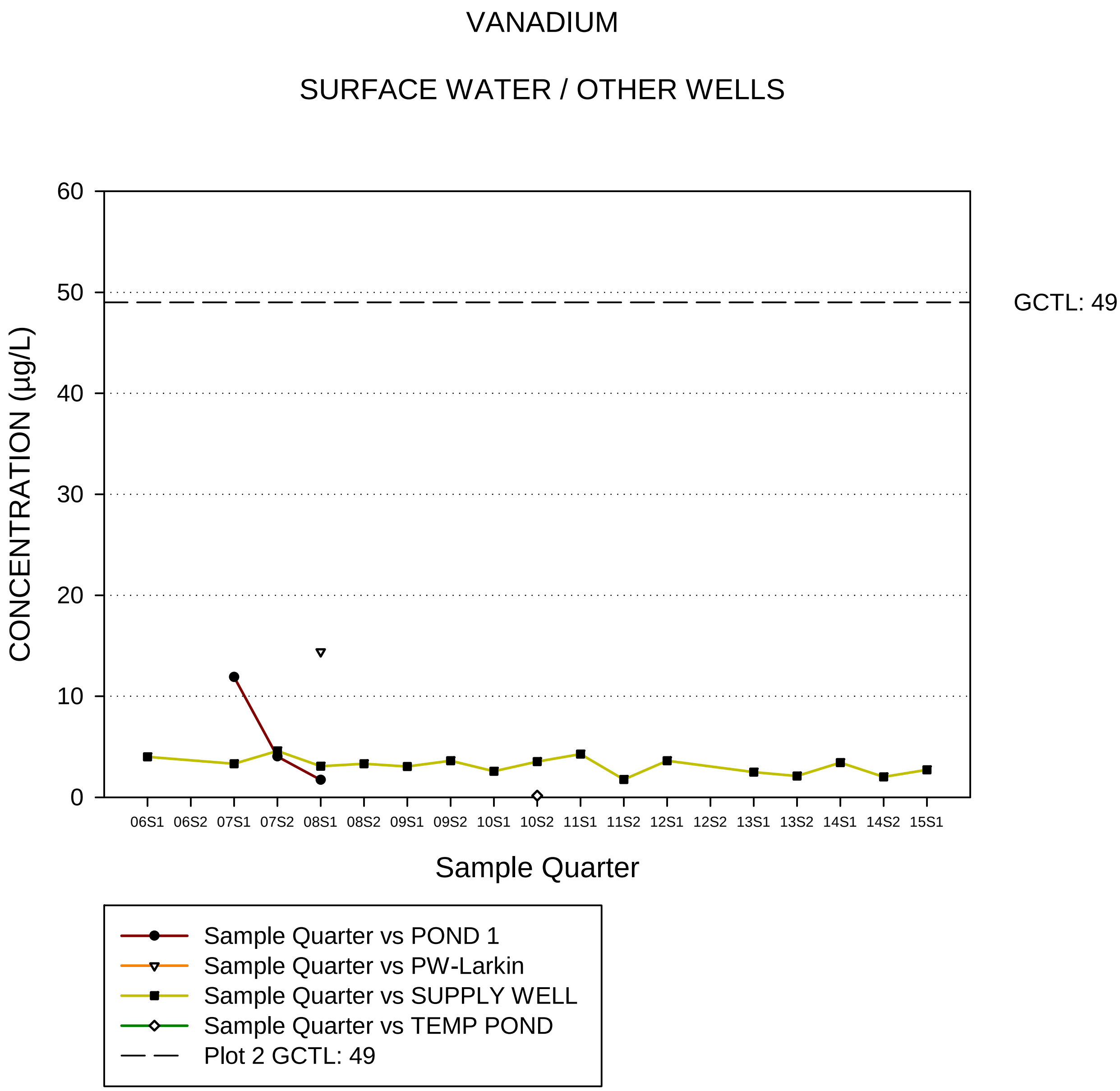


TURBIDITY

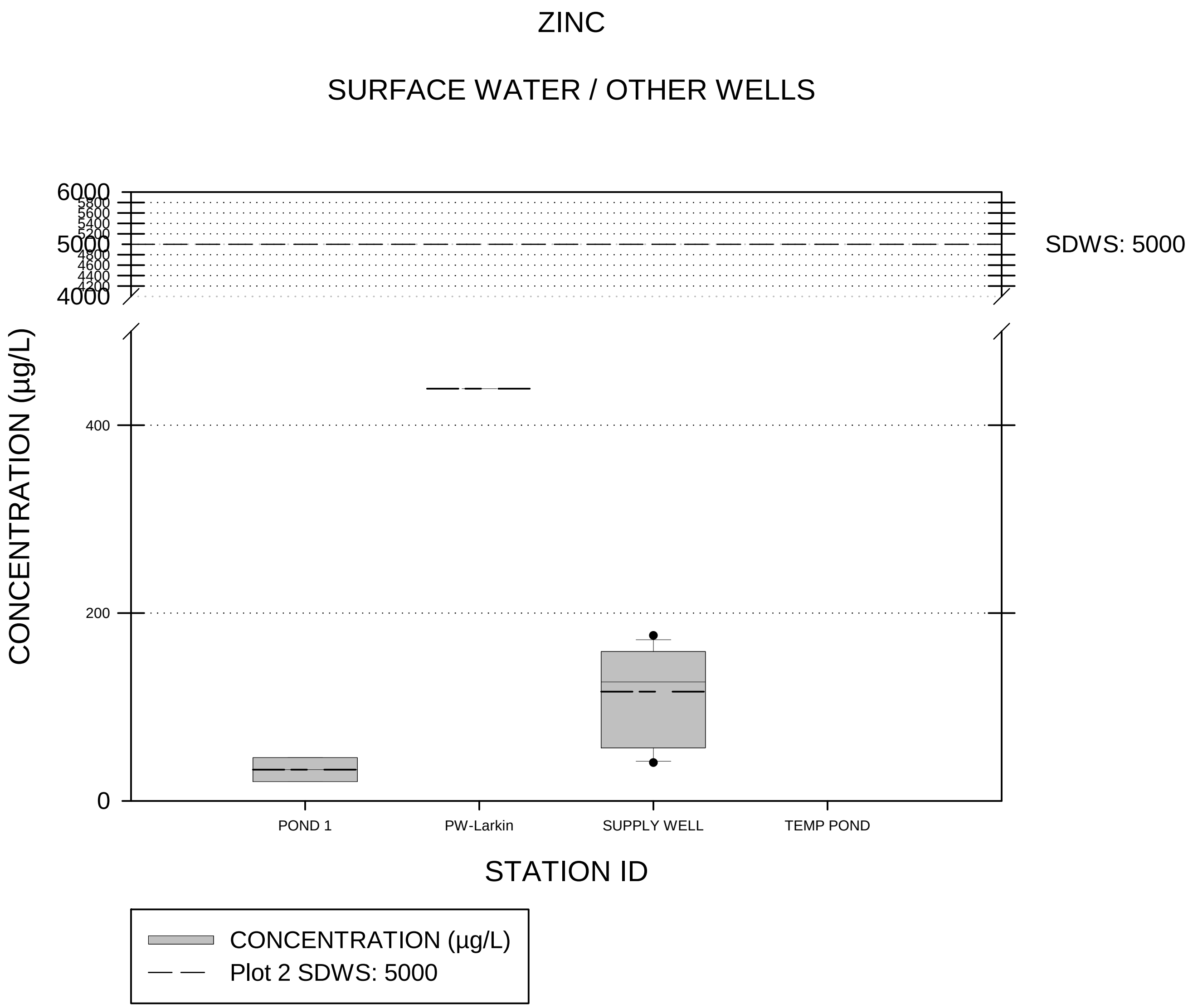
SURFACE WATER / OTHER WELLS




VANADIUM
SURFACE WATER / OTHER WELLS
CONCENTRATION (µg/L)
0
10
20
30
40
50
60
GCTL: 49
POND 1
PW-Larkin
SUPPLY WELL
TEMP POND
STATION ID
CONCENTRATION (µg/L)
Plot 2 GCTL: 49

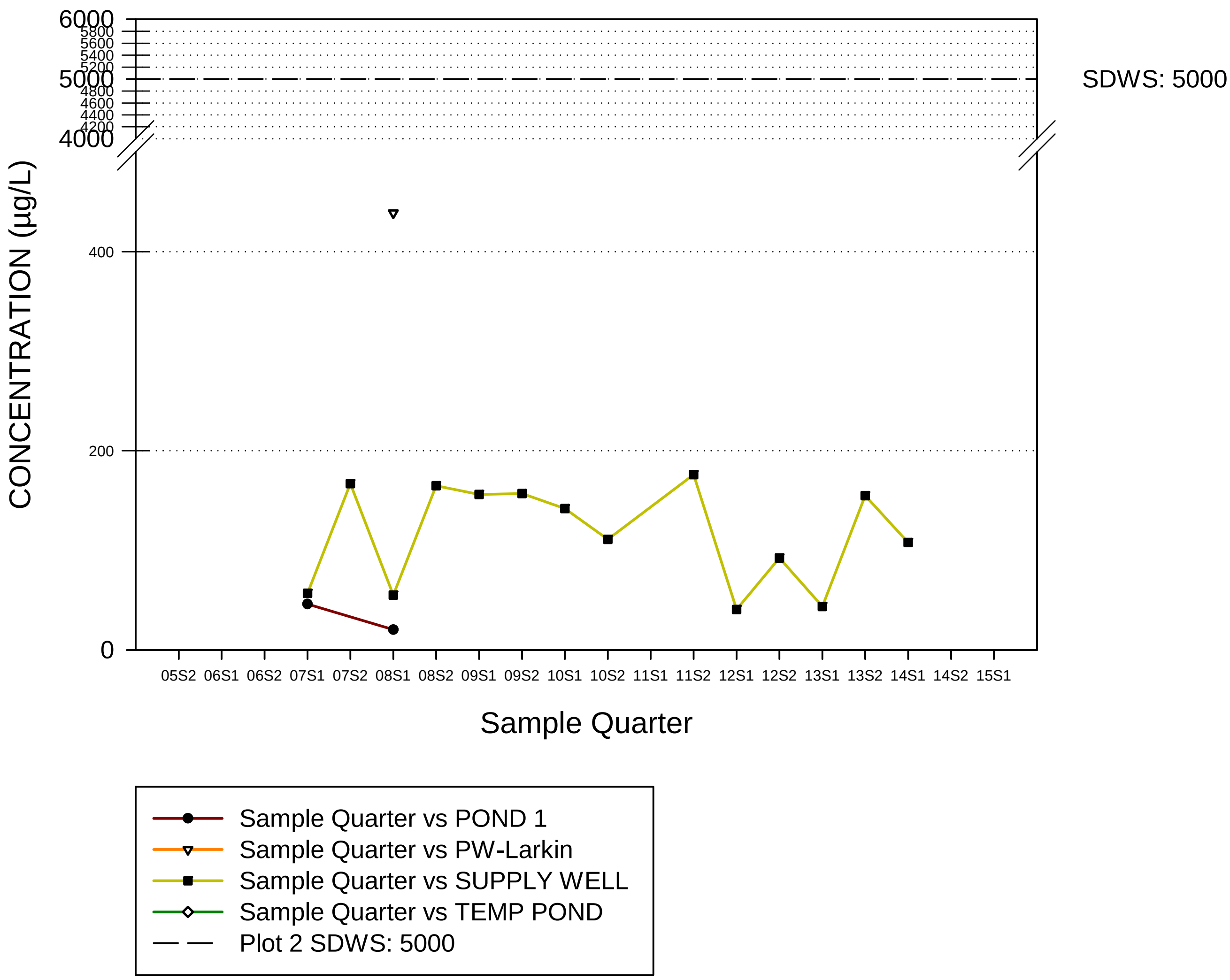


VANADIUM
SURFACE WATER / OTHER WELLS
CONCENTRATION (µg/L)
0
10
20
30
40
50
60
GCTL: 49
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Quarter
Sample Quarter vs POND 1
Sample Quarter vs PW-Larkin
Sample Quarter vs SUPPLY WELL
Sample Quarter vs TEMP POND
Plot 2 GCTL: 49


ZINC
SURFACE WATER / OTHER WELLS
CONCENTRATION (µg/L)
6000
5800
5600
5400
5200
5000
4800
4600
4400
4200
4000
400
200
0
SDWS: 5000
POND 1
PW-Larkin
SUPPLY WELL
TEMP POND
STATION ID
CONCENTRATION (µg/L)
Plot 2 SDWS: 5000

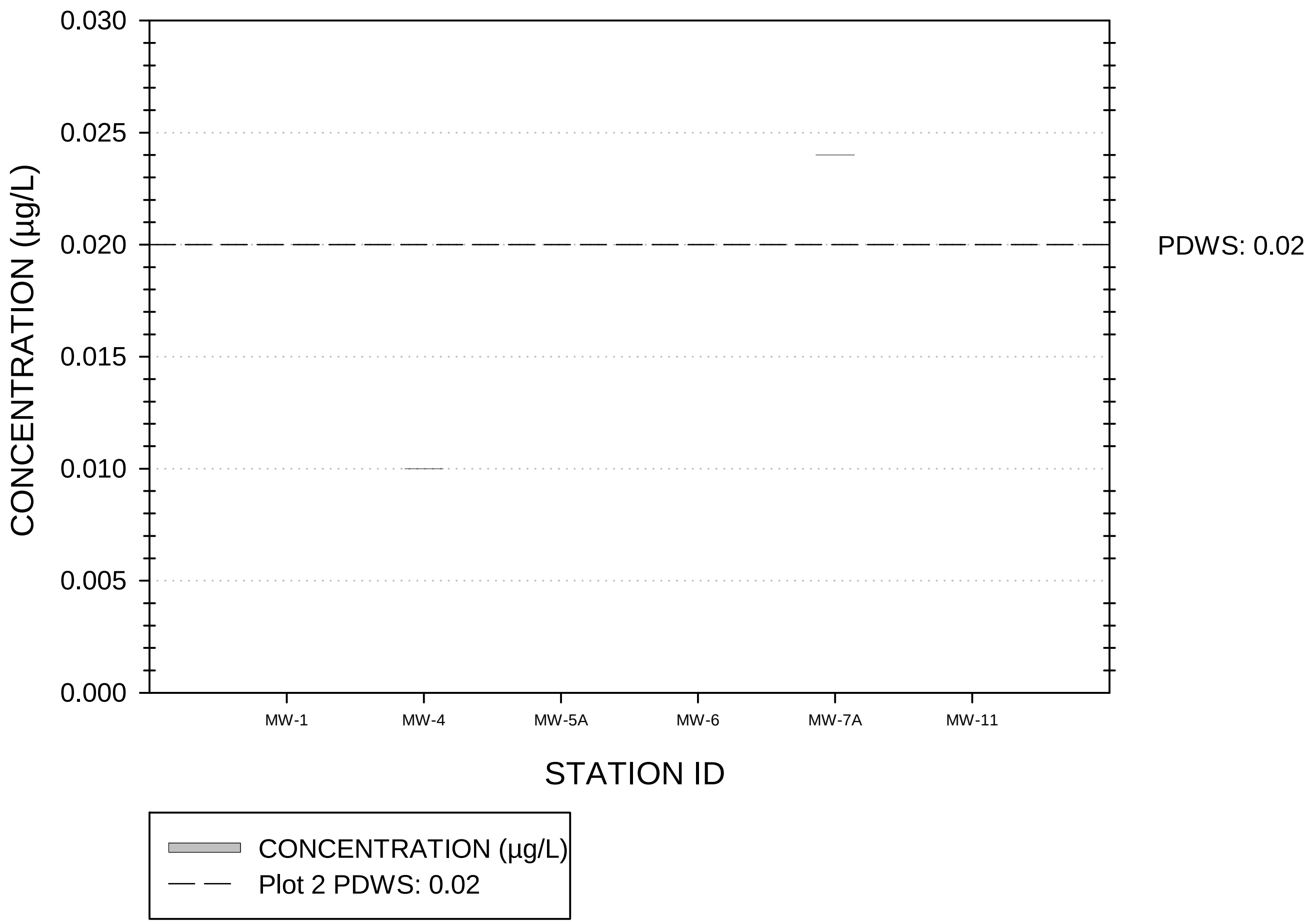
ZINC

SURFACE WATER / OTHER WELLS



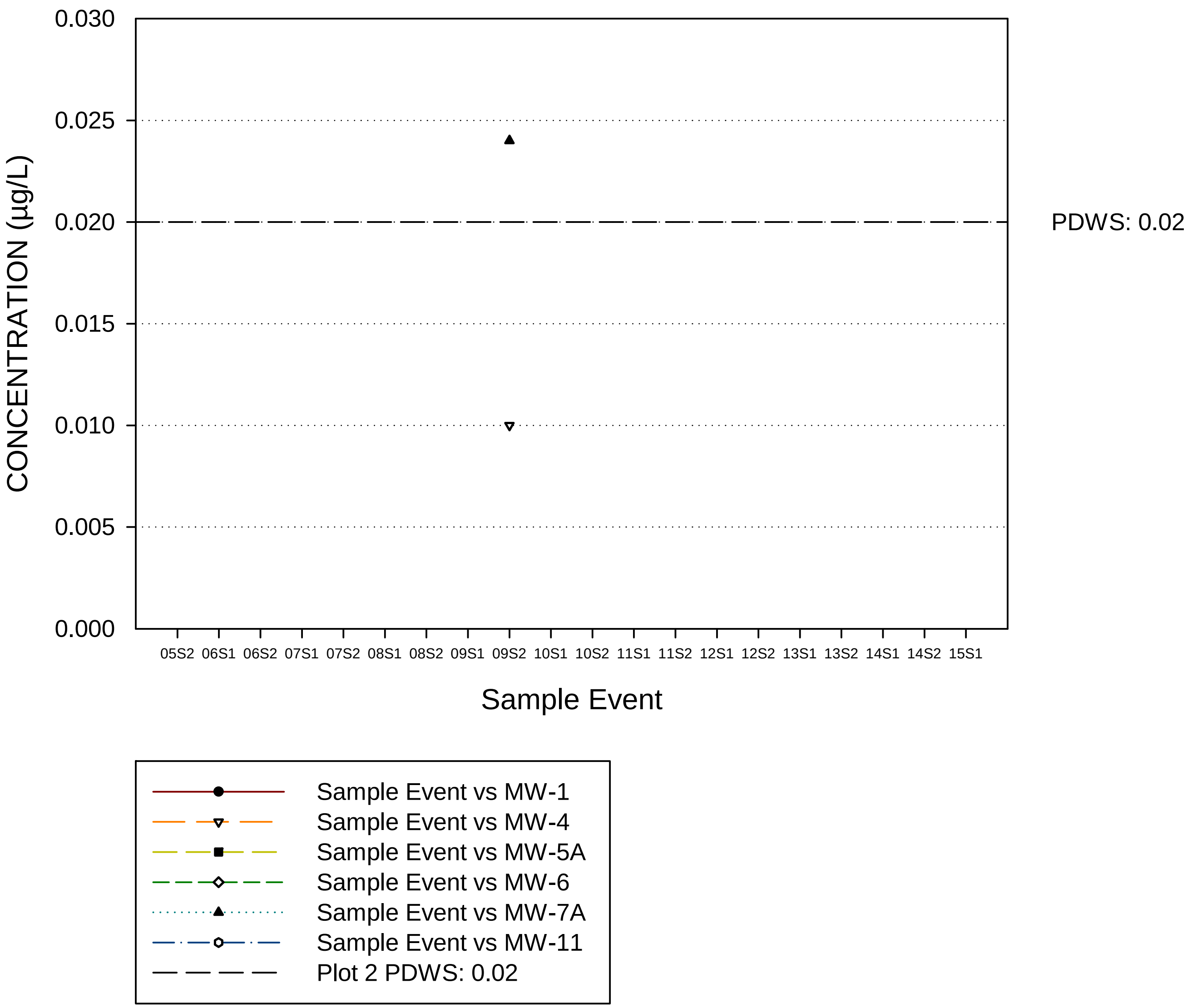
1,2-DIBROMOETHANE

SURFICIAL AQUIFER



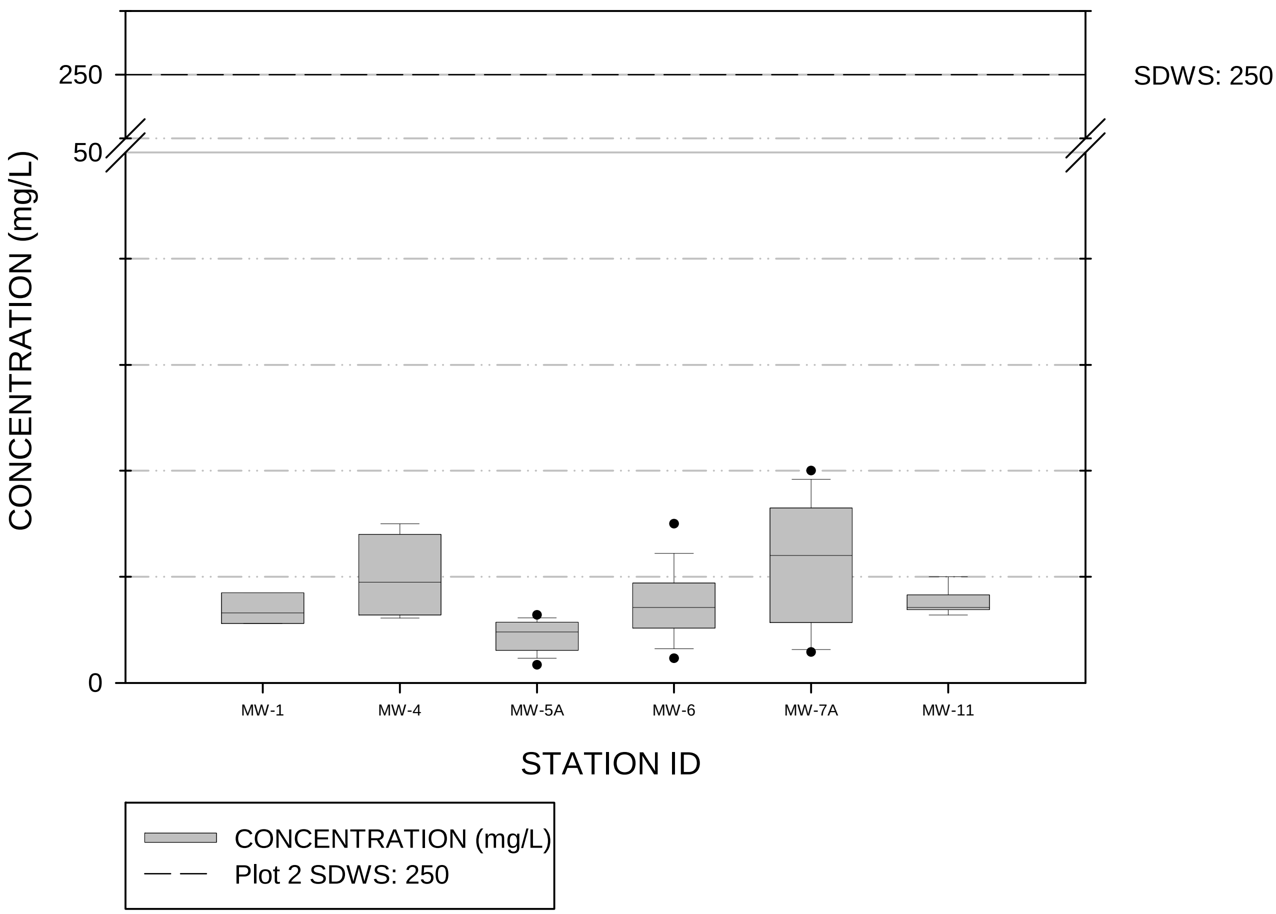
1,2-DIBROMOETHANE

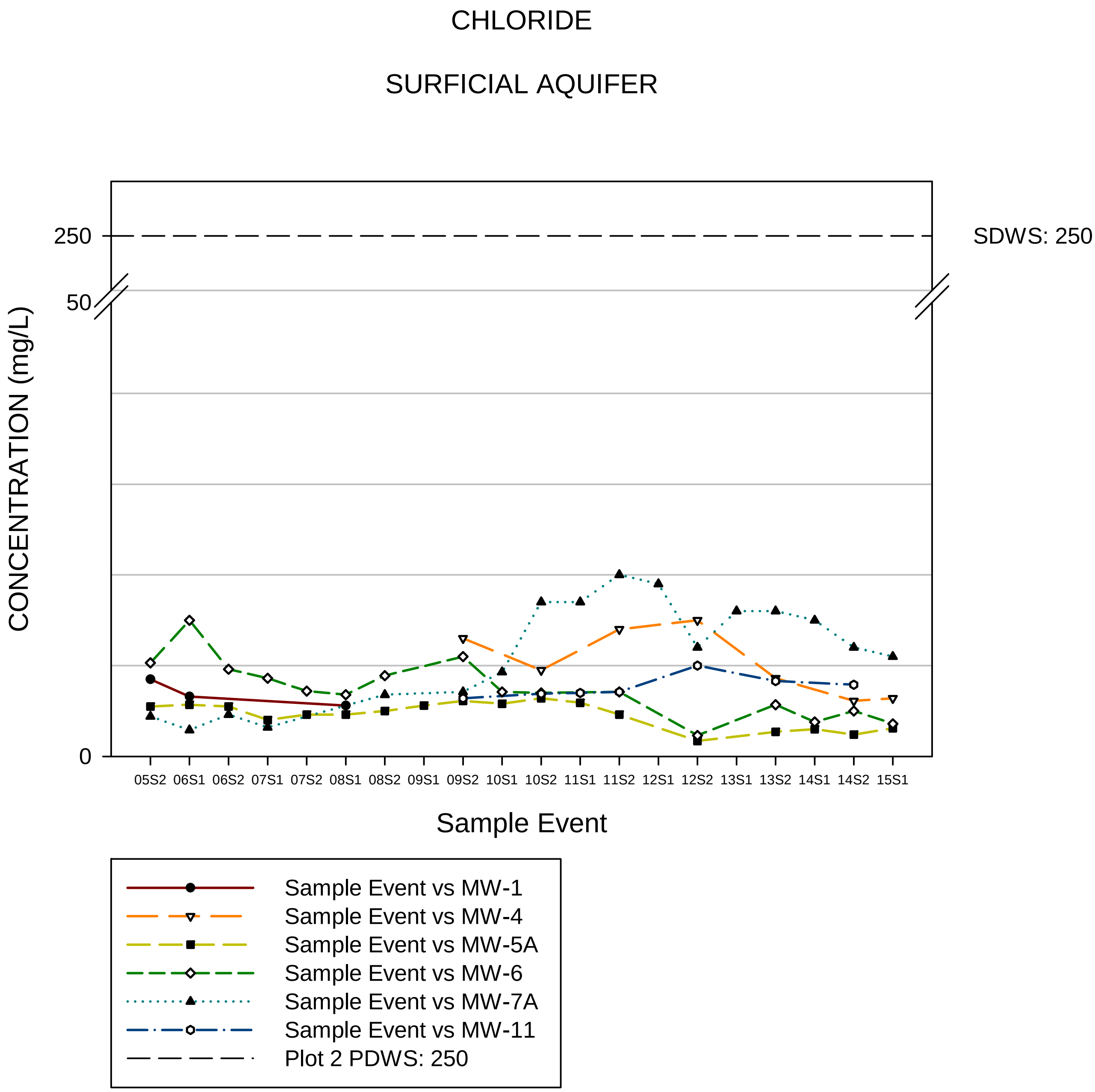
SURFICIAL AQUIFER



CHLORIDE

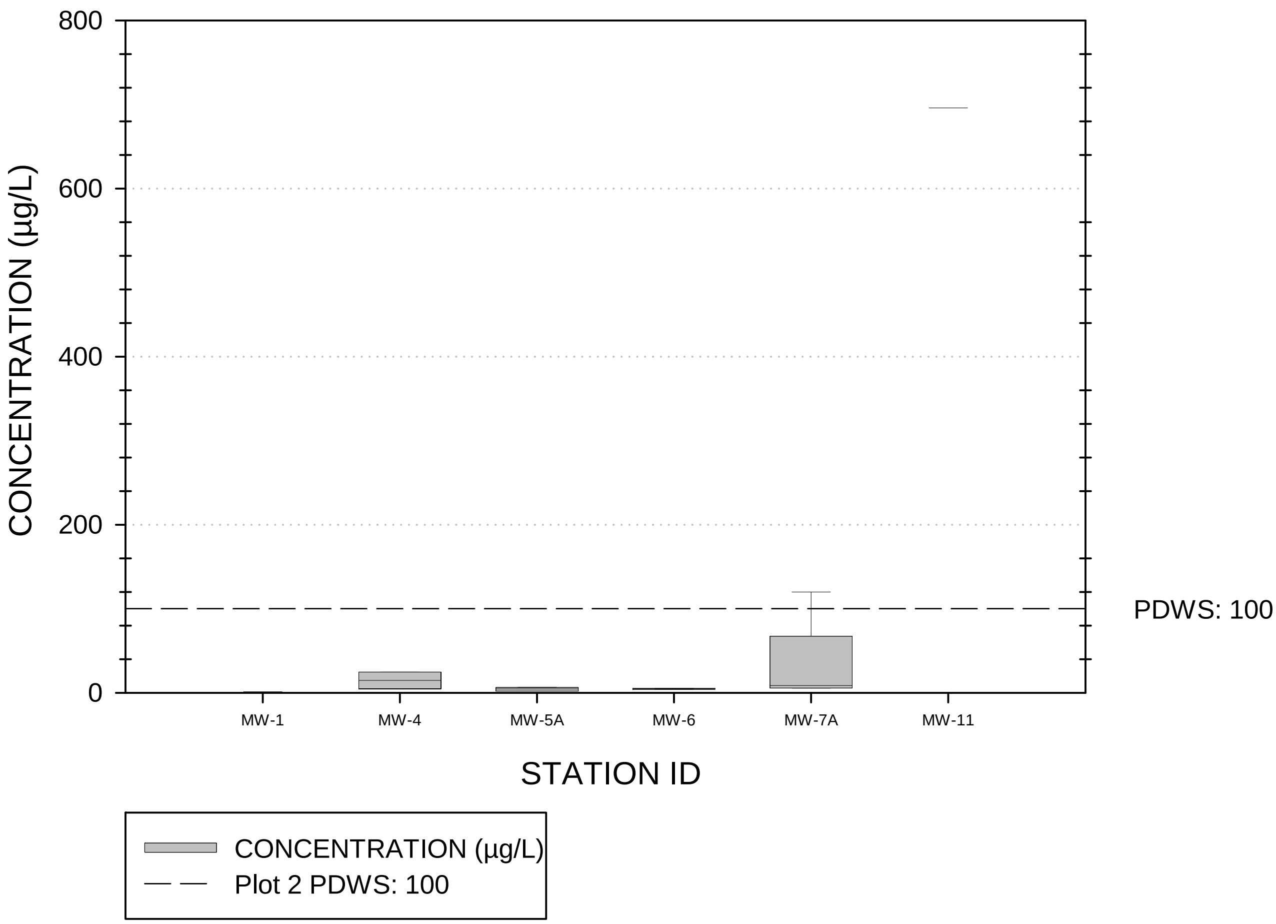
SURFICIAL AQUIFER

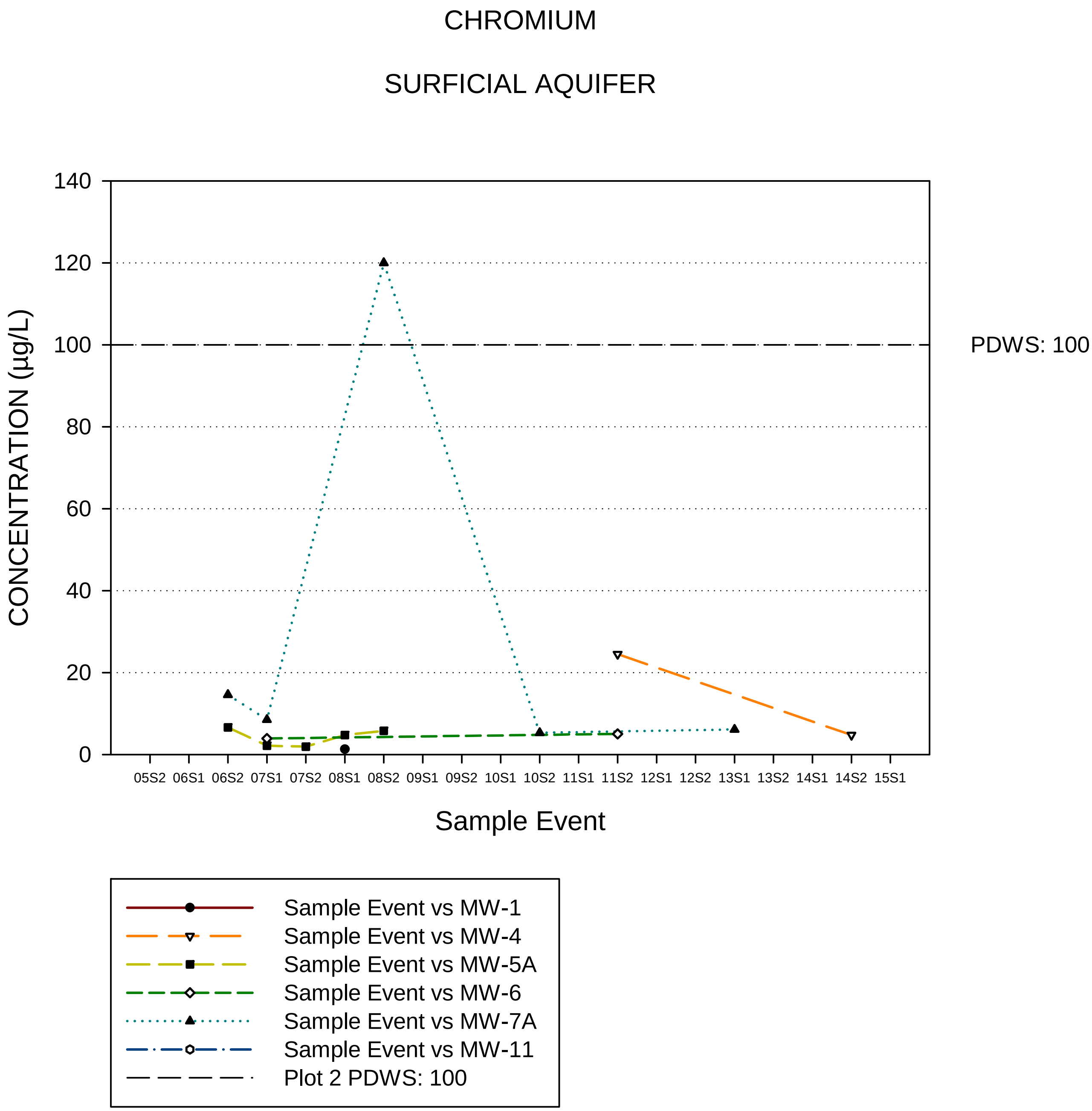



CHLORIDE
SURFICIAL AQUIFER
CONCENTRATION (mg/L)
250
50
0
SDWS: 250
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Event
Sample Event vs MW-1
Sample Event vs MW-4
Sample Event vs MW-5A
Sample Event vs MW-6
Sample Event vs MW-7A
Sample Event vs MW-11
Plot 2 PDWS: 250

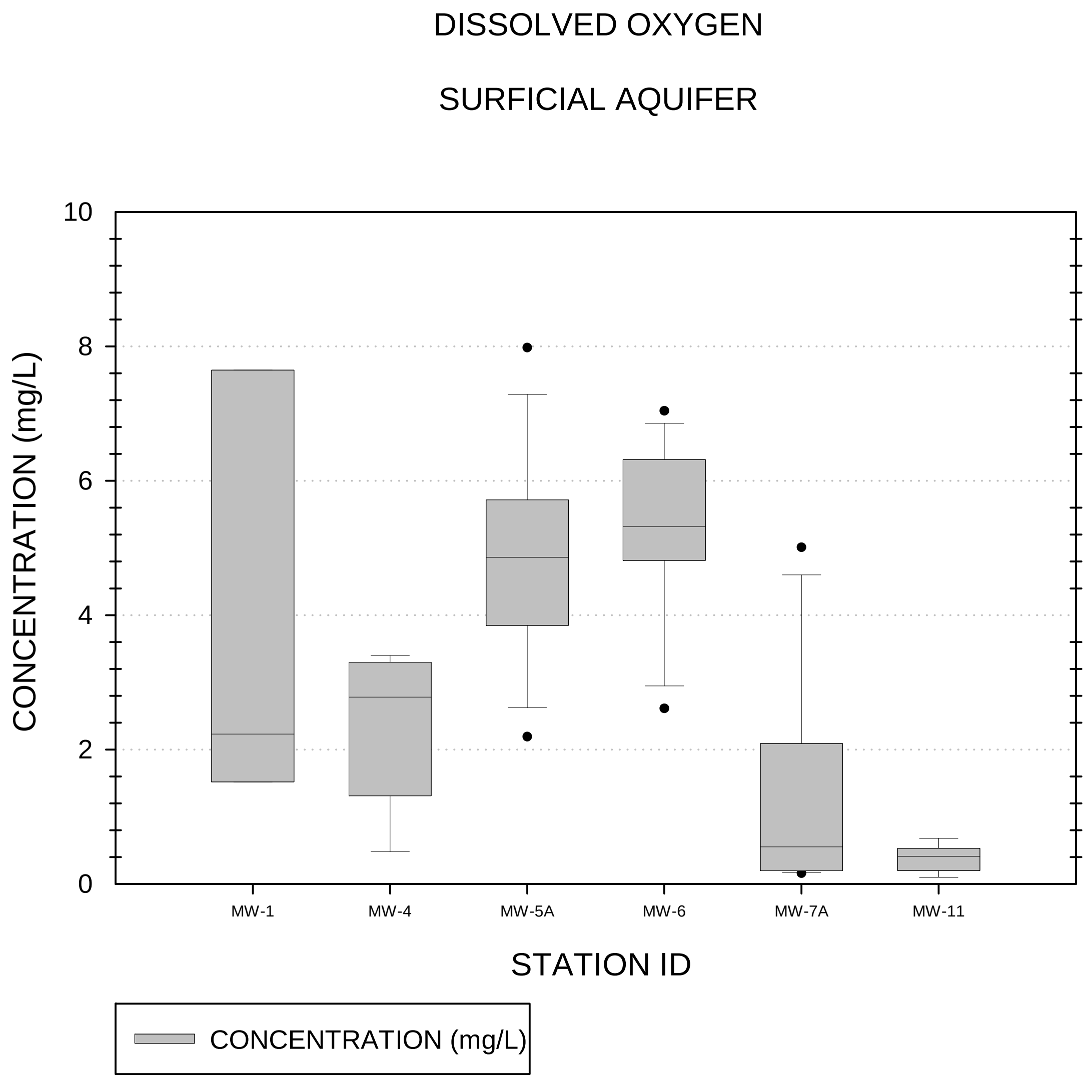
CHROMIUM

SURFICIAL AQUIFER



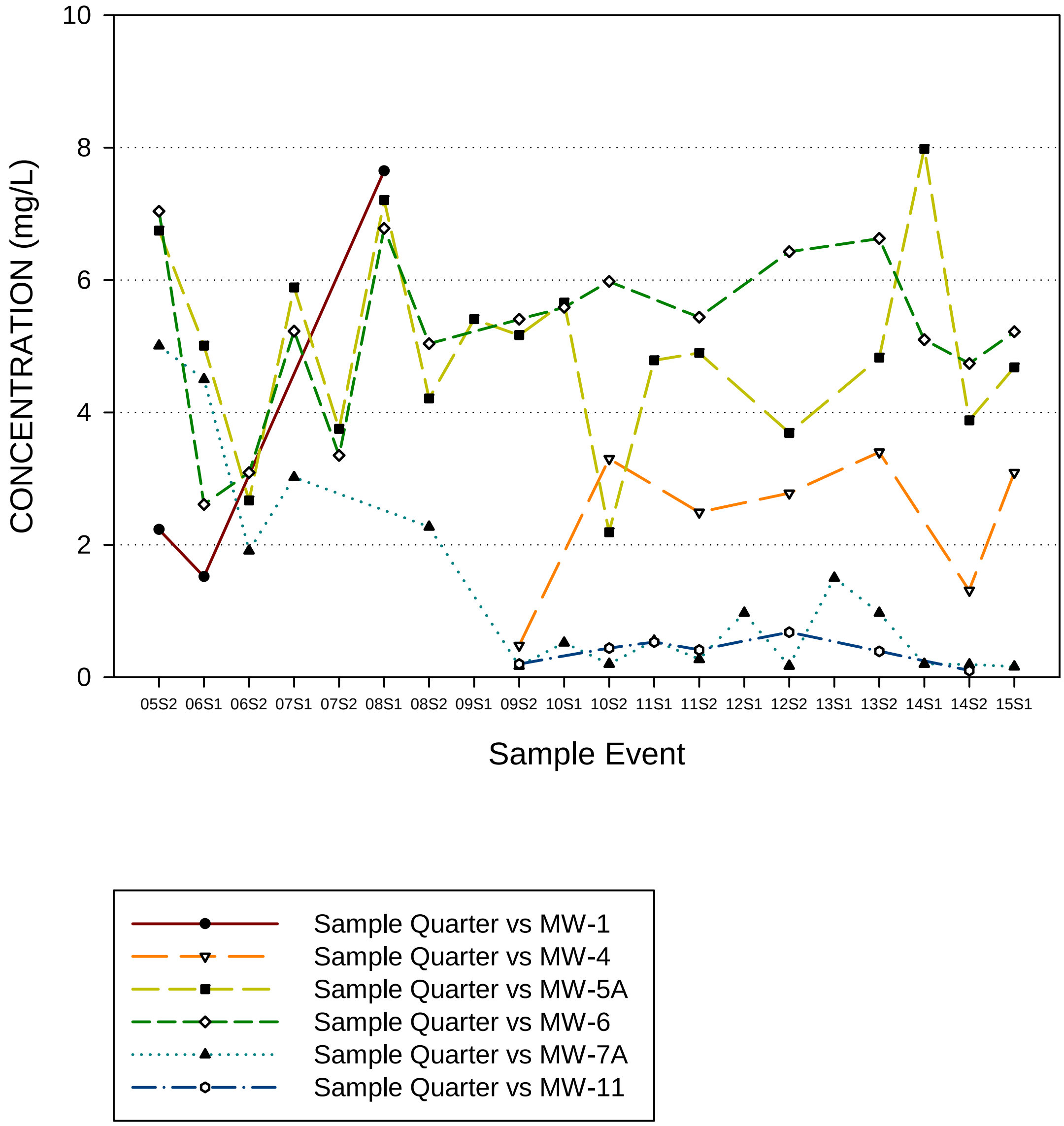


CHROMIUM
SURFICIAL AQUIFER
CONCENTRATION (µg/L)
140
120
100
80
60
40
20
0
PDWS: 100
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Event
Sample Event vs MW-1
Sample Event vs MW-4
Sample Event vs MW-5A
Sample Event vs MW-6
Sample Event vs MW-7A
Sample Event vs MW-11
Plot 2 PDWS: 100


DISSOLVED OXYGEN
SURFICIAL AQUIFER
10
8
6
4
2
0
CONCENTRATION (mg/L)
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (mg/L)

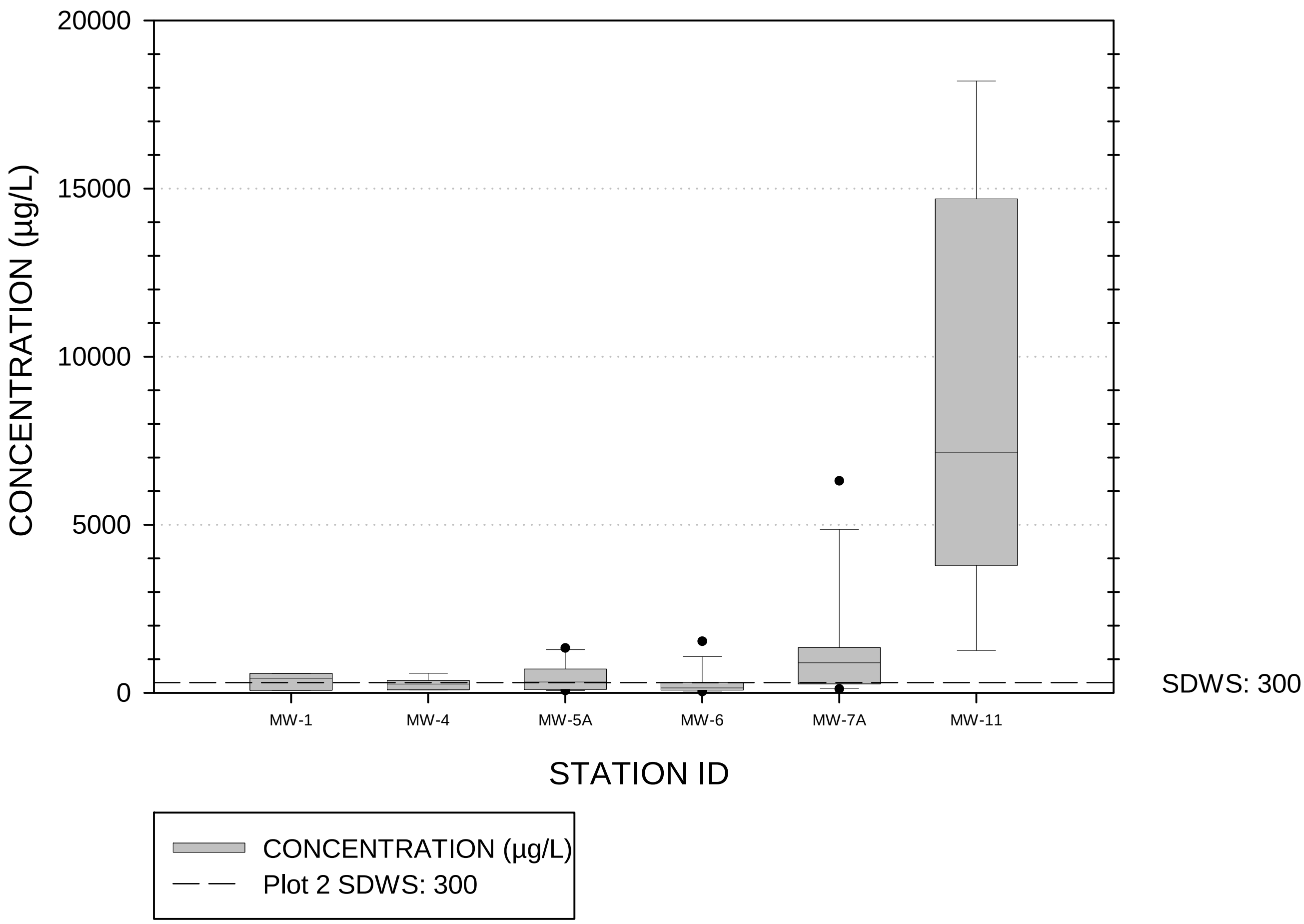
DISSOLVED OXYGEN

SURFICIAL AQUIFER



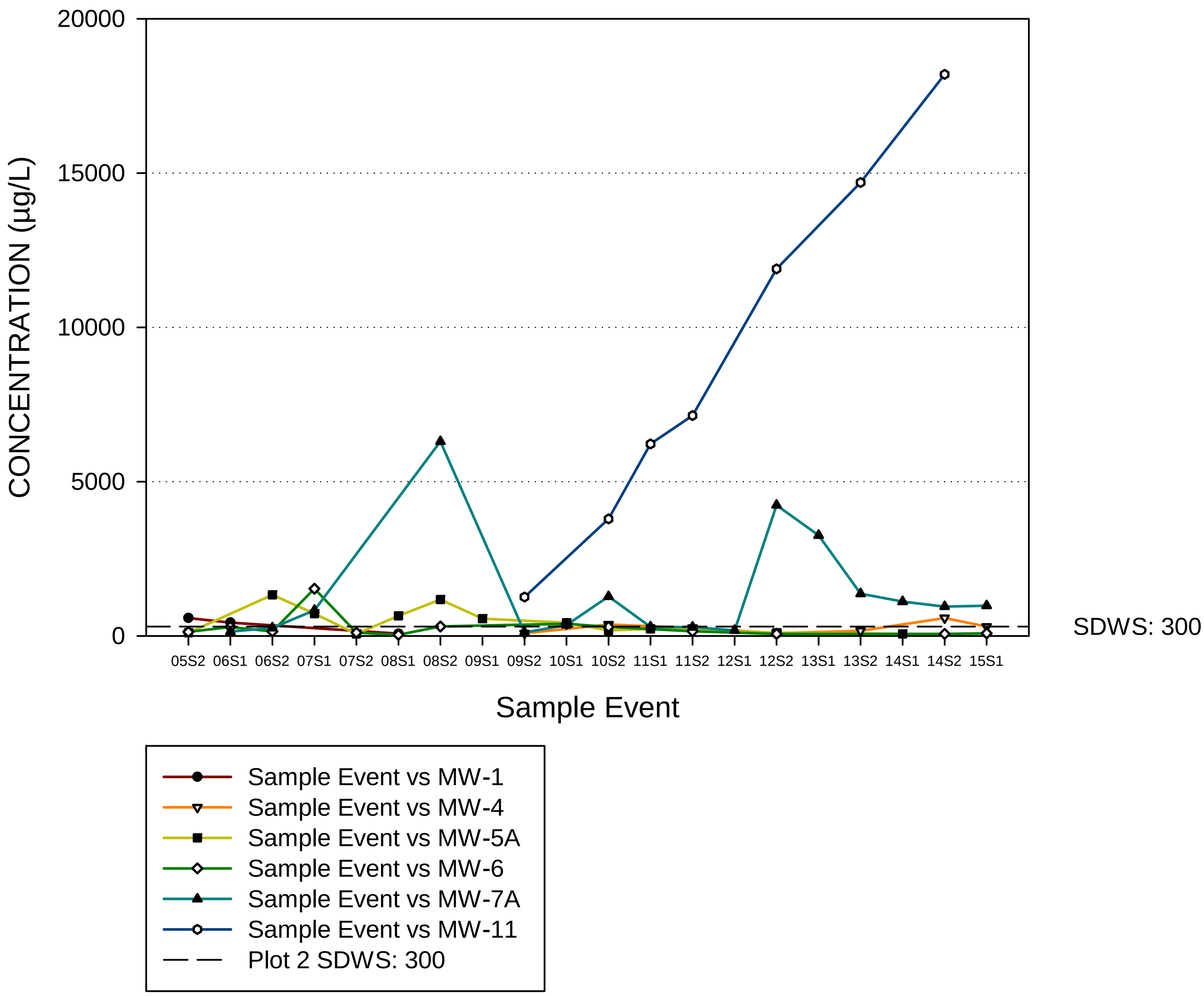
IRON

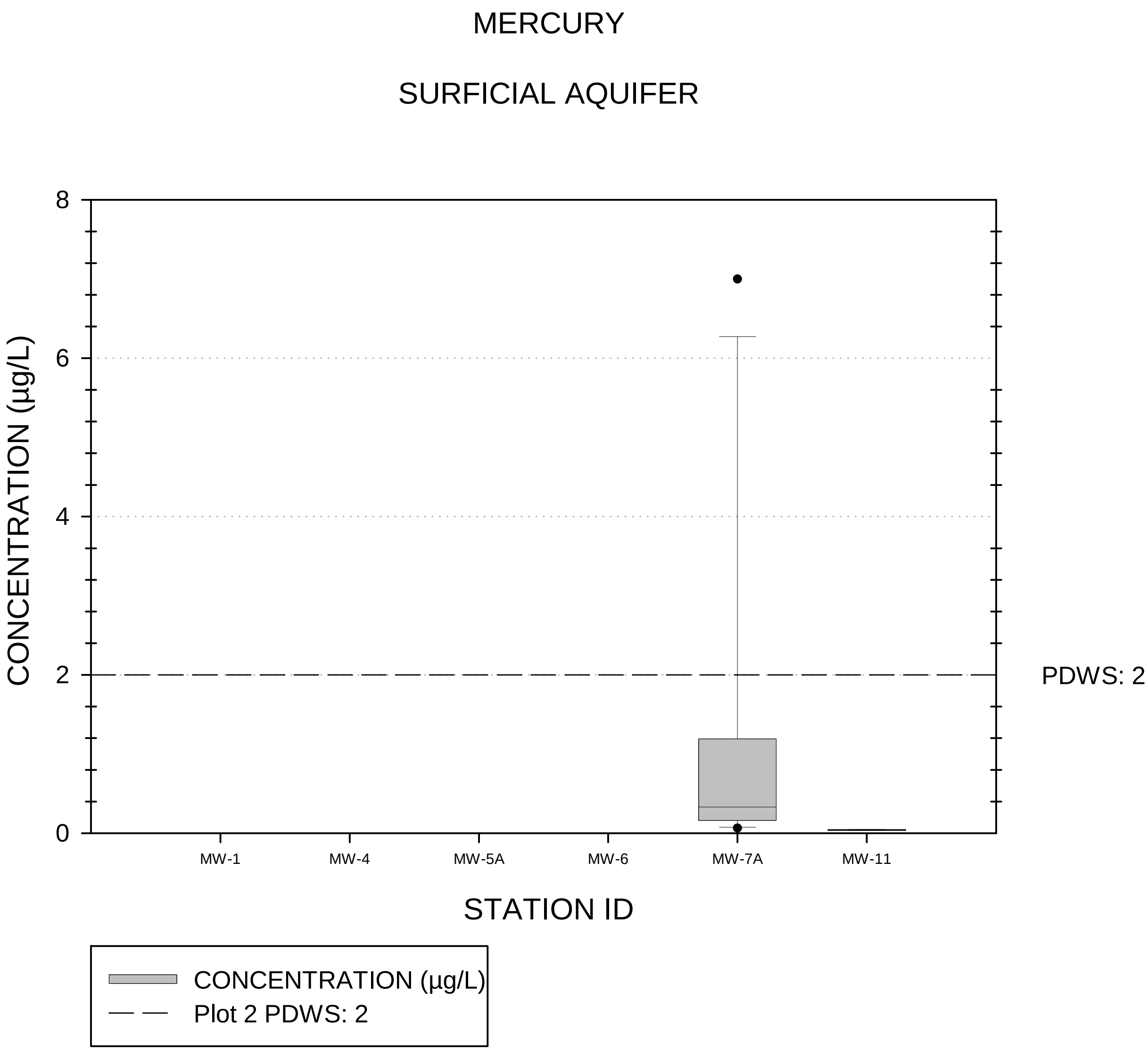
SURFICIAL AQUIFER



IRON

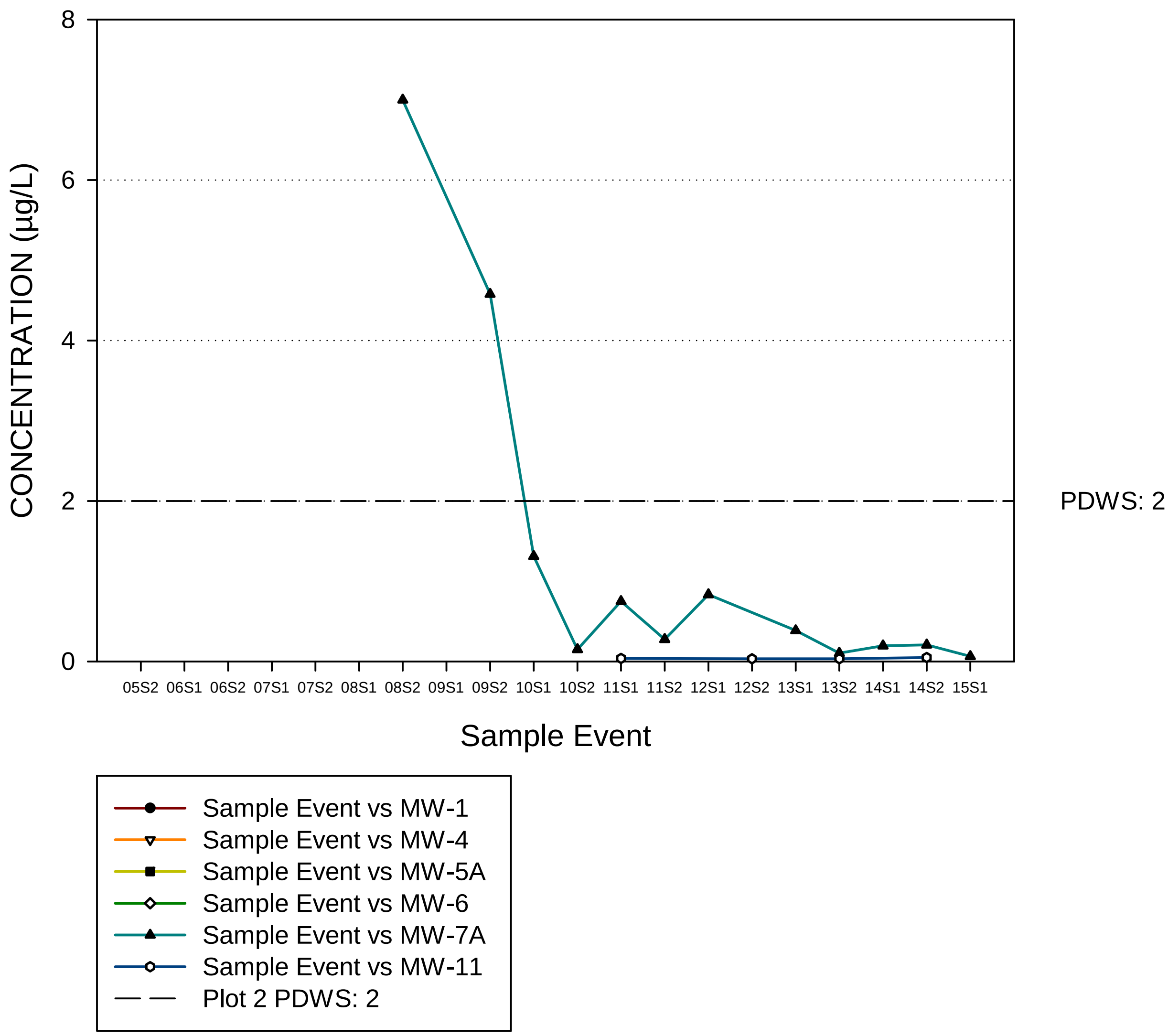
SURFICIAL AQUIFER

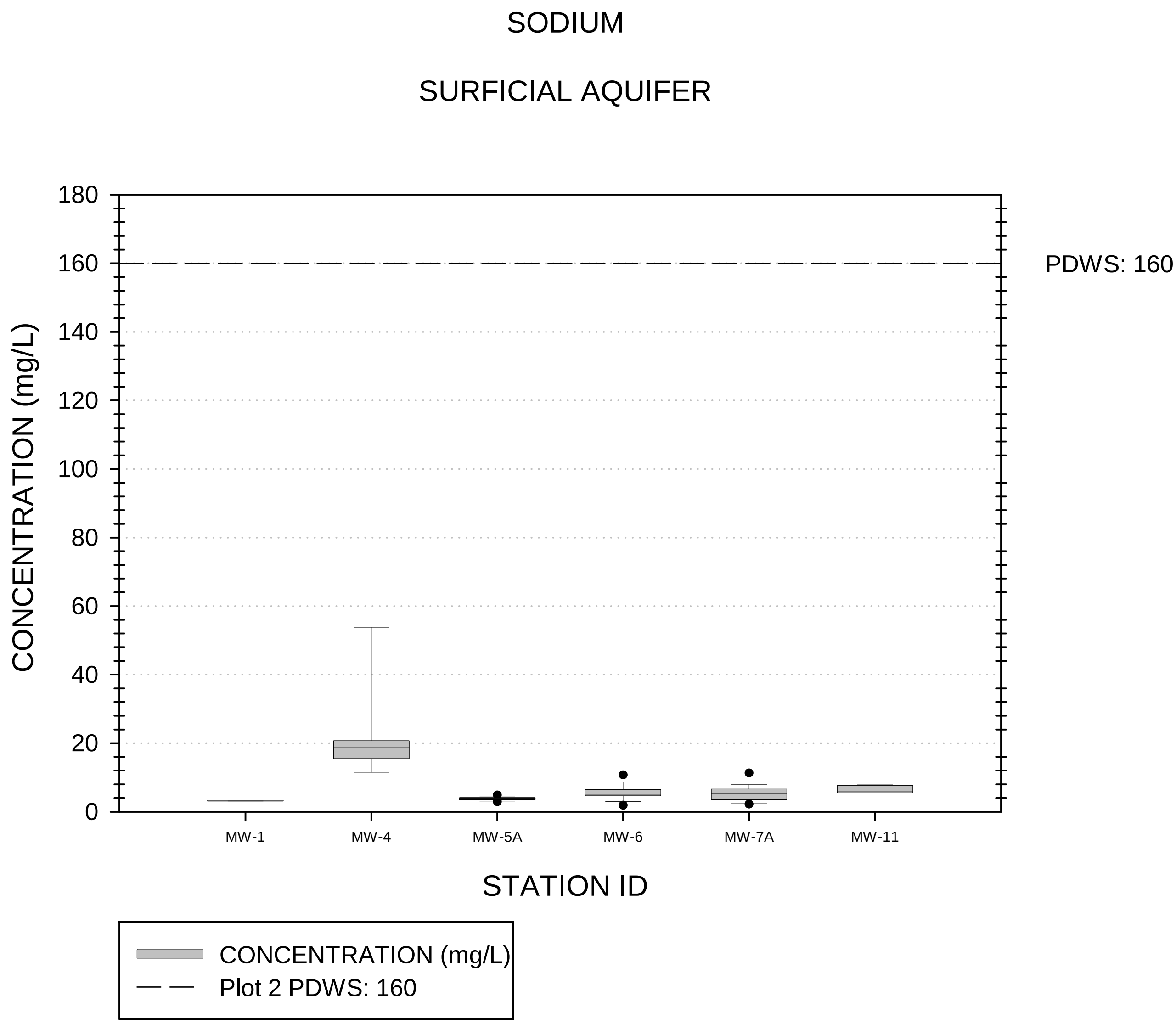



MERCURY
SURFICIAL AQUIFER
CONCENTRATION (µg/L)
8
6
4
2
0
PDWS: 2
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 2

MERCURY

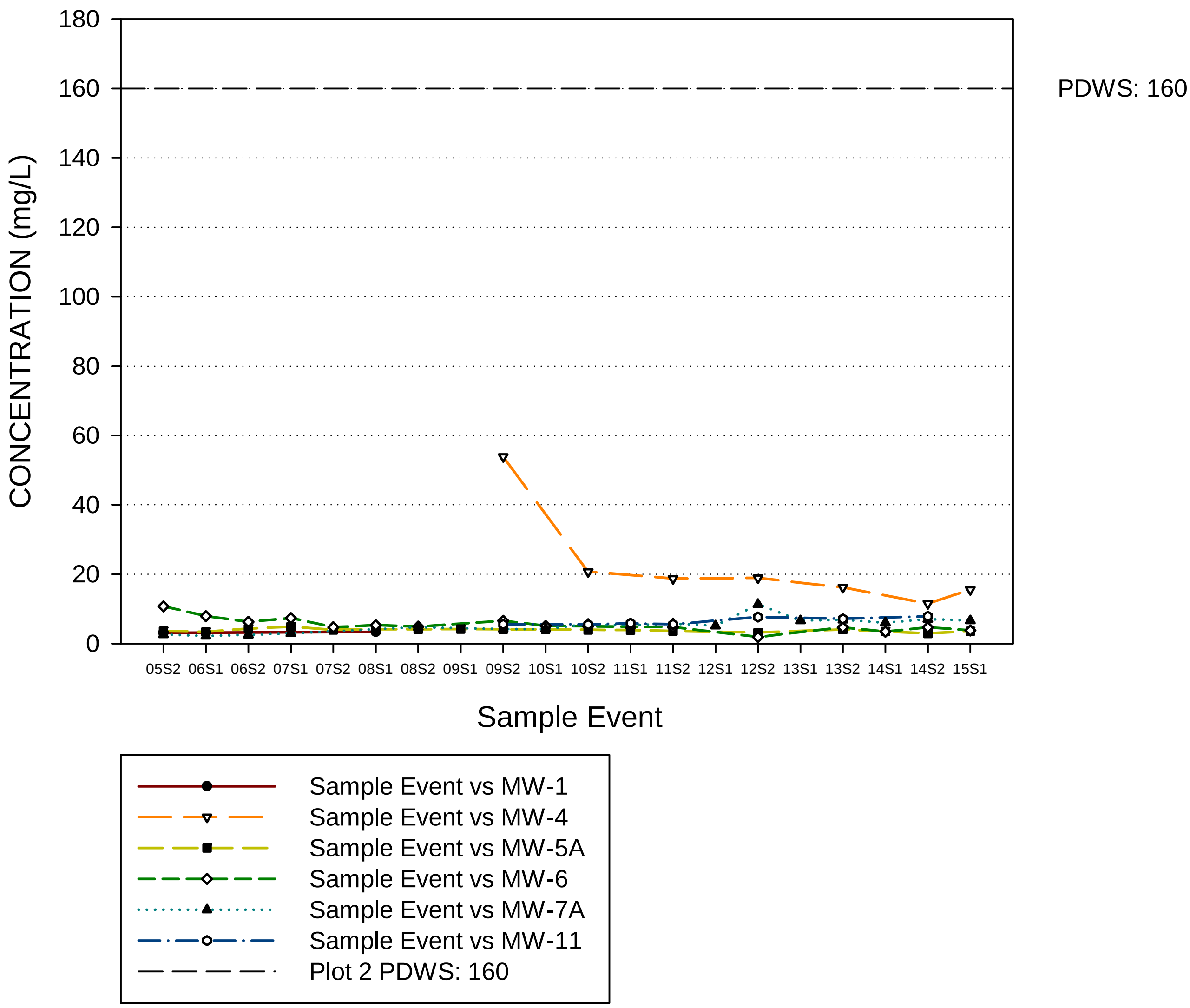
SURFICIAL AQUIFER

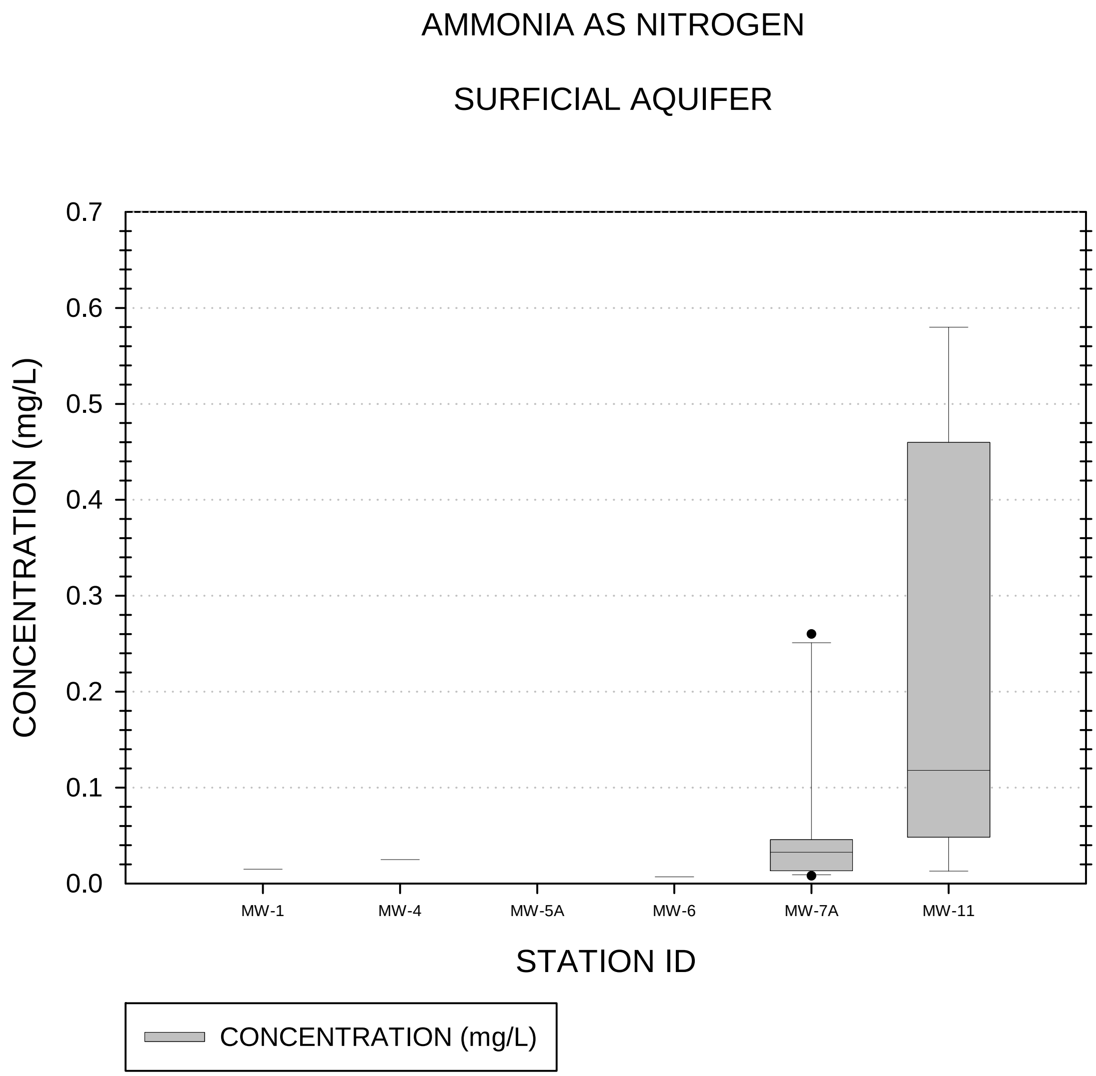



SODIUM
SURFICIAL AQUIFER
180
160
140
120
100
80
60
40
20
0
CONCENTRATION (mg/L)
PDWS: 160
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (mg/L)
Plot 2 PDWS: 160

SODIUM

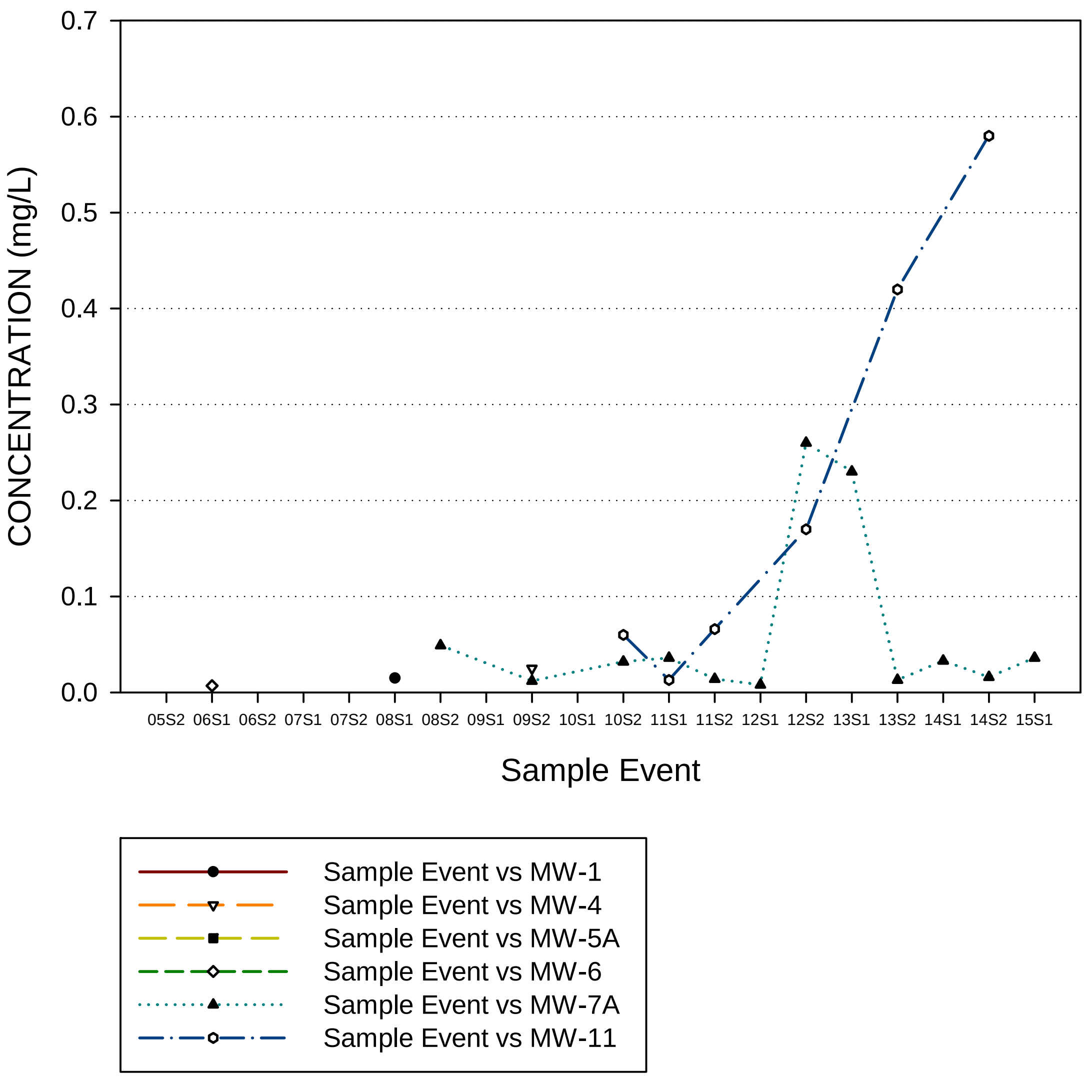
SURFICIAL AQUIFER




AMMONIA AS NITROGEN
SURFICIAL AQUIFER
CONCENTRATION (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (mg/L)

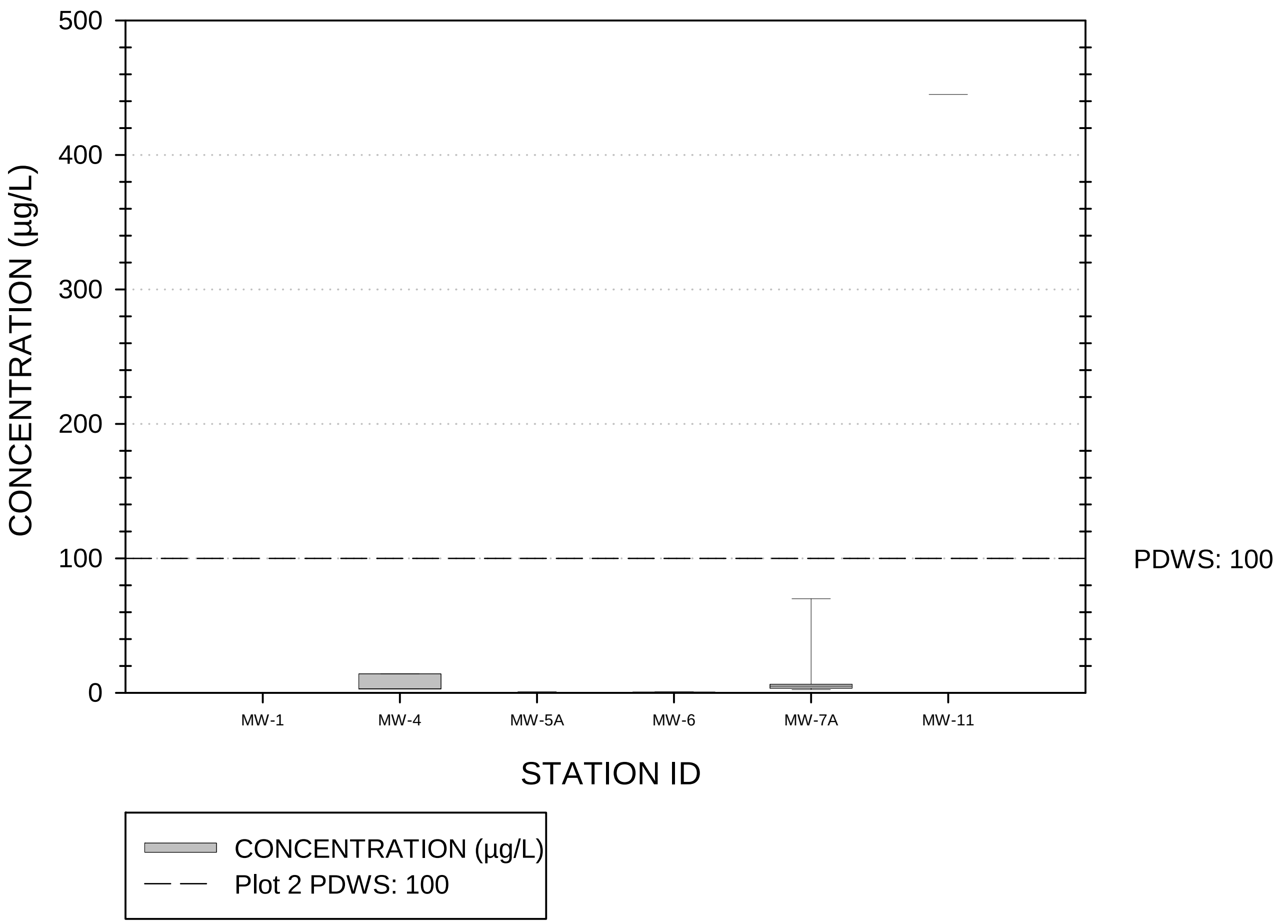
AMMONIA AS NITROGEN

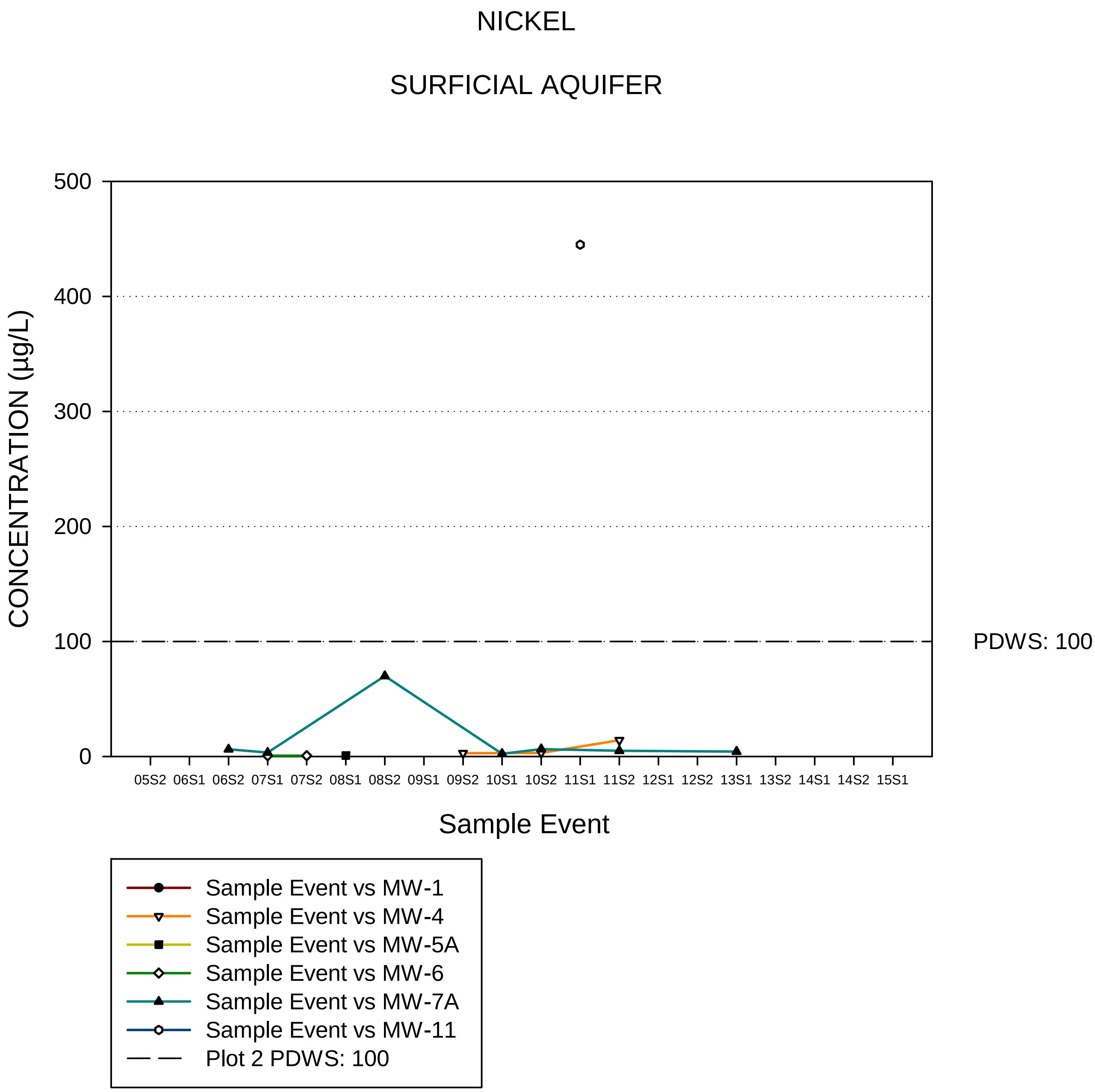
SURFICIAL AQUIFER



NICKEL

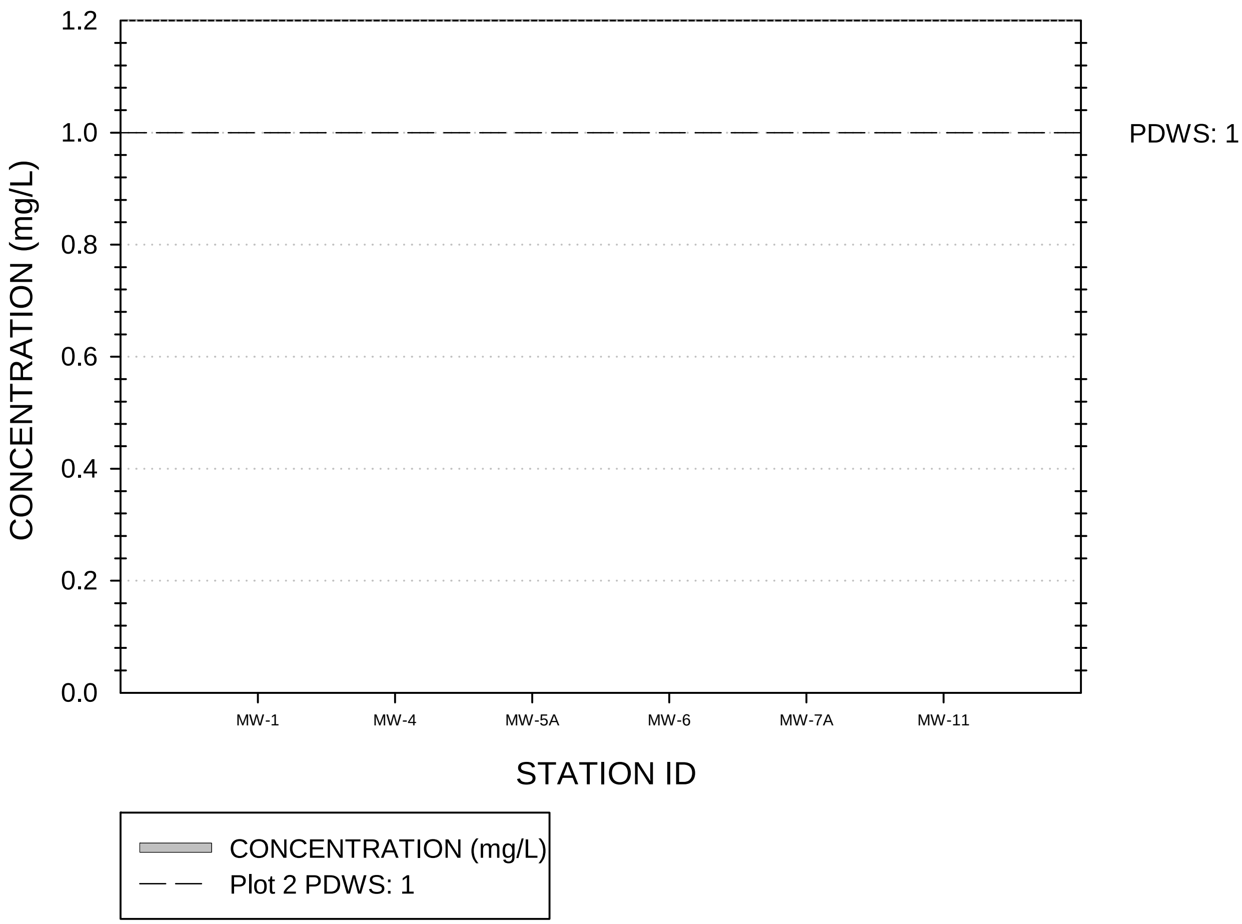
SURFICIAL AQUIFER

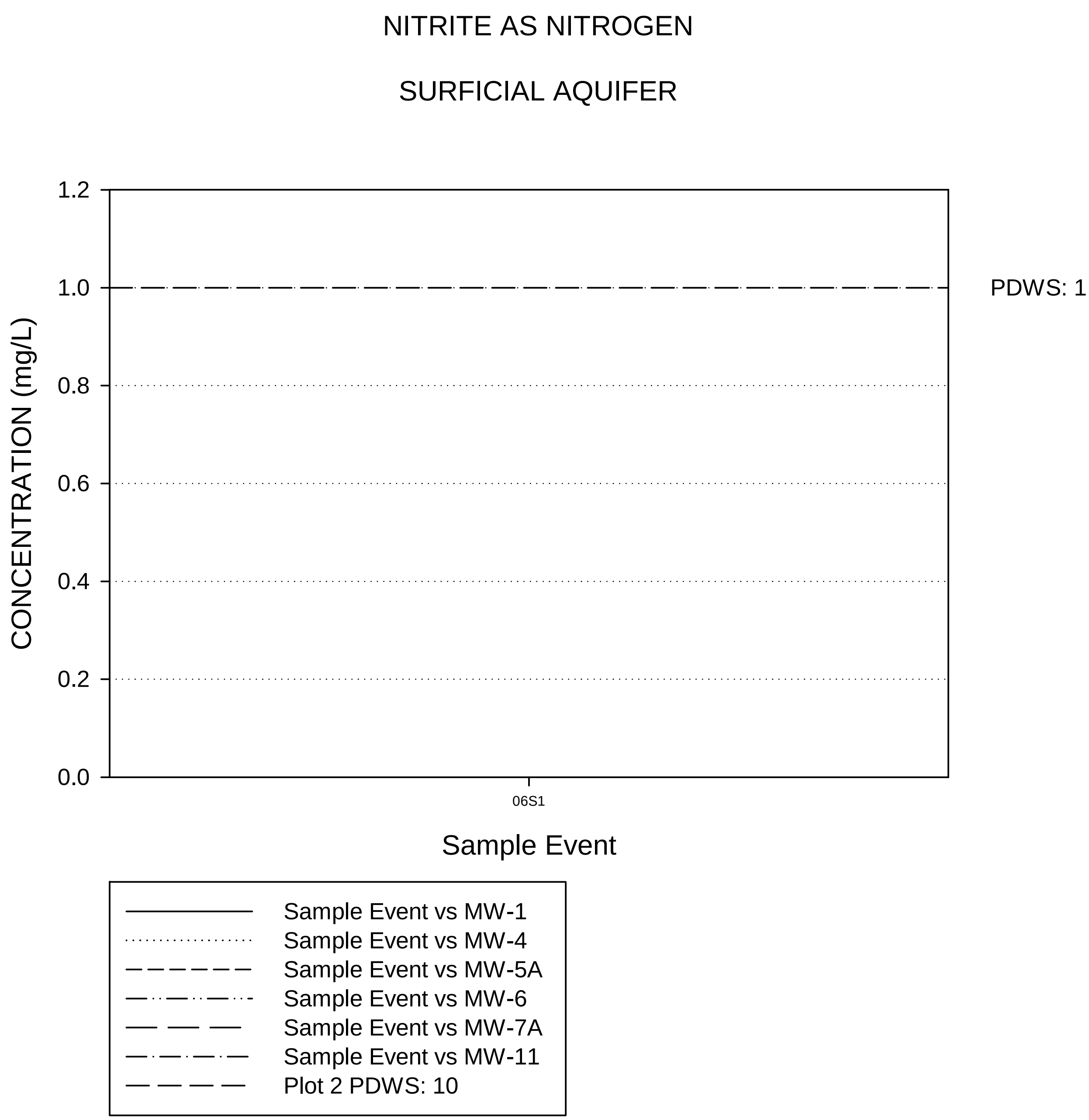


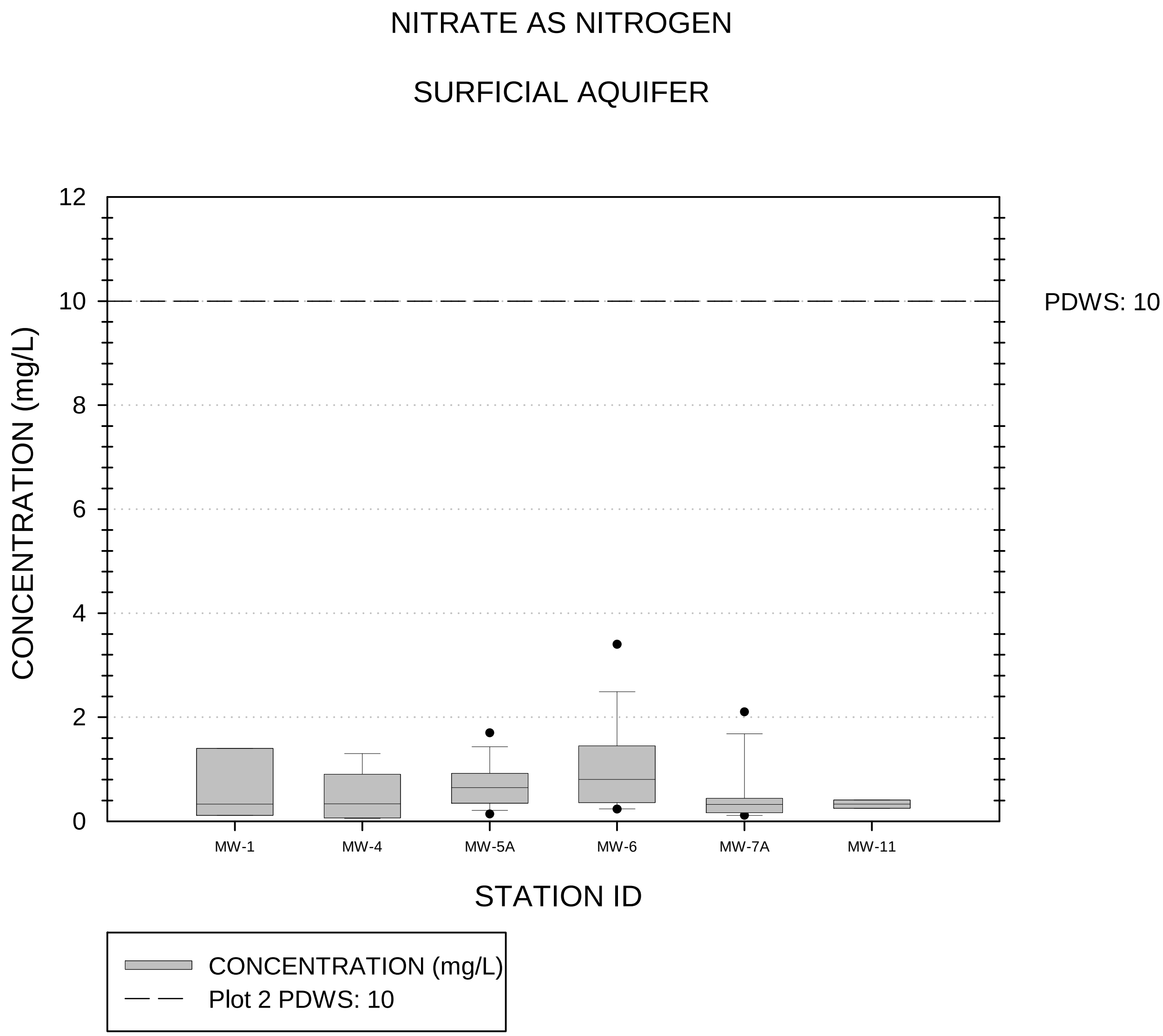

NICKEL
SURFICIAL AQUIFER
CONCENTRATION (µg/L)
500
400
300
200
100
0
PDWS: 100
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Event
Sample Event vs MW-1
Sample Event vs MW-4
Sample Event vs MW-5A
Sample Event vs MW-6
Sample Event vs MW-7A
Sample Event vs MW-11
Plot 2 PDWS: 100

NITRITE AS NITROGEN

SURFICIAL AQUIFER

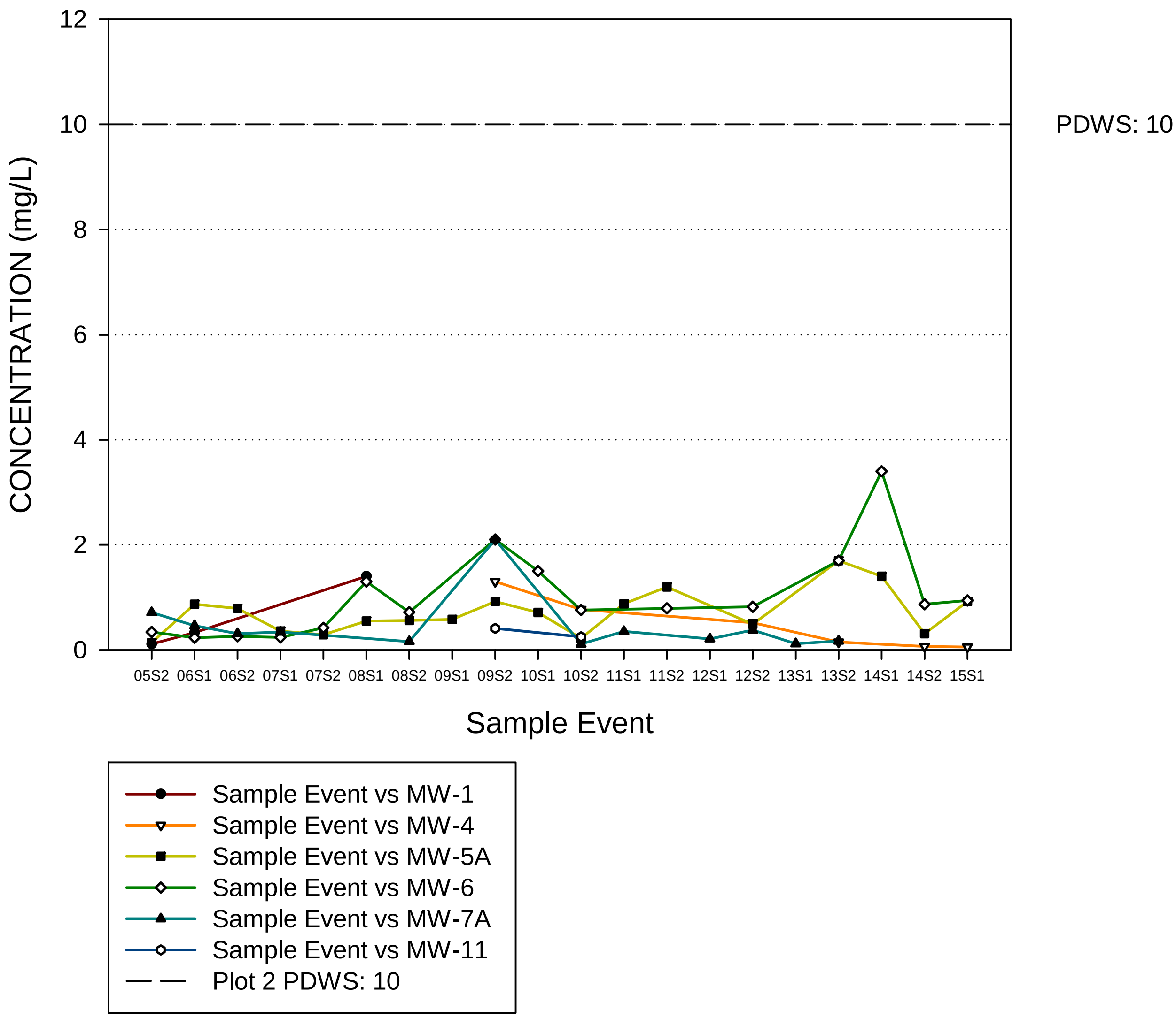



NITRITE AS NITROGEN
SURFICIAL AQUIFER
CONCENTRATION (mg/L)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
PDWS: 1
06S1
Sample Event
Sample Event vs MW-1
Sample Event vs MW-4
Sample Event vs MW-5A
Sample Event vs MW-6
Sample Event vs MW-7A
Sample Event vs MW-11
Plot 2 PDWS: 10


NITRATE AS NITROGEN
SURFICIAL AQUIFER
CONCENTRATION (mg/L)
12
10
8
6
4
2
0
PDWS: 10
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (mg/L)
Plot 2 PDWS: 10

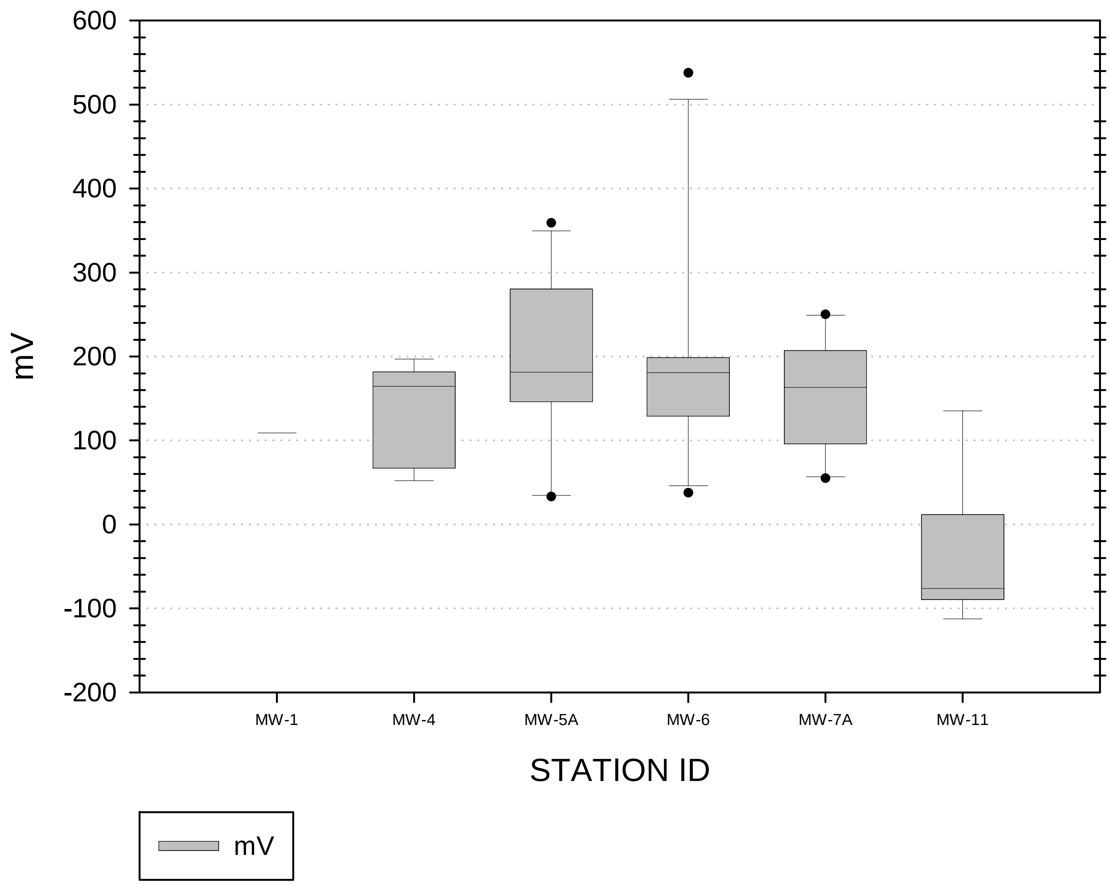
NITRATE AS NITROGEN

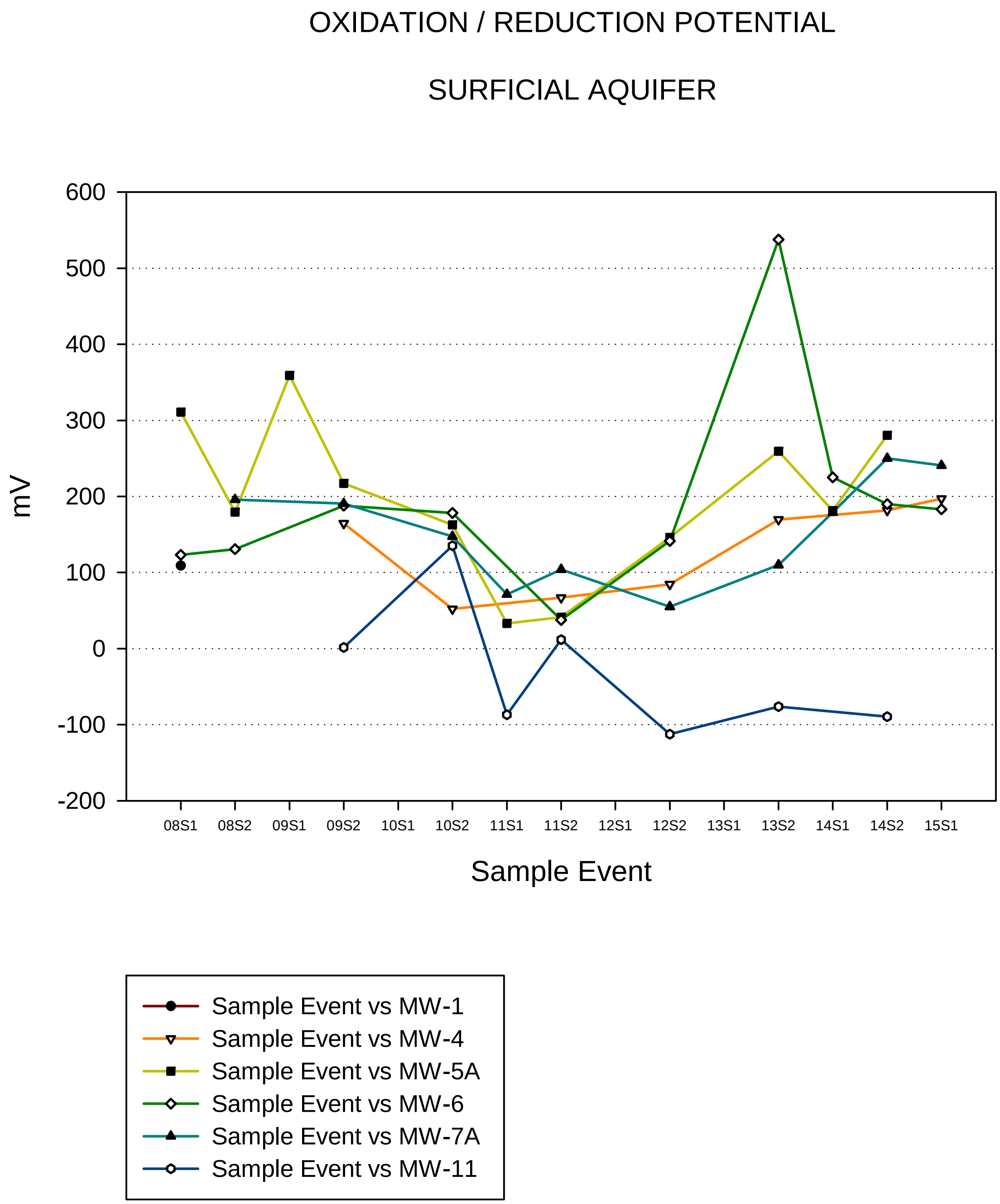
SURFICIAL AQUIFER

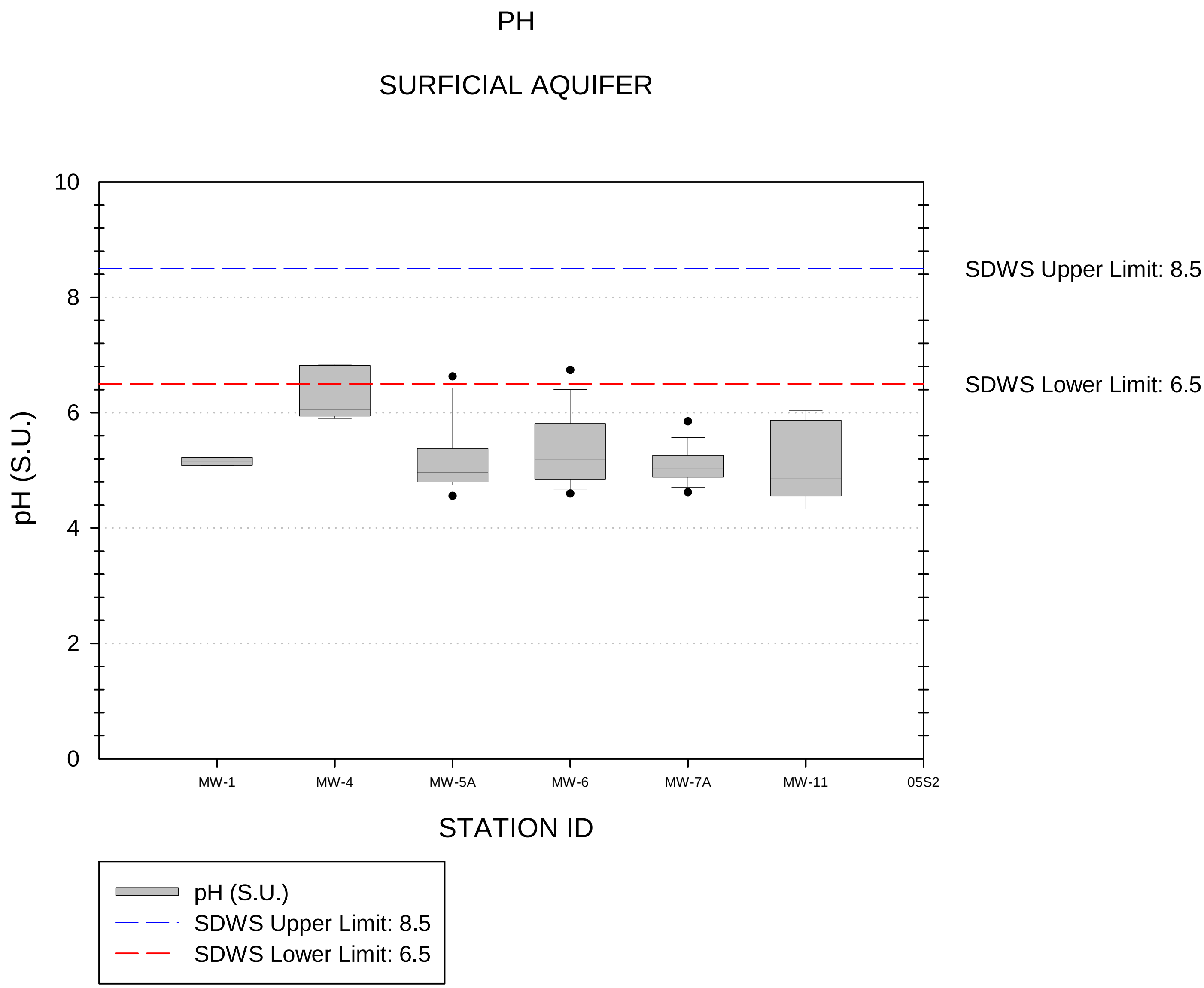


OXIDATION / REDUCTION POTENTIAL

SURFICIAL AQUIFER

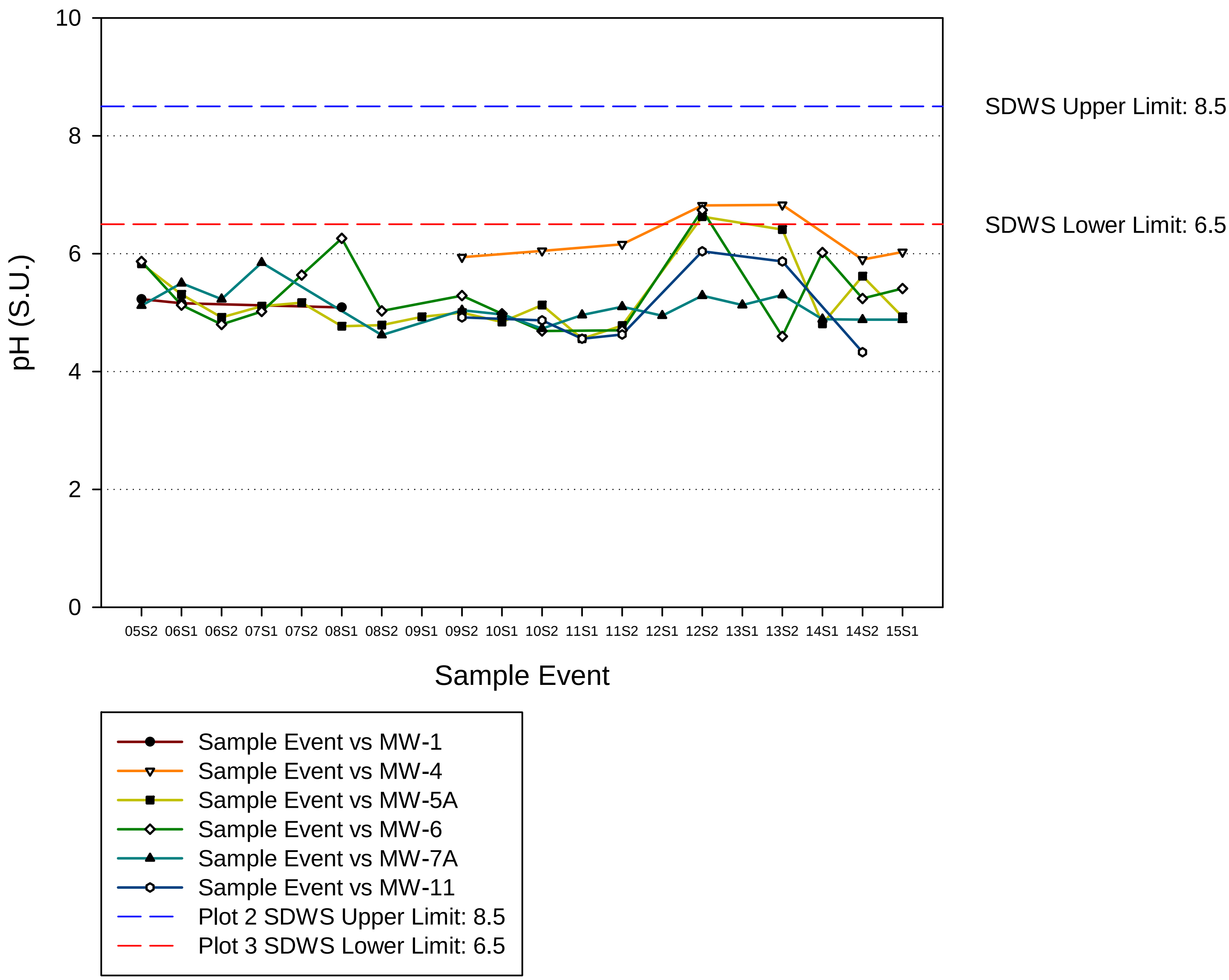



OXIDATION / REDUCTION POTENTIAL
SURFICIAL AQUIFER
600
500
400
300
200
100
0
-100
-200
mV
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Event
Sample Event vs MW-1
Sample Event vs MW-4
Sample Event vs MW-5A
Sample Event vs MW-6
Sample Event vs MW-7A
Sample Event vs MW-11


PH
SURFICIAL AQUIFER
10
8
6
4
2
0
pH (S.U.)
SDWS Upper Limit: 8.5
SDWS Lower Limit: 6.5
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
05S2
STATION ID
pH (S.U.)
SDWS Upper Limit: 8.5
SDWS Lower Limit: 6.5

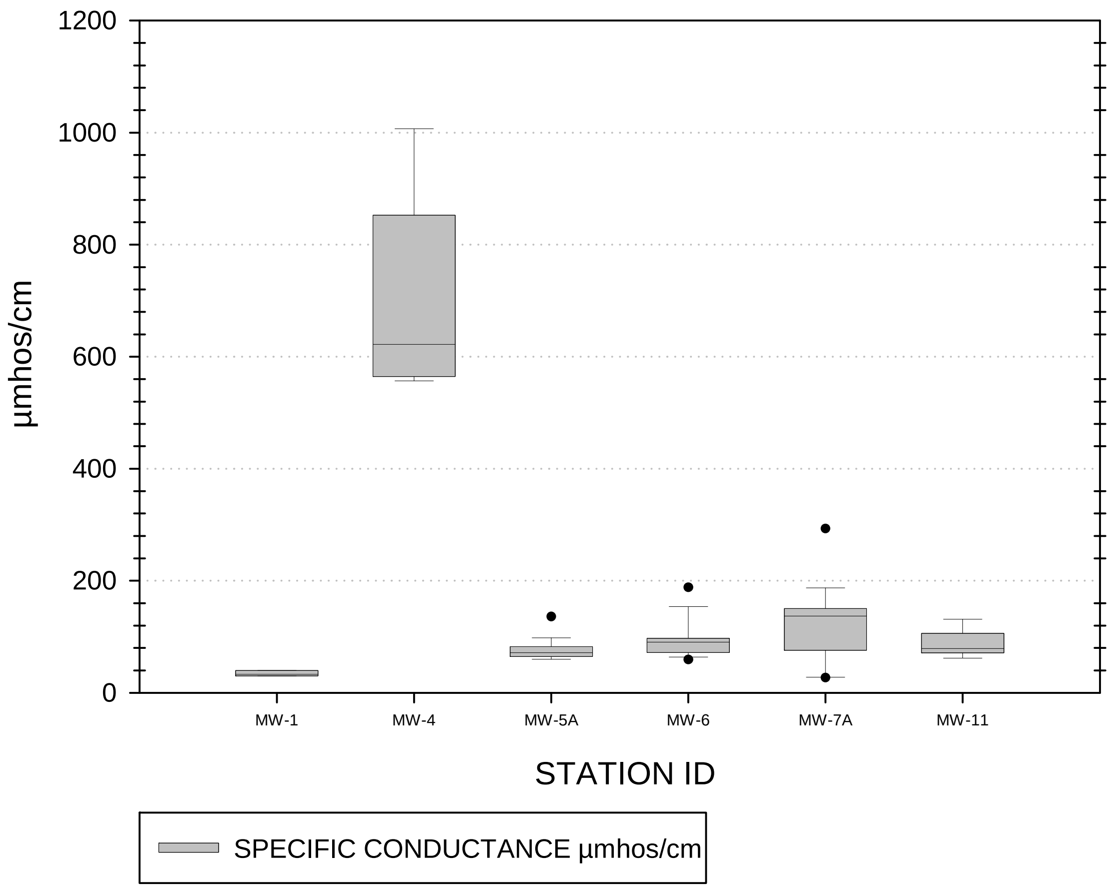
PH

SURFICIAL AQUIFER



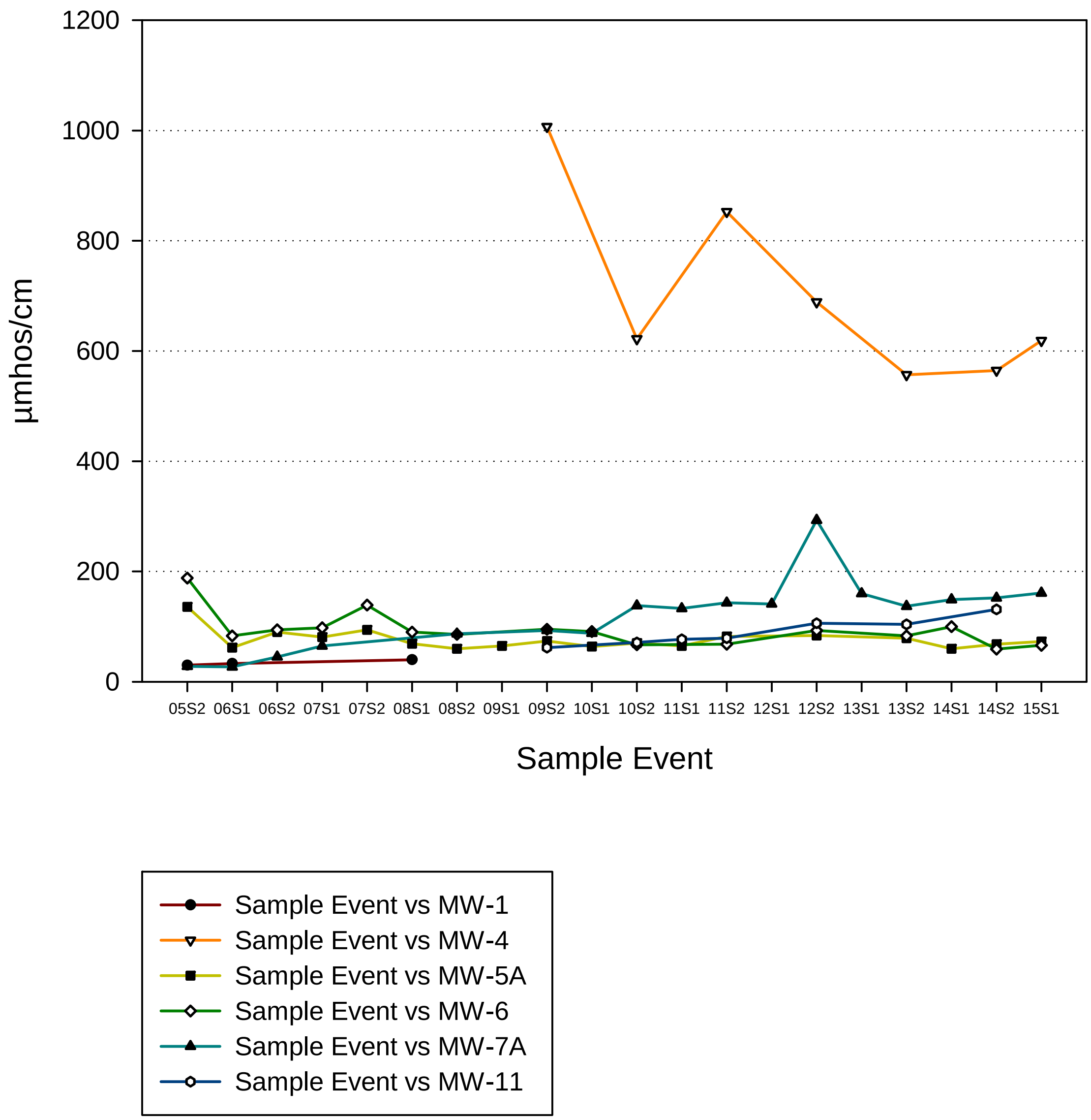
SPECIFIC CONDUCTANCE

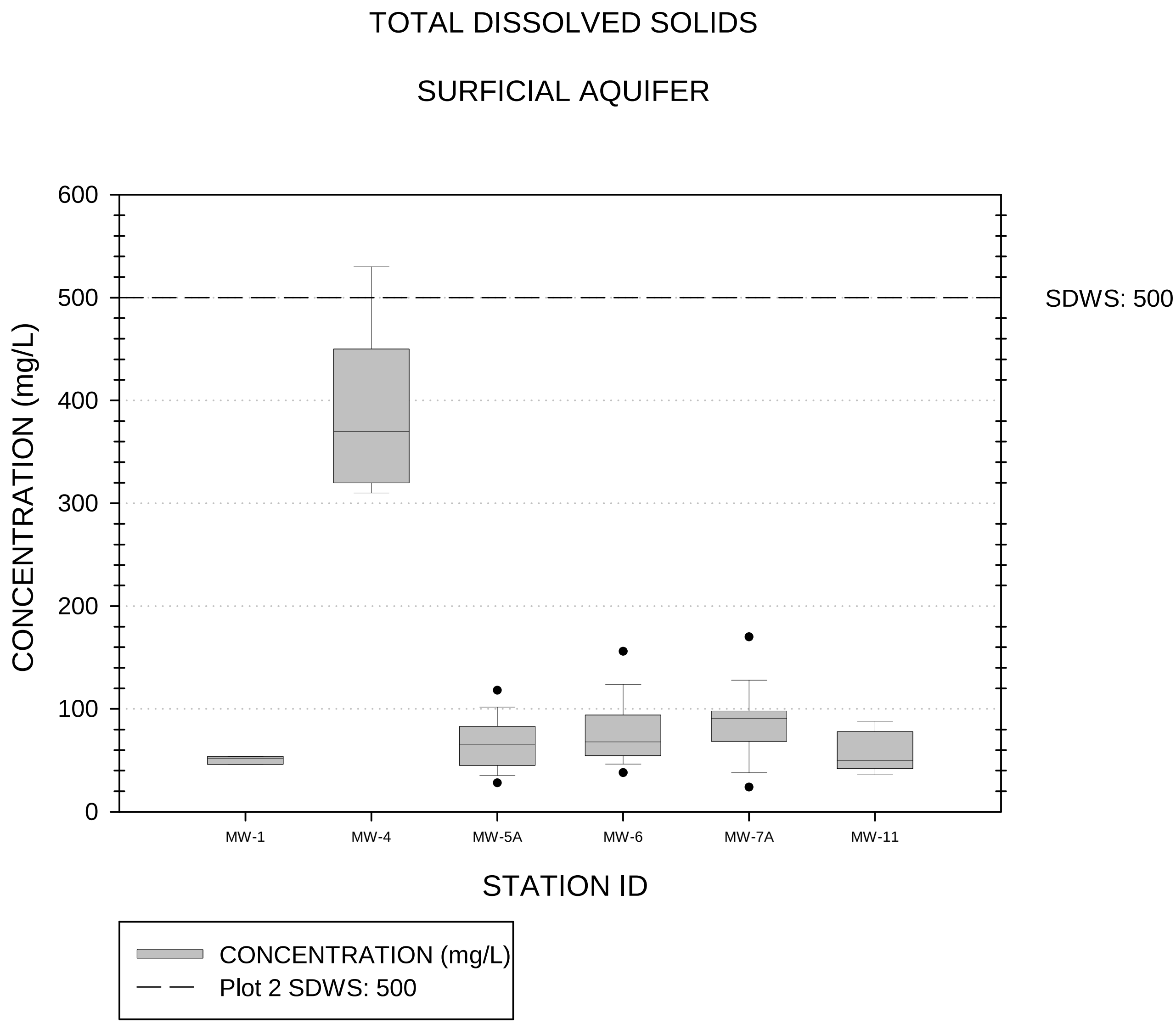
SURFICIAL AQUIFER

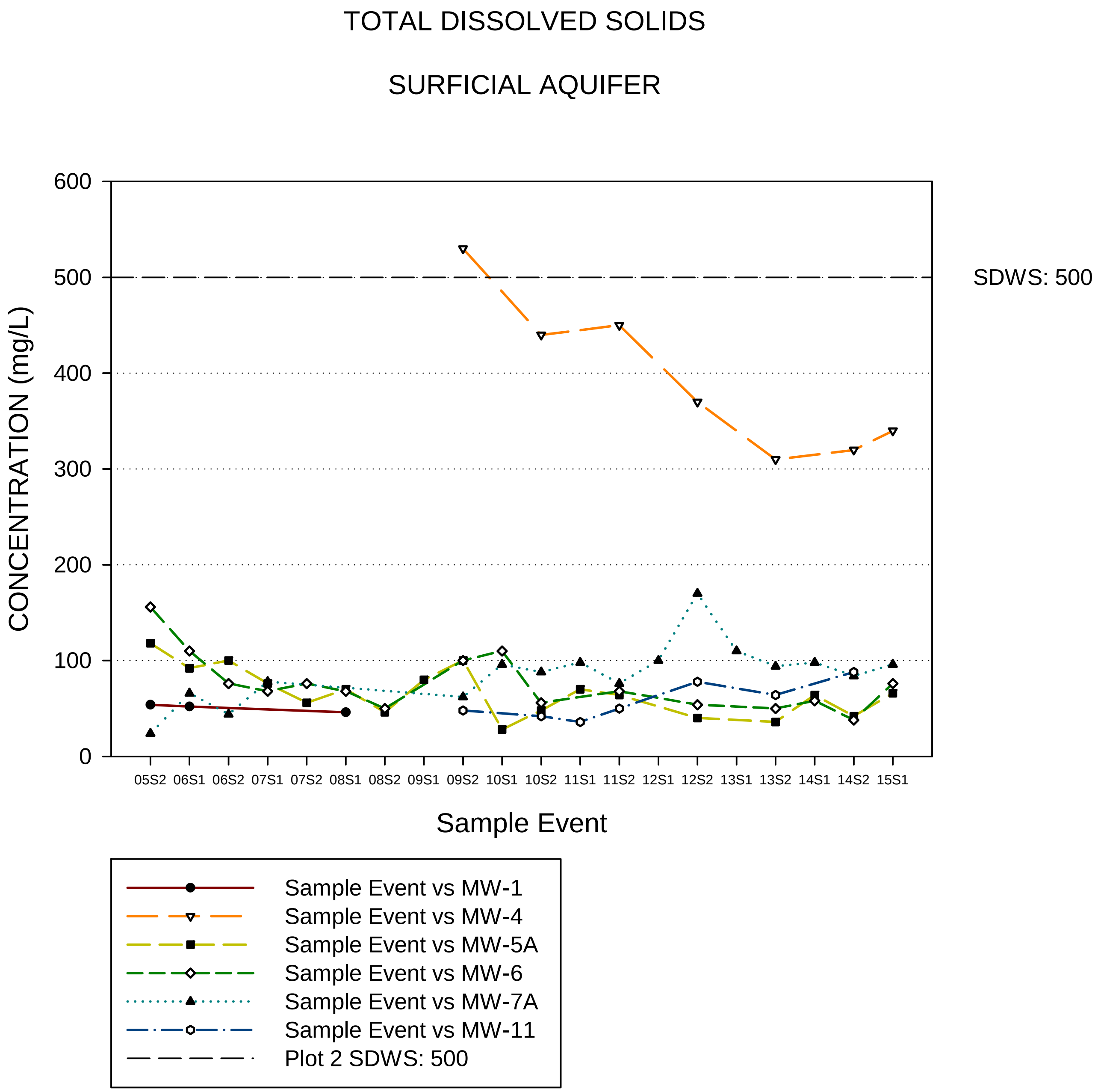


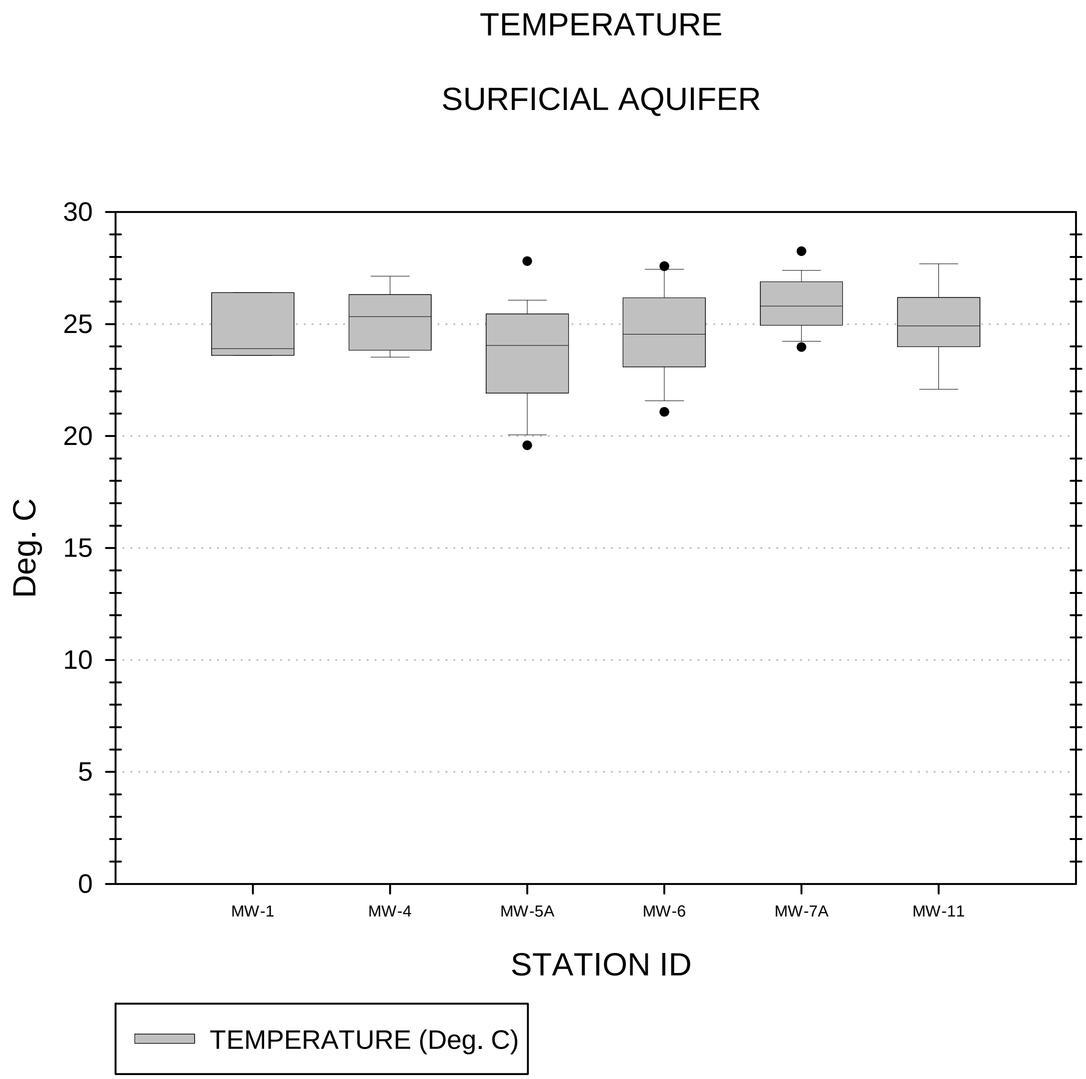
SPECIFIC CONDUCTANCE

SURFICIAL AQUIFER



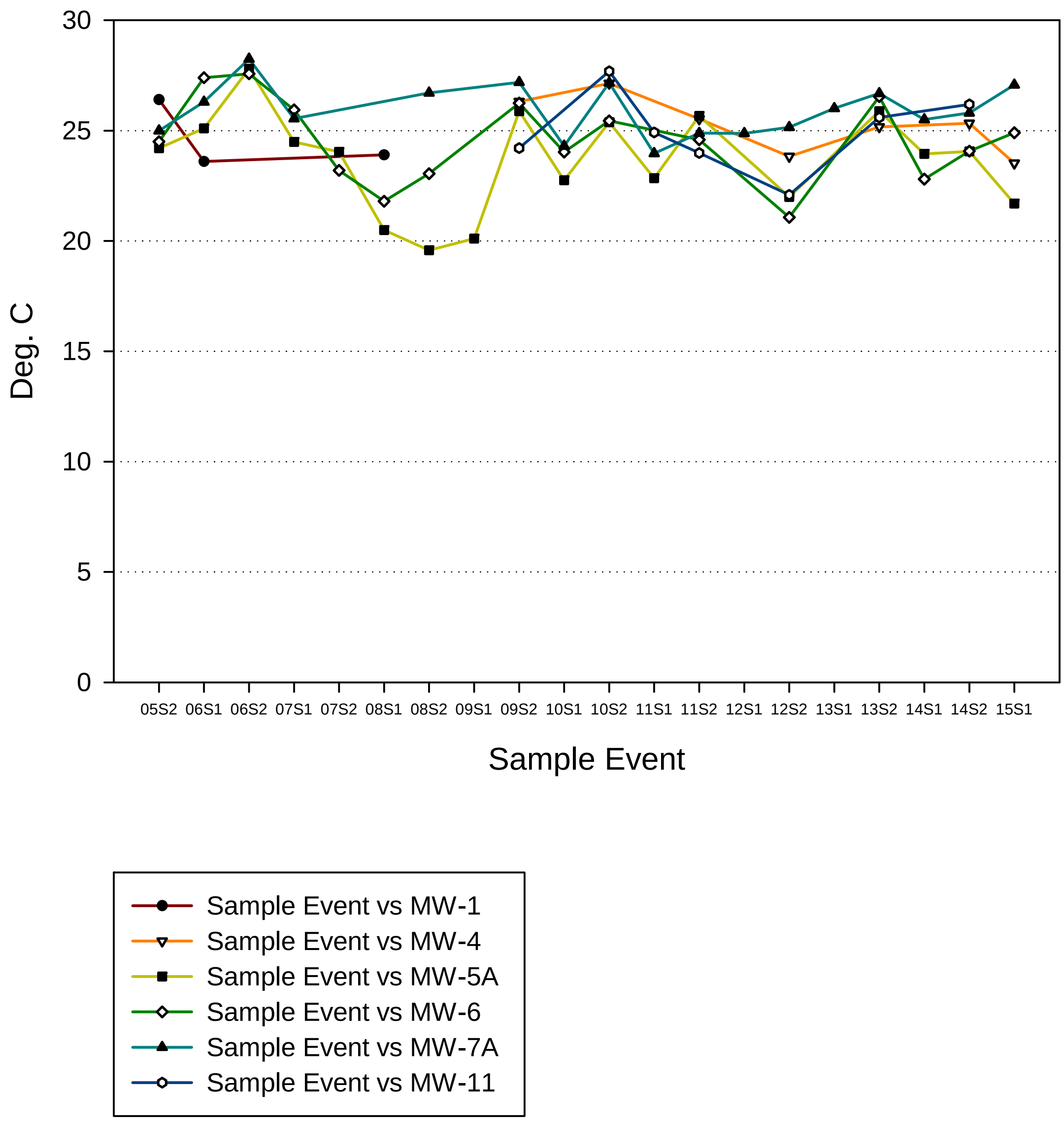

TOTAL DISSOLVED SOLIDS
SURFICIAL AQUIFER
600
500
400
300
200
100
0
CONCENTRATION (mg/L)
SDWS: 500
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (mg/L)
Plot 2 SDWS: 500

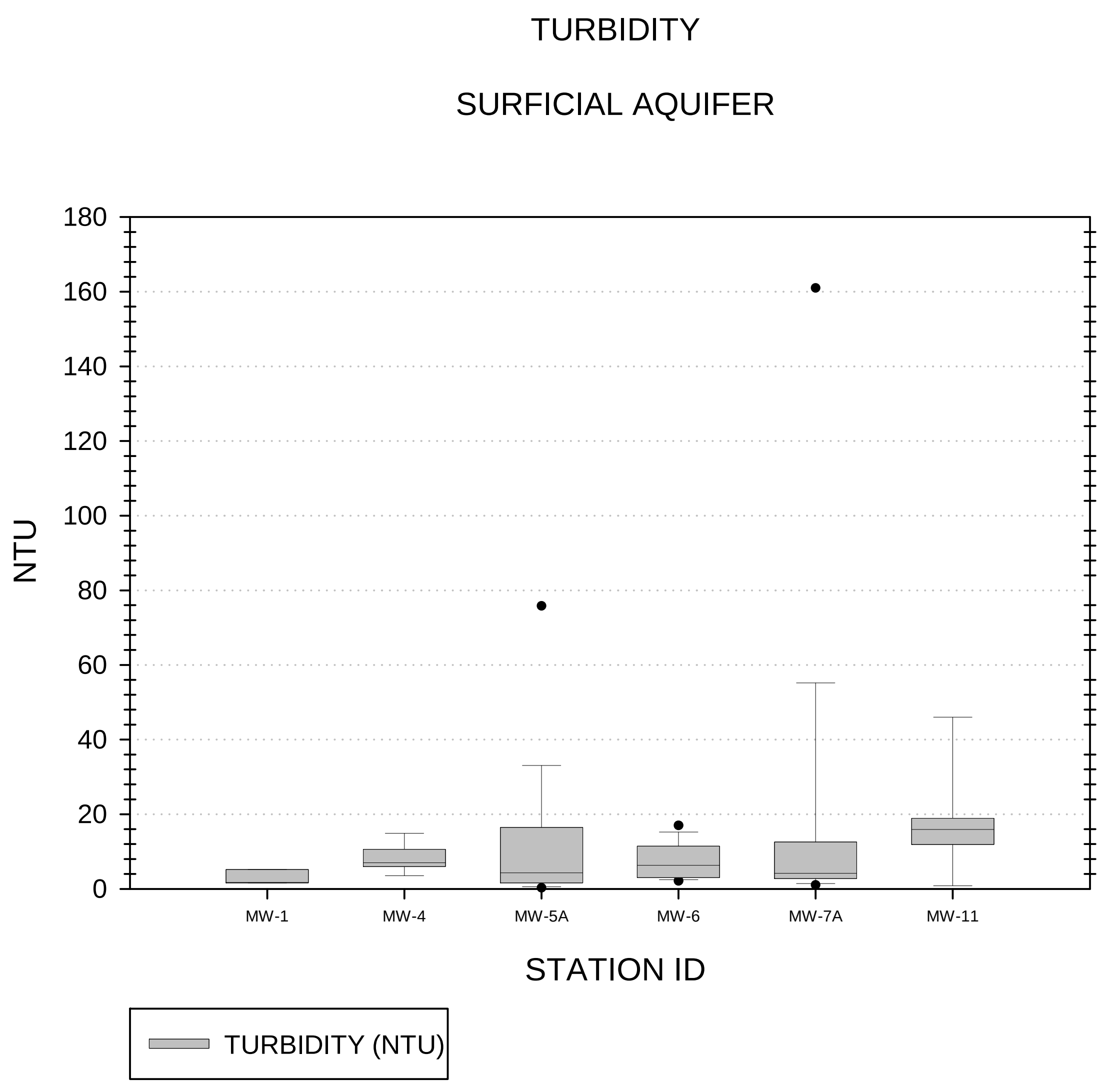

TOTAL DISSOLVED SOLIDS
SURFICIAL AQUIFER
CONCENTRATION (mg/L)
0
100
200
300
400
500
600
SDWS: 500
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Event
Sample Event vs MW-1
Sample Event vs MW-4
Sample Event vs MW-5A
Sample Event vs MW-6
Sample Event vs MW-7A
Sample Event vs MW-11
Plot 2 SDWS: 500


TEMPERATURE
SURFICIAL AQUIFER
30
25
20
15
10
5
0
Deg. C
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
TEMPERATURE (Deg. C)

TEMPERATURE

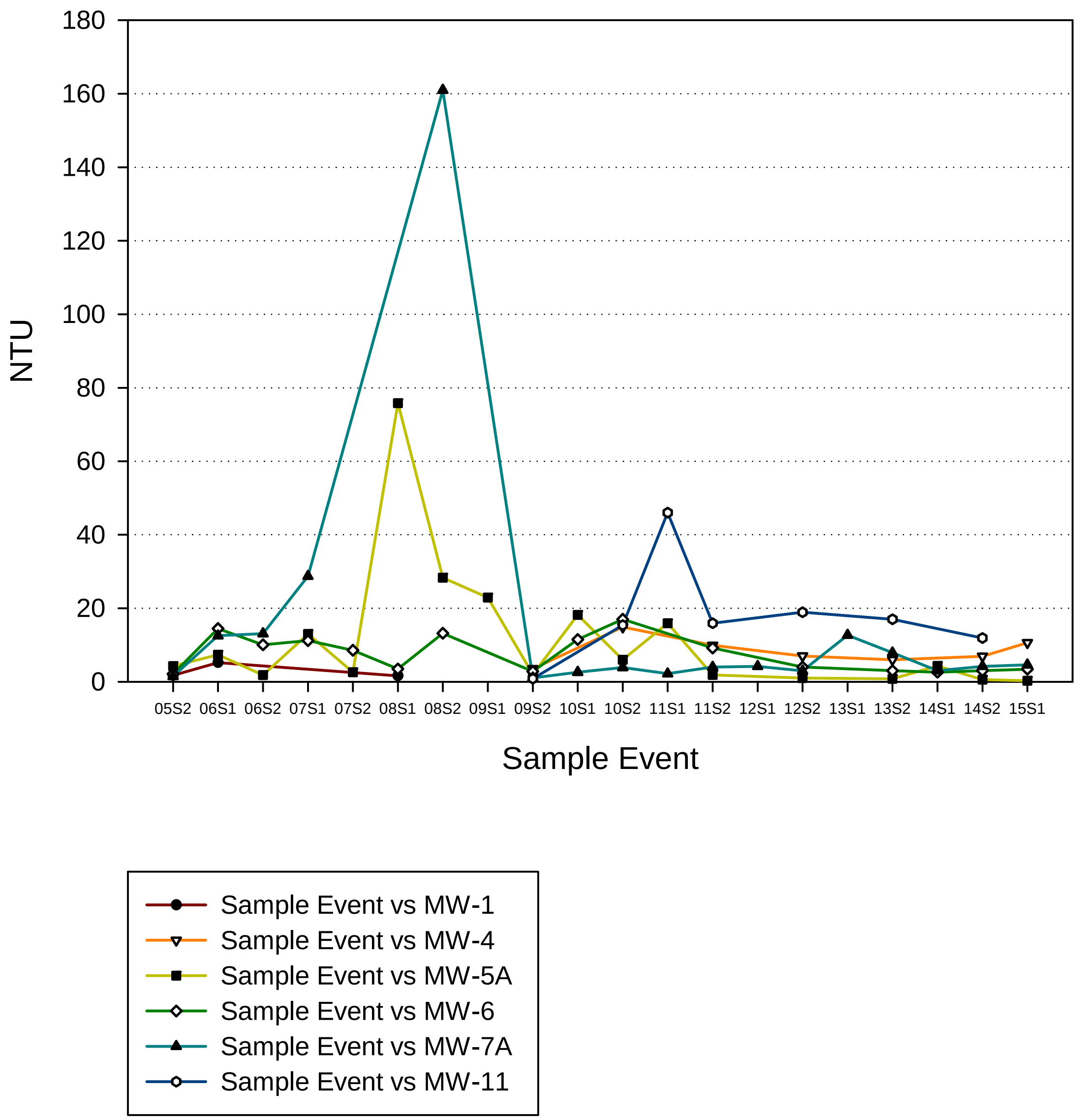
SURFICIAL AQUIFER




TURBIDITY
SURFICIAL AQUIFER
NTU
0
20
40
60
80
100
120
140
160
180
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
TURBIDITY (NTU)

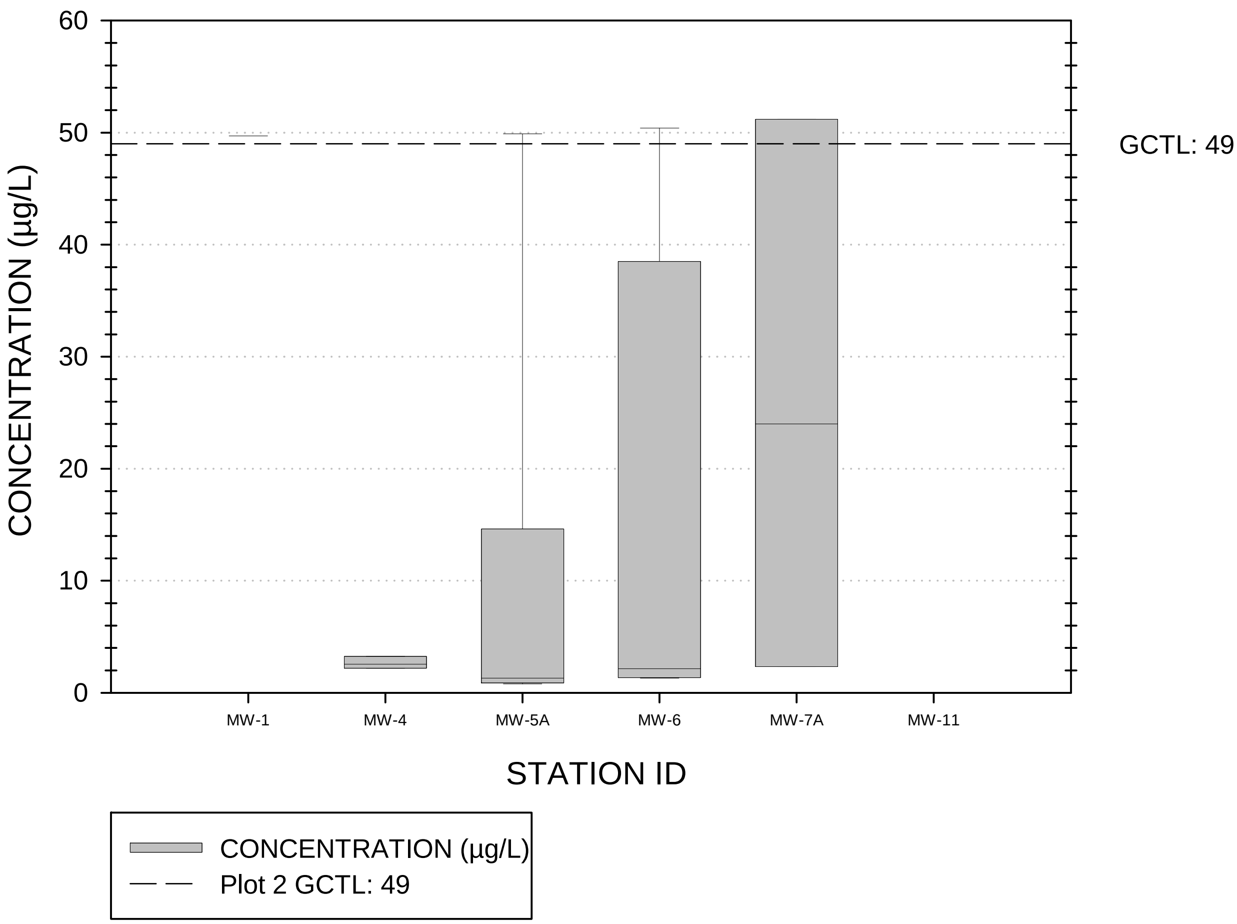
TURBIDITY

SURFICIAL AQUIFER



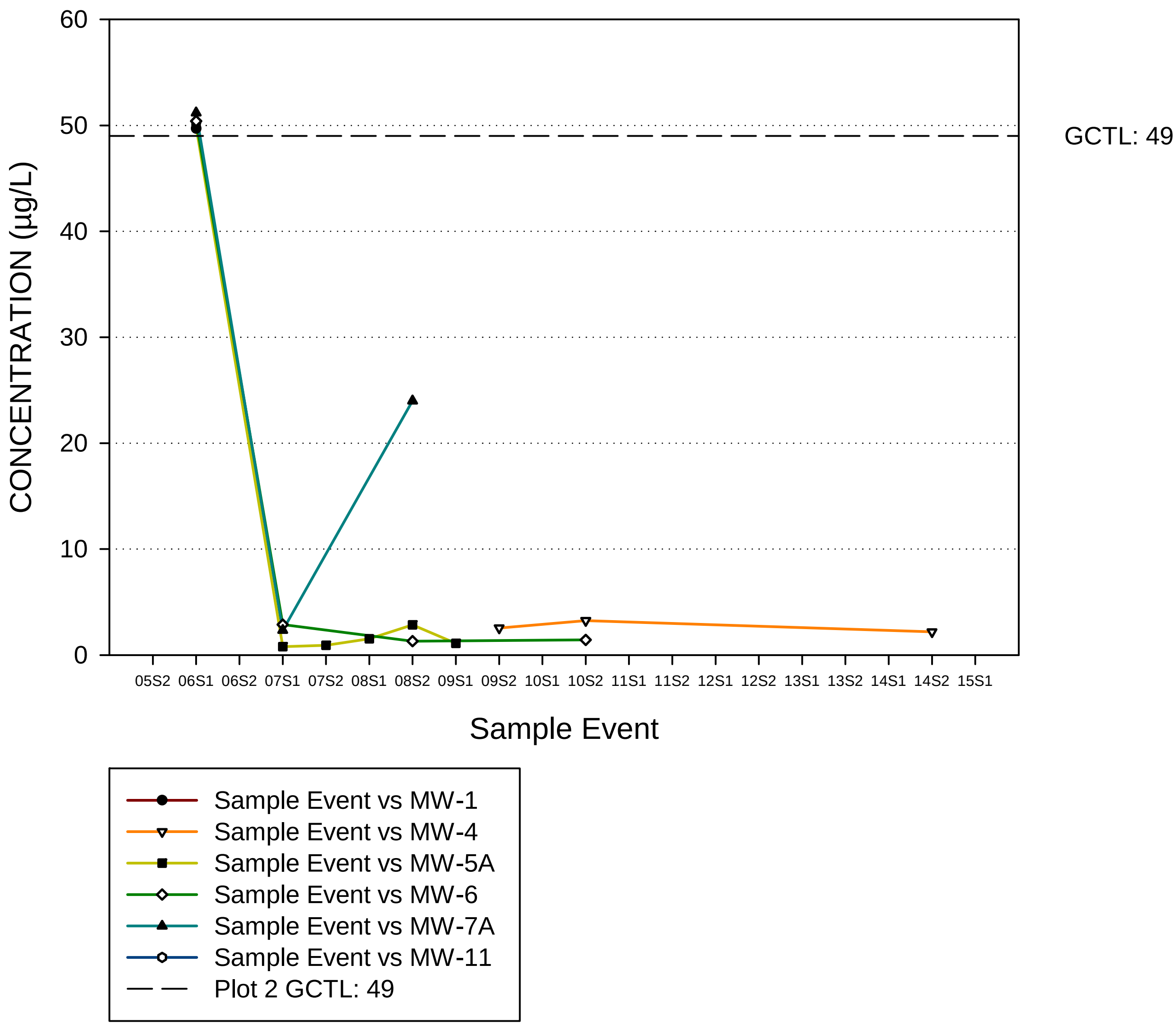
VANADIUM

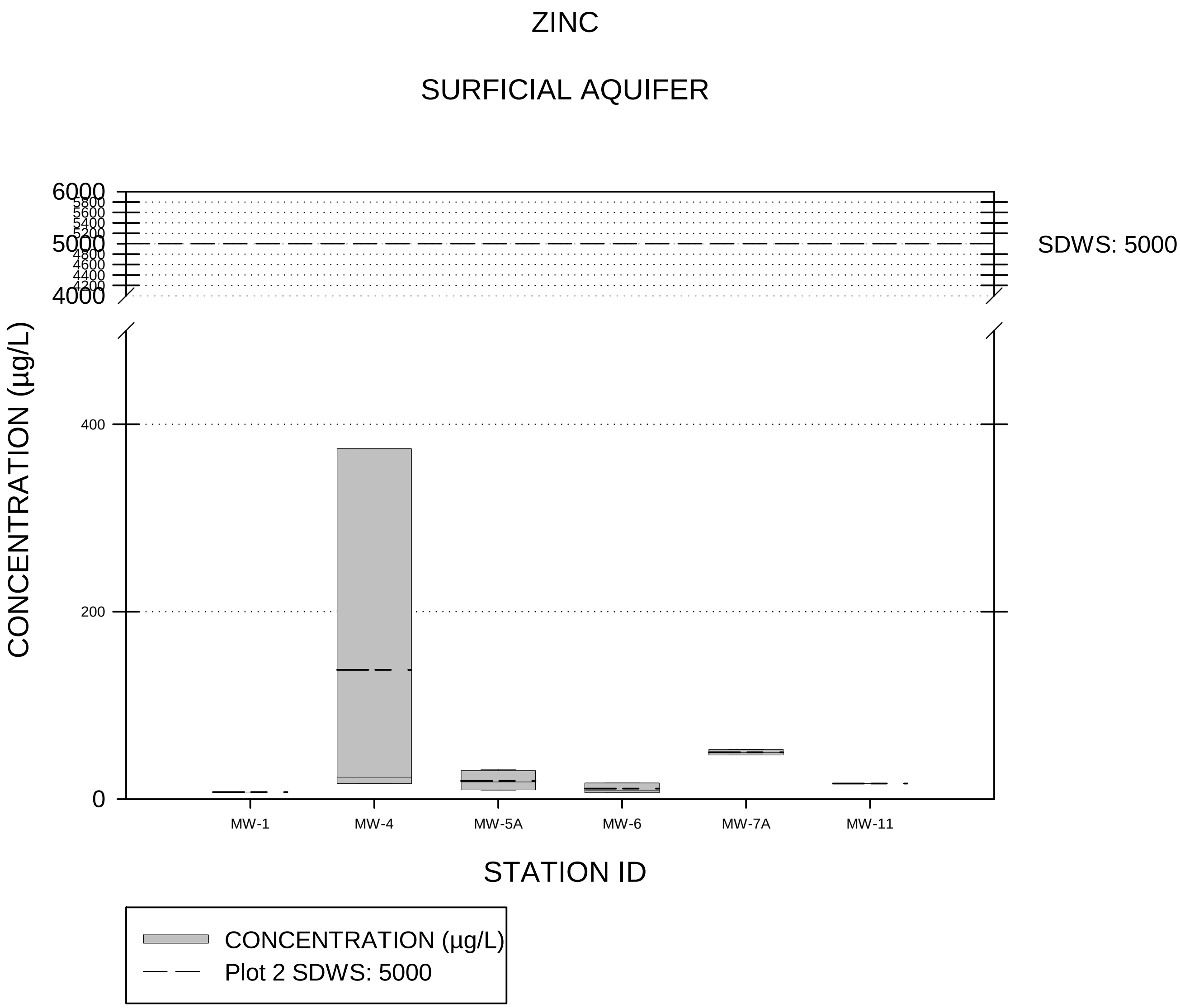
SURFICIAL AQUIFER



VANADIUM

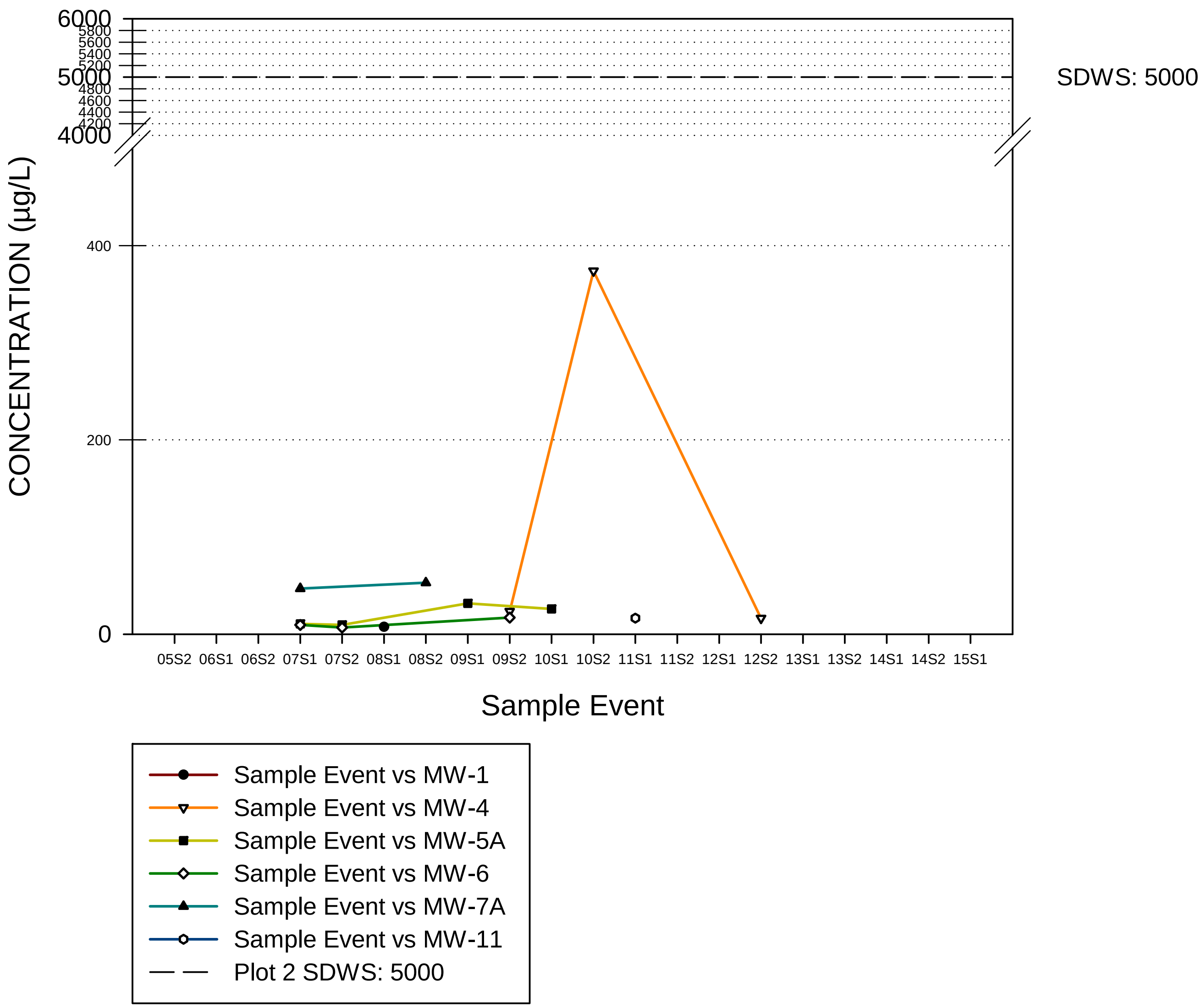
SURFICIAL AQUIFER

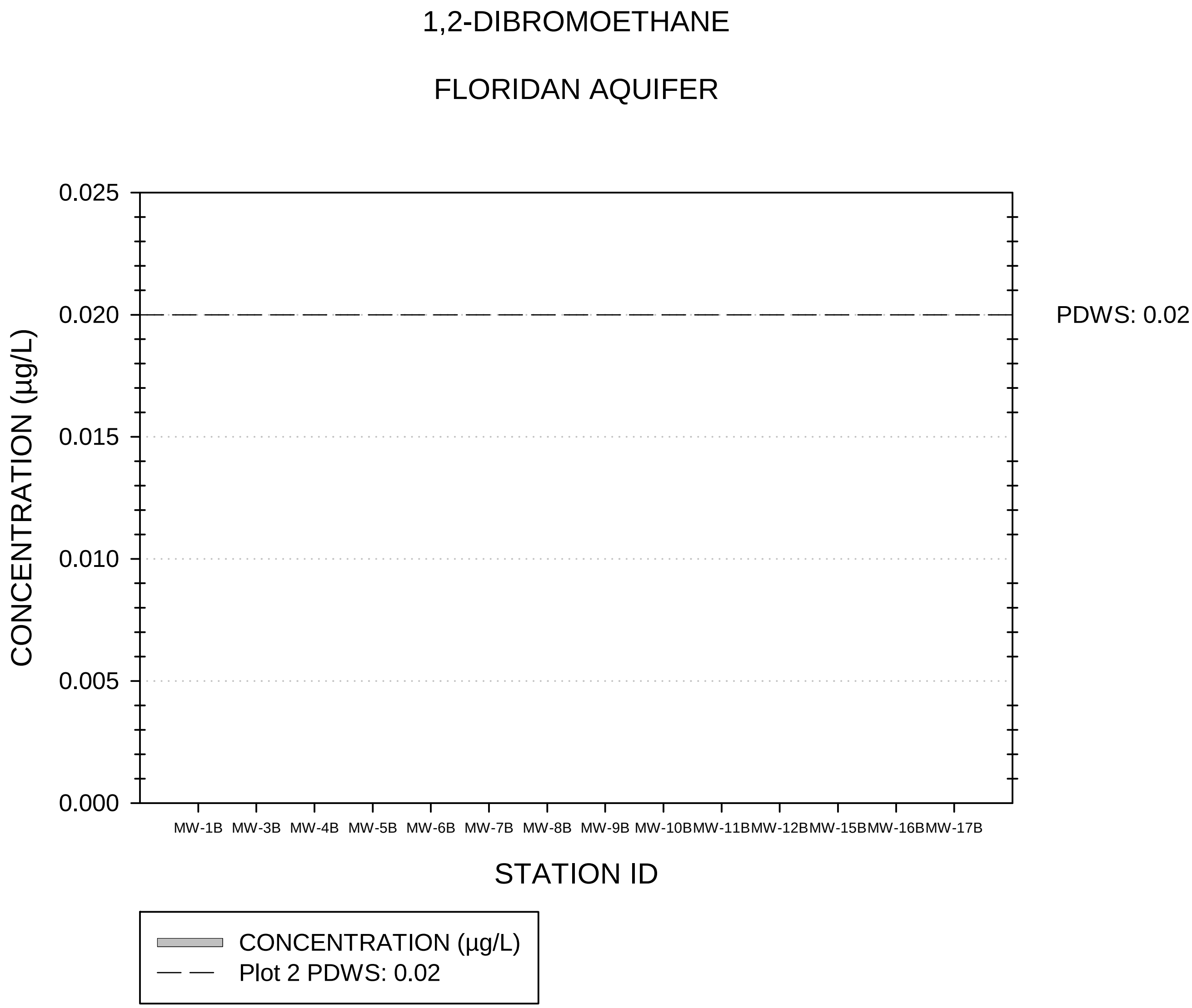



ZINC
SURFICIAL AQUIFER
6000
5800
5600
5400
5200
5000
4800
4600
4400
4200
4000
400
200
0
SDWS: 5000
CONCENTRATION (µg/L)
MW-1
MW-4
MW-5A
MW-6
MW-7A
MW-11
STATION ID
CONCENTRATION (µg/L)
Plot 2 SDWS: 5000

ZINC

SURFICIAL AQUIFER

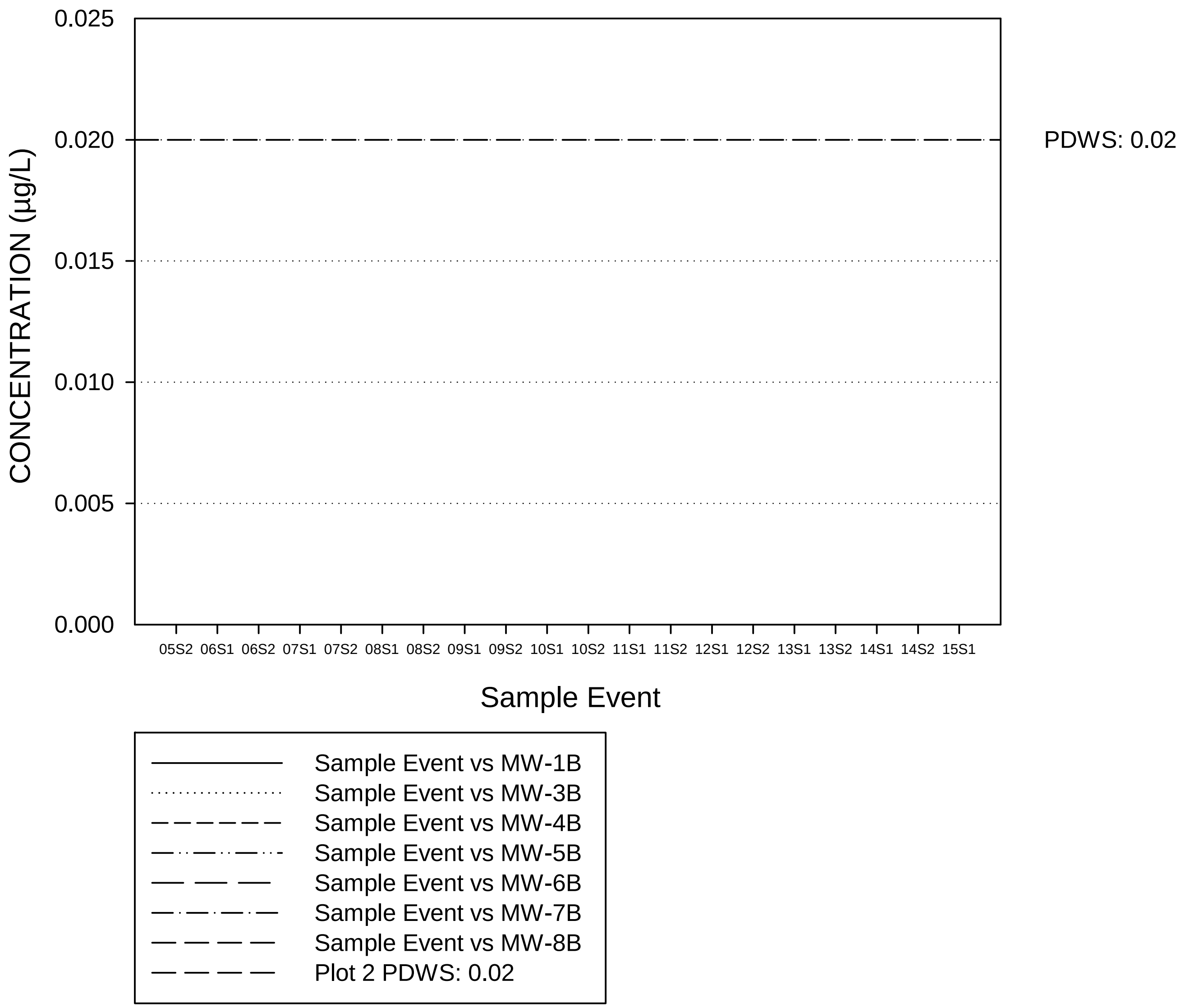




1,2-DIBROMOETHANE
FLORIDAN AQUIFER
0.025
0.020
0.015
0.010
0.005
0.000
CONCENTRATION (µg/L)
PDWS: 0.02
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 0.02

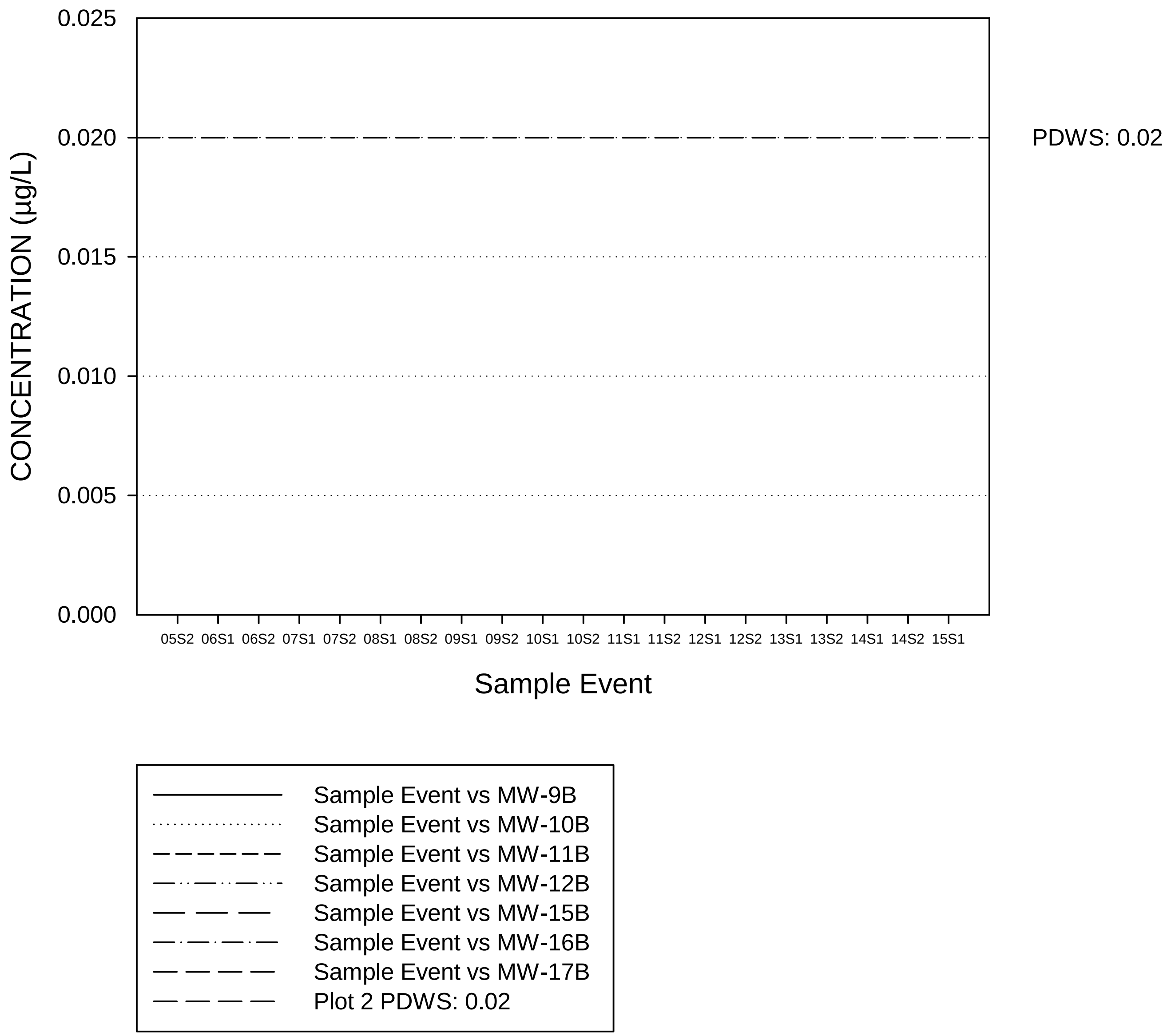
1,2-DIBROMOETHANE

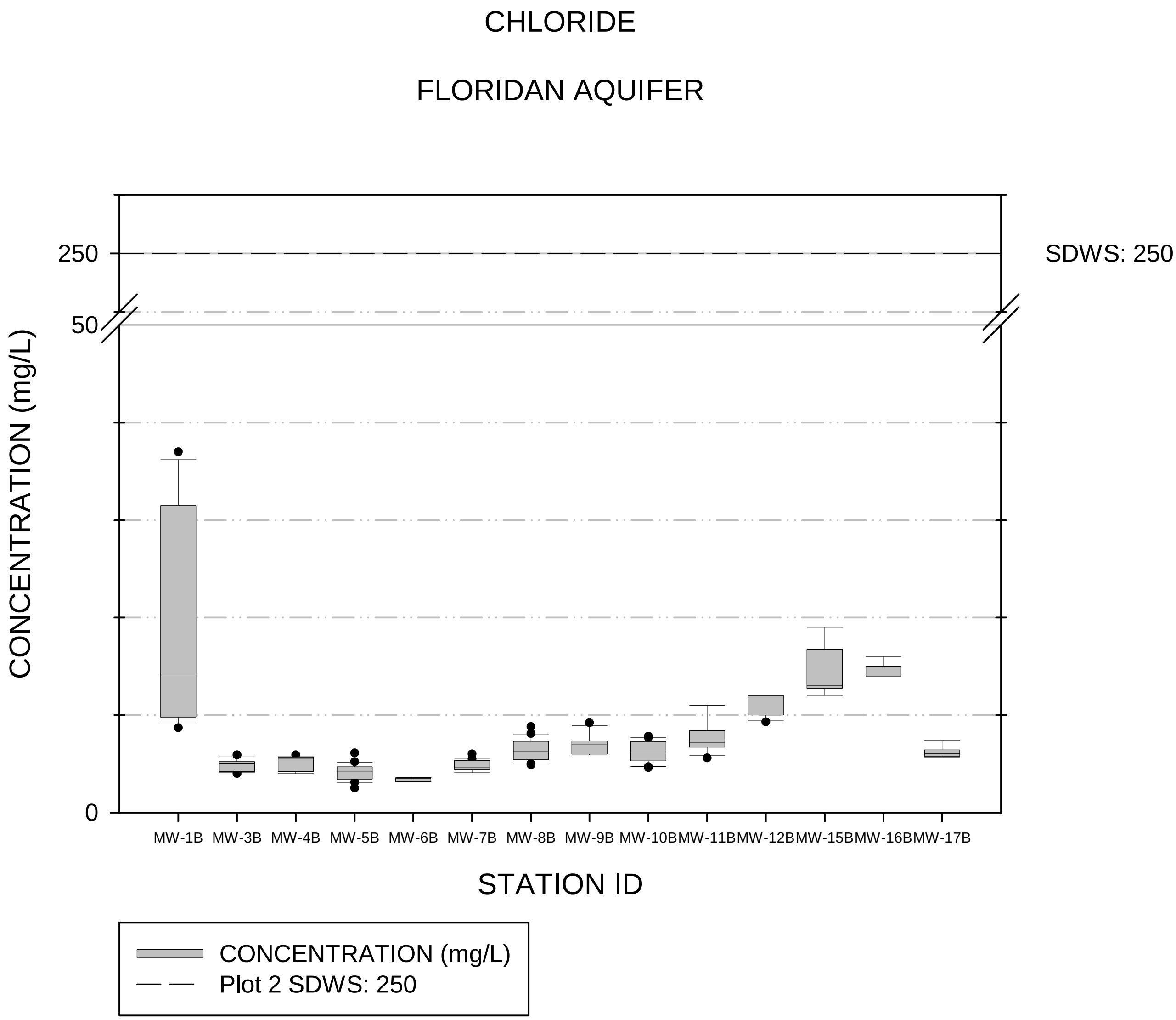
FLORIDAN AQUIFER



1,2-DIBROMOETHANE

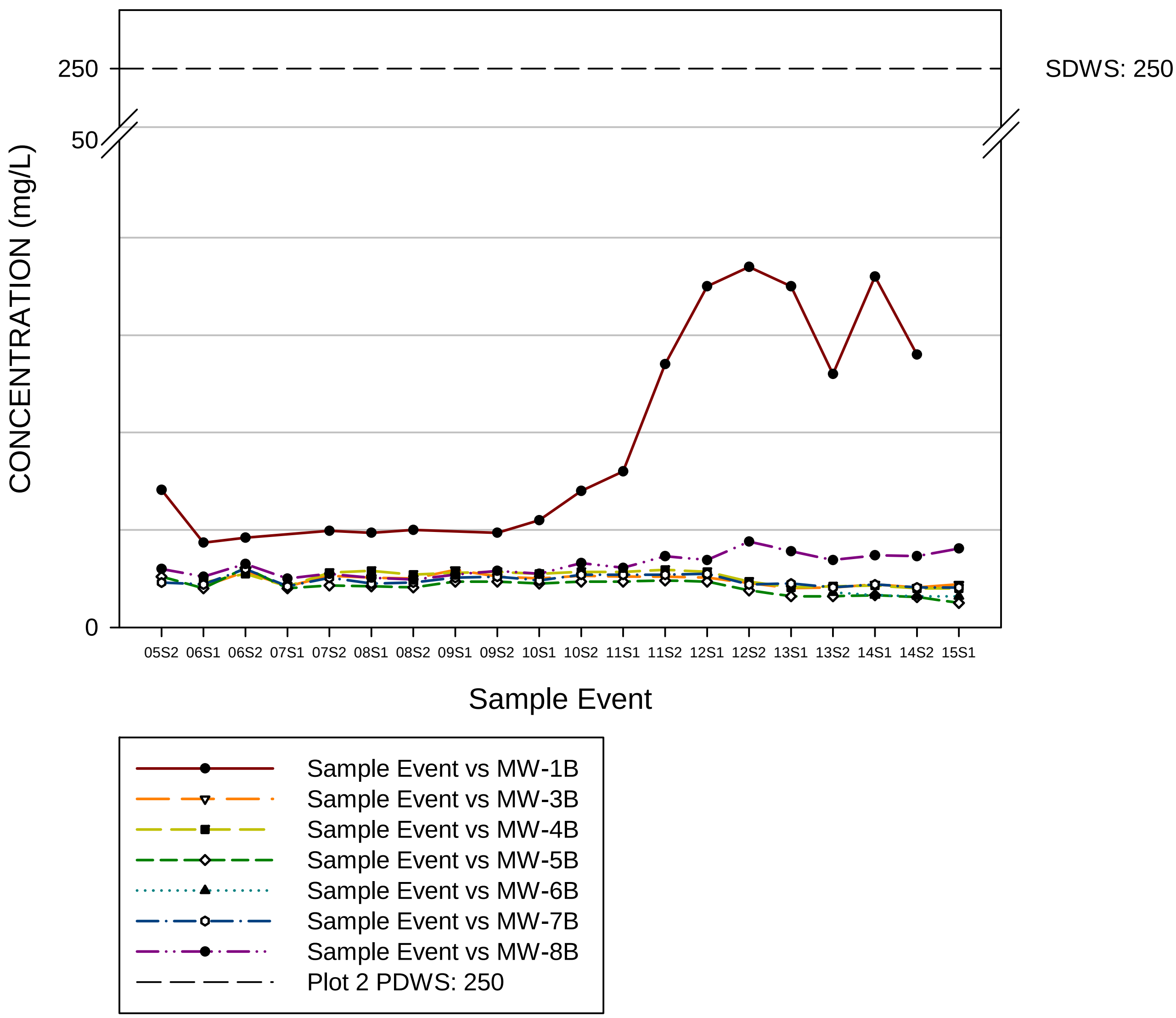
FLORIDAN AQUIFER




CHLORIDE
FLORIDAN AQUIFER
250
50
0
SDWS: 250
CONCENTRATION (mg/L)
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
CONCENTRATION (mg/L)
Plot 2 SDWS: 250

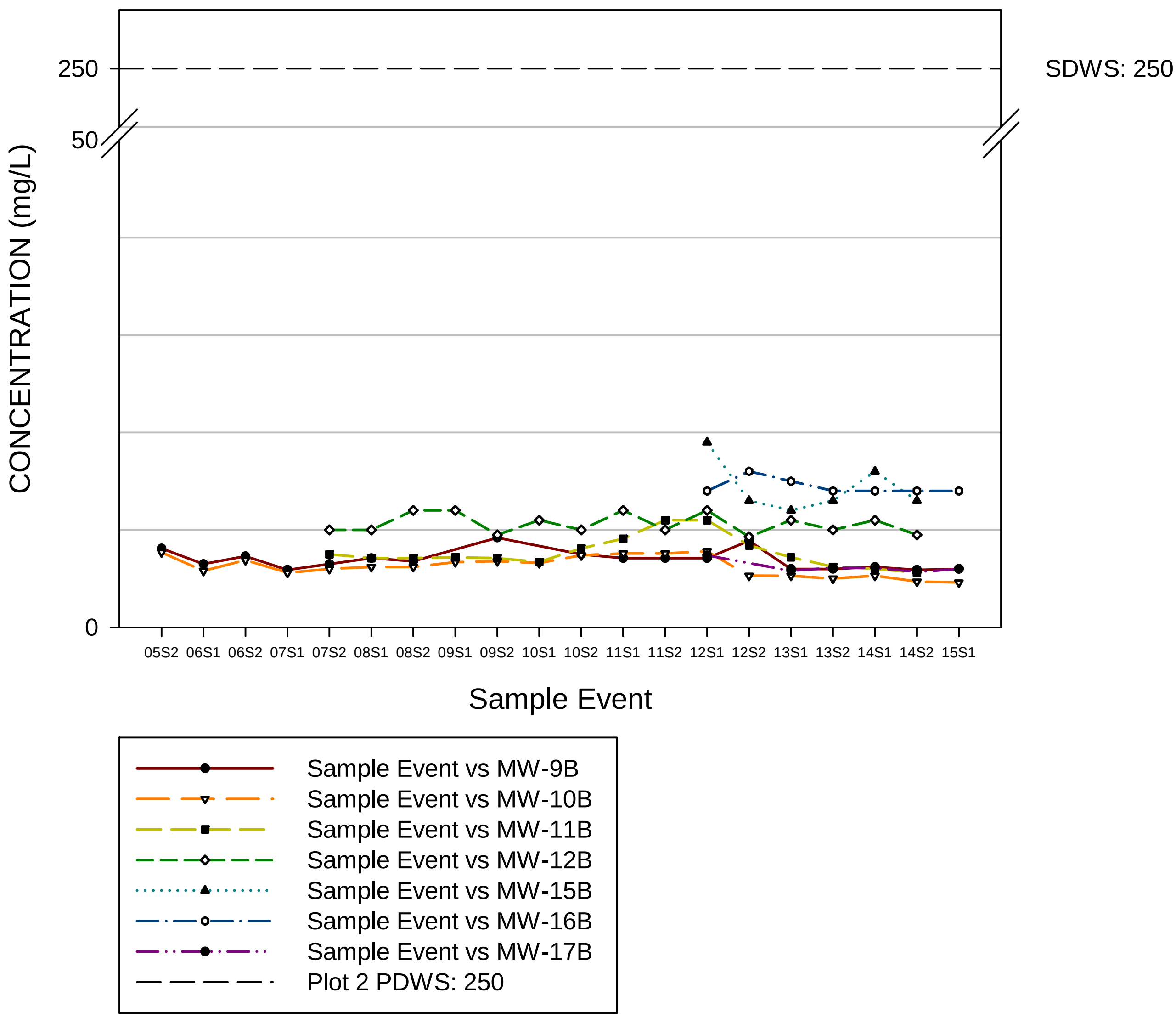
CHLORIDE

FLORIDAN AQUIFER



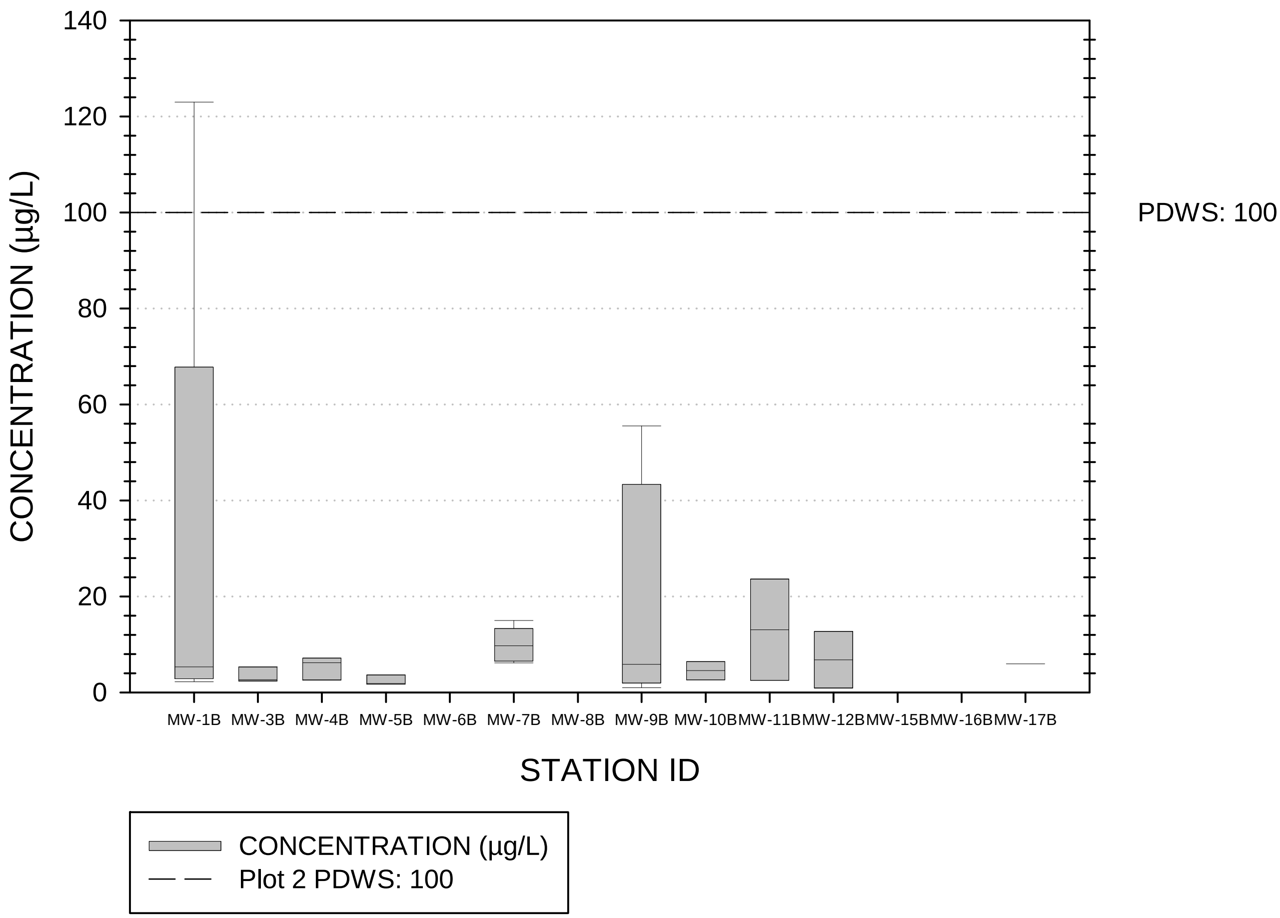
CHLORIDE

FLORIDAN AQUIFER



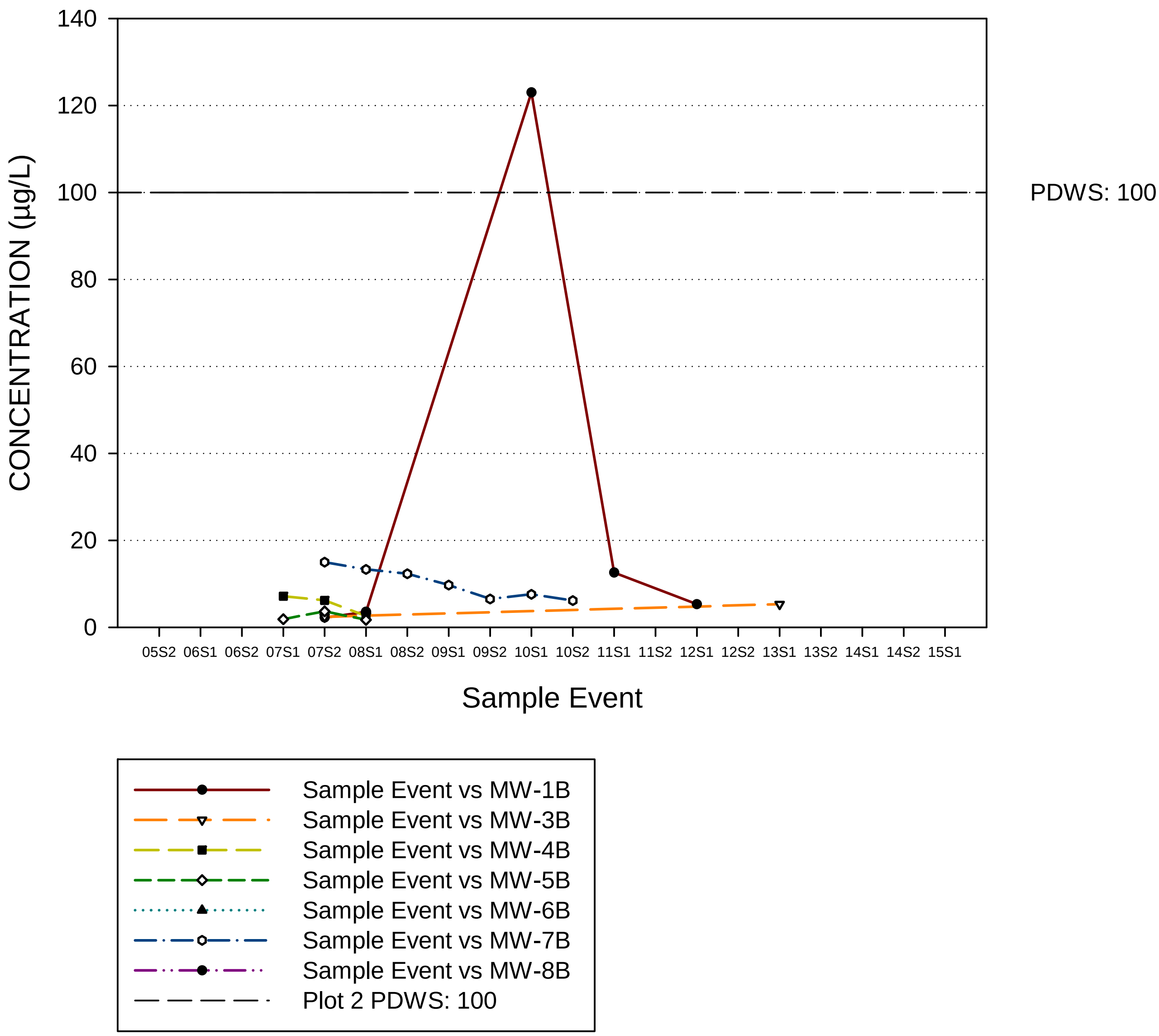
CHROMIUM

FLORIDAN AQUIFER



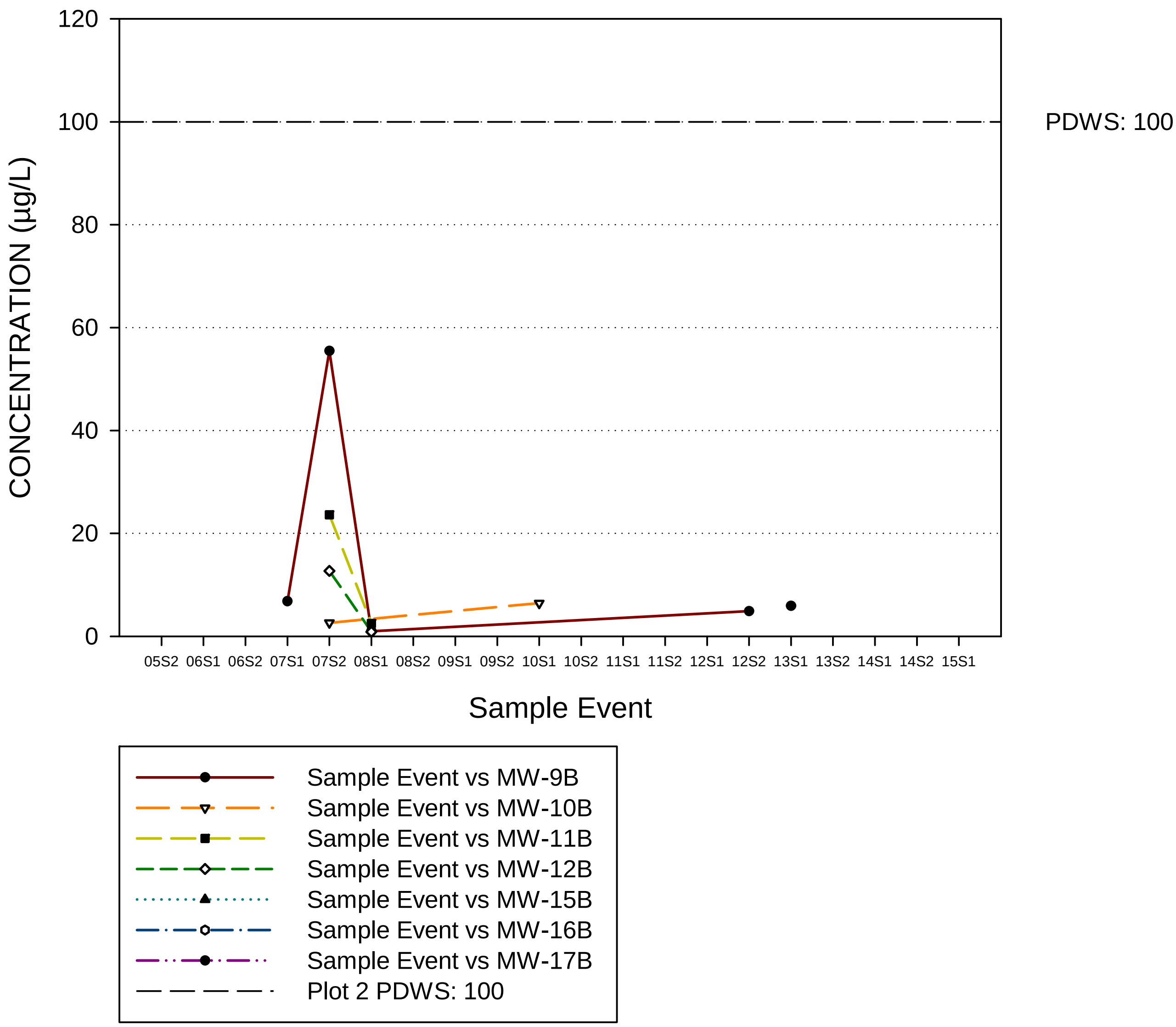
CHROMIUM

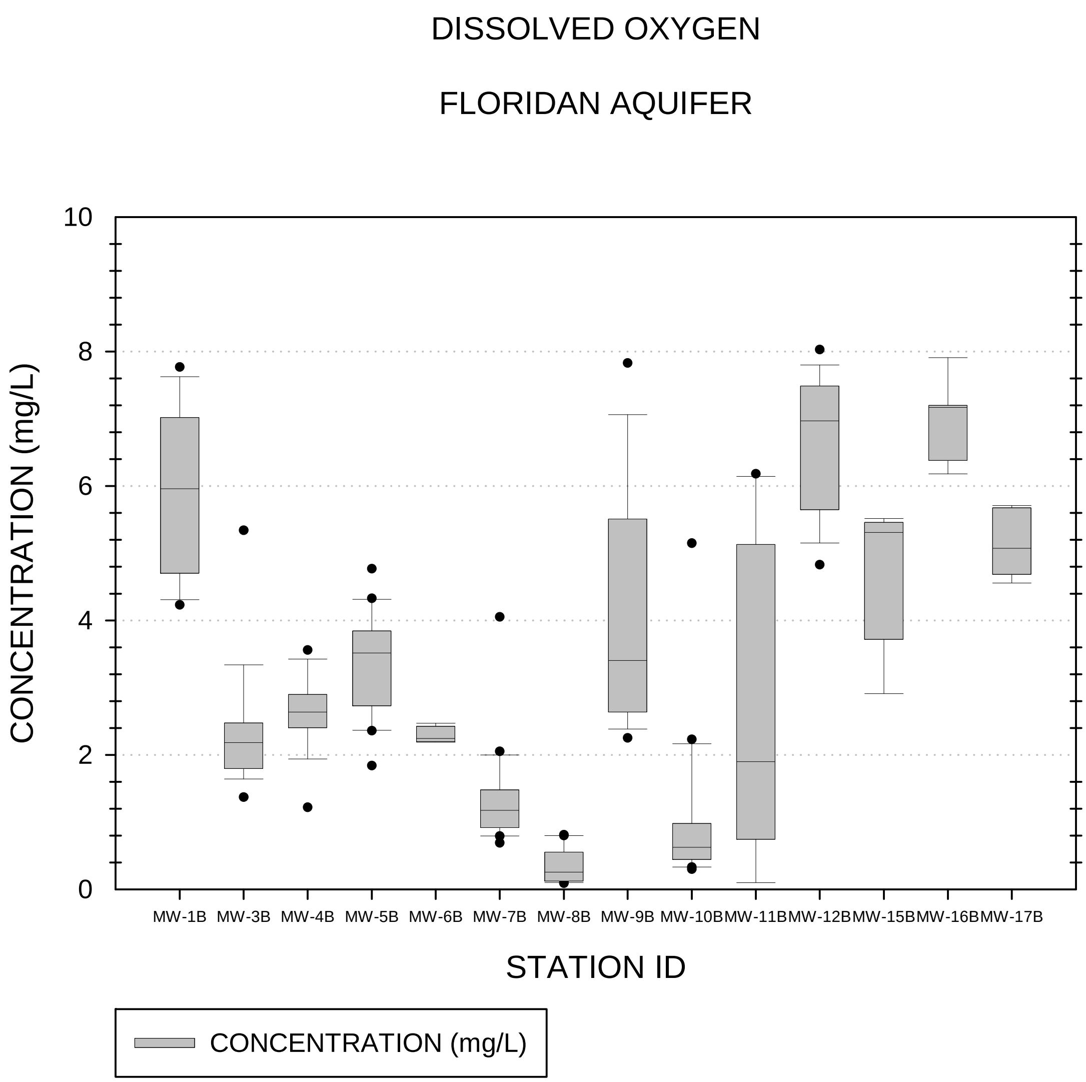
FLORIDAN AQUIFER



CHROMIUM

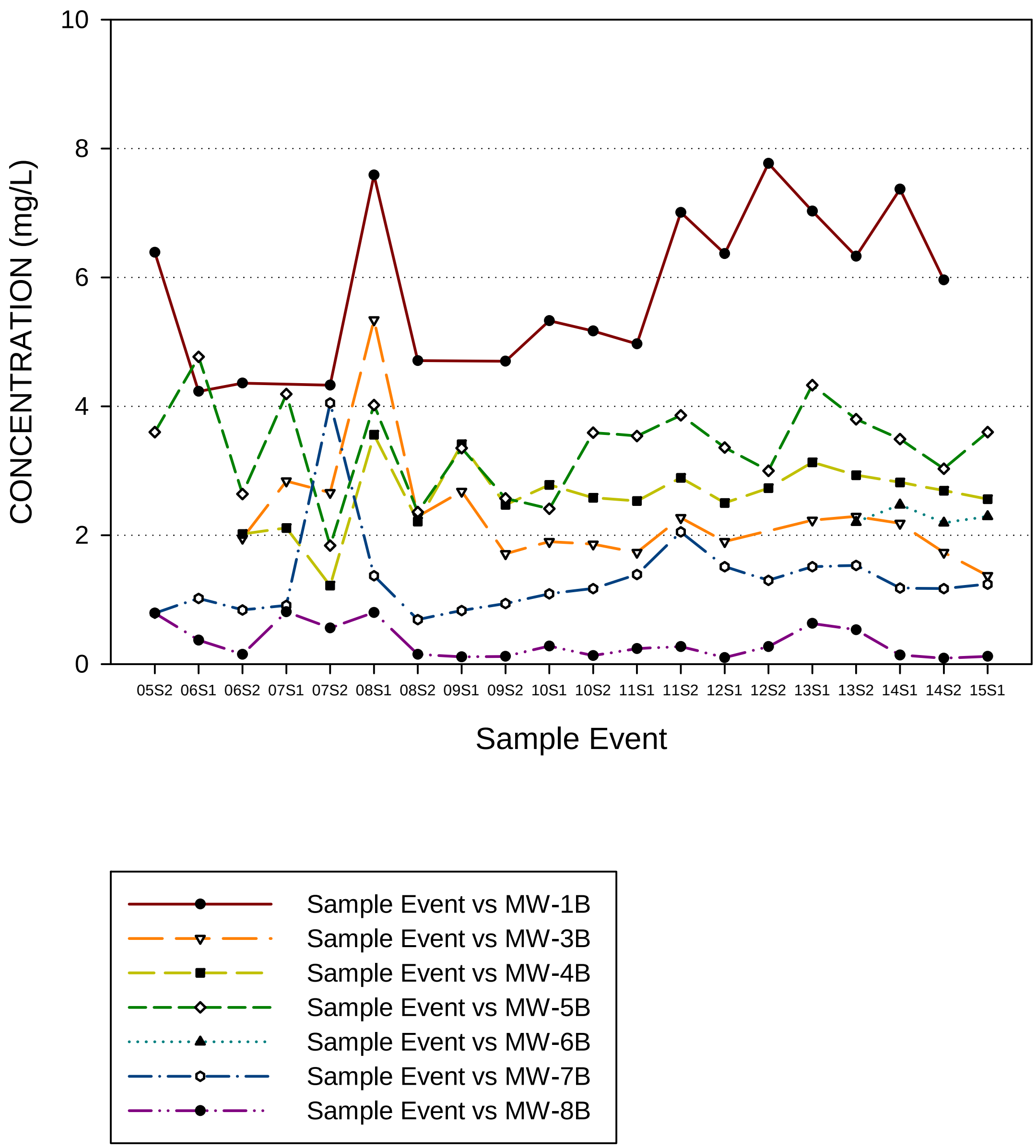
FLORIDAN AQUIFER




DISSOLVED OXYGEN
FLORIDAN AQUIFER
CONCENTRATION (mg/L)
0
2
4
6
8
10
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
CONCENTRATION (mg/L)

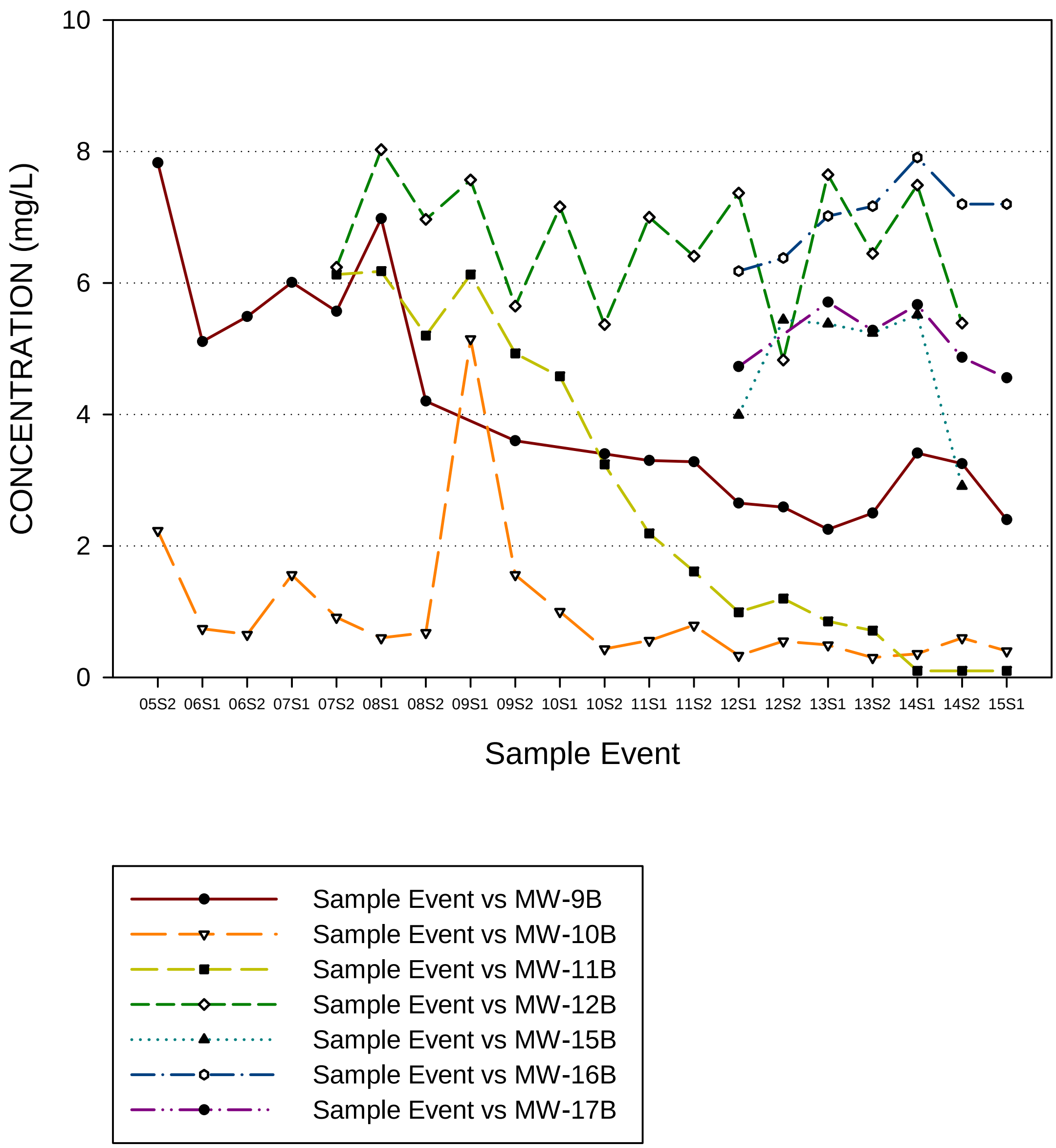
DISSOLVED OXYGEN

FLORIDAN AQUIFER



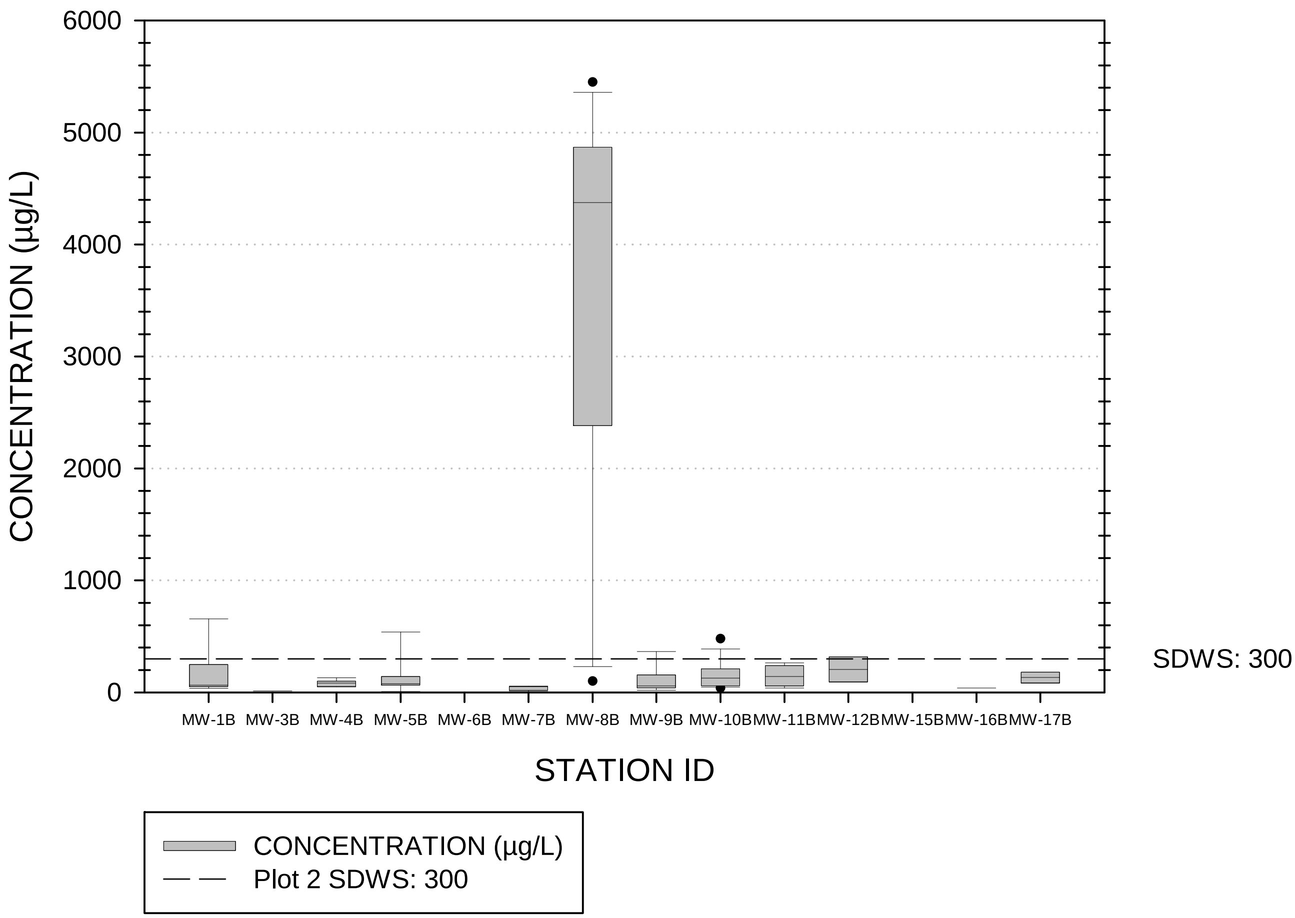
DISSOLVED OXYGEN

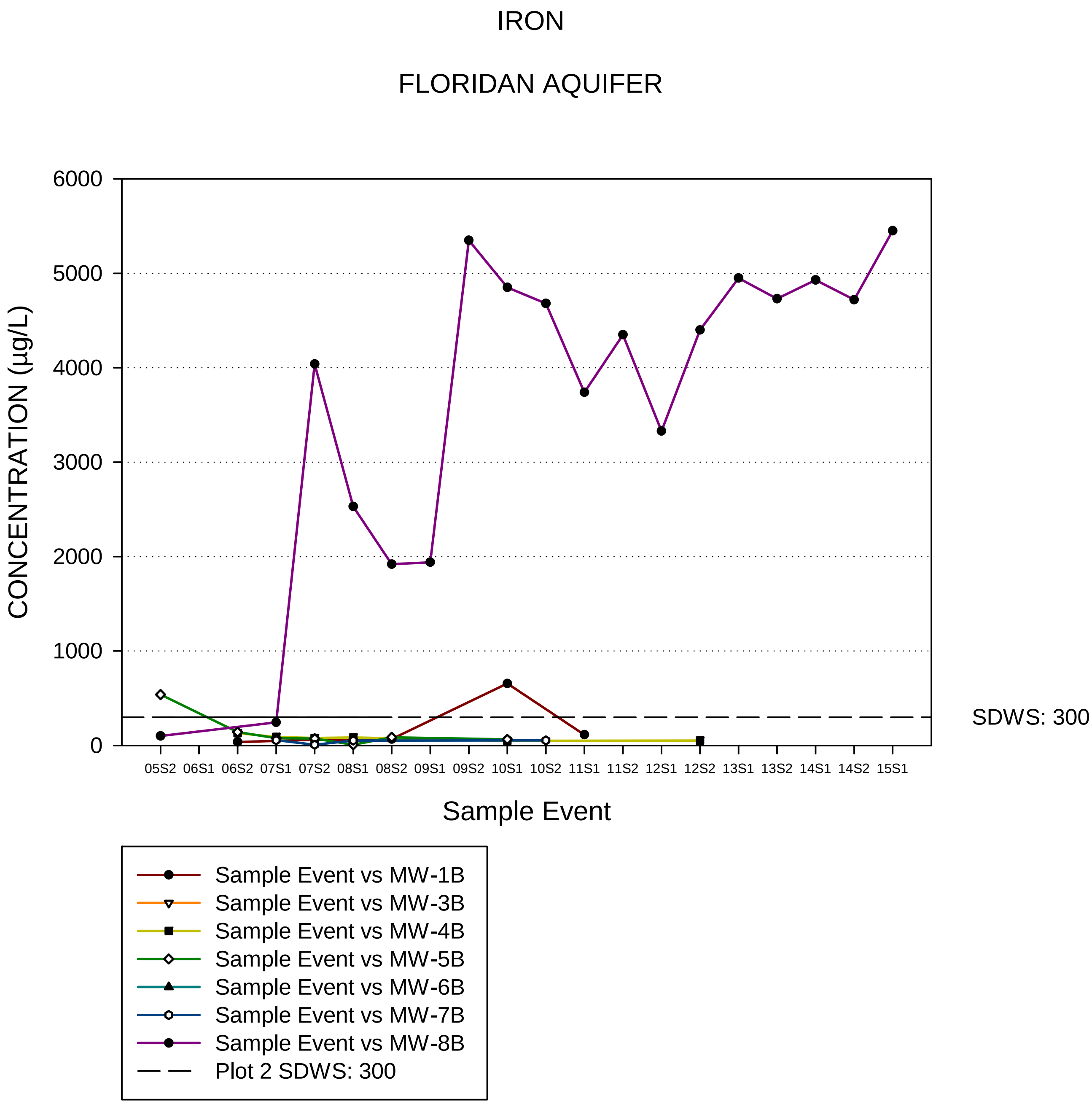
FLORIDAN AQUIFER



IRON

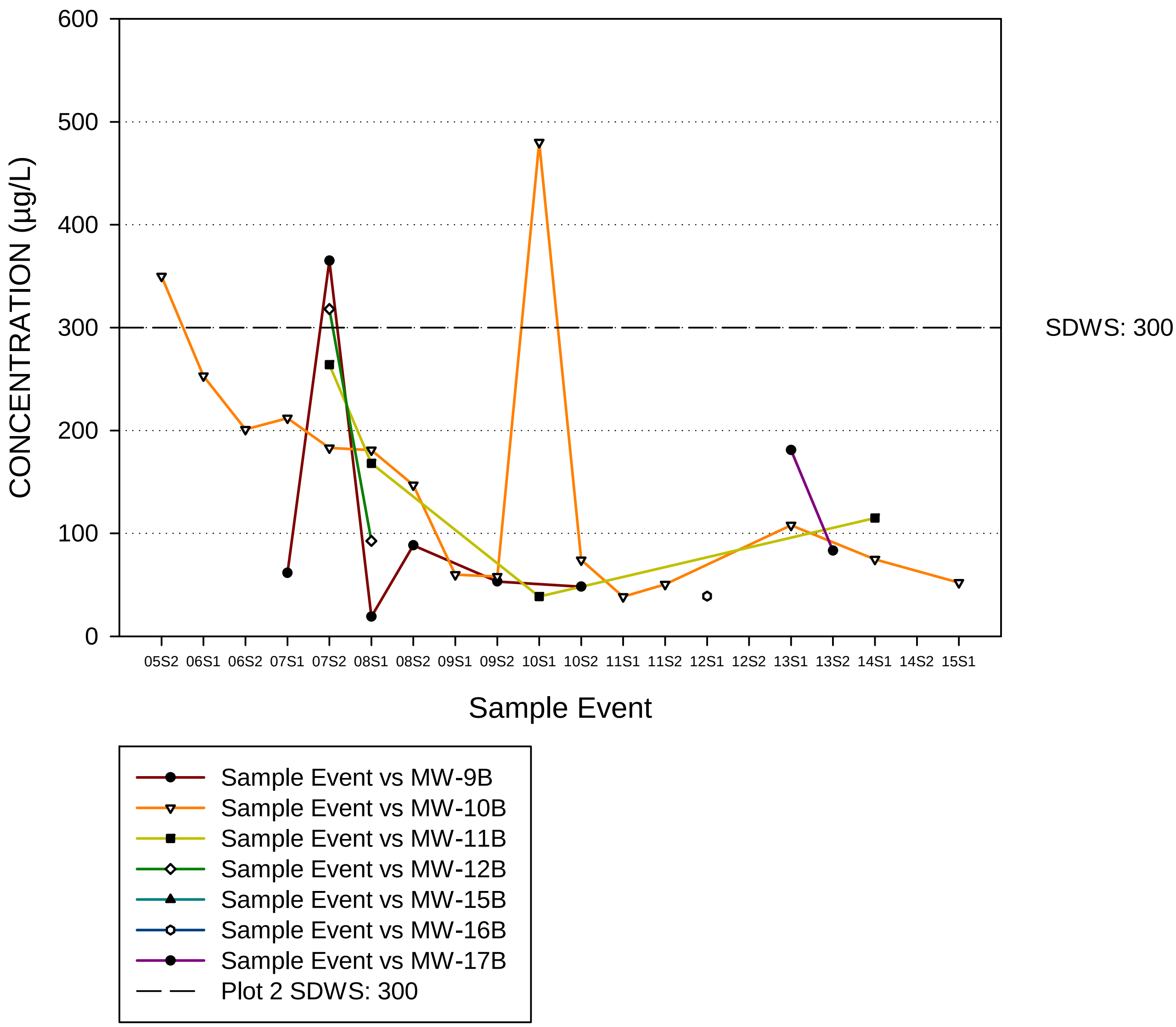
FLORIDAN AQUIFER

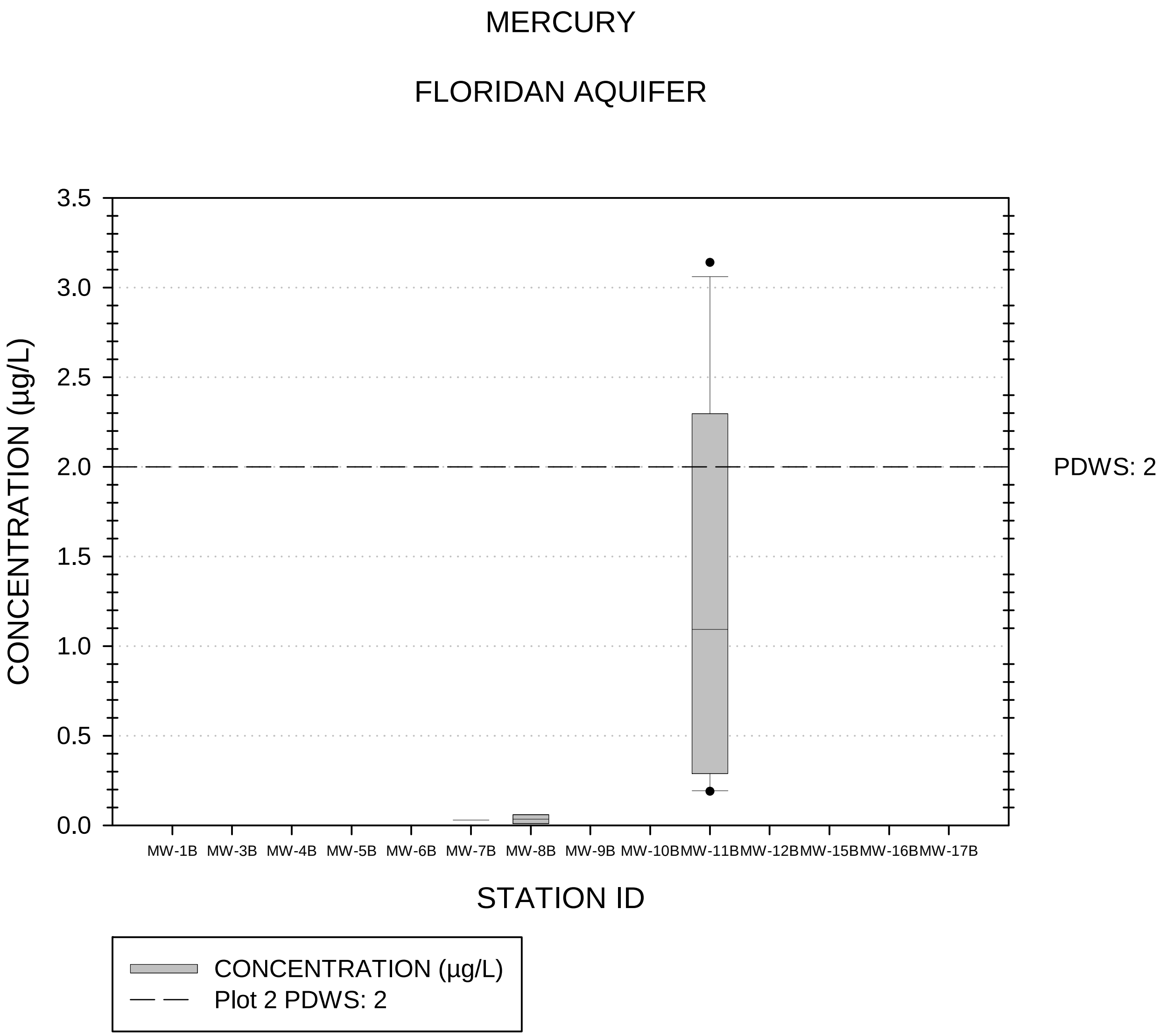



IRON
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
6000
5000
4000
3000
2000
1000
0
SDWS: 300
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Event
Sample Event vs MW-1B
Sample Event vs MW-3B
Sample Event vs MW-4B
Sample Event vs MW-5B
Sample Event vs MW-6B
Sample Event vs MW-7B
Sample Event vs MW-8B
Plot 2 SDWS: 300

IRON

FLORIDAN AQUIFER

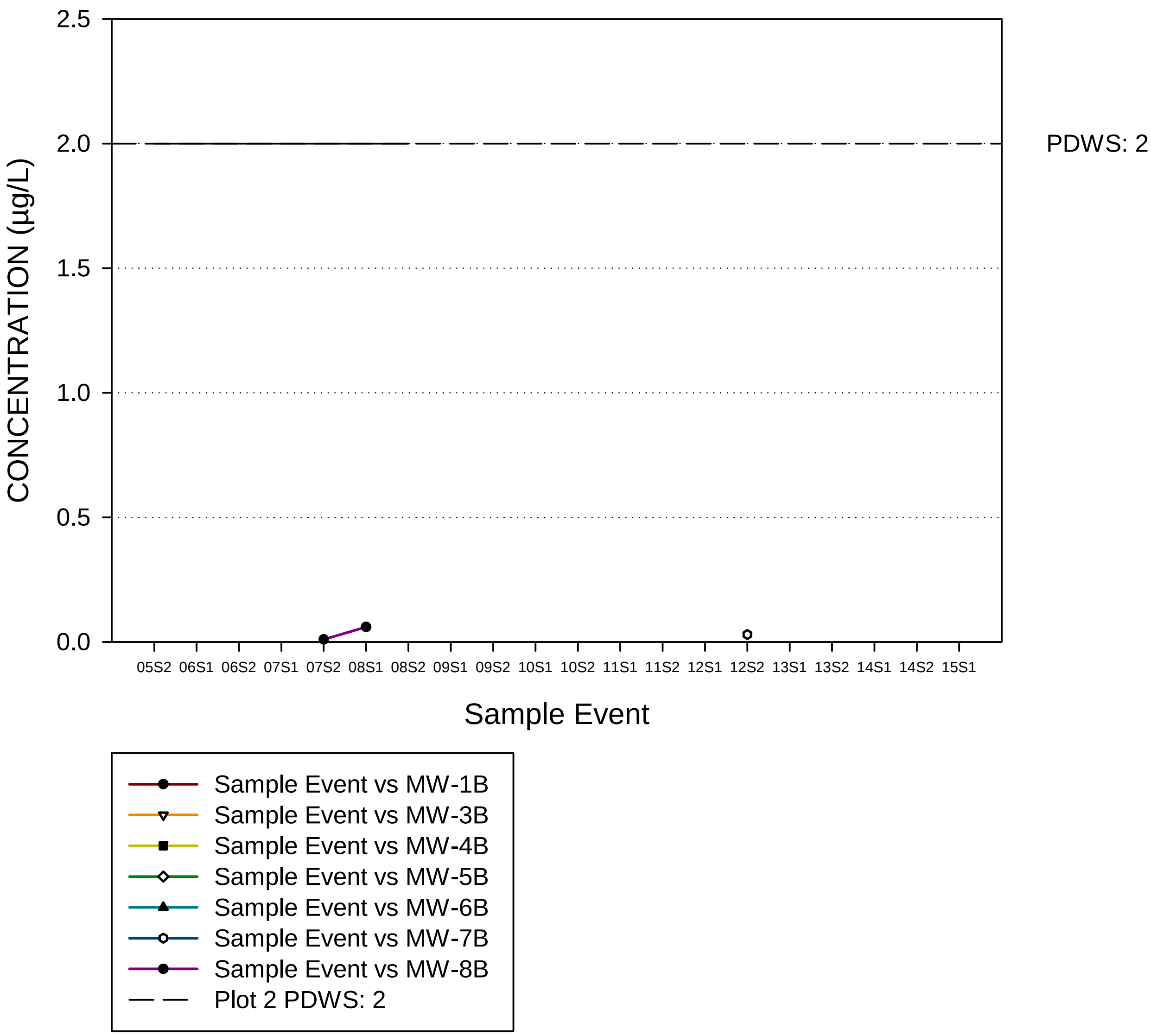


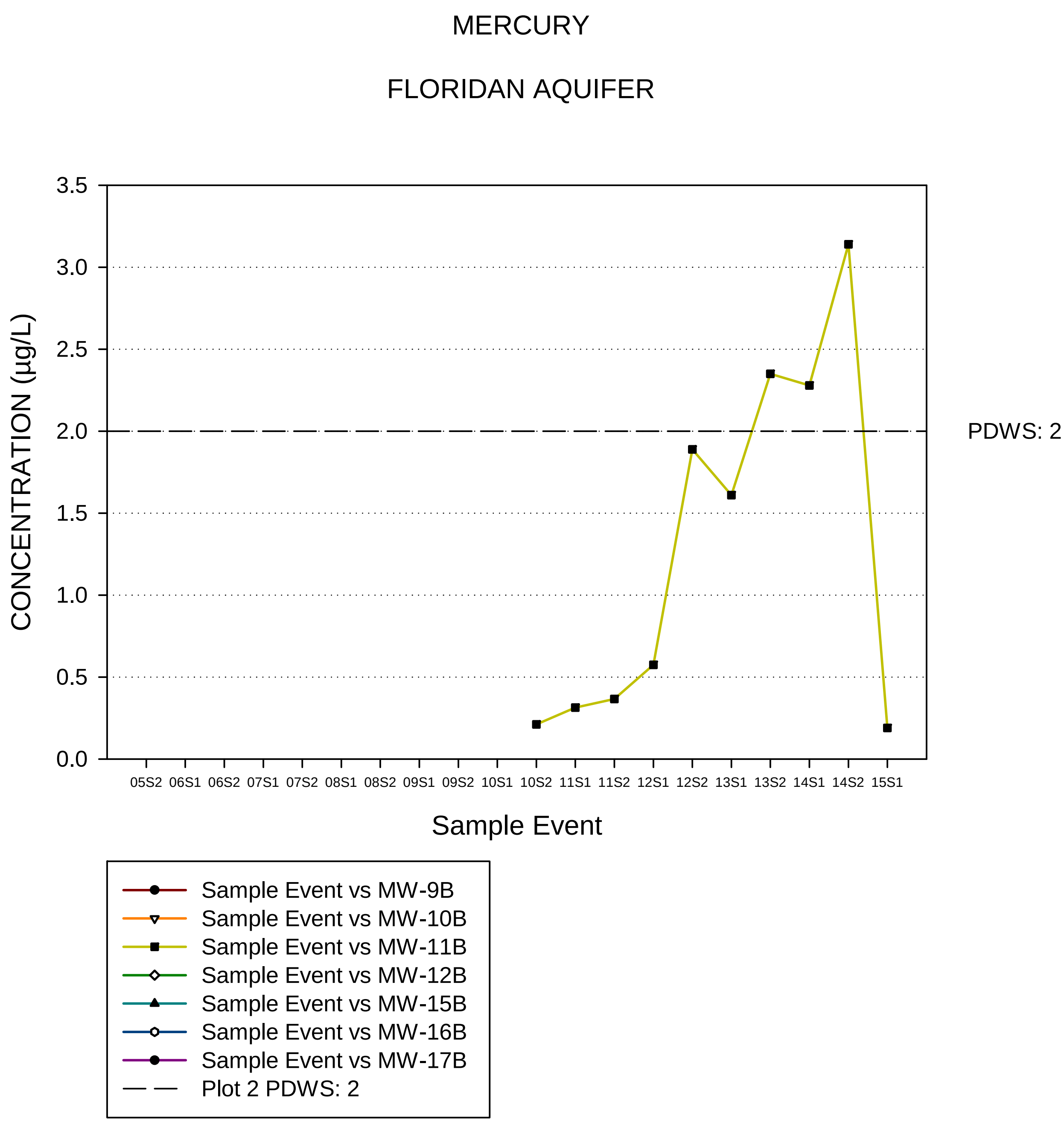


MERCURY
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
PDWS: 2
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 2

MERCURY

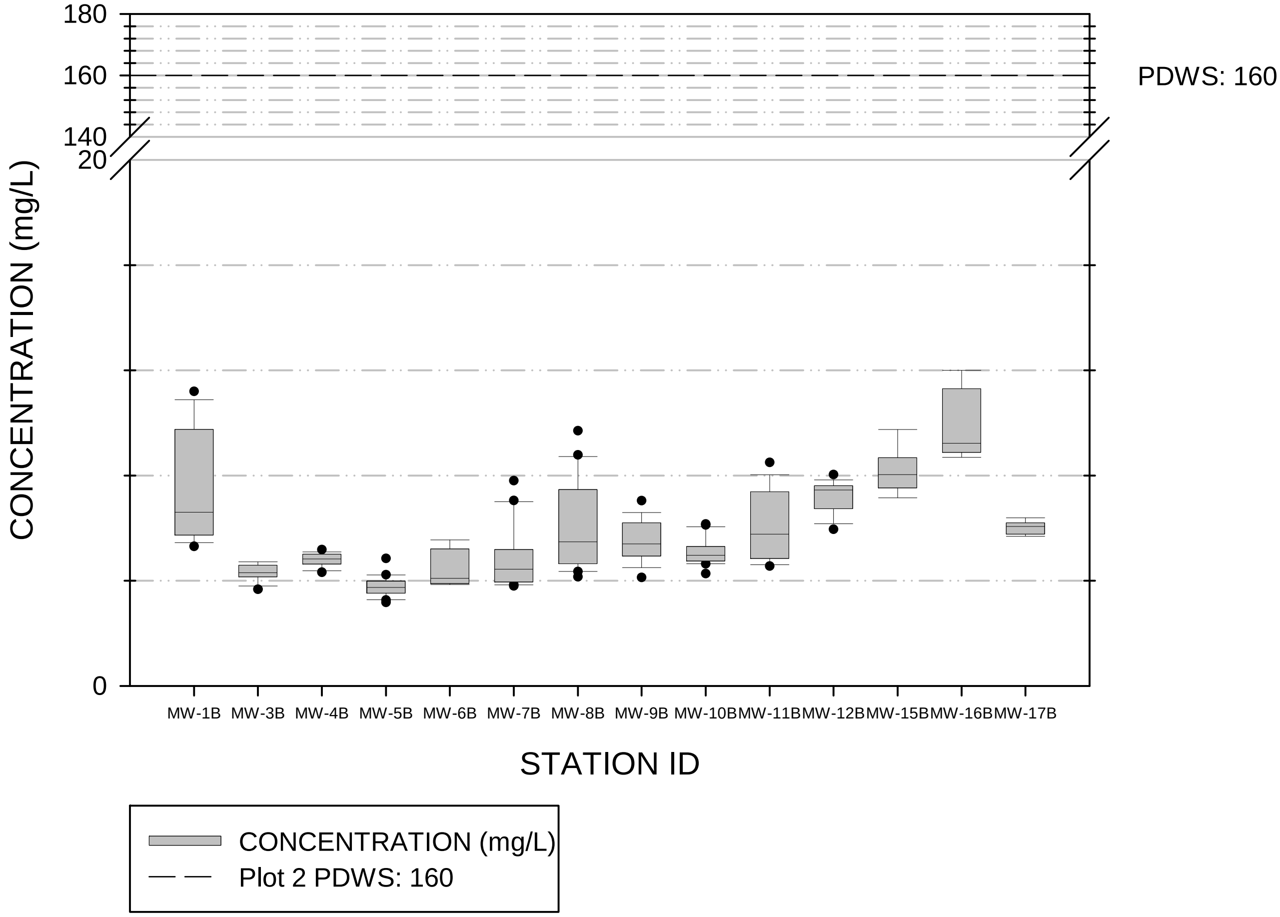
FLORIDAN AQUIFER




MERCURY
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
PDWS: 2
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Event
Sample Event vs MW-9B
Sample Event vs MW-10B
Sample Event vs MW-11B
Sample Event vs MW-12B
Sample Event vs MW-15B
Sample Event vs MW-16B
Sample Event vs MW-17B
Plot 2 PDWS: 2

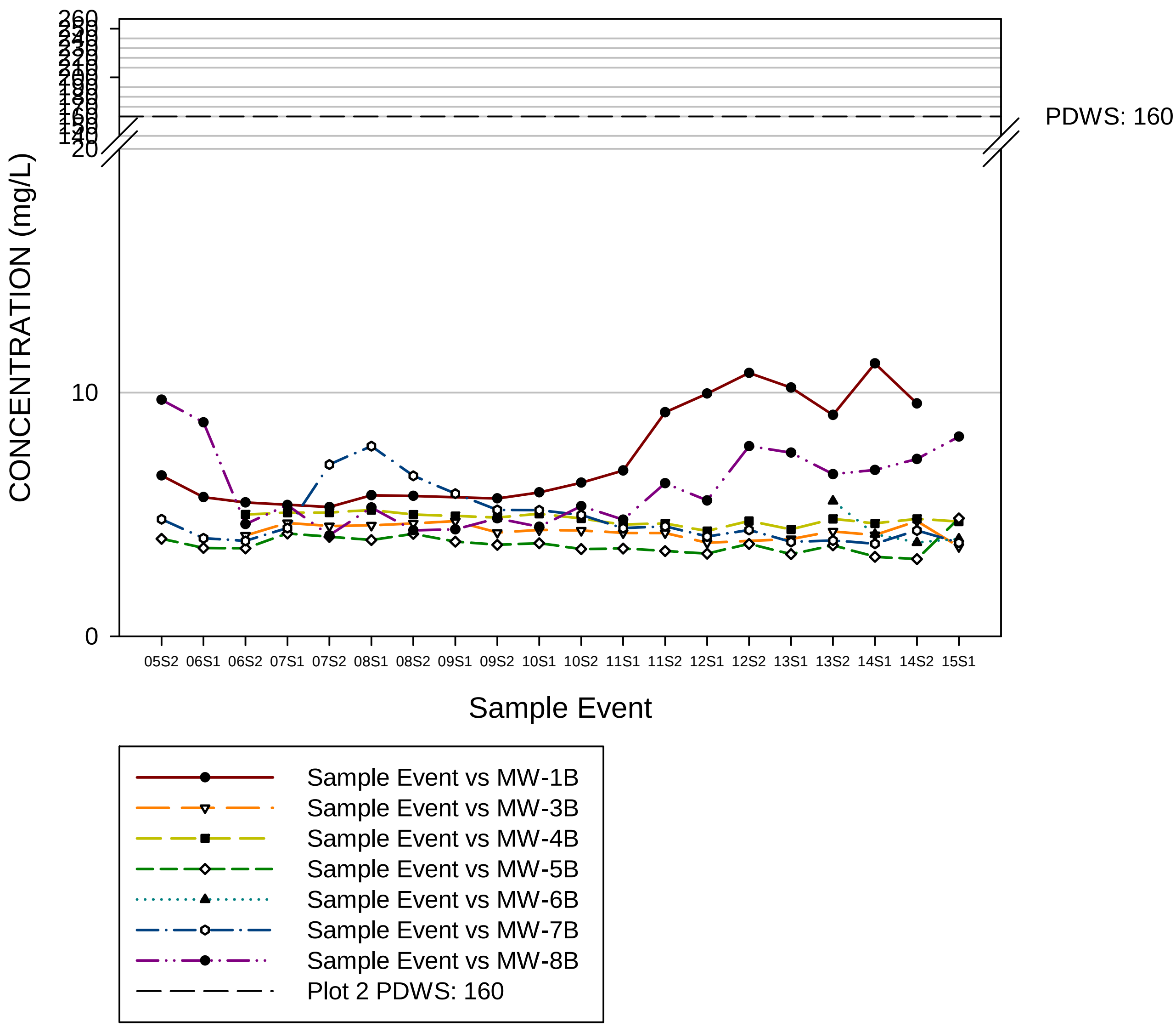
SODIUM

FLORIDAN AQUIFER



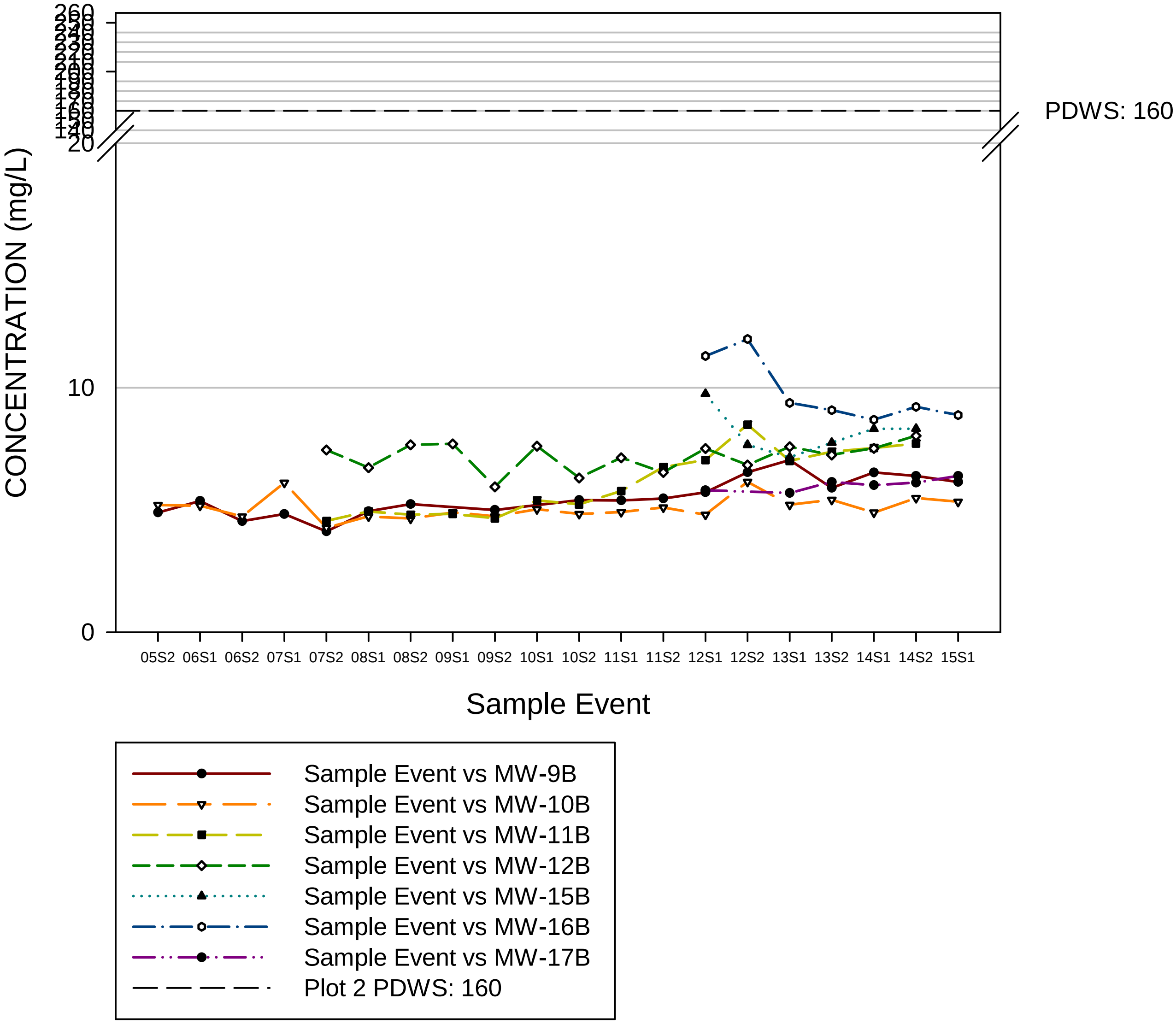
SODIUM

FLORIDAN AQUIFER



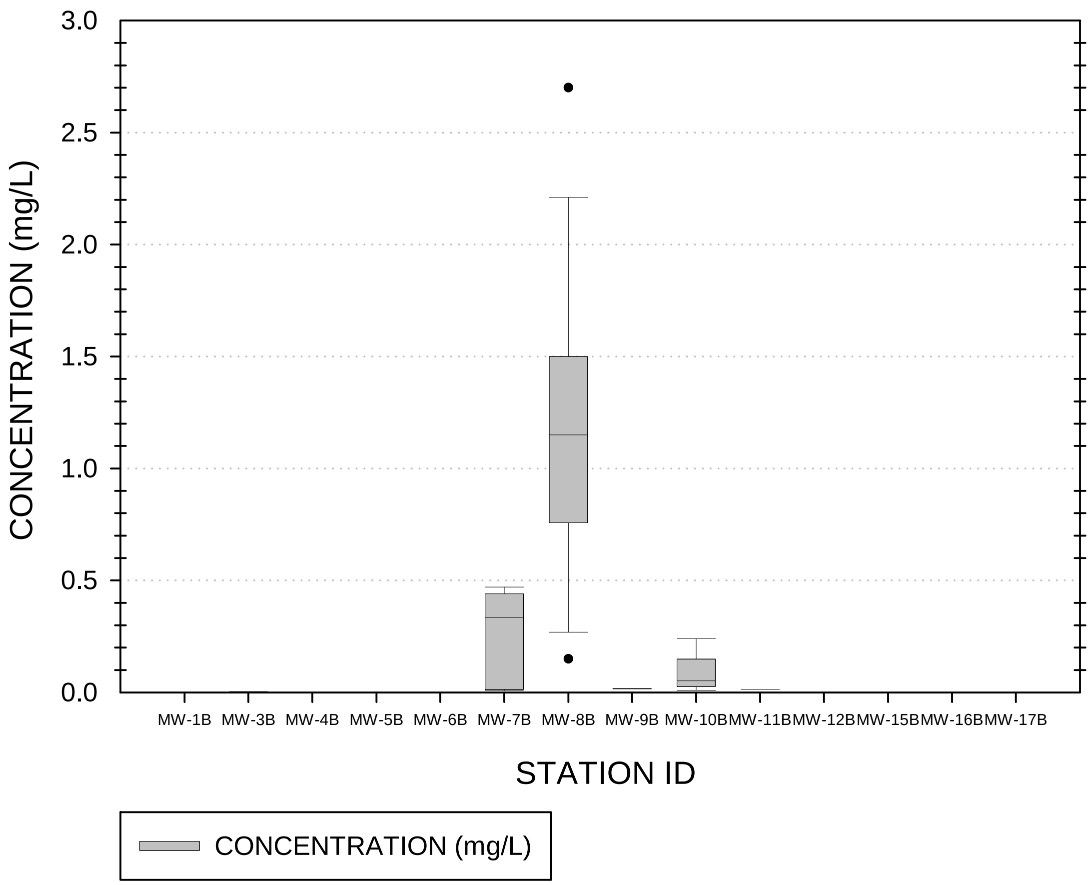
SODIUM

FLORIDAN AQUIFER



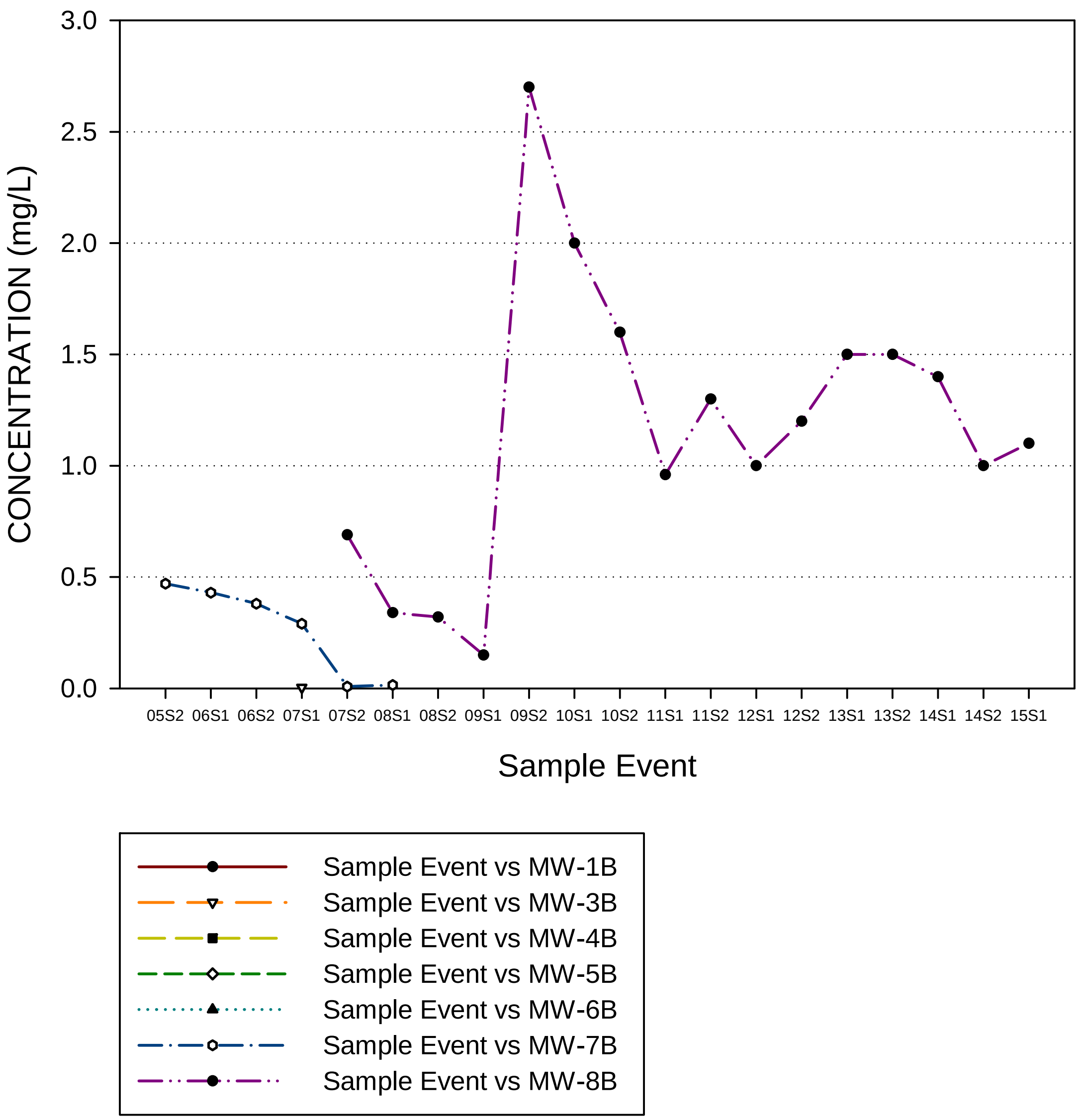
AMMONIA AS NITROGEN

FLORIDAN AQUIFER



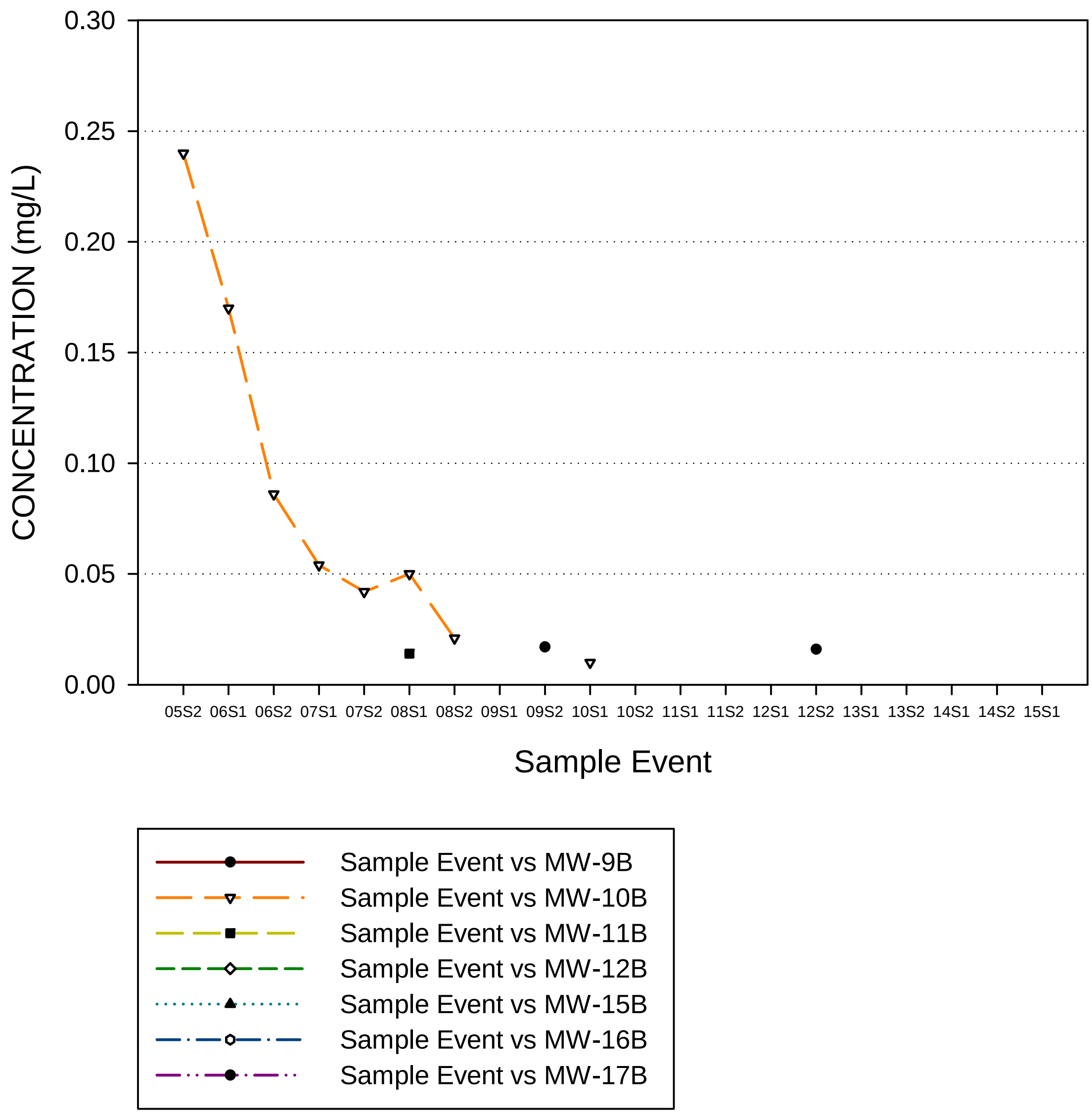
AMMONIA AS NITROGEN

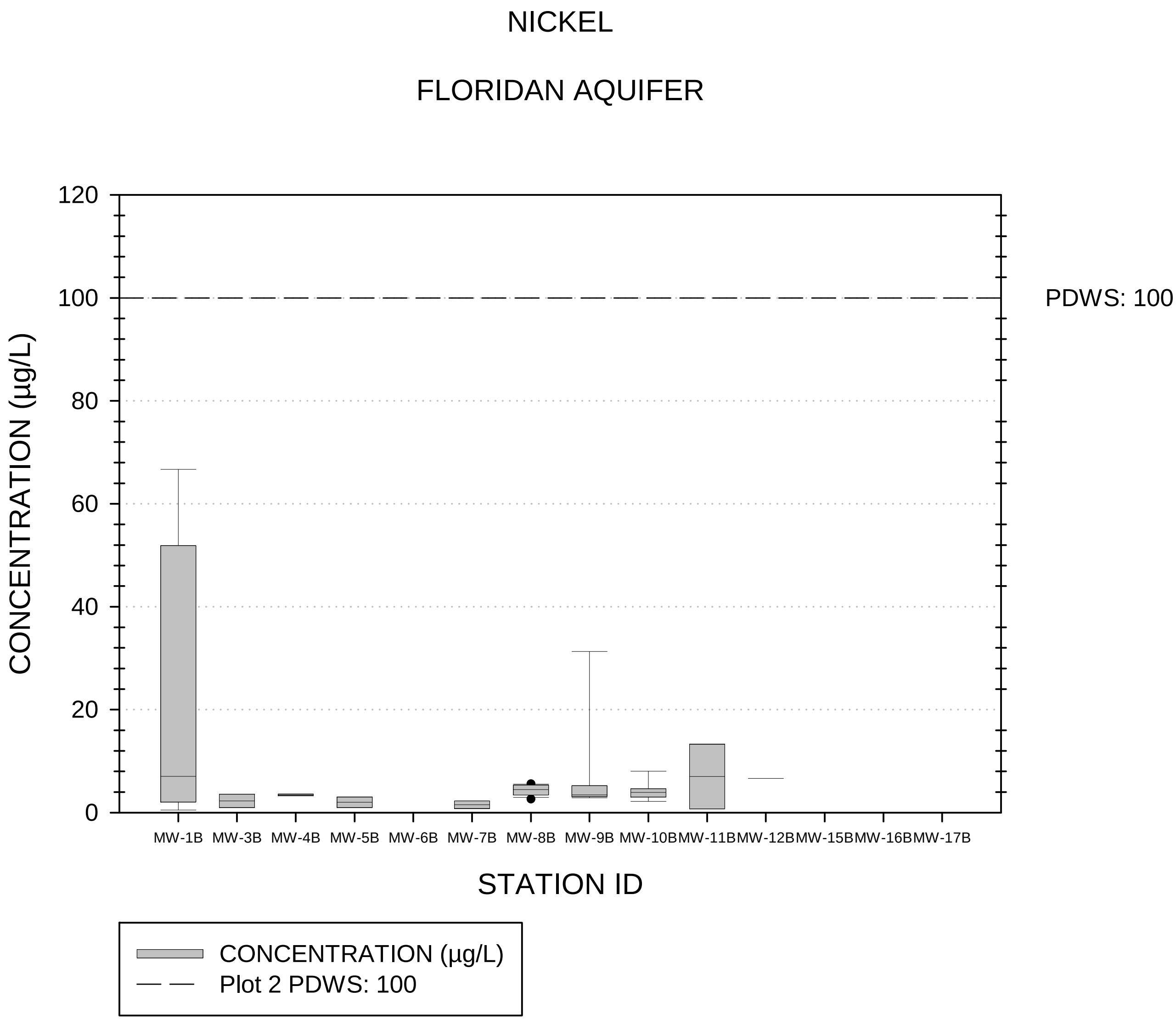
FLORIDAN AQUIFER

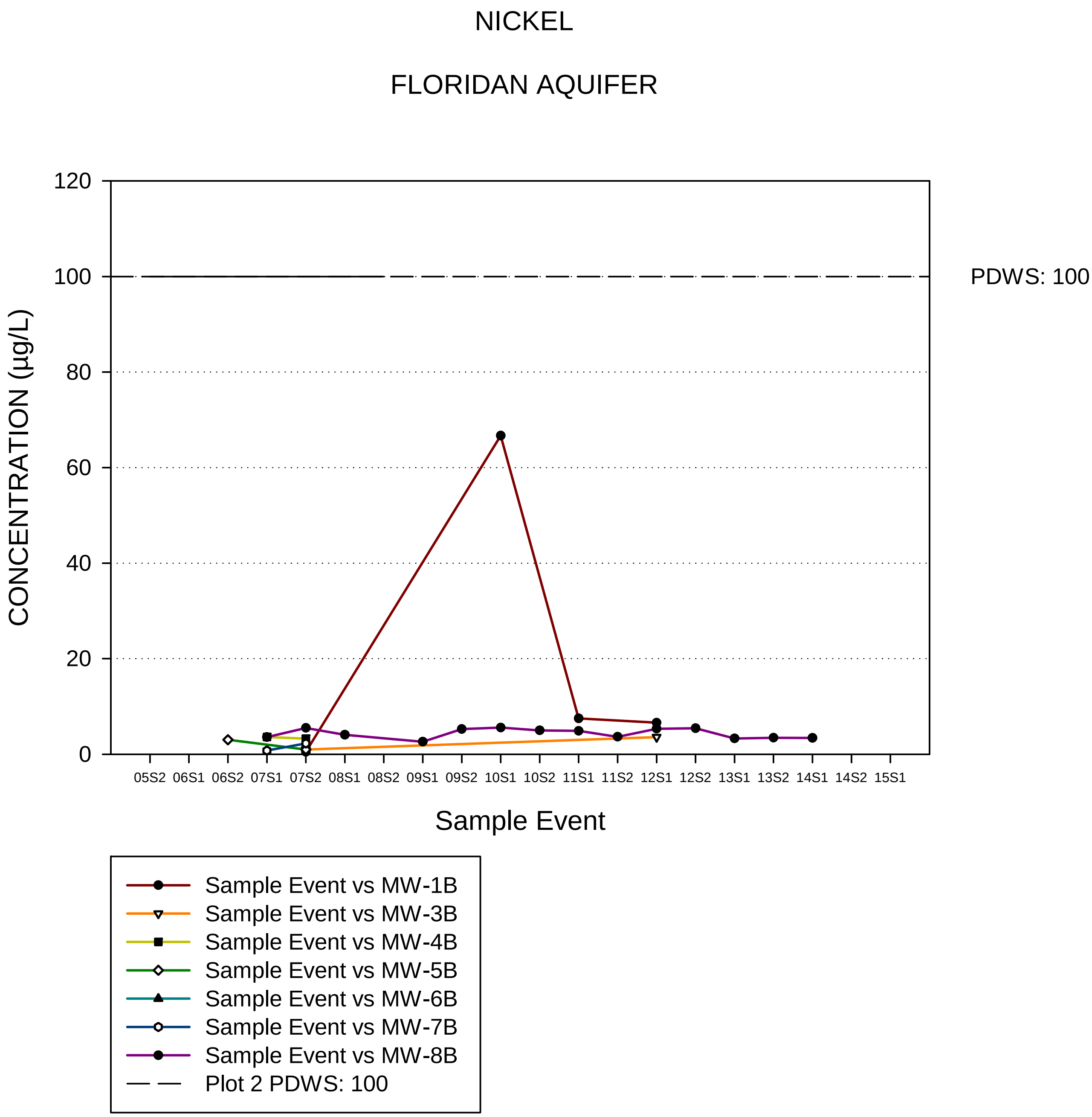


AMMONIA AS NITROGEN

FLORIDAN AQUIFER

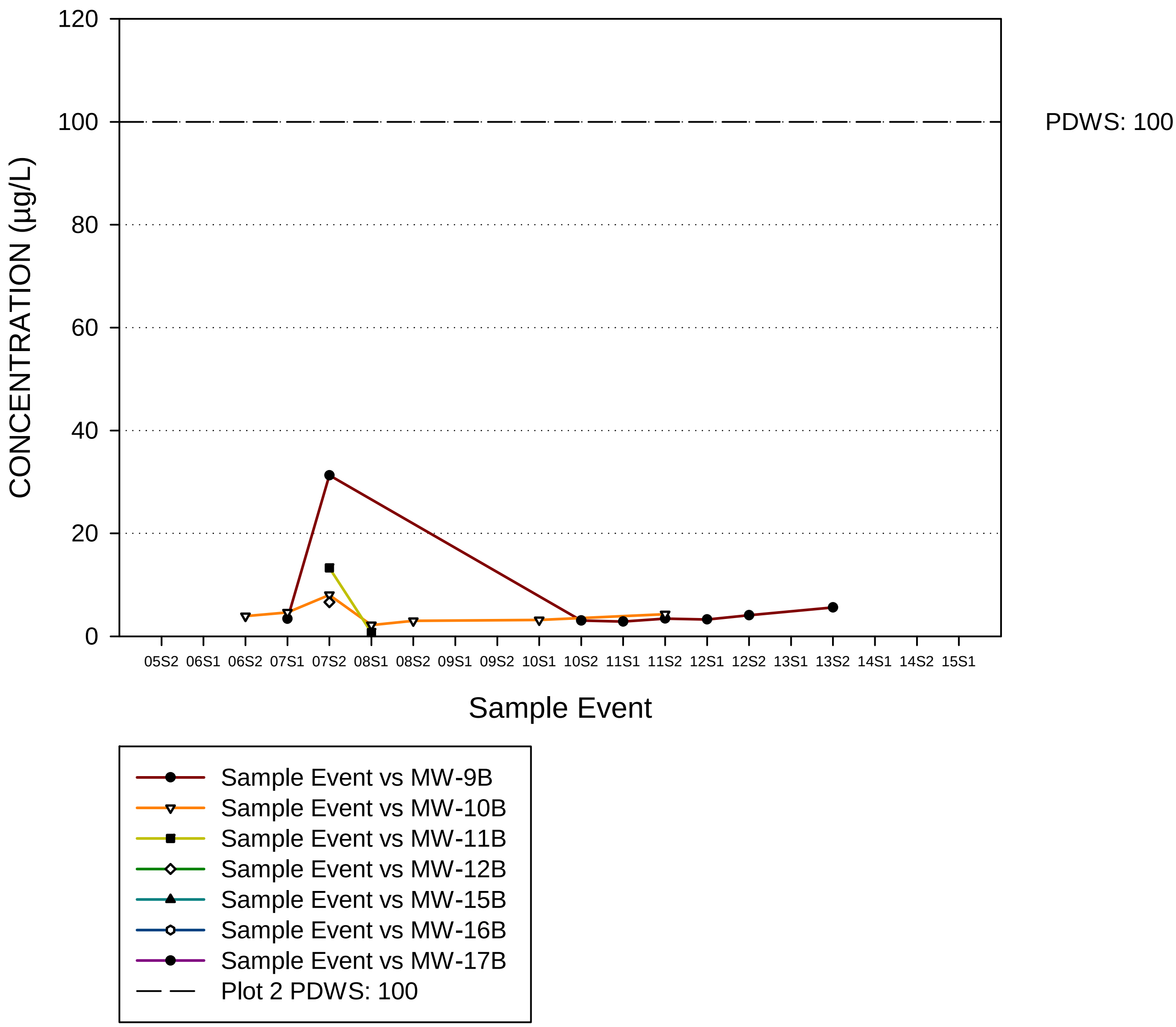



NICKEL
FLORIDAN AQUIFER
120
100
80
60
40
20
0
PDWS: 100
CONCENTRATION (µg/L)
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
CONCENTRATION (µg/L)
Plot 2 PDWS: 100


NICKEL
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
120
100
80
60
40
20
0
PDWS: 100
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Event
Sample Event vs MW-1B
Sample Event vs MW-3B
Sample Event vs MW-4B
Sample Event vs MW-5B
Sample Event vs MW-6B
Sample Event vs MW-7B
Sample Event vs MW-8B
Plot 2 PDWS: 100

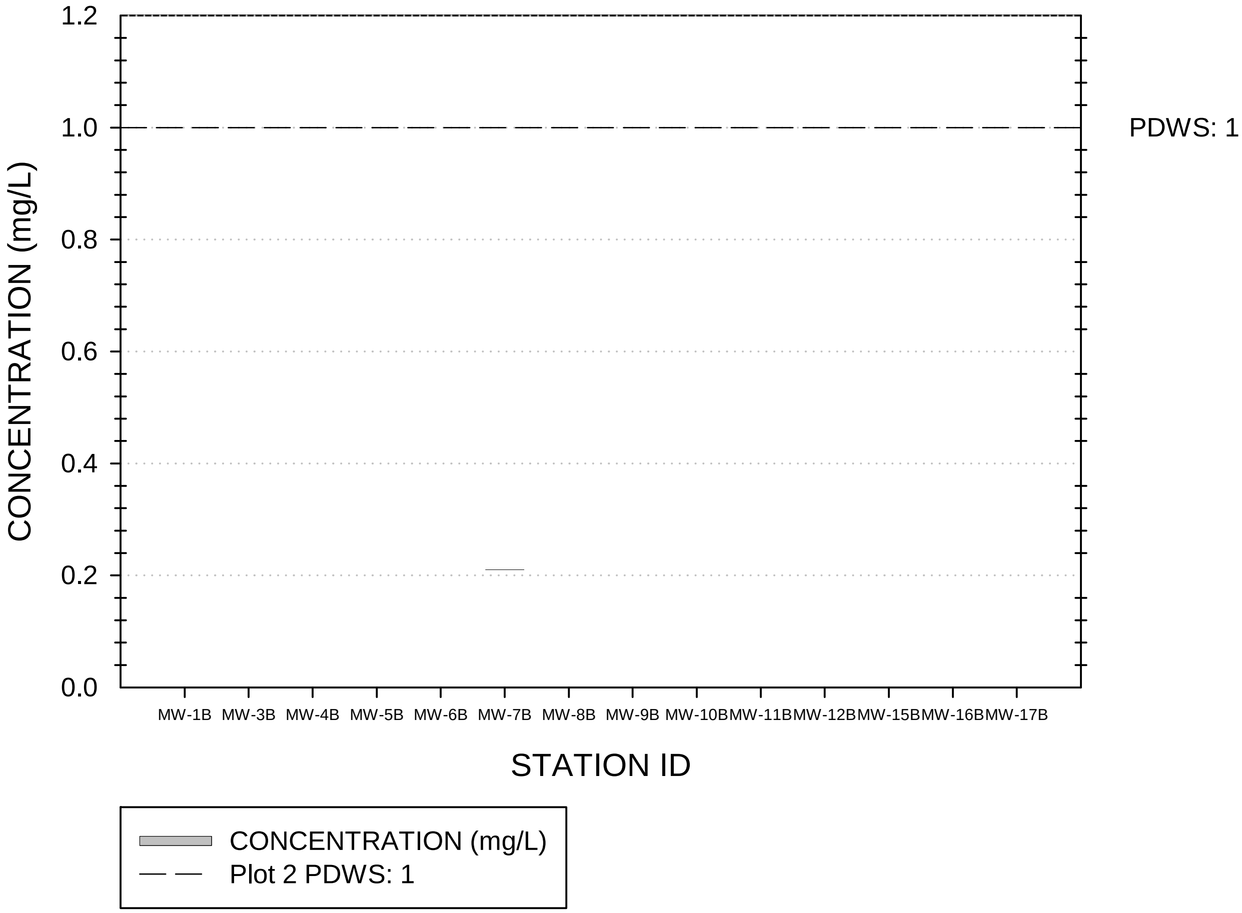
NICKEL

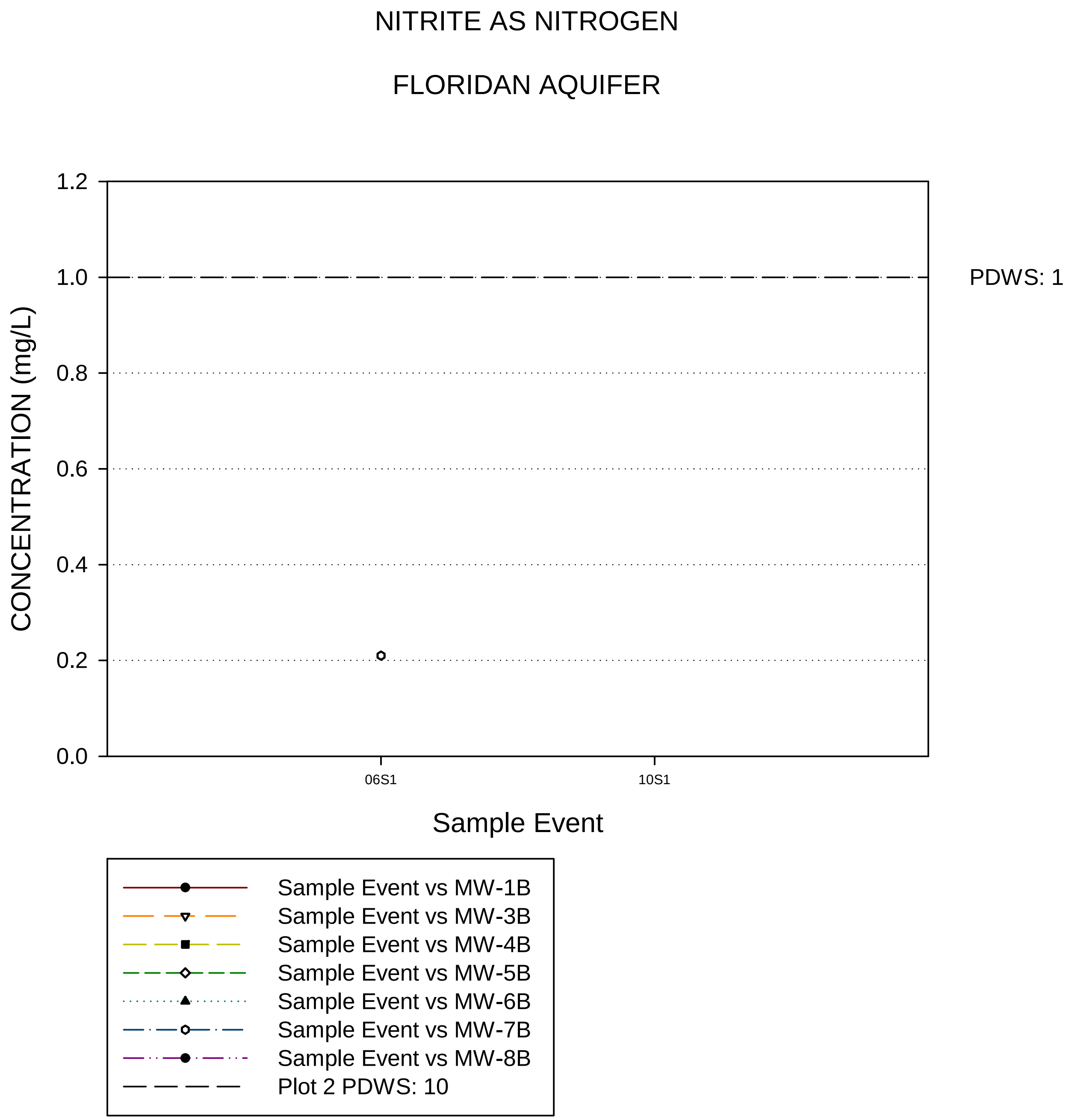
FLORIDAN AQUIFER



NITRITE AS NITROGEN

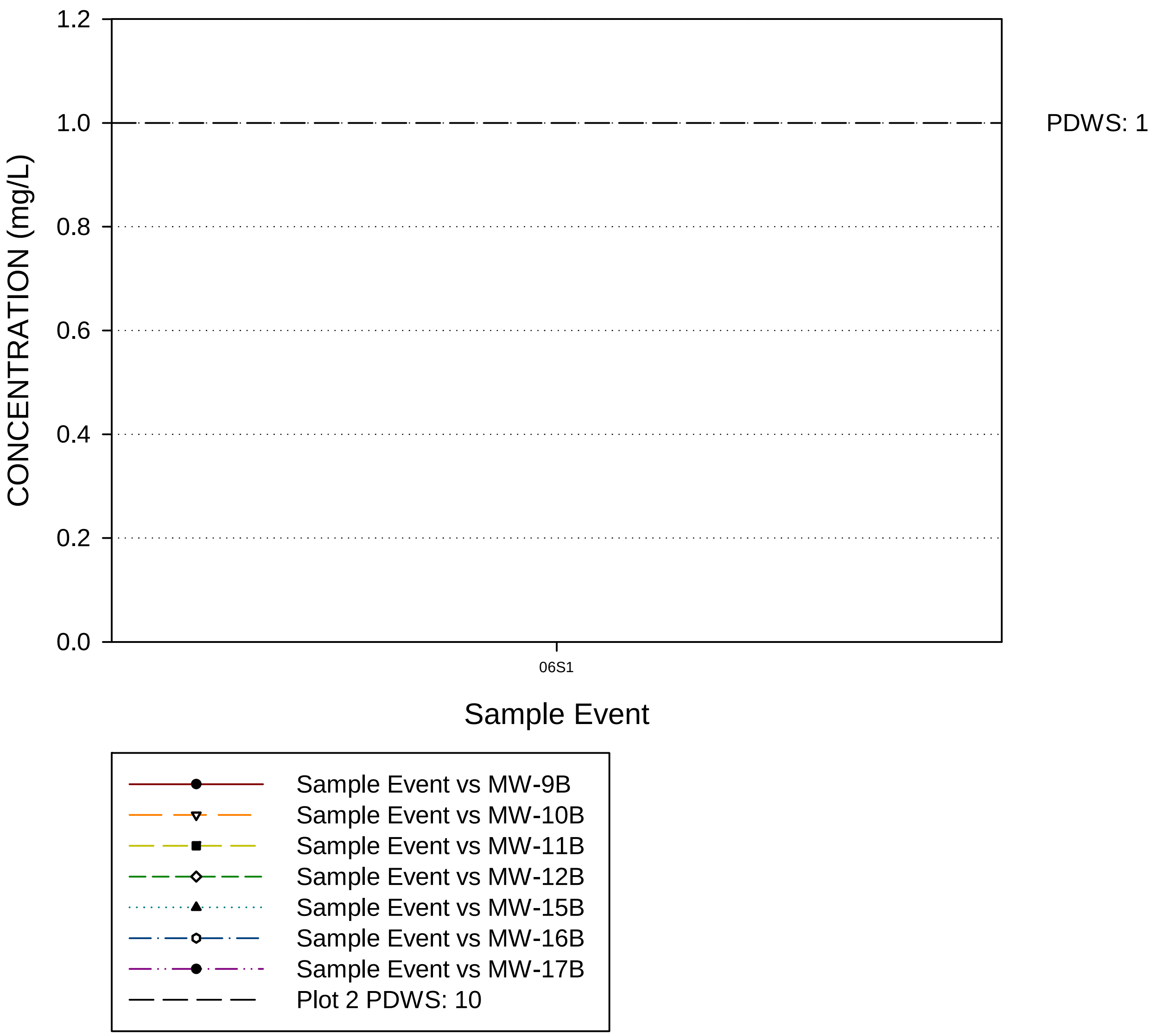
FLORIDAN AQUIFER




NITRITE AS NITROGEN
FLORIDAN AQUIFER
CONCENTRATION (mg/L)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
PDWS: 1
06S1
10S1
Sample Event
Sample Event vs MW-1B
Sample Event vs MW-3B
Sample Event vs MW-4B
Sample Event vs MW-5B
Sample Event vs MW-6B
Sample Event vs MW-7B
Sample Event vs MW-8B
Plot 2 PDWS: 10

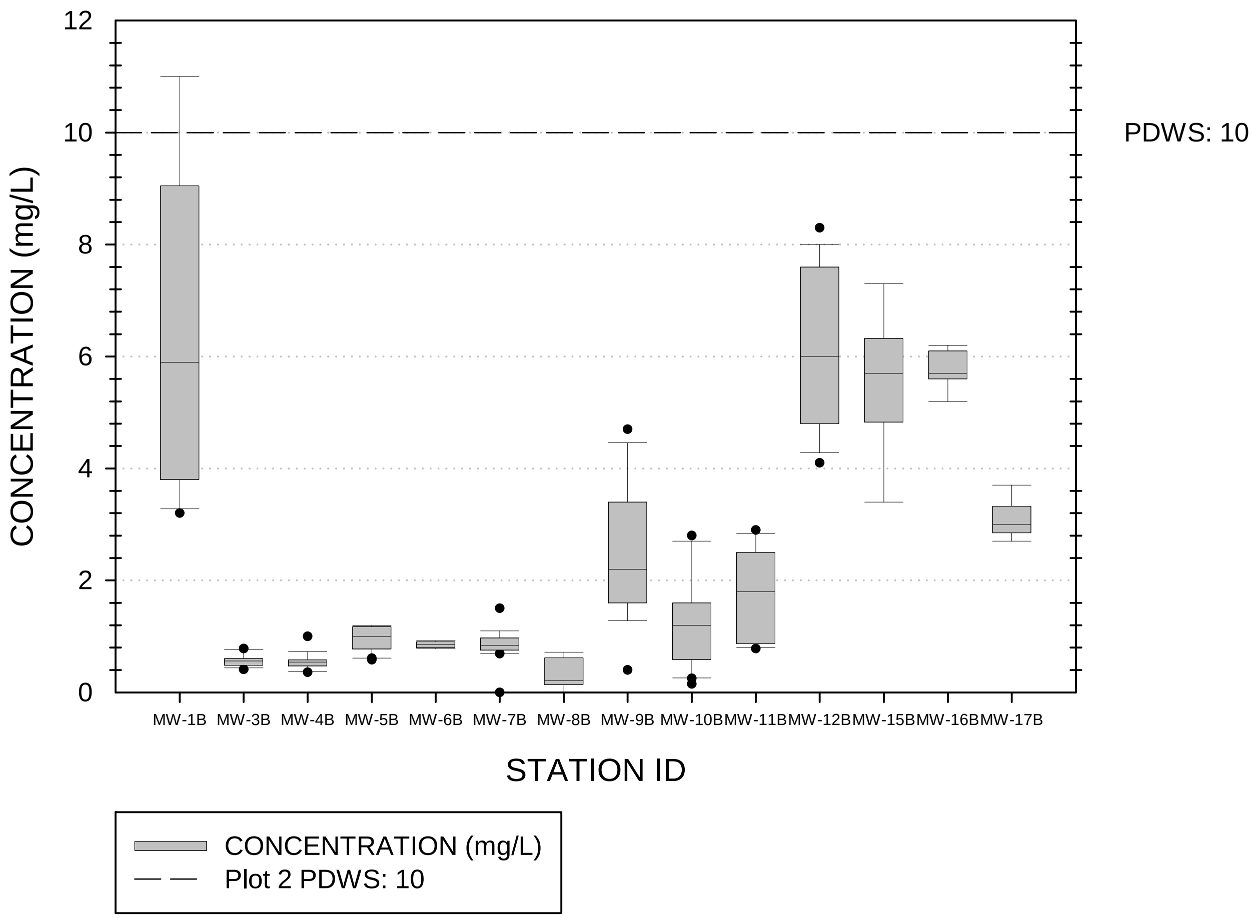
NITRITE AS NITROGEN

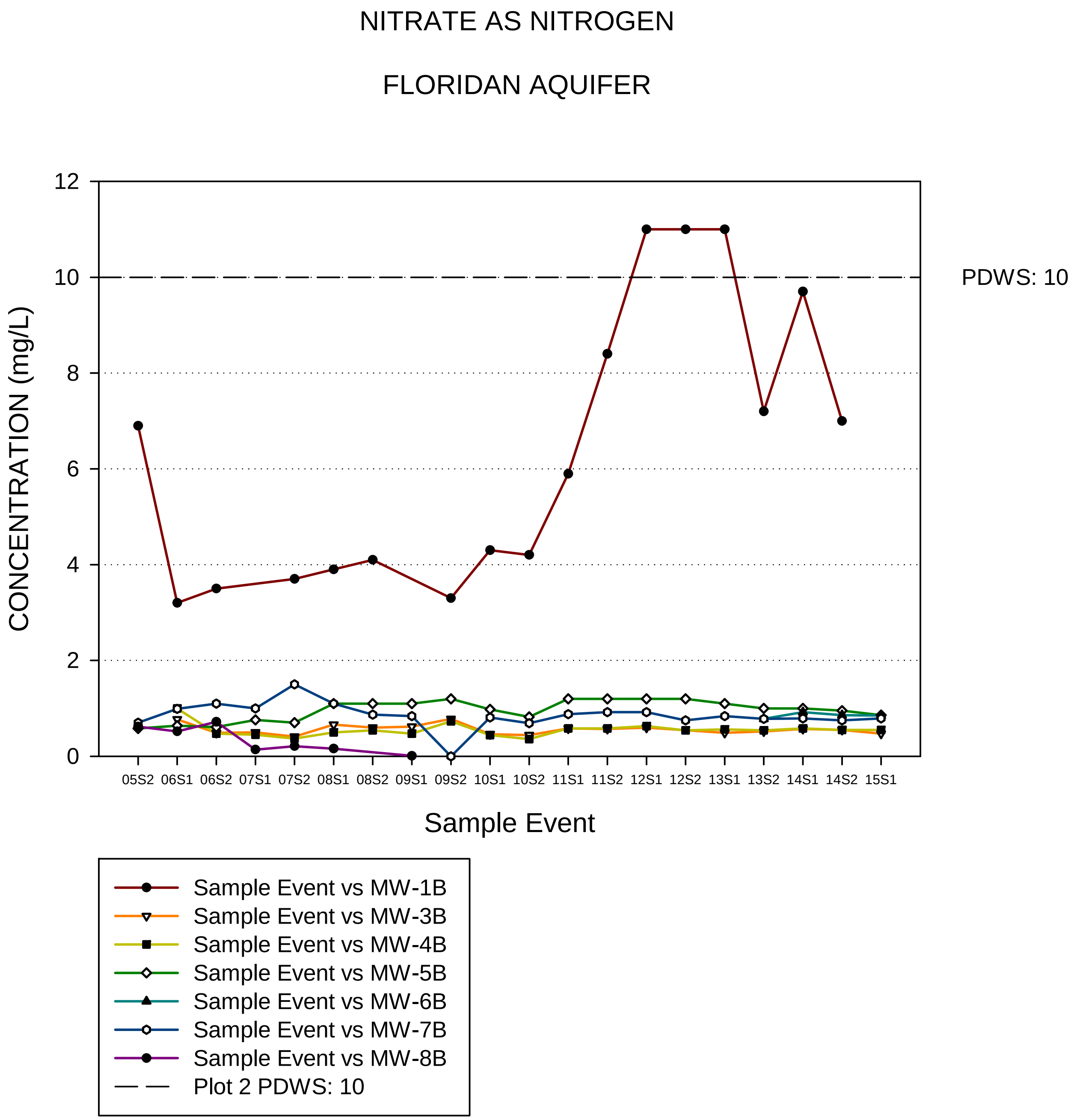
FLORIDAN AQUIFER



NITRATE AS NITROGEN

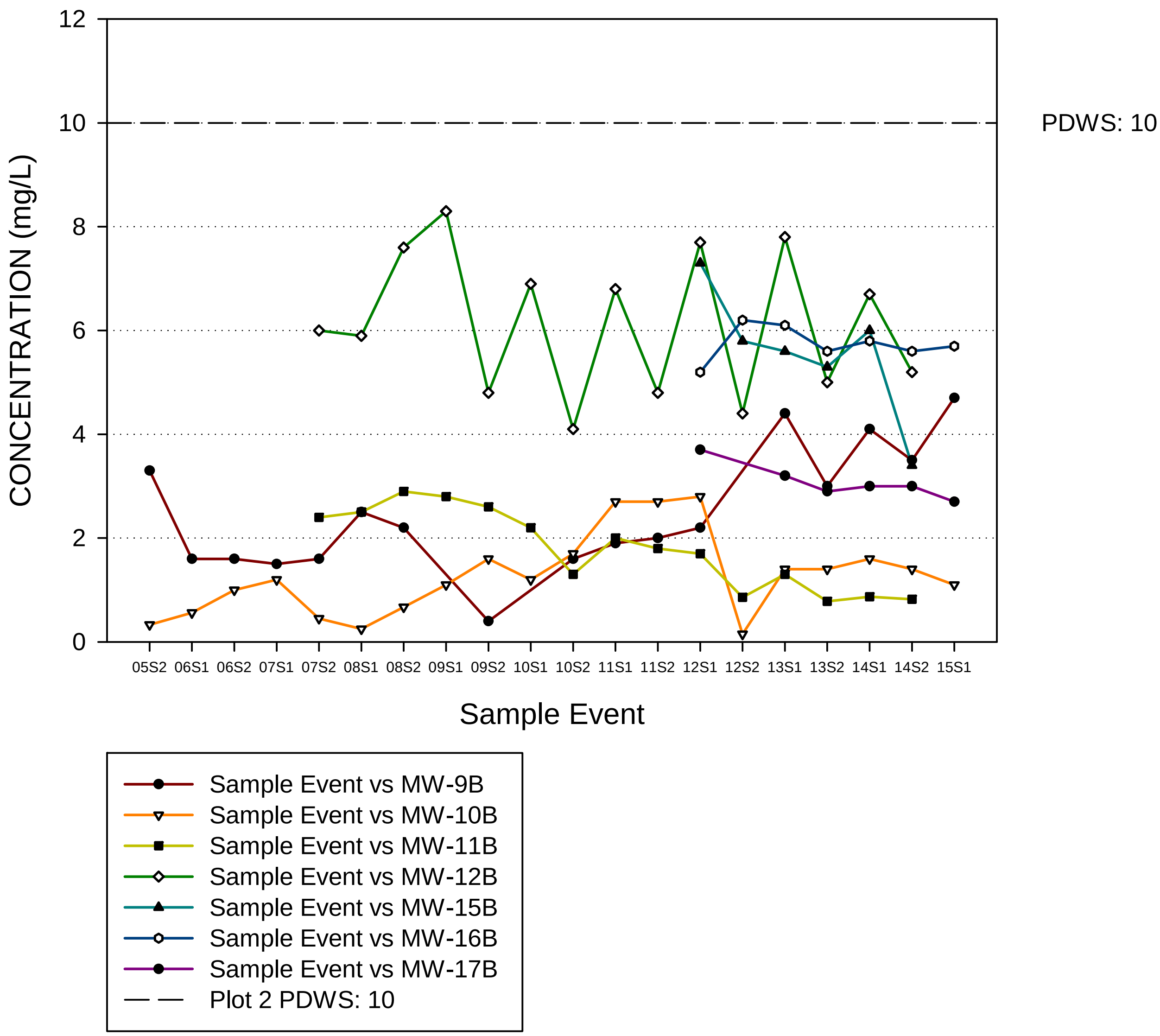
FLORIDAN AQUIFER




NITRATE AS NITROGEN
FLORIDAN AQUIFER
CONCENTRATION (mg/L)
0
2
4
6
8
10
12
PDWS: 10
05S2 06S1 06S2 07S1 07S2 08S1 08S2 09S1 09S2 10S1 10S2 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1
Sample Event
Sample Event vs MW-1B
Sample Event vs MW-3B
Sample Event vs MW-4B
Sample Event vs MW-5B
Sample Event vs MW-6B
Sample Event vs MW-7B
Sample Event vs MW-8B
Plot 2 PDWS: 10

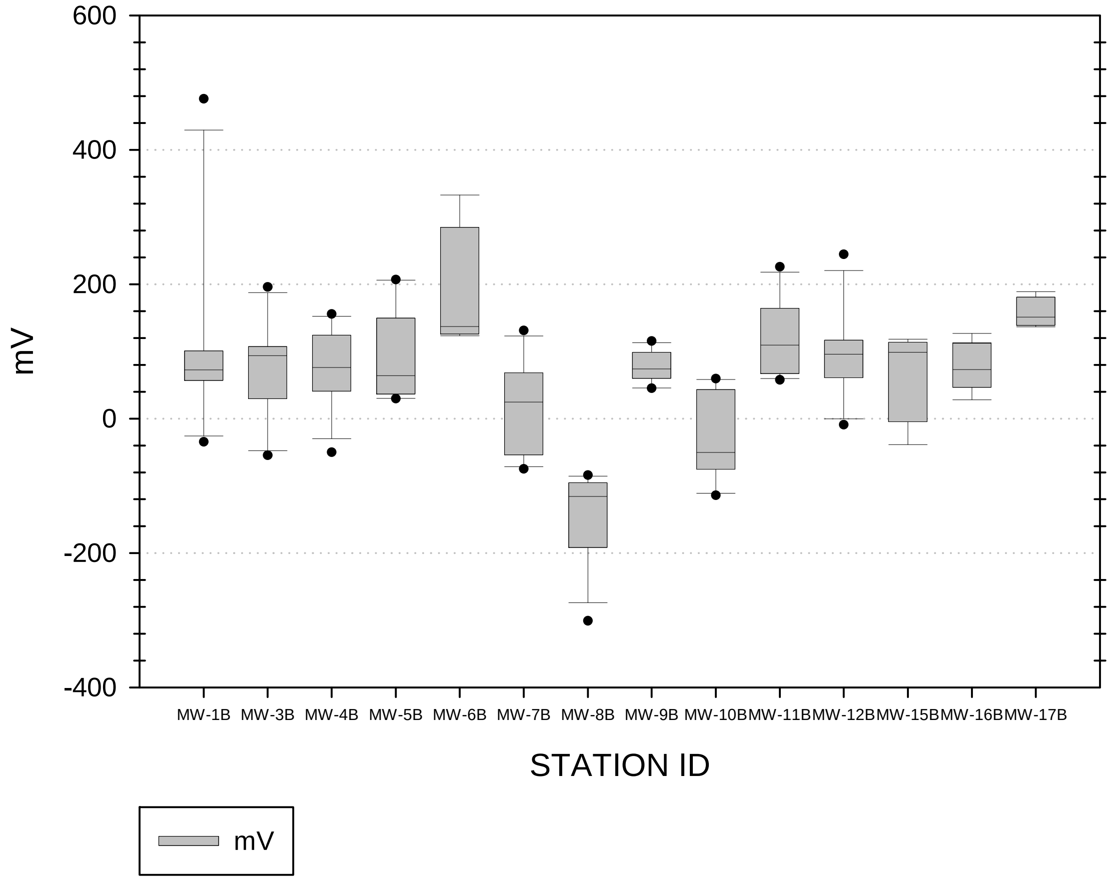
NITRATE AS NITROGEN

FLORIDAN AQUIFER



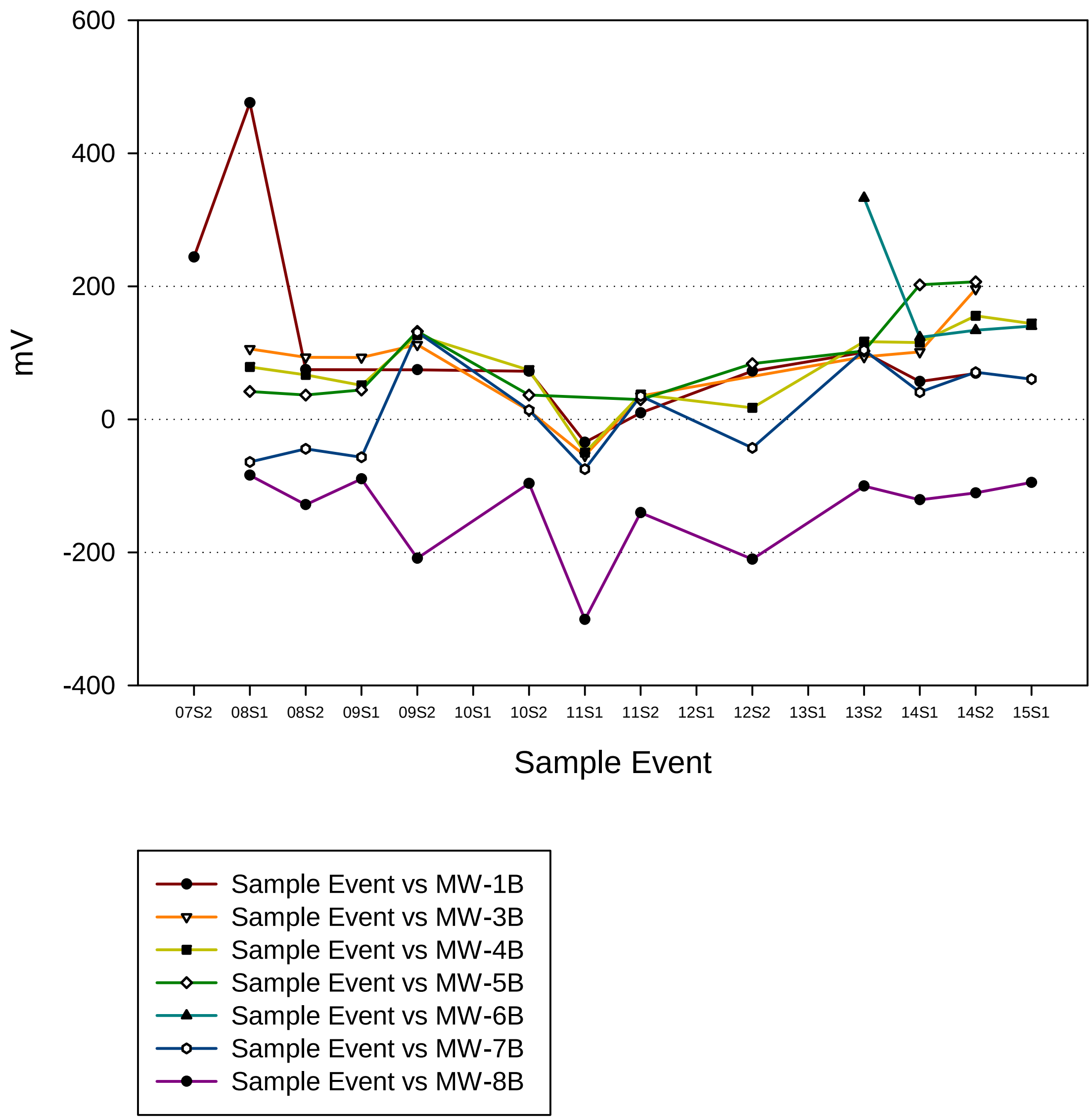
OXIDATION / REDUCTION POTENTIAL

FLORIDAN AQUIFER



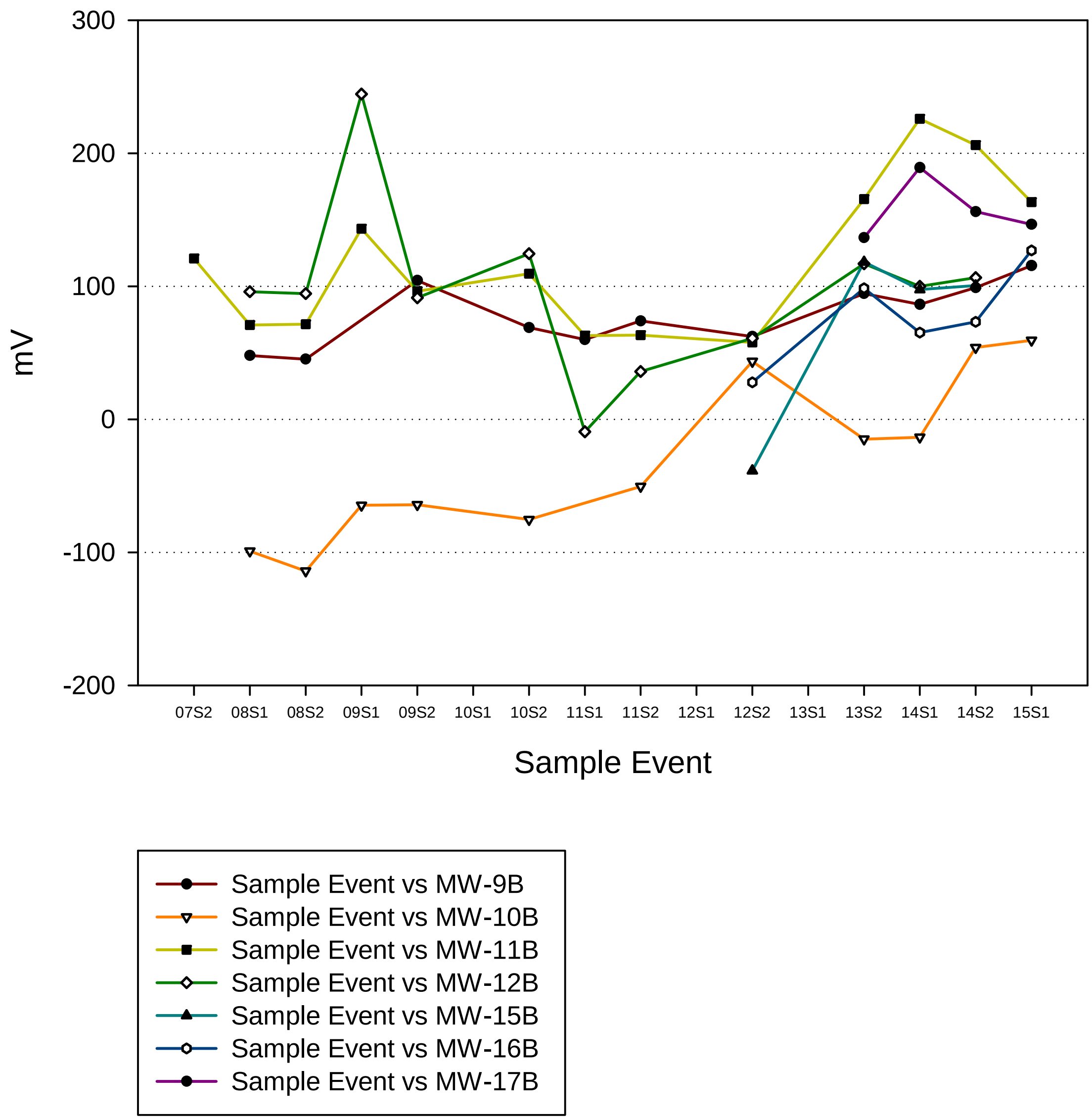
OXIDATION / REDUCTION POTENTIAL

FLORIDAN AQUIFER



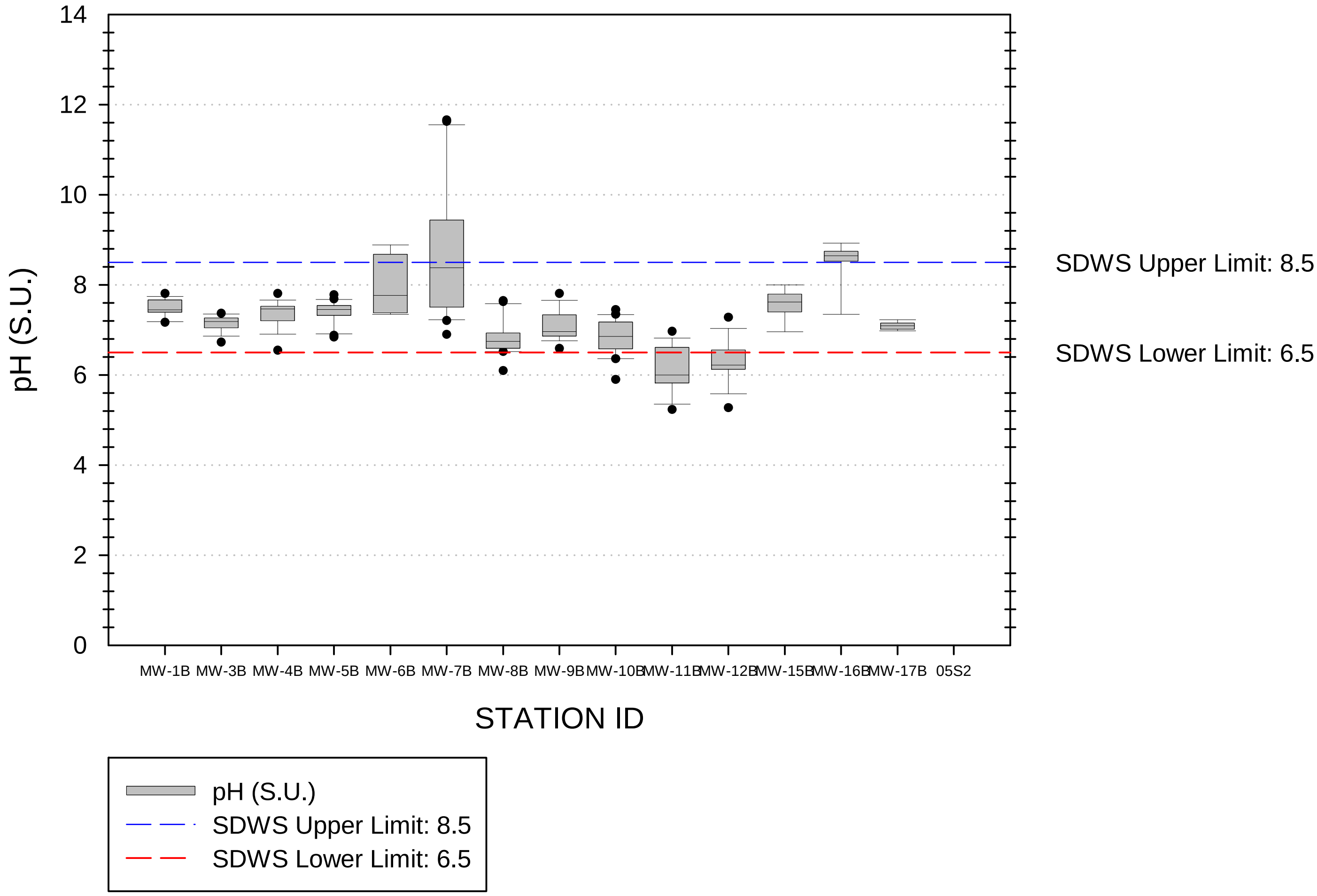
OXIDATION / REDUCTION POTENTIAL

FLORIDAN AQUIFER



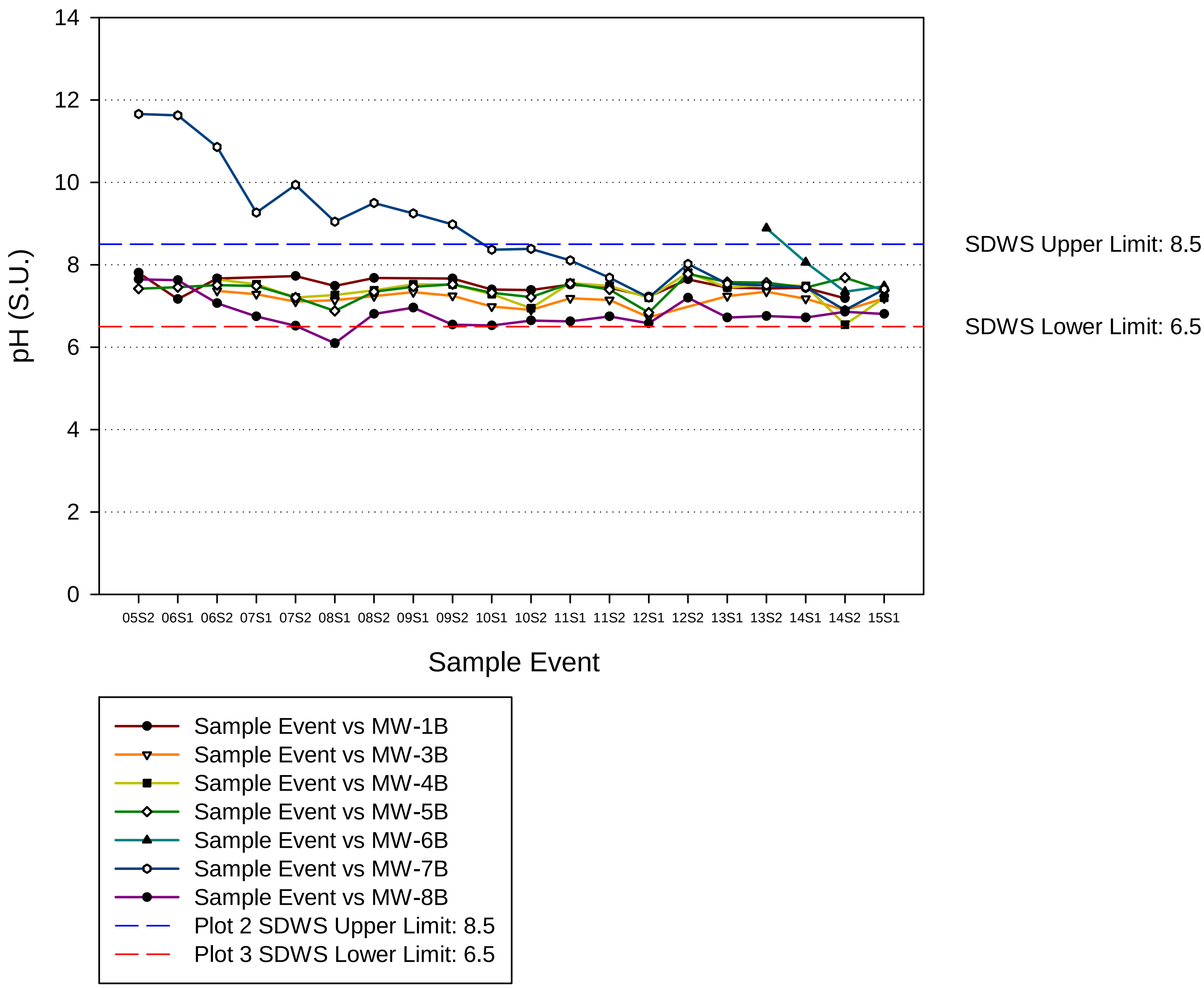
PH

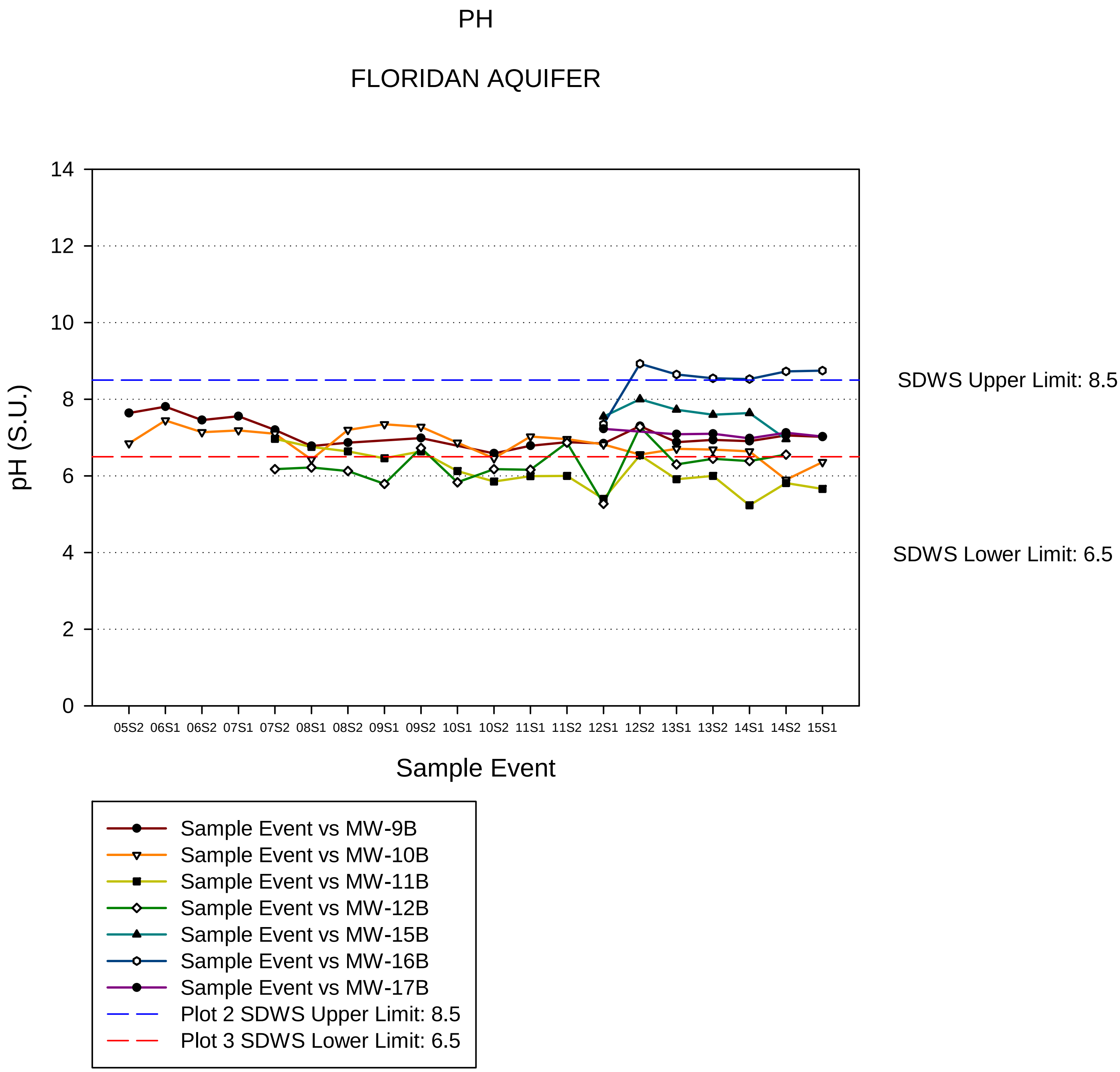
FLORIDAN AQUIFER



PH

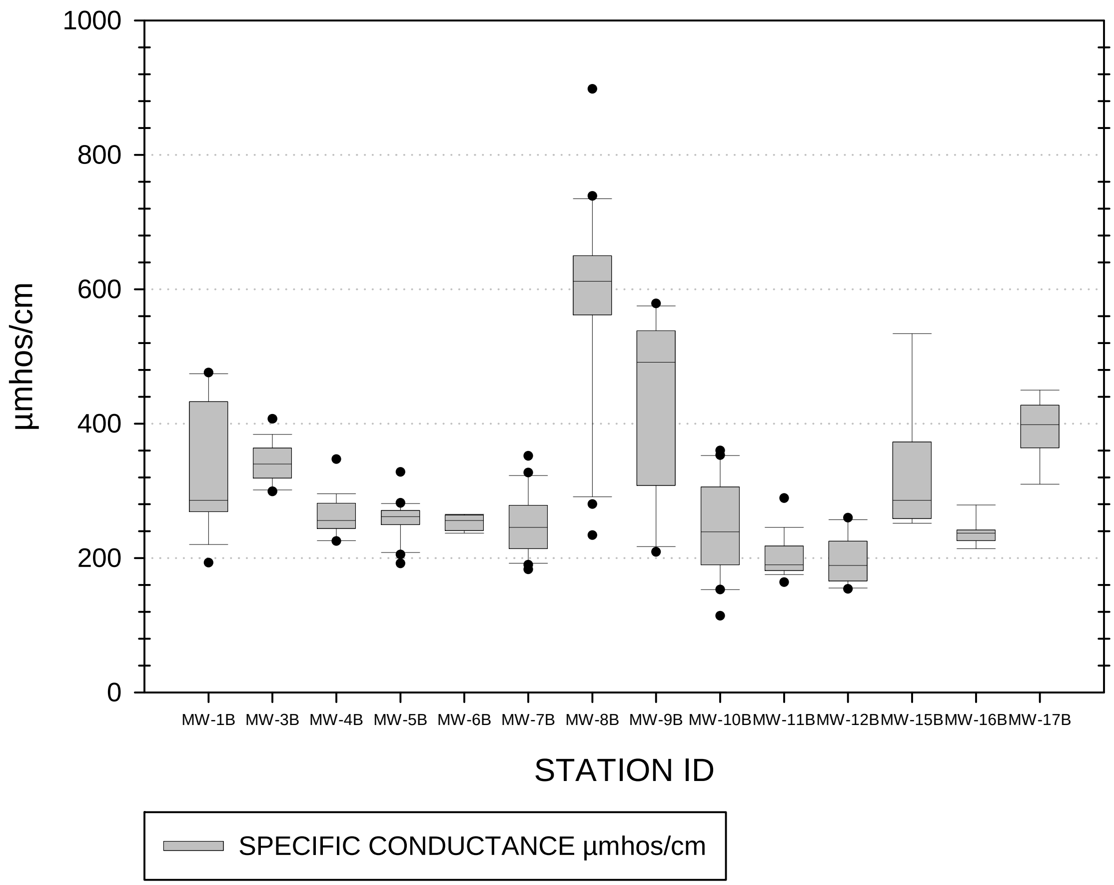
FLORIDAN AQUIFER




PH
FLORIDAN AQUIFER
pH (S.U.)
14
12
10
8
6
4
2
0
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Event
SDWS Upper Limit: 8.5
SDWS Lower Limit: 6.5
Sample Event vs MW-9B
Sample Event vs MW-10B
Sample Event vs MW-11B
Sample Event vs MW-12B
Sample Event vs MW-15B
Sample Event vs MW-16B
Sample Event vs MW-17B
Plot 2 SDWS Upper Limit: 8.5
Plot 3 SDWS Lower Limit: 6.5

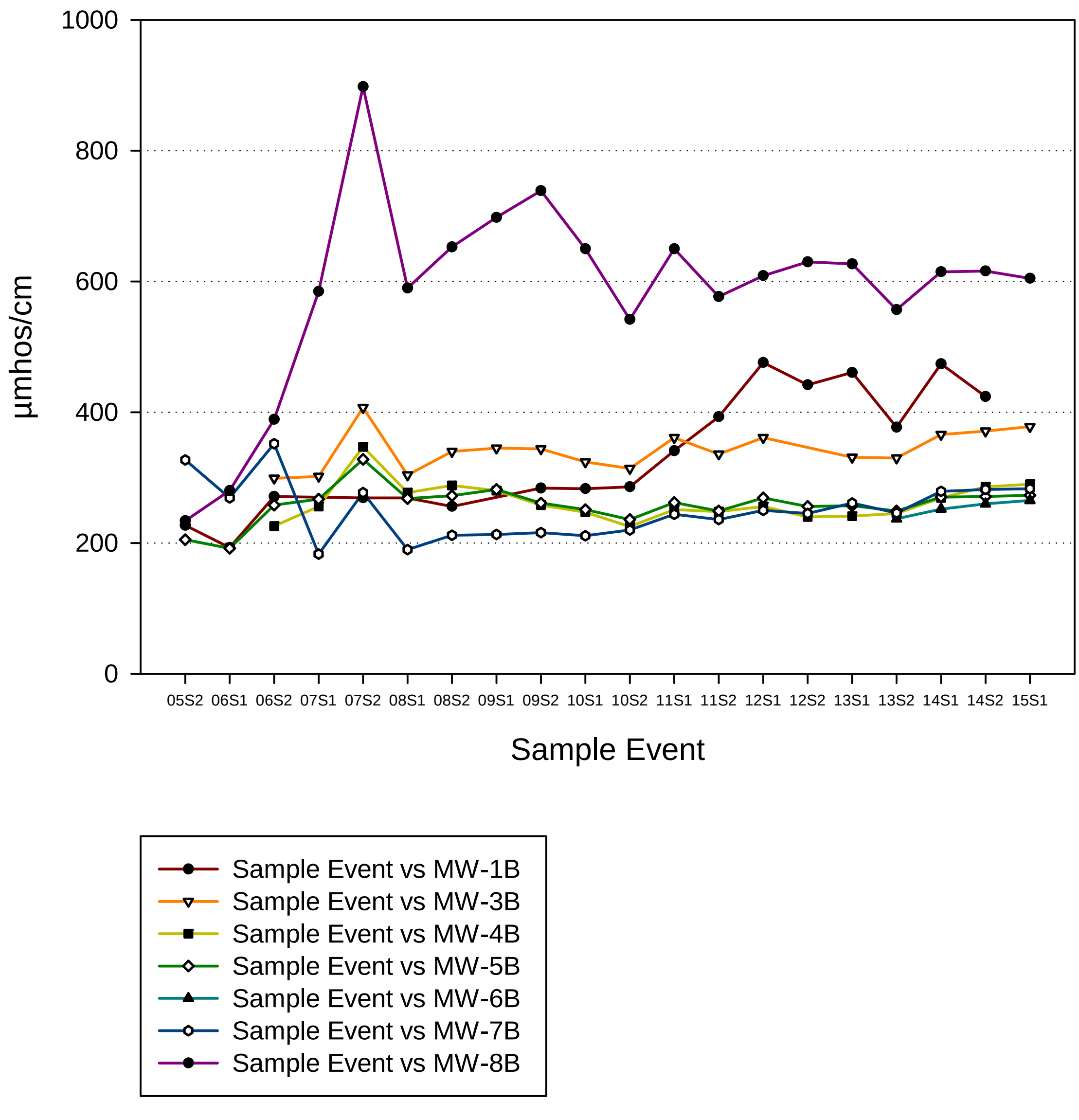
SPECIFIC CONDUCTANCE

FLORIDAN AQUIFER



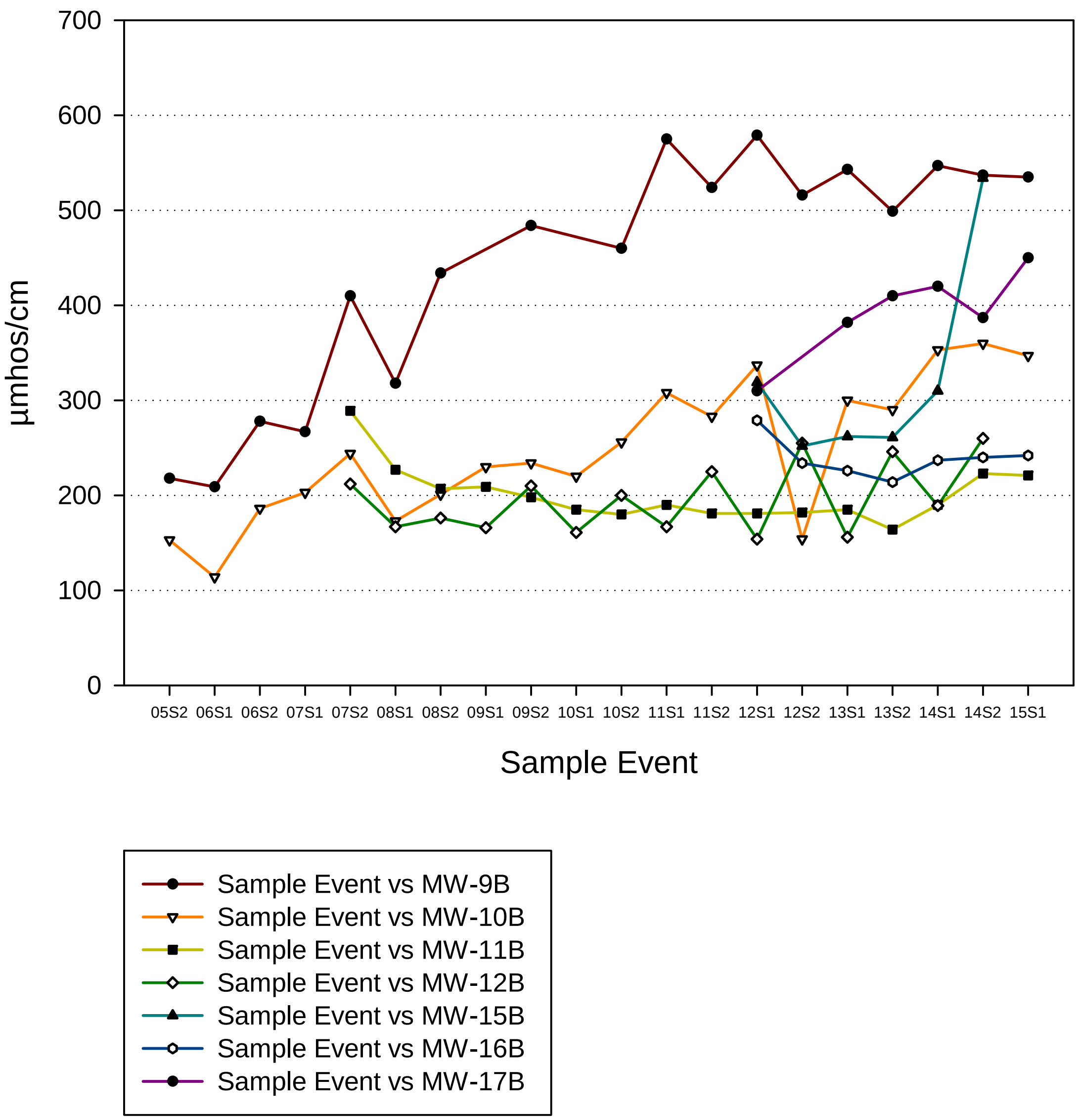
SPECIFIC CONDUCTANCE

FLORIDAN AQUIFER



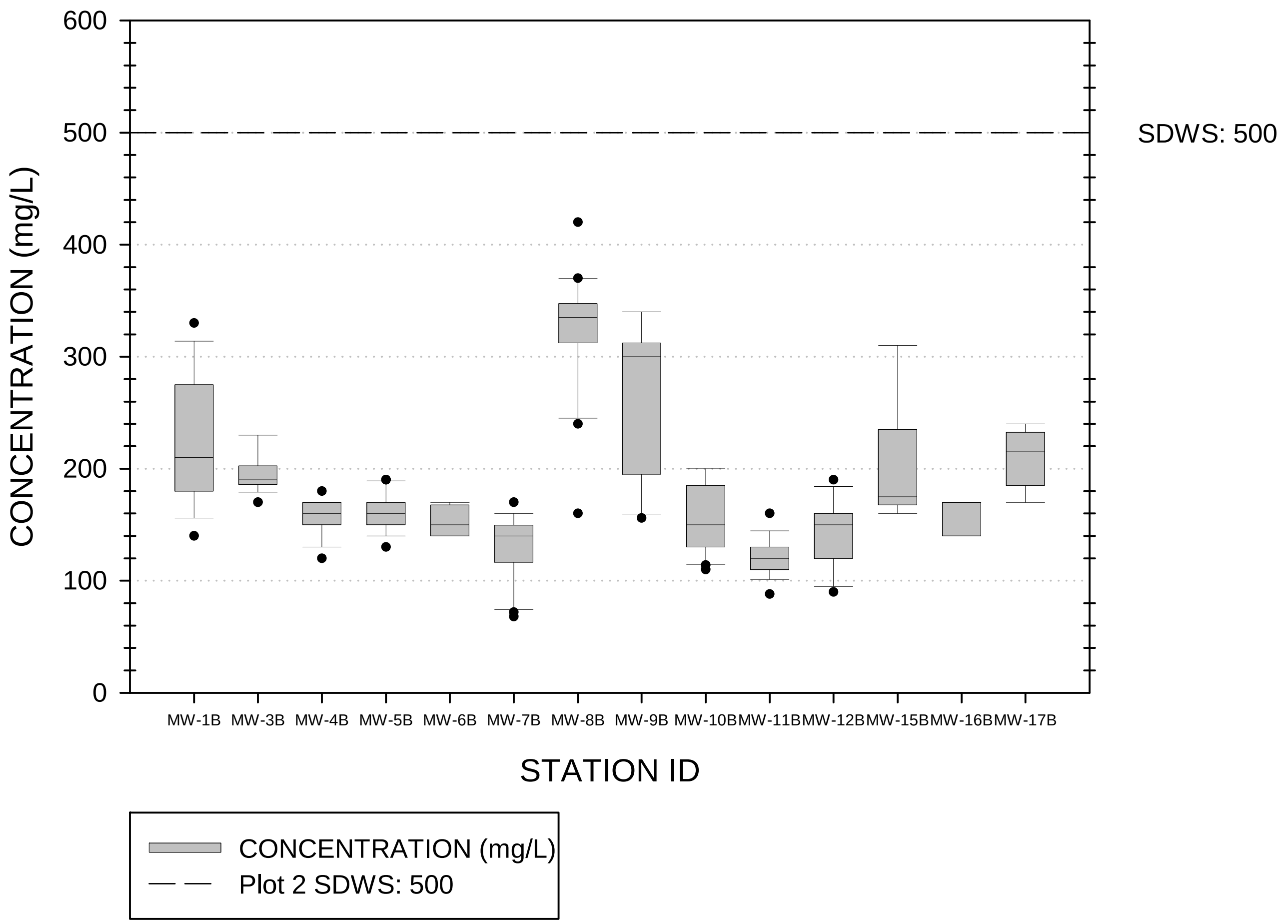
SPECIFIC CONDUCTANCE

FLORIDAN AQUIFER



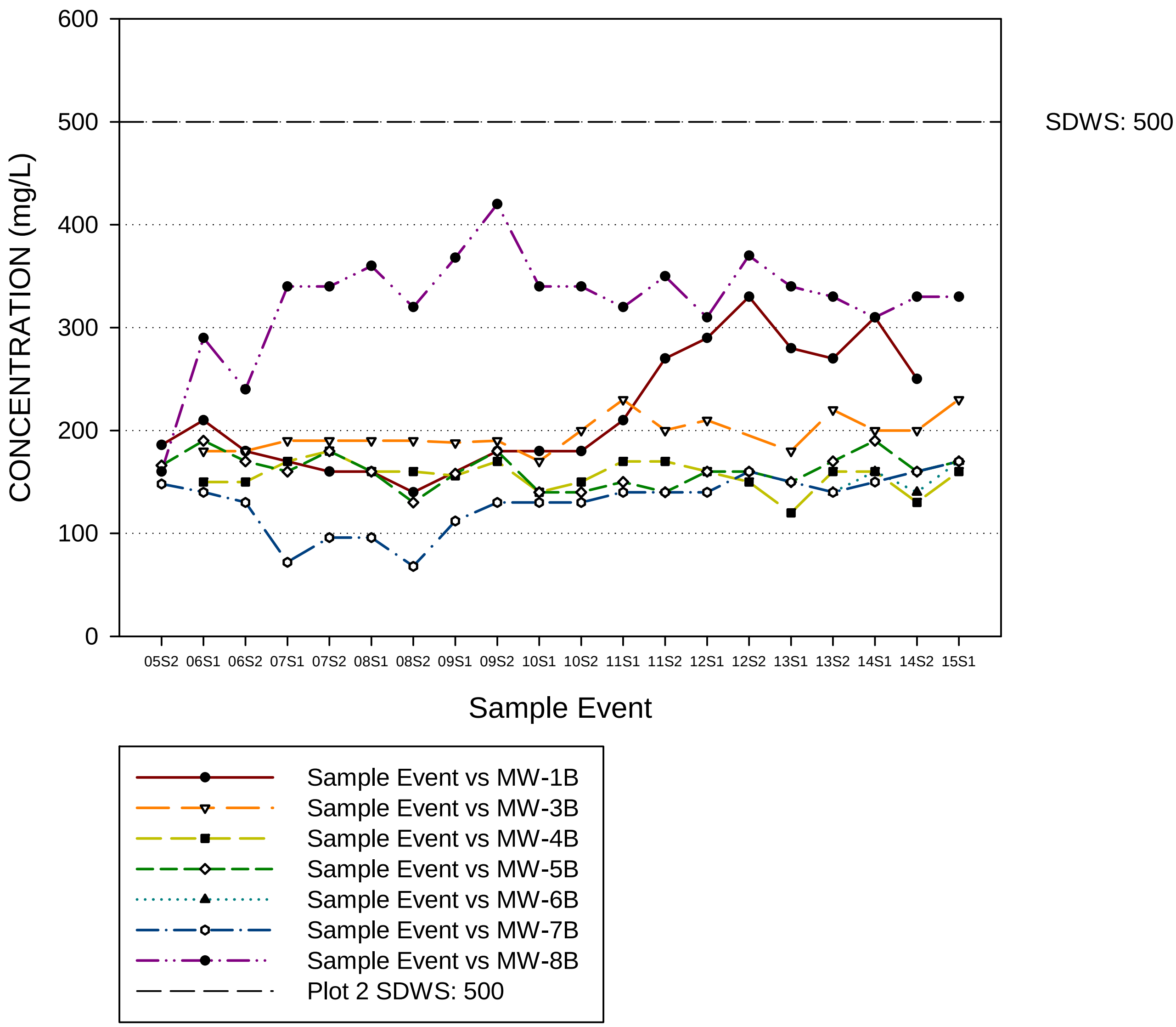
TOTAL DISSOLVED SOLIDS

FLORIDAN AQUIFER



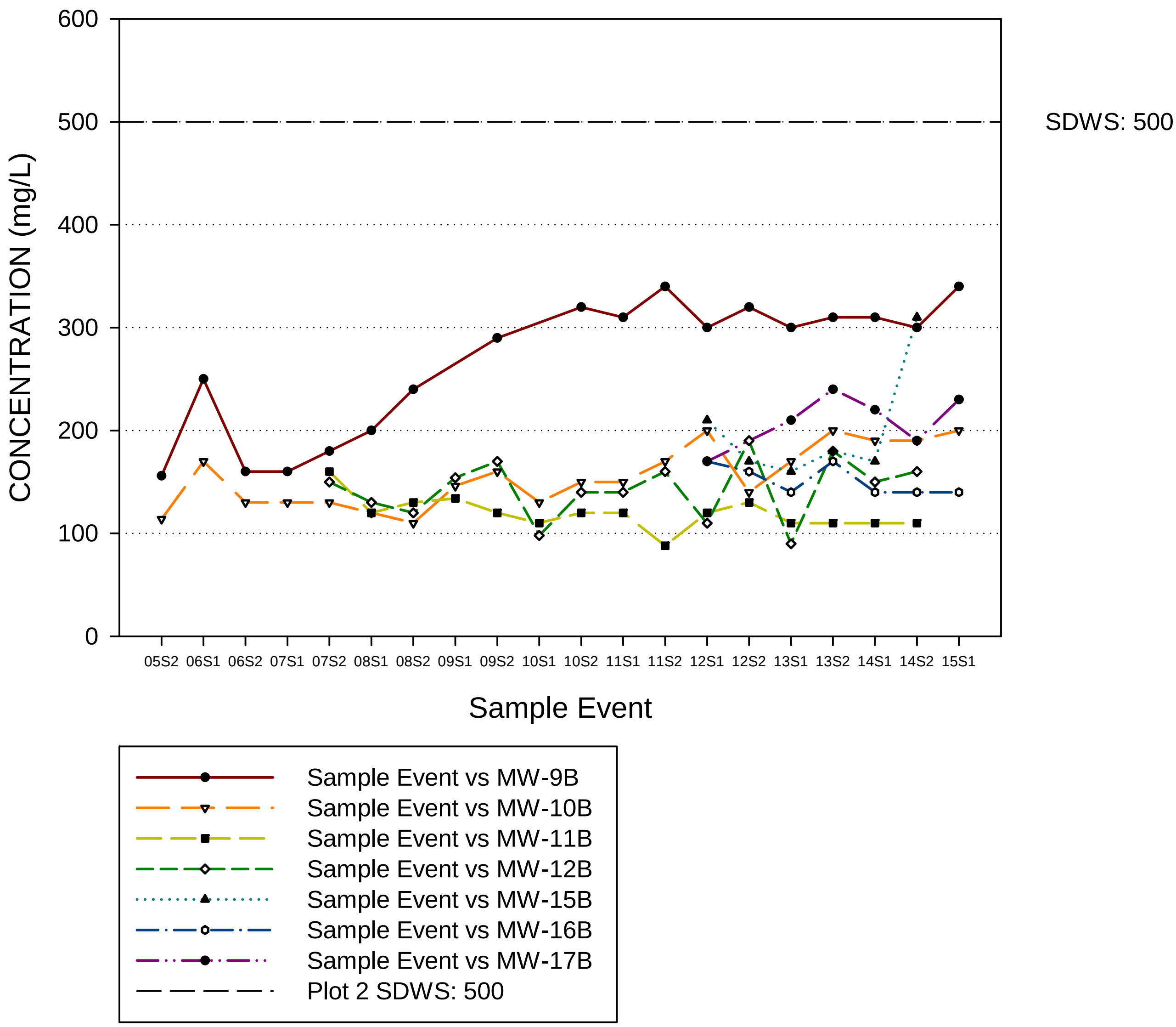
TOTAL DISSOLVED SOLIDS

FLORIDAN AQUIFER



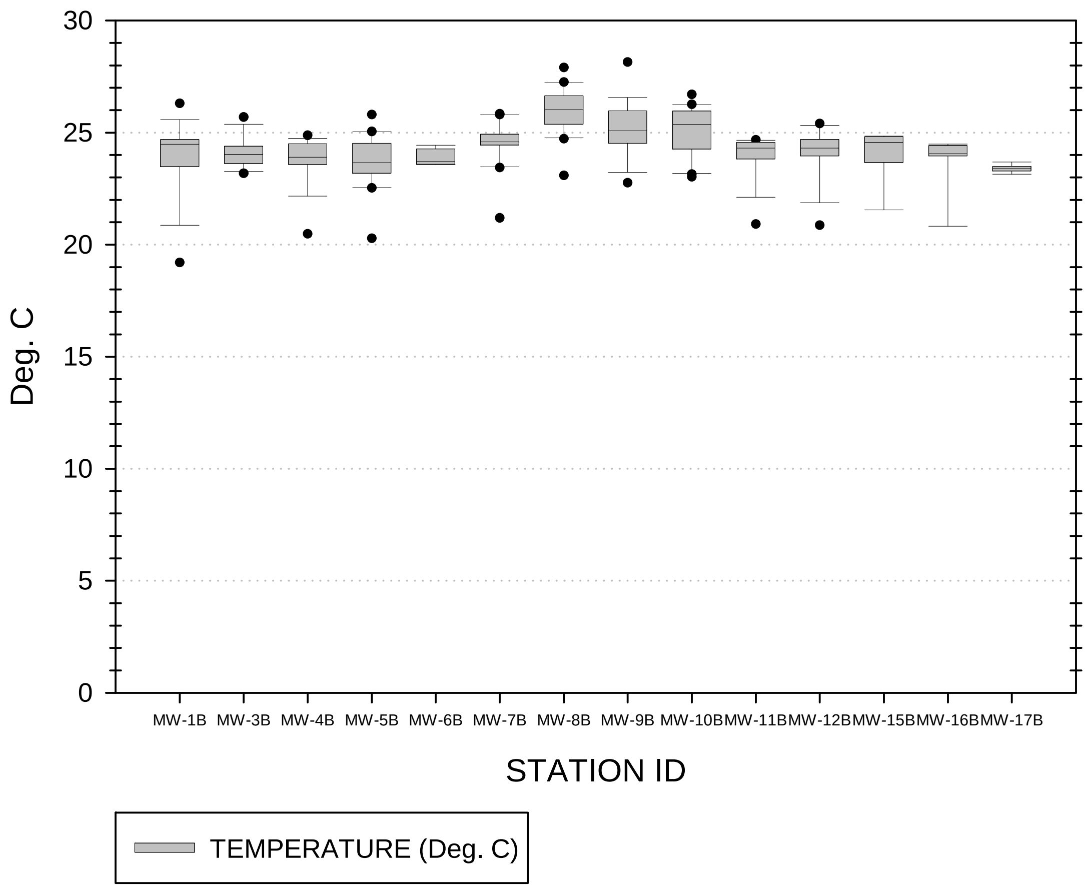
TOTAL DISSOLVED SOLIDS

FLORIDAN AQUIFER



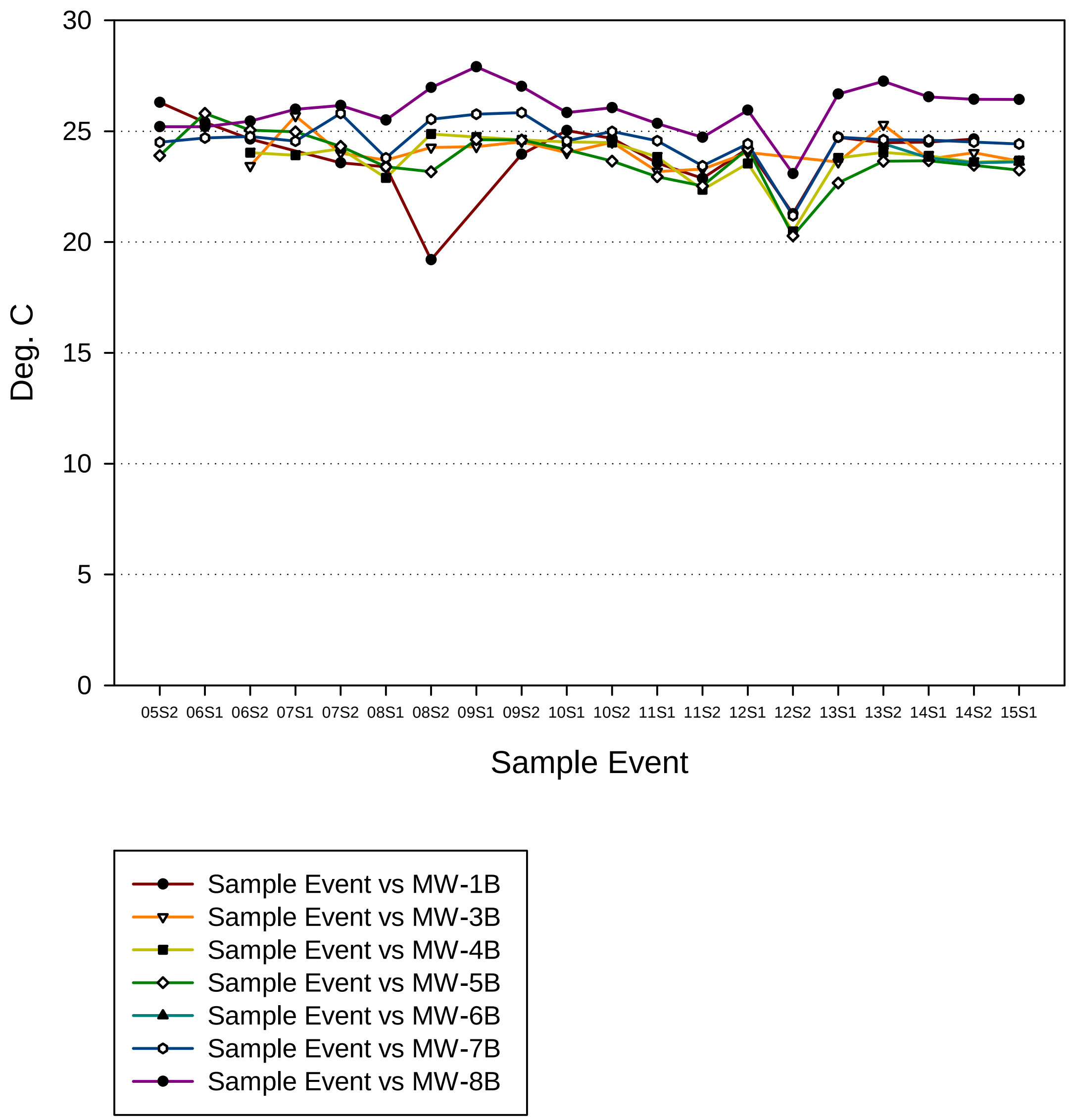
TEMPERATURE

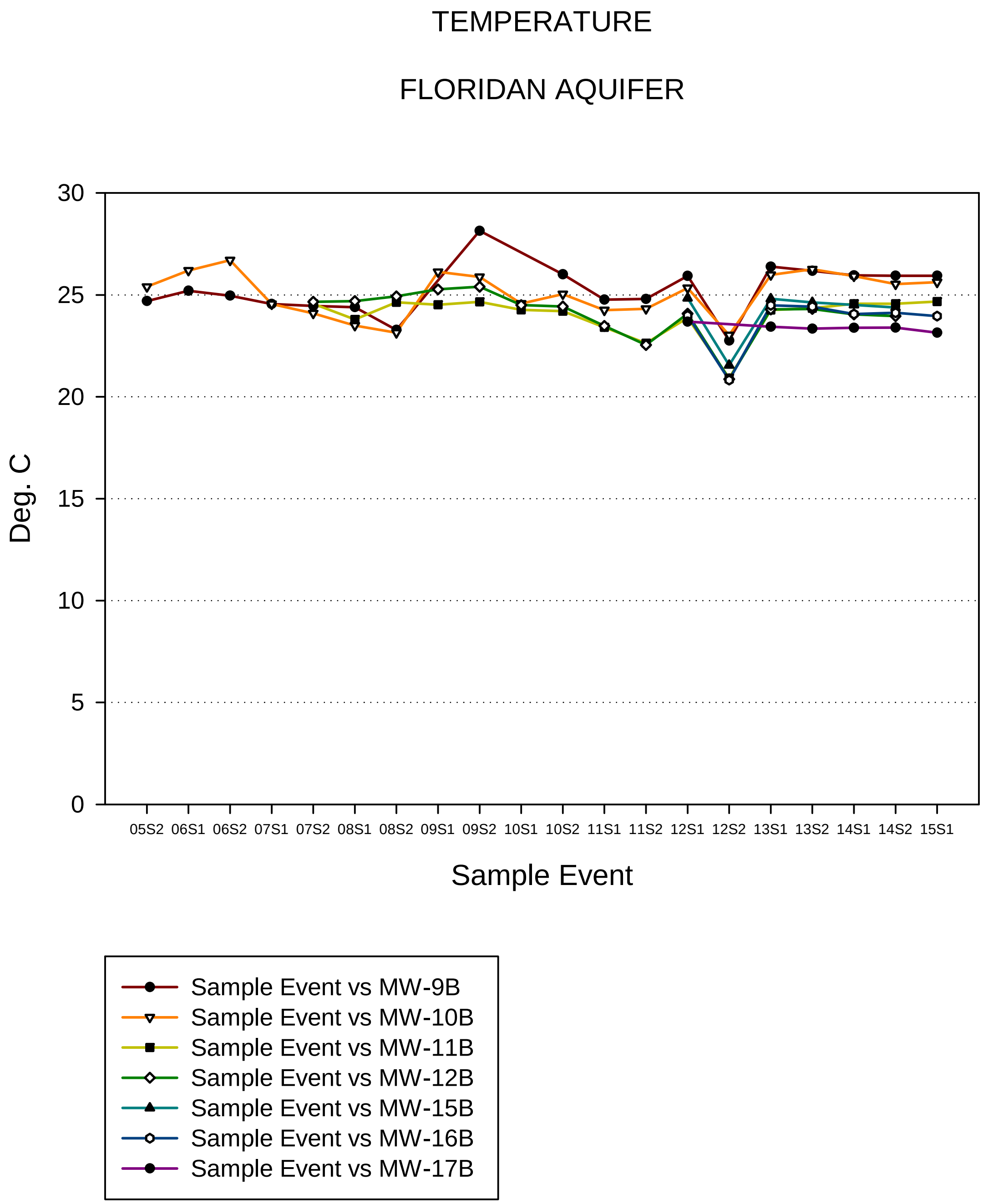
FLORIDAN AQUIFER



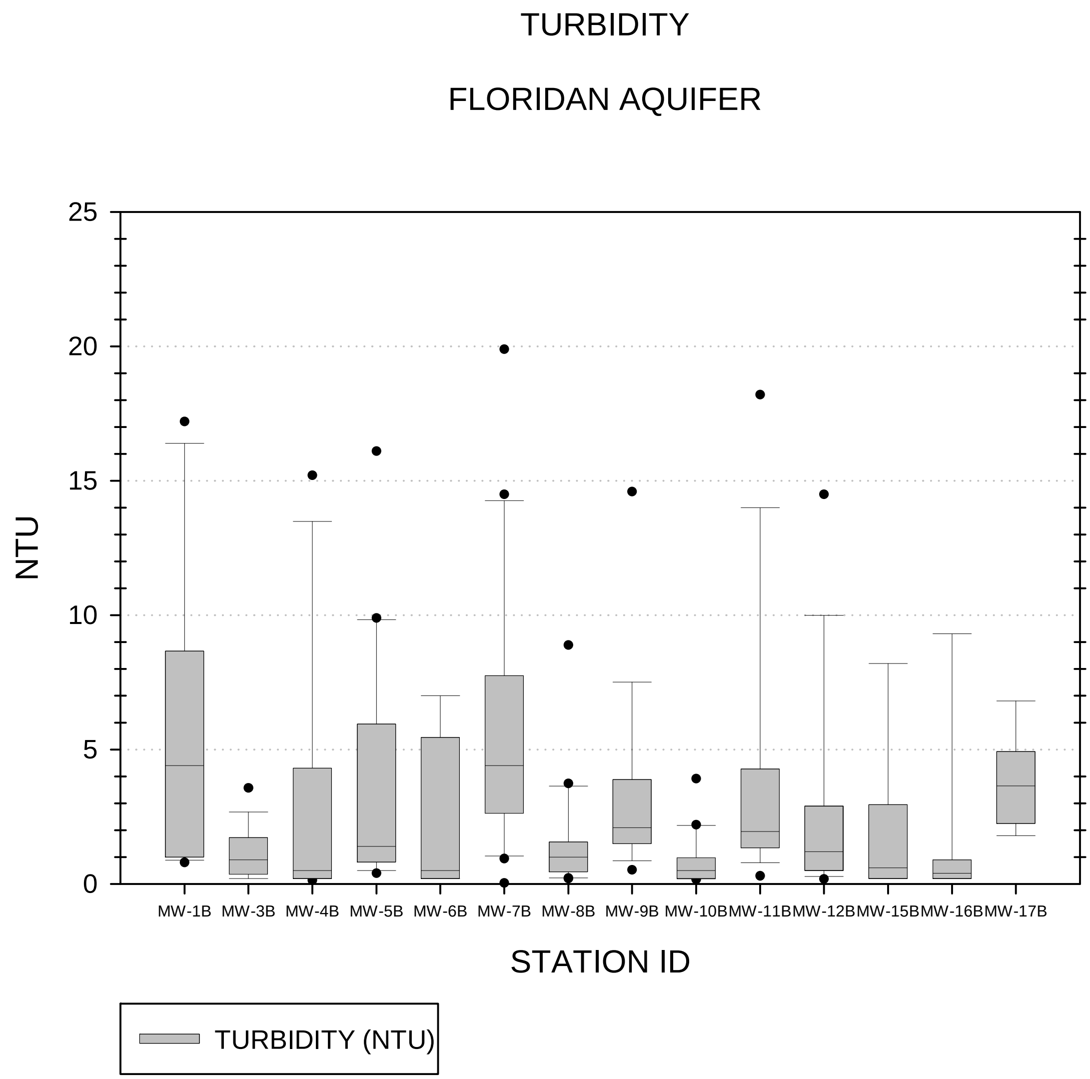
TEMPERATURE

FLORIDAN AQUIFER



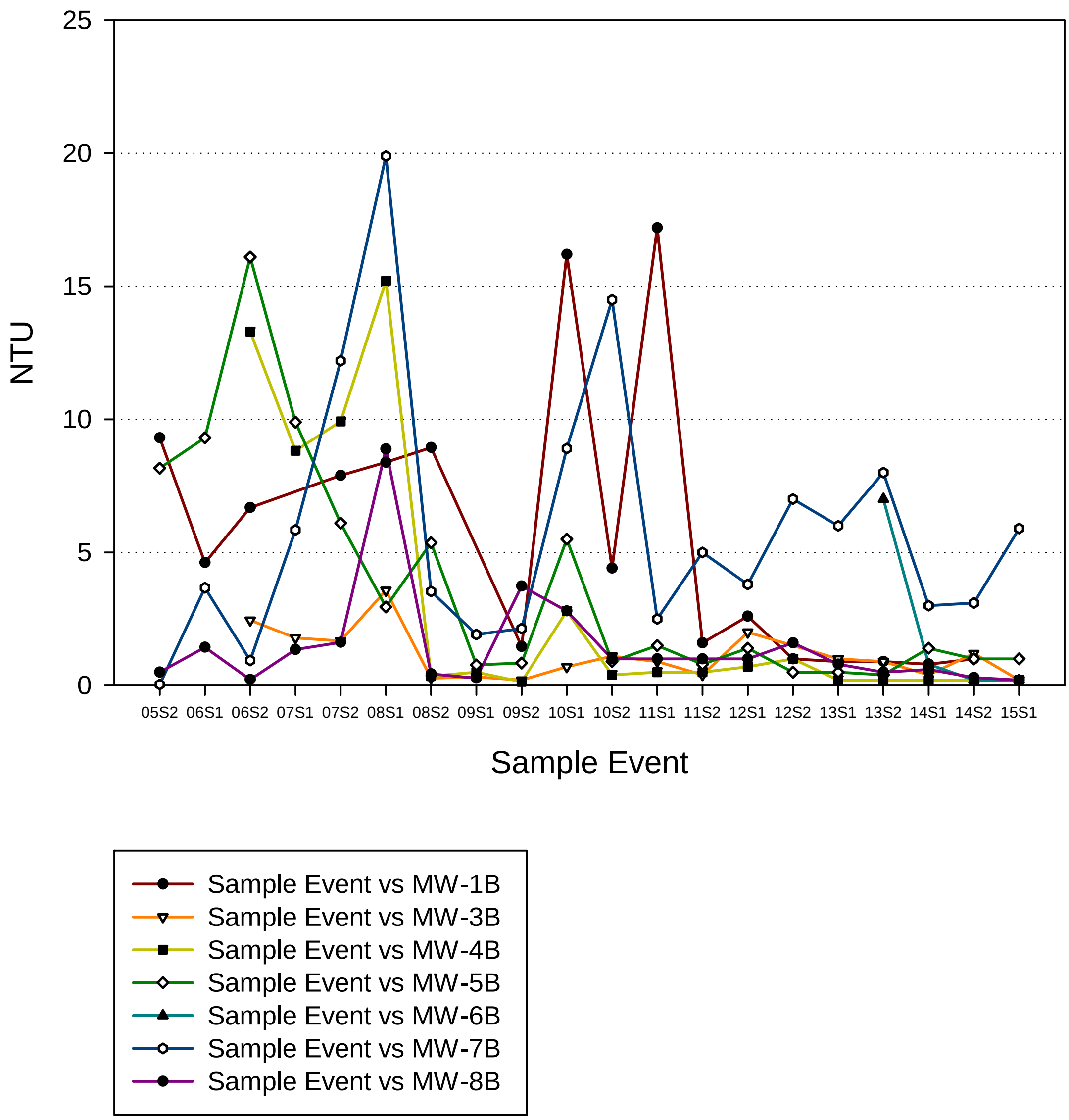


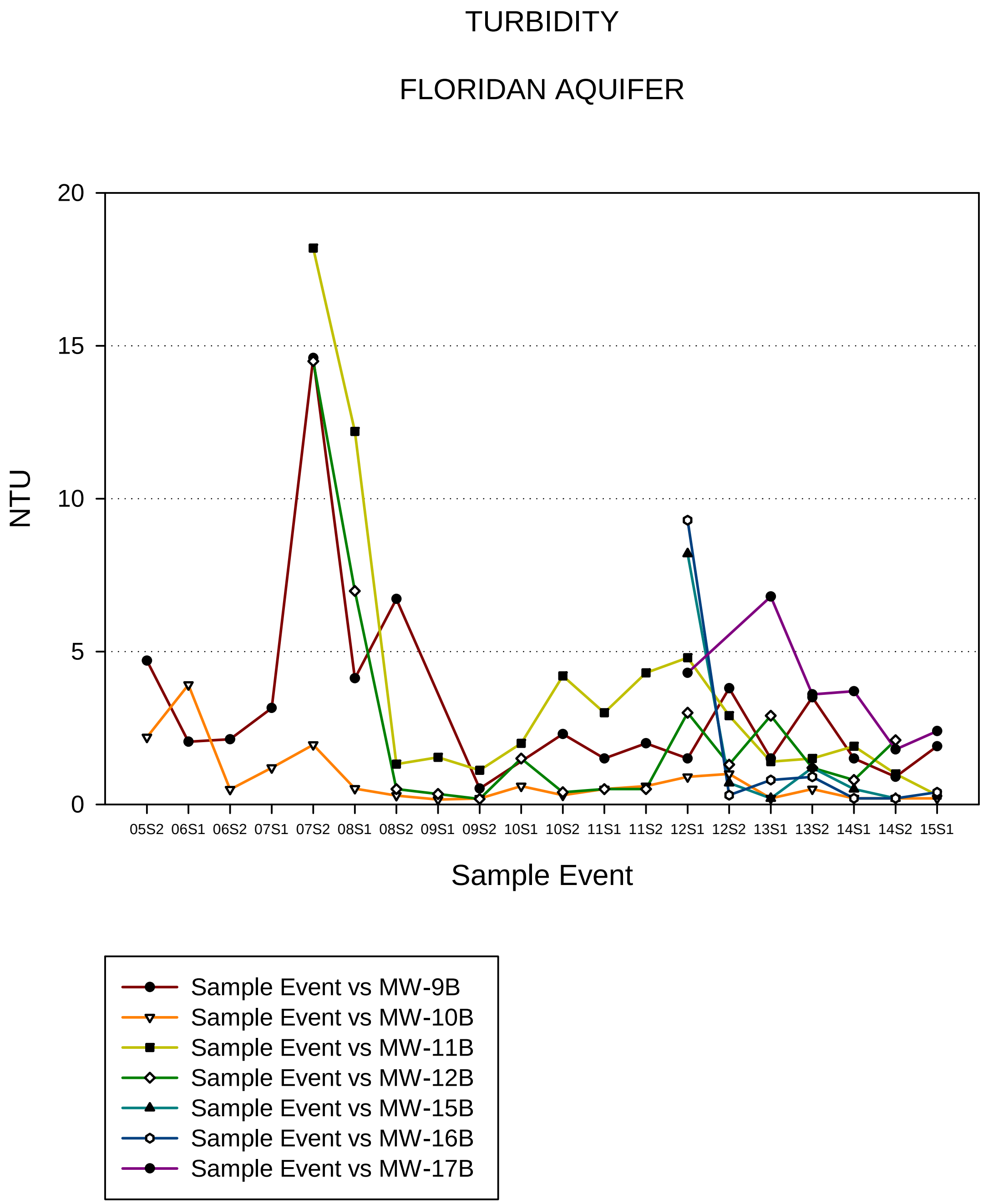
TEMPERATURE
FLORIDAN AQUIFER
Deg. C
30
25
20
15
10
5
0
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Event
Sample Event vs MW-9B
Sample Event vs MW-10B
Sample Event vs MW-11B
Sample Event vs MW-12B
Sample Event vs MW-15B
Sample Event vs MW-16B
Sample Event vs MW-17B

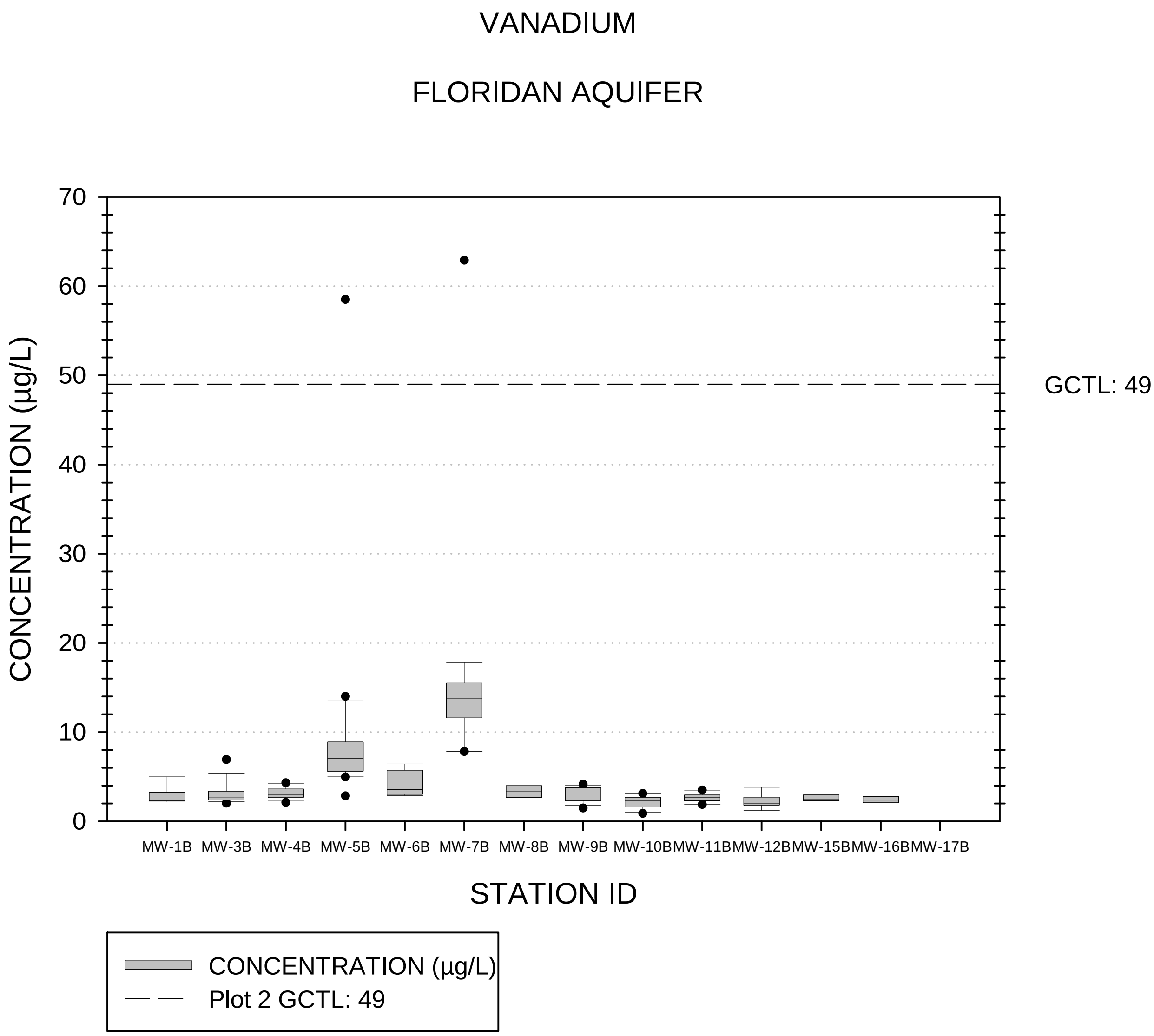

TURBIDITY
FLORIDAN AQUIFER
NTU
25
20
15
10
5
0
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
TURBIDITY (NTU)

TURBIDITY

FLORIDAN AQUIFER



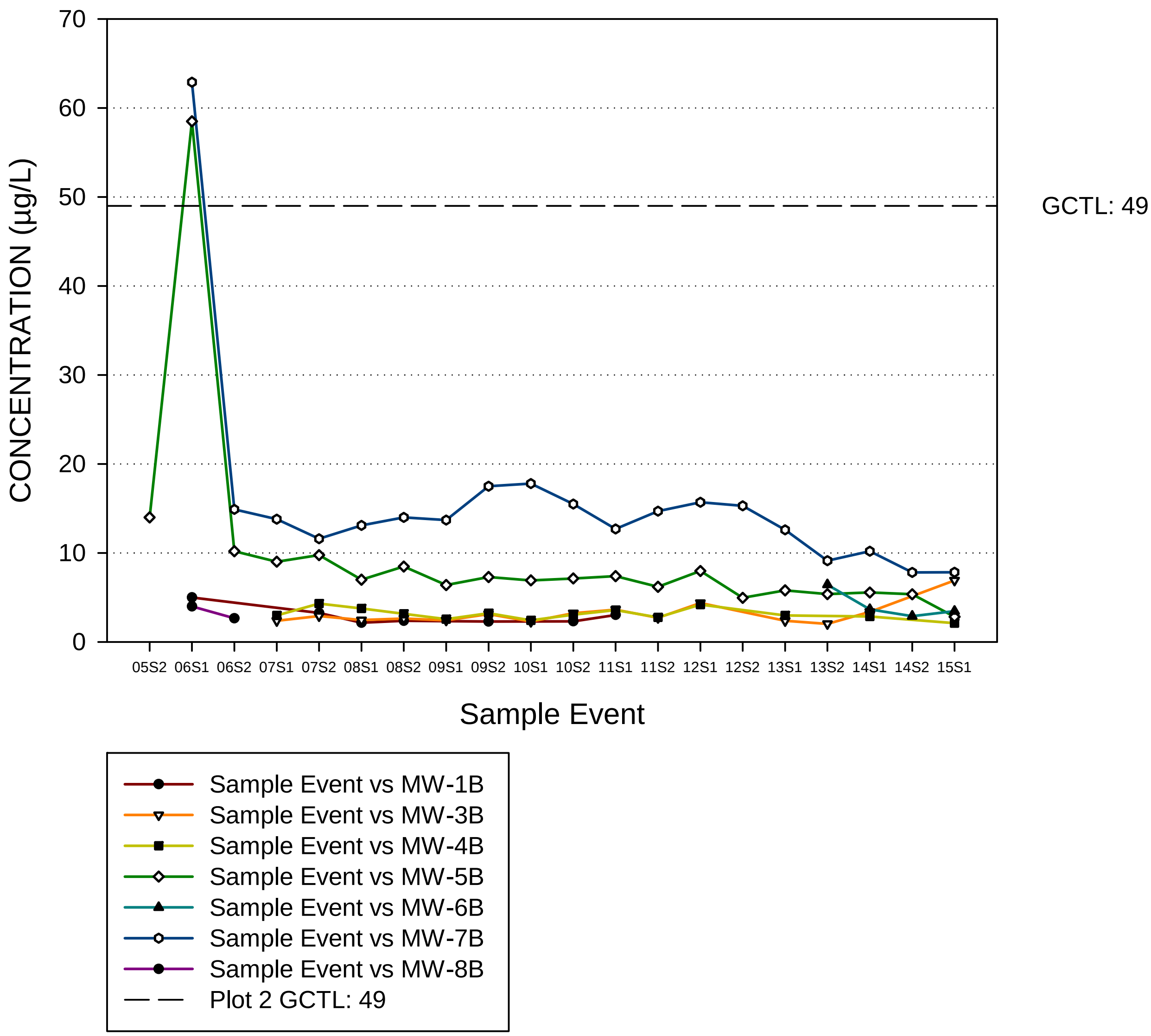

TURBIDITY
FLORIDAN AQUIFER
NTU
20
15
10
5
0
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Event
Sample Event vs MW-9B
Sample Event vs MW-10B
Sample Event vs MW-11B
Sample Event vs MW-12B
Sample Event vs MW-15B
Sample Event vs MW-16B
Sample Event vs MW-17B



VANADIUM
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
0
10
20
30
40
50
60
70
GCTL: 49
MW-1B
MW-3B
MW-4B
MW-5B
MW-6B
MW-7B
MW-8B
MW-9B
MW-10B
MW-11B
MW-12B
MW-15B
MW-16B
MW-17B
STATION ID
CONCENTRATION (µg/L)
Plot 2 GCTL: 49

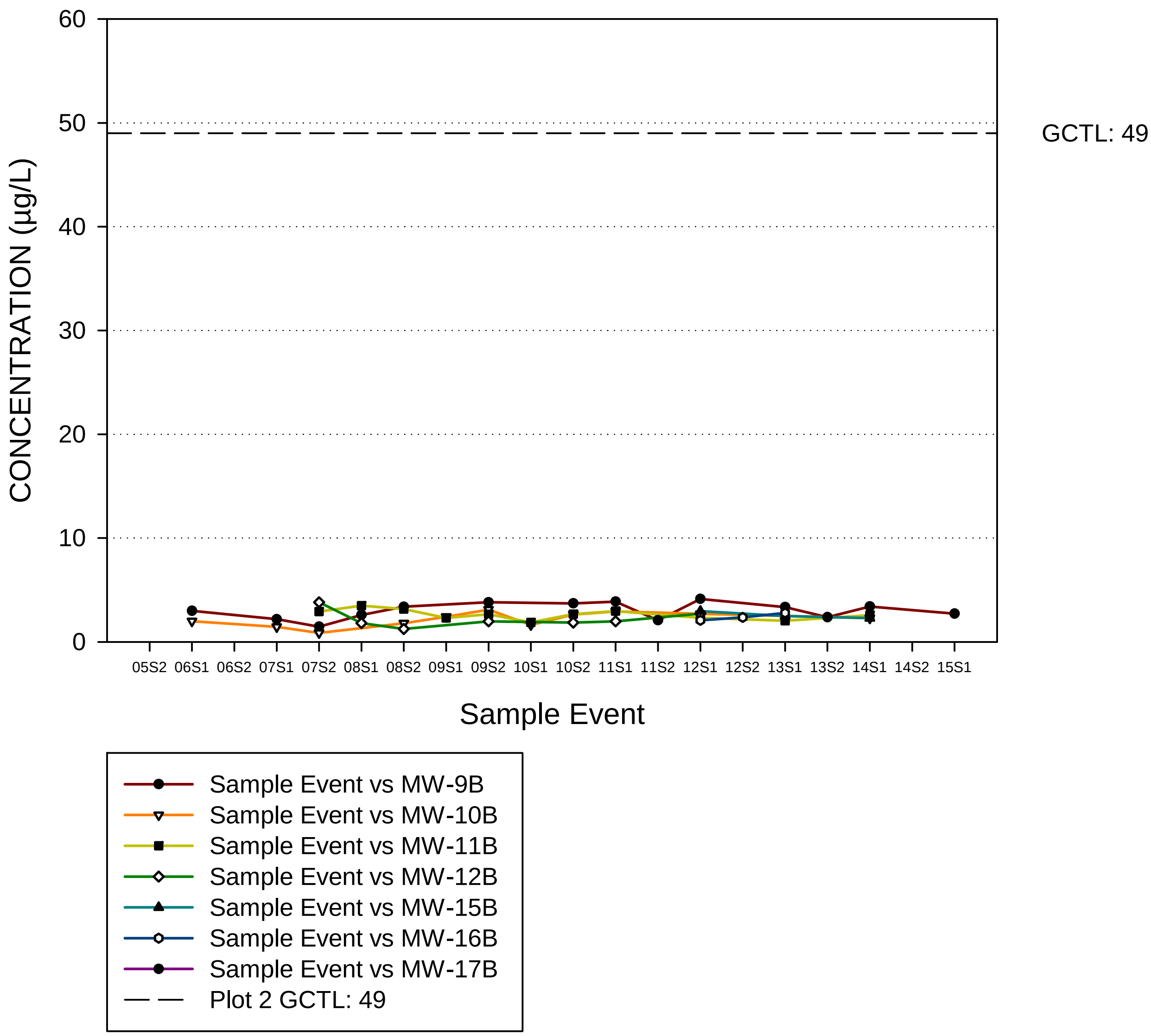
VANADIUM

FLORIDAN AQUIFER



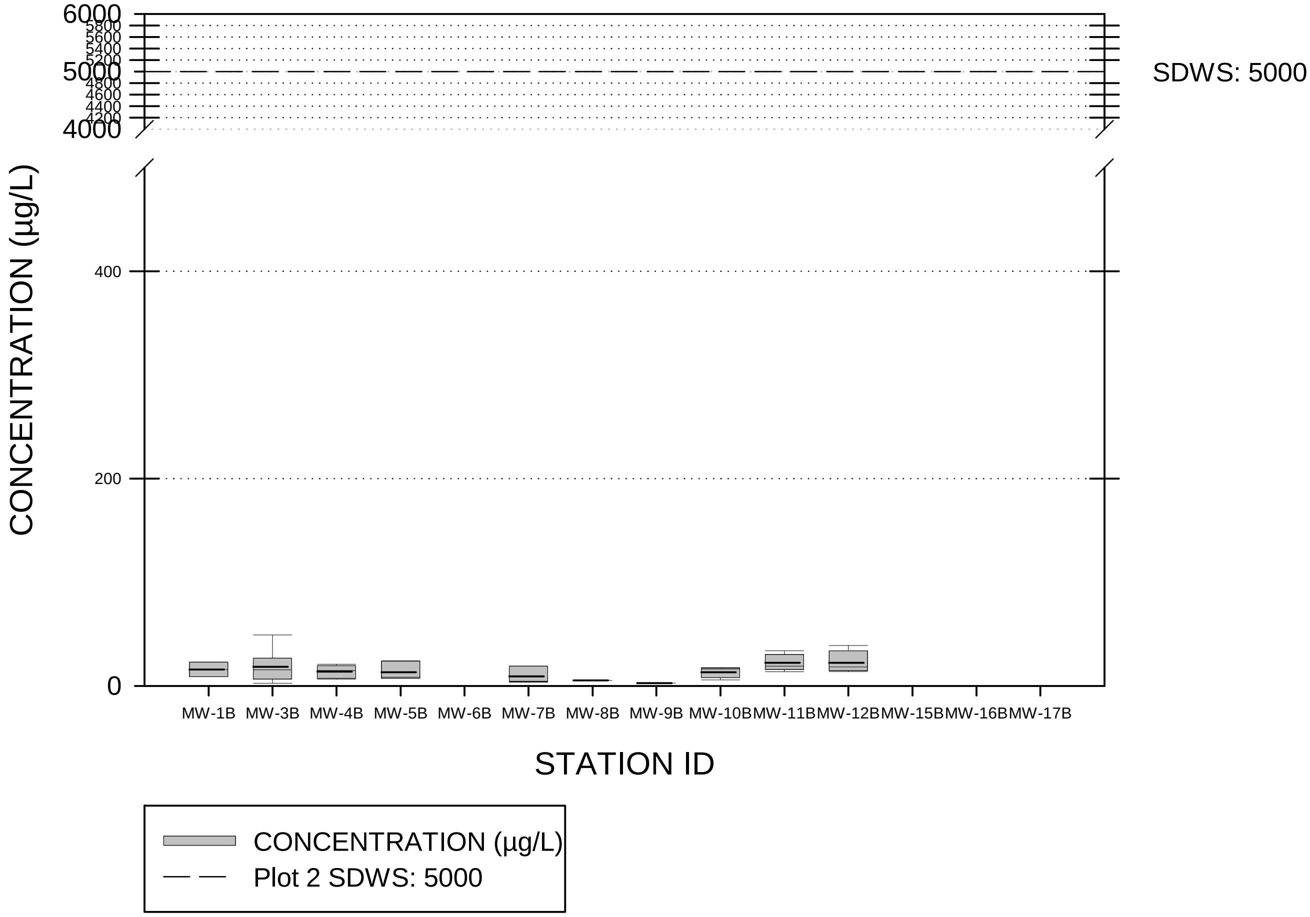
VANADIUM

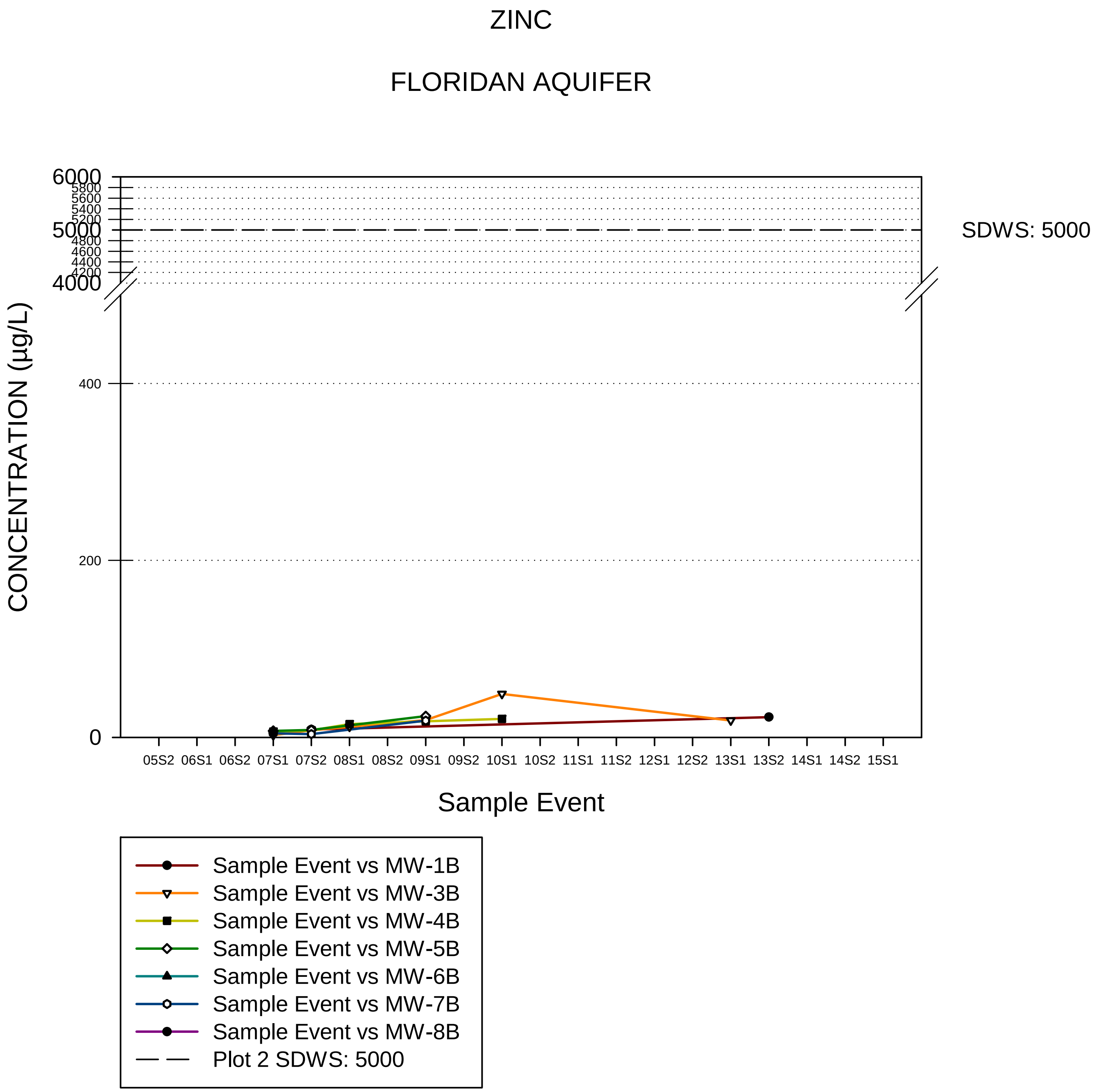
FLORIDAN AQUIFER



ZINC

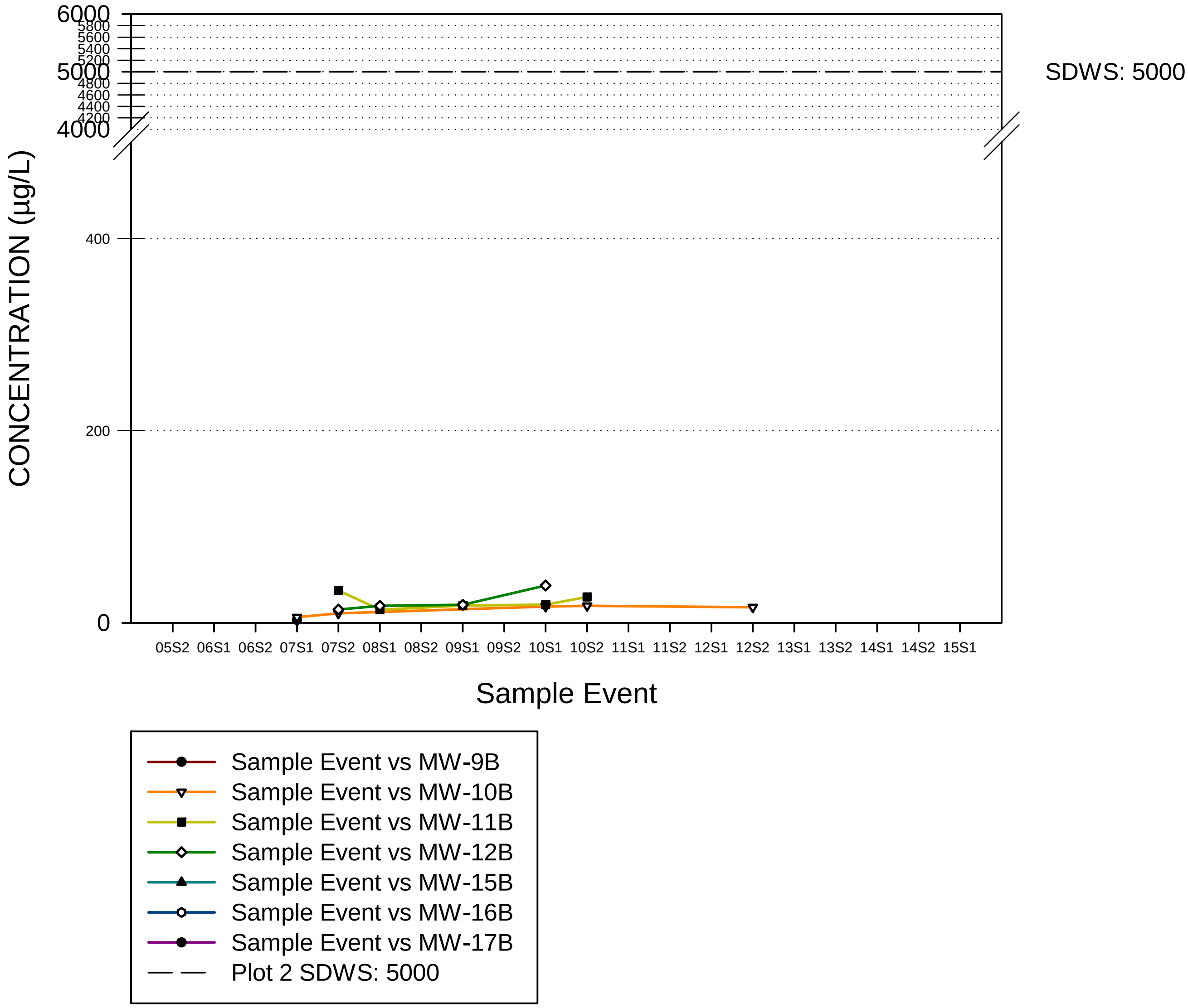
FLORIDAN AQUIFER




ZINC
FLORIDAN AQUIFER
CONCENTRATION (µg/L)
6000
5800
5600
5400
5200
5000
4800
4600
4400
4200
4000
400
200
0
SDWS: 5000
05S2
06S1
06S2
07S1
07S2
08S1
08S2
09S1
09S2
10S1
10S2
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
Sample Event
Sample Event vs MW-1B
Sample Event vs MW-3B
Sample Event vs MW-4B
Sample Event vs MW-5B
Sample Event vs MW-6B
Sample Event vs MW-7B
Sample Event vs MW-8B
Plot 2 SDWS: 5000

ZINC

FLORIDAN AQUIFER



ATTACHMENT 3
POTABLE WELL SURVEY

Locklear & Associates

Engineering & Environmental Consulting

Potable Well Location Map

Enterprise Road Class III Recyling and Disposal Facility Permit Modification

Dade City, Pasco County, Florida

N

SCALE: 1" = 800'

SOURCE: Florida Geographic Data Library & Esri

ENGINEERING REPORT
APPENDIX D

GROUNDWATER MONITORING PLAN

Enterprise Class III Landfill Groundwater Monitoring Plan

March 2016

Prepared for:

ANGELO'S RECYCLED MATERIALS, LTD.
41111 Enterprise Road
Dade City, Florida 33525

Prepared by:

LOCKLEAR & ASSOCIATES, INC.
4140 NW 37th Place, Suite A
Gainesville, FL 32606

JOHN D. LOCKLEAR
LICENSE No. PG2467
STATE OF FLORIDA
PROFESSIONAL GEOLOGIST
3/31/16
John Locklear
FL PG 2467

This Groundwater Monitoring Plan (GWMP) has been prepared in accordance with the provisions of Rule 62-701.510, F.A.C., and any non-conflicting provisions of Chapter 62-520, F.A.C. The GWMP was developed based upon an extensive evaluation of site data provided in the March 2012 (Revised March 2013) Water Quality Monitoring Plan Evaluation Report prepared by Locklear & Associates, Inc. The Water Quality Monitoring Plan Evaluation Report is provided in Section 6 of the March 2012 Operations Permit Renewal Application. Analytical data tables and graphs as well as groundwater contour maps updated since 2012 were recently provided to the Department in the December 2015 Groundwater Technical Report (formerly referred to as a Biennial Report).

1. Water Quality Monitoring Plan

The groundwater monitoring network is shown in Table 1 and in Figure 1.

a. All groundwater monitoring well installations and abandonments shall be performed in accordance with ASTM D 5092-04, Rule 62-701.500(5), F.A.C. and the rules of Southwest Florida Water Management District.

b. Sign and Seal

The reports shall be signed and sealed in accordance with Chapter 471, Florida Statutes and Chapter 61G15, FAC for engineers or with Chapter 492 for professional geologists.

c. Sampling and Analysis

All sampling and analysis shall be performed in accordance with Chapter 62-160, FAC; 62-701.510(2)(b), FAC; the DEP Standard Operating Procedures for Field Activities (DEP-SOP-001/01); and the DEP Standard Operating Procedures for Laboratory Activities (DEP-SOP-002/01).

d. Groundwater Monitoring Requirements

The groundwater monitoring network consists of detection monitoring wells located downgradient from and within 50 feet of the disposal units. The detection wells are located no more than 500 feet apart. The network also includes background monitoring wells BW-1A and BW-1B screened within the surficial and Floridan aquifers, respectively. Downgradient compliance monitoring wells will be installed if warranted based on the results of detection monitoring results and Evaluation Monitoring as discussed in

Section 1.h. Compliance wells will be located at or immediately adjacent to the compliance line of the zone of discharge.

Monitoring wells shall be constructed to provide representative groundwater samples from the surficial aquifer, where present, and the Floridan aquifer system. Well screen placement will be determined from lithologic information collected at the time of well installation and historic water level elevations as discussed in Section III of the March 2012 Water Quality Monitoring Plan Evaluation Report. Wells shall be constructed in accordance with the details provided in Figures 2 and 3. Documentation of well construction shall be submitted within 30 days of installation using Department Form #62-701.900(30).

Wells scheduled to be abandoned during construction of Cell 16 and Pond 3, (MW-5A, MW-5B and P-4), and wells which become damaged, shall be plugged and abandoned in accordance with Rule 62-532.500(5), F.A.C. and the rules of the Southwest Florida Water Management District. Documentation of abandonment shall be submitted to the Department within 30 days of abandonment.

Replacement wells associated with those abandoned as part of construction of Cell 16 and Pond 3 (MW-5AR and MW-5BR) will be constructed in accordance with the details provided in Figures 2 and 3.

The location(s) of all new or replacement monitoring wells, in degrees, minutes and seconds of latitude and longitude, and the elevation of the top of the well casing to the nearest 0.01 foot, using a consistent, nationally recognized datum, shall be determined by a Florida Licensed Professional Surveyor and Mapper. Wells will be marked with their identification label in the field.

e. Surface Water Monitoring Requirements

Ponds 1, 2 and 3 do not have off-site discharge associated with the 100-year flood event. Therefore, surface water sampling is not required as part of the solid waste operating permit. However, surface water in Pond 3 will be sampled in accordance with the Industrial Wastewater pond permit being applied for concurrent with the solid waste permit modification application.

f. Leachate Monitoring Requirements

(1) Leachate monitoring is not applicable to this facility.

g. Sampling Frequency and Requirements

(1) Water samples from all newly installed monitoring wells (including replacement wells associated with those abandoned as part of construction of Cell 16 and Pond 3) will be collected to determine background groundwater quality. Groundwater samples from the initial sampling of any new wells will be analyzed for parameters listed in Rule 62-701.510(7)(a) and (7)(c), F.A.C. (Table 2).

Table 2
Initial Groundwater Sampling Parameters

Field Parameters	Laboratory Parameters
Static Water Levels	Total Ammonia – N
Specific Conductivity	Chlorides
pH	Iron
Dissolved Oxygen	Mercury
Turbidity	Nitrate
Temperature	Sodium
Colors and Sheens	Total Dissolved Solids (TDS)
	Those Parameters listed in 40 CFR Part 258, Appendices I and II

(2) Groundwater samples from all monitoring wells (background and detection) and the on-site supply well shall be sampled and analyzed semiannually for the parameters listed in Table 3. A semiannual sampling frequency is adequate to detect potential groundwater quality standard exceedances based upon the flow velocities provided in Section III of the 2012 WQMPE. Maximum groundwater flow velocities were less than 50 feet per six months within both the surficial and Floridan aquifers. The first semiannual sampling event shall be performed between January 1 and June 30. The second semiannual sampling event shall be performed between July 1 and December 31.

Table 3
Routine Groundwater Sampling Parameters

Field Parameters	Laboratory Parameters
Static Water Level	Total Ammonia – N
Specific	Chlorides
Conductivity	Iron
pH	Mercury
Dissolved Oxygen	Nitrate
Turbidity	Sodium
Temperature	Total Dissolved Solids (TDS)
Colors, Sheens	Those Parameters listed in 40 CFR Part 258, Appendix I

(3) Surface water sampling shall be conducted at Pond 3 in accordance with the requirements of the separate Industrial Wastewater pond permit.

(4) Leachate sampling is not applicable to this facility.

h. Evaluation Monitoring, Prevention Measures, and Corrective Action

If parameters are detected in detection wells at concentrations that are significantly above background water quality, or that are at concentrations above the FDEP's water quality standards or criteria specified in 62-520, F.A.C., the well will be resampled within 30 days after the initial analytical data are received to confirm the data. If the data are confirmed or the well is not resampled, the FDEP will be notified in writing within 14 days of detection. Evaluation monitoring shall be initiated as follows:

- Routine monitoring of all monitoring wells will continue according to the GWMP.

- Within 90 days of initiating evaluation monitoring and annually thereafter, the background wells and all affected detection wells will be sampled for the parameters listed in 62-701.510(7)(c), F.A.C. Any new parameter detected and confirmed in the downgradient wells will be added to the routine groundwater monitoring parameter list.

- Within 90 days of initiating evaluation monitoring compliance monitoring wells will be installed at the compliance line of the zone of discharge and downgradient of the affected detection wells. The compliance wells will be installed in accordance with 62-701.510(3)(d), F.A.C. Compliance wells and affected detection wells shall be sampled quarterly for analysis of the parameters listed in Rule 62-701.510(7)(a), F.A.C. and any other parameters detected in the affected detection and downgradient wells sampled in accordance with Rule 62-701.510(6)(a)2, F.A.C. Compliance wells and affected detection wells shall be sampled annually for analysis of the parameters listed in Rule 62-701.510(7)(c), F.A.C.

- Within 180 days of initiating evaluation monitoring, a contamination evaluation plan will be submitted to the FDEP. The contamination evaluation plan will be designed to delineate the extent and cause contamination and to predict the probability that FDEP water quality standards are not violated outside the zone of discharge and to evaluate methods to prevent any violations. Upon agreement with the FDEP that the plan is so designed, the plan shall be implemented and a contamination evaluation report will be submitted to the FDEP. All reasonable efforts will be made to prevent further degradation of water quality from the landfill activities.

- If the contamination evaluation report indicates that water quality standards or criteria are likely to be violated outside the zone of discharge, a prevention measures plan shall be submitted to the Department. Upon approval, the prevention measures shall be initiated.

- Evaluation monitoring shall not be discontinued until authorization to return to routine monitoring only is received from the Department.

i. Water Quality Monitoring Report Requirements

(1) All representative water quality monitoring results shall be reported to the Department within 60 days from completion of laboratory analyses. In accordance with subsections 62-160.240(3) and 62-160.340(4), F.A.C., water quality data contained in the report shall be provided to the Department in an electronic format consistent with requirements for importing into Department databases.

At a minimum the semiannual report shall include the following:

- The facility name and identification number, sample collection dates, and analysis dates;
- All analytical results, including all peaks even if below maximum contaminant levels;
- Identification number and designation of all groundwater monitoring points;
- Applicable water quality standards;
- Quality assurance, quality control notations;
- Method detection limits;
- STORET code numbers for all parameters;
- Water levels recorded prior to evaluating wells or sample collection. Elevation reference shall include the top of well casing and the land surface at each well site at a precision of plus or minus 0.01 foot, National Geodetic Vertical Datum (NGVD);
- Department Form 62-701.900(31);
- An updated groundwater table contour map signed and sealed by a professional geologist or professional engineer with experience in hydrogeologic investigations, with contours at no greater than one-foot intervals unless site-specific conditions dictate otherwise, which indicates groundwater elevations and flow directions; and
- A summary of any water quality standards or criteria that are exceeded.

(2) A technical report will be submitted every two and one-half years summarizing and interpreting the water quality monitoring results and water level measurements collected during that period. The report will be in accordance with Rule 62-701.510(8)(b) and signed and sealed by Florida licensed Professional Geologist or Professional Engineer. The report shall contain, at a minimum, the following:

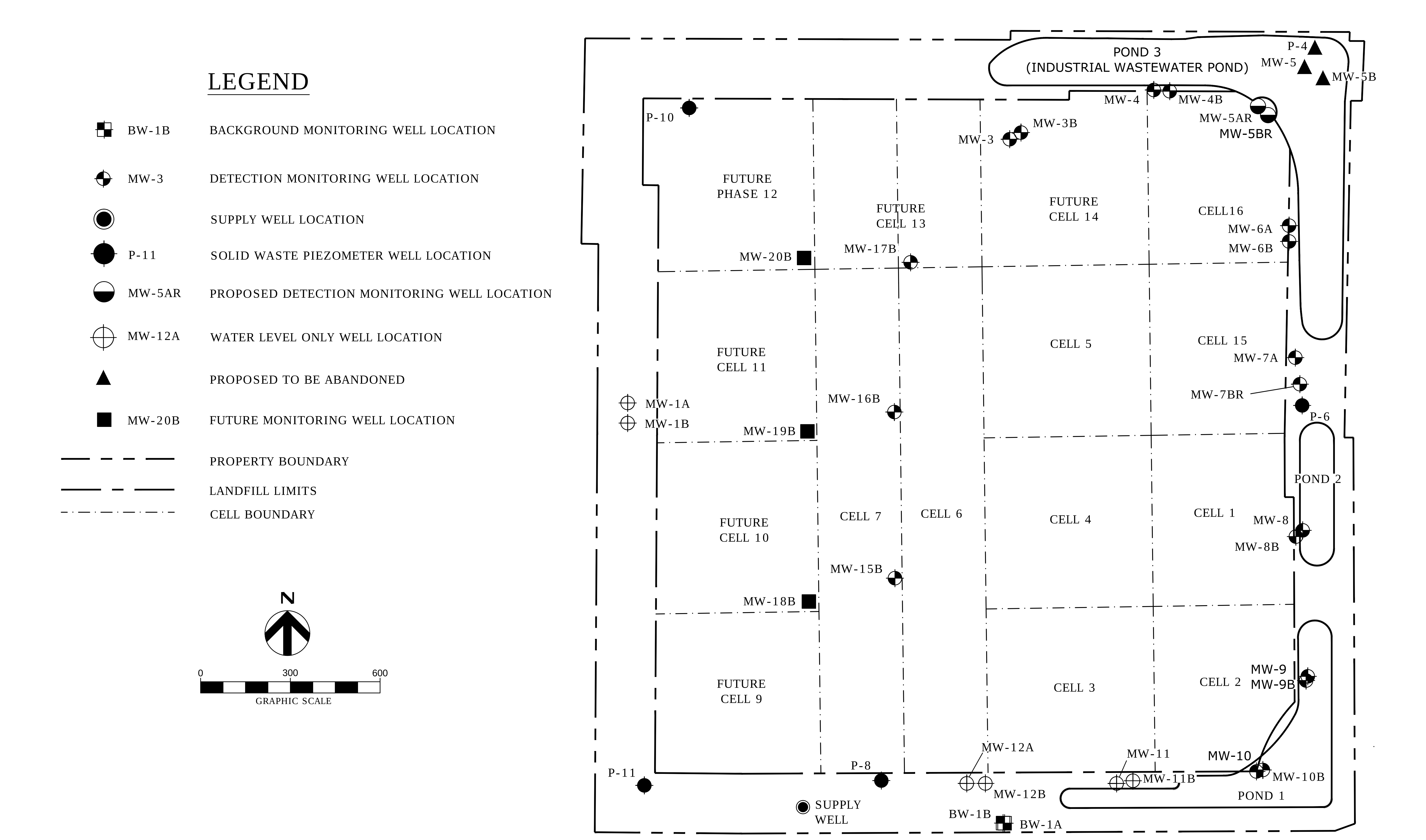
- Tabular displays of any data which shows that a monitoring parameter has been detected, and graphical displays of any leachate key indicator parameters detected (such as pH, specific conductance, TDS, TOC, sulfate, chloride, sodium and iron), including hydrographs for all monitoring wells;
- Trend analyses of any monitoring parameters consistently detected;
- Comparison among shallow, middle, and deep zone wells;
- Comparisons between background water quality and the water quality in detection and compliance wells;
- Correlations between related parameters such as total dissolved solids and specific conductance;

- Discussion of erratic and/or poorly correlated data;
- An interpretation of the groundwater contour maps, including an evaluation of groundwater flow rates; and
- An evaluation of the adequacy of the water quality monitoring frequency and sampling locations based on site conditions.

TABLE 1

Well ID	Well Type	Aquifer	Existing or Future	Notes
BW-1A	Background	Surficial	Existing	
BW-1B	Background	Floridan	Existing	
MW-1A	Water Level	Surficial	Existing	
MW-1B	Water Level	Floridan	Existing	
MW-3	Detection	Surficial	Existing	
MW-3B	Detection	Floridan	Existing	
MW-4	Detection	Surficial	Existing	
MW-4B	Detection	Floridan	Existing	
MW-5A	Detection	Surficial	Existing	To be abandoned within 60 days of permit modification issuance
MW-5AR	Detection	Surficial	Future	To be installed within 60 days of permit modification issuance
MW-5B	Detection	Floridan	Existing	To be abandoned within 60 days of permit modification issuance
MW-5BR	Detection	Floridan	Future	To be installed within 60 days of permit modification issuance
MW-6	Detection	Surficial	Existing	
MW-6B	Detection	Floridan	Existing	
MW-7A	Detection	Surficial	Existing	
MW-7BR	Detection	Floridan	Existing	
MW-8	Detection	Surficial	Existing	
MW-8B	Detection	Floridan	Existing	
MW-9	Detection	Surficial	Existing	
MW-9B	Detection	Floridan	Existing	
MW-10	Detection	Surficial	Existing	
MW-10B	Detection	Floridan	Existing	
MW-11	Water Level	Surficial	Existing	
MW-11B	Water Level	Floridan	Existing	
MW-12A	Water Level	Surficial	Existing	
MW-12B	Water Level	Floridan	Existing	
MW-15B	Detection	Floridan	Existing	
MW-16B	Detection	Floridan	Existing	
MW-17B	Detection	Floridan	Existing	
Water Supply	Supply	Floridan	Existing	
MW-18A*	Detection	Surficial	Future	To be installed in conjunction with Cell 7 construction
MW-18B	Detection	Floridan	Future	To be installed in conjunction with Cell 7 construction
MW-19A*	Detection	Surficial	Future	To be installed in conjunction with Cell 7 construction
MW-19B	Detection	Floridan	Future	To be installed in conjunction with Cell 7 construction
MW-20A*	Detection	Surficial	Future	To be installed in conjunction with Cell 7 construction
MW-20B	Detection	Floridan	Future	To be installed in conjunction with Cell 7 construction
P-4	Piezometer	Surficial	Existing	To be abandoned within 60 days of permit modification issuance
P-6	Piezometer	Surficial	Existing	
P-8	Piezometer	Floridan	Existing	
P-10	Piezometer	Floridan	Existing	
P-11	Piezometer	Surficial	Existing	

* To be installed only if water bearing sediments are encountered above the clay units



NO.	DATE	REVISION DESCRIPTION	BY

Locklear & Associates
Engineering & Environmental Consulting

4140 NW 37th Place, Suite A
Gainesville, Florida 32606
Phone: 352.672.6867 Fax: 352.692.5390
Certificate of Authorization No. 30066

PROJECT TITLE:

ENTERPRISE ROAD RECYCLING AND DISPOSAL FACILITY DADE CITY, FLORIDA

LISA J. BAKER

FL PE NO. 74652

DESIGNED BY	LJB
DRAWN BY	LJB
CHECKED BY	JDL
APPROVED BY	LJB

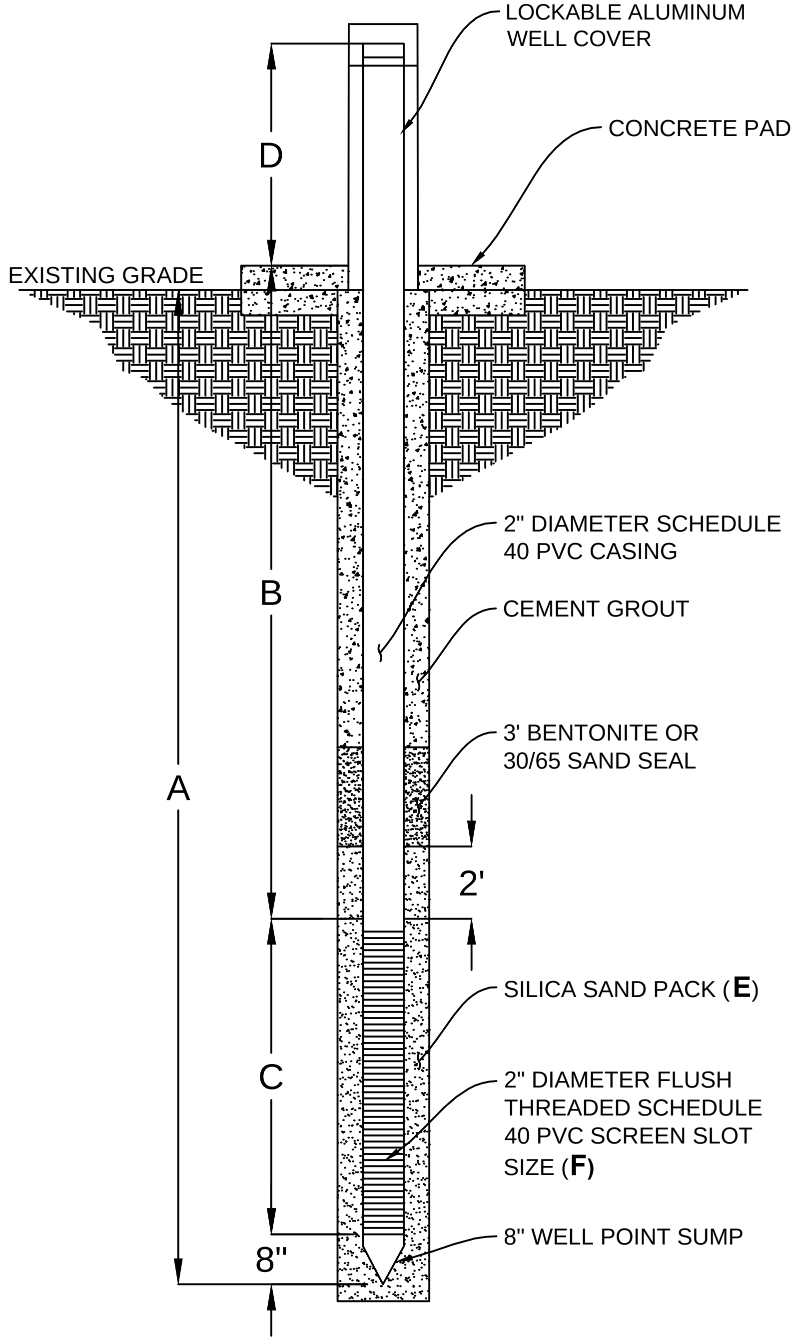
SHEET TITLE:

GROUNDWATER MONITORING NETWORK

PROJECT NO.:	02000-144-14
SCALE:	AS SHOWN
DATE:	MARCH 2016
DRAWING:	FIGURE 1

Z:\Civil 3D Projects\02000-144-14_01\CADD\Misc\Monitoring Wells\FIG_01_GROUNDWATER MONITORING PLAN NETWORK_02.dwg PLOT DATE 3/31/2016 11:00 AM BY LJB

FIGURE NOT TO SCALE



WELL	A	B	C	D	E	F	ASSUMED GROUND SURFACE ELEVATION FT, NGVD	ASSUMED LIMESTONE SURFACE ELEVATION FT, NGVD
MW-18A (1)	25'	5'	20'	3'	20/30	0.010"	148' (2)	116' (5)
MW-19A (1)	70'	50'	20'	3'	20/30	0.010"	138' (3)	61' (5)
MW-20A (1)	50'	30'	20'	3'	20/30	0.010"	87' (4)	31' (5)
MW-5AR	28'	8'	20'	3'	20/30	0.010"	87' (6)	60' (7)

NOTES:

(1) Wells to be installed only if water bearing sediments are encountered above the Floridan aquifer confining layer.

(2) From MW-15B elevation

(3) From MW-16B elevation

(4) From MW-17B elevation

(5) From Cell 6 well lithologies

(6) From MW-5A elevation

(7) From MW-5A lithology

REVISED FEBRUARY 2016

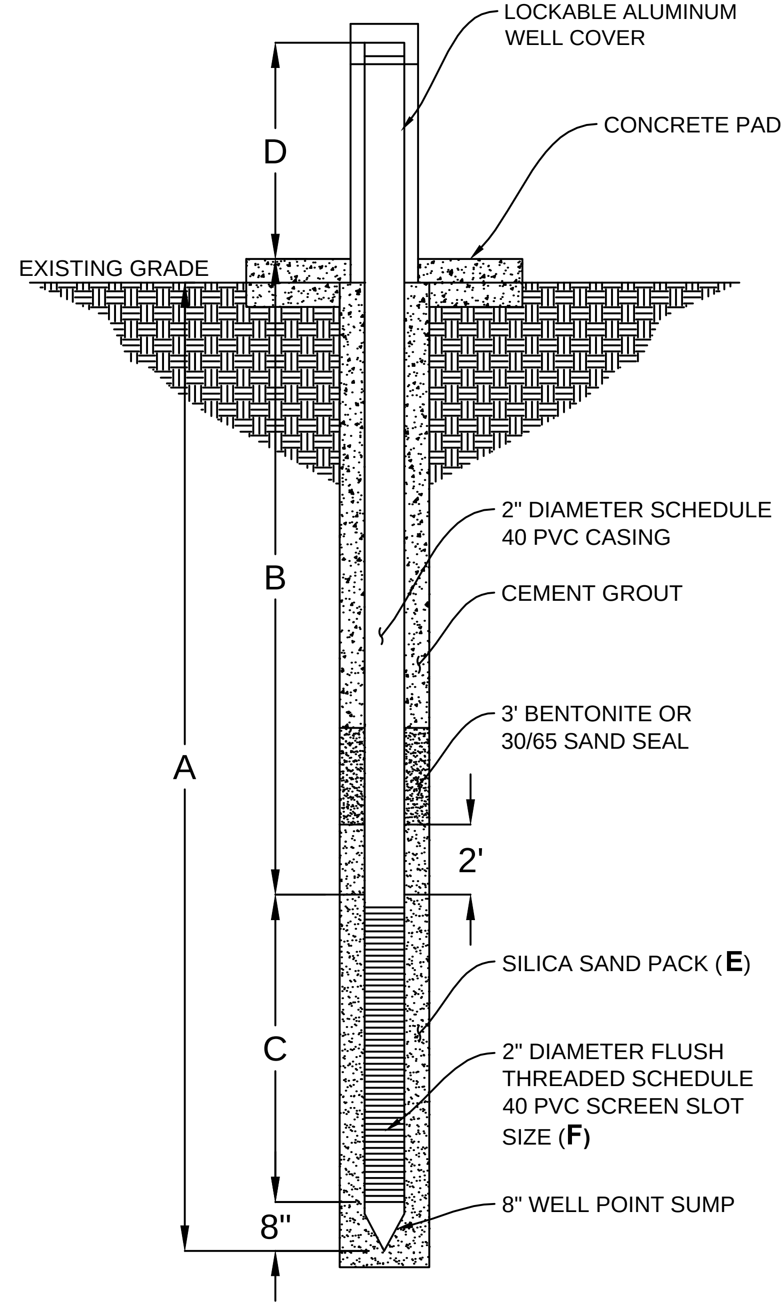
Locklear & Associates
Engineering & Environmental Consulting

ENTERPRISE ROAD RECYCLING AND DISPOSAL FACILITY
DADE CITY, FLORIDA

PROPOSED SURFICIAL AQUIFER MONITOR WELL DETAIL

FIGURE 2

FIGURE NOT TO SCALE



WELL	A	B	C	D	E	F	ASSUMED GROUND SURFACE ELEVATION FT, NGVD	ASSUMED LIMESTONE SURFACE ELEVATION FT, NGVD
MW-18B	100'	80'	20'	3'	20/30	0.010"	148' (1)	118' (6)
MW-19B	100'	80'	20'	3'	20/30	0.010"	138' (2)	63' (7)
MW-20B	80'	60'	20'	3'	20/30	0.010"	87' (3)	32' (8)
MW-5BR	48'	38'	10'	3'	20/30	0.010"	86' (4)	60' (9)

NOTES:

(1) From MW-15B ground elevation
(2) From MW-16B ground elevation
(3) From MW-17B ground elevation
(4) From MW-5B ground elevation
(5) From MW-15B lithology
(6) From MW-16B lithology
(7) From MW-17B lithology
(8) From MW-5B lithology

REVISED FEBRUARY 2016

Locklear & Associates
Engineering & Environmental Consulting

Locklear & Associates	ENTERPRISE ROAD RECYCLING AND DISPOSAL FACILITY DADE CITY, FLORIDA	PROPOSED FLORIDAN AQUIFER MONITOR WELL DETAIL	FIGURE 3

ENGINEERING REPORT
APPENDIX E

SLOPE STABILITY ANALYSIS

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

April 1, 2016 Project No. 16-01-0111.01

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

RE: Slope Stability, Settlement, and Bearing Capacity Analysis
Enterprise Class III Landfill – Cell 16 Expansion
Dade City, Florida

Dear Mr. Locklear,

Civil Design Services, Inc. (CDS) is submitting the following Slope Stability, Settlement, and Bearing Capacity Analysis Report (Report) to Locklear & Associates, Inc. (L&A) for the Cell 16 Expansion for continued Class III solid waste operations at the Enterprise Class III Landfill (Landfill), located in Dade City, Florida. It is our understanding that the following items are proposed as part of the expansion permit;

- Cell 16 will be constructed with 3(h):1(v) ratio sideslopes from the perimeter maintenance road to the first terrace at EL 125;
- 3(H):1(V) sideslopes will continue from the first terrace to s buildout elevation of Elevation 152 for of the Cell 16 area.
- The bottom of the Cell 16 area will be constructed with a compacted 3-foot clay layer that will be connected with the north end of Cell 15 and the bottom will slope toward the north. Water collected in the Cell 16 area will gradually flow toward a clay lined Pond 3 area located to the north and east of Cell 16.
- Grading as reference the Permit Drawings prepared by Locklear and Associates, Inc. for the Cell 16 Expansion.

The purpose and limitation of the scope of this Report is to evaluate the above proposed Cell 16 expansion and to evaluate the stability of the waste materials with the proposed geometry, estimate the settlement of the bottom area of the Cells 16 area, and estimate the bearing capacity of the foundation with the Cell 16 area, based upon boring information referenced in this Report. Previous geotechnical and hydrogeological reports, submitted by others, evaluated the subsurface conditions for potential activity in the karst layers beneath the site and are strictly the responsibility of others. Reference the Cell 16 Expansion Permit Application for additional evaluations and recommendations made by others to support the overall Cell 16 expansion.

Reference Documents

The following documents were reviewed and information contained within these reference documents were used as part of the 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.

Reference No 2. Hartman and Associates Response to RAI Number 1 dated April, 03, 2001.

- Boring logs B-11 through B-17.
- Boring logs for L-12 through L-17 (just soil identification is shown with no SPT data shown), dated September 9, 1999.
- Boring logs for DCL01-DCL-15, dated January of 2001.

Reference No 3. Locklear and Associates, Inc. – Angelo's Class III Cell 16 Expansion Permit Application dated April 1, 2016.

<u>Slope Stability Model Analysis</u>

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

The boring logs referenced above were reviewed and similar soil types, with similar SPT N-values, were grouped together for the purpose of modeling. Breaks in soils types or SPT N-values were assigned to layers to differentiate between stronger or weaker soils. This allows for a better representation of failure planes, and thus stability of the foundation, as the failure planes shear through the different layers.

The estimated shear strength for the soils shown in the boring logs is contained in Attachment A.

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 B 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 in the northeast corner of the Facility were not representative of the groundwater and may have been perched water tables.

Two sets of Slope Stability Models were completed as follows;

- Cell 16 Expansion – The permit application is for the expansion of the Cell 16 area and models were prepared to demonstrate stability for the expansion.
  - Refer to Figure 1 – Cell 16 Expansion, Boring Locations, and Cross Section
  - Refer to Figure 2 – East/West Model Cross Section

- Refer to Figure 3 – North/South Model Cross Section

- Site Buildout – A proposed Site Buildout plan was prepared by Locklear for the purpose of sizing the capacity of Pond 3. Models were prepared to demonstrate buildout stability. Detailed future designs for the Site Buildout were not evaluated and design calculations will be submitted in future applications.
  - Refer to Figure 4 – Site Buildout, Boring Locations, and Cross Section
  - Refer to Figure 5 – East/West Model Cross Section
  - Refer to Figure 6 – North/South Model Cross Section

A review of the above reference information and the modeling assumptions made above are reasonable for completing the slope stability analyses prepared by CDS for the proposed expansion.

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 CIRCULAR failure modes were evaluated. BLOCK failure modes are used to evaluate sliding failure planes and CIRCULAR failure modes are used to evaluate shallow and deep rotational stability of the waste and foundation soils.

All cross sections were modeled with, and without, temporary waste equipment loading conditions.

All equipment loads were modeled at the crest of the slope, a position that would induce the greatest stress on the slopes and thus generate the lowest Factor of Safety.

A typical input file of the slope stability models for the BLOCK and CIRCULAR searches has been placed prior to the graphical output of the models. In each scenario, the profile and failure search routines were adjusted to determine the lowest Factor of Safety.

The graphical output files of the slope stability analyses are contained in the following attachments;

- Attachment C – East/West Section - Cell 16 Expansion – CIRCULAR & BLOCK Analysis
- Attachment D – North/South Section - Cell 16 Expansion – CIRCULAR & BLOCK Analysis
- Attachment E – East/West Section - Site Buildout – CIRCULAR & BLOCK Analysis
- Attachment F – North/South Section- Site Buildout – CIRCULAR & BLOCK Analysis

Summary of Slope Stability Model Results

Table 1 summarizes the slope stability mode results. As shown in Table 1, the slopes are stable and have a factor of safety above 1.5.

Table 1. Summary of Slope Stability Models

Description		Configuration	West/East Section		North/South Section	
Cell 16			Circular	Block	Circular	Block
	EL 152	Waste Only	1.6	1.9	2.0	1.8
		CAT D8	1.6	1.9	1.9	1.7
		CAT 826H	1.6	1.9	2.0	1.8
		CAT 740B	1.6	1.9	1.8	1.6
Site Buildout						
	EL 174					
		Waste Only	1.8	1.8	1.9	2.0
		CAT D8	1.7	1.8	1.9	1.9
		CAT 826H	1.7	1.8	1.9	2.0
		CAT 740B	1.7	1.8	1.9	1.9

As shown in Table 1, the overall slope stability scenerios meet the minimum Factors of Safety of 1.5 and are therefore considered stable.

Settlement Estimates

Settlement of the foundation soil beneath the expansion was evaluated. The proposed drainage pattern is toward the north, sloping downward from Cell 15, northward across Cell 16, and toward Pond 3.

Settlement of the soils beneath the Cell 16 area will be a function of soil types, soil compressibility, and the change in stress induced on the soils after the overburden is removed and waste is added. Note: the landfill is being excavated to form the bottom of the cells. In some cased, some of the soils shown in the boring have already been excavated; therefore, settlement estimates in these layers was not computed.

Settlement estimates were computed starting on the high end of Cell 16 at the interface with Cell 15 (using Boring DCL01-13), and in the middle (using Boring DCL01-14), and on the northside (using Boring B-5). Typical soil properties based upon soil types, relative in-situ density, and consolidation coefficients were made at each location and for each soil layer group.

Contained in Attachment G are the soil properties and settlement estimates at each location. Listed below in Table 2 is a summary of the estimated settlement.

Table 2. Settlement Summary

Boring ID	Location	Settlement (ft)	Drainage Pattern	Comment
DCL01-13	Southside of Cell 16	0.60	Maintains slope toward the north	Top of the Clay Barrier is at EL 81; 0.60 ft of settlement; Top of Clay is at EL 80.4
DCL01-14	Middle of Cell 16	0.38	Maintains slope toward the north	Top of the Clay Barrier is at EL 79.4; 0.38 ft of settlement; Top of Clay is at El 79.12.
B-5	Northside of Cell 16	1.02	Maintains slope toward the north	Top of the Clay Barrier is at EL 78.75; 1.02 ft of settlement; Top of Clay is at El 77.73.

As shown in Table 2, the overall drainage is maintained toward the north.

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. This is a function of soil layers, waste unit weight, and depth of waste at that location.

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, or to a minimum of 1.5. Both Block and Circular failure planes were evaluated for different unit weights for the waste materials.

The results of the modeling indicate an increase in the unit weight for waste from 50 pounds per cubic foot (pcf) to 65 pcf for would be needed to achieve a minimum Factor of Safety 1.5. Based upon the model results, this would be representative of the ultimate bearing capacity of the foundation. Refer to Attachment H for bearing capacity models.

At the crest of the expansion, at EL 152, the underlying base of disposal Cell 16 at approximately El 79 (+/-), thus 73 feet of waste will be placed over the landfill foundation at this location. The ultimate bearing capacity (maximum bearing capacity) is therefore estimated to be 4,745 pounds per square foot (65 pcf * 73 feet). The proposed loading on the landfill foundation is only estimated to be 3,650 psf (50 pcf * 73 feet); therefore, the proposed expansion has sufficient additional foundation bearing capacity to accommodate the proposed design.

Conclusions

- **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.**

- **The proposed expansions overall drainage pattern, sloping toward the north is maintained after settlement.**

- **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 – Soil Strength Estimates
Attachment B – Equipment Loading Data
Attachment C – E/W Section – Cell 16
Attachment D - N/S Section – Cell 16
Attachment E - E/W Section – Site Buildout
Attachment F – N/S Section – Site Buildout
Attachment G- Settlement Estimates
Attachment H- Bearing Capacity Models

4/1/16
Joseph H. O'Neill, P.E.
P.E. No. 52049

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11012 N. Ridgedale Road
Temple Terrace, Florida 33617
Certificate of Authorization 28923

FIGURES

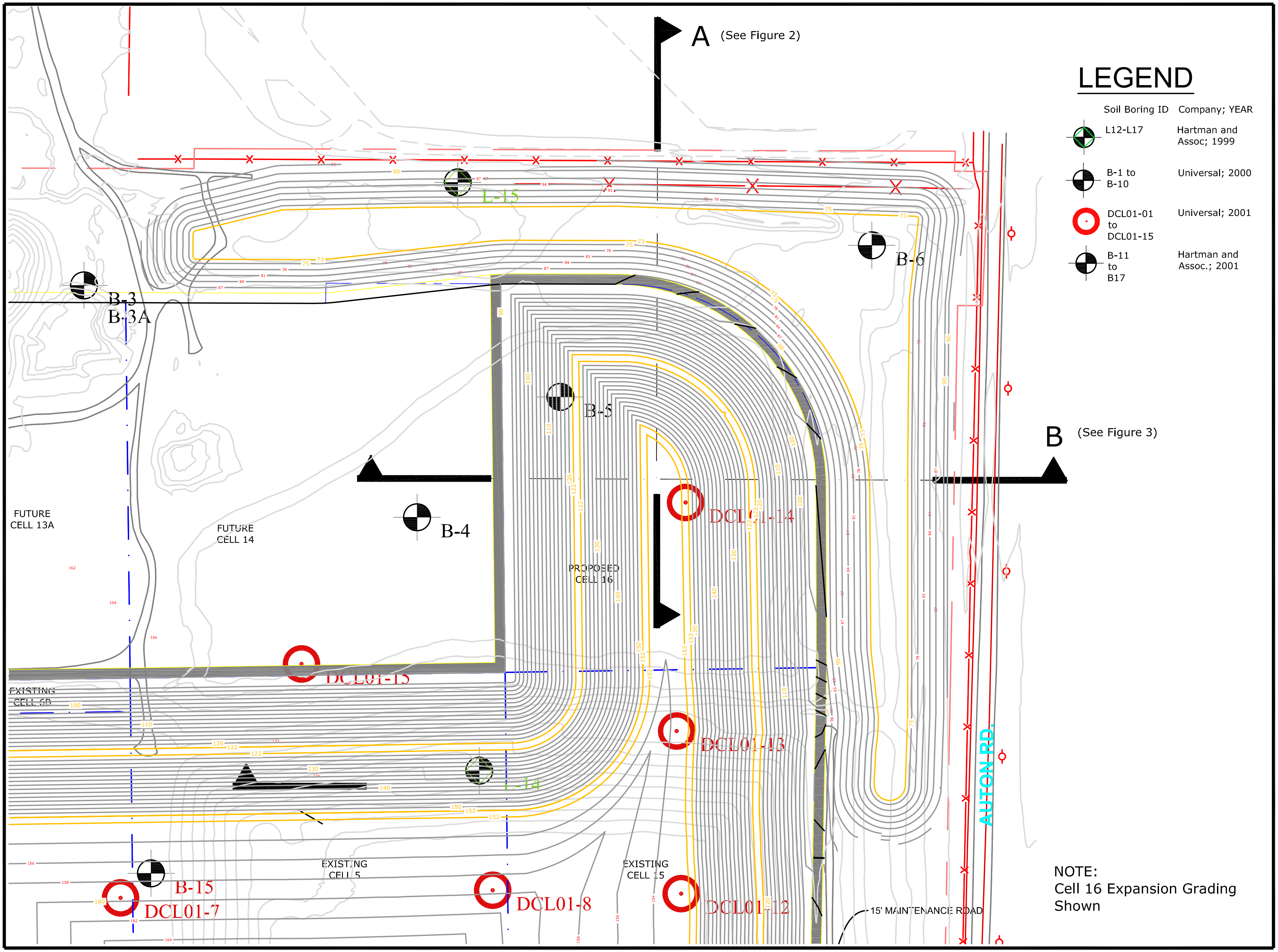

FIGURE 1. CELL 16 EXPANSION, BORING LOCATIONS, and SECTIONS

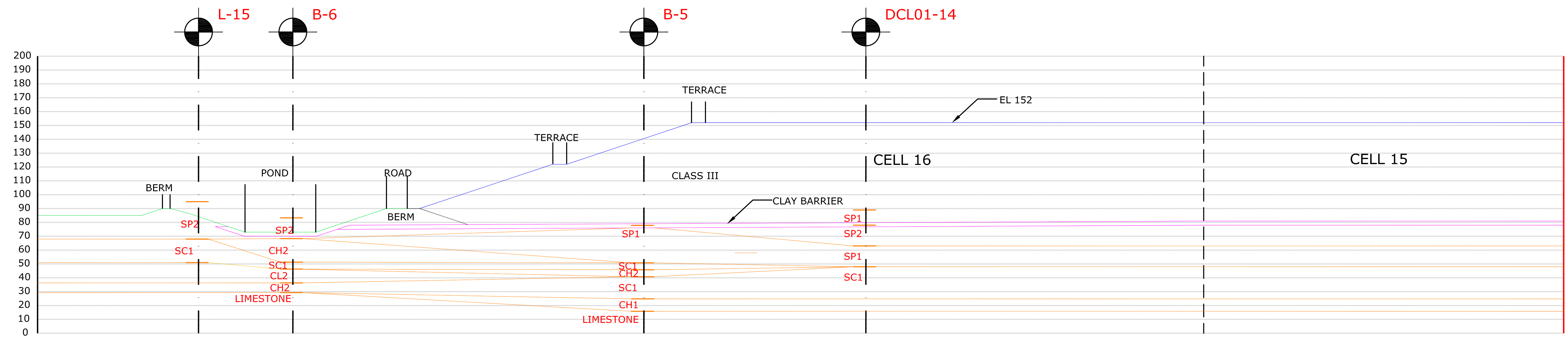

FIGURE 2. CELL 16 EXPANSION SECTION A

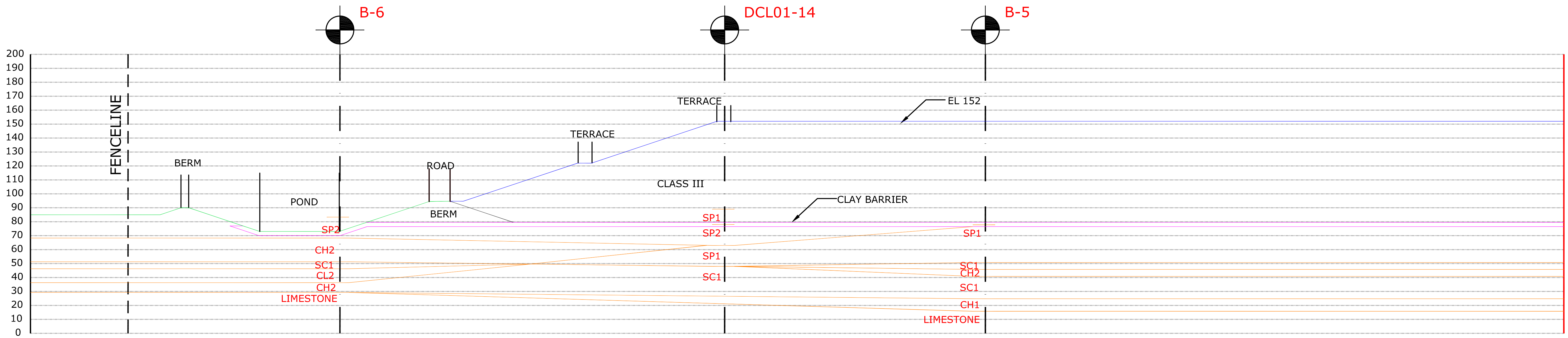

FIGURE 3. CELL 16 EXPANSION SECTION B

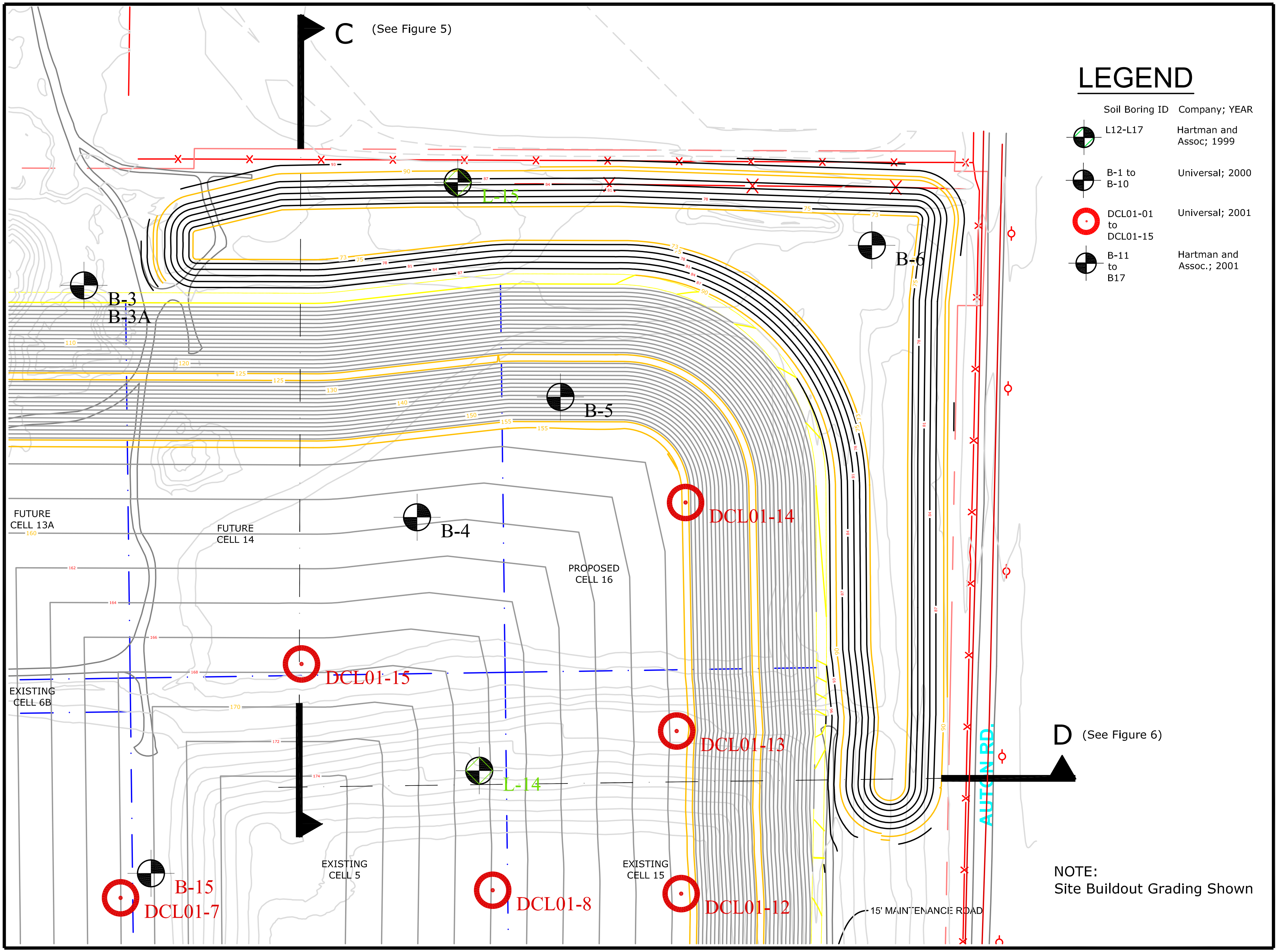

FIGURE 4. SITE BUILDOUT, BORING LOCATIONS, and SECTIONS

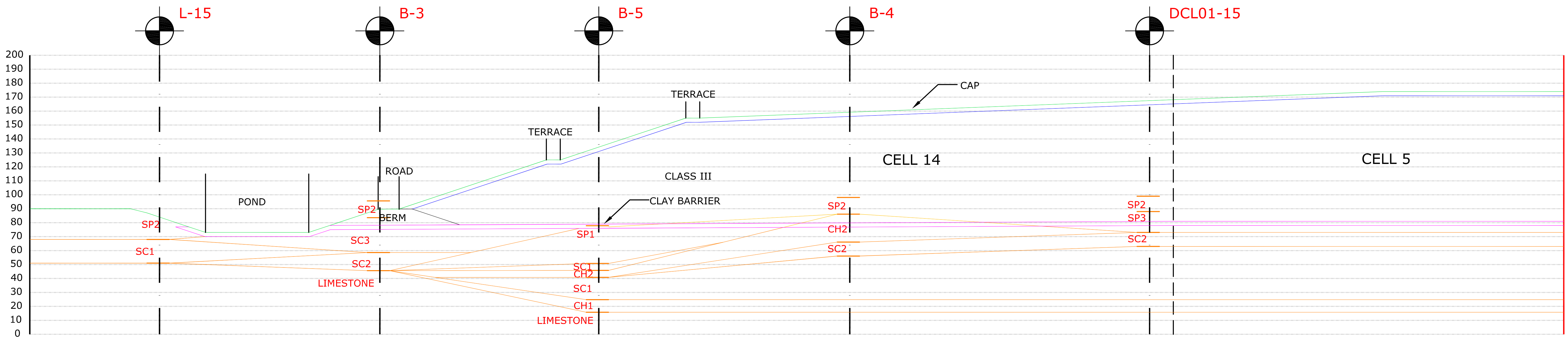

FIGURE 5. SITE BUILDOUT SECTION C

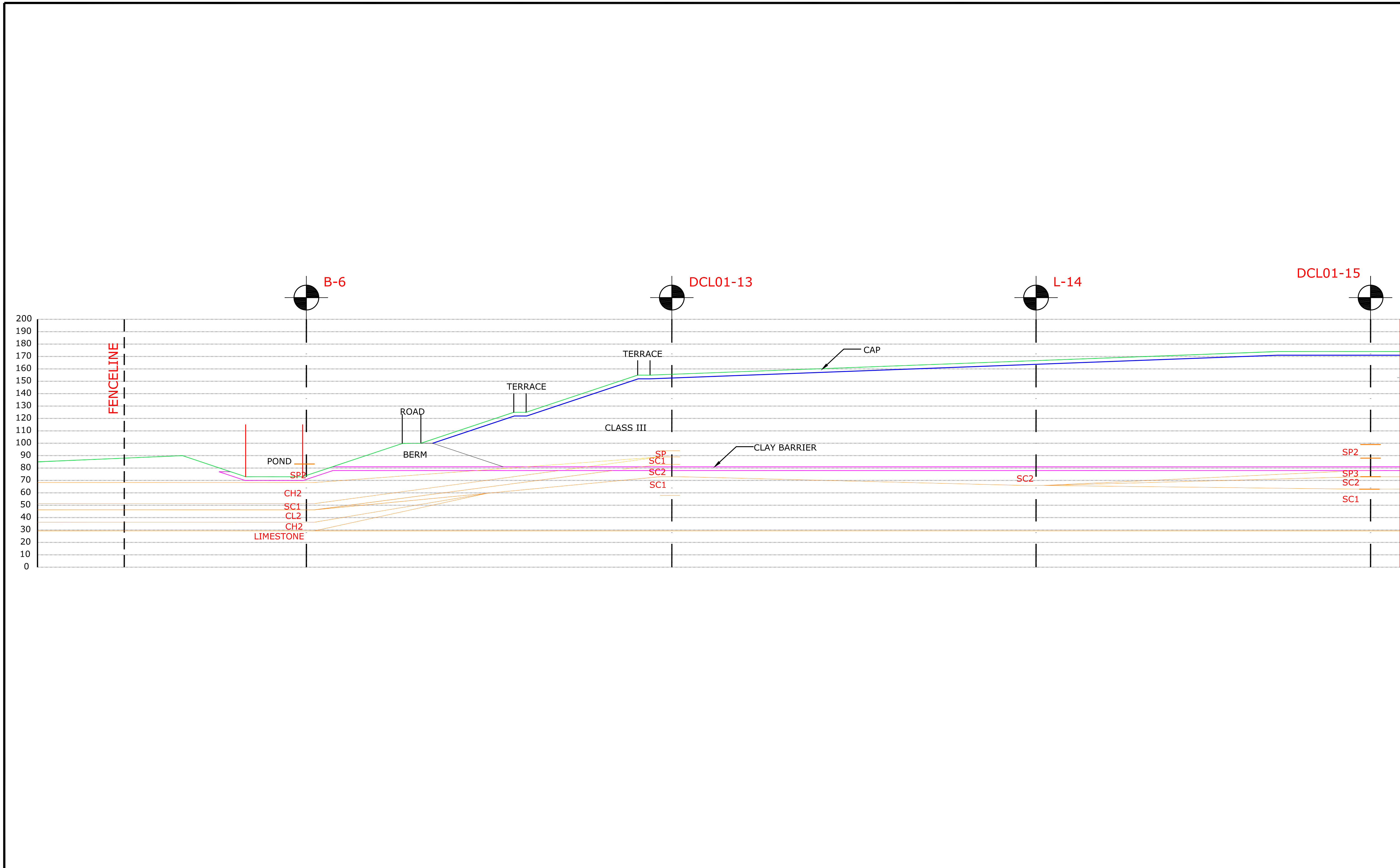

FIGURE 6. SITE BUILDOUT SECTION D

ATTACHMENT A

Soil Properties - Strength for Slope Stability

Sands, Silty Sands, Clayey Sands

SPT Blow Count	Description	Dr*	Dr avg
0-4	Very Loose	0-15	10
4-10	Loose	15-30	20
10-30	Medium	35-65	50
30-50	Dense	65-85	75
>50	Very Dense	85-100	90

Clays

SPT Blow Count	Description	Dr avg
<2	Very Soft	10
2-4	Soft	20
4-8	Medium	50
8-15	Stiff	75
15-30	Very Stiff	90
>30	Hard	100

References:

1) SPT vs Soil Relative Density
" Soil Mechanics; 1969 Lambe and Whitman, Table 3.3"

2) SPT vs Cohesive Soil Shear Strength, Soil Properties
" Soil Mechanics; 1969 Lambe and Whitman, Table 7.4"

3) SPT vs Cohesionless Soil Shear Strength - *"Principles of Geotechnical Engineering, 1985, B. Das, Table 13.3"*

Soils for Slope Stability Models

Model Soil ID	Soil Types	SPT N	Dr	Description	Shear Strengh Properties phi	c	Comment
1	SP1	0-4	Very Loose	Poorly Grade Sands, Fine Sand, Silty Sand	0	26	Model using "low strength" for conservative results
2	SP2	4-10	Loose		0	30	
3	SP3	10-30	Medium		0	34	
4	SC1	0-4	Very Loose	Very fine sands, sands with clays	0	26	Model using "low strength" for conservative results
5	SC2	4-10	Loose		0	30	
6	SC3	10-30	Medium		0	34	
7	CL1	0-4	Very Loose	clays with sand and silts, low PI index	0	28	Model using "low strength" for conservative results
8	CL2	4-10	Loose		0	30	Transition from Sands to Clays
9	CL3	10-30	Medium		0	34	
10	CH1	<2	Very Soft	Clays with High PI index	0	100	Model using "low strength" for conservative results
11	CH2	2-4	Soft		0	750	
12	CH3	4-8	Medium		0	1000	
13	SP 2		Loose-med	Perimeter Berm - Sandy to allow for flow	0	30	sandy soils - typ medium compaction
14	SP2		Loose-med	Closure Cap	0	30	Sandy to Sandy Clay soils available onsite
15	CL 3		Loose-med	Compacted Clay Barrier	0	30	Compacted sandy-clay - typ med to high strength
16	Waste			Class III waste	0	35	Typically higher strength - model low at 35
17	Foundation	>30-40	Dense	Limetone, fractured limestone	0	40	Hard, high strength soils - failure planes above this layer

Cohesionless Soils - SP, SP/SM. SM. SC, (Transition to CL)

SPT N-values	Estimated	Modeled	
0-5	26-30	26-28	low SPT N values; low density, weak shear strenght layer
5-10	28-35	30	
10-30	35-42	34	
30-50	38-46	40	

* Reference 3

Cohesive Soils - CL, CH

SPT N-values	Estimated		Modeled
<2	< .25 tsf	<500 psf	100
2-4	0.25-0.50 tsf	500-1,000	750
4-8	0.50-1.00 tsf	1,000-2,000	1000
8-15	1.00-2.00 tsf	2,000-4,000 psf	
15-30	2.00-4.00 tsf	4,000-8,000 psf	
>30	>4.00 tsf	>8,000 psf	

* Reference 2

Reference 1
Soil Stength

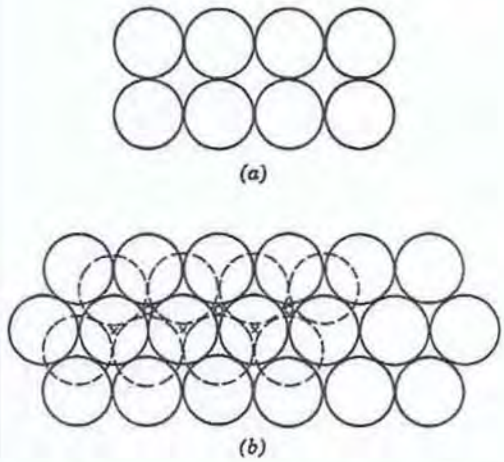

Fig. 3.2 Arrangements of uniform spheres. (*a*) Plan and elevation view: simple cubic packing. (*b*) Plan view: dense packing. Solid circles, first layer; dashed circles, second layer; ∘, location of sphere centers in third layer: face-centered cubic array; ×, location of sphere centers in third layer: close-packed hexagonal array. (From Deresiewicz, 1958.)

these simple packings can be computed from the geometry of the packings, and the results are given in Table 3.2. This table also gives densities for some typical granular soils in both the "dense" and "loose" states. A variety of tests have been proposed to measure the maximum and

Table 3.2 Maximum and Minimum Densities for Granular Soils

Description	Void Ratio		Porosity (%)		Dry Unit Weight (pcf)	
	e_{max}	e_{min}	n_{max}	n_{min}	$\gamma_{d\,min}$	$\gamma_{d\,max}$
Uniform spheres	0.92	0.35	47.6	26.0	—	—
Standard Ottawa sand	0.80	0.50	44	33	92	110
Clean uniform sand	1.0	0.40	50	29	83	118
Uniform inorganic silt	1.1	0.40	52	29	80	118
Silty sand	0.90	0.30	47	23	87	127
Fine to coarse sand	0.95	0.20	49	17	85	138
Micaceous sand	1.2	0.40	55	29	76	120
Silty sand and gravel	0.85	0.14	46	12	89	146

B. K. Hough, *Basic Soils Engineering*. Copyright © 1957, The Ronald Press Company, New York.

minimum void ratios (Kolbuszewski, 1948). The test to determine the maximum density usually involves some form of vibration. The test to determine minimum density usually involves pouring oven-dried soil into a container. Unfortunately, the details of these tests have not been entirely standardized, and values of the maximum density and minimum density for a given granular soil depend on the procedure used to determine them. By using special measures, one can obtain densities greater than the so-called maximum density. Densities considerably less than the so-called minimum density can be obtained, especially with very fine sands and silts, by slowly sedimenting the soil into water or by fluffing the soil with just a little moisture present.

The smaller the range of particle sizes present (i.e., the more nearly uniform the soil), the smaller the particles, and the more angular the particles, the smaller the minimum density (i.e., the greater the opportunity for building a loose arrangement of particles). The greater the range of particle sizes present, the greater the maximum density (i.e., the voids among the larger particles can be filled with smaller particles).

A useful way to characterize the density of a natural granular soil is with *relative density* D_r, defined as

$$D_r = \frac{e_{max} - e}{e_{max} - e_{min}} \times 100\%$$

$$= \frac{\gamma_{d\,max}}{\gamma_d} \times \frac{\gamma_d - \gamma_{d\,min}}{\gamma_{d\,max} - \gamma_{d\,min}} \times 100\% \qquad (3.1)$$

where

e_{min} = void ratio of soil in densest condition
e_{max} = void ratio of soil in loosest condition
e = in-place void ratio
$\gamma_{d\,max}$ = dry unit weight of soil in densest condition
$\gamma_{d\,min}$ = dry unit weight of soil in loosest condition
γ_d = in-place dry unit weight

Table 3.3 characterizes the density of granular soils on the basis of relative density.

Table 3.3 Density Description

Relative Density (%)	Descriptive Term
0–15	Very loose
15–35	Loose
35–65	Medium
65–85	Dense
85–100	Very dense

MOISTURE TE

$\omega = \frac{M_s}{M_w}$

Values of water content for natural granular soils vary from less than 0.1% for air-dry sands to more than 40% for saturated, loose sand.

Typical Values of Phase Relationships for Cohesive Soils

The range of values of phase relationships for cohesive soils is much larger than for granular soils. Saturated sodium montmorillonite at low confining pressure can exist at a void ratio of more than 25; saturated clays

Reference No. 2
Soil Strength

Table 7.4 Standard Penetration Test

Relative Density of Sand		Strength of Clay		
Penetration Resistance N (blows/ft)	Relative Density	Penetration Resistance N (blows/ft)	Unconfined Compressive Strength (tons/ft²)	Consistency
0–4	Very loose	<2	<0.25	Very soft
4–10	Loose	2–4	0.25–0.50	Soft
10–30	Medium	4–8	0.50–1.00	Medium
30–50	Dense	8–15	1.00–2.00	Stiff
>50	Very dense	15–30	2.00–4.00	Very stiff
		>30	>4.00	Hard

From Terzaghi and Peck, 1948.

In certain countries, such as Holland, subsoil conditions are such that penetration testing has proved to be a relatively reliable technique. More sophisticated techniques [such as the friction jacket cone (Begemann, 1953)] have been widely used.

The vane test has proved to be a very useful method of determining the shear strength of soft clays and silts. Figure 7.6 shows various sizes and shapes of vanes which have been used for field testing. The vane is forced into the ground and then the torque required to rotate the vane is measured. The shear strength is determined from the torque required to shear the soil along the vertical and horizontal edges of the vane.

As later chapters in this book will show, a proper subsoil investigation should include the determination of water pressure at various depths within the subsoil. Methods of determining pore water pressure are discussed in Part IV. Part IV also notes how the permeability of a subsoil can be estimated from pumping tests.

Various load tests and field compaction tests may be highly desirable in important soil projects. In this type of test, a small portion of the subsoil to be loaded by the prototype is subjected to a stress condition in the field which approximates that under the completed structure. The engineer extrapolates the results of the field tests to predict the behavior of the prototype.

7.7 SUBSOIL PROFILES

Figures 7.7 to 7.17 present a group of subsoil profiles and Table 7.5 gives some information on the geological history of the various profiles. The purposes of presenting these profiles are to:

1. Indicate how geological history influences soil characteristics.
2. Give typical values of soil properties.
3. Show dramatically the large variability in soil behavior with depth.
4. Illustrate how engineers have presented subsoil data.

Three considerations were used in the selection of the profiles: first, examples were chosen with different types of geological history; second, most of the profiles are ones for which there are excellent references giving considerably more detail on the characteristics of the soil and engineering problems involved with the particular profile; and finally, most of the profiles selected have been involved in interesting and/or important soil engineering projects.

Some of the soil characteristics shown in the profiles have already been described in this book. These characteristics include water content, unit weight, void ratio, porosity, Atterberg limits, and particle size. Other characteristics, particularly those referring to strength and compressibility, will be discussed in detail in later portions of this book. Reference will then be made back to these profiles.

The profiles illustrate many concepts presented in the preceding parts of this book; some of them are discussed in the remaining part of this section.

Stress History

In a normally consolidated sedimentary soil both the void ratio and water content decrease with depth in the profile, and the strength therefore increases. This characteristic is illustrated in several of the profiles, e.g., the Norwegian marine clay (Fig. 7.7), the Thames Estuary clay (Fig. 7.10), and the Canadian clay (Fig. 7.11). The London clay is overconsolidated since it was compressed by a greater overburden than now exists. Erosion removed some of the original overburden. As would be expected, the overconsolidated London clay does not

Refernce No. 3
Soil Strength

Table 13.3 Approximate Relation Between Corrected Standard Penetration Number, Angle of Friction, and Relative Density of Sand

Corrected standard penetration number, N	Relative density, D_r (%)	Angle of friction, ϕ (degrees)
0–5	0–5	26–30
5–10	5–30	28–35
10–30	30–60	35–42
30–50	60–95	38–46

The standard penetration number is a very useful guideline in soil exploration and assessment of subsoil conditions, provided that the results are interpreted correctly. Note that all equations and correlations relating to the standard penetration numbers are approximate. Since soil is not homogeneous, a wide variation in the N-value may be obtained in the field. In soil deposits

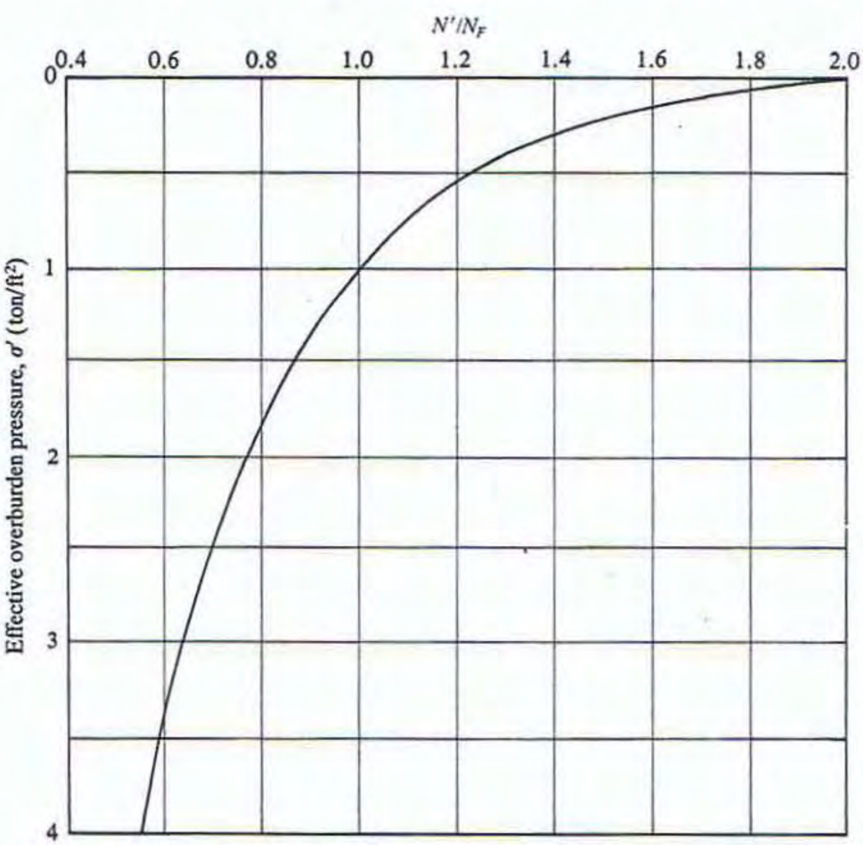

Figure 13.11 Variation of N'/N_F with vertical effective stress, σ' (after Peck, Hanson, and Thornburn, 1974)

ATTACHMENT B

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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

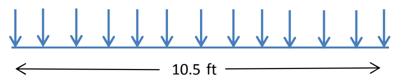
Track Length = 10.5 ft

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

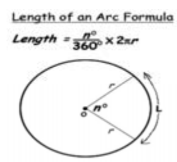
Approximately 2,400.00 psf

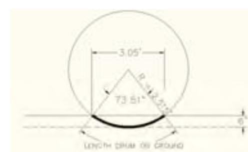


CAT 826H Compactor

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

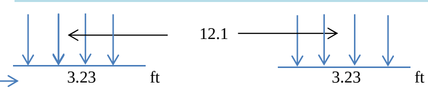
Drum Width = 3.94 ft
Drum Length on Ground L = 3.23 ft
Area of Each Drum = 12.71 sf

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

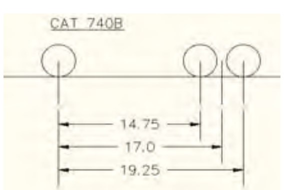
Equipment Surface Loads

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		

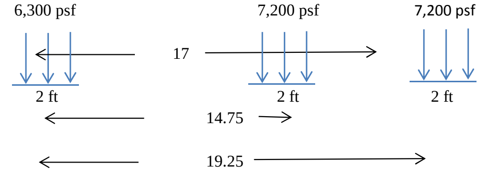
(negligible difference of 2 lbf)



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

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Current number of specifications

CATERPILLAR D8R WHA CRAWLER TRACTOR

VIEW ARTICLES ON THIS ITEM

Print specification

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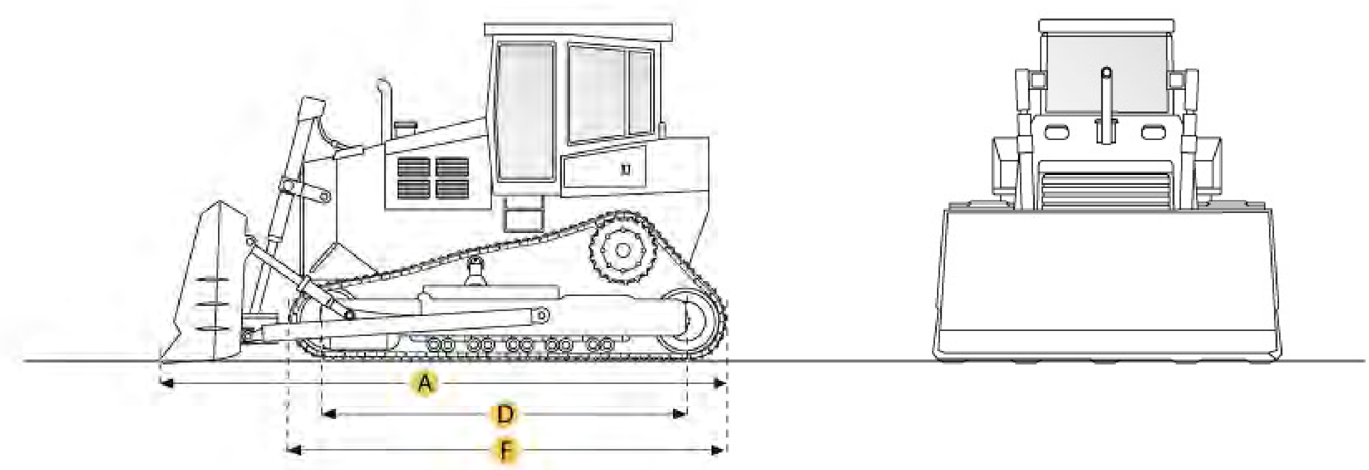


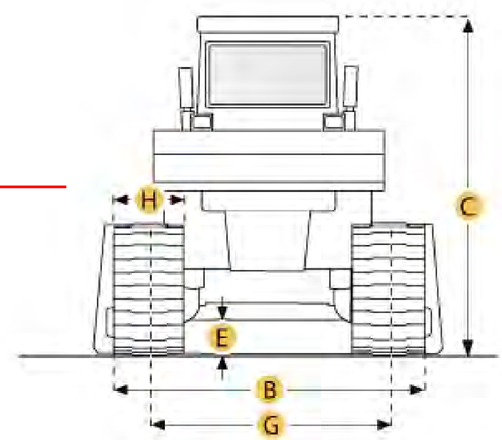
Selected Dimensions

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

D8T WH (TIER 4 INTERIM/STAGE IIIB)

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 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

Home → Spec Search → Construction Equipment → Compactor → Caterpillar → 826H

CATERPILLAR 826H COMPACTOR

VIEW ARTICLES ON THIS ITEM

Print specification

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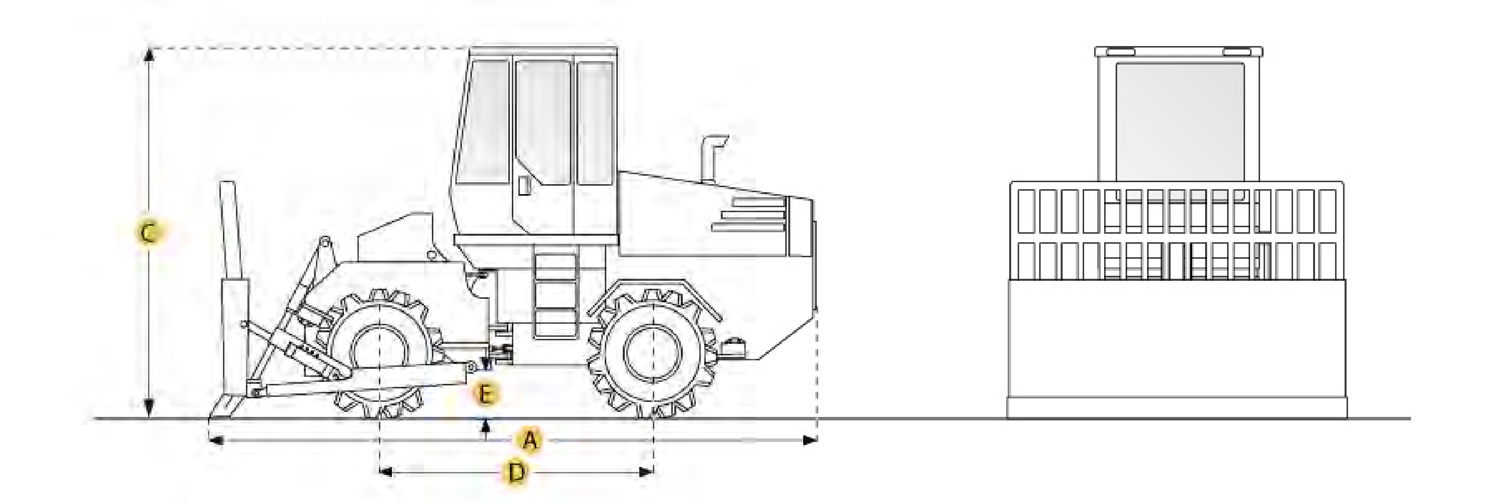
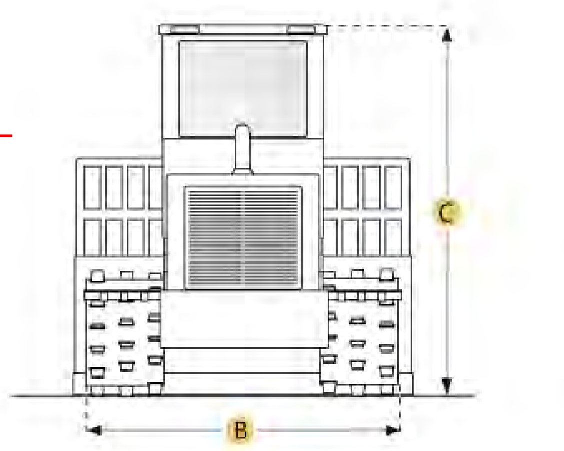


Selected Dimensions

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

826H

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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

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.

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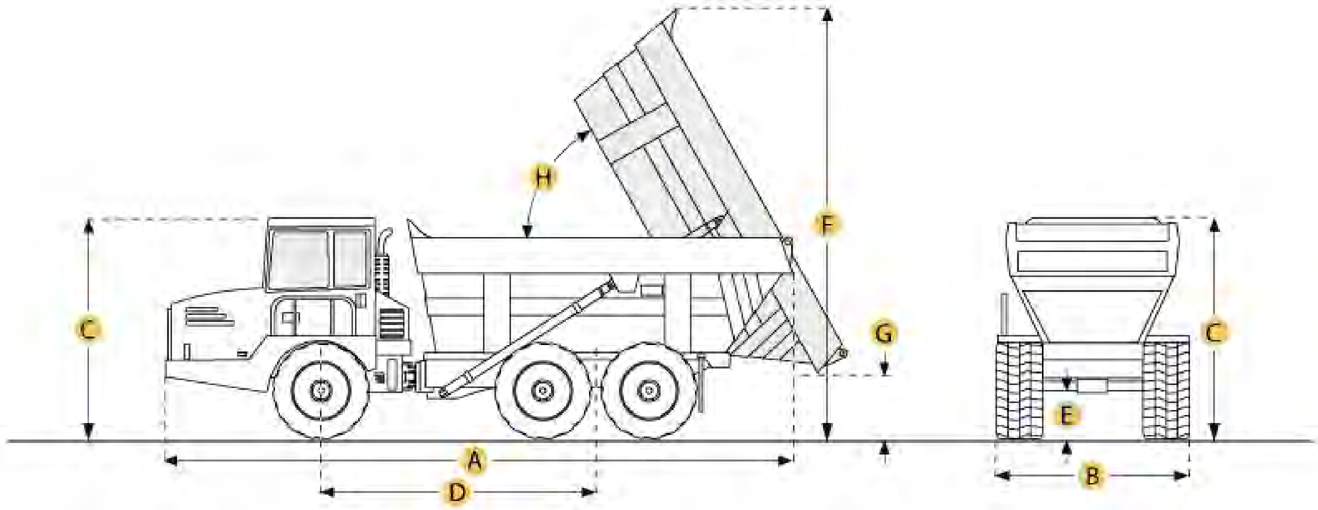
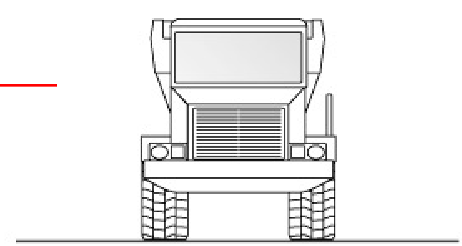


Selected Dimensions

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

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RENT ARTICULATED TRUCKS	(HTTP://WWW.CATRENTALSTORE.COM/EQUIPM TRUCKS)

:2)

740B Ejector Articulated Trucks

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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)

PAGE OPTIONS

Printable Version

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

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 C

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/29/2016
Time of Run: 5:55PM
Run By: Civil Design Service, Inc
Input Data Filename: C:ew_cel~1.
Output Filename: C:ew_cel~1.OUT
Plotted Output Filename: C:ew_cel~1.PLT
PROBLEM DESCRIPTION Angelos Class III Cell 16 Expansion
Cell 16 East/West Section

BOUNDARY COORDINATES
14 Top Boundaries
56 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	85.00	93.00	85.00	2
2	93.00	85.00	108.00	90.00	2
3	108.00	90.00	113.50	90.00	2
4	113.50	90.00	152.50	77.00	2
5	152.50	77.00	164.50	73.00	15
6	164.50	73.00	221.50	73.00	15
7	221.50	73.00	241.00	79.50	15
8	241.00	79.50	286.00	94.50	13
9	286.00	94.50	301.00	94.70	13
10	301.00	94.70	310.50	94.70	16
11	310.50	94.70	392.40	122.00	16
12	392.40	122.00	402.40	122.00	16
13	402.40	122.00	492.40	152.00	16
14	492.40	152.00	1100.00	152.00	16
15	301.00	94.70	305.70	93.10	13
16	305.70	93.10	346.60	79.50	13
17	241.60	79.50	346.60	79.50	15
18	346.00	79.50	1100.00	79.50	15
19	143.00	77.00	152.50	77.00	15
20	143.00	77.00	164.00	70.00	2
21	164.00	70.00	222.00	70.00	2
22	222.00	70.00	241.50	76.50	2
23	241.50	76.50	489.00	76.50	2
24	489.00	76.50	676.00	76.50	2
25	676.00	76.50	1100.00	76.50	1
26	.00	68.30	212.50	68.30	11
27	212.50	68.30	228.50	68.30	11
28	228.50	68.30	489.00	63.00	11
29	489.00	63.00	505.00	63.00	1
30	505.00	63.00	676.00	76.50	1
31	676.00	50.80	692.00	50.80	4
32	692.00	50.80	1100.00	50.80	4
33	.00	51.30	212.50	51.30	4
34	212.50	51.30	228.50	51.30	4
35	228.50	51.30	358.80	49.70	4
36	358.80	49.70	489.00	63.00	1
37	358.80	49.70	489.00	48.00	4
38	489.00	48.00	505.00	48.00	4
39	505.00	48.00	676.00	50.80	4
40	505.00	48.00	676.00	45.80	11
41	676.00	45.80	692.00	45.80	11
42	692.00	45.80	1100.00	45.80	11
43	505.00	48.00	676.00	40.80	4
44	676.00	40.80	692.00	40.80	4
45	692.00	40.80	1100.00	40.80	4
46	.00	36.30	212.50	36.30	11
47	212.50	36.30	228.50	36.30	11
48	228.50	36.30	358.70	49.70	11
49	.00	29.30	212.50	29.30	17
50	212.50	29.30	228.50	29.30	17
51	228.50	29.30	676.00	24.80	10

52	676.00	24.80	692.00	24.80	10
53	692.00	24.80	1100.00	24.80	10
54	228.50	29.30	676.00	15.80	17
55	676.00	15.80	692.00	15.80	17
56	692.00	15.80	1100.00	15.80	17

ISOTROPIC SOIL PARAMETERS

17 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	105.0	110.0	.0	26.0	.00	.0	1
2	107.0	112.0	.0	30.0	.00	.0	1
3	110.0	115.0	.0	34.0	.00	.0	1
4	85.0	100.0	.0	26.0	.00	.0	1
5	95.0	105.0	.0	30.0	.00	.0	1
6	100.0	115.0	.0	34.0	.00	.0	1
7	85.0	100.0	.0	28.0	.00	.0	1
8	95.0	105.0	.0	30.0	.00	.0	1
9	100.0	115.0	.0	34.0	.00	.0	1
10	80.0	100.0	100.0	.0	.00	.0	1
11	95.0	105.0	750.0	.0	.00	.0	1
12	100.0	115.0	1500.0	.0	.00	.0	1
13	110.0	115.0	.0	30.0	.00	.0	1
14	110.0	115.0	.0	30.0	.00	.0	1
15	95.0	105.0	.0	30.0	.00	.0	1
16	50.0	50.0	.0	35.0	.00	.0	1
17	120.0	130.0	.0	40.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	75.00
2	1100.00	75.00

BOUNDARY LOAD(S)

3 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	492.40	494.40	6300.0	.0
2	507.15	509.15	7200.0	.0
3	511.65	513.65	7200.0	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

100 Trial Surfaces Have Been Generated.

2 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	100.00	50.00	325.00	50.00	40.00
2	350.00	50.00	600.00	50.00	40.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	215.74	73.00
2	222.26	70.37
3	230.61	64.86
4	239.41	60.11
5	248.23	55.40
6	257.97	53.13
7	430.18	61.71
8	434.15	70.89
9	441.22	77.96

Angelos Class III Cell 16 Expansion Cell 16 East/West Section

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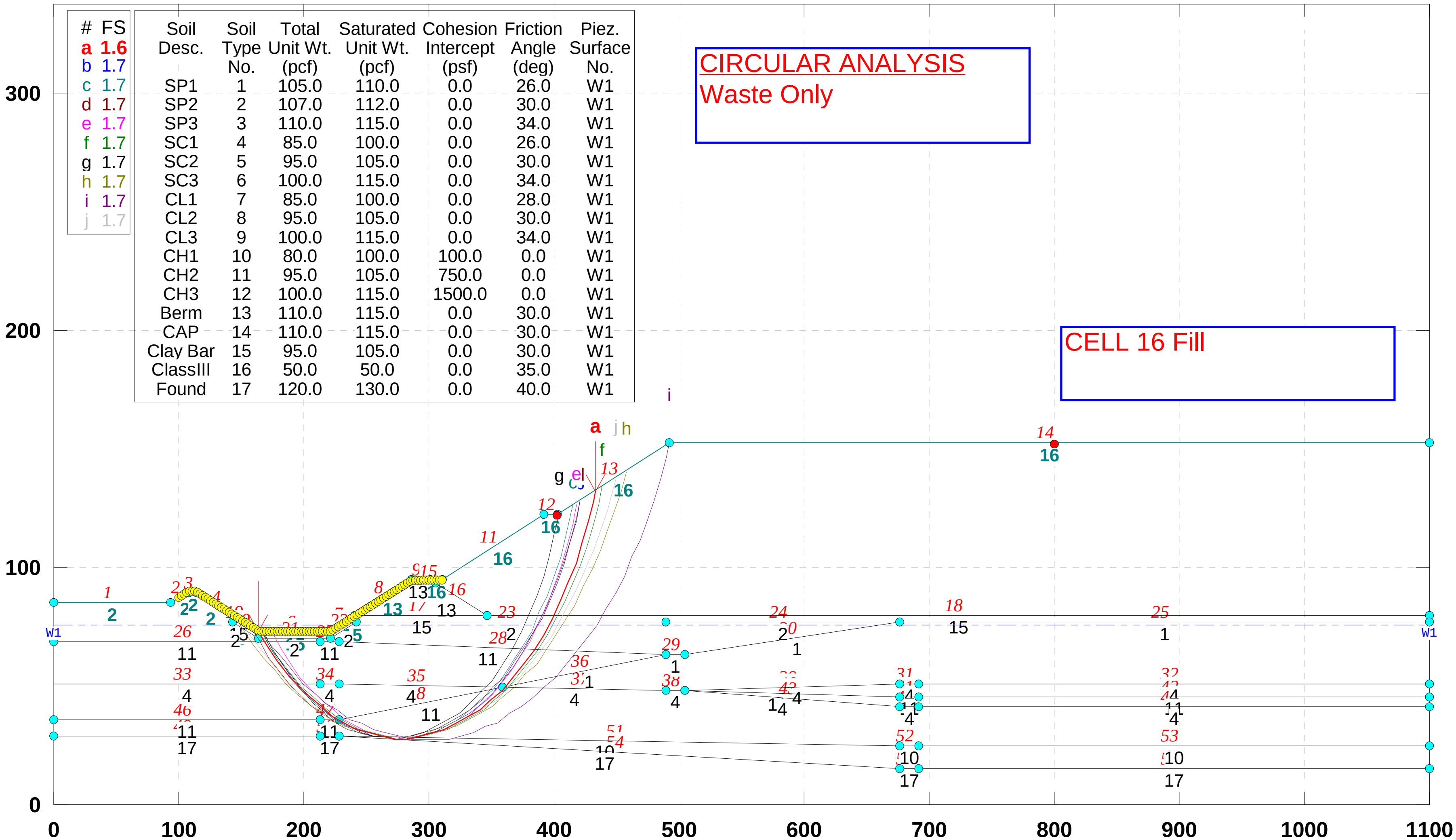

#	FS
a	1.6
b	1.7
c	1.7
d	1.7
e	1.7
f	1.7
g	1.7
h	1.7
i	1.7
j	1.7

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=1.6

Safety Factors Are Calculated By The Modified Bishop Method

STED

Angelos Class III Cell 16 Expansion Cell 16 East/West Section

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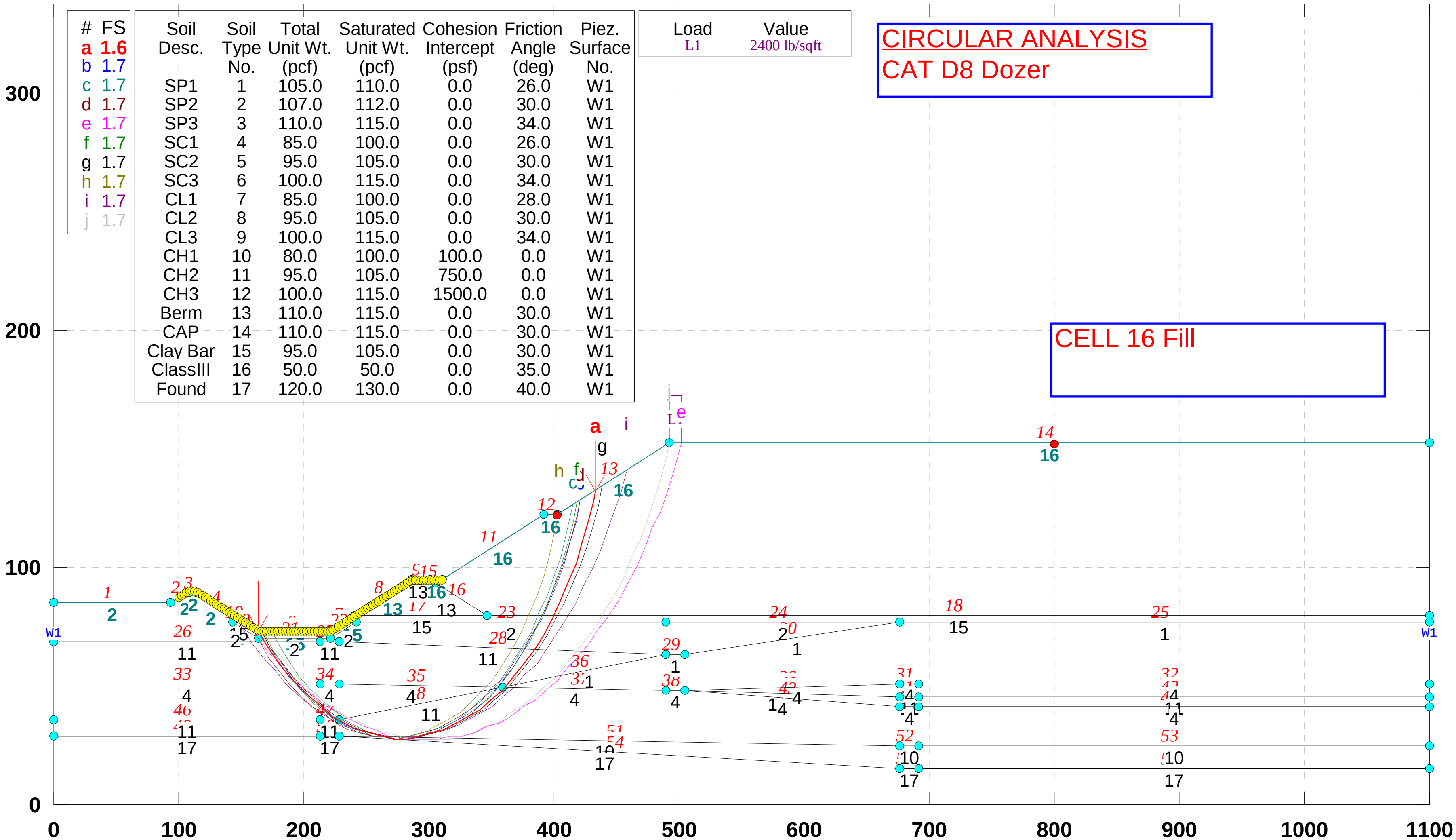


Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

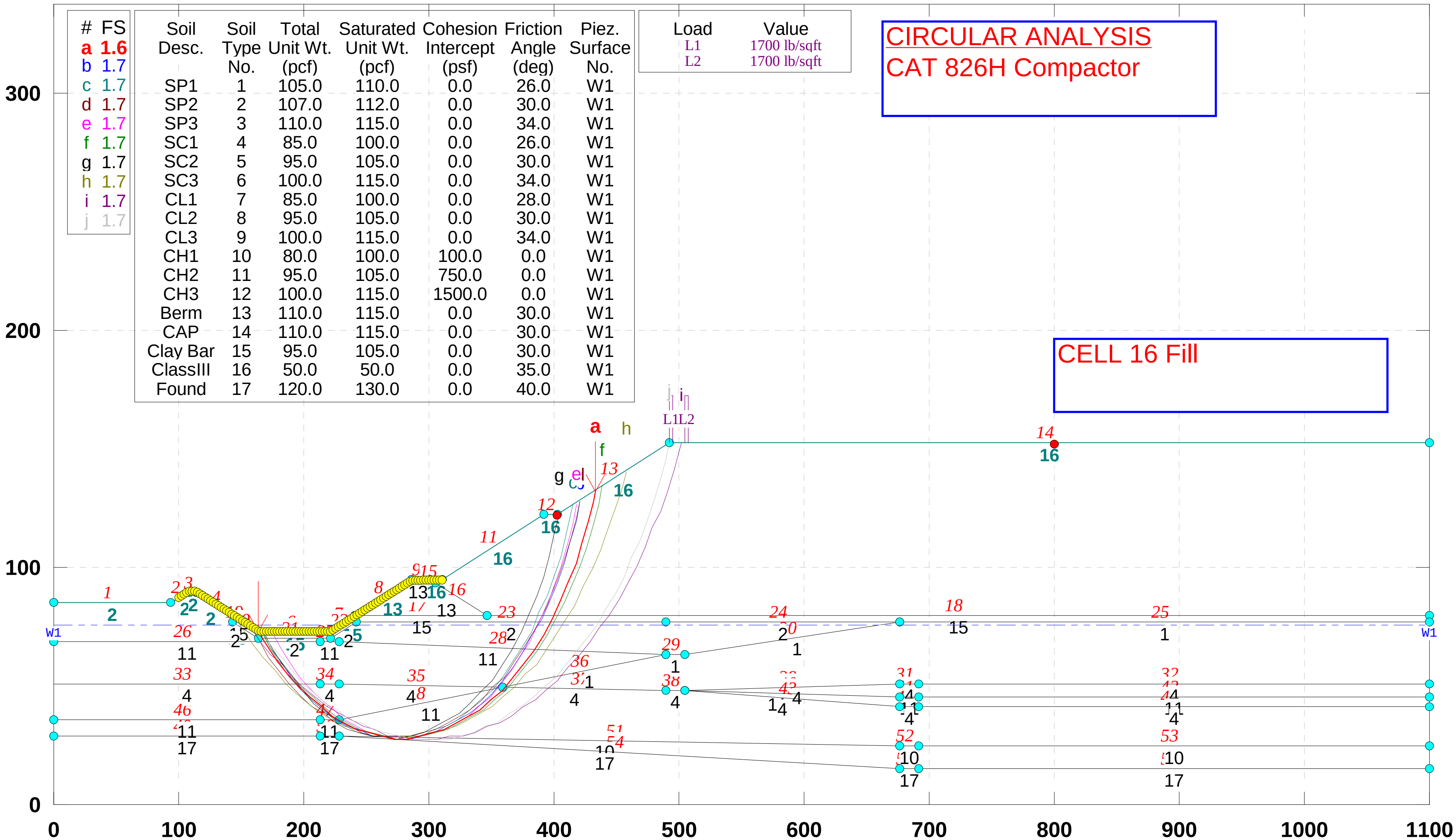
STABL6H FSmin=1.6

Safety Factors Are Calculated By The Modified Bishop Method

STED

Angelos Class III Cell 16 Expansion Cell 16 East/West Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\EW_CEL~1\EW_CEL~1.PL2 Run By: Civil Design Service, Inc 3/29/2016 5:41PM



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

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

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

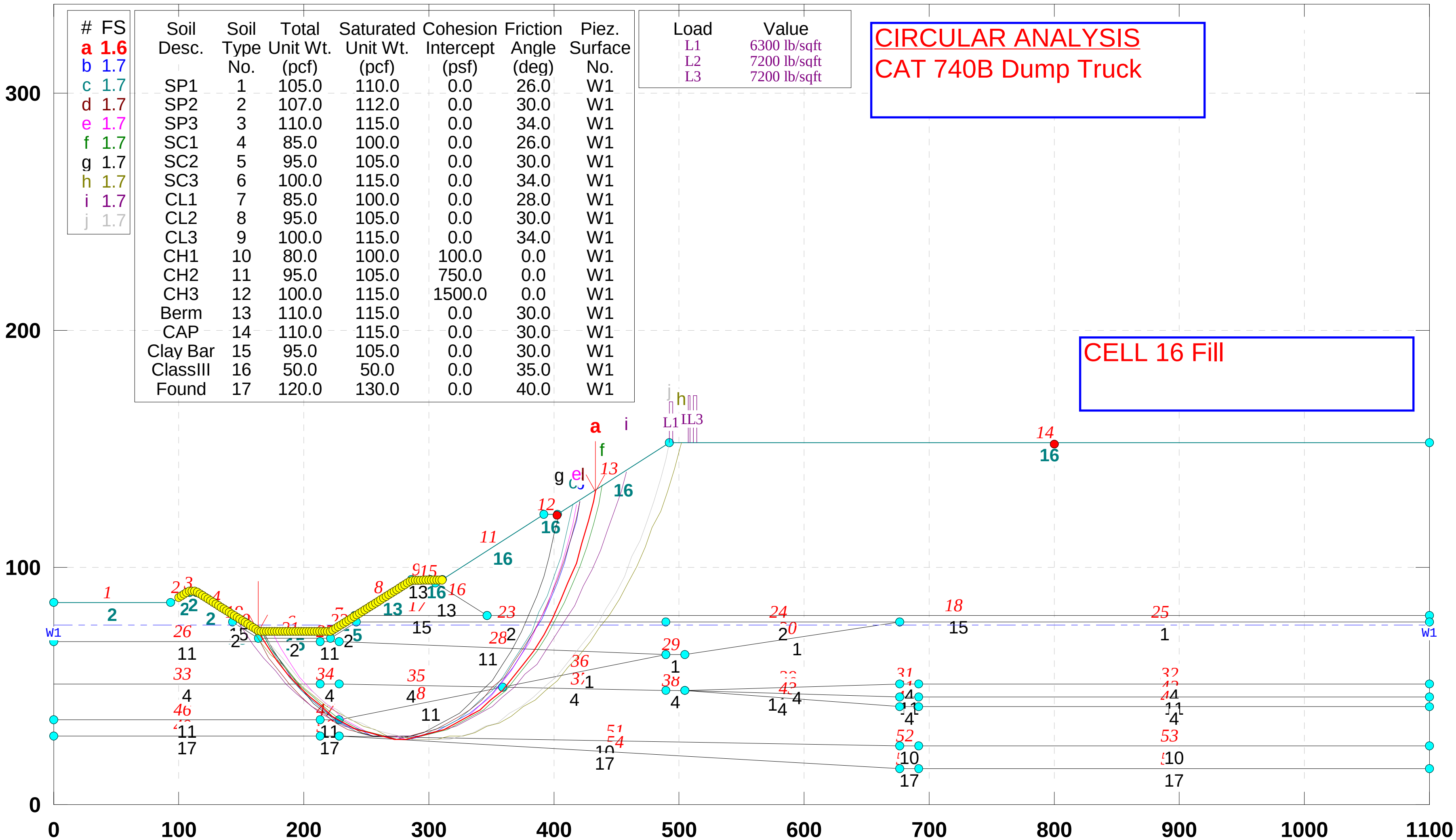
STABL6H FSmin=1.6

Safety Factors Are Calculated By The Modified Bishop Method

STED

Angelos Class III Cell 16 Expansion Cell 16 East/West Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\EW_CEL~1\EW_CEL~1.PL2 Run By: Civil Design Service, Inc 3/29/2016 5:39PM



Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=1.6

Safety Factors Are Calculated By The Modified Bishop Method

STED

Angelos Class III Cell 16 Expansion Cell 16 East/West Section

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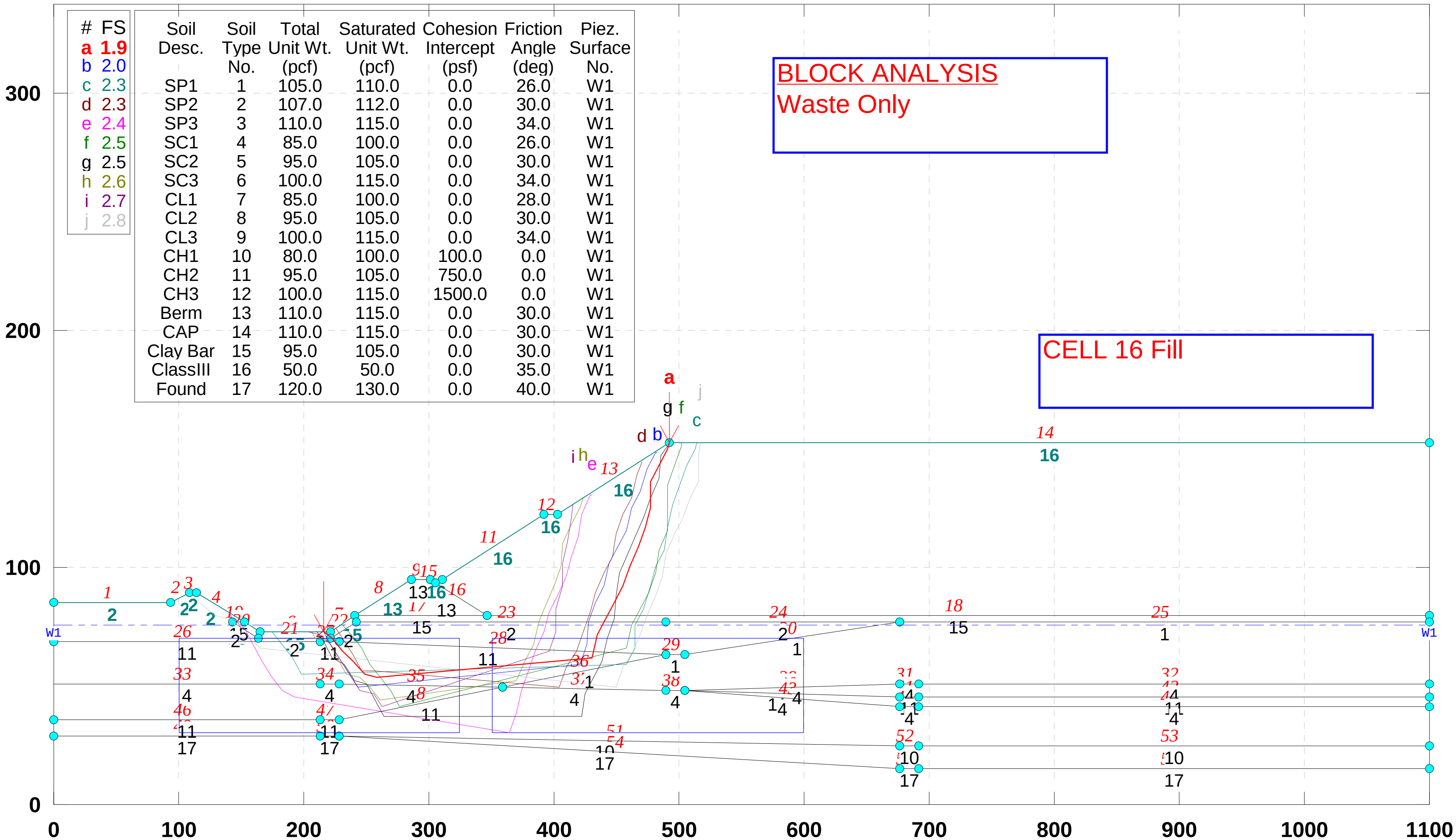


Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

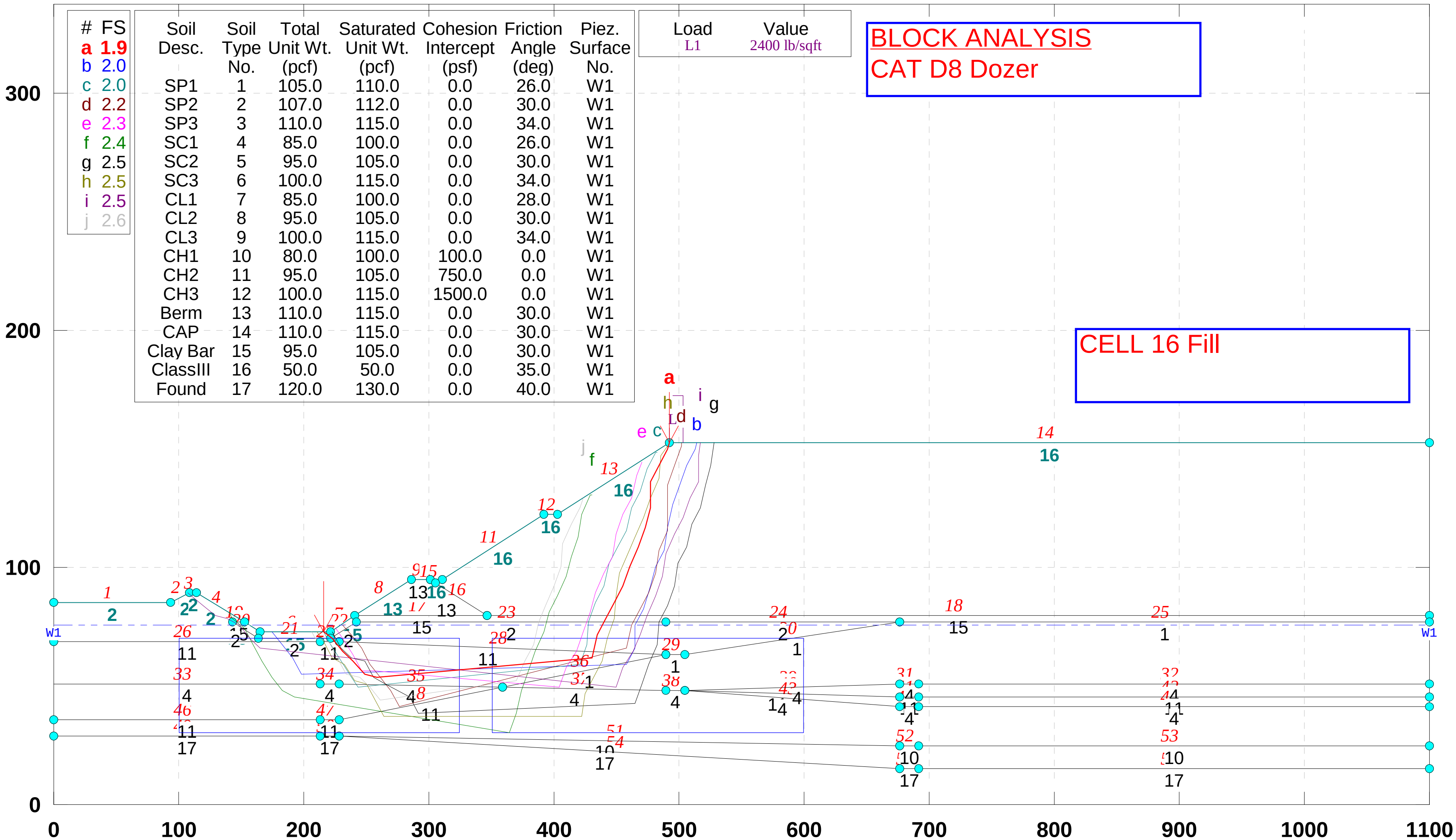
STABL6H FSmin=1.9

Safety Factors Are Calculated By The Modified Janbu Method

STED

Angelos Class III Cell 16 Expansion Cell 16 East/West Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\EW_CEL~1\EW_CEL~1.PL2 Run By: Civil Design Service, Inc 3/29/2016 5:50PM



Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=1.9

Safety Factors Are Calculated By The Modified Janbu Method

STED

Angelos Class III Cell 16 Expansion Cell 16 East/West Section

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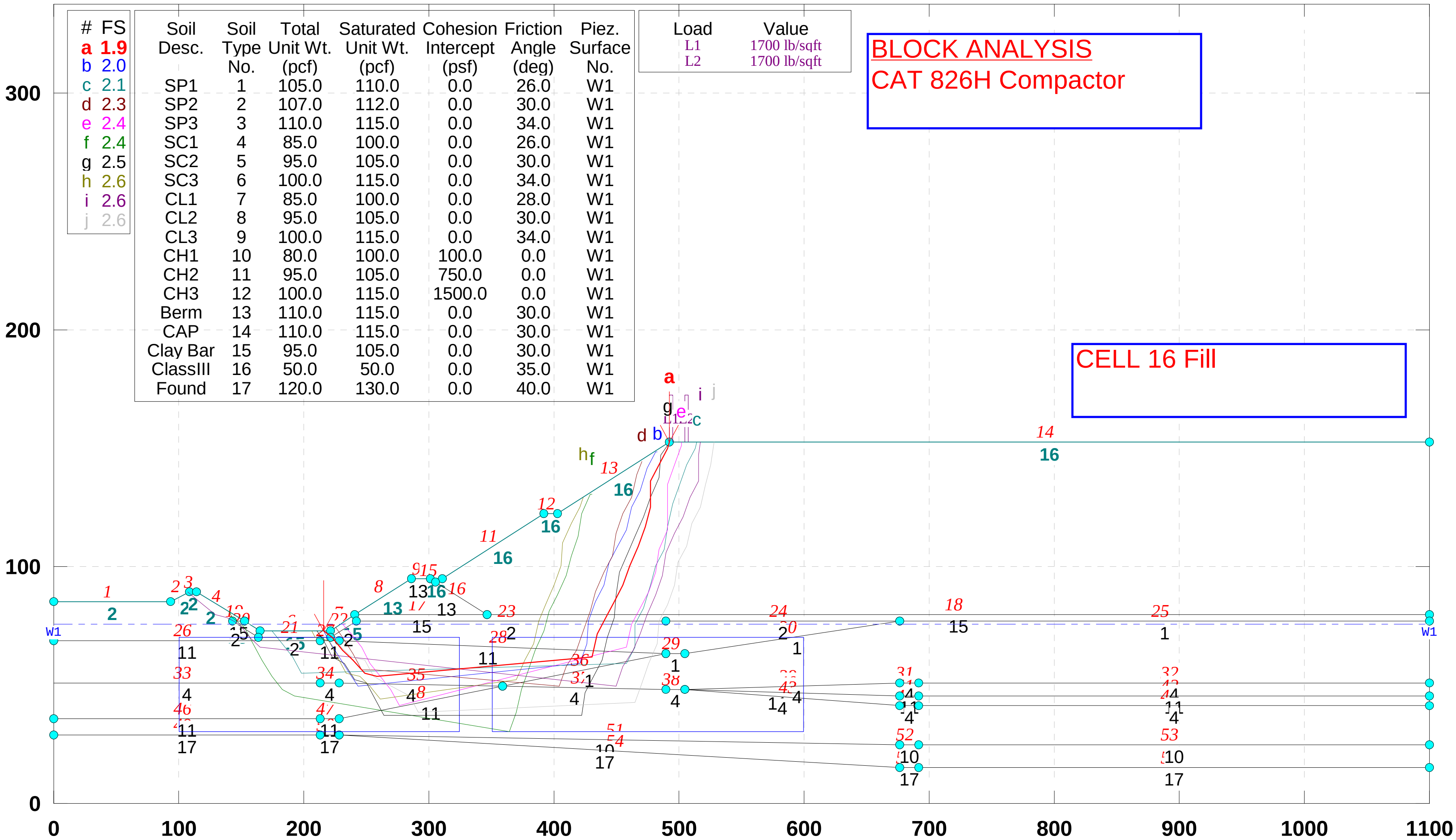

#	FS
a	1.9
b	2.0
c	2.1
d	2.3
e	2.4
f	2.4
g	2.5
h	2.6
i	2.6
j	2.6

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

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

STABL6H FSmin=1.9

Safety Factors Are Calculated By The Modified Janbu Method

STED

Angelos Class III Cell 16 Expansion Cell 16 East/West Section

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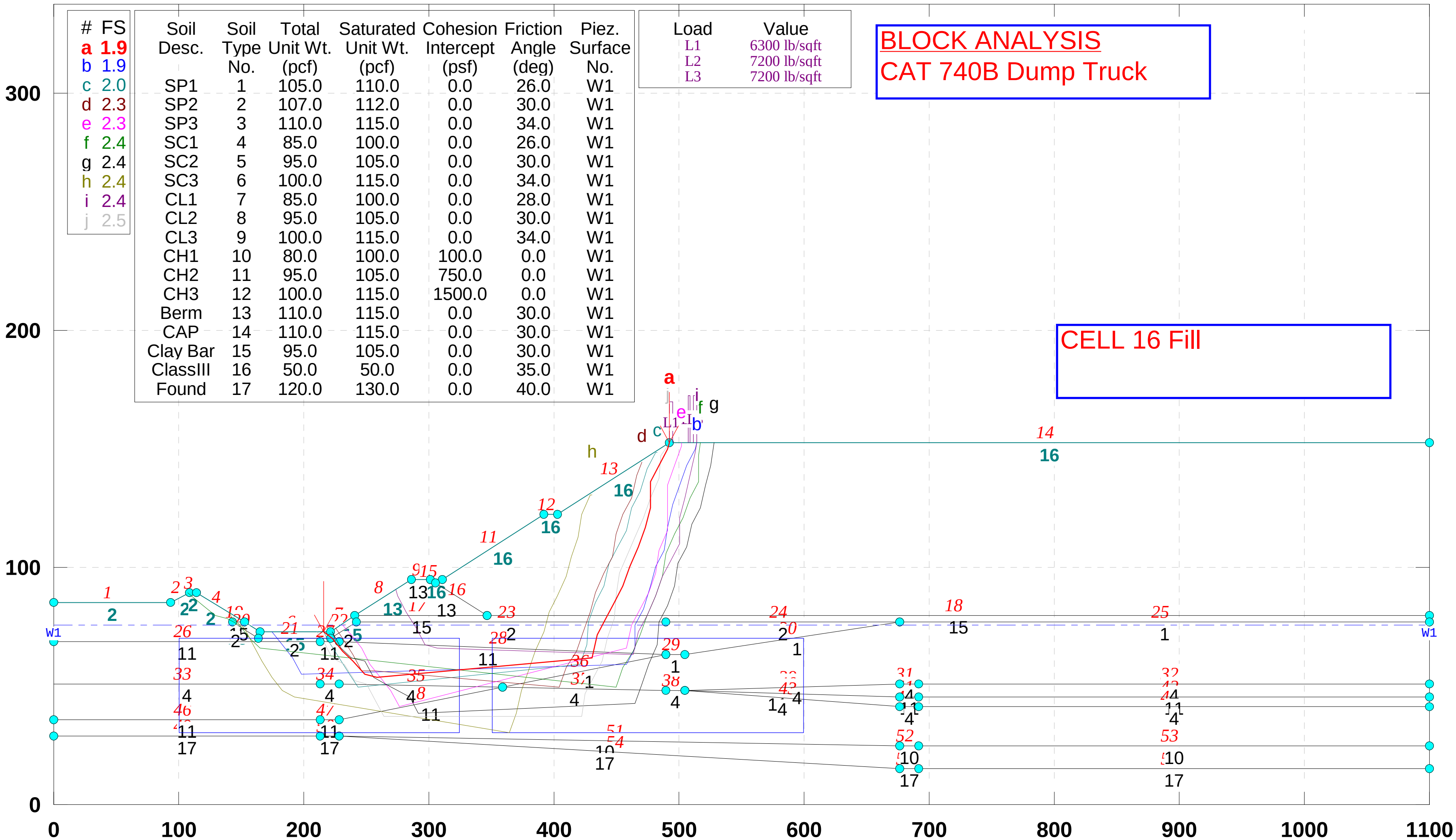

#	FS
a	1.9
b	1.9
c	2.0
d	2.3
e	2.3
f	2.4
g	2.4
h	2.4
i	2.4
j	2.5

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	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 Janbu Method

STED

ATTACHMENT D

**** STABL6H ****

by

Purdue University

--Slope Stability Analysis--

Simplified Janbu, Simplified Bishop

or Spencer`s Method of Slices

Run Date: 3/29/2016

Time of Run: 7:34PM

Run By: Civil Design Service, Inc

Input Data Filename: C:ns_cel~1.

Output Filename: C:ns_cel~1.OUT

Plotted Output Filename: C:ns_cel~1.PLT

PROBLEM DESCRIPTION Angelos Class III Cell 16 Expansion

Cell 16 _ North South Section

BOUNDARY COORDINATES

15 Top Boundaries

65 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	85.00	75.00	85.00	2
2	75.00	85.00	90.00	90.00	2
3	90.00	90.00	95.50	90.00	2
4	95.50	90.00	109.30	86.40	2
5	109.30	86.40	137.50	77.00	2
6	137.50	77.00	149.50	73.00	15
7	149.50	73.00	200.50	73.00	15
8	200.50	73.00	215.50	78.00	15
9	215.50	78.00	251.50	90.00	13
10	251.50	90.00	266.50	90.20	13
11	266.50	90.20	276.00	90.20	13
12	276.00	90.20	371.40	122.00	16
13	371.40	122.00	381.40	122.00	16
14	381.40	122.00	471.40	152.00	16
15	471.40	152.00	1100.00	152.00	16
16	276.00	90.20	311.20	78.50	13
17	128.00	77.00	137.50	77.00	15
18	215.50	78.00	311.20	78.50	15
19	311.20	78.50	840.50	81.00	15
20	840.50	81.00	1100.00	81.00	15
21	216.00	75.00	428.00	76.00	2
22	428.00	76.00	444.00	76.10	1
23	444.00	76.10	840.50	78.00	2
24	840.50	78.00	1100.00	78.00	2
25	201.00	70.00	216.00	75.00	2
26	128.00	77.00	149.00	70.00	2
27	149.00	70.00	201.00	70.00	2
28	.00	68.00	107.00	68.00	4
29	107.00	68.00	123.00	68.00	4
30	123.00	68.00	175.00	68.30	11
31	175.00	68.30	191.00	68.30	11
32	191.00	68.30	428.00	76.00	1
33	444.00	67.10	588.00	63.00	1
34	588.00	63.00	604.00	63.00	1
35	604.00	63.00	1100.00	63.00	1
36	123.00	68.00	175.00	51.30	4
37	175.00	51.30	191.00	51.30	4
38	191.00	51.30	428.00	50.80	4
39	428.00	50.80	444.00	50.80	4
40	444.00	50.80	588.00	48.00	4
41	588.00	48.00	604.00	48.00	4
42	604.00	48.00	1100.00	48.00	4
43	.00	51.00	107.00	51.00	8
44	107.00	51.00	123.00	51.00	8
45	123.00	51.00	175.00	46.30	8
46	175.00	46.30	191.00	46.30	8
47	191.00	46.30	428.00	45.80	11
48	428.00	45.80	444.00	45.80	11
49	444.00	45.80	588.00	48.00	11
50	588.00	48.00	604.00	48.00	4
51	604.00	48.00	1100.00	48.00	4

52	191.00	46.30	428.00	40.80	8
53	.00	36.30	175.00	36.30	11
54	175.00	36.30	191.00	36.30	11
55	191.00	36.30	428.00	40.80	4
56	428.00	40.80	444.00	40.80	4
57	444.00	40.80	588.00	48.00	4
58	.00	29.30	175.00	29.30	17
59	175.00	29.30	191.00	29.30	17
60	191.00	29.30	428.00	24.80	10
61	428.00	24.80	444.00	24.80	10
62	444.00	24.80	1100.00	24.80	10
63	191.00	29.30	428.00	15.80	17
64	428.00	15.80	444.00	15.80	17
65	444.00	15.80	1100.00	15.80	17

ISOTROPIC SOIL PARAMETERS

17 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	105.0	110.0	.0	26.0	.00	.0	1
2	107.0	112.0	.0	30.0	.00	.0	1
3	110.0	115.0	.0	34.0	.00	.0	1
4	85.0	100.0	.0	26.0	.00	.0	1
5	95.0	105.0	.0	30.0	.00	.0	1
6	100.0	115.0	.0	34.0	.00	.0	1
7	85.0	100.0	.0	28.0	.00	.0	1
8	95.0	105.0	.0	30.0	.00	.0	1
9	100.0	115.0	.0	34.0	.00	.0	1
10	80.0	100.0	100.0	.0	.00	.0	1
11	95.0	105.0	750.0	.0	.00	.0	1
12	100.0	115.0	1500.0	.0	.00	.0	1
13	110.0	115.0	.0	30.0	.00	.0	1
14	110.0	115.0	.0	30.0	.00	.0	1
15	95.0	105.0	.0	30.0	.00	.0	1
16	50.0	50.0	.0	35.0	.00	.0	1
17	120.0	130.0	.0	40.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	75.00
2	1100.00	75.00

BOUNDARY LOAD(S)

3 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	471.40	473.40	6300.0	.0
2	485.15	488.15	7200.0	.0
3	490.65	492.65	7200.0	.0

NOTE - Intensity Is Specified As A Uniformly Distributed
Force Acting On A Horizontally Projected Surface.

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

100 Trial Surfaces Have Been Generated.

2 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	100.00	30.00	325.00	30.00	30.00
2	350.00	30.00	600.00	30.00	30.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

Angelos Class III Cell 16 Expansion Cell 16 _ North South Section

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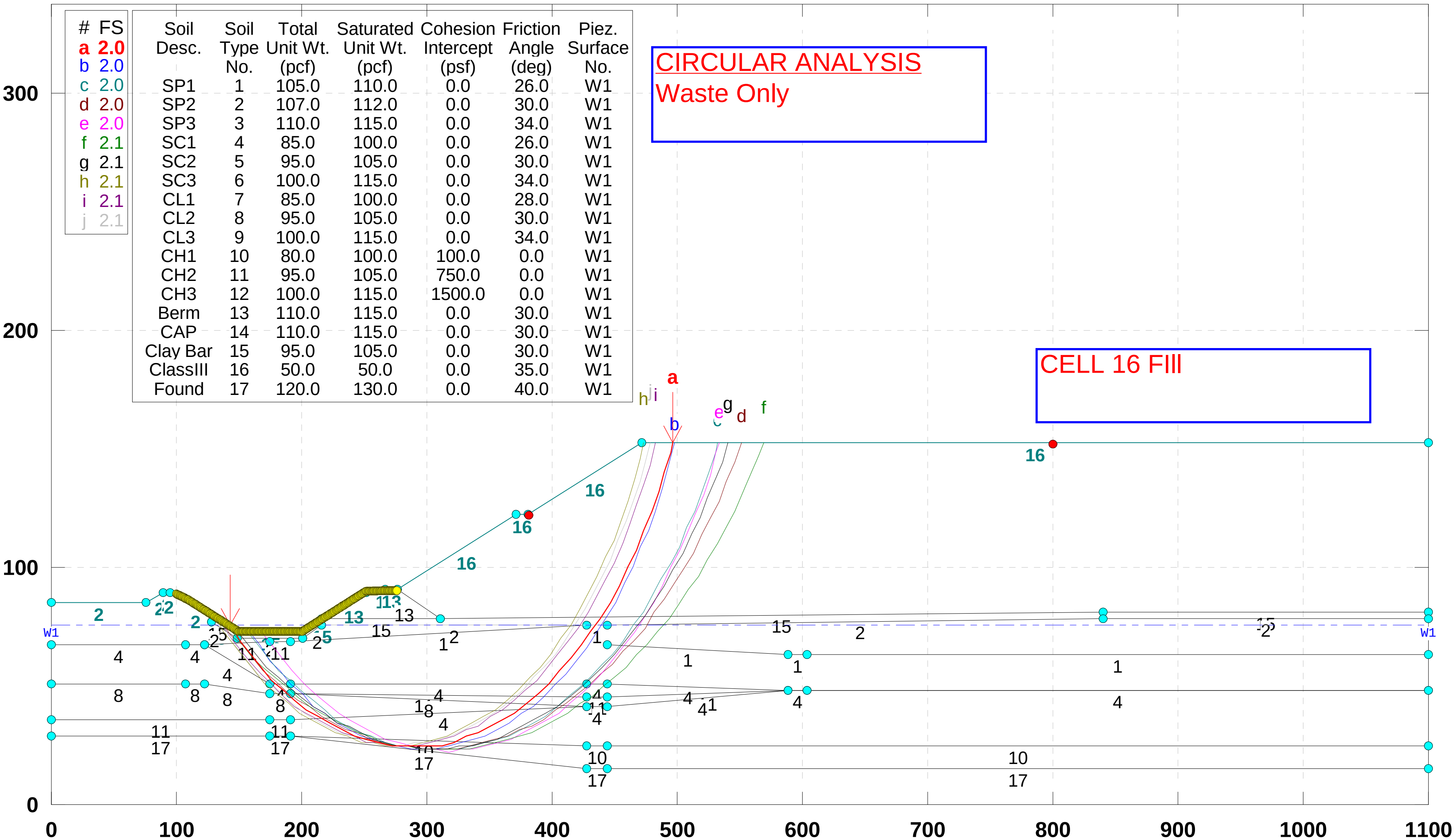


Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

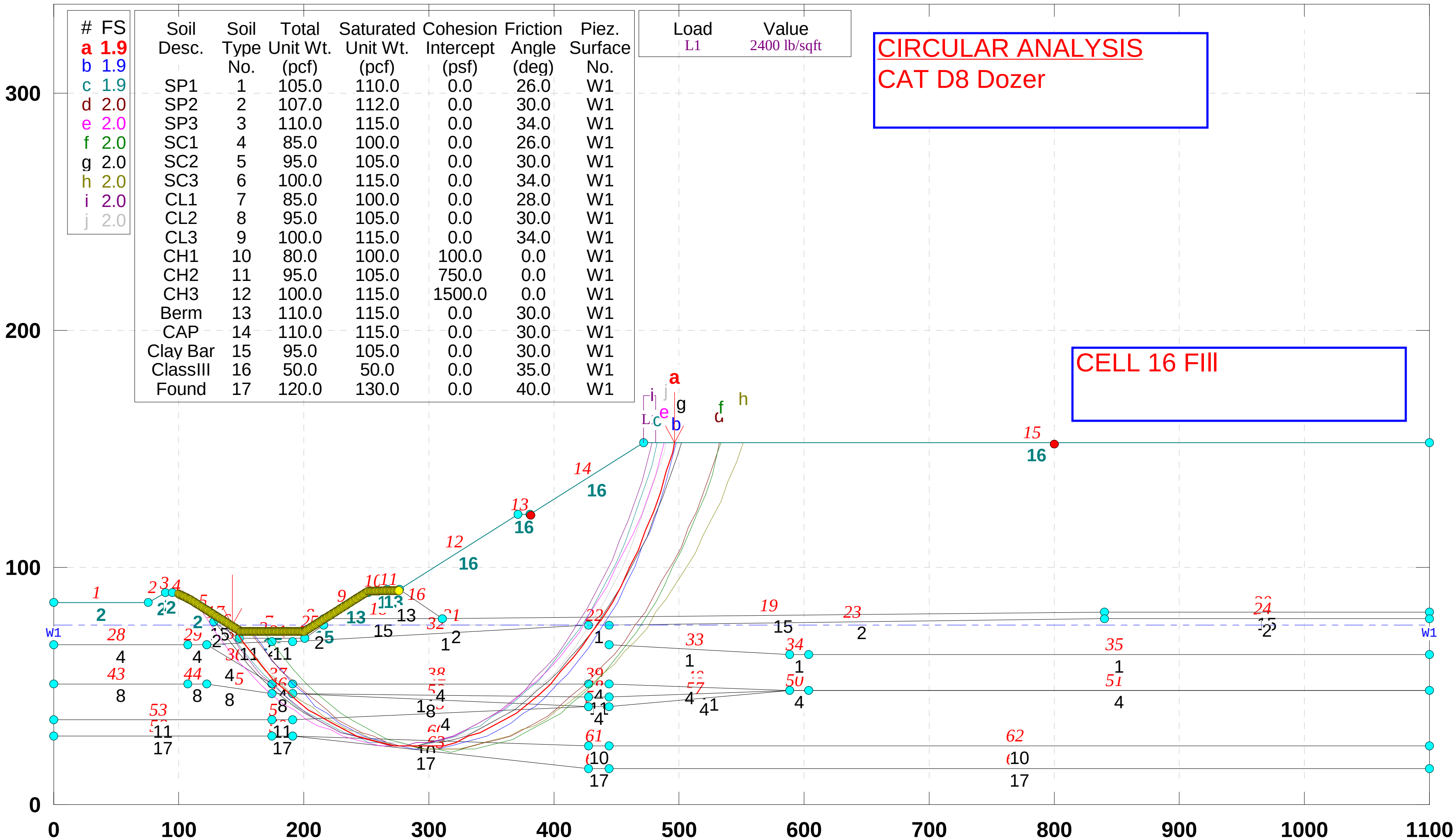
STABL6H FSmin=2.0

Safety Factors Are Calculated By The Modified Bishop Method

STED

Angelos Class III Cell 16 Expansion Cell 16 _ North South Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\NS_CEL~1\NS_CEL~1.PL2   Run By: Civil Design Service, Inc   3/29/2016   7:03PM



#	FS
a	1.9
b	1.9
c	1.9
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.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

Load	Value
L1	2400 lb/sqft

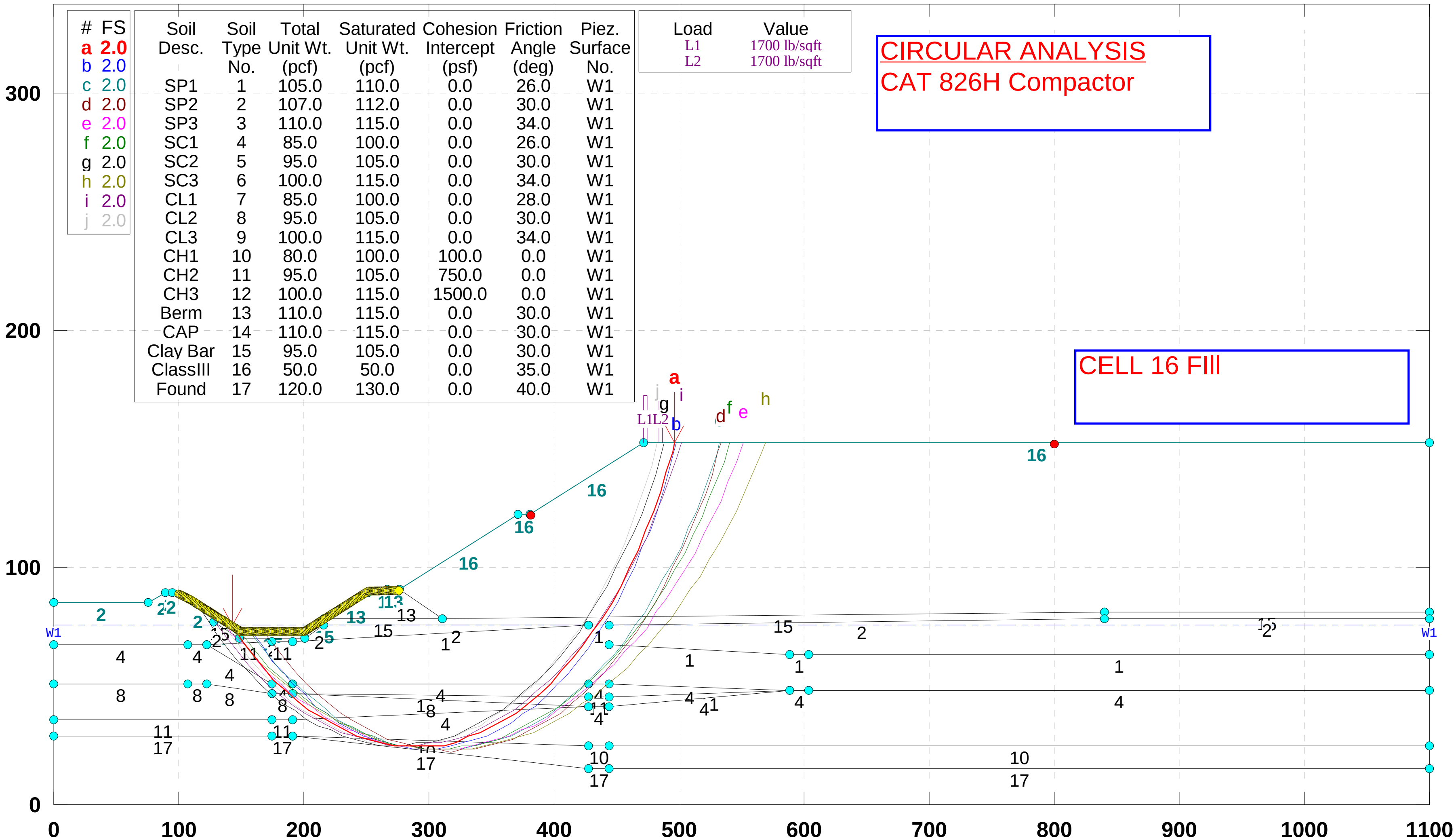
STABL6H FSmin=1.9

Safety Factors Are Calculated By The Modified Bishop Method

STED

Angelos Class III Cell 16 Expansion Cell 16 _ North South Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\NS_CEL~1\NS_CEL~1.PL2   Run By: Civil Design Service, Inc   3/29/2016   7:13PM



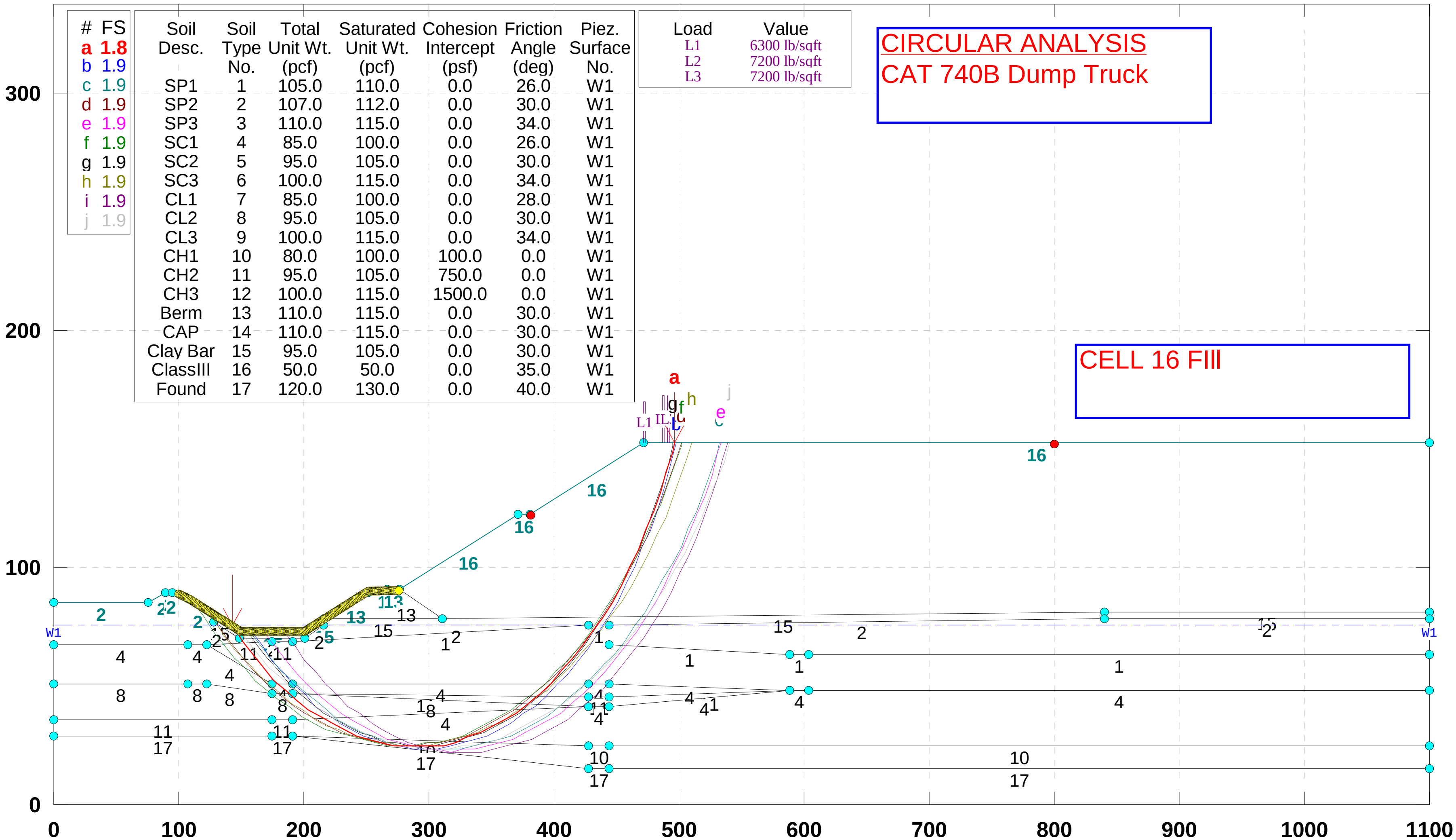
STABL6H FSmin=2.0

Safety Factors Are Calculated By The Modified Bishop Method

STED

Angelos Class III Cell 16 Expansion Cell 16 _ North South Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\NS_CEL~1\NS_CEL~1.PL2 Run By: Civil Design Service, Inc 3/29/2016 7:16PM



Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

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

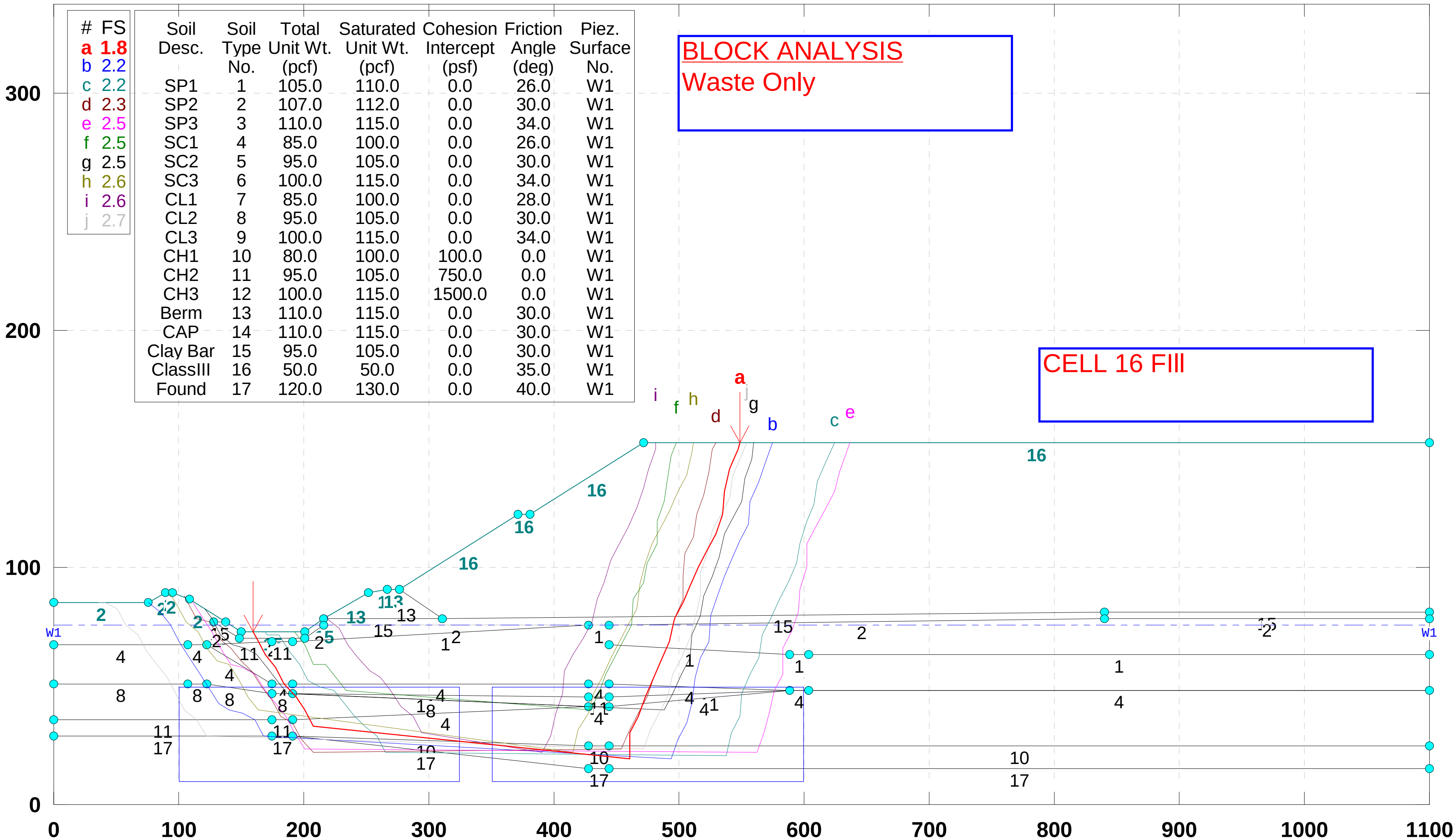
STABL6H FSmin=1.8

Safety Factors Are Calculated By The Modified Bishop Method

STED

Angelos Class III Cell 16 Expansion Cell 16 _ North South Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\NS_CEL~1\NS_CEL~1.PL2 Run By: Civil Design Service, Inc 3/29/2016 7:23PM



Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=1.8

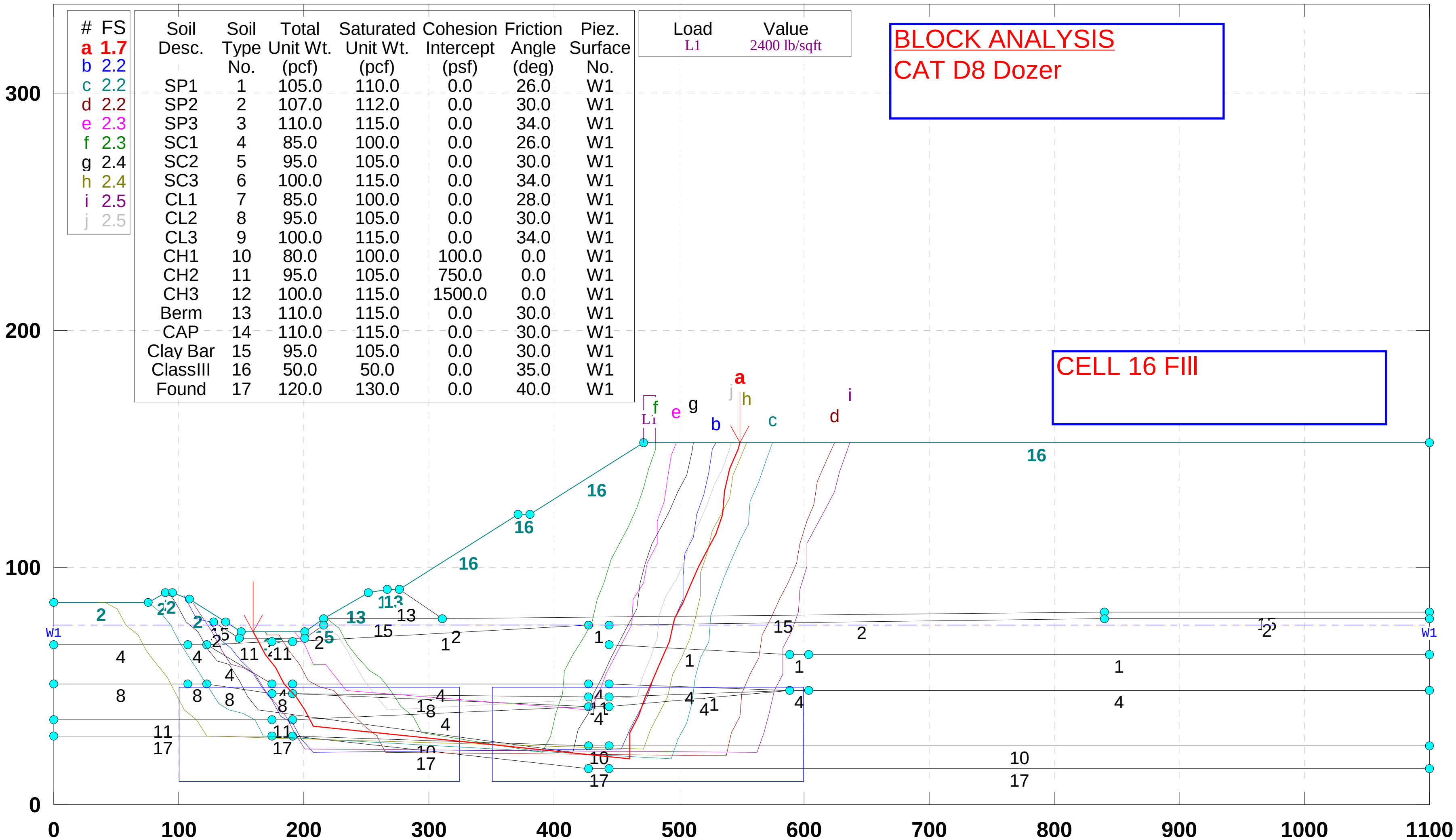
Safety Factors Are Calculated By The Modified Janbu Method

STED

Angelos Class III Cell 16 Expansion Cell 16 _ North South Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\NS_CEL~1\NS_CEL~1.PL2 Run By: Civil Design Service, Inc 3/29/2016 7:22PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1



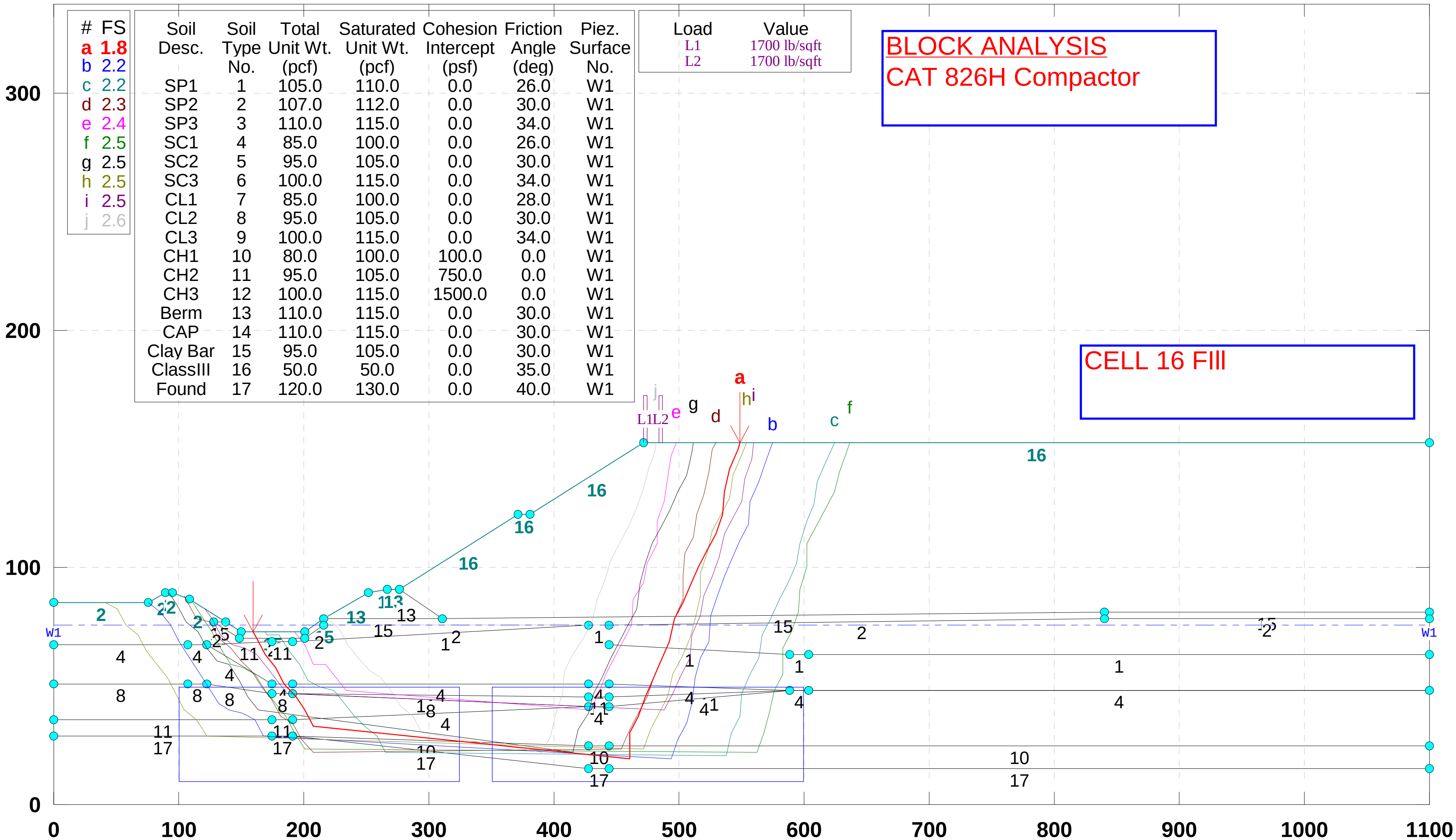
STABL6H FSmin=1.7

Safety Factors Are Calculated By The Modified Janbu Method

STED

Angelos Class III Cell 16 Expansion Cell 16 _ North South Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\NS_CEL~1\NS_CEL~1.PL2 Run By: Civil Design Service, Inc 3/29/2016 7:21PM



#	FS
a	1.8
b	2.2
c	2.2
d	2.3
e	2.4
f	2.5
g	2.5
h	2.5
i	2.5
j	2.6

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

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

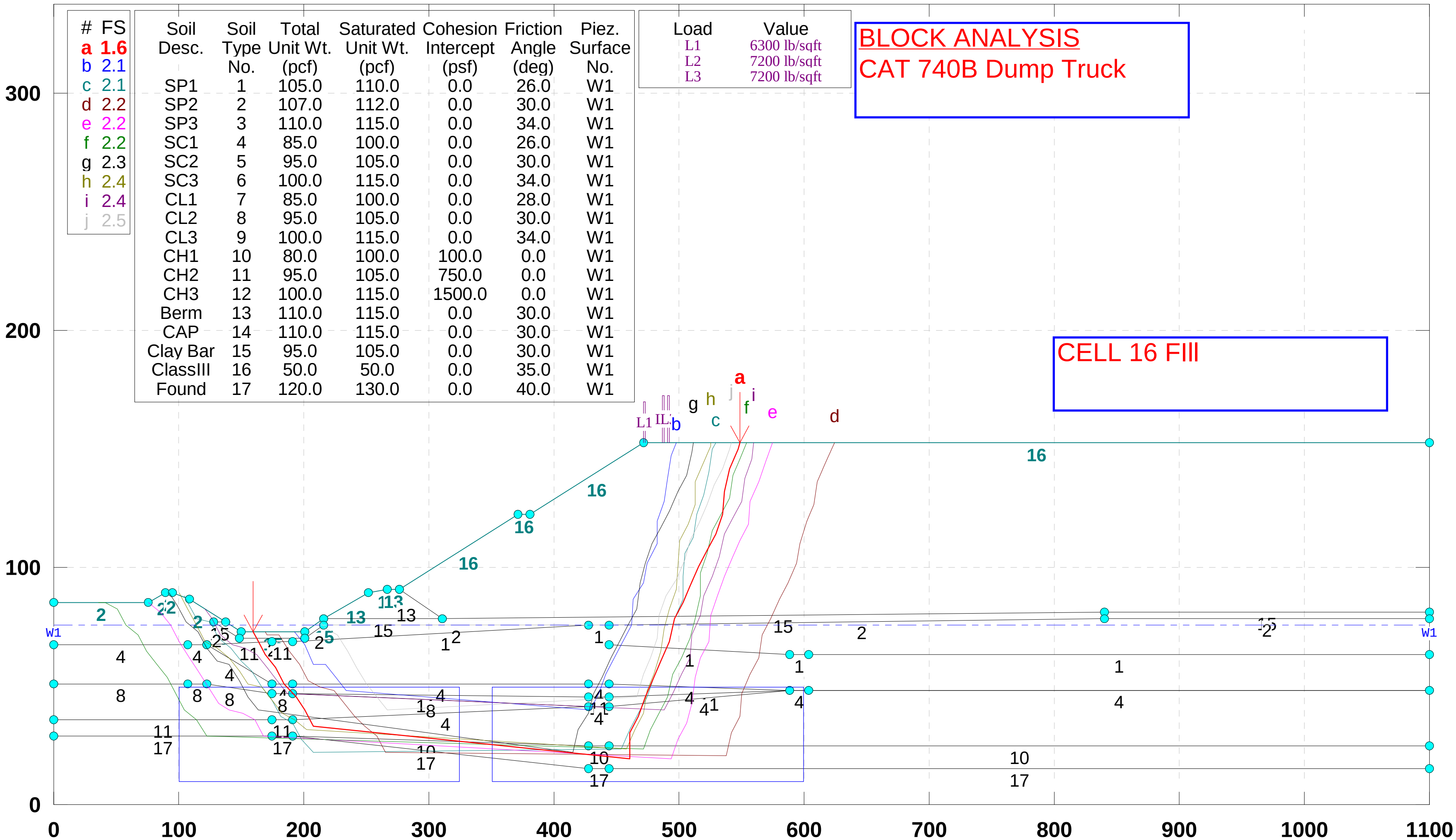
STABL6H FSmin=1.8

Safety Factors Are Calculated By The Modified Janbu Method

STED

Angelos Class III Cell 16 Expansion Cell 16 _ North South Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\NS_CEL~1\NS_CEL~1.PL2   Run By: Civil Design Service, Inc   3/29/2016   7:18PM



#	FS
a	1.6
b	2.1
c	2.1
d	2.2
e	2.2
f	2.2
g	2.3
h	2.4
i	2.4
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.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	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 Janbu Method

STED

ATTACHMENT E

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/2016
Time of Run: 5:16PM
Run By: Civil Design Service, Inc
Input Data Filename: C:ew_cel~1.
Output Filename: C:ew_cel~1.OUT
Plotted Output Filename: C:ew_cel~1.PLT
PROBLEM DESCRIPTION Angelos Class III Cell 16 Expansion
Full Buildout _ East/West Section

BOUNDARY COORDINATES
13 Top Boundaries
57 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	85.00	117.00	95.00	2
2	117.00	95.00	156.00	77.00	2
3	156.00	77.00	168.00	73.00	15
4	168.00	73.00	214.00	73.00	15
5	214.00	73.00	238.00	81.00	15
6	238.00	81.00	294.40	99.80	13
7	294.40	99.80	309.40	100.00	13
8	309.40	100.00	384.40	125.00	14
9	384.40	125.00	394.40	125.00	14
10	394.40	125.00	484.40	155.00	14
11	484.40	155.00	494.40	155.00	14
12	494.40	155.00	1001.10	174.00	14
13	1001.10	174.00	1100.00	174.00	14
14	309.40	100.00	318.90	100.00	13
15	318.90	100.00	384.90	122.00	16
16	384.90	122.00	394.90	122.00	16
17	394.90	122.00	484.90	152.00	16
18	484.90	152.00	494.40	152.00	16
19	494.40	152.00	1001.10	171.00	16
20	1001.10	171.00	1100.00	171.00	16
21	318.90	100.00	375.90	81.00	13
22	238.00	81.00	1100.00	81.00	15
23	146.50	77.00	156.00	77.00	15
24	146.50	77.00	167.50	70.00	2
25	167.50	70.00	214.50	70.00	2
26	214.50	70.00	238.50	78.00	2
27	238.50	78.00	354.20	78.00	2
28	354.20	78.00	421.10	78.00	11
29	421.10	78.00	464.50	78.00	4
30	464.50	78.00	1067.00	78.00	5
31	1067.00	78.00	1100.00	78.00	2
32	.00	68.30	207.50	68.30	11
33	207.50	68.30	223.50	68.30	11
34	223.50	68.30	354.20	78.00	11
35	.00	51.30	207.50	51.30	4
36	207.50	51.30	223.50	51.30	4
37	223.50	51.30	421.10	78.00	4
38	.00	46.30	207.50	46.30	8
39	207.50	46.30	223.50	46.30	8
40	223.50	46.30	464.50	78.00	5
41	223.50	46.30	363.00	59.70	8
42	363.00	59.70	502.50	73.00	4
43	502.50	73.00	518.50	73.00	4
44	518.50	73.00	796.50	66.00	4
45	796.50	66.00	812.50	66.00	4
46	812.50	66.00	1067.00	78.00	3
47	812.50	66.00	1067.00	73.00	5
48	1067.00	73.00	1100.00	74.00	5
49	812.50	66.00	1067.00	63.00	4
50	1067.00	63.00	1100.00	63.00	4
51	.00	36.30	207.50	36.30	11

52	207.50	36.30	223.50	36.30	11
53	223.50	36.30	363.00	59.70	11
54	223.50	29.30	363.00	59.70	11
55	.00	29.30	207.50	29.30	17
56	207.50	29.30	223.50	29.30	17
57	223.50	29.30	1100.00	29.30	17

ISOTROPIC SOIL PARAMETERS

17 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	105.0	110.0	.0	26.0	.00	.0	1
2	107.0	112.0	.0	30.0	.00	.0	1
3	110.0	115.0	.0	34.0	.00	.0	1
4	85.0	100.0	.0	26.0	.00	.0	1
5	95.0	105.0	.0	30.0	.00	.0	1
6	100.0	115.0	.0	34.0	.00	.0	1
7	85.0	100.0	.0	28.0	.00	.0	1
8	95.0	105.0	.0	30.0	.00	.0	1
9	100.0	115.0	.0	34.0	.00	.0	1
10	80.0	100.0	100.0	.0	.00	.0	1
11	95.0	105.0	750.0	.0	.00	.0	1
12	100.0	115.0	1500.0	.0	.00	.0	1
13	110.0	115.0	.0	30.0	.00	.0	1
14	110.0	115.0	.0	30.0	.00	.0	1
15	95.0	105.0	.0	30.0	.00	.0	1
16	50.0	50.0	.0	35.0	.00	.0	1
17	120.0	130.0	.0	40.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	75.00
2	1100.00	75.00

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

200 Trial Surfaces Have Been Generated.

2 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	100.00	50.00	325.00	50.00	40.00
2	350.00	50.00	600.00	50.00	40.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

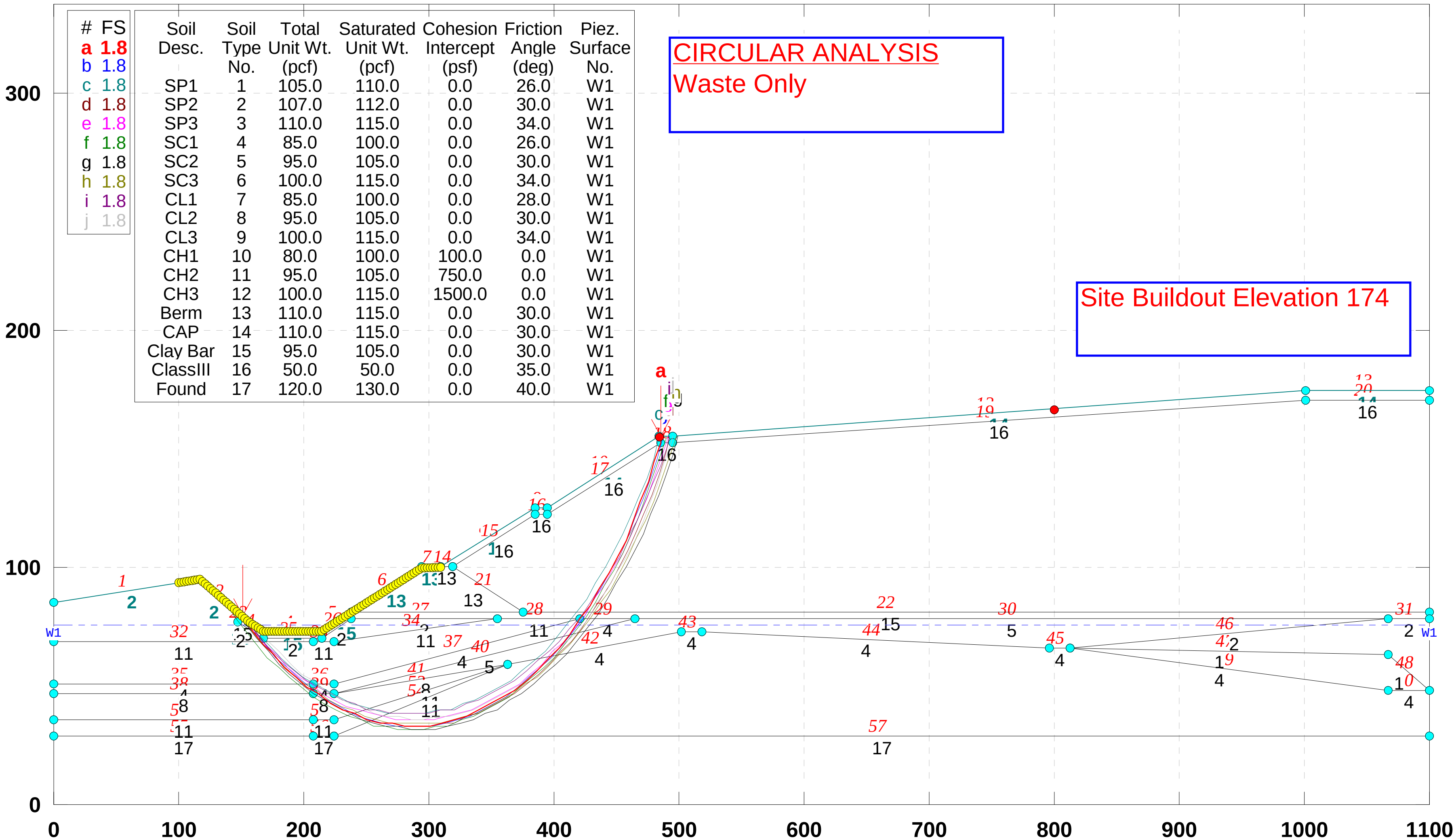
* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 21 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	202.49	73.00
2	203.00	72.72
3	211.41	67.30
4	220.25	62.64
5	229.19	58.16
6	236.33	51.15
7	243.41	44.09
8	251.15	37.76
9	258.30	30.77
10	359.26	46.06
11	366.33	53.14
12	371.53	61.68
13	378.28	69.06
14	382.57	78.09
15	389.64	85.16
16	391.04	95.06
17	391.96	105.02

Angelos Class III Cell 16 Expansion Full Buildout _ East/West Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\EW_FULL\EW_CEL~1.PL2 Run By: Civil Design Service, Inc 3/29/2016 6:05PM



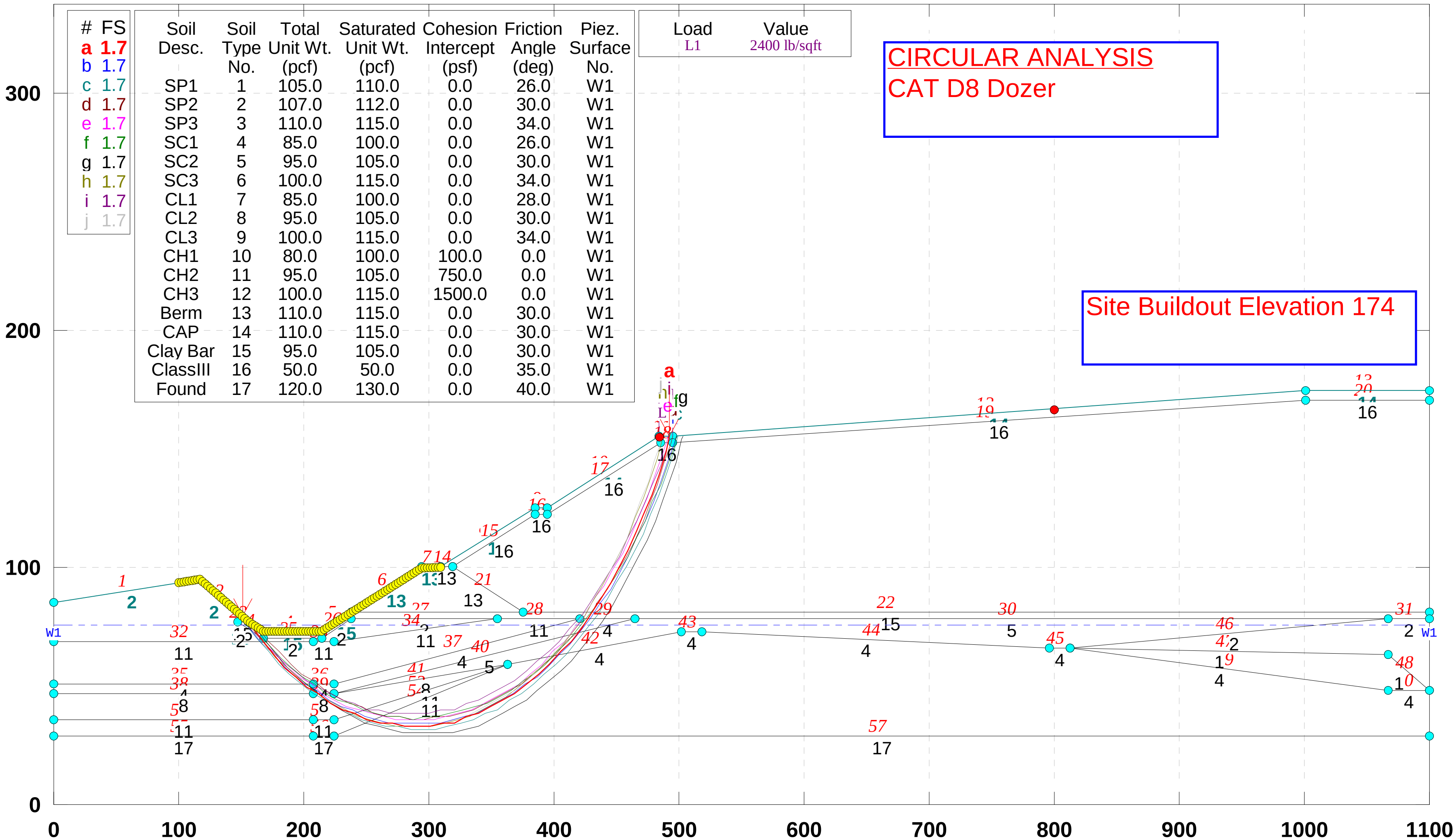
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=1.8

Safety Factors Are Calculated By The Modified Bishop Method

Angelos Class III Cell 16 Expansion Full Buildout _ East/West Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\EW_FULL\EW_CEL~1.PL2 Run By: Civil Design Service, Inc 3/29/2016 6:08PM



Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

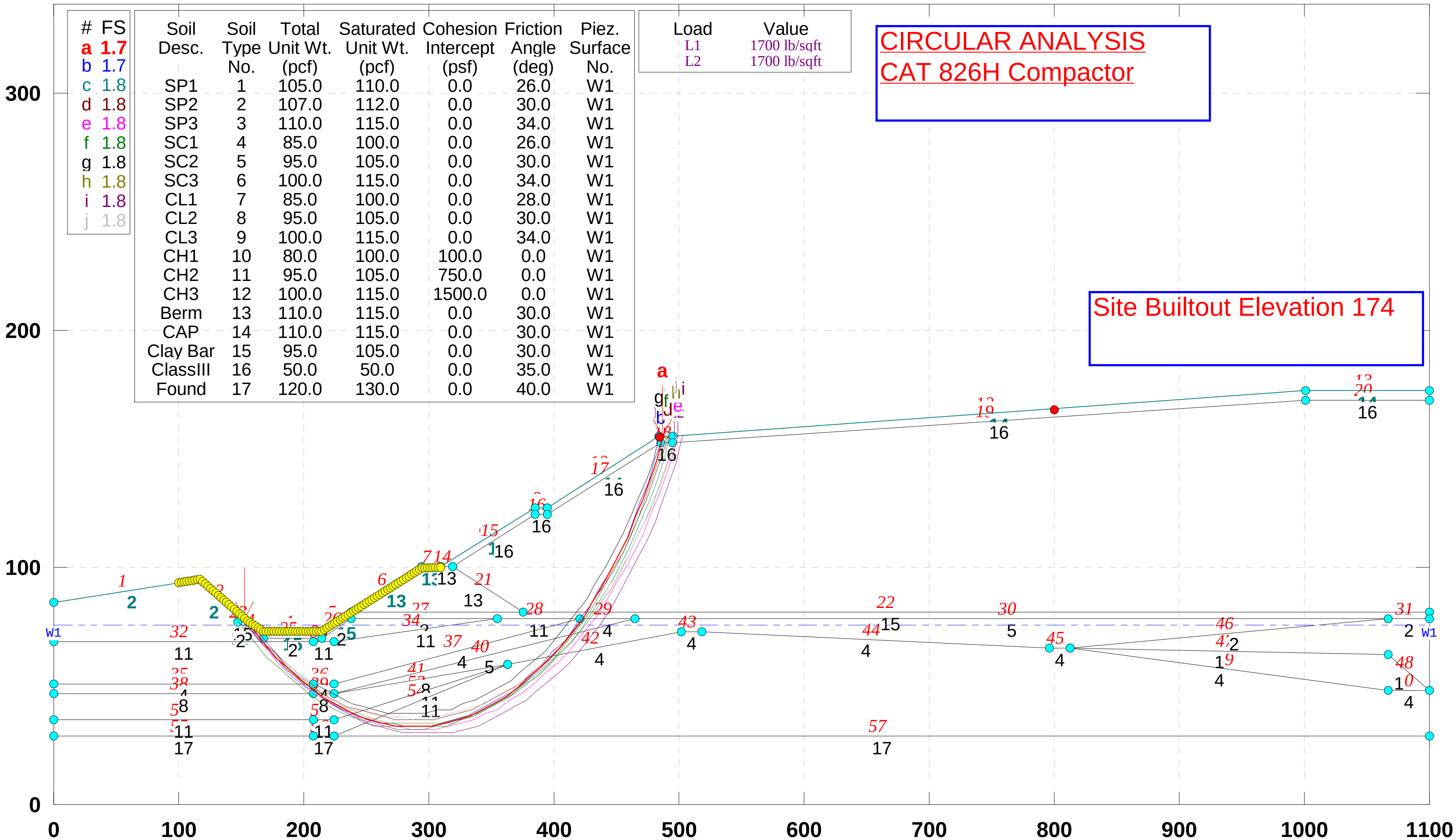
STABL6H FSmin=1.7

Safety Factors Are Calculated By The Modified Bishop Method

STED

Angelos Class III Cell 16 Expansion Full Buildout _ East/West Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\EW_FULL\EW_CEL~1.PL2 Run By: Civil Design Service, Inc 3/29/2016 6:10PM



Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

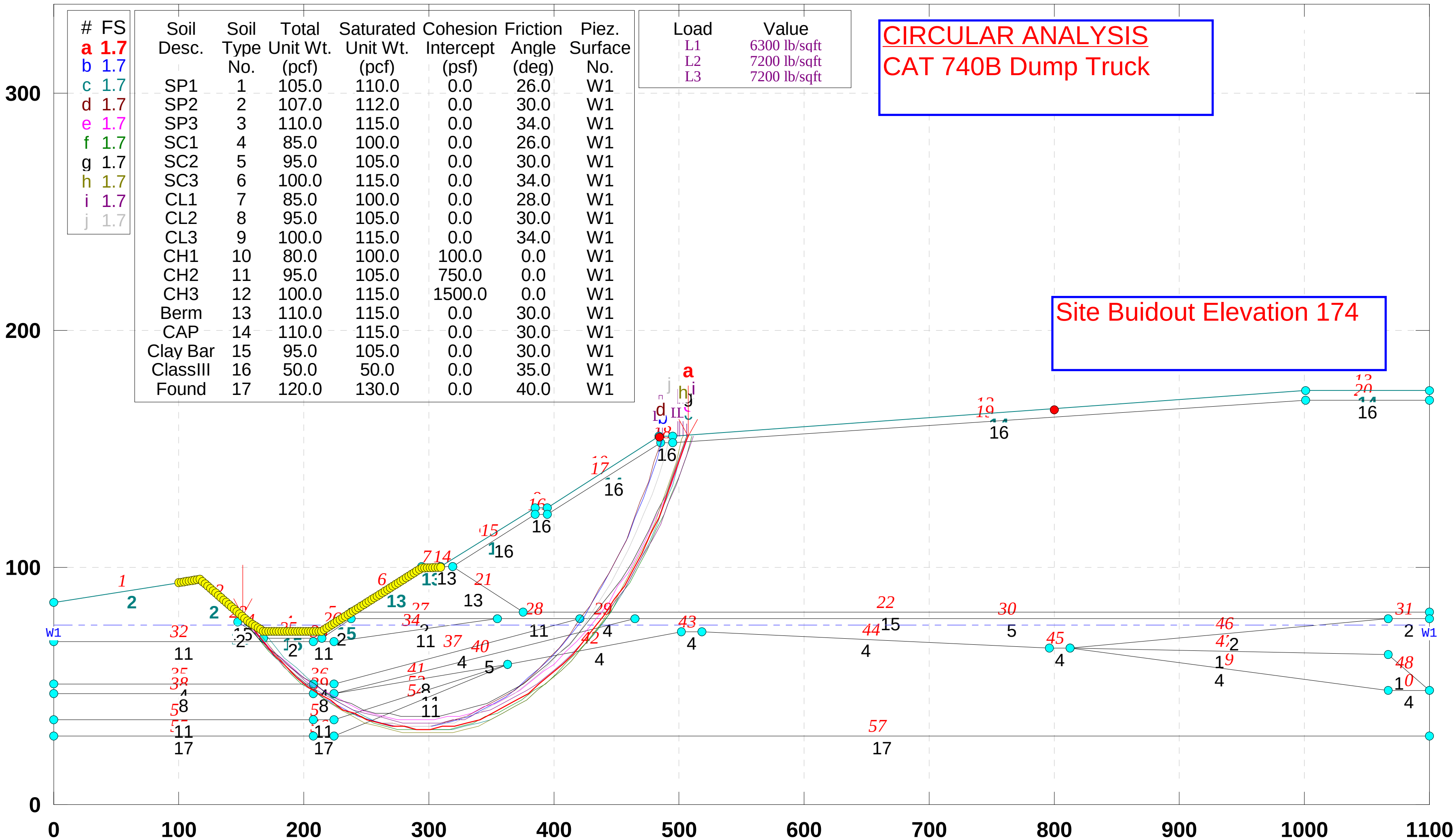
STABL6H FSmin=1.7

Safety Factors Are Calculated By The Modified Bishop Method

STED

Angelos Class III Cell 16 Expansion Full Buildout _ East/West Section

C:\PCSTABL\STEDWIN\ANGELOS\CLASSI~1\CELL16~1\EW_FULL\EW_CEL~1.PL2 Run By: Civil Design Service, Inc 3/29/2016 6:14PM



Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=1.7
Safety Factors Are Calculated By The Modified Bishop Method

STED

Angelos Class III Cell 16 Expansion Full Buildout _ East/West Section

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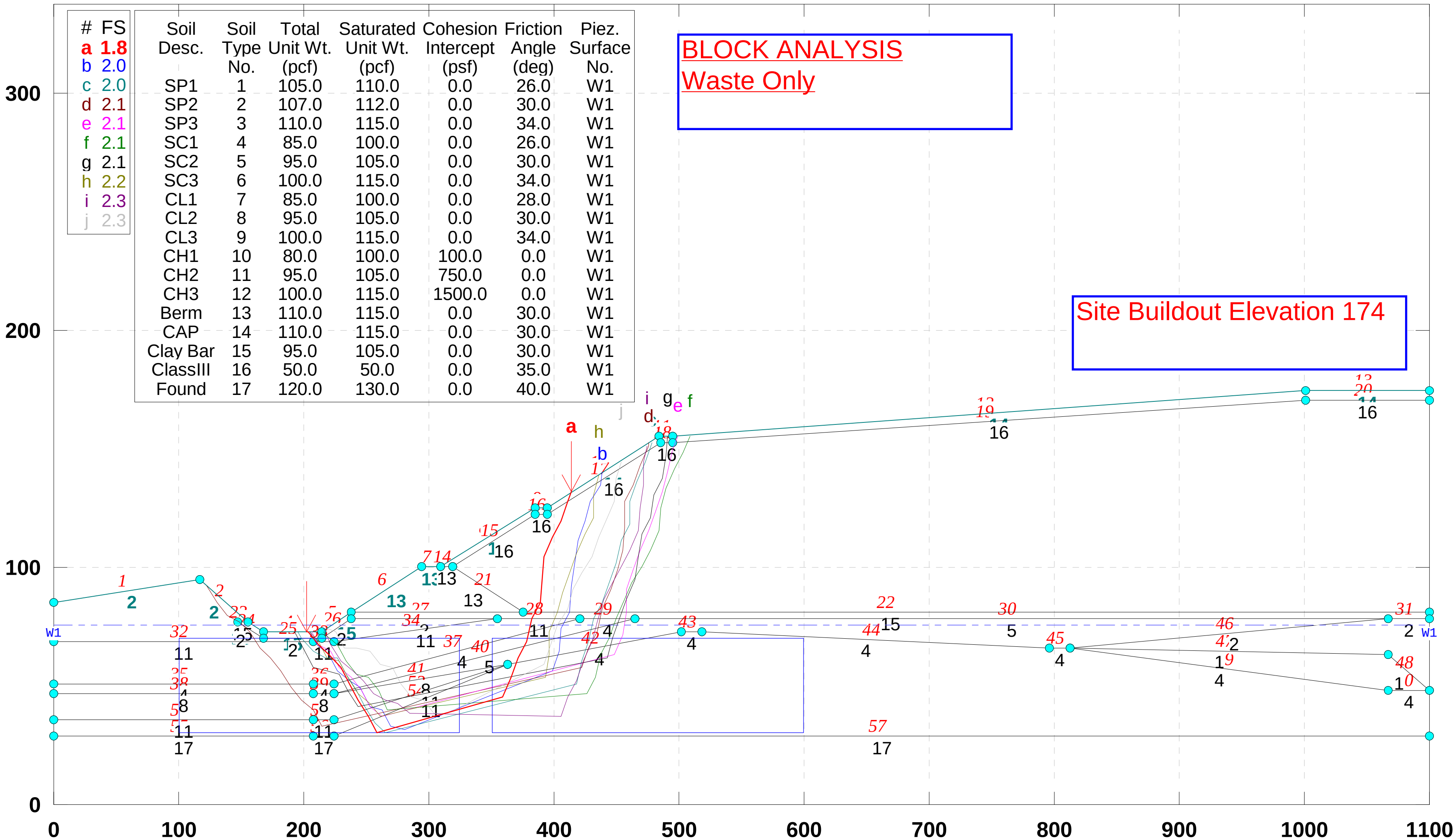

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=1.8

Safety Factors Are Calculated By The Modified Janbu Method

STED

Angelos Class III Cell 16 Expansion Full Buildout _ East/West Section

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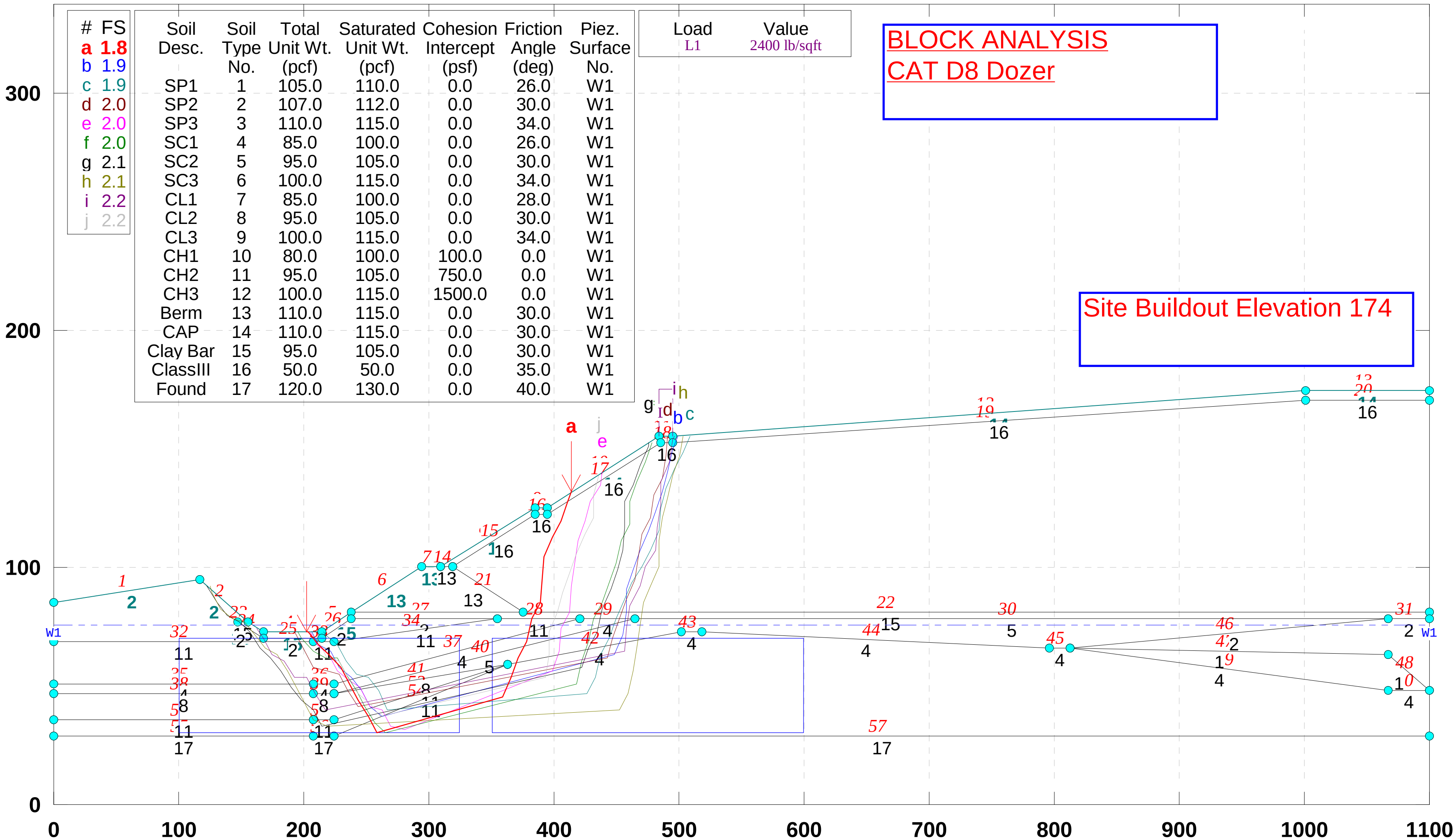

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=1.8

Safety Factors Are Calculated By The Modified Janbu Method

STED

Angelos Class III Cell 16 Expansion Full Buildout _ East/West Section

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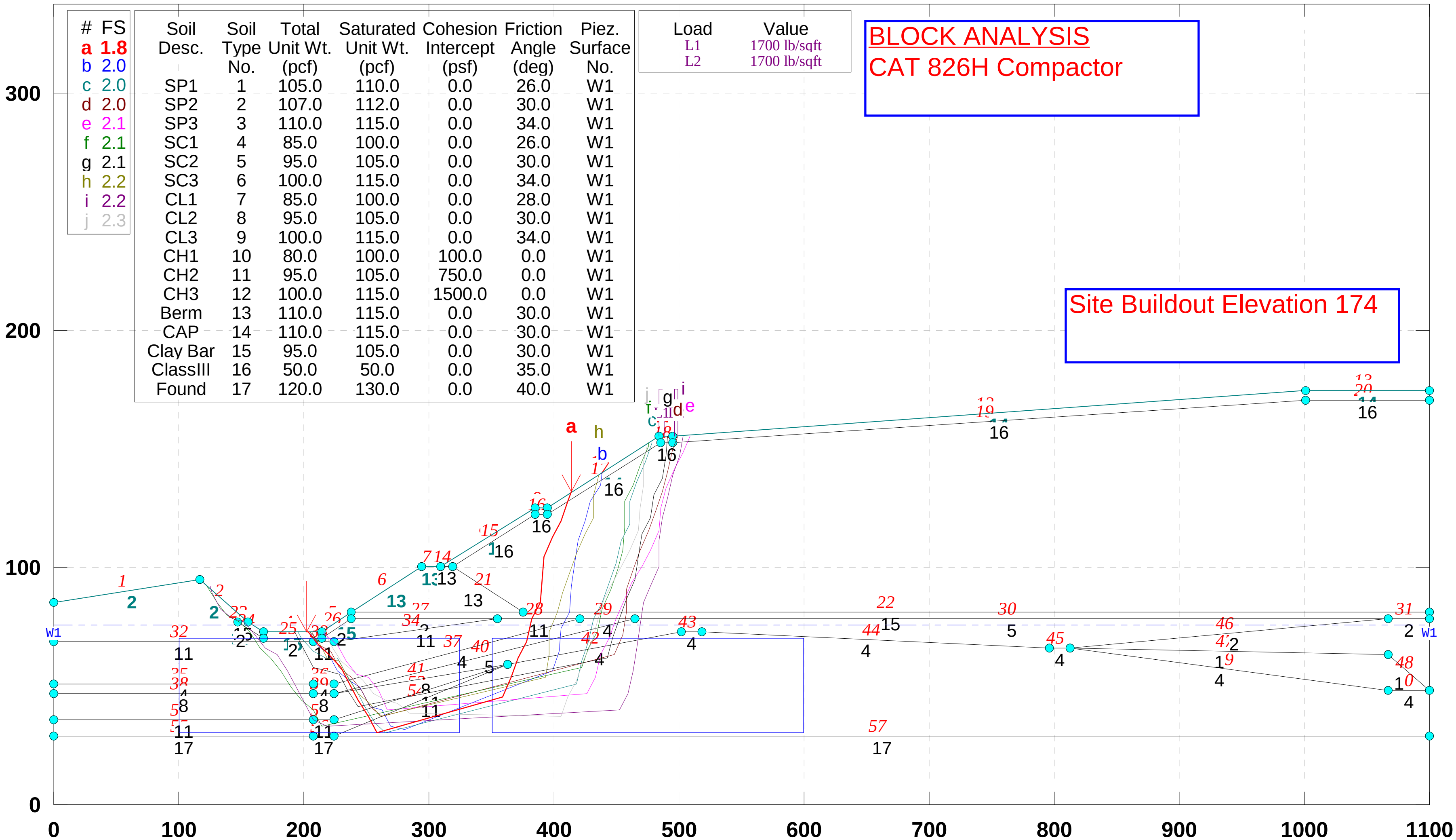

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=1.8

Safety Factors Are Calculated By The Modified Janbu Method

STED

Angelos Class III Cell 16 Expansion Full Buildout _ East/West Section

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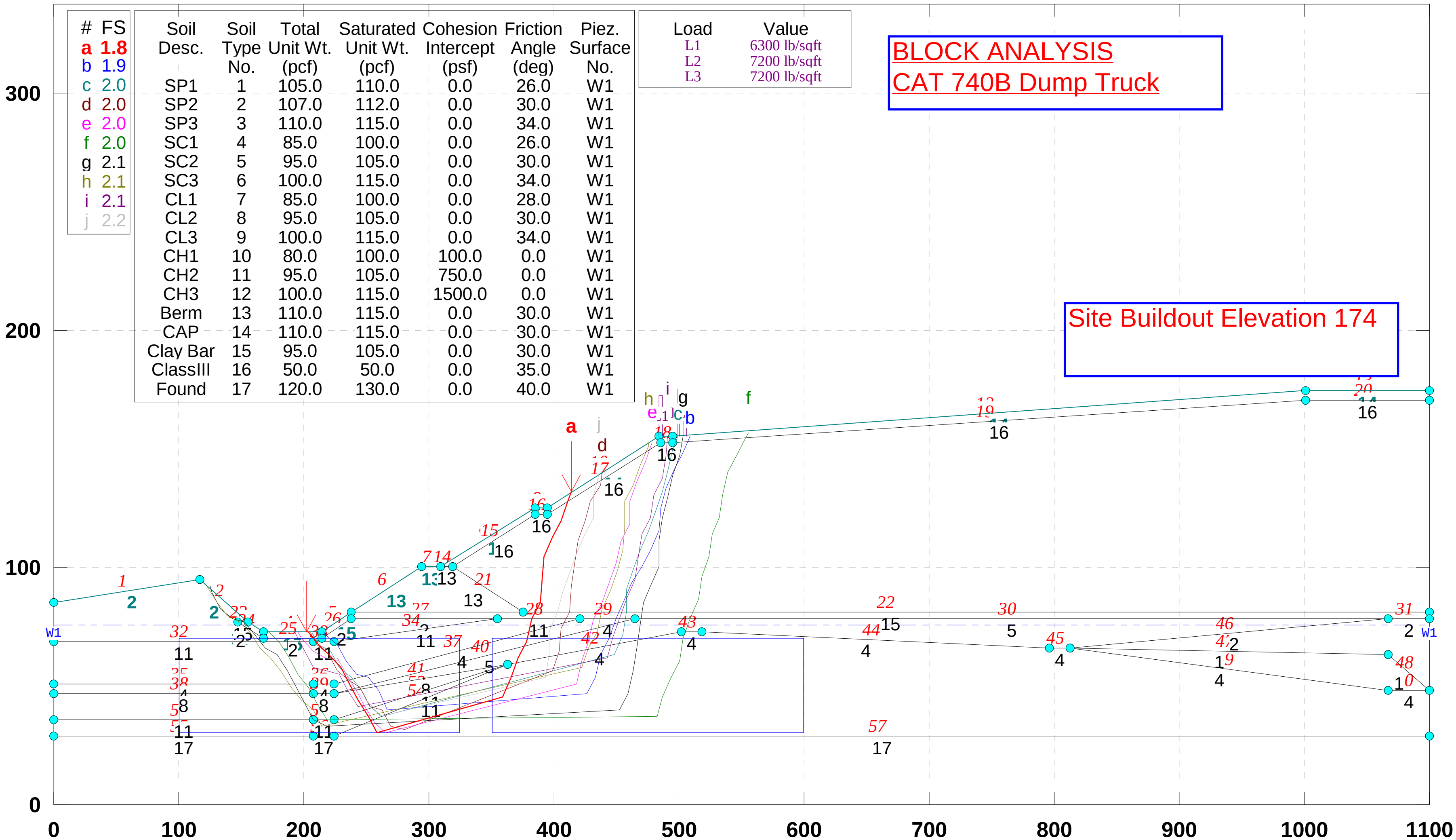

#	FS
a	1.8
b	1.9
c	2.0
d	2.0
e	2.0
f	2.0
g	2.1
h	2.1
i	2.1
j	2.2

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

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

STED

ATTACHMENT F

**** STABL6H ****
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/29/2016
Time of Run: 8:42PM
Run By: Civil Design Service, Inc
Input Data Filename: C:ns_cel~1.
Output Filename: C:ns_cel~1.OUT
Plotted Output Filename: C:ns_cel~1.PLT
PROBLEM DESCRIPTION Angelos Class III Cell 16 Expansion
Full Buildout_ North South Section

BOUNDARY COORDINATES
14 Top Boundaries
75 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	90.00	72.00	90.00	2
2	72.00	90.00	84.00	87.00	2
3	84.00	87.00	114.00	77.00	2
4	114.00	77.00	126.00	73.00	15
5	126.00	73.00	200.00	73.00	15
6	200.00	73.00	215.00	78.00	15
7	215.00	78.00	249.80	89.60	13
8	249.80	89.60	264.80	89.80	13
9	264.80	89.80	370.40	125.00	14
10	370.40	125.00	380.40	125.00	14
11	380.40	125.00	470.40	155.00	14
12	470.40	155.00	480.40	155.00	14
13	480.40	155.00	970.10	174.00	14
14	970.10	174.00	1100.00	174.00	14
15	264.80	89.80	274.30	89.80	13
16	274.30	89.80	370.90	122.00	16
17	370.90	122.00	380.80	122.00	16
18	380.80	122.00	470.90	152.00	16
19	470.90	152.00	480.50	152.00	16
20	480.50	152.00	970.20	171.00	16
21	970.20	171.00	1100.00	171.00	16
22	274.30	89.80	308.30	78.50	13
23	215.00	78.00	308.30	78.50	15
24	308.30	78.50	820.00	81.00	15
25	820.00	81.00	1100.00	81.00	15
26	104.50	77.00	114.00	77.00	15
27	114.00	77.00	125.50	70.00	2
28	125.50	70.00	200.50	70.00	6
29	200.50	70.00	215.50	75.00	6
30	215.50	75.00	394.00	75.90	6
31	394.00	75.90	415.00	76.00	1
32	415.00	76.00	540.40	76.60	1
33	540.40	76.60	725.20	77.50	11
34	725.20	77.50	820.00	81.00	3
35	820.00	81.00	1100.00	81.00	3
36	725.20	77.50	794.00	73.00	11
37	.00	68.00	84.00	68.00	4
38	84.00	68.00	100.00	68.00	4
39	100.00	68.00	125.50	70.00	6
40	100.00	68.00	242.00	58.60	5
41	242.00	58.60	258.00	58.60	5
42	258.00	58.60	316.40	58.60	2
43	316.40	58.60	394.00	75.90	1
44	497.00	66.00	540.40	76.60	11
45	.00	51.00	84.00	51.00	17
46	84.00	51.00	100.00	51.00	17
47	100.00	51.00	242.00	58.60	5
48	100.00	51.00	242.00	45.60	17
49	242.00	45.60	258.00	45.60	17
50	258.00	45.60	316.40	58.60	1
51	258.00	45.60	399.00	50.80	4

52	399.00	50.80	415.00	50.80	4
53	415.00	50.80	497.00	66.00	4
54	258.00	45.60	399.00	45.60	11
55	399.00	45.60	415.00	45.60	11
56	415.00	45.60	497.00	66.00	11
57	415.00	40.80	579.00	66.10	5
58	579.00	66.10	595.00	66.10	5
59	595.00	66.10	794.00	73.00	5
60	794.00	73.00	810.00	73.00	5
61	810.00	73.00	1100.00	73.00	5
62	415.00	40.80	579.00	56.10	4
63	579.00	56.10	595.00	56.10	4
64	595.00	56.10	794.00	63.00	4
65	794.00	63.00	810.00	63.00	4
66	810.00	63.00	1100.00	63.00	4
67	258.00	45.60	290.50	40.80	10
68	290.50	40.80	399.00	40.80	4
69	399.00	40.80	415.00	40.80	4
70	290.50	40.80	399.00	24.80	10
71	399.00	24.80	415.00	24.80	10
72	415.00	24.80	1100.00	24.80	10
73	258.00	45.60	399.00	15.80	17
74	399.00	15.80	415.00	15.80	17
75	415.00	15.80	1100.00	15.80	17

ISOTROPIC SOIL PARAMETERS

17 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	105.0	110.0	.0	26.0	.00	.0	1
2	107.0	112.0	.0	30.0	.00	.0	1
3	110.0	115.0	.0	34.0	.00	.0	1
4	85.0	100.0	.0	26.0	.00	.0	1
5	95.0	105.0	.0	30.0	.00	.0	1
6	100.0	115.0	.0	34.0	.00	.0	1
7	85.0	100.0	.0	28.0	.00	.0	1
8	95.0	105.0	.0	30.0	.00	.0	1
9	100.0	115.0	.0	34.0	.00	.0	1
10	80.0	100.0	100.0	.0	.00	.0	1
11	95.0	105.0	750.0	.0	.00	.0	1
12	100.0	115.0	1500.0	.0	.00	.0	1
13	110.0	115.0	.0	30.0	.00	.0	1
14	110.0	115.0	.0	30.0	.00	.0	1
15	95.0	105.0	.0	30.0	.00	.0	1
16	50.0	50.0	.0	35.0	.00	.0	1
17	120.0	130.0	.0	40.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	75.00
2	1100.00	75.00

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	470.40	480.90	2400.0	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.

SURCHARGE BOUNDARY LOAD DATA HAS BEEN SUPPRESSED

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

200 Trial Surfaces Have Been Generated.

2 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)

Angelos Class III Cell 16 Expansion Full Buildout_ North South Section

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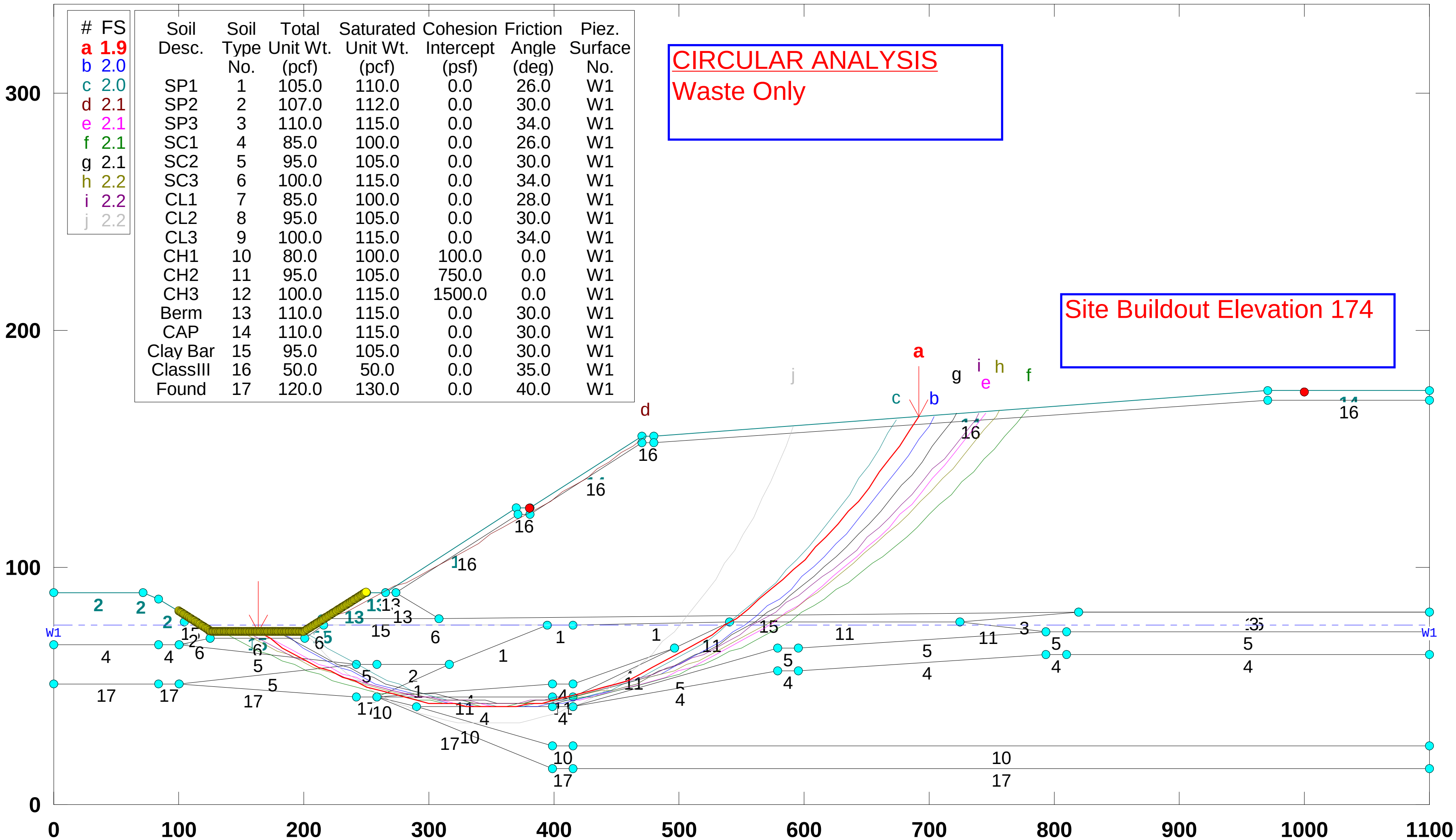

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=1.9

Safety Factors Are Calculated By The Modified Bishop Method

STED

Angelos Class III Cell 16 Expansion Full Buildout_ North South Section

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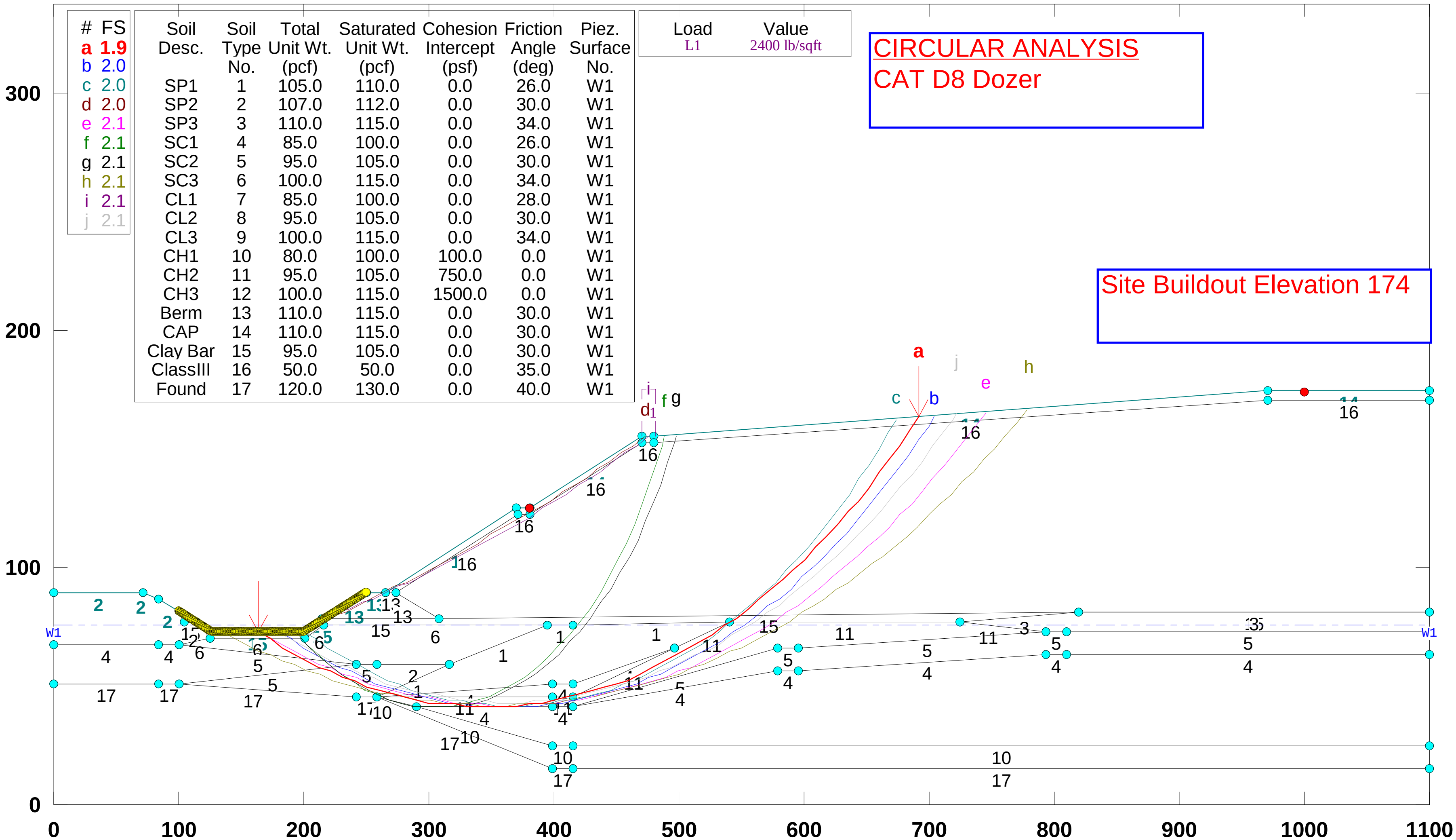

#	FS
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b	2.0
c	2.0
d	2.0
e	2.1
f	2.1
g	2.1
h	2.1
i	2.1
j	2.1

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=1.9

Safety Factors Are Calculated By The Modified Bishop Method

STED

Angelos Class III Cell 16 Expansion Full Buildout_ North South Section

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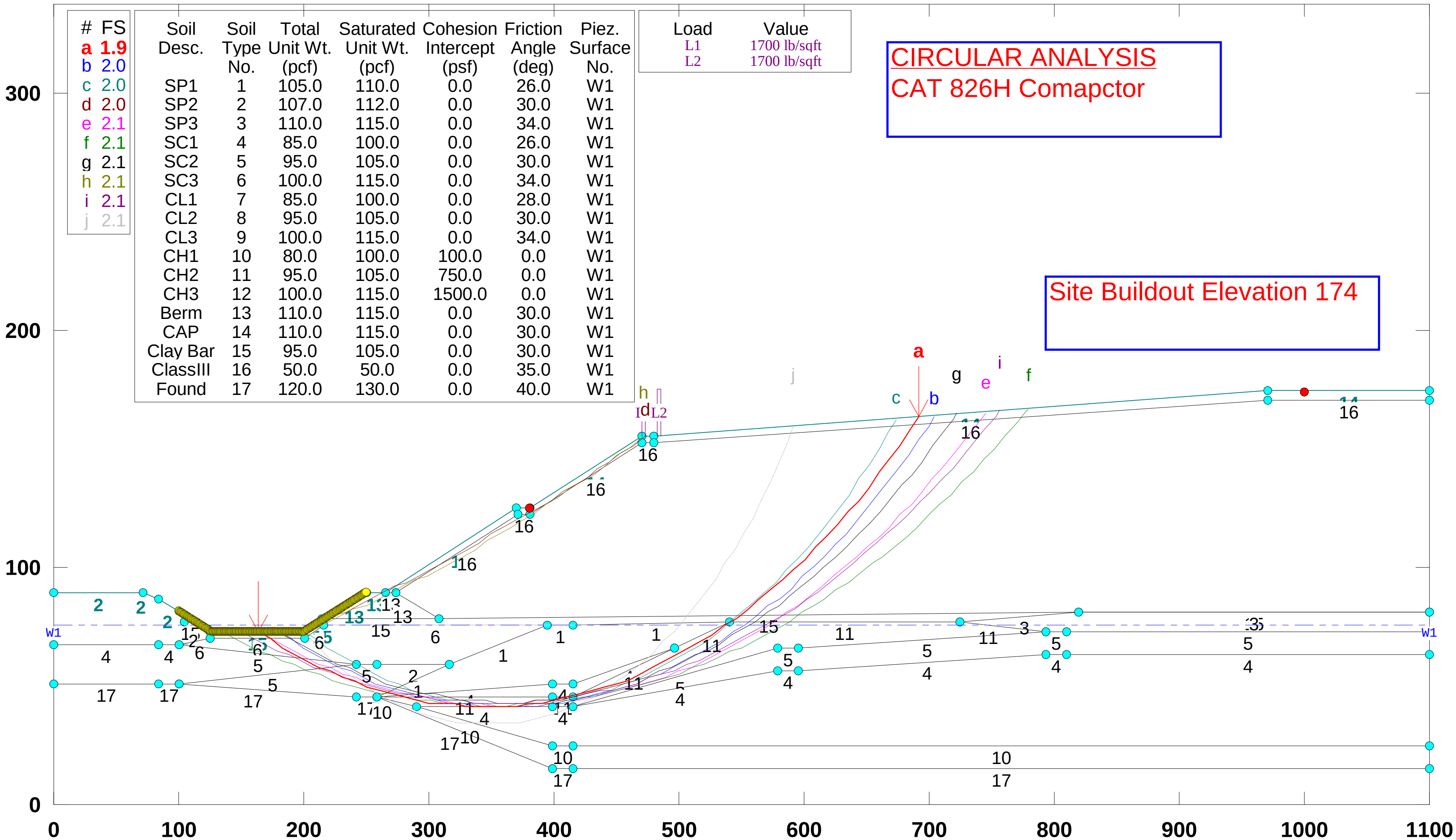

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	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

Angelos Class III Cell 16 Expansion Full Buildout_ North South Section

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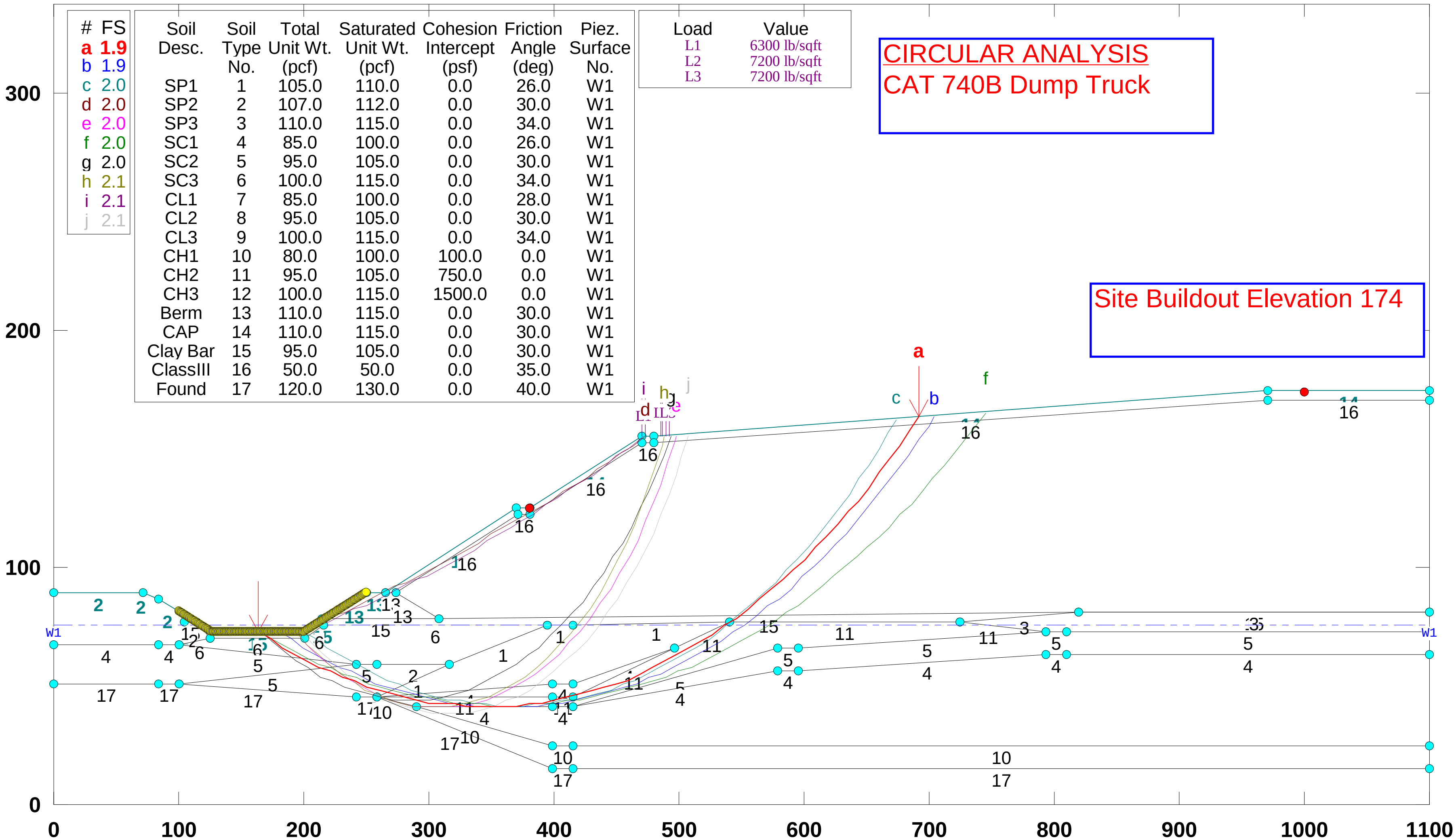

#	FS
a	1.9
b	1.9
c	2.0
d	2.0
e	2.0
f	2.0
g	2.0
h	2.1
i	2.1
j	2.1

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	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

Angelos Class III Cell 16 Expansion Full Buildout_ North South Section

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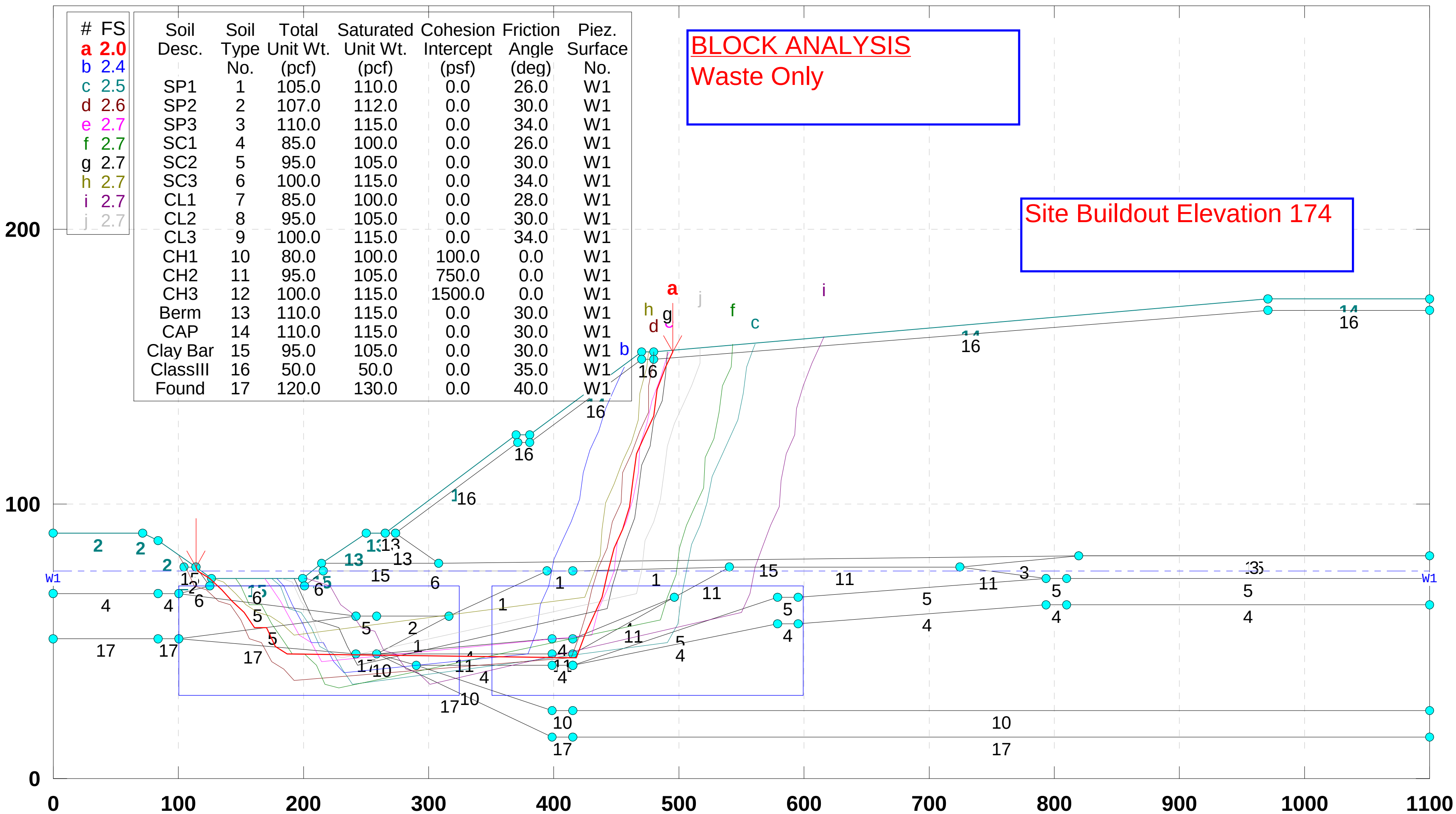

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=2.0

Safety Factors Are Calculated By The Modified Janbu Method

STED

Angelos Class III Cell 16 Expansion Full Buildout_ North South Section

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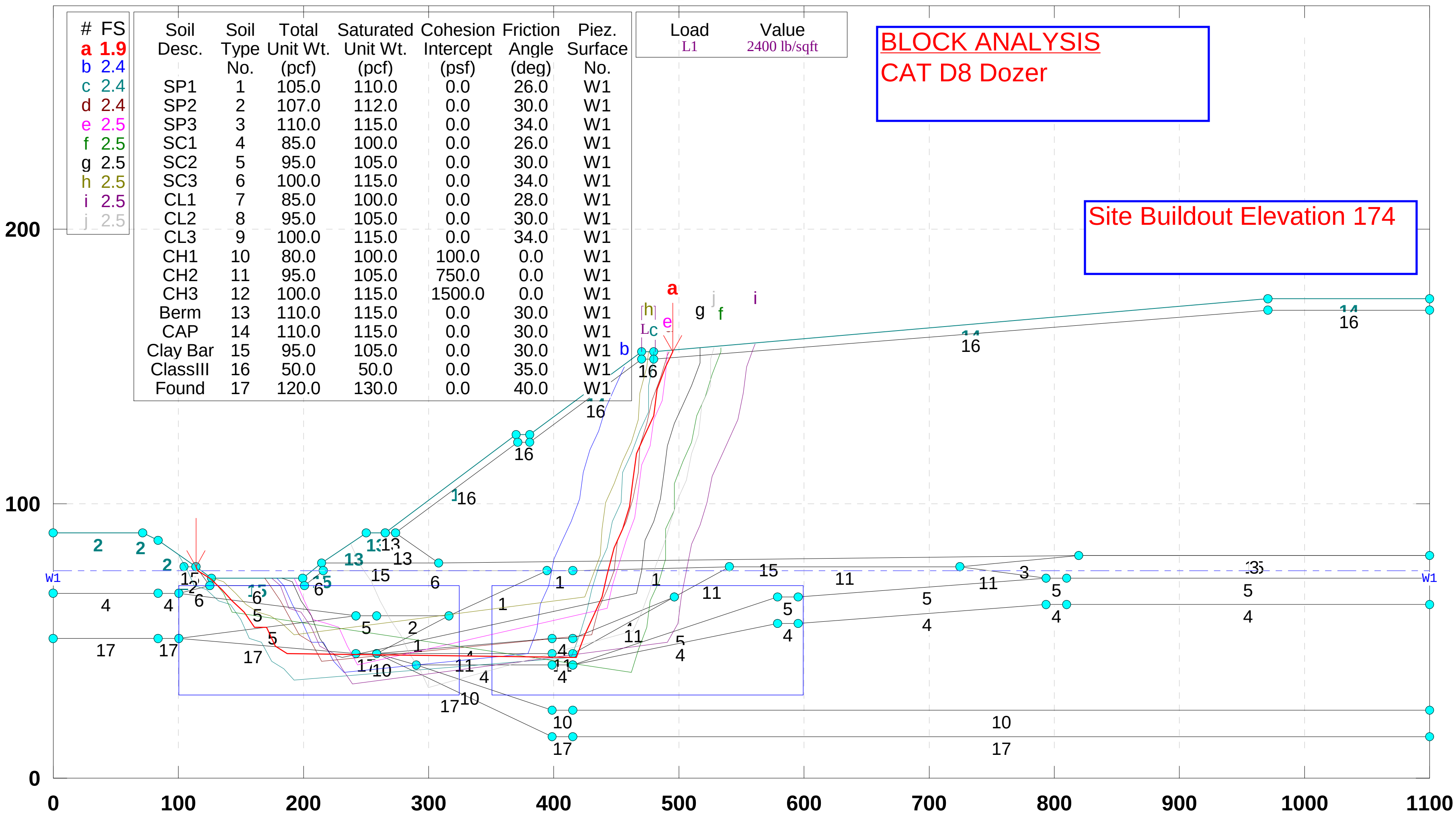

#	FS
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b	2.4
c	2.4
d	2.4
e	2.5
f	2.5
g	2.5
h	2.5
i	2.5
j	2.5

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=1.9

Safety Factors Are Calculated By The Modified Janbu Method

STED

Angelos Class III Cell 16 Expansion Full Buildout_ North South Section

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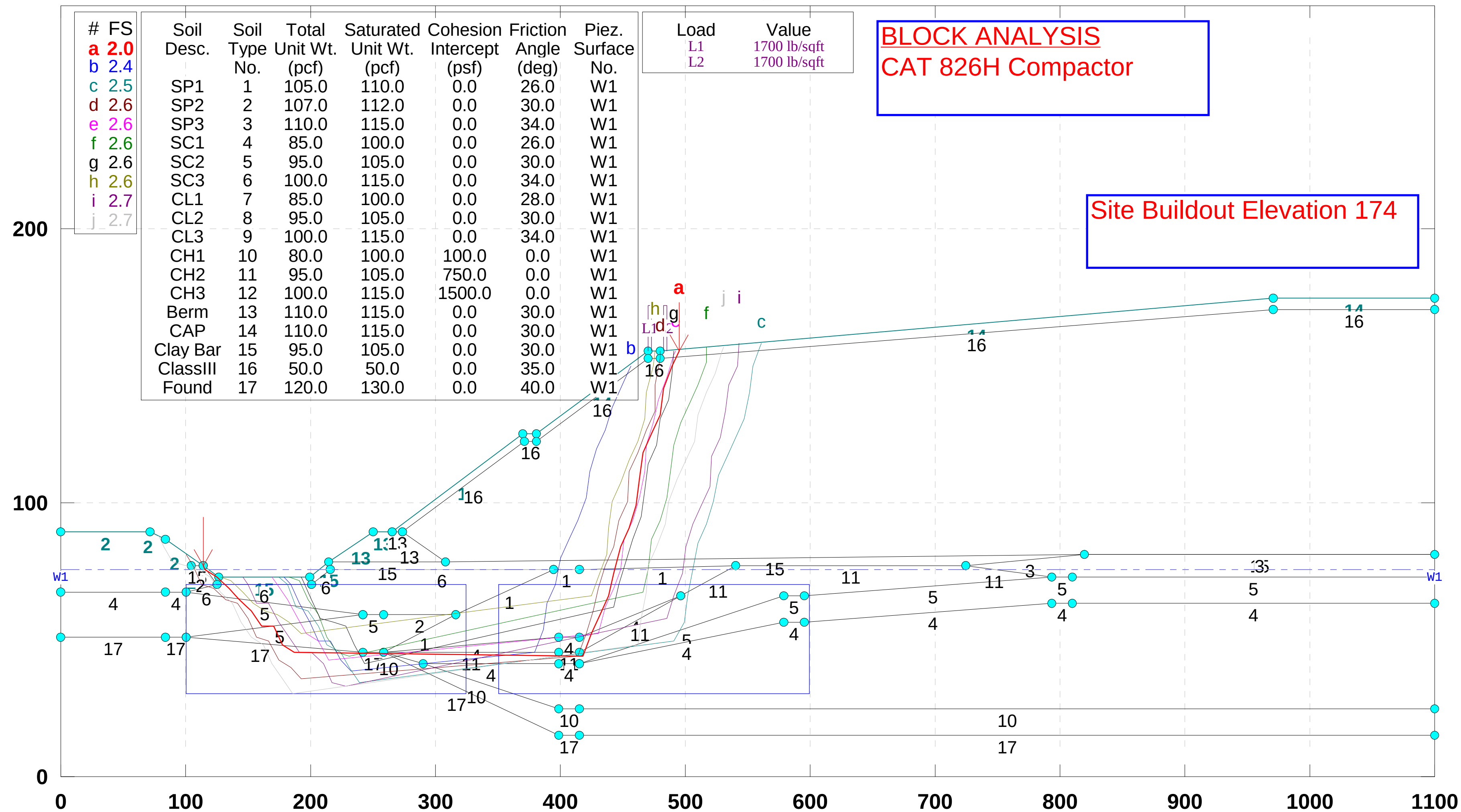

#	FS
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b	2.4
c	2.5
d	2.6
e	2.6
f	2.6
g	2.6
h	2.6
i	2.7
j	2.7

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=2.0

Safety Factors Are Calculated By The Modified Janbu Method

STED

Angelos Class III Cell 16 Expansion Full Buildout_ North South Section

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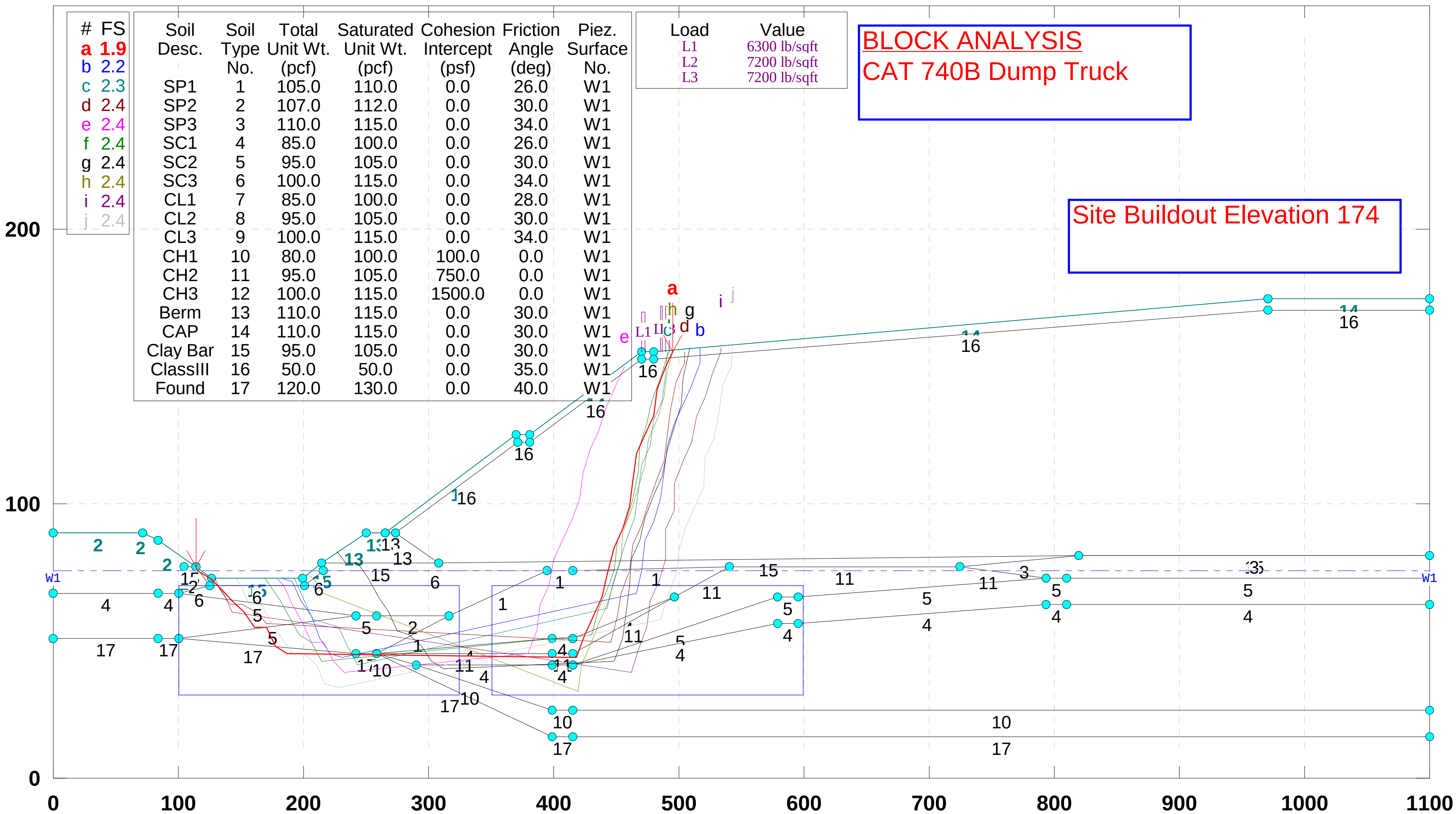

#	FS
a	1.9
b	2.2
c	2.3
d	2.4
e	2.4
f	2.4
g	2.4
h	2.4
i	2.4
j	2.4

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	50.0	50.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	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 Janbu Method

STED

ATTACHMENT G

Soil Properties - Settlement Estimates

Sands, Silty Sands, Clayey Sands

SPT Blow Count	Description	Dr*	Dr avg
0-4	Very Loose	0-15	10
4-10	Loose	15-30	20
10-30	Medium	35-65	50
30-50	Dense	65-85	75
>50	Very Dense	85-100	90

*Dr - Relative Density (Reference 1)

Clays

SPT Blow Count	Description	Dr avg
<2	Very Soft	10
2-4	Soft	20
4-8	Medium	50
8-15	Stiff	75
15-30	Very Stiff	90
>30	Hard	100

References: 1) SPT vs Soil Relative Density
" Soil Mechanics; 1969 Lambe and Whitman, Table 7.4"

2) Soil Types, Soil Properties
" Soil Mechanics; 1969 Lambe and Whitman, Table 3.2"

3) Soil Consolidation Coefficent vs Soil Type
Sands - "Basic Soils Engineering, 1969 B.K. Hough, Table 5-1"

4) Clays - *"Principles of Geotechnical Engineering, 1985, B. Das, Table 7.1"*

Soil Types (Reference 2)

SP

emin	0.2
emax	0.95
Gs	2.65
Moisture	12

SPT N	Eo	γdry	γsat	γmoist	
0-4	0.875	88.2	117.3	98.8	
4-10	0.8	91.9	119.6	102.9	
10-30	0.575	105.0	127.8	117.6	
30-50	0.3875	119.2	136.6	133.5	
>50	0.275	129.7	143.2	143.2	Saturated

SP - Esimated Consolidation Coefficient *Reference 3

Cc =a(Emax-b)

0.03375	a =	0.075
	Emax =	0.95
	b =	0.5

SC

emin	0.3
emax	0.9
Gs	2.65
Moisture	12

SPT N	Eo	γdry	γsat	γmoist
0-4	0.84	89.9	118.4	100.7
4-10	0.78	92.9	120.2	104.0
10-30	0.6	103.4	126.8	115.8
30-50	0.45	114.0	133.4	127.7
>50	0.36	121.6	138.1	136.2

SC - Esimated Consolidation Coefficient *Reference 3

Cc =a(Emax-b)

0.092	a =	0.23
	Emax =	0.9
	b =	0.5

Clays

emin	0.4
emax	2
Gs	2.65
Moisture	30

SPT N	Eo	γdry	γsat	γmoist	
<2	1.84	58.2	98.7	75.7	
2-4	1.68	61.7	100.8	80.2	
4-8	1.2	75.2	109.2	97.7	
8-15	0.8	91.9	119.6	119.4	
15-30	0.56	106.0	128.4	128.4	Saturated
>30	0.4	118.1	135.9	135.9	Saturated

Clay - Esimated Consolidation Coefficient *Reference 4

Cc = (0.156Eo)+0.107

SPT N	Eo	
<2	1.84	0.29774
2-4	1.68	0.27278
4-8	1.2	0.1979
8-15	0.8	0.1355
15-30	0.56	0.09806
>30	0.4	0.0731

Reference No. 1
Settlement

Table 7.4 Standard Penetration Test

Relative Density of Sand		Strength of Clay		
Penetration Resistance N (blows/ft)	Relative Density	Penetration Resistance N (blows/ft)	Unconfined Compressive Strength (tons/ft^2)	Consistency
0–4	Very loose	<2	<0.25	Very soft
4–10	Loose	2–4	0.25–0.50	Soft
10–30	Medium	4–8	0.50–1.00	Medium
30–50	Dense	8–15	1.00–2.00	Stiff
>50	Very dense	15–30	2.00–4.00	Very stiff
		>30	>4.00	Hard

From Terzaghi and Peck, 1948.

In certain countries, such as Holland, subsoil conditions are such that penetration testing has proved to be a relatively reliable technique. More sophisticated techniques [such as the friction jacket cone (Begemann, 1953)] have been widely used.

The vane test has proved to be a very useful method of determining the shear strength of soft clays and silts. Figure 7.6 shows various sizes and shapes of vanes which have been used for field testing. The vane is forced into the ground and then the torque required to rotate the vane is measured. The shear strength is determined from the torque required to shear the soil along the vertical and horizontal edges of the vane.

As later chapters in this book will show, a proper subsoil investigation should include the determination of water pressure at various depths within the subsoil. Methods of determining pore water pressure are discussed in Part IV. Part IV also notes how the permeability of a subsoil can be estimated from pumping tests.

Various load tests and field compaction tests may be highly desirable in important soil projects. In this type of test, a small portion of the subsoil to be loaded by the prototype is subjected to a stress condition in the field which approximates that under the completed structure. The engineer extrapolates the results of the field tests to predict the behavior of the prototype.

7.7 SUBSOIL PROFILES

Figures 7.7 to 7.17 present a group of subsoil profiles and Table 7.5 gives some information on the geological history of the various profiles. The purposes of presenting these profiles are to:

1. Indicate how geological history influences soil characteristics.
2. Give typical values of soil properties.
3. Show dramatically the large variability in soil behavior with depth.
4. Illustrate how engineers have presented subsoil data.

Three considerations were used in the selection of the profiles: first, examples were chosen with different types of geological history; second, most of the profiles are ones for which there are excellent references giving considerably more detail on the characteristics of the soil and engineering problems involved with the particular profile; and finally, most of the profiles selected have been involved in interesting and/or important soil engineering projects.

Some of the soil characteristics shown in the profiles have already been described in this book. These characteristics include water content, unit weight, void ratio, porosity, Atterberg limits, and particle size. Other characteristics, particularly those referring to strength and compressibility, will be discussed in detail in later portions of this book. Reference will then be made back to these profiles.

The profiles illustrate many concepts presented in the preceding parts of this book; some of them are discussed in the remaining part of this section.

Stress History

In a normally consolidated sedimentary soil both the void ratio and water content decrease with depth in the profile, and the strength therefore increases. This characteristic is illustrated in several of the profiles, e.g., the Norwegian marine clay (Fig. 7.7), the Thames Estuary clay (Fig. 7.10), and the Canadian clay (Fig. 7.11). The London clay is overconsolidated since it was compressed by a greater overburden than now exists. Erosion removed some of the original overburden. As would be expected, the overconsolidated London clay does not

Reference No. 2
Settlement

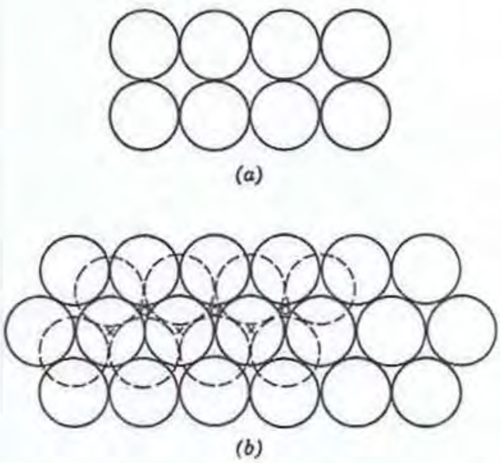

Fig. 3.2 Arrangements of uniform spheres. (*a*) Plan and elevation view: simple cubic packing. (*b*) Plan view: dense packing. Solid circles, first layer; dashed circles, second layer; ∘, location of sphere centers in third layer: face-centered cubic array; ×, location of sphere centers in third layer: close-packed hexagonal array. (From Deresiewicz, 1958.)

these simple packings can be computed from the geometry of the packings, and the results are given in Table 3.2.

This table also gives densities for some typical granular soils in both the "dense" and "loose" states. A variety of tests have been proposed to measure the maximum and

Table 3.2 Maximum and Minimum Densities for Granular Soils

Description	Void Ratio		Porosity (%)		Dry Unit Weight (pcf)	
	e_{max}	e_{min}	n_{max}	n_{min}	$\gamma_{d\,min}$	$\gamma_{d\,max}$
Uniform spheres	0.92	0.35	47.6	26.0	—	—
Standard Ottawa sand	0.80	0.50	44	33	92	110
Clean uniform sand	1.0	0.40	50	29	83	118
Uniform inorganic silt	1.1	0.40	52	29	80	118
Silty sand	0.90	0.30	47	23	87	127
Fine to coarse sand	0.95	0.20	49	17	85	138
Micaceous sand	1.2	0.40	55	29	76	120
Silty sand and gravel	0.85	0.14	46	12	89	146

B. K. Hough, *Basic Soils Engineering*. Copyright © 1957, The Ronald Press Company, New York.

minimum void ratios (Kolbuszewski, 1948). The test to determine the maximum density usually involves some form of vibration. The test to determine minimum density usually involves pouring oven-dried soil into a container. Unfortunately, the details of these tests have not been entirely standardized, and values of the maximum density and minimum density for a given granular soil depend on the procedure used to determine them. By using special measures, one can obtain densities greater than the so-called maximum density. Densities considerably less than the so-called minimum density can be obtained, especially with very fine sands and silts, by slowly sedimenting the soil into water or by fluffing the soil with just a little moisture present.

The smaller the range of particle sizes present (i.e., the more nearly uniform the soil), the smaller the particles, and the more angular the particles, the smaller the minimum density (i.e., the greater the opportunity for building a loose arrangement of particles). The greater the range of particle sizes present, the greater the maximum density (i.e., the voids among the larger particles can be filled with smaller particles).

A useful way to characterize the density of a natural granular soil is with *relative density* D_r, defined as

$$D_r = \frac{e_{max} - e}{e_{max} - e_{min}} \times 100\%$$

$$= \frac{\gamma_{d\,max}}{\gamma_d} \times \frac{\gamma_d - \gamma_{d\,min}}{\gamma_{d\,max} - \gamma_{d\,min}} \times 100\% \qquad (3.1)$$

where

e_{min} = void ratio of soil in densest condition
e_{max} = void ratio of soil in loosest condition
e = in-place void ratio
$\gamma_{d\,max}$ = dry unit weight of soil in densest condition
$\gamma_{d\,min}$ = dry unit weight of soil in loosest condition
γ_d = in-place dry unit weight

Table 3.3 characterizes the density of granular soils on the basis of relative density.

Table 3.3 Density Description

Relative Density (%)	Descriptive Term
0–15	Very loose
15–35	Loose
35–65	Medium
65–85	Dense
85–100	Very dense

MOISTURE TEST
$\omega = \frac{M_s}{M_w}$

Values of water content for natural granular soils vary from less than 0.1% for air-dry sands to more than 40% for saturated, loose sand.

Typical Values of Phase Relationships for Cohesive Soils

The range of values of phase relationships for cohesive soils is much larger than for granular soils. Saturated sodium montmorillonite at low confining pressure can exist at a void ratio of more than 25; saturated clays

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Reference No. 3
Settlement

BASIC SOILS ENGINEERING

B. K. HOUGH

SECOND EDITION

References for Settlement

THE RONALD PRESS COMPANY • NEW YORK

values of 0.5 and 0.270, respectively; a curve plotted on this basis is included in Fig. 5-12 for comparative purposes.

Values of the constants a and b of Eq. (5-7) obtained from tests on laboratory prepared specimens of many different soil types, including those described above, are summarized in Table 5-1. The values given

TABLE 5–1

Values of the Constants of Equation (5–7) for Typical Materials

	Type of Soil	Value of Constant a	Value of Constant b*	
	Uniform cohesionless material ($C_u \leq 2$)			
	Clean gravel	0.05	0.50	
	Coarse sand	0.06	0.50	
SP	Medium sand	0.07	0.50	
	Fine sand	0.08	0.50	
	Inorganic silt	0.10	0.50	
	Well-graded, cohesionless soil			
SP/SM	Silty sand and gravel	0.09	0.20	
	Clean, coarse to fine sand	0.12	0.35	
SM	Coarse to fine silty sand	0.15	0.25	
SC	Sandy silt (inorganic)	0.18 0.21 0.23	0.25	SM/SC
	Inorganic, cohesive soil			
CL	Silt, some clay; silty clay; clay	0.29	0.27	
	Organic, fine-grained soil			
	Organic silt, little clay	0.35	0.50	

* The value of the constant b should be taken as e_{min} whenever the latter is known or can conveniently be determined. Otherwise, use tabulated values as a rough approximation.

for materials such as sand and gravel, which are too coarse for testing in consolidometers of conventional size, represent assumptions based on study of available settlement records.

5–16. GENERALIZATIONS AS TO COMPRESSIBILITY

Before describing procedures for utilizing Eq. (5-7) for evaluation of the compression index in practical applications, it may be instructive to consider certain general aspects of compressibility which are evident from the discussion which has thus far been presented. These generalities may be stated in the following manner.

At a given void ratio, a (confined) *uniform* material is less compressible than one which is well graded.

Considering (confined) uniform materials at a given void ratio, the finer the particle size, the more compressible is the material.

Soils in general with bulky, angular, or rounded particles are less compressible than those with flat particles.

Clays with needle-shaped particles, such as attapulgite (and to a lesser degree, halloysite), are less compressible than those with plate-shaped particles, montmorillonite (plate-shaped particles plus expanding lattice) in particular.

Materials of any given type which include significant amounts of mica and/or organic matter are more (sometimes considerably more) compressible than those of the same type which do not.

As an overall generalization, the greater its void ratio prior to loading, the greater is the compressibility of any given soil type; and vice versa.[15]

5–17. INITIAL DENSITY OF SOIL FORMATIONS

It is evident that information on the original, "no-load" void ratio of a formation must be available if the C_c, e_o relationship is to be used directly for estimating soil compressibility. A rather general impression apparently exists to the effect that sedimentary formations, at least, are laid down initially in a condition approximating their maximum void ratio. Skempton's work suggests that this is true in the case of fine-grained sedimentary formations, clay in particular. Coupled with this belief is the assumption that the present, in-place condition of such formations is entirely the result of loading subsequent to deposition. If these assumptions could be completely accepted, the value e_{max} could be substituted for e_o in Eq. (5-7) and application of the equation would be greatly simplified.

Unfortunately, there are many reasons for doubting the general applicability of such assumptions as the above. For example, in a texturally uniform deposit of fine-grained sand or silt, if these assumptions were valid, the void ratio of the material would steadily decrease with depth and at any given depth would have the same value at points which laterally are some distance apart. The finding of such a condition in a natural formation, however, is very much more the exception than the rule. In many cases, void ratio varies quite unpredictably both laterally and with depth. Most surprising to the layman, perhaps, is the finding that void ratio often *increases* with depth, loose sand layers being found beneath more compact surface layers and soft clay intervals underlying stiff clay.

The construction of compression diagrams based on use of the C_c, e_o relationship in the manner described in the next section is often helpful

[15] This, of course, is the justification for the expenditure of considerable sums of money to compact both compacted fills and natural soil formations prior to loading.

sting.

ïield Compression Diagrams

-18. DEFINITION

As the term is used in this book, a field compression diagram is a
essure-void ratio curve originating at or passing through a point which
epresents the in-place density of an element in a natural soil formation
earth fill and the existing overburden pressure.

-19. CONSTRUCTION AND UTILIZATION

The recommended construction should be performed on semilog paper
ith pressure and void ratio scales appropriate to the conditions of the
roblem. The void ratio scale should cover the range from e_{max} to e_{min}
or the material in question. For the pressure scale, it is usually sufficient
o make provision for two logarithmic cycles ranging from 0.1 to 1.0 and
om 1.0 to 10.0 tons per sq. ft., respectively.

A pressure-void ratio curve originating at $e = e_{max}$ and $p = 0.1$ ton
er sq. ft. is then constructed as shown in Fig. 5-14, by utilization of
e relationship,

$$C_c = a(e_{max} - b)$$

or clay soils, e_{max} can be taken as the void ratio at the liquid limit.
or other soil types, an indication of e_{max} can be obtained by reference
Table 2-3 or by test on representative material. Although of less
ractical importance, it may be of interest to draw a second diagram,
riginating at e_{min}. The latter may be assumed to be a horizontal line.

The two diagrams described above establish limits on the area within
hich a point representing the in-place condition of the soil will fall
cept in a very few cases, which are mentioned later. Points A, B,
d C in Fig. 5-14 represent examples of in-place condition points for
dinary situations.

If a plotting of the in-place void ratio and overburden pressure for
soil element of any type results in a point such as point A, close
the uppermost limiting diagram, it may reasonably be assumed that
e material was laid down in an approximation of its loosest condition
d that the subsequent reduction in void ratio was due entirely to
eight of present overburden. If the soil is a cohesive type it would

tio and pressure plot at point B, it should be presumed,
at ..., that it is precompressed and that the field compression diagr

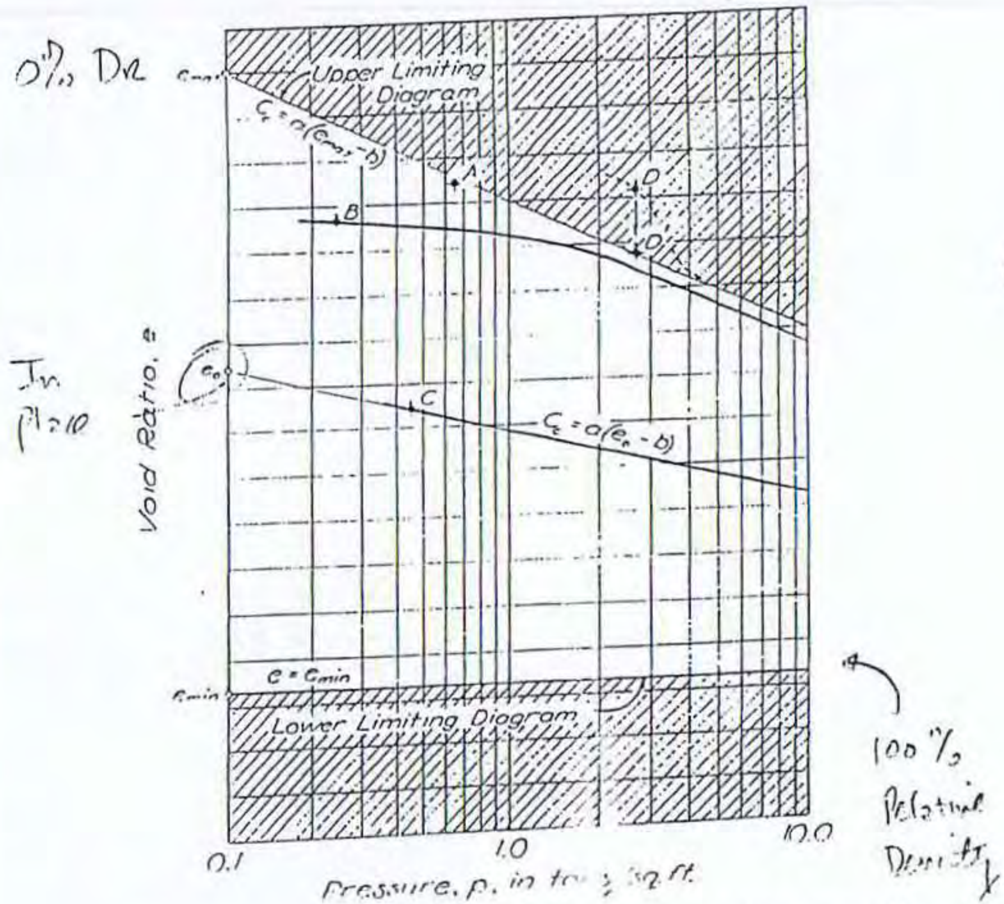

Fig. 5-14. Illustration of procedure for con...ucting field compression diagrams.

will resemble that shown by the full line d...am through B in Fig.
5-14. This plotting provides a reasonable ... for recommending a
program of undisturbed sampling and labor... testing even though
greater than ordinary expense may be involve

Reference No. 4
Settlement

However, if the e vs. log p curve is given, it is possible to simply pick Δe off the plot for the appropriate range of pressures. This figure may be substituted into Eq. (7.18) for calculation of settlement, S.

7.8 Compression Index (C_c)

The compression index for calculation of field settlement due to consolidation can be determined by graphic construction (as shown in Figure 7.12) after obtaining laboratory test results for void ratio and pressure.

Terzaghi and Peck (1967) suggest the following empirical expressions for compression index:

for undisturbed clays

$$C_c = 0.009(LL - 10) \tag{7.24}$$

for remolded clays

$$C_c = 0.007(LL - 10) \tag{7.25}$$

where LL = liquid limit, in percent

In the absence of laboratory consolidation data, Eq. (7.24) is often used for approximate calculation of primary consolidation in the field.

Several other correlations for compression index are also available now. They have been developed by testing various clays. Some of these correlations are given in Table 7.1.

7.9 Swell Index (C_s)

The swell index is appreciably smaller in magnitude than the compression index and can generally be determined from laboratory tests. In most cases

$$C_s \simeq \frac{1}{5} \text{ to } \frac{1}{10} C_c \tag{7.26}$$

Table 7.1 Correlations for Compression Index, C_c*

Equation	Reference	Region of applicability
$C_c = 0.007(LL - 7)$	Skempton	Remolded clays
$C_c = 0.01w_N$		Chicago clays
$C_c = 1.15(e_O - 0.27)$	Nishida	All clays
$C_c = 0.30(e_O - 0.27)$	Hough	Inorganic cohesive soil: silt, silty clay, clay
$C_c = 0.0115w_N$		Organic soils, peats, organic silt, and clay
$C_c = 0.0046(LL - 9)$		Brazilian clays
$C_c = 0.75(e_O - 0.5)$		Soils with low plasticity
$C_c = 0.208e_O + 0.0083$		Chicago clays
$C_c = 0.156e_O + 0.0107$		All clays

*After Rendon-Herrero (1980)

Note: e_O = *in situ* void ratio; w_N = *in situ* water content

Boring B-5

Final Stress

Top EL (ft)	Floor (ft)	Material	Depth (ft)	Unit Weight (pcf)	Stress (psf)
145	78.75	Class III	66.25	50	3,312.5

Soil Layers		Type	(ft-total)	(ft-mid)	SPT N	Weight (pcf)	End Layer Stress (psf)	Mid-Layer Stress (psf)	Initial Stress (psf)	Final Stress (psf)	Eo	Cc	Computed Settlement (ft)	Adjusted Settlement (ft)	Comment
Ground EL	77.8								0						
		SP1	5.8	2.9	4-7	102.9		298.4	298.4						
SHGWT EL	72						298.4		596.8						
		SP1	21.2	10.6	4-7	119.6		606.3	1,203.1	3,312.5	0.8	0.03375	0.23		
EL	50.8						606.3		1,809.4						
		SC1	5	2.5	8	126.8		160.9	1,970.3	3,312.5	0.78	0.092	0.11		
EL	45.8						160.9		2,131.2						
		CH2	5	2.5	10	119.6		143.0	2,274.2	3,312.5	0.8	0.1355	0.15		
EL	40.8						143.0		2,417.2						
		SC2	16	8	4-12	120.2		462.7	2,879.9	3,312.5	0.78	0.092	0.27		
EL	24.8						462.7		3,342.6						
		CH1	9	4.5	4	100.8		172.9	3,515.5	3,312.5	1.68	0.27278	0.26		
EL	15.8														
		END											**1.02**	**ft - Estimated Settlement**	

Boring DCL01-14

Final Stress

Top EL (ft)	Floor (ft)	Material	Depth (ft)	Unit Weight (pcf)	Stress (psf)
155	79.5	Class III	75.5	50	3,775.0

Soil Layers	Type	(ft-total)	(ft-mid)	SPT N	Weight (pcf)	End Layer Stress (psf)	Mid-Layer Stress (psf)	Initial Stress (psf)	Final Stress (psf)	Eo	Cc	Computed Settlement (ft)	Adjusted Settlement (ft)	Comment
EL 89								0						Top of Clay Barrier @ EL79.5;
	SP1	17	8.5	13-20	105.0		892.4	892.4	3,775.0	0.575	0.0338	0.26	0.13	exsiting soil from EL 89-79.5
SHGWT EL 72						892.4		1,784.8						excavated; approx 1/2 thickness
	SP1	9	4.5	13-20	127.8		294.2	2,079.0	3,775.0	0.575	0.0338	0.09	0.09	remain in place
EL 63						294.2		2,373.2						
	SP/SM1	10	5	4	119.6		286.0	2,659.2	3,775.0	0.8	0.0338	0.07	0.07	
EL 53						286.0		2,945.2						
	SC2	5	2.5	6	120.2		144.6	3,089.8	3,775.0	0.78	0.0920	0.09	0.09	
EL 48						144.6		3,234.4						
	END												**0.38**	**ft - Estimated Settlement**

Boring DCL01-13

Final Stress

Top EL (ft)	Floor (ft)	Material	Depth (ft)	Unit Weight (pcf)	Stress (psf)
155	81	Class III	74	50	3,700.0

Soil Layers	Type	(ft-total)	(ft-mid)	SPT N	Weight (pcf)	End Layer Stress (psf)	Mid-Layer Stress (psf)	Initial Stress (psf)	Final Stress (psf)	Eo	Cc	Computed Settlement (ft)	Adjusted Settlement (ft)	Comment
Ground EL 94								0						Top of Clay Barrier @ EL81; exsiting soil from EL 94-81 excavated; no settlement in this layer
	SC1	11	5.5	5	92.9		510.9	510.9	3,700.0	0.78	0.092	0.52	0	
EL 83						510.9		1,021.9						
	SC2	10	5	13-20	103.4		516.8	1,538.6	3,700.0	0.6	0.092	0.31	0.31	
EL 73						516.8		2,055.4						
	SC1	1	0.5	1	100.7		50.3	2,105.7	3,700.0	0.84	0.092	0.02	0.02	
SHGWT EL 72						50.3		2,156.0						
	SC1	14	7	1	118.4		391.7	2,547.7	3,700.0	0.84	0.092	0.27	0.27	
EL 58						391.7		2,939.4						
	END												**0.60**	**ft - Estimated Settlement**

ATTACHMENT H

Angelos Class III Cell 16 Expansion Cell 16 _ North South Section

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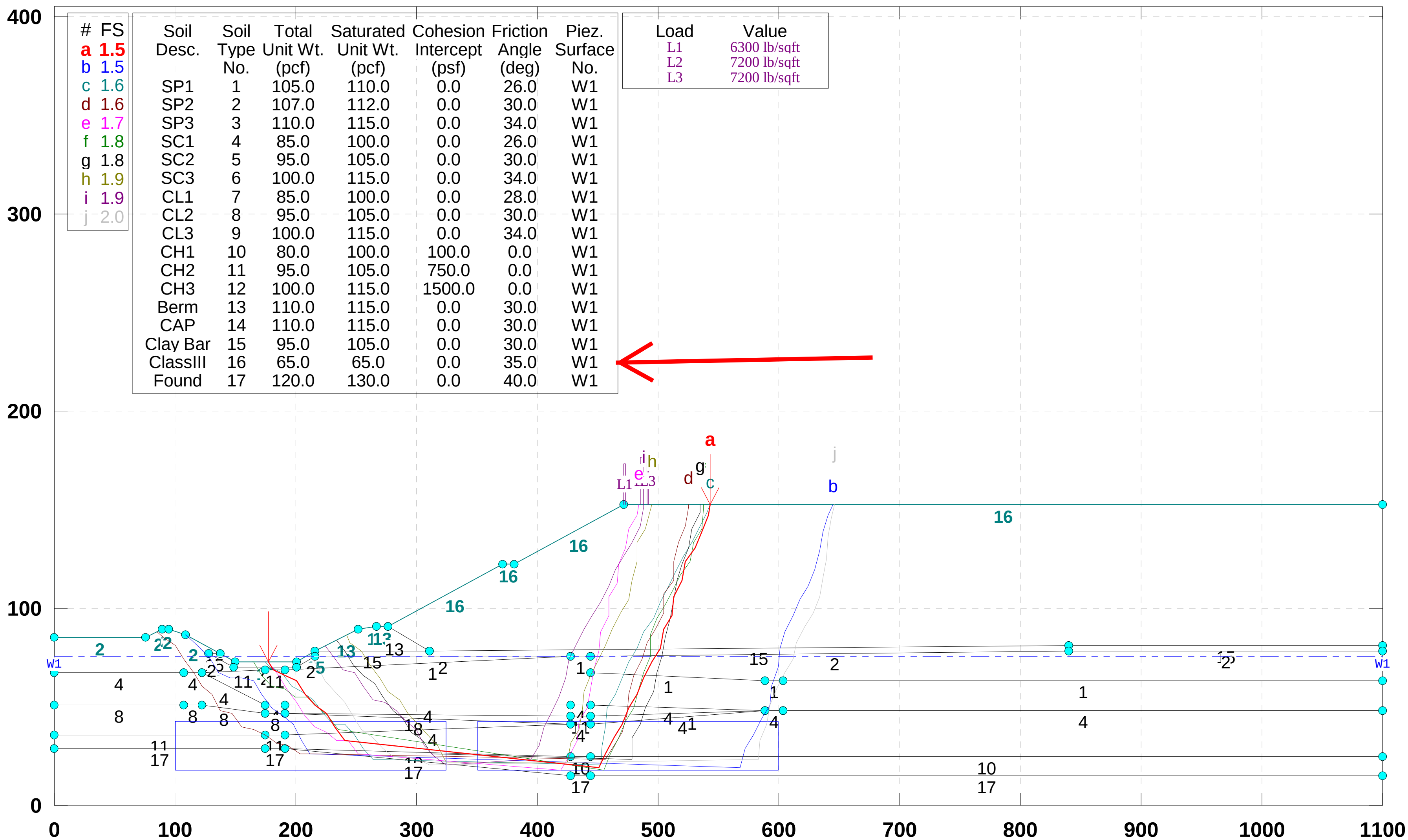

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	65.0	65.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	W1

STABL6H FSmin=1.5

Safety Factors Are Calculated By The Modified Janbu Method

STED

Angelos Class III Cell 16 Expansion Cell 16 East/West Section

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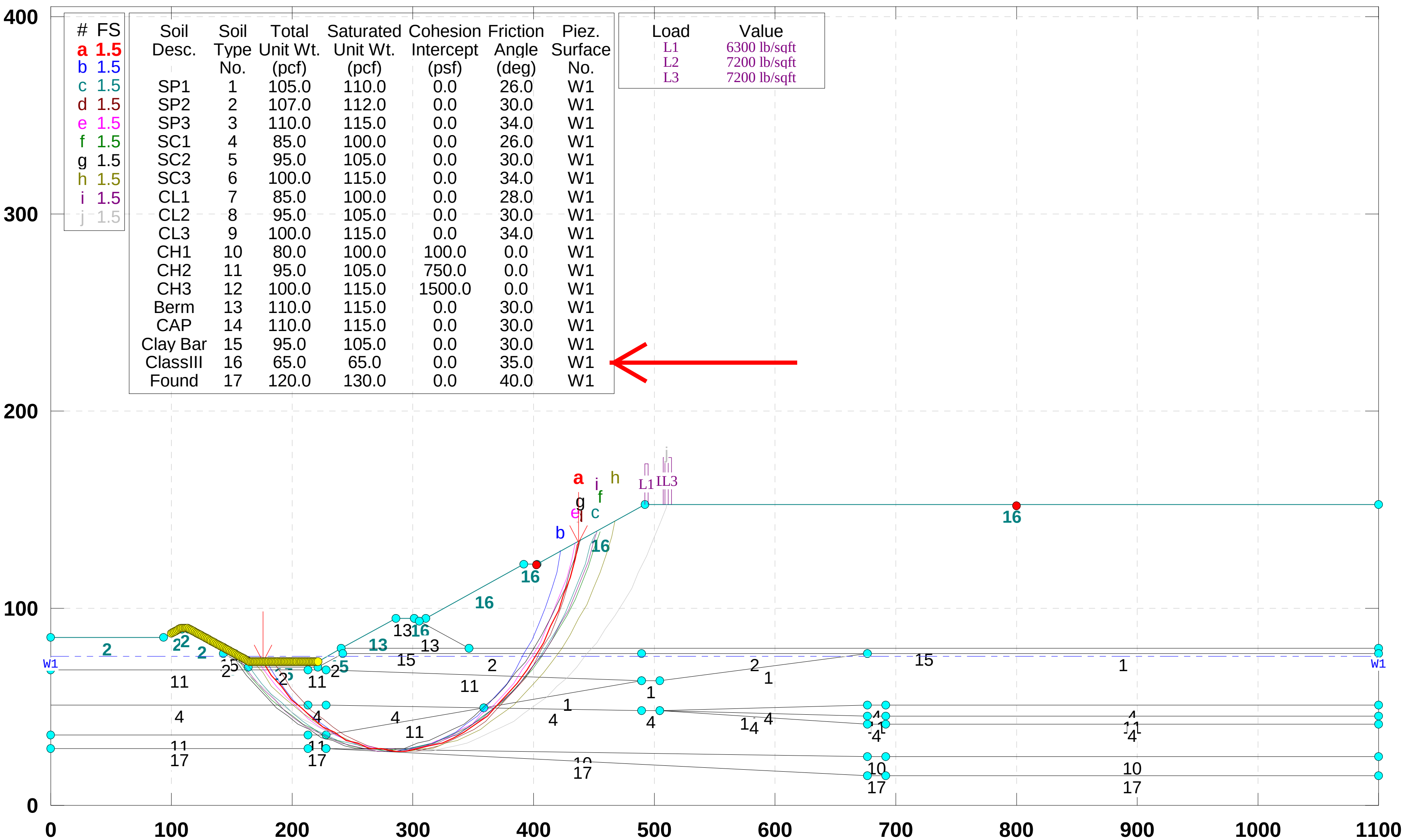

#	FS
a	1.5
b	1.5
c	1.5
d	1.5
e	1.5
f	1.5
g	1.5
h	1.5
i	1.5
j	1.5

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
SP1	1	105.0	110.0	0.0	26.0	W1
SP2	2	107.0	112.0	0.0	30.0	W1
SP3	3	110.0	115.0	0.0	34.0	W1
SC1	4	85.0	100.0	0.0	26.0	W1
SC2	5	95.0	105.0	0.0	30.0	W1
SC3	6	100.0	115.0	0.0	34.0	W1
CL1	7	85.0	100.0	0.0	28.0	W1
CL2	8	95.0	105.0	0.0	30.0	W1
CL3	9	100.0	115.0	0.0	34.0	W1
CH1	10	80.0	100.0	100.0	0.0	W1
CH2	11	95.0	105.0	750.0	0.0	W1
CH3	12	100.0	115.0	1500.0	0.0	W1
Berm	13	110.0	115.0	0.0	30.0	W1
CAP	14	110.0	115.0	0.0	30.0	W1
Clay Bar	15	95.0	105.0	0.0	30.0	W1
ClassIII	16	65.0	65.0	0.0	35.0	W1
Found	17	120.0	130.0	0.0	40.0	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 Bishop Method

STED

ENGINEERING REPORT
APPENDIX F

CLOSURE AND RECLAMATION PLAN

ENTERPRISE ROAD CLASS III RECYCLING AND DISPOSAL FACILITY
MAJOR PERMIT MODIFICATION
CLOSURE AND RECLAMATION 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.: 02000-144-15

March 2016

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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 C2.00 of the 2016 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 C3.00 of the 2016 Plan Set provided in Appendix A.

1.3.2 Barrier Layer

The 18-inch barrier layer will have a permeability of 1×10^{-7} 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 C2.10 of the 2016 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^{-7} 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 x 10^{-7} 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 H 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 Recycling and Disposal 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: State Plan Datum: NGVD 29

Collected by: ______________ Company/Affiliation Pickett Surveying

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, 15 and 16	67.0	2004	22	13	N/A	N/A

Total disposal unit acreage included in this estimate: Closure: ______ Long-Term Care: ______

Facility type: (Check all that apply)

☐ Class I ☒ Class III ☐ C&D Debris Disposal

☐ 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 ex
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.	67	$1,200.00	$80,400.00
Compaction	CY			
Off-Site Material	CY			
Delivery	CY			
			Subtotal Slope and Fill:	$80,400.00
3. Cover Material (Barrier Layer):				
Off-Site Clay	CY	160,755	$9.00	$1,446,795.00
Synthetics - 40 mil	SY			
Synthetics - GCL	SY			
Synthetics - Geonet	SY			
Synthetics - Other (explain)				
			Subtotal Cover Material:	$1,446,795.00
4. Top Soil Cover:				
Off-Site Material	CY	160,755	$4.25	$683,208.75
Delivery	CY			
Spread	CY			
			Subtotal Top Soil Cover:	$683,208.75
5. Vegetative Layer				
Sodding	SY	3,000	$1.25	$3,750.00
Hydroseeding	AC	67	$9.75	$653.25
Fertilizer	AC			
Mulch	AC			
Other (explain) Return trips to irrigate, establish vegetation	EA	4	$500.00	$2,000.00
			Subtotal Vegetative Layer:	$6,403.25
6. Stormwater Control System:				
Earthwork	CY			
Grading	SY			
Piping	LF	3,119	$21.83	$68,087.77
Ditches	LF	2,000	$2.00	$4,000.00
Berms	LF	12,114	$3.90	$47,244.60
Control Structures	EA	11	$2,100.00	$23,100.00
Other (explain) Drop Inlets	EA	12	$2,096.92	$25,163.04
			Subtotal Stormwater Control System:	$167,595.41

Description	Unit	Number of Units	Cost / Unit	Total Cost
7. Passive Gas Control:				
Wells	EA	550	$93.00	$51,150.00
Pipe and Fittings	LF			
Monitoring Probes	EA	6	$1,583.00	$9,498.00
NSPS/Title V requirements	LS	1		
			Subtotal Passive Gas Control:	$60,648.00
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	$15,000.00	$15,000.00
NSPS/Title V Air Permit	LS	1		
Final Survey	LS	1	$4,700.00	$4,700.00
Certification of Closure	LS	1	$18,000.00	$18,000.00
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) See explanations	1	$99,988	1	$174,97	$274,967.00

Description	Unit	Number of Units	Cost / Unit	Total Cost
Quality Assurance Testing	LS	1	$29,583.75	$29,583.75
			Subtotal Professional Services:	$304,550.75

Subtotal of 1-11 Above:	$2,812,301.16
12. Contingency 10 % of Subtotal of 1-11 Above	$281,230.12
Subtotal Contingency:	$281,230.12
Estimated Closing Cost Subtotal:	$3,093,531.28

Description	Total Cost
13. Site Specific Costs	
Mobilization	$130,000.00
Waste Tire Facility	
Materials Recovery Facility	
Special Wastes	$18,000.00
Leachate Management System Modification	
Other (explain)	
Subtotal Site Specific Costs:	$148,000.00

TOTAL ESTIMATED CLOSING COSTS ($):	$3,241,531.28

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	21	$642.85	$26,999.70
Annually	1			
		Subtotal Groundwater Monitoring:		$26,999.70
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	16	$62.50	$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	268	$41.09	$11,012.12
Fertilizer	AC			
			Subtotal Landscape Maintenance:	$11,012.12
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	$3,500.00	$3,500.00
			Subtotal Storm Water Management System Maintenance:	$3,500.00
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 1 - 5 year Report	LS	1	$4,500.00	$4,500.00
			Subtotal Administrative:	$12,340.00
			Subtotal of 1-14 Above:	$75,551.82
15. Contingency	10	% of Subtotal of 1-14 Above		$7,555.18
			Subtotal Contingency:	$7,555.18

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
16. Site Specific Costs				
			Subtotal Site Specific Costs:	

ANNUAL LONG-TERM CARE COST ($ / YEAR): $83,107.00

Number of Years of Long-Term Care: 30

TOTAL LONG-TERM CARE COST ($): $2,493,210.06

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.

LISA BAKER
LICENSE
No. 74652
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Signature

Lisa Baker, P.E.
Name and Title (please type)

3.31.16
Date

74652
Florida Registration Number
(please affix seal)

4140 NW 37th Place, Suite A
Mailing Address

Gainesville, Florida 32606
City, State, Zip Code

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

352-672-6867
Telephone Number

VII. SIGNATURE BY OWNER/OPERATOR

Signature of Applicant

John Arnold, P.E.
Name and Title (please type)

John.Phillip.Arnold@gmail.com
E-Mail address (if available)

855 28th Street South
Mailing Address

St. Petersburg, Florida 33712
City, State, Zip Code

813-477-1719
Telephone Number

FACE - Attachment 1

General Information and Assumptions

FINANCIAL ASSURANCE
CLOSURE AND LONG-TERM CARE COST ESTIMATES
GENERAL INFORMATION AND ASSUMPTIONS

For the permit modification application, we have recalculated the closure and long-term care costs for Cells 1 – 7, 15 and 16. Closure and Long-term Care costs include material, labor and professional services required for closing and the long-term care of the permitted disposal areas.

The cell capacity and lifespan estimates for Cells 1 – 7, 15 and 16 have been recalculated as 13 years, as detailed in Section 3.8.3 of the Engineering Report.

UNIT COST ESTIMATIONS AND CALCULATIONS:

This section provides detailed information and justification for the unit quantity and cost estimates shown on FDEP Form 62-701.900(28) *Financial Assurance Cost Estimate Form*. Cost references are provided in the Appendix and consist of third party quotes and information from recognized cost-estimating sources, such as the FDOT construction cost database.

Cost Estimate Information and Assumptions - Closure:

Item 1: Proposed Monitoring Wells

No additional monitoring wells are proposed as part of the Cell 16 construction.

Item 2: Slope and Fill

This item represents the cost of rough grading and sloping of the waste to the closure grades. The volume has been calculated per acre for the two-dimensional closure area. Refer to Reference 6 for unit costs.

Item 3: Cover Material (Barrier Layer)

This item includes purchasing, hauling, placing and compacting 18-inches of $1x10^{-7}$ off-site clay material to meet the closure specifications in the Closure and Remediation Plan. The volume was calculated for 18-inches of clay over the two-dimensional closure area. Refer to Reference 6 for unit costs.

Item 4: Top Soil Cover

This item includes purchasing, hauling and placing off-site soil material. The quantity represents 18” of soil material, across the 2-dimensional closure area. Refer to Reference 6 for unit costs.

Item 5: Vegetative Layer

This item includes the cost to hydroseed (including materials and installation) the closure area (Cells 1-7, 15 and 16). The per-acre cost is provided in Reference 6.

The site Environmental Resource Permit (ERP) was issued for the site buildout, including cells 9 – 14 that are not included in this permit modification application. We have assumed that, following closure of Cell 6 or Cell 7, an approximately 2,000 LF by 15-ft wide swale will be constructed along the west side of the landfill to convey runoff to either the temporary stormwater pond to the north, or Pond 1 to the south. We have included the cost of 3,000 yd^3 of sod to stabilize the swale sideslopes. The per-yard cost for sod is provided in Reference 6.

Other:

This line item was provided by the earthwork contractor for 4 return trips to irrigate and maintain sod and seed until established. The per-trip cost is provided in Reference 6.

Item 6: Stormwater Control System

This item includes costs associated with constructing conveyance ditches, stormwater downcomers, drop inlets, and energy dissapators. Ponds 1 and 2 are associated with Cells 1 – 6 and 15 and have been constructed. Proposed Pond 3 is associated with the proposed Cell 16 construction and is included in this permit modification application.

As discussed in Item 5 above, this closure cost estimate includes the cost of constructing a conveyance swale along the west side of the landfill. The per-foot cost for swale construction is provided in Reference 6.

The piping estimate represents 2,194 linear feet of 18-inch corrugated HDPE downcomer pipe, as conceptually shown on Sheet C2.00 of the Drawing Set. Please refer to Reference 13 for the per foot cost of corrugated HDPE pipe.

The cost for berms represents construction of approximately 12,114 LF of tack-on berms at elevations 125’ and 150’ on the conceptual final cover plan shown on Sheet C2.00 of the Drawing Set. Please refer to the cost for miscellaneous earthwork provided in Reference 6.

The cost for control structures represents the price of U-Endwall, baffles as conceptually shown on Sheet C2.00 of the Drawing Set. Please refer to Reference 11 for unit prices.

The cost under the “other” heading represents the cost of 14 drop inlet structures to be installed along the stormwater berms shown on the conceptual final cover plan on Sheet C2.00 of the Drawing Set. Please refer to Reference 10 for unit prices.

Item 7: Gas Control: Passive

Wells:

This item includes the costs associated with constructing and installing 9 passive landfill gas vents, as shown in Sheet C2.00 in Section 3, Appendix A of this permit application. It is assumed that each well will be constructed to 20-feet above the bottom of the Cell, for a total of 550 LF of well installation. Refer to Reference 5 for installation costs.

Monitoring Probes:

This item includes costs associated with installing 6 landfill gas monitoring probes on the west property boundary as shown in Sheet C2.00 in Section 3. Please refer to Reference 9.

Item 8: Gas Control: Active Extraction

This item is not applicable – the Enterprise Class III RDF does not have active gas extraction.

Item 9: Security System

This item is not applicable – the Facility has perimeter fencing, signage and gates installed.

Item 10: Engineering

The total cost for engineering services associated with final closure have been estimated below and are typical of what would be required for any third party engineering consulting firm to perform these tasks.

The work is broken out as follows:

- Closure Plan (Closure permit application, review and update CQA Plan, Closure Plan, and Long-Term Care Plan): $25,000
- Closure Drawings: $15,000
- Closure Survey: $4,700 (see Reference 2)
- Certification of Construction Completion Report: $18,000

Item 11: Professional Services

It is estimated that 4% of construction cost will be needed for contract management and construction management: 4% of $2,499,705.25 = $99,988.21.

It is estimated that 7% of construction cost will be needed for construction quality assurance and on-site observation: 7% of $2,499,705.25 = $174,979.36.

CQA testing for the cover soils has been estimated by a third-party testing company (Reference 3) for the work described in the CQA Plan.

Item 12: Contingency

A contingency amount of 10% of the total cost was used in the cost estimate.

Item 13: Site Specific Costs

Waste Tire Facility:

The Facility contains a waste tire processing facility (FDEP Permit 303741-001-WT/02). Financial assurance for the waste tire processing facility is submitted separately to FDEP and is not included in this estimate.

Special Wastes:

This line item includes costs associated with removing and disposing of unacceptable materials and/or incidental recyclables that may have been temporarily stored pending appropriate disposal. The Facility Operations Plan allows for storage of the following waste types and amounts: The transportation and disposal costs have been provided by Choice Waste in Reference 7. It is assumed that a loader and operator will be used for one 10-hour day.

TYPE	MAX. QTY
Class I waste	20 CY
Paint, batteries, solvents, oils, etc.	40 CY
Ferrous Metal	500 CY
Aluminum	300 CY
Stainless Steel	300 CY
Copper	25 CY
Asphalt	300 CY
Concrete / Rubble	300 CY
Electronics	8 CY

Cost Estimate Information and Assumptions – Long-Term Care:

Item 1: Groundwater Monitoring

This line item is based on total annual costs for two semi-annual monitoring events (sampling, analysis and reporting) of $22,000 (Reference 1).

Item 2: Surface Water Monitoring

Surface water sampling is required in the event that stormwater discharges from the property. We have included the cost associated with sampling and analysis of one stormwater location during each semi-annual event. This cost is included in the total groundwater monitoring cost in Item 1 (Reference 1).

Item 3: Gas Monitoring

This item includes third-party costs for field work and reporting associated with quarterly off-site gas migration monitoring. The estimate is based on quarterly sampling of 16 monitoring points and is provided in Reference 1.

Item 4: Leachate Monitoring

This item is not applicable.

Item 5: Leachate Collection/Treatment Systems Maintenance

This item is not applicable.

Item 6: Leachate Collection/Treatment System Operation

This item is not applicable.

Item 7: Maintenance of Groundwater Monitoring Wells

It is assumed that a lump sum cost of $750 per year will be needed maintenance of groundwater monitoring wells; this will allow the facility to replace approximately 1 groundwater monitoring well every 5 years.

Item 8: Gas System Maintenance

It is assumed that the above ground part of one gas vent will need to be replaced annually at a lump sum cost of $2,500.

Item 9: Landscape

Mowing:

Mowing was assumed for 67.0 acres of closure 4 times per year (total of 268 acres). An FDOT average unit cost for District 5 is provided in Reference 4.

Item 10: Erosion Control and Cover Maintenance

It is assumed that a lump sum cost of $7,500 per year will be needed for regrading and dressing the landfill cover.

Item 11: Stormwater Management System Maintenance

It is assumed that a lump-sum cost of $3,500 per year will be required for dressing and maintenance of the stormwater ponds, control structures and swales.

Item 12: Security System Maintenance

It is assumed that a lump sum cost of $3,000 per year will be needed for maintenance of signs, gates, and fences.

Item 13: Utilities

The Enterprise Class III Landfill does not have a leachate collection system with pumps, so utilities costs are expected to be minimal. It is assumed that lighting costs will be $100 per month, or $1,200 per year.

Item 14: Administrative

It is assumed that long-term annual administrative costs associated with scheduling routine maintenance and monitoring and coordinate unscheduled maintenance will equate to 2 hours per week of administrative time (112 hours at a rate of $70 / hour).

Other: This item includes costs associated with preparing the 5-year evaluation report on the closure. A third-party cost estimate to provide this work is provided in Reference 1.

Item 15: Contingency

Contingency costs of 10% were included with this cost estimate for long-term care.

FACE - Attachment 2

Cost References

Locklear & Associates, Inc.
Environmental Consulting Services

4140 NW 37th Place, Suite A
Gainesville, FL 32606
352-672-6867

REFERENCE #1

December 5, 2012

Mr. John Arnold, P.E.
Angelo's Aggregate Materials, Ltd
P.O. Box 1493
Largo, FL 33779

RE: **Enterprise Class III Landfill, Pasco County [WACS facility #87895]**
Construction Permit Renewal Application, Pending Permit #177982-019-SC/T3
Operation Permit Renewal Application, Pending Permit #177982-020-SO/T3

Dear John:

Locklear & Associates, Inc. is pleased to provide this cost estimate for semiannual groundwater and quarterly landfill gas monitoring and reporting at the referenced facility located at 41111 Enterprise Road, Dade City, Florida. The cost estimate includes the following tasks to be completed in accordance with the pending FDEP permits referenced above:

1. Landfill gas measurements will be recorded from the 16 site monitoring locations for four quarterly monitoring events.
2. Reports of landfill gas monitoring results including field data, Gas Monitoring Survey Form, and map of monitoring locations will be prepared and submitted to the FDEP.
3. Collect First and Second Semiannual groundwater samples from 14 groundwater monitoring wells (assumes one well will be sampled for each well cluster), the on-site supply well and two surface water samples from the on-site stormwater ponds. All sampling will be performed in accordance with FDEP SOP 001/01.
4. All groundwater samples will be analyzed for the parameters listed in Table 3 of the December 2012 Revised GWMP.
5. All surface water samples will be analyzed for the parameters listed in Table 4 of the December 2012 Revised GWMP.
6. Water levels will be recorded from all on-site groundwater monitoring wells and piezometers listed in Table 1 of the December 2012 Revised GWMP.
7. Prepare semiannual groundwater monitoring reports and submit to FDEP. The reports will include a groundwater contour map, summary table of any groundwater exceedances, laboratory analytical data report, field sampling data sheets, and a letter report.

This scope of work can be completed for an annual fee of $22,000. The cost breakdown is as follows:

- Gas monitoring and reporting $4,000
- Groundwater and surface water sampling $6,000
- Laboratory analytical costs $8,000
- Semiannual reporting costs $4,000

When operations begin in Cell 7, the monitoring network will have a net increase of two wells. The total annual cost at that time will increase to $23,000. We appreciate the opportunity to assist you with this project and we look forward to working with you in the future. Please feel free to call me at 352-672-6867 if you have any questions.

Best regards,

John Locklear, P.G.
President

REFRENCE #2

PICKETT
SURVEYING & PHOTOGRAMMETRY

September 30, 2011

John Arnold, PE
Angelo's Recycled Materials
41111 Enterprise Road,
Dade City, FL 33525

RE: Enterprise Road Landfill
Pickett # 14094-5

Dear Mr. Arnold:

This is in response to your request for a proposal from Pickett & Associates, Inc. (Pickett) to provide professional surveying and photogrammetry services in connection with the above referenced project. For purposes of this agreement, Angelo's Recycled Materials will be referred to as the CLIENT. The subject facilities are as attached hereto and made part of this agreement. As requested, listed below are the scope of services and fees associated with this project.

AERIAL MAPPING:

- Acquisition of new color aerial photography, suitable for topographic and planimetric mapping at a scale of 1"=100', with a 1' contour interval for the area as shown.

PROJECT DELIVERABLES:

- Digital deliverable will be in Acadv2008 and an orthoimage in tif/tfw format on CD. A photo plot that covers the mapping area will be produced. Hardcopy mapping plots may be produced upon request.
- All items shall be shipped overnight service and the cost shown below shall include all shipping and postage.

Mapping work shall meet or exceed the Florida Minimum Technical Standards requirements as set forth in Rule 5J-17. Planimetric features visible and identifiable on the photography will be shown per map scale standards. Contours in partially obscured areas will be dashed and accuracy standards will not apply in these areas. Areas totally obscured will be left blank and designated as such. CLIENT will provide all necessary targeting and ground control.

The total lump sum cost for these services shall be; **Four Thousand Seven Hundred Dollars ($4,700.00)**

As a condition of this Agreement, CLIENT agrees to accept Pickett's "Terms and Conditions of Agreement" attached hereto as Attachment "B" and made part of this contract. If you wish for us to proceed please sign below as your agreement and acceptance of our scope and terms and conditions. Please return as our authorization to begin work. The stated cost for services is valid for 60 days. This proposal and fee is predicated upon the client being solely responsible for payment upon delivery and acceptance of service products.

Sincerely,

PICKETT & ASSOCIATES, INC

T. Jeffrey Young

T. Jeffrey Young, PSM, CP
Vice President, Director of Photogrammetry

Agreed to and accepted by: ____
Authorized Agent   Date

Enclosures: Attachment "B"
Exhibit A

ATTACHMENT "B"

PICKETT & ASSOCIATES, INC.
TERMS AND CONDITIONS OF AGREEMENT

This engagement of Pickett by CLIENT is under the following terms and conditions and is an integral part of the accepted Proposal between CLIENT and Pickett.

1. The fee estimate for the proposed scope of services is valid for 60 days from the date of proposal.

2. Payment to Pickett is the sole responsibility of signatory of this Agreement and is not subject to third party agreements.

3. All schedules set forth in the attached scope of services commence upon receipt of a signed Agreement and, if requested, a retainer. All retainer amounts will be applied to the last invoice.

4. Requests for additional services must be authorized in writing before additional work can begin. Any fee adjustment required will be established at that time.

5. Invoices will be rendered biweekly and become due upon receipt. Any invoice outstanding for more than 30 days after date of invoice will be subject to a financing charge of 1-1/2 percent per month. Invoices will be rendered on a Pickett standard form. Special formats requested by the CLIENT may require additional compensation.

6. Pickett shall be entitled to collect its costs and reasonable attorney's fees incurred in the collection of any amounts due it hereunder including all costs and reasonable attorney's fees incurred in any litigation resulting from the collection or enforcement of any of the terms of this contract.

7. Invoice payments must be kept current for work to continue. If the CLIENT fails to pay any invoice due to Pickett within 45 days of the date of invoice, Pickett may, without waiving any other claim or right against CLIENT, suspend services under this Agreement until Pickett has been paid in full all amounts due Pickett and/or any of its consultants and subcontractors. All payments due Pickett under this contract are to be made at Pickett's business located at 475 South First Avenue, Bartow, Polk County, Florida. Except as Pickett elects otherwise, venue for any proceedings brought under the terms of this contract will be in Polk County, Florida.

8. Pickett agrees to carry the following insurance during the term of this Agreement: workmen's compensation, general liability, professional liability and comprehensive automobile liability. Certificates of insurance will be furnished upon request. If the CLIENT requires insurance coverage or limits in excess of Pickett normal policies, and it is available, CLIENT agrees to reimburse Pickett for such additional expense.

9. The CLIENT shall, at all times, indemnify and save harmless Pickett and its officers, agents, and employees on account of any claims, damages, losses, litigation, expenses, counsel fees, and compensation arising out of any claims, damages personal injuries, property losses and/or economic damages sustained by or alleged to have been sustained by any person or entity, and caused in whole or in part by the acts, omissions or negligence of the CLIENT, its agents, employees, or subcontractors in connection with the project.

10. For any damage on account of any error, omission or other professional negligence, Pickett liability will be limited to a sum not to exceed $50,000 or the fee received under this Agreement less third-party costs, whichever is greater.

11. Pickett shall not be responsible for failure to perform or for delays in the performance of work, which arises out of causes beyond the control and without the fault or negligence of Pickett.

12. All documents including drawings, digital files and specifications prepared by Pickett pursuant to this Agreement are instruments of service in respect to the project. They are not intended or represented to be suitable for reuse by the CLIENT on extensions of the project or on any other project. Any reuse without written verification or adaptation by Pickett for the specific purpose intended will be at the CLIENT's sole risk and without liability or legal exposure to Pickett; and the CLIENT, or whoever shall reuse said documents, shall indemnify and hold harmless Pickett from all claims, damages, losses, and expenses, including attorneys' fees, arising out of or resulting there from. Any such verification or adaptation will entitle Pickett to additional compensation at rates to be agreed upon by Pickett and the person or entity seeking to reuse said documents.

13. In entering into this Agreement, CLIENT has relied only upon the warranties or representation (a) set forth in this Agreement; or (b) implied in law. No oral warranties, representations or statements shall be considered a part of this Agreement or a basis upon which the CLIENT relied in entering into this Agreement. No statements, representations, warranties, or understandings, unless contained herein, exist between CLIENT and Pickett.

14. In the event that any survey staking is destroyed by acts of nature or parties other than Pickett, the cost of re-staking shall be considered as additional services and will be provided upon authorization by the CLIENT.

15. In the event all or any portion of the work prepared or partially prepared by Pickett is suspended, abandoned, or terminated, the CLIENT shall pay Pickett all fees, charges, and services provided for the project, not to exceed any contract limit specified herein.

16. Pickett's services under this agreement do not include participation in any litigation. Pickett agrees to serve as an expert witness provided that a separate contract is negotiated and agreed upon.

Exhibit A

UNIVERSAL
ENGINEERING SCIENCES, INC.

Consultants in: Geotechnical Engineering • **Environmental Sciences**

Construction Materials Testing • **Threshold Inspection** • **Private Provider Inspection**

9802 Palm River Road • Tampa FL 33619-4438 • (813) 740-8506 • Fax(813) 740-8706

SCOPE OF WORK AND COST ESTIMATE FOR MATERIALS TESTING SERVICES
ENTERPRISE CLASS III LANDFILL

UES TASK CODE	TASK DESCRIPTION	QTY	UNIT	UNIT COST	COST
1	Moisture Content ASTM D2216 (Borrow Pit)	3	test	$25.00	$75.00
2	Percent Fines ASTM D1140 (Borrow Pit)	3	test	$25.00	$75.00
3	Permeability Per ASTM D-5084 (Borrow Pit)	3	test	$250.00	$750.00
4	Atterburg Limits ASTM D4318 (Borrow Pit)	3	test	$45.00	$135.00
5	Moisture Content ASTM D2216 (In-place)	50	test	$25.00	$1,250.00
6	Percent Fines ASTM D1140 (In-place)	50	test	$25.00	$1,250.00
7	Permeability Per ASTM D-5084 (In-place)	50	test	$250.00	$12,500.00
8	Atterburg Limits ASTM D4318 (In-place)	50	test	$45.00	$2,250.00
9	In-place Thickness Check (Hand Augers) (In-place)	150	each	$25.00	$3,750.00
10	Modified/Standard Proctor	1	each	$65.00	$65.00
11	In-place Densities (In-place)	300	each	$15.00	$4,500.00
12	Engineering Technician	10	trips	$150.00	$1,500.00
13	Signed and Sealed Completion Reports	3	each	$25.00	$75.00
				Total	$28,175.00
				Administrative Services 5%	$1,408.75
				Total Construction Materials Testing Cost Estimate	**$29,583.75**

REFERENCE #4

Florida Department of Transportation
Item Average Unit Cost
From 2011/01/01 to 2011/12/31

Contract Type: CC AREAS: 05
Displaying: VALID ITEMS WITH HITS
From: 0102 1 To: 9999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0102 1	19	$348.43	$2,559,191.75	7,345.000	DA	N	MAINTENANCE OF TRAFFIC
0102 3	2	$18.88	$10,480.00	555.000	CY	N	COMMERCIAL MATL FOR DRIVEWAY MAINT
0102 14	12	$16.69	$649,361.44	38,916.000	MH	N	TRAFFIC CONTROL OFFICER
0102 60	19	$.23	$123,125.39	528,910.000	ED	N	WORK ZONE SIGN
0102 61	2	$68.20	$341.00	5.000	EA	N	BUSINESS SIGN
0102 71 11	4	$7.72	$423,611.04	54,837.000	LF	N	BARRIER WALL,TEMP,F&I,CONCRETE
0102 71 13	2	$10.92	$23,278.00	2,132.000	LF	N	BARRIER WALL,TEMP,F&I,LOW PROFILE,CONC
0102 71 14	4	$20.57	$127,904.59	6,218.000	LF	N	BARRIER WALL,TEMP,F&I,TYPE K
0102 71 21	3	$3.92	$25,826.64	6,594.000	LF	N	BARRIER WALL,TEMP,REL,CONCRETE
0102 71 23	1	$5.05	$1,626.10	322.000	LF	N	BARRIER WALL,TEMP,REL,LOW PROFILE,CONC
0102 71 24	3	$9.80	$56,019.00	5,717.000	LF	N	BARRIER WALL,TEMP,REL,TYPE K
0102 74 1	17	$.08	$149,225.26	1,835,261.000	ED	N	BARRICADE,TEMP,TYPS I,II,DI,VP & DRUM
0102 74 2	9	$.30	$9,763.78	32,673.000	ED	N	BARRICADE,TEMP,TYPE III, 6'
0102 76	15	$4.91	$51,530.11	10,490.000	ED	N	ARROW BOARD /ADVANCE WARNING ARROW PANEL
0102 77	18	$.31	$37,562.15	119,312.000	ED	N	HIGH INTENSITY FLASH LI,TEMP,TYP B
0102 78	13	$3.02	$77,369.13	25,604.000	EA	N	TEMPORARY RETROREFLECTIVE PAVT MARKER
0102 79	7	$.09	$47,702.70	534,493.000	ED	N	LIGHTS,BARR WALL MNT,TEMP,TYP C,STDY BRN
0102 89 7	6	$979.20	$149,817.75	153.000	LO	N	TEMPORARY CRASH CUSHION, REDIRECT OPT
0102 99	19	$12.83	$247,417.26	19,287.000	ED	N	PORTABLE CHANGEABLE MESSAGE SIGN,TEMP
0102150 1	8	$7.19	$38,131.60	5,304.000	ED	N	PORTABLE REGULATORY,SIGN
0102150 2	8	$7.39	$39,258.60	5,314.000	ED	N	RADAR SPEED DISPLAY UNIT
0102911 1	1	$1.71	$90,659.07	53,017.000	LF	N	PAVT MARKING REMOVABLE TAPE,WH-BLK,SKIP
0102911 2	4	$1.47	$134,428.19	91,377.000	LF	N	PAVT MARKING REMOVABLE TAPE,WH-BLK,SOLID
0102912 2	4	$1.43	$130,406.39	91,507.000	LF	N	PAVT MARKING REMOVABLE TAPE,YELLOW,SOLID
0104 1	1	$20.00	$580.00	29.000	SY	N	ARTIFICIAL COVERINGS / ROLL EROSION CNTL
0104 6	2	$25.00	$12,500.00	500.000	LF	N	TEMPORARY SLOPE DRAIN / RUNOFF CONT STR
0104 10 3	16	$.77	$127,597.19	166,635.600	LF	N	SEDIMENT BARRIER
0104 11	6	$5.93	$31,584.12	5,327.000	LF	N	FLOATING TURBIDITY BARRIER
0104 12	1	$3.79	$181.92	48.000	LF	N	STAKED TURBIDITY BARRIER- NYL REINF PVC
0104 18	11	$38.65	$17,738.24	459.000	EA	N	INLET PROTECTION SYSTEM
0107 1	15	$22.62	$168,005.82	7,426.920	AC	N	LITTER REMOVAL
0107 2	15	$41.09	$257,420.76	6,264.180	AC	N	MOWING
0110 1 1	17	$13,098.34	$958,549.37	73.181	AC	N	CLEARING & GRUBBING
0110 3	1	$16.29	$535,093.92	32,848.000	SF	N	REMOVAL OF EXISTING STRUCTURE
0110 4	13	$18.76	$2,394,607.95	127,647.800	SY	N	REMOVAL OF EXISTING CONCRETE PAVEMENT

SULLIVAN ENVIRONMENTAL, INC.

4448 13th LANE NE | ST. PETERSBURG, FL 33703 | PHONE: 813-625-2952 | FAX: 727-498-2930

February 27, 2012

Rebecca Kelner, P.E.
Kelner Engineering
1050 Northeast Tenth Place
Gainesville, FL 32601

Subject: Proposal to Install 9 Passive Landfill Gas (LFG) Vents at the Enterprise Recycling and Disposal Facility, Dade City, Florida

Dear Ms. Kelner:

Sullivan Environmental, Inc. (SEI) proposes to install 9 passive LFG vents at the Enterprise Recycling and Disposal Facility, Dade City, Florida. SEI can perform this task at a per foot unit cost of $93.00. Based on the estimated footage you provided of 550 feet total drilling, the final cost would be $51,150.

Please contact me if you have any additional questions. Thank you for the opportunity to provide these services.

Sincerely,

Kristine Sullivan
President
Sullivan Environmental, Inc.

REFERENCE #6

David Nelson Construction Company
3483 Alternate US19
Palm Harbor, Florida 34683
Ph. 727-784-7624
Fax 727-786-8894
Visit our Web Site, www\nelson-construction.com

MR. JOHN ARNOLD
41111 ENTERPRISE ROAD
DADE CITY, FL 33525

PHONE 352-339-1408

PROJECT **ENTERPRISE ROAD CLASS III FACILITY-CLOSURE CONSTRUCTION ESTIMATE**
DATE/TIME **Tuesday, February 28, 2012**

ITEM	DESCRIPTION	QTY	UNIT		UNIT PRICE		TOTAL
1	MOBILIZATION	1	LS	$	130,000.00	$	130,000.00
2	ROUGH GRADING SLOPES SUBLINER	61	AC	$	1,200.00	$	73,200.00
3	18" CLAY BARRIER 1x10-6 CM/SEC	146400	CY	$	9.00	$	1,317,600.00
4	18" VEGETATIVE SOIL INSTALLED	146400	CY	$	4.25	$	622,200.00
5	SODDING WORK AREAS AS REQUIRED	10000	SY	$	1.25	$	12,500.00
6	GRASSING/HYDR SEEDING	61	AC	$	975.00	$	59,475.00
7	WATERING GRASS AREAS	61	AC	$	500.00	$	30,500.00
8	REGRADING OF ERODED AREAS	AS REQUIRED	SY	$	0.25		
9	DITCH 15' WIDEx2' DEEP WITH 3:1 SLOPES	AS REQUIRED	LF	$	2.00		
10	MISC. EARTHWORK	AS REQUIRED	CY	$	3.90		

CONSTRUCTION DURATION WOULD BE 14 WEEKS
DOES NOT INCLUDE ANY PERMITS FEES

IF YOU SHOULD HAVE ANY QUESTIONS CONCERNING THIS PROPOSAL, PLEASE CONTACT ME AT OUR OFFICE.

Bob Clark

BOB CLARK
NELSON CONSTRUCTION CO
PHONE 727-784-7624
FAX 727-786-8894
E-MAIL BCLARK@NELSON-CONSTRUCTION.COM

Rebecca Kelner

From: Frank Gomez [FGomez@choicewaste.com]
Sent: Thursday, December 06, 2012 4:31 PM
To: Rebecca Kelner
Subject: Fw: Enterprise Landfill Quote

If there is anything we can help with let us know
Sent on the Sprint® Now Network from my BlackBerry®

From: Rebecca Kelner <rebecca@kelnerinc.com>
Date: Thu, 6 Dec 2012 16:30:10 -0500
To: 'Frank Gomez'<FGomez@choicewaste.com>
Subject: Enterprise Landfill Quote

TYPE	Max. Qty.	Cost For Removal and Disposal
Ferrous Metal	500 CY	$4,125
Aluminum	300 CY	$2,500
Stainless Steel	300 CY	$2,500
Copper	25 CY	$250
Asphalt	300 CY	$3,000
Concrete / Rubble	300 CY	$3,000
Electronics	8 CY	$300
Class I	20 CY	$325
Paint, solvents, oils, etc.	40 CY	$650

$215/HR FOR LOADER AND LOAD OPERATOR

Locklear & Associates, Inc.
Environmental Consulting Services

4140 NW 37th Place, Suite A
Gainesville, FL 32606
352-672-6867

REFERENCE #8

December 5, 2012

Mr. John Arnold, P.E.
Angelo's Aggregate Materials, Ltd
P.O. Box 1493
Largo, FL 33779

RE: **Enterprise Class III Landfill, Pasco County [WACS facility #87895]**
Construction Permit Renewal Application, Pending Permit #177982-019-SC/T3
Operation Permit Renewal Application, Pending Permit #177982-020-SO/T3

Dear John:

Locklear & Associates, Inc. (L&A) is pleased to provide this cost estimate to install three new groundwater monitoring wells at the referenced facility located at 41111 Enterprise Road, Dade City, Florida. The cost estimate includes the following tasks to be completed in accordance with the pending FDEP permits referenced above:

1. Install monitoring wells BW-1A, BW-1B and MW-6B in accordance with the December 2012 Revised GWMP.
2. L&A will observe installation activities which will be performed by a Florida-licensed water well contractor.
3. The well locations will measured by Florida-licensed land surveyor.
4. L&A will update the Site Monitoring Network Figure with the new locations supplied by the surveyor.
5. The three wells will be developed using the pump-and-surge technique and the Turbidity will be measured during the development process.
6. The three wells will be sampled in accordance with DEP SOP 001/01. All samples will be analyzed for the parameters listed in Table 2 of the December 2012 Revised GWMP.
7. L&A will prepare monitoring well completion reports on the FDEP-required forms and submit to the FDEP with the well development notes, well sampling logs, laboratory analytical data report, a cover letter and a copy of the update Site Monitoring Network Figure.

This scope of work can be completed for a total fee of $28,500. The cost breakdown is as follows:

- Driller $15,000
- Surveyor $1,000
- Laboratory $2,500
- L&A $10,000

We appreciate the opportunity to assist you with this project and we look forward to working with you in the future. Please feel free to call me at 352-672-6867 if you have any questions.

Best regards,

John Locklear, P.G.
President

Locklear & Associates, Inc.
Environmental Consulting Services

4140 NW 37th Place, Suite A
Gainesville, FL 32606
352-672-6867

REFERENCE#9

December 5, 2012

Mr. John Arnold, P.E.
Angelo's Aggregate Materials, Ltd
P.O. Box 1493
Largo, FL 33779

RE: **Enterprise Class III Landfill, Pasco County [WACS facility #87895]**
Construction Permit Renewal Application, Pending Permit #177982-019-SC/T3
Operation Permit Renewal Application, Pending Permit #177982-020-SO/T3

Dear John:

Locklear & Associates, Inc. (L&A) is pleased to provide this cost estimate to install six landfill gas monitoring probes at the referenced facility located at 41111 Enterprise Road, Dade City, Florida. The cost estimate includes the following tasks to be completed in accordance with the pending FDEP permits referenced above:

1. Install six landfill gas monitoring probes in accordance with the specifications shown in Figure 3-14 of the December 2012 Revised Permit Renewal Application.
2. L&A will observe installation activities which will be performed by a Florida-licensed water well contractor.
3. The probe locations will measured by Florida-licensed land surveyor.
4. L&A will update the Site Monitoring Network Figure with the new locations supplied by the surveyor.
5. L&A will prepare as-built diagrams for the probes and submit to the FDEP with a cover letter and a copy of the update Site Monitoring Network Figure.

This scope of work can be completed for a total fee of $9,500. The cost breakdown is as follows:

- Driller $5,300
- Surveyor $1,000
- L&A $3,200

We appreciate the opportunity to assist you with this project and we look forward to working with you in the future. Please feel free to call me at 352-672-6867 if you have any questions.

Best regards,

John Locklear, P.G.
President

Reference #10

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Florida Department of Transportation
Item Average Unit Cost
From 2012/01/01 to 2012/12/31

Contract Type: CC AREAS: 07
Displaying: VALID ITEMS WITH HITS
From: 0102 1 To: 9999999

Item		No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0425	1351	4	$3,396.86	$173,240.00	51.000	EA	N	INLETS, CURB, TYPE P-5, <10'
0425	1352	1	$3,800.00	$3,800.00	1.000	EA	N	INLETS, CURB, TYPE P-5, >10'
0425	1355	1	$2,000.00	$2,000.00	1.000	EA	N	INLETS, CURB, TYPE P-5, PARTIAL
0425	1361	2	$3,579.46	$46,533.00	13.000	EA	N	INLETS, CURB, TYPE P-6, <10'
0425	1451	1	$5,285.00	$10,570.00	2.000	EA	N	INLETS, CURB, TYPE J-5, <10'
0425	1461	2	$4,220.00	$8,440.00	2.000	EA	N	INLETS, CURB, TYPE J-6, <10'
0425	1471	2	$3,148.33	$85,005.00	27.000	EA	N	INLETS, CURB, TYPE 7, <10'
0425	1474	1	$4,875.00	$4,875.00	1.000	EA	N	INLETS, CURB, TYPE 7, J BOT , >10'
0425	1511	2	$4,900.00	$9,800.00	2.000	EA	N	INLETS, DT BOT, TYPE B, <10'
0425	1515	2	$2,650.00	$5,300.00	2.000	EA	N	INLETS, DT BOT, TYPE B, PARTIAL
0425	1521	4	$2,096.92	$190,820.00	91.000	EA	N	INLETS, DT BOT, TYPE C, <10'
0425	1523	2	$3,605.43	$151,428.00	42.000	EA	N	INLETS, DT BOT, TYPE C,J BOT,<10'
0425	1524	1	$3,950.00	$11,850.00	3.000	EA	N	INLETS, DT BOT, TYPE C, J BOT, >10'
0425	1525	1	$2,585.00	$2,585.00	1.000	EA	N	INLETS, DT BOT, TYPE C, PARTIAL
0425	1529	2	$2,934.40	$29,344.00	10.000	EA	N	INLETS, DT BOT, TYPE C, MODIFY
0425	1531	2	$1,903.00	$15,224.00	8.000	EA	N	INLETS, DT BOT, TYPE C MOD- BACK, <10'
0425	1541	5	$2,543.88	$262,019.90	103.000	EA	N	INLETS, DT BOT, TYPE D, <10'
0425	1543	1	$3,525.00	$63,450.00	18.000	EA	N	INLETS, DT BOT,TYPE D, J BOT, <10'
0425	1544	1	$4,302.00	$25,812.00	6.000	EA	N	INLETS, DT BOT,TYPE D, J BOT, >10'
0425	1545	2	$2,462.50	$4,925.00	2.000	EA	N	INLETS, DT BOT,TYPE D, PARTIAL
0425	1549	2	$3,414.89	$30,734.00	9.000	EA	N	INLETS, DT BOT, TYPE D, MODIFY
0425	1551	3	$2,808.73	$143,245.00	51.000	EA	N	INLETS, DT BOT, TYPE E, <10'
0425	1555	1	$2,000.00	$2,000.00	1.000	EA	N	INLETS, DT BOT, TYPE E, PARTIAL
0425	1559	1	$3,068.00	$18,408.00	6.000	EA	N	INLETS, DT BOT, TYPE E, MODIFY
0425	1581	2	$4,119.00	$8,238.00	2.000	EA	N	INLETS, DT BOT, TYPE H, <10'
0425	1589	1	$5,060.00	$10,120.00	2.000	EA	N	INLETS, DT BOT, TYPE H, MODIFY
0425	1701	4	$1,927.64	$90,599.00	47.000	EA	N	INLETS, GUTTER, TYPE S, <10'
0425	1703	1	$2,525.00	$68,175.00	27.000	EA	N	INLETS, GUTTER, TYPE S, J BOT<10'
0425	1704	2	$4,245.38	$55,190.00	13.000	EA	N	INLETS, GUTTER, TYPE S, J BOT, >10'
0425	1910	2	$1,363.70	$27,274.00	20.000	EA	N	INLETS, CLOSED FLUME
0425	2 41	4	$2,000.33	$18,003.00	9.000	EA	N	MANHOLES, P-7, <10'
0425	2 43	3	$1,425.17	$8,551.00	6.000	EA	N	MANHOLES, P-7, PARTIAL
0425	2 61	3	$2,083.20	$102,077.00	49.000	EA	N	MANHOLES, P-8, <10'
0425	2 63	3	$1,617.25	$25,876.00	16.000	EA	N	MANHOLES, P-8, PARTIAL
0425	2 71	1	$2,912.00	$32,032.00	11.000	EA	N	MANHOLES, J-7, <10'

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Florida Department of Transportation
Item Average Unit Cost
From 2012/01/01 to 2012/12/31

Contract Type: CC AREAS: 07
Displaying: VALID ITEMS WITH HITS
From: 0102 1 To: 9999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0430175248	1	$138.00	$25,806.00	187.000	LF	N	PIPE CULV, OPT MATL, OTHER, 48"S/CD
0430175254	1	$154.00	$192,654.00	1,251.000	LF	N	PIPE CULV, OPT MATL, OTHER, 54"S/CD
0430175260	1	$181.00	$309,691.00	1,711.000	LF	N	PIPE CULV, OPT MATL, OTHER, 60"S/CD
0430611125	1	$2,100.00	$2,100.00	1.000	EA	N	U-ENDWALL, BAFFLES,STD 261,1:4 SLP, 18"
0430830	2	$274.87	$33,534.60	122.000	CY	N	PIPE FILLING AND PLUGGING
0430950	2	$91.73	$6,512.50	71.000	CY	N	DESILTING CONCRETE BOX CULVERT,
0430963 1	1	$58.00	$8,700.00	150.000	LF	N	PVC PIPE FOR BACK OF SIDEWALK, 4"
0430982123	1	$623.00	$623.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 15" CD
0430982125	5	$656.58	$19,697.37	30.000	EA	N	MITERED END SECT, OPTIONAL RD, 18" CD
0430982129	3	$689.15	$7,580.63	11.000	EA	N	MITERED END SECT, OPTIONAL RD, 24" CD
0430982133	2	$1,486.00	$2,972.00	2.000	EA	N	MITERED END SECT, OPTIONAL RD, 30" CD
0430982138	1	$1,800.00	$7,200.00	4.000	EA	N	MITERED END SECT, OPTIONAL RD, 36" CD
0430982140	1	$1,922.00	$1,922.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 42" CD
0430982141	1	$2,140.00	$2,140.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 48" CD
0430982142	1	$3,390.00	$3,390.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 54" CD
0430982143	1	$4,280.00	$4,280.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 60" CD
0430982625	3	$679.25	$2,717.00	4.000	EA	N	MITERED END SECT, OPT - OTHER, 18" CD
0430982629	1	$850.00	$850.00	1.000	EA	N	MITERED END SECT, OPT - OTHER, 24" CD
0430982633	1	$940.00	$1,880.00	2.000	EA	N	MITERED END SECT, OPT - OTHER, 30" CD
0430982638	1	$1,770.00	$1,770.00	1.000	EA	N	MITERED END SECT, OPT - OTHER, 36" CD
0430982643	1	$3,940.00	$11,820.00	3.000	EA	N	MITERED END SECT, OPT - OTHER, 60" CD
0430984123	1	$1,100.00	$1,100.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 15" SD
0430984125	5	$626.43	$83,315.78	133.000	EA	N	MITERED END SECT, OPTIONAL RD, 18" SD
0430984129	3	$634.52	$19,670.00	31.000	EA	N	MITERED END SECT, OPTIONAL RD, 24" SD
0430984133	2	$2,498.00	$7,494.00	3.000	EA	N	MITERED END SECT, OPTIONAL RD, 30" SD
0430984623	1	$580.00	$1,160.00	2.000	EA	N	MITERED END SECT, OPTIONAL,OTHER,15" SD
0430984625	5	$668.94	$22,075.00	33.000	EA	N	MITERED END SECT, OPT / OTHER, 18" SD
0430984629	1	$1,900.00	$19,000.00	10.000	EA	N	MITERED END SECT, OPT / OTHER, 24" SD
0433 1	1	$852.24	$23,862.72	28.000	EA	N	CHEM GROUT REPAIR, MANHOLE / INLET
0436 1 1	1	$95.00	$340,290.00	3,582.000	LF	N	TRENCH DRAIN, STANDARD
0440 1 50	1	$22.06	$16,169.98	733.000	LF	N	UNDERDRAIN, TYPE V
0440 73 2	1	$20.05	$5,513.75	275.000	LF	N	UNDERDRAIN OUTLET PIPE, 6"
0443 70 5	1	$138.00	$34,776.00	252.000	LF	N	FRENCH DRAIN, 30"
0455133 3	1	$22.00	$220,946.00	10,043.000	SF	N	SHEET PILING STEEL, F&I PERMANENT
0458 1 21	2	$116.26	$165,905.00	1,427.000	LF	N	BRIDGE DECK EXPANSION JNT, REHAB,POURED

33 41 Storm Utility Drainage Piping

33 41 13 – Public Storm Utility Drainage Piping

$21.83 in 2013 $

33 41 13.50 Piping, Drainage & Sewage, Corrug. HDPE Type S		Crew	Daily Output	Labor-Hours	Unit	2010 Bare Costs Material	Labor	Equipment	Total	Total Incl O&P
0010	PIPING, DRAINAGE & SEWAGE, CORRUGATED HDPE TYPE S									
0020	Not including excavation & backfill, bell & spigot									
1000	With gaskets, 4" diameter	B-20	425	.056	L.F.	.80	2.09		2.89	4.09
1010	6" diameter		400	.060		1.82	2.22		4.04	5.40
1020	8" diameter		380	.063		3.47	2.33		5.80	7.40
1030	10" diameter		370	.065		4.80	2.40		7.20	9
1040	12" diameter		340	.071		6.55	2.61		9.16	11.20
1050	15" diameter		300	.080		8.85	2.95		11.80	14.30
1060	18" diameter	B-21	275	.102		12.65	3.87	.50	17.02	20.50
1070	24" diameter		250	.112		19.60	4.26	.55	24.41	28.50
1080	30" diameter		200	.140		31	5.30	.69	36.99	43
1090	36" diameter		180	.156		39.50	5.90	.77	46.17	53.50
1100	42" diameter		175	.160		49	6.10	.79	55.89	64
1110	48" diameter		170	.165		64	6.25	.81	71.06	80.50
1120	54" diameter		160	.175		98.50	6.65	.86	106.01	119
1130	60" diameter		150	.187		115	7.10	.92	123.02	138
1135	Add 15% to material pipe cost for water tight connection bell & spigot									
1140	HDPE type s, elbows 12" diameter	B-20	11	2.182	Ea.	54	80.50		134.50	184
1150	15" diameter	"	9	2.667		83.50	98.50		182	244
1160	18" diameter	B-21	9	3.111		138	118	15.35	271.35	350
1170	24" diameter		9	3.111		293	118	15.35	426.35	520
1180	30" diameter		8	3.500		465	133	17.25	615.25	740
1190	36" diameter		8	3.500		600	133	17.25	750.25	885
1240	HDPE type s, Tee 12" diameter	B-20	7	3.429		122	127		249	330
1260	15" diameter	"	6	4		145	148		293	385
1280	18" diameter	B-21	6	4.667		212	177	23	412	530
1300	24" diameter		5	5.600		279	213	27.50	519.50	660
1320	30" diameter		5	5.600		525	213	27.50	765.50	935
1340	36" diameter		4	7		685	266	34.50	985.50	1,200
1360	42" diameter		4	7		1,175	266	34.50	1,475.50	1,750
1380	48" diameter		4	7		1,950	266	34.50	2,250.50	2,600
1400	Add to basic installation cost for each split coupling joint									
1402	HDPE type s, split coupling, 12" diameter	B-20	17	1.412	Ea.	5.95	52		57.95	87
1420	15" diameter		15	1.600		6.60	59		65.60	98.50
1440	18" diameter		13	1.846		11.45	68		79.45	118
1460	24" diameter		12	2		16.75	74		90.75	132
1480	30" diameter		10	2.400		27.50	88.50		116	167
1500	36" diameter		9	2.667		35.50	98.50		134	191
1520	42" diameter		8	3		42.50	111		153.50	218
1540	48" diameter		8	3		54.50	111		165.50	231

33 41 13.60 Sewage/Drainage Collection, Concrete Pipe		Crew	Daily Output	Labor-Hours	Unit	Material	Labor	Equipment	Total	Total Incl O&P
0010	SEWAGE/DRAINAGE COLLECTION, CONCRETE PIPE									
0020	Not including excavation or backfill									
0050	Box culvert, cast in place, 6' x 6'	C-15	16	4.500	L.F.	188	176		364	475
0060	8' x 8'		14	5.143		277	201		478	615
0070	12' x 12'		10	7.200		545	282		827	1,025
0100	Box culvert, precast, base price, 8' long, 6' x 3'	B-69	140	.343		294	12.40	11.05	317.45	355
0150	6' x 7'		125	.384		445	13.90	12.35	471.25	525
0200	8' x 3'		133	.361		405	13.05	11.60	429.65	480
0250	8' x 8'		100	.480		545	17.35	15.45	577.80	645
0300	10' x 3'		110	.436		600	15.80	14.05	629.85	700
0350	10' x 8'		80	.600		680	21.50	19.30	720.80	805

ENGINEERING REPORT
APPENDIX G

OPERATIONS PLAN

ENTERPRISE ROAD CLASS III RECYCLING AND DISPOSAL FACILITY
MAJOR 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

March 2016

Performed Under the
Supervision of

3-31-16

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 March 2016 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 Facilities

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 2016 Plan Set provided in Appendix A of the Engineering Report.

2.2 Primary Haul Routes

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 TRESPASSING" 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 H 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 2016 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 2016 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:

- Putrescible 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 2016 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

Filling activities are currently (as of March 2016) occurring in Cells 6 and 6B of the Class III Landfill. The cell construction and filling sequence operations will be as follows (see Drawing Sheets C-1.00 and C1.10 of the 2016 Plan Set provided in Appendix A):

Phasing Sequence 1	Fill Cells 6, 6B, 7, 1, 2, 3, 4, 5 and 15 in 10 – 12 foot lifts from base grade to elevation 150’, including filling over Cells 1 – 5,

	and 15. Maximum side slope is 3H:1V. 10-ft wide stormwater benches are to be constructed at elevation 125’ and 150’. Construction of Cell 16 will be ongoing during Phasing Sequence 1
Phasing Sequence 2	Complete construction of Cell 16 per Sheet C1.00 of the drawing set in Appendix A. Continue filling Cell 7 and begin filling Cell 16 in 10 – 12 foot lifts from base grade to elevation 150’, including filling over Cells 1 - 6 and 15. Maximum side slope is 3H:1V. 10-ft wide stormwater benches are to be constructed at final cover elevations 125’ and 150’.
Phasing Sequence 3	Continue filling Cells 1 through 7, and 16 in 10 – 12 foot lifts from base grade to elevation 150’, including filling over Cells 1 – 6, and 15. Maximum side slope is 3H:1V and minimum 2 % grade from final cover elevation 170’ to 175’; 10-ft wide stormwater benches are to be constructed at elevation 125’ and 150’. Cover elevations noted include 18” intermediate cover and 18” top soil layer. Fill elevations shall be such that design cover elevations will be achieved on all external slopes. Sideslope berms and stormwater appurtenances are to be constructed at final closure.

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.

- 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.
- 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 excavation and filling area will be diverted to the onsite temporary storage pond using a temporary interior swale and 6-foot berm. Perimeter berms will direct stormwater away from excavation and filling areas. The temporary stormwater pond will receive runoff until Pond 3 is developed.

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, grass, and maintain intermediate covers

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

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 C2.00 and C2.10 of the 2016 Plan Set provided in Appendix A of the Engineering Report, respectively.

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 C2.00 of the 2016 Plan Set provided in Appendix A of the Engineering Report. The construction details of the vents are shown on Figure 1 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 2015 Plan Set provided in Appendix A of the Engineering Report. The construction details a typical gas probe as shown on Figure 1 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 G 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

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.

10.3 Stormwater Control

The approved 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. These stormwater facilities are designated to retain the 100-year, 24-hour storm volume as required by Pasco County and the FDEP. During excavation, construction and waste disposal, stormwater will be controlled by a series of berms that direct stormwater to the temporary stormwater pond located in the northeast corner of the site. A 6-foot berm adjacent to active and filled cells retains stormwater from the filling area and diverts stormwater from the excavation area to the temporary stormwater pond. A new stormwater Pond 3 is being proposed and submitted to be permitted as an Industrial Wastewater Pond through FDEP. Additional details concerning the stormwater management system are provided in Drawing Sheets C1.00, C1.10, C2.00 and C2.10.

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 firefighting purposes will be borrowed from the closest unexcavated area of the site to the fire. Details of all firefighting 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 plan.

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 cud 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 C1.00 and C2.00 of the 2016 Plan Set provided in Appendix A of the Engineering Report) and in the cross-sections (Drawings C1.10 and C2.10). 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 C2.00 (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, OGC Case No. 07-1985 was opened against the applicant for the Angelo's C&D Recycling Waste Processing Facility in Apopka, 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.

In 2007, Warning Letter # WL07-0008SW52SWD was issued to Angelo's Aggregate Materials, Ltd. for the Recycling Waste Processing Facility in Largo, FL. The Warning Letter was settled April, 2009 for total fines of $24,986. In the "Proposed Settlement of Amended Warning Letter WL07-0008SW52SWD", 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
ERATING 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

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

3900 SW 63rd Blvd.
Gainesville, FL 32608
tel: (352) 392-9570
fax: (352) 392-6910
train@treeo.ufl.edu

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

3900 SW 63rd Blvd.
Gainesville, FL 32608
tel: (352) 392-9570
fax: (352) 392-6910
train@treeo.ufl.edu

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ATTACHMENT 6

TRAINING CERTIFICATES

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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train@treeo.ufl.edu

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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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Florida's Solid Waste Operators & Spotters University of Florida

Home | Tracks | Courses | Providers | Participants | Reports | Login

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:	
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

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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fax: (352) 392-6910
train@treeo.ufl.edu

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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 H

CONTINGENCY PLAN

ENTERPRISE ROAD CLASS III RECYCLING AND DISPOSAL FACILITY
MAJOR 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.: 02000-144-15

March 2016

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 firefighting 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.

- Office / Scale House
- Heavy Equipment Cabs

1.4 Spills

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 clean up 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.

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]

Elizabeth A. Baldwin
MY COMMISSION # CC... EXPIRES
November 30, 2001

Notary Public

Printed Name: Elizabeth A. Baldwin

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

Linda Breakey
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

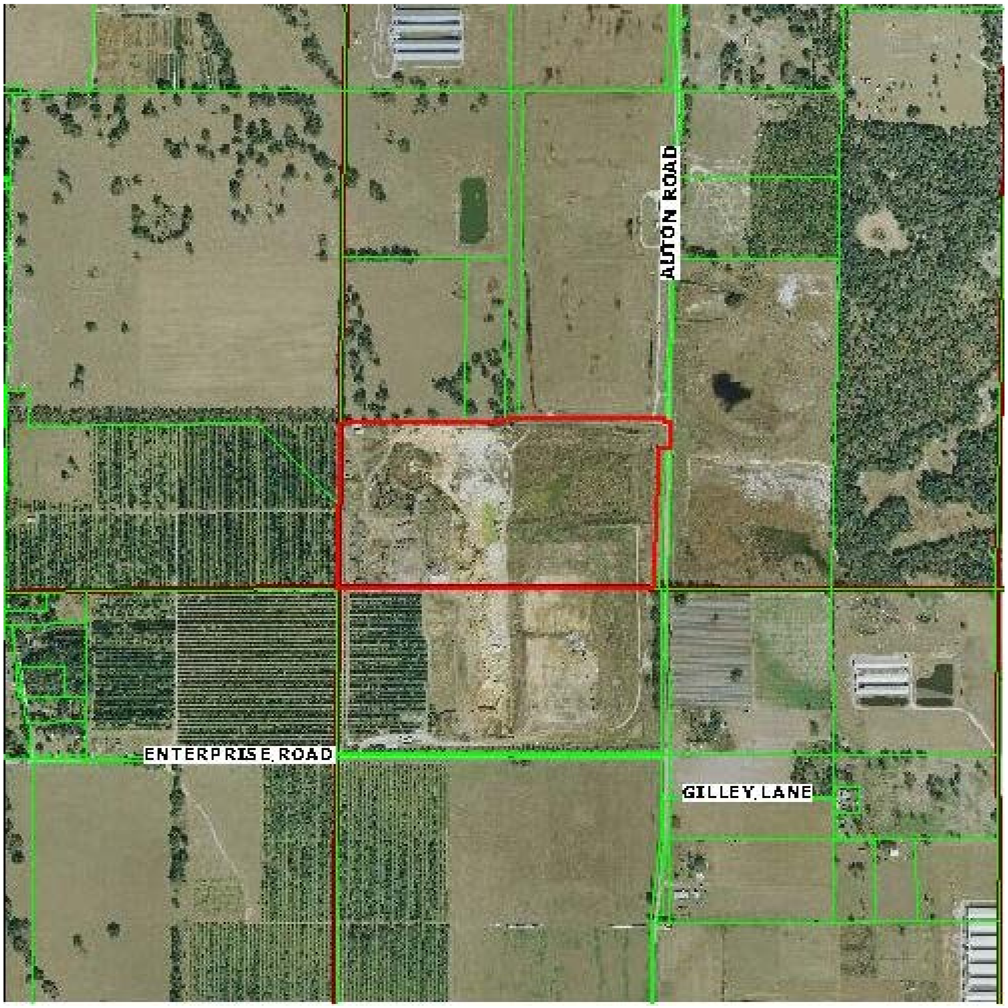
A PORTION OF SECTIONS 7 AND 8, TOWNSHIP 25 SOUTH, RANGE 22 EAST, PASCO COUNTY, FLORIDA, FURTHER DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF SECTION 7, TOWNSHIP 25 SOUTH, RANGE 22 EAST, BEING ALSO THE SOUTHWEST CORNER OF SECTION 8, TOWNSHIP 25 SOUTH, RANGE 22 EAST, THENCE ALONG THE SOUTH 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	78.61	Tax Area	21MF	FEMA Code	X	Residential Code	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

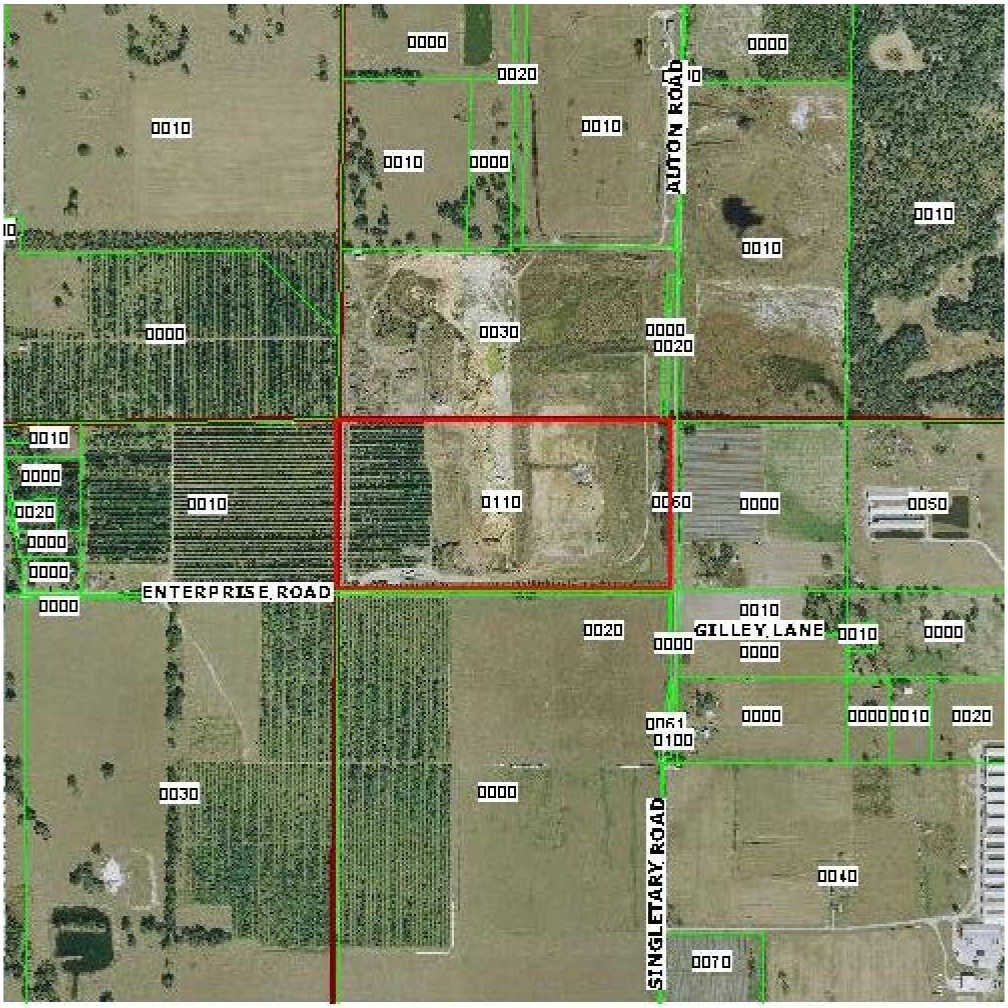
Previous Owner: SID LARKIN & SON INC

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 Locklear

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 NOTIFICATION.