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FINAL GROUNDWATER BACKGROUND STUDY FOR METALS NS MAYPORT FL
10/1/2014
TETRA TECH

# Groundwater Background Study for Metals

# Naval Station Mayport Jacksonville, Florida

## Naval Facilities Engineering Command Southeast

**Contract Number N62470-08-D-1001**
**Contract Task Order JM71**

**October 2014**

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October 2014

# GROUNDWATER BACKGROUND STUDY FOR METALS

## NAVAL STATION MAYPORT
## JACKSONVILLE, FLORIDA

## COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| ABB-ES | ABB Environmental Services, Inc. |
| AOC | Area of Concern |
| Background Study | Groundwater Background Study for Metals |
| bls | below land surface |
| CTO | Contract Task Order |
| DQO | data quality objective |
| FDEP | Florida Department of Environmental Protection |
| FOD | frequency of detection |
| FRCSE | Fleet Readiness Center Southeast |
| GCTL | Groundwater Cleanup Target Level |
| GIR | General Information Report |
| IDW | investigative-derived waste |
| µg/L | microgram per liter |
| MDD | minimal detectable difference |
| mg/L | milligram per liter |
| MS/MSD | matrix spike/matrix spike duplicate |
| msl | mean sea level |
| NAVSTA | Naval Station |
| NFESC | Naval Facilities Engineering Service Center |
| Partnering Team | NAVSTA Mayport Installation Restoration Partnering Team |
| PWD | Public Works Department |
| QA | quality assurance |
| QC | quality control |
| r | variance |
| RCRA | Resource Conservation and Recovery Act |
| RFA | RCRA Facility Assessment |
| RFI | RCRA Facility Investigation |
| RPD | relative percent difference |
| S | Substantial Difference |
| SERMC | Southeast Regional Maintenance Center |
| SOP | Standard Operating Procedure |
| SWMU | Solid Waste Management Unit |
| UFP-SAP | Uniform Federal Policy Sampling and Analysis Plan |
| USEPA | United States Environmental Protection Agency |

# EXECUTIVE SUMMARY

The Naval Station (NAVSTA) Mayport Groundwater Background Study for Metals (Background Study) is being conducted to evaluate the groundwater background concentrations of specific target analytes believed to be naturally occurring in the surficial aquifer at NAVSTA Mayport. This Background Study Data Evaluation Report presents a statistical summary evaluation of the groundwater concentrations of the target analytes. The Background Study Data Evaluation Report was generated for, and complies with, applicable United States Department of the Navy, United States Environmental Protection Agency Region IX, and Florida Department of Environmental Protection requirements, regulations, guidance, and technical standards.

The purpose of this investigation was to evaluate the groundwater background concentrations of 13 target analytes (aluminum, ammonia-n, antimony, arsenic, chromium, iron, lead, manganese, silver, sulfate, thallium, vanadium, and zinc). Groundwater samples were collected from 15 monitoring wells located throughout NAVSTA Mayport in November 2012 and February 2013. The two events yielded a sample size of 30 for the background population, consistent with current published guidance on this subject. The 3-month period between sampling episodes assures that the data are independent.

The background data set was evaluated to determine if the data are usable and representative of the population under evaluation. Four of the target analytes (i.e., antimony, lead, silver, and thallium) were not detected in any groundwater sample. Therefore, the data associated with antimony, lead, silver, and thallium were removed from the final background data set. In addition, the chromium and zinc data were removed from the final background data set due to bias issues associated with the frequency of non-detected values in the right tail of the distributions. A manganese value (883 micrograms per liter [µg/L]) associated with the sample collected from MPT-02-MW17S during the February 2013 sampling event, was determined to be an outlier and removed from the manganese data set. Iron values (12,200 and 13,100 µg/L) associated with the sample collected from MPT-02-MW17I during the November 2012 and February 2013 sampling events respectively, were determined to be outliers and removed from the iron data set. Based upon these findings, an updated data set was developed.

Summary parameters were developed for each of the data sets for seven target analytes (i.e., aluminum, ammonia-n, arsenic, iron, manganese, sulfate, and vanadium) contained in the updated data set. These summary parameters are as follows:

- count (sample size)
- mean
- twice the mean

- maximum reported value
- minimum reported value
- frequency of detection
- frequency of non-detection
- skewness and kurtosis
- goodness of fit to the Normal distribution, the Lognormal distribution, and the Gamma distribution
- substantial difference (S)

An uncomplicated three-step approach for comparing background data to site data was developed. The three-step process incorporated approaches that include direct comparison of smaller of the background maximum or twice the background mean to the maximum site values as well as when to use Background Test Form 1 and Background Test Form 2.

Based upon the information reviewed and developed in this Background Study, it was concluded that the data sets for aluminum, ammonia-n, arsenic, iron, manganese, sulfate, and vanadium can be used for further comparison with sites that have identified one or more of these target analytes as a chemical of potential concern.

The Table ES-1 contains the groundwater background values for the target analytes at NAVSTA Mayport.

**TABLE ES-1**

**GROUNDWATER BACKGROUND RESULTS**
**NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA**

| Target Analyte | Background Groundwater Concentration |
|---|---|
| ALUMINUM | 281 |
| AMMONIA-N | 3.53 |
| ARSENIC | 7.18 |
| IRON | 592.80 |
| MANGANESE | 188 |
| SULFATE | 538 |
| VANADIUM | 6.39 |

**Notes:**
Values reported in ug/L (ammonia-n and sulfate reported in milligrams per liter)

# 1.0 INTRODUCTION

The NAVSTA Mayport Groundwater Background Study for Metals (Background Study) is being prepared for the United States Department of the Navy by Tetra Tech under the under Contract Task Order (CTO) JM71 for the Comprehensive Long-term Environmental Action Navy Contract Number N62467-08-D-1001. This Background Study Data Evaluation Report presents a statistical summary evaluation of the groundwater concentrations of target analytes naturally occurring in the surficial aquifer at NAVSTA Mayport, located in Jacksonville, Florida (see Figure 1-1).

## 1.1 PURPOSE AND SCOPE OF THE BACKGROUND STUDY

Groundwater in the shallow aquifer has been impacted by different classes of chemicals (i.e., semivolatile organic compounds, volatile organic compounds, pesticides, and metal) as a result of historical activities at NAVSTA Mayport. Several analytes selected for the Background Study had groundwater sample results exceeding the Florida Department of Environmental Protection (FDEP) Groundwater Cleanup Target Levels (GCTLs) since the 1980s. The cause of the elevated analyte concentrations in the shallow groundwater aquifer is not clearly understood and may be related to naturally occurring geochemical reactions in the aquifer, and not to past Station activities. The Background Study of the shallow aquifer is being conducted to determine if naturally occurring geochemical reactions were producing the elevated results of the target analytes.

The scope of the Background Study was to evaluate the background groundwater concentrations of thirteen target analytes: Aluminum, ammonia, antimony, arsenic, chromium, iron, lead, manganese, silver, sulfate, thallium, vanadium, and zinc. The groundwater samples were to be collected from background wells in the shallow aquifer at NAVSTA Mayport during two separate sampling events. The data quality objectives (DQOs) for this study were presented to the NAVSTA Mayport Installation Restoration Partnering Team (Partnering Team) in March 2012 (see Appendix A) and were accepted by the Partnering Team.

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| DRAWN BY J. ENGLISH | DATE 05/19/10 | FACILITY LOCATION MAP<br>NAVAL STATION MAYPORT<br>JACKSONVILLE, FLORIDA | CONTRACT NUMBER ___ |
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| REVISED BY T. WHEATON | DATE 11/09/10 | | APPROVED BY ___ DATE ___ |
| SCALE AS NOTED | | | FIGURE NO. FIGURE 1-1 / REV 0 |

## 1.2 REPORT ORGANIZATION

This Background Study consists of the following sections:

1.0 INTRODUCTION

Section 1.0 (this Section) presents the purpose and scope of the Background Study, report organization, and previous studies at NAVSTA Mayport.

2.0 FACILITY BACKGROUND

Section 2.0 presents an overall background of NAVSTA Mayport history, operations and the conditions that have led to the generation of this Background Study.

3.0 FIELD INVESTIGATION

Section 3.0 provides the Background Study field activities, including groundwater sampling methods.

4.0 GROUNDWATER RESULTS AND USABILITY REVIEW

Section 4.0 discusses the usability review of the data set. The usability review focuses on quality assurance (QA)/quality control (QC), frequency of detection (FOD), presence of potential outliers, the usability of the resulting sample size, and information on the updated data set. This information includes maximum, mean, twice mean, summary statistics, and recommended Substantial Differences for each of the target analyte retained in the updated background data set.

5.0 UPDATED BACKGROUND DATA SET

Section 5.0 presents the post-usability review data set.

6.0 METHODS FOR COMPARATIVE ANALYSIS

Section 6.0 discusses the methods to be used by the FDEP and the Navy to compare site groundwater data against background levels.

7.0 SUMMARY AND CONCLUSIONS

Section 7.0 presents the summary and conclusions of the Background Study Data Evaluation.

## 1.3 PREVIOUS INVESTIGATIONS AND BACKGROUND STUDIES

Numerous environmental investigations have been conducted at NAVSTA Mayport beginning in the 1980s, and investigations have continued to date. These ongoing investigations included the analysis of groundwater samples for the metals target analytes (aluminum, ammonia, antimony, arsenic, chromium,

iron, lead, manganese, silver, sulfate, thallium, vanadium, and zinc) that are part of this study. A brief overview of these studies is provided in this section.

A Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) (A. T. Kearney, Inc., 1989) identified 56 Solid Waste Management Units (SWMUs) and 2 Area of Concerns (AOCs) at NAVSTA Mayport. Fifteen SWMUs were determined not to require further action because no evidence of a release of hazardous substances to the environment was observed. Twenty-three SWMUs were determined to require further investigation because hazardous substance releases to the environment were suspected, but not confirmed. The remaining 18 SWMUs were determined to require a RCRA Facility Investigation (RFI) because hazardous substance releases to the environment were confirmed and required further characterization to determine the nature and extent of contamination.

A background study was previously conducted in the early 1990s and provided screening values for several analytes in groundwater (ABB Environmental Services, Inc. [ABB-ES], 1994). Results of the study are reported in the RCRA General Information Report (GIR) (ABB ES, 1995). The background data was reviewed in 2000. The review determined that FDEP Standard Operating Procedures (SOPs) used during the original background investigation were not consistent with currently accepted regulatory guidelines, and apparent spurious or problematic results were present in the data used to perform the calculations. Issues with the original background investigation data set included high turbidity of groundwater samples due to the use of bailers to collect samples, and not including non-detect results. Hence, a recalculation of the background screening values was performed to conform to newer regulatory guidance (Tetra Tech, 2000). The recalculated background values were accepted by the FDEP as screening criteria for media at NAVSTA Mayport (FDEP, 2001).

In 2007, the Partnering Team discussed that the arsenic contamination in the soils found sporadically throughout the installation may be due to the historical use of dredged materials to build up low-lying areas. Working with the University of Florida, additional sampling and a statistical analysis of the soil was conducted. As a result of the study, the background level of arsenic at NAVSTA Mayport, which was determined to be naturally occurring, exceeded the FDEP Soil Cleanup Target Levels per Chapter 62-777, Florida Administrative Code, and was adjusted to 13.7 milligrams per kilogram (Tetra Tech, 2008).

# 2.0 FACILITY BACKGROUND

## 2.1 SITE DESCRIPTION

NAVSTA Mayport is located within the corporate limits of the city of Jacksonville, Duval County, Florida, approximately 12 miles to the northeast of downtown Jacksonville, and adjacent to the town of Mayport. The Station complex is located on the northern end of a peninsula bound by the Atlantic Ocean to the east and the St. Johns River to the north and west. NAVSTA Mayport occupies the entire northern portion of the peninsula except for the town of Mayport, which is located to the west between the Station and the St. Johns River. A facility aerial map of NAVSTA Mayport is presented on Figure 2-1.

NAVSTA Mayport was commissioned in 1942 on approximately 700 acres of land. The Station initially consisted of a harbor and an airfield located near the mouth of the St. Johns River. The harbor and airfield were constructed from the dredging operations of Ribault Bay. The harbor, referred to as the Mayport Turning Basin, was initially dredged to a depth of 29 feet below mean sea level (msl) and is surrounded on three sides by ship piers. The original mission of the Station included use by patrol craft, target boats, and rescue boats. The Station was placed in caretaker status from 1946 to 1948. In 1948, the Station was reopened, and in 1952, an aircraft carrier was assigned to the Station. The turning basin was dredged to a depth of 40 feet below msl to allow aircraft carriers and other large ships to berth at NAVSTA Mayport. Dredge material was used to fill areas south of the turning basin, which increased the amount of uplands at NAVSTA Mayport.

NAVSTA Mayport provides all necessary support services for the surface fleet and aircraft stationed at or visiting Mayport. This support includes the Public Works Department (PWD), which provides infrastructure support. Other services include personnel support, facilities support, and ship and aircraft repair and maintenance. Maintenance and repair operations for ships are carried out by two organizations at NAVSTA Mayport: the Southeast Regional Maintenance Center, Jacksonville (SERMC) and the Fleet Readiness Center Southeast (FRCSE). The SERMC conducts and contracts repair and maintenance operations onboard ships at the piers and in the operations building. The FRCSE conducts maintenance operations on aircraft launching and arresting systems in specific buildings on the Station.

Historical activities at NAVSTA Mayport have resulted in the release of volatile-, semivolatile-, metal-, and fuel-related constituents into the soils and groundwater. The impacted areas have been identified as SWMUs and AOCs.

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FACILITY MAP
NAVSTA MAYPORT
JACKSONVILLE, FLORIDA

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| FIGURE NO. FIGURE 2-1 | REV 0 |

Wetland and low-lying areas of NAVSTA Mayport were filled with dredge material from the turning basin adjacent to the St Johns River beginning in the 1940s, and may have contributed to the concentrations of target analytes at the station.

## 2.2 SWMU GROUPS AND AOC

The 56 SWMUs were divided into four groups. Three of these groups were defined geographically by their proximity to one another and to site features such as wetlands, rivers, and land use patterns. The fourth group contains SWMUs and AOCs associated with utility networks and appurtenances that span multi-geographic regions at NAVSTA Mayport. The SWMUs were prioritized according to the perceived relative risks posed by the SWMUs based on the existing knowledge of the sites and past releases. Group I was the highest priority group of SWMUs. The Groups II, III, and IV were assigned sequentially lower priorities. A Installation Map showing the SWMUs and AOCs is presented as Figure 2-2.

The Group I SWMUs (consisting of SWMUs 2, 3, 4, 5, 22, and 56) are located in the southwestern portion of NAVSTA Mayport and include former landfills, dredge material handling areas, and other individual SWMUs. These SWMUs were incorporated into Group I because of their 1) proximity to each other, 2) common drainage to the Sherman Creek watershed, 3) similarity of past waste disposal activities, and 4) the potential for similar or related corrective measures. Group I SWMUs were ranked as Priority 1 because of a “high perceived risk” for numerous contaminants to be of large areal extent and to affect large volumes of soil and groundwater (ABB-ES, 1996b). An Interim Measure to remove polychlorinated biphenyl-contaminated soil was completed for SWMU 2. The RFI for Group I was completed in March 1996. Long-term monitoring of groundwater is currently being conducted.

The Group II SWMUs (consisting of SWMUs 6, 7, 8, 9, 10, 11, 15, and 28) are located along the northern portion of NAVSTA Mayport contiguous with the St Johns River and include former hazardous and solid waste storage areas and petroleum waste treatment and disposal areas. The SWMUs were incorporated into Group II because of their 1) proximity to each other, 2) nearness to the St Johns River, and 3) potential for similar or related corrective measures. Group II SWMUs were ranked as Priority 2 because of a “moderate perceived risk” for contaminants to be of moderate areal extent, affecting moderate volumes of soil and groundwater, and moderate potential for adverse impacts to ecological receptors by soil and groundwater (ABB-ES, 1996a).

The Group III SWMUs (consisting of SWMUs 1, 14, 17, 18, 19, 20, 21, 23, 24, 25, 44, 45, and 52) are located in the eastern portion of NAVSTA Mayport adjacent to the Mayport Turning Basin and include isolated areas with suspected contaminants confined to localized areas. The SWMUs were incorporated into Group III because of their 1) proximity to the Mayport Turning Basin, the St Johns River, and the Atlantic Ocean; 2) similarity of surrounding land use; and 3) potential for similar or related corrective

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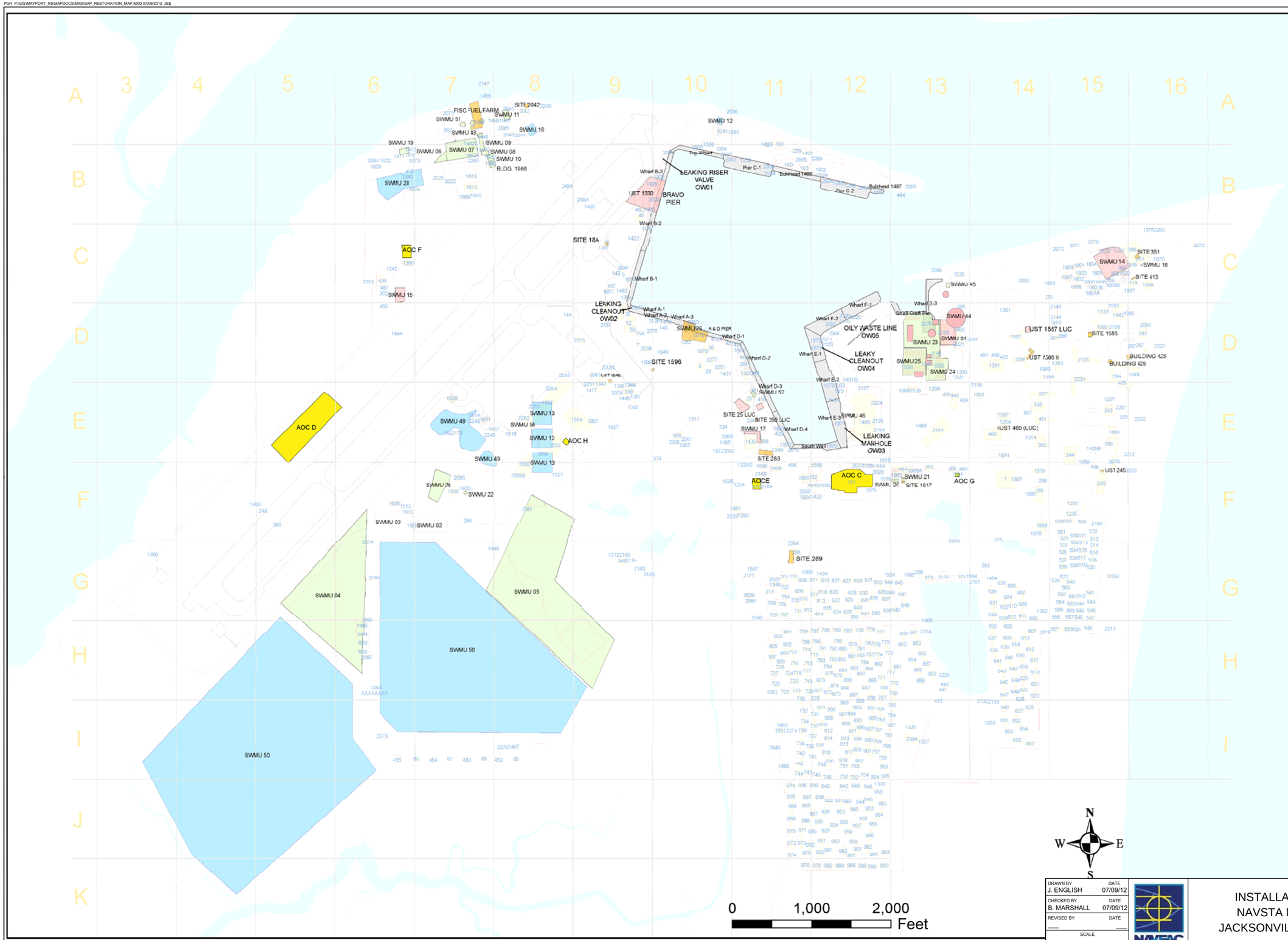


## PETROLEUM SITES

| ACTIVE | COMPLETED |
|---|---|
| SITE 351-1 | SITE 1601 |
| SITE 351-2 | UST 1556B |
| SITE 425 | SITE 1241 |
| SITE 1586 II | UST 1388 |
| FUEL FARM | UST 265 |
| PIER ALPHA/DELTA | SITE 365 |
| SITE 1330 | UST G-23 |
| SITE 1343 | BUILDING 3 POND |
| SITE 413 | ECHO PIER |
| SITE 1585 | SITE 1490 |
| SITE 1517 | SITE 1326 |
| SITE 2042 | SITE 1376 |
| SITE 18A | SITE 285 |
| SITE 1596 McD'S | SITE 358B |
| SITE 245 | SITE 264 |
| SITE 283 | SITE 23 |
| SITE 289 | SITE 1552 |
| SITE 25 (LUC) | SITE 1864 |
| SITE 350 (LUC) | SITE 350 |
| SITE 1587 (LUC) | SITE 338 |
| SITE 460 (LUC) | SITE 353 |
| BRAVO PIER (LUC) | SITE 1363/1363G |
| | SITE 245 |

## SWMU NUMERICAL LISTING

1 - LANDFILL A
2 - LANDFILL B
3 - LANDFILL D
4 - LANDFILL E
5 - LANDFILL F
6 - WASTE OIL PIT
7 - OWTP SLUDGE BEDS
8 - OWTP PERCOLATION POND
9 - OWTP
10 - HAZ WASTE STORAGE
11 - FUEL SPILL AREA
12 - NEUTRALIZATION POND
13 - OLD FIRE TRAINING
14 - MERCURY/OILY WASTE SPILL
15 - OLD PESTICIDE AREA
16 - OLD TRANSFORMER STORAGE AREA
17 - CARBONACEOUS FUEL BOILER
18 - FTC DIESEL GENERATOR SUMP
19 - NADP BLASTING AREA
20 - HOBBY SHOP DRAIN
21 - HOBBY SHOP SCRAP STORAGE
22 - BLDG. 1600 BLASTING AREA
23 - JAX SHIPYAHDS
24 - NORTH FLORIDA SHIPYARDS
25 - ATLANTIC MARINE (BAE)
26 - LANDFILL C
28 - DRMO YARD
29 - OILY WASTE PIPELINE BREAK
44 - WWTP CLARIFIERS 1 & 2
45 - WWTP SLUDGE DRYING BEDS
46 - SIMA ENGINE DRAIN SUMP
47 - OILY WASTE COLLECTION SYSTEM
- OW-01_LEAKING RISER VALVE NORTH OF B-3 BIRTH
- OW-02_LEAKING CLEANOUT A/B - WHARF CORNER
- OW-03_LEAKING MANHOLE ON E - WHARF
- OW-04_LEAKING CLEANOUT ON E-WHARF
- OW-05_OILY WASTE LINE SOUTH OF F-WHARF
48 - FORMER CHEMICAL LAB AREA
49 - FLIGHT LINE RETENTION PONDS
50 - DREDGE SPOIL DISPOSAL AREAS
51 - WASTE OIL TANKS
52 - PWD SERVICE STATION STORAGE
53 - SEWER PIPELINES
54 - OIL/WATER SEPARATORS
55 - STORM SEWER / DRAIN SYSTEM
56 - BLDG. 1552 ACCUMULATION AREA
- BLDG. 1986 PART B HWSF
AOC A - FUEL DISTRIBUTION LINES
AOC B - PRODUCT STORAGE TANKS
AOC C - BLDG. 191 WAREHOUSE
AOC D - AIRFIELD SOIL PLACEMENT SITE
AOC E - MWR EQUIPMENT MAINTENANCE
AOC F - SATELLITE 2 PARKING LOT
AOC G - BUILDING 285 OUTFALL
AOC H - BLDG 1553 - JACK STAND TEST AREA

AREAS OF CONCERN
PETROLEUM CONTAMINATED SITES
SWMU (MOA-LUC)
SWMU
LUCIP

Source: ABB-ES, 1996b. *RFI-Group I SWMUs*, Naval Station Mayport, Jacksonville, Florida. March.

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INSTALLATION MAP
NAVSTA MAYPORT
JACKSONVILLE, FLORIDA

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| FIGURE | REV |
| FIGURE 2-2 | 0 |

measures. Group III SWMUs were ranked as Priority 3 because of a “low perceived risk” for contaminants to be of localized areal extent and to affect small volumes of soil and groundwater. (ABB-ES, 1996c).

The Group IV SWMUs are composed of utility networks and system components that span multiple geographic areas at NAVSTA Mayport. This group was formed due to similarity of investigative and corrective measures that may be required for utilities that are networked throughout NAVSTA Mayport. In addition, some of the SWMUs in Group IV are being addressed by other environmental management, regulatory, and maintenance programs (ABB-ES, 1995).

Two AOCs (AOC A and AOC B) were also identified in the RFA. Since these sites were fuel oil tanks with associated lines, they were transferred to the petroleum program. Six additional sites have been subsequently identified and have been labeled as AOC C through AOC H.

## 2.3 FACILITY GEOLOGY

Geology underlying NAVSTA Mayport was reported by Geraghty & Miller (Geraghty & Miller, Inc., 1983) and the geology of Groups I, II, and III was compiled and documented in the RCRA GIR (ABB-ES, 1995). The compiled data is summarized below. Note that this study is concerned only with the surficial groundwater aquifer underlying NAVSTA Mayport. Thus, the geology in this section is primarily concerned with the surficial aquifer.

The geologic sequence of layers underlying NAVSTA Mayport generally consists of unconsolidated deposits of sands and clays overlying a thick sequence of marine carbonate rocks. The uppermost sediments extend to a depth of approximatley 60 feet below land surface (bls) and consist of sand, shell, and clay. Underlying the surficial aquifer is the Hawthorn Formation that serves as a confining layer separting the surficial aquifer from the underlying Floridian Aquifer. The Hawthorn Formation consists primarily of calcareous, phosphatic, sandy clays with ocassional thin discontinuous lenses of sands, limestones, and dolostones (Geraghty & Miller, 1983).

A surficial deposit of dredge material from the Mayport Turning Basin and St. Johns River makes up the interior areas of NAVSTA Mayport covering former marshes and sand flats. Beach and riverbank sands predominate in areas along the Atlantic Ocean and St. Johns River. The dredge material typically consists of fine-grained, well sorted sands and/or marine shell fragments. Undifferentiated post-Hawthorne deposits are typically encountered beneath the surficial dredge depositional material. This unit consists of fairly uniform, well-sorted, poorly graded, very fine-grained sand, that typically contains minor quantities of fines consisting of silt and clay. It also typically has numerous shell fragments and subrounded pea-size gravel. Color ranges from tan to light gray with color change

typically gradational over several feet. The Upper Hawthorne Group is encountered beneath the undifferentiated post-Hawthorn deposits. This formation consists of fine- to medium-grained, tan to greenish-gray sand with black phosphatic nodules and/or lithic limestone fragments. Sandy clay, typically gray or olive green in color, may be found within this zone. In addition, clay seams may be encountered varying in thickness from inches to several feet along the zone between the Upper Hawthorne Group and the overlying post-Hawthorne deposits (ABB-ES, 1995).

## 2.4 FACILITY HYDROGEOLOGY

As documented in the RCRA GIR (ABB-ES, 1995), three primary aquifer systems are recognized beneath NAVSTA Mayport (in descending depth): the Surficial Aquifer, the Intermediate Hawthorn Aquifer, and the Floridian Aquifer System. The surficial aquifer, which extends from near the surface to a depth of nearly 70 feet bls at NAVSTA Mayport (Franks, 1980), is the groundwater zone considered in this investigation. It includes all of the undifferentiated post-Hawthorn deposits and consists of unconsolidated sand, shell, and clay, which vary horizontally and vertically in lithology, thickness, and permeability. The surficial aquifer is recharged primarily by precipitation at a estimated rate of 54.5 inches per year, and discharge from the surficial aquifer is primarily by seepage into surface water bodies and evapotranspiration.

The Surficial Aquifer is underlain by the Hawthorn Aquifer. The Hawthorn Aquifer consists of sand and limestone layers interbedded with clayey sand and sandy clay. It was noted in the RFI that the most productive limestone layer in the upper part of the Hawthorn Aquifer is absent in the Mayport area. Thus, the Intermediate Hawthorn Aquifer may be in hydraulic contact with the surficial aquifer at NAVSTA Mayport. Overall, the Hawthorn Group is a complex aquiclude that acts as a confining bed to the underlying Floridian Aquifer. The primary recharge mechanism for the Intermediate Hawthorn Aquifer is precipitation in areas approximately 30 miles to the west of NAVSTA Mayport where the Hawthorn Group sediments occurs at shallow depths below ground surface. Because the surficial aquifer is the preferred pathway for groundwater flow and contaminant migration at NAVSTA Mayport, groundwater in the Intermediate Hawthorn Aquifer was not considered in analysis.

The hydrogeologic information was gathered over 12 months to investigate tidal influences on the surficial aquifer and to estimate hydraulic parameters, as reported in the RCRA GIR (ABB-ES, 1995). In general, data for the tidal influence study suggested there is marginal to no significant influence on the surficial aquifer at NAVSTA Mayport. Wells within 400 feet of the river or ocean appear to have tidal influence; beyond that extent, little or no tidal influence was detected. Throughout much of NAVSTA Mayport, surficial groundwater flow is generally toward the major surface water bodies of the St. Johns River to the north and west, to the Atlantic Ocean to the east, and to Shermans Creek to the south.

The transmissivity of the principal water bearing sand and shell zone, at a depth of 35 to 55 feet bls, was determined to be 320 gallons per foot per day, as reported in a hydraulic study by Franks (Franks, 1980). Franks also reported that groundwater movement is primarily lateral through the surficial aquifer and is fresh in the upper 40 feet and then becomes brackish in deeper zones. Hydraulic parameters were calculated by Franks for surficial aquifer wells screened across the water table and results are provided in Table 2-1.

**TABLE 2-1**

**SWMU GROUPS I, II, AND III HYDRAULIC PARAMETERS**
**NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA**

| | **Radial Hydraulic Conductivity** (feet per day) | **Horizontal Groundwater Gradients** (foot per feet) | **Horizontal Groundwater Flow Rates** (foot per day and feet per year) |
|---|---|---|---|
| Group I | 1.3-22 | 0.0026-0.077 | 0.074-0.22 and 27-80 |
| Group II | 0.2-32 | 0.011-0.014 | 0.19-0.24 and 69-87 |
| Group III | 15.82 | 0.0046 | 0.41 and 149 |

## 2.5 HISTORICAL DETECTIONS OF TARGET ANALYTES

Target analytes (aluminum, ammonia, antimony, arsenic, chromium, iron, lead, manganese, silver, sulfate, thallium, vanadium, and zinc) have been detected in shallow aquifer groundwater samples since the beginning of the groundwater sampling program. A review of historical groundwater analytical data collected from 2000 to 2009 from wells in SWMU/AOC Groups I, II, III, and IV and more recent data collected from 2010 to 2011 from Groups I, II, and III for these metals target analytes reveal sample results that exceed the FDEP GCTLs. Tables 2-2 and 2-3 provide a summary of groundwater results for target analytes exceeding FDEP GCTLs from data collected during the periods covering 2000 to 2009 and 2010 to 2011. A recent long-term groundwater monitoring program (Tetra Tech, 2012) was conducted at Group I, II, and III SWMUs from September 2010 to September 2011. Wells sampled at SWMUs 1, 23, 24, and 25 were actually associated with SWMUs 44 and 45 and showed elevated levels of arsenic and one detection of antimony above FDEP GCTLs. Monitoring wells in the area of SWMUs 2, 3, 4, 5, and 22 have sample results for inorganic constituents (iron and manganese) that consistently exceed their respective FDEP GCTLs. SWMU 15 groundwater sample results show intermittant levels of arsenic and lead exceeding FDEP GCTLs. The results are shown as a range of low-high exceedance of the FDEP GCTL for each analyte. Only data meeting the current QC criteria are displayed in the tables and some data was not available and/or did not exceed the FDEP GCTL. All of the metals target analytes exceeded the FDEP GCTL in one or both of the time periods, with the exception of silver and zinc, as shown in Tables 2-2 and 2-3.

**TABLE 2-2**

**RANGE OF TARGET ANALYTE EXCEEDANCES: 2000 TO 2009**
**NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA**

| Target Analyte | Group I | Group II | Group III | Group IV | FDEP GCTL |
|---|---|---|---|---|---|
| Aluminum | NE | 204-560 | NE | 248-851 | 200 |
| Ammonia | NE | NE | 4,000 | NE | 2,800 |
| Antimony | NE | NE | NE | NE | 6 |
| Arsenic | 250-800 | 11-357 | 10-334 | 11-13.9 | 10 |
| Chromium | NE | NE | NE | 313-8280 | 100 |
| Iron | 320-7870 | 420-14800 | 308-13100 | NE | 300 |
| Lead | NE | NE | NE | NE | 15 |
| Manganese | 55.5-3750 | 58-518 | 51.9-454 | 57.4-556 | 50 |
| Silver | NE | NE | NE | NE | 100 |
| Sulfate | 250,000-2,500,000 | NE | 270,000-470,000 | NE | 250,000 |
| Thallium | 276 | NE | 7.4-9.9 | 6.7-8.3 | 2 |
| Vanadium | NE | 62 | NE | NE | 49 |
| Zinc | NE | NE | NE | NE | 5000 |

**Notes:**
NE = no exceedances and/or data.
Results reported in micrograms per liter (µg/L).
Only results meeting QC criteria are presented.

**TABLE 2-3**

**RANGE OF TARGET ANALYTE EXCEEDANCES: 2010 to 2011**
**NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA**

| Target Analyte | Group I | Group II | Group III | Group IV | FDEP GCTL |
|---|---|---|---|---|---|
| Aluminum | NE | NE | NE | NE | 200 |
| Ammonia | 3,100-29,700 | NE | NE | NE | 2,800 |
| Antimony | NE | NE | 7.18 | NE | 6 |
| Arsenic | 16.8 | NE | 10.5-212 | NE | 10 |
| Chromium | NE | NE | NE | NE | 100 |
| Iron | NE | 321-13200 | NE | NE | 300 |
| Lead | 19.4-40.6 | NE | NE | NE | 15 |
| Manganese | NE | 51.5-3570 | NE | NE | 50 |
| Silver | NE | NE | NE | NE | 100 |
| Sulfate | 270,000-17,000,000 | NE | NE | NE | 250,000 |
| Thallium | NE | NE | NE | NE | 2 |
| Vanadium | NE | NE | NE | NE | 49 |
| Zinc | NE | NE | NE | NE | 5000 |

**Notes:**
NE = no exceedances and/or data.
Results reported in micrograms per liter (µg/L).
Only results meeting QC criteria are presented.

### 2.5.1 Migration Pathways

Groundwater is capable of transporting constituents in a dissolved state. Inorganic compounds are brought into solution with specific physical criteria. The migration of constituents in groundwater is a function of the fate process acting upon that individual constituent. The groundwater pathway is the most likely pathway for the inorganic constituent migration at NAVSTA Mayport. Movement of groundwater in the surficial aquifer is primarily lateral into surface water bodies surrounding the base.

### 2.5.2 Receptors and Land Use

Potential current and future human receptors at NAVSTA Mayport include people employed at the site, trespassers, maintenance workers, industrial workers, and utility workers who could potentially interact with contaminated groundwater. Trespassers could have infrequent exposure to groundwater at the site. Trespassing at NAVSTA Mayport is unlikely because of fencing and security measures. Land use control restrictions for groundwater are documented for select areas and future land use is regulated by military installation planning requirements and the NAVSTA Mayport Master Plan. Any future residential uses of groundwater would be subject to the National Environmental Planning Act process. Future human receptors have a potential to be exposed to groundwater via dermal contact and ingestion.

# 3.0 FIELD INVESTIGATION

## 3.1 STUDY BOUNDARIES

The Background Study boundaries for groundwater are restricted to those areas that meet the definition of background. The term “background” is used in this document to represent local conditions, usually upgradient or upstream, side gradient, or far removed from a SWMU/AOC.

The horizontal boundary of the groundwater is the Station boundary at NAVSTA Mayport that includes the SWMUs/AOCs. The eastern boundary of NAVSTA Mayport is the Atlantic Ocean, the northern boundary is the St. Johns River, the southern boundary is the marshland adjacent to the Wonderwood Expressway, and the western boundary is State Road A1A, which is adjacent to the St. Johns River. The vertical boundary for the groundwater investigation is defined by the depth of the water table (varies from 3 to 10 feet bls) to the depth of the surficial aquifer (approximately 70 feet bls). The depth of the surficial aquifer corresponds to the top of the Hawthorne Group. The monitoring wells used for the Background Study are screened within the surficial groundwater aquifer.

## 3.2 DQOS AND ANALYTIC APPROACH

The DQO Partnering Team determined that the Background Study would contain the following statistical elements: background maximum, mean, twice mean, summary statistics, recommended Substantial Differences, and guidance for comparative analysis (see Appendix A). The Background Study may also be used to support the goals of future studies that attempt to discern a difference between site data and background data. If data is acceptable, then it is anticipated the Background Study will present the data sets, and provide guidance on how to use the data sets, to determine if the site data and the background groundwater data are the same or different. The decision rules developed for this study clarify the suitability of the groundwater data collected to provide acceptable background values of target analytes.

Summary statistics includes information on the following: mean, standard deviation, minimum detected concentration, maximum detected concentration, FOD, frequency of non-detection, skewness, kurtosis, outlier test results, goodness of fit to the Normal distribution, the Lognormal distribution, and the Gamma distribution. The summary statistics were developed using readily available software.

Substantial Differences (S) was developed using a specified proportion of variance (r) of background concentrations for each target analyte based on federal and state guidance (United States Environmental Protection Agency [USEPA], 2002; FDEP, 2009). A sensitivity analysis was used to develop the recommended S, where r will equal 1.0, 1.5, 2.0, and 2.5. The Background Test Form 2 is assumed.

The minimal detectable difference (MDD) was determined by the acceptable range of recovery on spiked samples. Alpha will equal 0.05, and Beta will equal 0.25.

**Decision Rule # 1: Acceptability of Data for Background Concentration Values**

If analysis of the groundwater data produces technically defensible and reliable estimates of the background concentration ranges for each target analyte, then provide in the Groundwater Background Study Report the following: background maximum, mean, twice mean, summary statistics, recommended Substantial Differences, and guidance for comparative analysis.

If the groundwater data does not provide acceptable background ranges, then identification of deficiencies will be conducted by the Partnering Team, the collection of additional data will be conducted, and the analysis steps will be repeated.

**Decision Rule # 2: Background Concentration Evaluation**

If acceptable background concentration ranges are determined, then the Groundwater Background Study Report will present the Individual Comparisons Method and the Comparative Method (FDEP, 2009; Naval Facilities Engineering Service Center [NFESC], 2004) as guidance to discern a difference between historical and future site data and naturally occurring background concentrations.

## 3.3 MONITORING WELL SELECTION AND INSTALLATION

Eleven background sample locations (BG1 through BG11) were identified for this study (see Figures 3-1, 3-2, 3-3, and 3-4). These locations include existing and newly installed monitoring wells. Historical groundwater contours and groundwater sample data indicate that these background areas are not impacted by SWMUs or AOCs (Tetra Tech, 2012). The selected monitoring well locations were chosen based on naturally occurring background locations, and to avoid areas within the influence of industrial operation areas or any NAVSTA Mayport SWMU/AOC sites. Well locations for the background areas were judgmentally based on the historical knowledge of Station activities and Partnering Team agreement. A summary table of the wells is provided in Table 3-1. The table includes nine new monitoring wells that were installed in October 2012.

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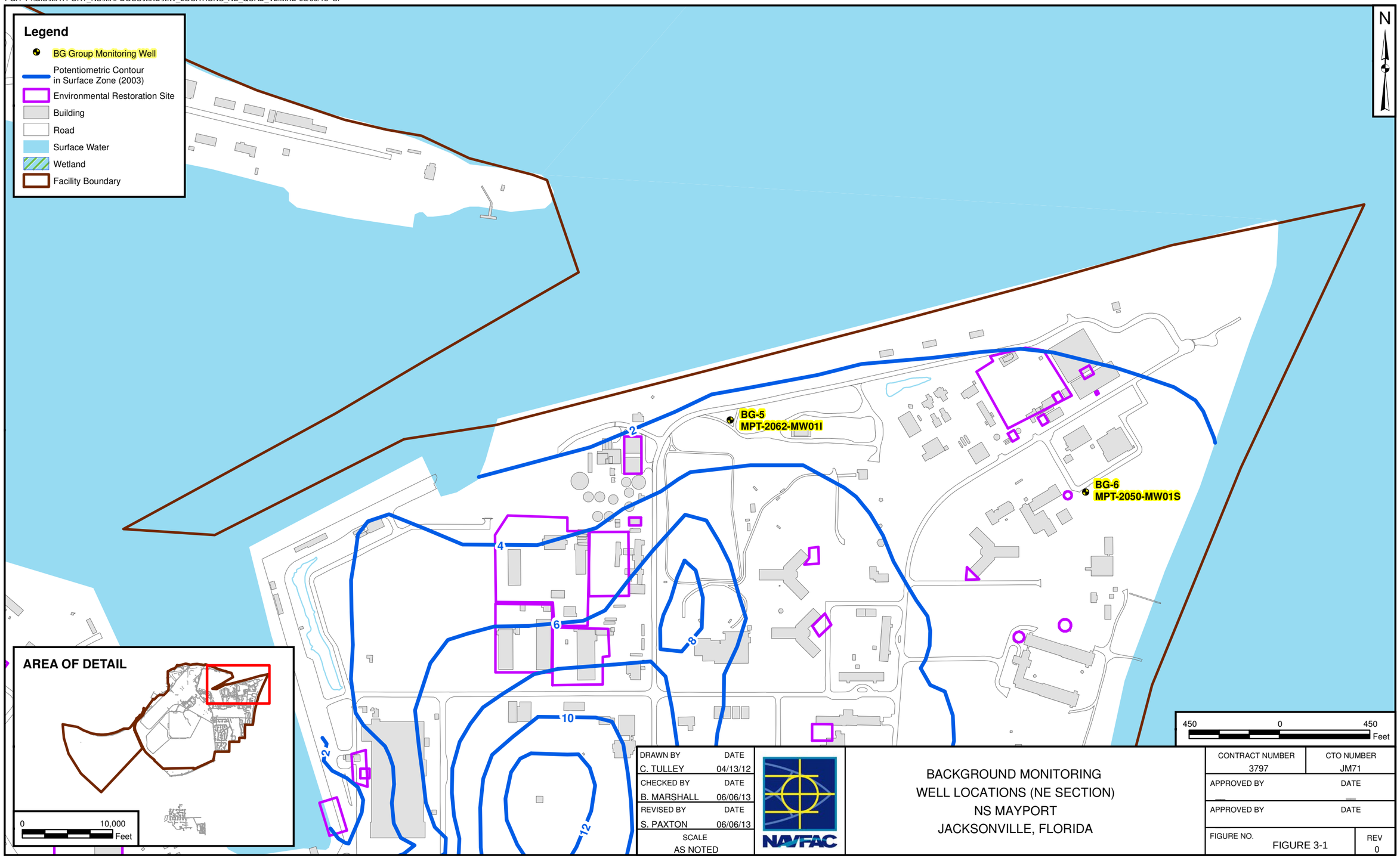


| DRAWN BY | DATE |
|---|---|
| C. TULLEY | 04/13/12 |
| CHECKED BY | DATE |
| B. MARSHALL | 06/06/13 |
| REVISED BY | DATE |
| S. PAXTON | 06/06/13 |
| SCALE | |
| AS NOTED | |

NAVFAC

BACKGROUND MONITORING
WELL LOCATIONS (NE SECTION)
NS MAYPORT
JACKSONVILLE, FLORIDA

| CONTRACT NUMBER | CTO NUMBER |
|---|---|
| 3797 | JM71 |
| APPROVED BY | DATE |
| APPROVED BY | DATE |
| FIGURE NO. FIGURE 3-1 | REV 0 |

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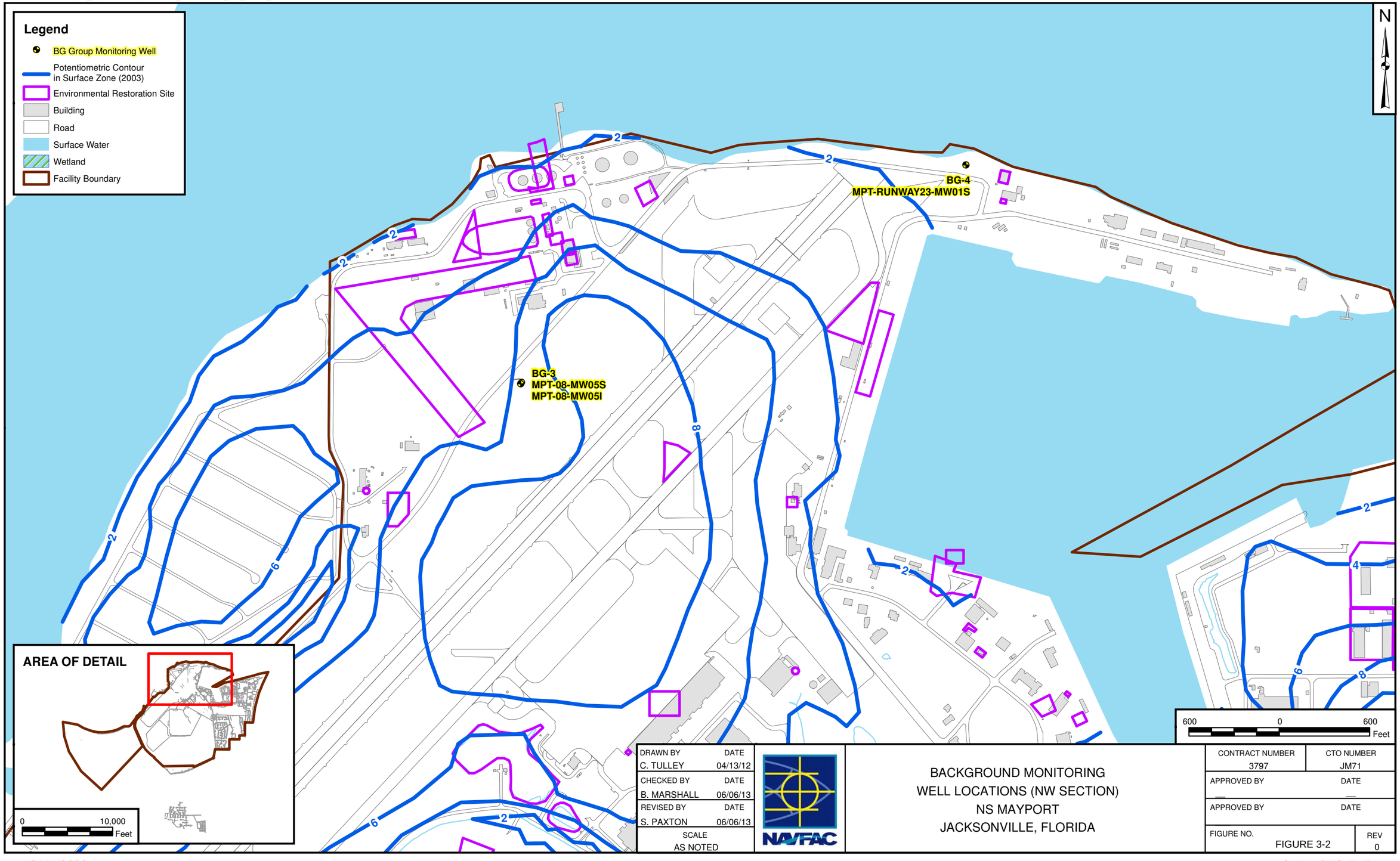


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|---|---|
| C. TULLEY | 04/13/12 |
| CHECKED BY | DATE |
| B. MARSHALL | 06/06/13 |
| REVISED BY | DATE |
| S. PAXTON | 06/06/13 |
| SCALE | |
| AS NOTED | |

NAVFAC

BACKGROUND MONITORING
WELL LOCATIONS (NW SECTION)
NS MAYPORT
JACKSONVILLE, FLORIDA

| CONTRACT NUMBER | CTO NUMBER |
|---|---|
| 3797 | JM71 |
| APPROVED BY | DATE |
| APPROVED BY | DATE |
| FIGURE NO. FIGURE 3-2 | REV 0 |

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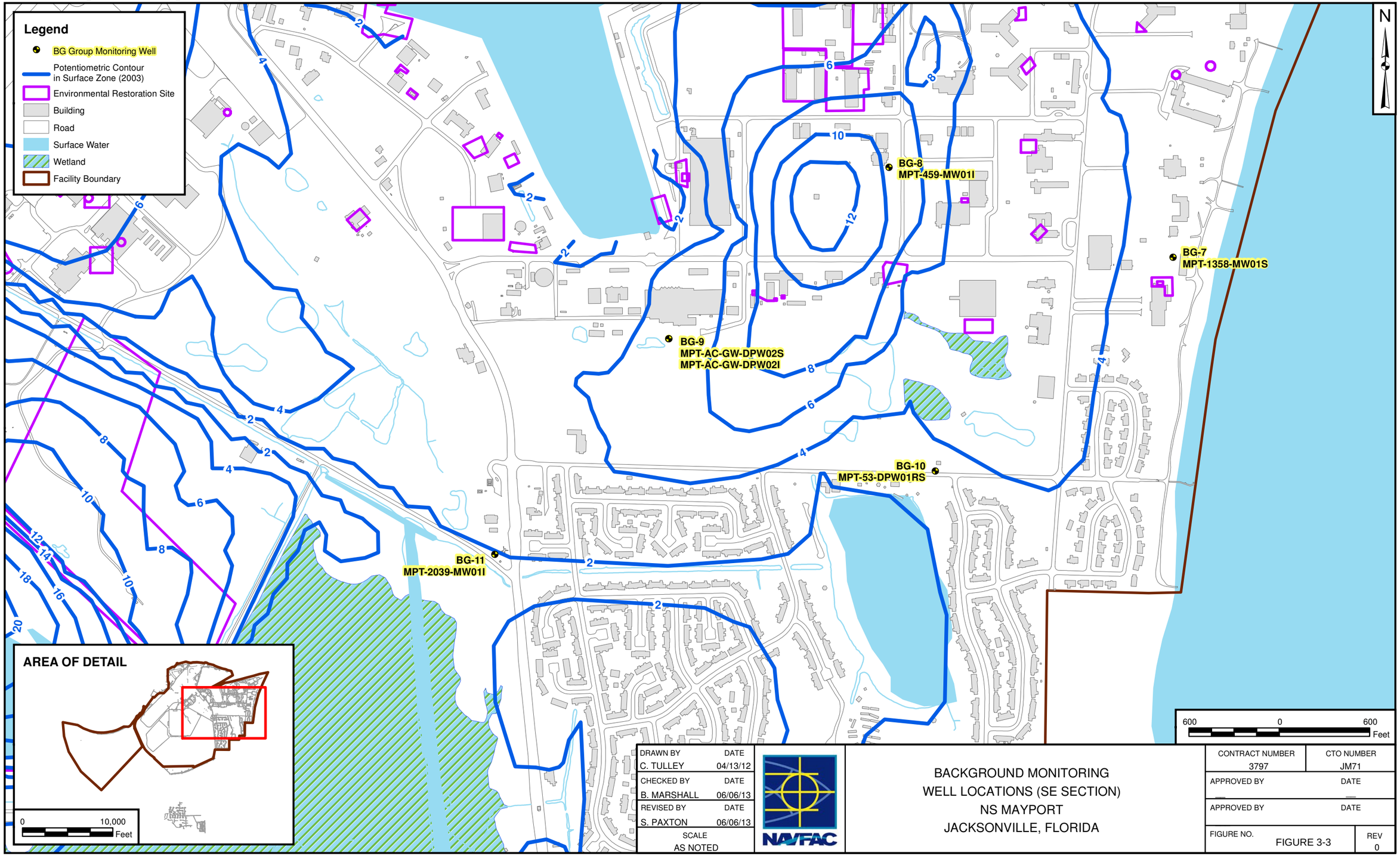


| DRAWN BY | DATE |
|---|---|
| C. TULLEY | 04/13/12 |
| CHECKED BY | DATE |
| B. MARSHALL | 06/06/13 |
| REVISED BY | DATE |
| S. PAXTON | 06/06/13 |
| SCALE | |
| AS NOTED | |

NAVFAC

BACKGROUND MONITORING
WELL LOCATIONS (SE SECTION)
NS MAYPORT
JACKSONVILLE, FLORIDA

| CONTRACT NUMBER | CTO NUMBER |
|---|---|
| 3797 | JM71 |
| APPROVED BY | DATE |
| APPROVED BY | DATE |
| FIGURE NO. FIGURE 3-3 | REV 0 |

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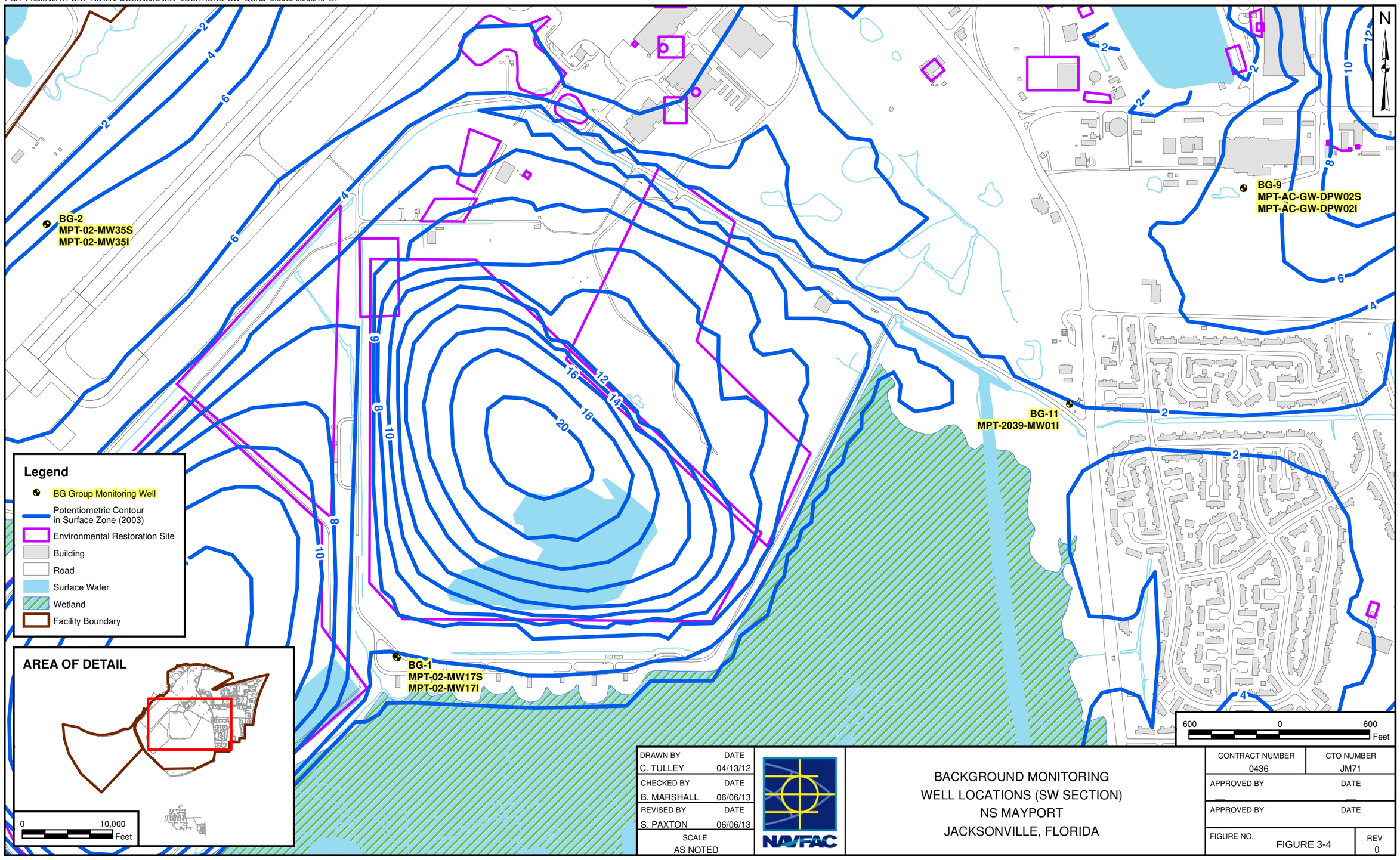


| DRAWN BY | DATE |
|---|---|
| C. TULLEY | 04/13/12 |
| CHECKED BY | DATE |
| B. MARSHALL | 06/06/13 |
| REVISED BY | DATE |
| S. PAXTON | 06/06/13 |
| SCALE | |
| AS NOTED | |

NAVFAC

BACKGROUND MONITORING
WELL LOCATIONS (SW SECTION)
NS MAYPORT
JACKSONVILLE, FLORIDA

| CONTRACT NUMBER | CTO NUMBER |
|---|---|
| 0436 | JM71 |
| APPROVED BY | DATE |
| APPROVED BY | DATE |
| FIGURE NO. FIGURE 3-4 | REV 0 |

Monitoring wells MPT-02-MW35RS, MPT-Runway23-MW01S, MPT-2050-MW01S, MPT-1358-MW01S, and MPT-53-MW01S were installed to a depth of 15 feet bls and screened in the 5- to 15-foot bls interval. Monitoring well MPT-02-MW35RI was installed to 30 feet bls and screened in the 25- to 30-foot bls interval. Monitoring wells MPT-2062-MW01I, MPT-459-MW01I, and MPT-2039-MW-01I were installed to depths of 40 feet bls and screened in the 35- to 40-foot bls interval. Each newly installed monitoring well was developed by pumping for ½ to 1 hour. Monitoring well completion logs for these wells are provided in Appendix B.

**TABLE 3-1**

**SELECTION OF MONITORING WELLS**
**NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA**

| Well Identification | Screened Interval (feet bls) | Number of Samples(2) | Rationale for Selection |
|---|---|---|---|
| MPT-02-MW17S | 3-13 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-02-MW17I | 25-30 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-02-MW35RS(1) | 2-12 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-02-MW35RI(1) | 25-30 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-08-MW05S | 5-15 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-08-MW05I | 25-30 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-Runway23-MW01S(1) | 5-15 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-2062-MW01I(1) | 35-40 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-2050-MW01S(1) | 5-15 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-1358-MW01S(1) | 5-15 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-459-MW01I(1) | 35-40 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-AC-GW-DPW02S | 2-12 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-AC-GW-DPW02I | 30-35 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-53-DPW01RS(1) | 5-15 | 2 | No detected impacts from SWMUs/AOCs |
| MPT-MW2039I(1) | 35-40 | 2 | No detected impacts from SWMUs/AOCs |

**Notes:**
1. New Wells installed (total of 9)
2. Number of samples (2) collected over two quarterly sampling events

## 3.4 MONITORING WELL SAMPLING

Two groundwater sampling events were conducted (November 2012 and February 2013) to sample the background monitoring wells. Groundwater samples were collected following FDEP SOPs using “low flow, low stress” sampling methods and were submitted to an off-site certified laboratory for analysis of target analytes. The groundwater levels and field parameters (dissolved oxygen, temperature, oxidation reduction potential, pH, conductivity, and turbidity) were measured during each sampling event at each monitoring well to evaluate the aquifer and to determine when groundwater was representative of site conditions. A summary of the laboratory results are presented in Table 3-2. The laboratory reports for both sampling events along with the completed chain-of-custody reports are included in Appendix C.

**TABLE 3-2**

**SUMMARY OF LABORATORY RESULTS**
**NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA**
**PAGE 1 OF 2**

| LOCATION | MPT-02-MW17I | | MPT-02-MW17S | | MPT-02-MW35RI | | MPT-02-MW35RS | | MPT-08-MW05I | | MPT-08-MW05S | | MPT-1358-MW01S | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE IDENTIFICATION | MPT-02-MW17I-022813 | MPT-02-MW17I-20121107 | MPT-02-MW17S-022813 | MPT-02-MW17S-20121107 | MPT-02-MW35RI-030113 | MPT-02-MW35RI-20121106 | MPT-02-MW35RS-030113 | MPT-02-MW35RS-20121106 | MPT-08-MW05I-030113 | MPT-08-MW05I-20121109 | MPT-08-MW05S-030113 | MPT-08-MW05S-20121109 | MPT-1358-MW01S-022813 | MPT-1358-MW01S-20121107 |
| SAMPLE DATE | 20130228 | 20121107 | 20130228 | 20121107 | 20130301 | 20121106 | 20130301 | 20121106 | 20130301 | 20121109 | 20130301 | 20121109 | 20130228 | 20121107 |
| **METALS (µg/L)** | | | | | | | | | | | | | | |
| ALUMINUM | 160 J | 364 J | 83.1 J | 275 | 80 | 265 J | 19.6 J | 77.1 | 12.5 U | 85.3 J | 12.5 U | 86.9 J | 33.4 J | 100 |
| ANTIMONY | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U |
| ARSENIC | 13.1 | 13.2 | 4.47 | 8.67 | 3.4 | 11.6 | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.906 J | 2.63 | 3.57 |
| CHROMIUM | 5 U | 5 U | 2.5 U | 1.09 J | 5 U | 5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.619 J |
| IRON | 13100 | 12200 | 743 | 1220 | 57.4 | 34.4 | 16.4 J | 25.9 | 22.5 J | 24.6 J | 108 | 237 | 1090 | 303 |
| LEAD | 3.75 U | 3.75 U | 1.88 U | 0.75 U | 3.75 U | 3.75 U | 0.375 U | 0.375 U | 0.375 U | 0.75 U | 0.375 U | 0.75 U | 0.75 U | 0.375 U |
| MANGANESE | 179 | 184 | 883 | 474 | 13.5 | 13.5 | 41.4 | 33.5 | 13.1 | 15.1 | 48.7 | 153 | 59.5 | 27.5 |
| SILVER | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| THALLIUM | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U |
| VANADIUM | 1.38 J | 2 J | 4.09 | 3.25 | 3.97 | 5.25 | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 2.16 J | 8.38 |
| ZINC | 12.5 U | 12.5 U | 6.25 U | 3.31 J | 12.5 U | 12.5 U | 1.25 U | 1.25 U | 4.62 J | 6.62 J | 1.25 U | 2.5 U | 2.5 U | 1.92 J |
| **MISCELLANEOUS PARAMETERS (mg/L)** | | | | | | | | | | | | | | |
| AMMONIA-N | 3.9 | 4.04 | 0.437 | 0.49 | 8.58 | 8.57 | 0.802 | 0.841 | 1.72 | 1.71 | 0.575 | 0.607 | 0.131 J | 0.11 U |
| SULFATE | 888 | 900 | 618 | 358 | 23.2 | 120 | 11.9 | 14.7 | 51.1 | 175 | 27.6 | 233 | 170 | 68.3 |

| LOCATION | MPT-1358-MW01S | | MPT-2039-MW01I | | MPT-2050-MW01S | | | | MPT-2062-MW01I | | MPT-459-MW01I | | MPT-53-DPW01RS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE IDENTIFICATION | MPT-1358-MW01S-20121107-AVG | MPT-1358-MW01S-20121107-D | MPT-2039-MW01I-022813 | MPT-2039-MW01I-20121105 | MPT-2050-MW01S-022813 | MPT-2050-MW01S-022813-AVG | MPT-2050-MW01S-022813-D | MPT-2050-MW01S-20121106 | MPT-2062-MW01I-030113 | MPT-2062-MW01I-20121106 | MPT-459-MW01I-022813 | MPT-459-MW01I-20121105 | MPT-53-DPWR01S-030113 | MPT-53-DPWR01S-20121105 |
| SAMPLE DATE | 20121107 | 20121107 | 20130228 | 20121105 | 20130228 | 20130228 | 20130228 | 20121106 | 20130301 | 20121106 | 20130228 | 20121105 | 20130301 | 20121105 |
| **METALS (µg/L)** | | | | | | | | | | | | | | |
| ALUMINUM | 93.85 | 87.7 | 331 J | 469 J | 49.1 J | 47.7 | 46.3 J | 151 | 44.2 J | 406 | 101 | 192 | 139 | 364 |
| ANTIMONY | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U |
| ARSENIC | 3.82 | 4.07 | 0.75 U | 0.75 U | 2 J | 1.955 | 1.91 J | 1.97 J | 0.75 U | 0.75 U | 0.75 U | 3.67 | 10 | 9.13 |
| CHROMIUM | 0.573 | 0.527 J | 12.5 U | 5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.99 J | 1.2 J | 1 J | 1.33 J | 2.5 U |
| IRON | 298.5 | 294 | 63.5 | 56.2 | 93.8 | 87 | 80.2 | 187 | 104 | 436 | 53.3 | 126 | 942 | 1550 |
| LEAD | 0.375 U | 0.375 U | 9.38 U | 3.75 U | 0.375 U | 0.375 U | 0.375 U | 0.375 U | 0.75 U | 1.88 U | 0.375 U | 0.375 U | 0.375 U | 1.88 U |
| MANGANESE | 28.65 | 29.8 | 343 | 279 | 3.96 | 3.93 | 3.9 | 21.8 | 223 | 220 | 13.6 | 11.4 | 110 | 149 |
| SILVER | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| THALLIUM | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U |
| VANADIUM | 8.6 | 8.82 | 4.26 | 4.22 | 3.23 | 3.19 | 3.15 | 1.84 J | 1.25 U | 1.58 J | 3.52 | 2.35 J | 7.3 | 2.89 J |
| ZINC | 1.93 | 1.94 J | 31.2 U | 12.5 U | 1.25 U | 1.25 U | 1.25 U | 1.27 J | 2.5 U | 6.25 U | 1.25 U | 1.25 U | 1.25 U | 6.25 U |
| **MISCELLANEOUS PARAMETERS (mg/L)** | | | | | | | | | | | | | | |
| AMMONIA-N | 0.11 U | 0.11 U | 3.64 | 3.46 | 0.11 U | 0.11 U | 0.11 U | 0.11 U | 0.93 | 1.01 | 3.03 | 2.68 | 0.374 | 0.66 |
| SULFATE | 68.85 | 69.4 | 1730 | 1700 | 75.9 | 74.75 | 73.6 | 37.1 | 103 | 106 | 20.8 | 13.8 | 67.9 | 175 |

**TABLE 3-2**

**SUMMARY OF LABORATORY RESULTS**
**NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA**
**PAGE 2 OF 2**

| LOCATION | MPT-AC-GW-DPW02I | | MPT-AC-GW-DPW02S | | MPT-RUNWAY23-MW01S | | | |
|---|---|---|---|---|---|---|---|---|
| SAMPLE IDENTIFICATION | MPT-AC-GW-DPW02I-022813 | MPT-AC-GW-DPW02I-20121105 | MPT-AC-GW-DPW02S-022813 | MPT-AC-GW-DPW02S-20121105 | MPT-RUNWAY23-MW01S-022813 | MPT-RUNWAY23-MW01S-022813-AVG | MPT-RUNWAY23-MW01S-022813-D | MPT-RUNWAY23-MW01S-201211 |
| SAMPLE DATE | 20130228 | 20121105 | 20130228 | 20121105 | 20130228 | 20130228 | 20130228 | 20121106 |
| **METALS (µg/L)** | | | | | | | | |
| ALUMINUM | 30.2 J | 76.9 | 17.7 J | 73.7 | 23 J | 24.3 | 25.6 J | 103 |
| ANTIMONY | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U | 1.25 U |
| ARSENIC | 0.75 U | 0.75 U | 1.6 J | 0.75 U | 2.23 J | 2.27 | 2.31 J | 5.63 |
| CHROMIUM | 1.93 J | 1.47 J | 0.542 J | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| IRON | 109 | 131 | 45.4 | 214 | 306 | 264 | 222 | 52.4 |
| LEAD | 0.375 U | 0.375 U | 0.375 U | 0.375 U | 0.375 U | 0.4375 U | 0.5 U | 0.375 U |
| MANGANESE | 17.5 | 14.9 | 20.1 | 13.2 | 17.9 | 16.55 | 15.2 | 12.3 |
| SILVER | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| THALLIUM | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U |
| VANADIUM | 2.46 J | 2.04 J | 8.53 | 2.06 J | 1.25 U | 1.25 U | 1.25 U | 8.93 |
| ZINC | 1.68 J | 1.53 J | 1.33 J | 1.31 J | 1.25 U | 1.25 U | 1.25 U | 2.61 J |
| **MISCELLANEOUS PARAMETERS (mg/L)** | | | | | | | | |
| AMMONIA-N | 0.877 | 0.924 | 0.218 J | 0.203 J | 1.32 | 1.295 | 1.27 | 0.948 |
| SULFATE | 49.9 | 51.6 | 80.7 | 118 | 32.7 | 32.6 | 32.5 | 55.8 |

**Notes:**

U - Indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the detection limit.

J - Indicates that the reported result is estimated. The mass spectral data pass the identification criteria showing that the compound is present, but the calculated result is less than the LOQ.

An adequate amount of representative site data were required to perform the hypotheses tests to obtain reasonably reliable estimates and test statistics. The number of samples was based upon several factors that included project cost, statistical variance, and MDD. The Partnering Team elected to collect groundwater samples from 15 background wells screened in the surficial aquifer over the course of two quarters. This yielded a sample size of 30 for the background population. The collection of groundwater samples for each event occurred over a short time period (1-3 days) to ensure site conditions were representative among all samples, and that the data provide a consistent temporal snapshot of the groundwater conditions. More details on sample size are provided in Section 4.4.

### 3.4.1 Supplement QC Measures

All groundwater samples were kept on ice in coolers and shipped with appropriate QA/QC samples. QA/QC samples were collected as part of the groundwater investigation including field duplicates, rinsate blanks, laboratory QC samples, and temperature blanks as described in Uniform Federal Policy Sampling and Analysis Plan (UFP-SAP).

### 3.4.2 Survey of Monitoring Wells

The newly installed monitoring well locations were surveyed by a professional surveyor licensed in the state of Florida. The two vertical measurements included 1) the top of the polyvinyl chloride riser pipe (herein referred to as “top of casing”) and 2) the top of ground adjacent to the pipe. All of the vertical measurements were taken from marked positions on each monitoring well or, if missing a mark, on the northern side of the riser pipe. The surveyor used an existing survey control at NAVSTA Mayport. Horizontal locations were referenced to the Florida State Plane Coordinate System North Sheet, North American Datum of 1983, and elevations were referenced to msl, North American Vertical Datum 1988 Adjustment. All survey data was determined to the nearest 0.03 meter horizontally (equivalent of 0.1 foot) and the nearest 0.003 meter vertically (equivalent of 0.01 foot).

### 3.4.3 Investigative-derived Waste

Investigative-derived waste (IDW) generated during this investigation included soil drill cuttings, purged groundwater, and one-time use personal protective equipment. All IDW was determined to be nonhazardous, and soil drill cuttings were placed into labeled, sealable 55-gallon Department of Transportation-approved steel drums provided by NAVSTA Mayport PWD or equivalent. Proper disposal of the drummed wastes will be performed by a permitted disposal contractor. The monitoring wells were located in areas with no history of impact from contamination, thus the purged groundwater was discharged to the ground surface adjacent to each monitoring well, as approved by the NAVSTA Mayport Partnering Team.

# 4.0 USABILITY REVIEW

## 4.1 QUALITY ASSURANCE/QUALITY CONTROL

This section of the Background Study focuses on QA/QC, FOD, presence of potential outliers, and the usability of the final data set. Information on these topics is presented in Sections 4.1 through 4.4.

The samples from the November 2012 and the February 2013 sampling events were submitted to Empirical Laboratories, LLC. The samples were analyzed within the required holding times as determined by the analytical method.

One QC rinsate blank was collected during the November 2012 sampling event, and one QC rinsate blank was collected during the February 2013 sampling event. Iron (16.5 µg/L, J qualifier) and zinc (1.41 µg/K, J qualifier) were detected in the QC rinsate blank associated with the November 2012 sampling event. No analytes were detected in the February 2013 sampling event. The detected concentrations of iron and zinc in the QC samples were within the reported range of the method detection limits associated with the non-QC groundwater samples for both analytes. The detection of these two analytes in the QC rinsate blank has no impact on the usability of the data.

Empirical Laboratories, LLC reported that for the November 2012 sampling event, the matrix spike for iron exceeded criteria. Therefore, the iron results associated with the November 2012 sampling event may have a positive bias. This finding has no impact on the usability of the data.

There were several notations reported by Empirical Laboratories, LLC for the analytical results associated with the November 2012 and February 2013 sampling events. The impact on the usability of the data is discussed in Section 4.3.

The relative percent differences (RPDs) on the results from the field original and duplicate samples were calculated using the following equation (USEPA, 2010b):

$$RPD = \frac{|\text{Original Sample} - \text{Duplicate Sample}|}{(\text{Original Sample} + \text{Duplicate Sample})/2} \times 100$$

The control limit of 30 percent for the RPD is used for original and duplicate field sample values (Tetra Tech, 2012). RPDs are not calculated on original and duplicate sample results when the reported concentrations are not detected or are near the detection limit due to the uncertainty associated with those concentrations. The RPDs were within acceptable QC limits for all except iron, which has a RPD of

31.82 percent, as shown in Table 4-1. The overall average RPD was 8.52 percent. These finding have no impact on the usability of the data.

**TABLE 4-1**

**RELATIVE PERCENT DIFFERENCES – FIELD ORIGINAL AND DUPLICATE SAMPLES NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA**

| ANALYTE | LOCATION IDENTIFICATION | | |
|---|---|---|---|
| | MPT-1358-MW01S | MPT-2050-MW01S | MPT-RUNWAY23-MW01S |
| Aluminum | 13.11 | NC | NC |
| Ammonia-N | NC | NC | 3.86 |
| Arsenic | 13.09 | NC | NC |
| Iron | 3.02 | 15.63 | 31.82 |
| Manganese | 8.03 | 1.53 | 16.31 |
| Sulfate | 1.60 | 3.08 | 0.61 |
| Vanadium | 5.12 | 2.51 | NC |

**Notes:**
NC = Not calculated as value – was either not detected or the result was estimated (i.e., "J" flagged)

## 4.2 FREQUENCY OF DETECTION

Eleven target analytes were analyzed from 30 groundwater samples. Fifteen of the groundwater samples were collected during the November 2012 sampling event, and 15 groundwater samples were collected during the February 2013 sampling event. Four target analytes (antimony, lead, silver, and thallium) were not detected in any groundwater sample while iron, manganese, and sulfate were detected in all 30 samples (see Table 4-2).

## 4.3 POTENTIAL OUTLIERS

The goal of the outlier evaluation is to determine if a suspected outlier could have reasonably been drawn from the same population as the other measurements. Both statistical and graphical methods were used to identify potential outliers. The laboratory data sheet for each potential outlier was then reviewed. The outlier was removed from the final data sheet if the weight-of-evidence suggested that the measurement was highly positively biased. The results of the outlier evaluation are presented in the following three subsections (4.3.1 through 4.3.3) and summarized in Subsection 4.3.4.

### 4.3.1 Statistical Methods

The data for the nine target analytes (aluminum, ammonia-n, arsenic, chromium, iron, manganese, sulfate, vanadium, and zinc) that exceeded laboratory detection limits were subjected to a series of evaluations. An average was taken for the original and the duplicate samples, and the average was used

**TABLE 4-2**

**FREQUENCY OF DETECTIONS**
**NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA**

| CAS | PARAMETER | FOD | MINIMUM RESULT | | MAXIMUM RESULT | | FDEP GCTL | LOCATION OF MAXIMUM DETECT | SAMPLE OF MAXIMUM DETECT | MINIMUM NON-DETECT | MAXIMUM NON-DETECT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals (results in µg/L)** | | | | | | | | | | | |
| 7429-90-5 | ALUMINUM | 28/30 | 17.7 | J | 469 | J | 200 | MPT-2039-MW01I | MPT-2039-MW01I-20121105 | 12.5 | 12.5 |
| 7440-36-0 | ANTIMONY | 0/30 | (a) | | (a) | | 6 | (a) | (a) | 1.25 | 1.25 |
| 7440-38-2 | ARSENIC | 17/30 | 0.906 | J | 13.2 | | 10 | MPT-02-MW17I | MPT-02-MW17I-20121107 | 0.75 | 0.75 |
| 7440-47-3 | CHROMIUM | 9/30 | 0.527 | J | 1.93 | J | 100 | MPT-AC-GW-DPW02I | MPT-AC-GW-DPW02I-022813 | 0.5 | 12.5 |
| 7439-89-6 | IRON | 30/30 | 16.4 | J | 13100 | | 300 | MPT-02-MW17I | MPT-02-MW17I-022813 | (b) | (b) |
| 7439-92-1 | LEAD | 0/30 | (a) | | (a) | | 15 | (a) | (a) | 0.375 | 9.38 |
| 7439-96-5 | MANGANESE | 30/30 | 3.9 | | 883 | | 50 | MPT-02-MW17S | MPT-02-MW17S-022813 | (b) | (b) |
| 7440-22-4 | SILVER | 0/30 | (a) | | (a) | | 100 | (a) | (a) | 0.25 | 0.25 |
| 7440-28-0 | THALLIUM | 0/30 | (a) | | (a) | | 2 | (a) | (a) | 0.75 | 0.75 |
| 7440-62-2 | VANADIUM | 22/30 | 1.38 | J | 8.93 | | 49 | MPT-RUNWAY23-MW01S | MPT-RUNWAY23-MW01S-201211 | 1.25 | 1.25 |
| 7440-66-6 | ZINC | 10/30 | 1.27 | J | 6.62 | J | 5,000 | MPT-08-MW05I | MPT-08-MW05I-20121109 | 1.25 | 31.2 |
| **Miscellaneous (results in mg/L)** | | | | | | | | | | | |
| TTNUS493 | AMMONIA-N | 27/30 | 0.131 | J | 8.58 | | 2,800 | MPT-02-MW35RI | MPT-02-MW35RI-030113[c] | 0.11 | 0.11 |
| 14808-79-8 | SULFATE | 30/30 | 11.9 | | 1730 | | 250,000 | MPT-2039-MW01I | MPT-2039-MW01I-022813 | (b) | (b) |

**Notes:**
(a) No value reported above detection limit
(b) No non-detects observed

(c ) The Empirical Laboratories, LLC ANALYTICAL DATA PACKAGE SDG # 1303017 dated March 22, 2013 ,and the included chain-of-custody forms show the sample_id for monitoring well MPT-02-MW35RI as MPT-02-MW35I-030113. The correct sample_id is MPT-02-MW35RI-030113.

in all subsequent calculations. The values (i.e., concentrations) for the samples that did not exceed laboratory detection limits were not adjusted[1] and were included in all subsequent calculations. The resulting data were sorted from largest concentration to smallest concentration and are presented in Table D-1 of Appendix D.

The data associated with each of the nine detected target analytes were then reviewed using ProUCL Version 4.1.00 to determine if the data fit one of three distributions. None of the nine data sets fit a normal distribution (see Table 4-3). The data associated with aluminum and ammonia-n fit a gamma distribution and a lognormal distribution. The data associated with sulfate fit a lognormal distribution. The data associated with vanadium fit a gamma distribution. The data associate with arsenic, chromium, iron, manganese, and zinc did not fit any of the three distributions.

**TABLE 4-3**

**UNADJUSTED DATA SET – DATA DISTRIBUTION ANALYSIS**
**NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA**

| Statistical Evaluation/Action | Aluminum | Ammonia-N | Arsenic | Chromium | Iron |
|---|---|---|---|---|---|
| Normal Distribution | O | O | O | O | O |
| Lognormal Distribution | X | X | O | O | O |
| Gamma Distribution | X | X | O | O | O |
| Transformation | Natural Log | Natural Log | NC | NC | NC |
| Rosner's Outlier Test | None | None | NC | NC | NC |

| Statistical Evaluation/Action | Manganese | Sulfate | Vanadium | Zinc |
|---|---|---|---|---|
| Normal Distribution | O | O | O | O |
| Lognormal Distribution | O | X | O | O |
| Gamma Distribution | O | O | X | O |
| Transformation | NC | Natural Log | NC | NC |
| Rosner's Outlier Test | NC | None | NC | NC |

**Notes:**
O = Did not fit the distribution – Goodness-of-Fit Test Statistics at (0.05) Significance Level.
X = Fit the distribution – Goodness-of-Fit Test Statistics at (0.05) Significances Level.
Natural log transformation used to "normalize" the data.
NC = not calculated
None = For 5% Significance Level, there is no Potential Outlier.

The data associated with aluminum, ammonia-n, and sulfate was subjected to a lognormal transformation. These transformed data sets were determined to fit a normal distribution, and the

[1] Frequently ½ the detection limit or some other fitted data are substituted for the reported non-detected values. This type of substitution may be appropriate for some types of data evaluation. At this point in the data set evaluation and construction, it is not appropriate to use substituted values for non-detected results. Future users may elect to use substituted values when comparing the background data set to data associated with a SWMU or AOC. The use of substituted values at this point in the data set evaluation and construction may confuse future users as they may not be able to discern how various statistical results were developed.

Rosner's Outlier Test was applied to each of the transformed data sets. No potential outliers were flagged at the 5% Significance Level.

### 4.3.2 Graphical Methods

Boxplots were developed for the nine data sets presented in Appendix D. The line in the middle of the boxplot is the median. The lower and upper edges of the boxplot represent the first and third quartiles. The whiskers extend to either the minimum or the maximum of the data or 1.5 times the distance between the first and third quartiles, whichever is smaller.

The method used in this section involves inspecting each boxplot and the associated sorted data used to generate the boxplot. The results are presented in the following nine subsections.

#### 4.3.2.1 Aluminum

One value (469 µg/L) is shown above the upper whiskers that extend to just over 400 µg/L. The range of detected values is from 469 µg /L to 17.7 µg/L (see Table D-1 in Appendix D). The 469 µg/L is part of the population of detected values.

#### 4.3.2.2 Ammonia-n

Two values (8.58 milligram per liter [mg/L] and 8.57 mg/L) are shown above the upper whiskers that extend to just over 4 mg/L. The range of detected values is from 8.58 mg/L to 0.131 mg/L (see Table D-1 in Appendix D). The 8.58 mg/L and 8.57 mg/L are part of the population of detected values.

#### 4.3.2.3 Arsenic

Three values (13.2 µg/L, 13.1 µg/L and 11.6 µg/L) are shown above the upper whiskers that extend to approximately 10 µg/L. The range of detected values is from 13.2 µg/L to 0.906 µg/L (see Table D-1 in Appendix D). The 13.2 µg/L, 13.1 µg/L and 11.6 µg/L are part of the population of detected values.

#### 4.3.2.4 Chromium

One value (12.5 µg/L) is shown above the upper whiskers that extend to approximately 5 µg/L. The range of detected values is from 1.93 µg/L to 0.542 µg/L (see Table D-1 in Appendix D). The 12.5 µg/L is not part of the population of detected values. Additionally, the next seven values, in descending order from 5 µg/L to 2.5 µg/L, are associated with non-detected results, and all of these seven values are higher than the highest detected concentration, which is 1.93 µg/L.

#### 4.3.2.5 Iron

Two values (13,100 µg/L and 12,200 µg/L) are shown to be approximately 12 times above the upper whiskers that extend to approximately 1,000 µg/L. Iron was detected in all 30 samples with a range of concentrations from 13,100 µg/L to 16.4 µg/L (see Table D-1 in Appendix D). The 13,100 µg/L and 12,200 µg/L are part of the population of detected values.

#### 4.3.2.6 Manganese

Two values (883 µg/L and 474 µg/L) are shown above the upper whiskers that extend to approximately 350 µg/L. Manganese was detected in all 30 samples with a range of concentrations from 883 µg/L to 3.93 µg/L (see Table D-1 in Appendix D). The 883 µg/L and 474 µg/L are part of the population of detected values.

#### 4.3.2.7 Sulfate

Two values (1,730 mg/L and 1,700 mg/L) are shown to be over 4 times above the upper whiskers that extend to approximately 400 mg/L. The range of detected values is from 1,730 mg/L to 11.9 mg/L (see Table D-1 in Appendix D). The 1,730 mg/L and 1,700 mg/L are part of the population of detected values.

#### 4.3.2.8 Vanadium

Three values (8.93 µg/L, 8.6 µg/L and 8.53 µg/L) are shown above the upper whiskers that extend to greater than 7 µg/L. The range of detected values is from 8.93 µg/L to 1.38 µg/L (see Table D-1 in Appendix D). The 8.93 µg/L, 8.6 µg/L and 8.53 µg/L are part of the population of detected values.

#### 4.3.2.9 Zinc

One value (31.2 µg/L) is shown above the upper whiskers that extend to approximately 13 µg/L. The range of detected values is from 6.62 µg/L to 1.27 µg/L (see Table D-1 in Appendix D). The 31.2 µg/L is not part of the population of detected values. Additionally, the next five values are all reported as non-detected at 12.5 µg/L, and five all of these values are higher than the highest detected concentration, which is 6.62 µg/L.

### 4.3.3 <u>Outlier Section</u>

Outliers were selected and then removed from the database based upon a weight-of-evidence approach. Information from the statistical and graphical methods plus analytic specific information from the

laboratory report was used to determine the presence or absence of outliers. Each of the nine detected inorganic analytes is discussed in the following subsections.

#### 4.3.3.1 Aluminum

Rosner's Outlier Test indicated that at the 5% Significance Level there were no potential outliers flagged. The graphical method indicated that one value (469 µg/L) is above the upper whiskers of the boxplot, and a review of the data shows the 469 µg/L is part of the population of detected values. The 469 µg/L is associated with the sample collected from monitoring well MPT-2039-MW01I during the November 2012 sampling event. The laboratory notes this concentration was estimated, and there are no data flags to suggest a positive bias; therefore, this value is not considered an outlier.

#### 4.3.3.2 Ammonia-n

Rosner's Outlier Test indicated that at the 5% Significance Level there were no potential outliers flagged. The graphical method indicated that two values (8.58 mg/L and 8.57 mg/L) are shown above the upper whiskers of the boxplot, and a review of the data shows these values are part of the population of detected values. The 8.58 mg/L is associated with the sample collected from monitoring well MPT-02-MW35RI during the February 2013 sampling event. There are no data qualifiers associated with this value; therefore, this value is not considered an outlier. The 8.57 mg/L is associated the sample collected during the November 2012 sampling event. This sample was also was taken from monitoring well MPT-02-MW35RI. There are no data qualifiers associated with this value; therefore, this value is not considered an outlier.

#### 4.3.3.3 Arsenic

The Rosner's Outlier Test was not conducted as the data could not be normalized through readily available transformations. Three values (13.2 µg/L, 13.1 µg/L, and 11.6 µg/L) are shown by the graphical method to be above the upper whiskers of the boxplot. The 13.2 µg/L, 13.1 µg/L, and 11.6 µg/L are part of the population of detected values. The 13.2 µg/L is associated with the sample collected from monitoring well MPT-02-MW17I during the November 2012 sampling event. There are no data qualifiers associated with this value; therefore, this value is not considered an outlier. The 13.1 µg/L is associated the sample collected during the February 2013 sampling event. This sample was also was taken from MPT-02-MW17I during the February 2013 sampling event. This value (13.1 µg/L) has an "N" flag, which indicates the matrix spike/matrix spike duplicate (MS/MSD) accuracy and/or precision were outside the laboratory's criteria. There are no comments about a positive bias; therefore, this value is not considered an outlier. The 11.6 µg/L is associated with the sample collected from monitoring well MPT-02-MW35RI

during the November 2012 sampling event. There are no data qualifiers associated with this value; therefore, this value is not considered an outlier.

#### 4.3.3.4 Chromium

The Rosner's Outlier Test was not conducted as the data could not be normalized through readily available transformations. One value (12.5 µg/L) is shown above the upper whiskers of the boxplot. The range of detected values is from 1.93 µg/L to 0.542 µg/L. The 12.5 µg/L is not part of the population of detected values. The next seven values, in descending order from 5 µg/L to 2.5 µg/L, are also associated with non-detected results, and all of these seven values are higher than the highest detected concentration (1.93 µg/L). The 12.5 µg/L represents a non-detected result associated with the sample collected from monitoring well MPT-2039-MW01I during the February 2012 sampling event. This value has a "X" flag in the laboratory report, which indicates a potential positive bias; therefore, this value is considered to be an outlier.

#### 4.3.3.5 Iron

The Rosner's Outlier Test was not conducted as the data could not be normalized through readily available transformations. Two values (13,100 µg/L and 12,200 µg/L) are shown to be approximately 12 times above the upper whiskers of the boxplot. The range of detected values is from 13,100 µg/L to 16.4 µg/L. The 13,100 µg/L and 12,200 µg/L are part of the population of detected values. The 13,100 µg/L is associated with the sample collected from MPT-02-MW17I during the February 2013 sampling event. This result has a "*" flag as the duplicate results exceed the laboratory's internal criteria of 20% RPD. Follow-up communication occurred with the laboratory who reported that there was no positive bias associated with the "*" flag; therefore, this value is not considered an outlier due to laboratory bias. The 12,200 µg/L is associated with the sample collected during the November 2012 sampling event. This value (12,200 µg/L) has an "N" flag, which indicates the MS/MSD accuracy and/or precision were outside the laboratory's criteria. This sample was also was taken from monitoring well MPT-02-MW17I. There are no comments about a positive bias; therefore, this value is not considered an outlier due to laboratory bias.

There was no indication that the two high values for iron (13,100 µg/L and 12,200 µg/L) were bias high due to laboratory methodology issues. Therefore, these values are considered usable. When evaluated graphically and placed within the population of useable iron values, it was determined that these two values are approximately 12 times above the upper whiskers that extend to approximately 1,000 µg/L (see Figure 5 of 9 in Appendix D). Therefore, based upon the graphical method, it was determined that these two values are outliers and should be removed from the data iron data set.

#### 4.3.3.6 Manganese

The Rosner's Outlier Test was not conducted as the data could not be normalized through readily available transformations. Two values (883 µg/L and 474 µg/L) are shown above the upper whiskers of the boxplot. The range of detected values is from 883 µg/L to 3.93 µg/L. The 883 µg/L and 474 µg/L are part of the population of detected values. The 883 µg/L is associated with the sample collected from monitoring well MPT-02-MW17S during the February 2013 sampling event. This result has an "EX" flag, and the laboratory reports there is a potential positive bias for this result; therefore, this value is considered to be an outlier. The 474 µg/L is associated the sample collected during the November 2012 sampling event. This sample was also was taken from monitoring well MPT-02-MW17S. There are no data qualifier flags in the laboratory report and no comments about a positive bias; therefore, this value is not considered an outlier.

#### 4.3.3.7 Sulfate

Rosner's Outlier Test indicated that at the 5% Significance Level, there were no potential outlier's flagged. Two values (1,730 mg/L and 1,700 mg/L) are shown to be over four times above the upper whiskers of the boxplot. The range of detected values is from 1,730 mg/L to 11.9 mg/L. The 1,730 mg/L and 1,700 mg/L are part of the population of detected values. The 1,730 mg/L is associated with the sample collected from monitoring well MPT-2039-MW01I during the February 2013 sampling event. This result has a "D" flag as there was a ten-fold dilution applied to the sample. There are no comments in the laboratory report about a positive bias; therefore, this value is not considered an outlier. The 1,700 mg/L is associated the sample collected during the November 2012 sampling event. This sample was also was taken from monitoring well MPT-2039-MW01I. This result has a "D" flag as there was a ten-fold dilution applied to the sample. There are no comments in the laboratory report about a positive bias; therefore, this value is not considered an outlier.

#### 4.3.3.8 Vanadium

The Rosner's Outlier Test was not conducted as the data could not be normalized through readily available transformations. Three values (8.93 µg/L, 8.6 µg/L, and 8.53 µg/L) are shown above the upper whiskers of the boxplot. The range of detected values is from 8.93 µg/L to 1.38 µg/L. The 8.93 µg/L, 8.6 µg/L, and 8.53 µg/L are part of the population of detected values. The 8.93 µg/L is associated with the sample collected from monitoring well MPT-RUNWAY23-MW01S during the November 2012 sampling event. There are no data qualifiers associated with this value; therefore, this value is not considered an outlier. The 8.6 µg/L is an average of the original (8.38 µg/L), and the duplicate (8.82 µg/L) sample associated the samples collected from monitoring well MPT-1358-MW01S during the November 2012 sampling event. There are no data qualifiers associated with this value; therefore, the

averaged value (8.6 µg/L) is not considered an outlier. The sample result 8.53 µg/L was collected from monitoring well MPT-AC-GW-DPW02S during the February 2013 sampling event. There are no data qualifiers associated with this value; therefore, this value is not considered an outlier.

#### 4.3.3.9 Zinc

The Rosner's Outlier Test was not conducted as the data could not be normalized through readily available transformations. One value (31.2 µg/L) is shown above the upper whiskers of the boxplot. The range of detected values is from 6.62 µg/L to 1.27 µg/L. The 31.2 µg/L is not part of the population of detected values. Additionally, the next five values are all reported as non-detected at 12.5 µg/L, and five of these values are higher than the highest detected concentration (6.62 µg/L). The 31.2 µg/L value represents a non-detected result associated with the sample collected from monitoring well MPT-2039-MW01I during the February 2013 sampling event. This value has a "X" flag, which indicates a potential positive bias; therefore, this value is considered to be an outlier.

### 4.3.4 Summary of Outlier Evaluation

A weight-of-evidence approach was used to select outliers. Information from the statistical and graphical methods plus analytic-specific information from the laboratory was used to determine the presence or absence of outliers. The following outliers were identified:

- Chromium at 12.5 µg/L from the sampled collected in February 2013 from monitoring well MPT-2039-MW01I
- Iron at 13,100 and 12,200 µg/L from the samples collected in November 2012 and February 2013, respectively, from monitoring well MPT-02-MW17I
- Manganese at 883 µg/L from the sampled collected in February 2013 from monitoring well MPT-02-MW17S
- Zinc at 31.2 µg/L from the sampled collected in February 2013 from monitoring well MPT-2039-MW01I

## 4.4 USABILITY OF FINAL BACKGROUND DATA SET

The background data set will be used to determine if target analytes detected from groundwater samples from SWMUs or AOCs should be retained for further evaluation. There are a number of methods that are used to make this determination. All of these methods assume that the values in the background data set are representative of the background population under evaluation. Several key factors (data quality, data bias, and sample size of the background data set) can be used to determine if the background data set are usable and representative of the population under evaluation. These key factors are discussed in this

section, and specific recommendations are made for the usability of the data for several of the targeted target analytes.

### 4.4.1 Data Quality

A data quality objectives review was conducted that addressed QA/QC and RPD. There were no findings that impacted the usability of the data.

### 4.4.2 Data Bias

The data bias review addressed FOD and the presence of potential outliers.

### 4.4.3 Frequency of Detection

Four of the 11 targeted analytes (antimony, lead, silver, and thallium) were not detected in any groundwater sample; therefore, the data associated with antimony, lead, silver, and thallium were removed from the final background data set.

The upper end of the distribution of the chromium data (the right tail) was populated with non-detected values (see Table D-1 in Appendix D), specifically the highest eight values. The non-detected values range from 12.5 µg/L to 2.5 µg/L. The highest detected concentration of chromium is 1.93 µg/L. The background data on chromium should not be used in a comparative analysis with groundwater data associated with an area of interest (e.g.; SWMUs or AOCs). The chromium data were removed from the final background data set.

A similar condition exists with the zinc background data. The upper end of the distribution of the data set (the right tail) was populated with non-detected values (see Table D-1 in Appendix D), specifically the highest six values. The background data on zinc has limited usefulness. The zinc data were removed from the final background data set.

### 4.4.4 Potential Outliers

The following outliers were identified in Section 4.3.4:

- Chromium at 12.5 µg/L from the sampled collected in February 2013 from monitoring well MPT-2039-MW01I
- Iron at 13,100 and 12,200 µg/L from the samples collected in November 2012 and February 2013, respectively, from monitoring well MPT-02-MW17I

- Manganese at 883 µg/L from the sampled collected in February 2013 from monitoring well MPT-02-MW17S
- Zinc at 31.2 µg/L from the sampled collected in February 2013 from monitoring well MPT-2039-MW01I

The chromium and zinc data were removed from the final background data set due to bias issues associated with the frequency of non-detected values in the right tail of the distributions. Therefore, any bias associated with the chromium or the zinc outlier is immaterial.

The manganese outlier (883 µg/L) and iron outliers (13,100 and 12,200 µg/L) were removed from the final background data set.

#### 4.4.5 Sample Size

The 15 groundwater samples were collected on two occasions (November 20012 and February 2013), as identified in the approved UFP-SAP (Tetra Tech, 2012). The two sampling events yielded a sample size of 30 for the background population. This sample size is consistent with current published guidance for comparing background and chemical concentrations (FDEP, 2009; USEPA, 2009; and USEPA, 2010a).

The 3-month period between sampling episodes assured that the data are independent. Adequate sampling of aquifer concentration distributions cannot be accomplished unless enough time elapses between sampling events to allow different portions of the aquifer to pass through the well screen. The minimum time interval between sampling episode that assures independence is determined by dividing the monitoring well diameter (D) by the average linear groundwater velocity (Vh) (USEPA, 2009). The largest monitoring well diameter in the background area is 2 inches. The groundwater velocity in the background area ranges from 0.888 inch per day to 4.92 inches per day (an average 2.90 inches per day). Therefore:

$$\text{Minimum time interval} = D/\ Vh = 2/2.90 = 0.689 \text{ day}$$

As a result, the background wells could have been sampled approximately every day and satisfy the independence criteria.

The conclusion is that the sample size and the sampling interval had no negative impact on the usability of the data.

# 5.0 UPDATED BACKGROUND DATA SET

## 5.1 SUMMARY OF STATISTICAL PARAMETERS

The Updated Data Set is presented in Table E-1 of Appendix E. As noted in Section 4.0, the following are not contained in the Updated Data Set:

- The manganese outlier of 883 µg/L
- The iron outliers of 13,100 and 12,200 µg/L
- All the data for the following analytes:
  - antimony
  - chromium
  - lead
  - silver
  - thallium
  - zinc

The Updated Data Set contains information on the groundwater concentrations of seven target analytes (aluminum, ammonia-n, arsenic, iron, manganese, sulfate, and vanadium).

The following summary parameters were developed for each of the data sets for the seven target analytes:

- Count (sample size)
- Mean
- Twice the mean
- Maximum reported value
- Minimum reported value[2]
- FOD
- frequency of non-detection
- skewness and kurtosis

[2] Frequently ½ the detection limit or some other fitted data are substituted for the reported non-detected values. This type of substitution may be appropriate for some types of data evaluation. At this point in the data set evaluation and construction, it is not appropriate to use substituted values for non-detected results. Future users may elect to use substituted values when comparing the background data set to data associated with a SWMU or an AOC. The use of substituted values at this point in the data set evaluation and construction may confuse future users as they may not be able to discern how various statistical results were developed.

- goodness of fit to the Normal distribution, the Lognormal distribution, and the Gamma distribution
- Substantial difference (S)

## 5.2 GOODNESS OF FIT

The parameters like skewness, kurtosis, and goodness of fit are generally used to help describe the shape of the distribution. Skewness is a measure of symmetry. A distribution, or data set, is symmetric if it looks the same to the left and right of the center point. The greater the skewness value, the more the distribution is influenced by values in the right tail of the distribution. Kurtosis is a measure of whether the data are peaked or flat relative to a normal distribution. That is, data sets with high Kurtosis tend to have a distinct peak near the mean, decline rather rapidly, and have heavy tails. Data sets with low Kurtosis tend to have a flat top near the mean rather than a sharp peak. The goodness of fit is a statistical approach that is used to tell how well the data fit a known distribution.

The data sets for all seven target analytes had positive skewness and kurtosis values. The lowest skewness and kurtosis values were associated with the aluminum data set and the highest skewness and kurtosis values were associated with the sulfate data set (see Table 5-1).

Generally, the goodness of fit information provides better information than skewness and kurtosis values on how the data sets can be used. Parametric statistics can be used if the data distribution is normal or can be transformed into a normal distribution. Nonparametric statistics are employed if this condition cannot be met. None of the data sets fit the normal distribution. Four of the seven data sets fit the lognormal distribution (see Table 5-1).

## 5.3 SUBSTANTIAL DIFFERENCE

Substantial difference, or S, is a constant that is added to a background data set when Background Test Form 2 (see Section 6.0 for a discussion of Background Test Form 2) is used. A value of S was developed for each of the seven target analytes contained in the Updated Data Set (see Table E-1 of Appendix E). A sensitivity analysis was used to aid in the selection of the recommended S values shown in Table 5-1. These recommended S values were developed using the procedures shown in Appendix A of the USEPA Guidance for Comparing Background and Chemical Concentrations for Soil (USEPA, 2002) (see also FDEP, 2009). The sensitivity analysis and the corresponding set of S values are presented in Appendix F of this Background Study.

## TABLE 5-1

## UPDATED DATA SUMMARY PARAMETERS
## NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA

| Parameter | Target Analyte | | | | | | |
|---|---|---|---|---|---|---|---|
| | ALUMINUM (µg/L) | AMMONIA-N (mg/L) | ARSENIC (µg/L) | IRON (µg/L) | MANGANESE (µg/L) | SULFATE (mg/L) | VANADIUM (µg/L) |
| **FDEP GCTL** | **200** | **2.8** | **10** | **300** | **50** | **250** | **49** |
| Count | 30.00 | 30.00 | 30.00 | 28 | 29.00 | 30.00 | 30.00 |
| Mean | 140.63 | 1.77 | 3.59 | 296.4 | 94.01 | 269.21 | 3.20 |
| Twice-Mean | 281.26 | 3.53 | 7.18 | 592.80 | 188.02 | 538.42 | 6.39 |
| Maximum | 469.00 | 8.58 | 13.20 | 1550 | 474.00 | 1,730.00 | 8.93 |
| Minimum | 12.50 | 0.11 | 0.75 | 16.4 | 3.93 | 11.90 | 1.25 |
| Standard Deviation | 131.20 | 2.21 | 4.04 | 414.6 | 119.30 | 456.70 | 2.35 |
| Frequency of Detection | 28 | 27 | 17 | 28 | 29 | 30 | 22 |
| Frequency of Non-detection | 2 | 3 | 13 | 0 | 0 | 0 | 8 |
| Skewness | 1.18 | 2.14 | 1.40 | 1.90 | 1.69 | 2.47 | 1.43 |
| Kurtosis | 0.26 | 4.53 | 0.65 | 2.69 | 2.59 | 5.55 | 1.12 |
| **Goodness of Fit** | | | | | | | |
| Normal Distribution | O | O | O | O | O | O | O |
| Lognormal Distribution | X | X | O | x | O | X | O |
| Gamma Distribution | X | X | O | O | O | O | X |
| **Substantial Difference** | 131.20 | 2.21 | 4.04 | 414.60 | 119.30 | 456.70 | 2.35 |

**Notes:**

Concentrations are in mg/L for ammonia and sulfate. The concentrations for metals are in µg/L.
O = Did not fit the distribution - Goodness-of-Fit Test Statistics at (0.05) Significance Level
X = Fit the the distribution - Goodness-of-Fit Test Statistics at (0.05) Significance Level

# 6.0 METHODS FOR COMPARATIVE ANALYSIS

## 6.1 GUIDANCE DOCUMENTS

The information in this Background Study may be used to support the goals of future studies that attempt to discern a difference between site data and background data. There are numerous guidance documents that provide acceptable procedures for the comparison of site contaminant levels to background concentrations in groundwater (e.g., FDEP, 2009; NFESC, 1988; NFESC, 1999; NFESC, 2004; USEPA, 2002; USEPA, 2009; and USEPA, 2010a). This Background Study integrated information from the three sources listed above into an uncomplicated approach that can be used to rapidly conduct the initial stage of background comparisons (e.g.; the "characterization stage"; see Section A.2 of Appendix A in USEPA, 2002). The uncomplicated approach is presented in the remainder of this section.

## 6.2 UNCOMPLICATED COMPARISON APPROACH

Sites (e.g., SWMUs, AOCs) with groundwater impacts exceeding GCTLs may be compared to background areas in the characterization or assessment stage to determine if contamination is present in levels exceeding background levels. One of the goals, at this stage, may be to determine the areal extent of contamination at the site. The first step (Step 1 of the Uncomplicated Comparison Approach) compares the maximum detected concentration of a contaminant in the site-impacted groundwater zone to the maximum detection background concentration of that contaminant. The smaller of the background maximum detection background concentrations or twice the background mean of the seven analytes associated with the Updated Background Data Set (see Table 6-1) can be used (a) to determine if further action is required, (b) to define the vertical and horizontal limits of contamination at the site, or (c) as a not-to-exceed cleanup criterion. The FDEP criteria for groundwater, fresh surface water, marine surface water, and low yield/poor quality aquifer are included in Table 6-1 for comparative purposes. The alternative to using the maximum detection background concentrations, presented in Table 6-1, is to proceed to Step 2.

Background Test Form 1 is used in Step 2 to determine if the difference between the site mean and the background mean is significantly greater than zero (see Section A.2 of Appendix A in USEPA, 2002). The null hypothesis (Ho), to be tested in Step 2, is as follows:

- The mean/median Site data is less than or equal to[3] the mean/median Background data (Site ≤ Background).

[3] It is important to note the null hypothesis (Ho) of "Site ≤ Background", is different from the Ho of "the mean/median Site data *is equal to* or *no different from* the mean/median Background data (Site=Background).

**TABLE 6-1**

**MAXIMUM DETECTION BACKGROUND CONCENTRATIONS**
**NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA**

| Inorganic Analyte | Smaller of the Maximum Detection Background Concentration or the Twice the Background Mean | FDEP CTLs | | | |
|---|---|---|---|---|---|
| | | Groundwater | Fresh Surface Water | Marine Surface Water | Low Yield/ Poor Quality |
| ALUMINUM (µg/L) | 281 | 200 | 13 | 1500 | 2000 |
| AMMONIA-N (mg/L) | 3.53 | 2.8 | 20 | 20* | 28 |
| ARSENIC (µg /L) | 7.18 | 10 | 50 | 50 | 100 |
| IRON (µg /L) | 592.80 | 300 | 1000 | 300 | 3000 |
| MANGANESE (µg /L) | 188 | 50 | NA | NA | 500 |
| SULFATE (mg/L) | 538 | 250 | NA | NA | 2500 |
| VANADIUM (µg /L) | 6.39 | 49 | NA | NA | 490 |

**Notes:**

* 1999 criteria listed since 2005 criteria not available
NA - Not available at time of 2005 rule adoption

If the null hypothesis associated with Background Test Form 1 is accepted, then it is determined that there is no difference between the site and the background, relative to the contaminant that was evaluated, and no further action should be required, relative to the contaminant that was evaluated.

The differences between Step 1 and Step 2 relate to cost and certainty. Step 1 is less expensive to perform, and the results are not as conclusive as the results from Step 2. In Step 1, a single number, either the maximum or a ratio (i.e., the mean), from the background data set is compared to a single number from the site data. In Step 2, the entire distribution of both the site and the background are considered. Step 2 is much more robust and, thus, the results are much more certain.

Background Test Form 2 is used in Step 3 when background comparisons are used to determine if a site, with known contamination, has been sufficiently remediated (see Section A.2 of Appendix A in USEPA, 2002). Background Test Form 2 is used if the goal of the remediation is to reduce contamination to near background levels. A number of statistical tests can be used to perform Background Test Form 2. Further guidance on the selection of a statistical test can be found in any of the following sources: FDEP, 2009; NFESC, 1988; NFESC, 1999; NFESC, 2004; USEPA, 2002; USEPA, 2009; and USEPA, 2010a.

# 7.0 SUMMARY AND CONCLUSIONS

The purpose of this Background Study is to statistically evaluate the groundwater analytical data collected from background wells for target analytes aluminum, ammonia, antimony, arsenic, chromium, iron, lead, manganese, silver, sulfate, thallium, vanadium, and zinc at NAVSTA Mayport. Groundwater samples were collected from the 15 background monitoring wells during the November 2012 and the February 2013 sampling events to provide the data set. The sampling events yielded a sample size of 30 for the background population, consistent with current published guidance on this subject (FDEP, 2009; USEPA, 2009; and USEPA, 2010a). The 3-month period between sampling episodes assures that the data are independent.

The background groundwater analytical results were evaluated to determine if the data set are usable and representative of the population under evaluation. Four of the 11 targeted analytes (antimony, lead, silver, and thallium) were not detected in any groundwater sample; thus, the data associated with these analytes were removed from the final background data set. Target analytes chromium and zinc data were removed from the final background data set due to bias issues associated with the frequency of non-detected values in the right tail of the distributions. A manganese value of 883 µg/L, associated with the sample collected from monitoring well MPT-02-MW17S during the February 2013 sampling event, was determined to be an outlier and removed from the manganese data set. Iron values (12,200 and 13,100 µg/L) associated with the sample collected from MPT-02-MW17I during the November 2012 and February 2013 sampling events, respectively, were determined to be outliers and removed from the iron data set. Based upon these findings, an Updated Data Set was developed (see Table E-1 of Appendix E).

Summary parameters were developed for each of the data sets for seven target analytes (aluminum, ammonia-n, arsenic, iron, manganese, sulfate, and vanadium) contained in the Updated Data Set. These summary parameters are as follows:

- Count (sample size)
- Mean
- Twice the mean
- Maximum reported value
- Minimum reported value
- FOD
- Frequency of non-detection
- skewness and kurtosis

- goodness of fit to the Normal distribution, the Lognormal distribution, and the Gamma distribution
- Substantial difference (S)

An uncomplicated three-step approach for comparing background data to site data was developed. The three-step process incorporated approaches that include direct comparison of background values (see Table 6-1) to site maximum values as well as when to use Background Test Form 1 and Background Test Form 2.

Based upon the information reviewed and developed in this Background Study, it was concluded that the data sets for aluminum, ammonia-n, arsenic, iron, manganese, sulfate, and vanadium can be used for comparison with sites that have identified one or more of these target analytes as a chemical of potential concern in surficial groundwater.

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# APPENDIX A

# PARTNERING TEAM MEETING PRESENTATION

# DQO Meeting
# Groundwater Background Study

## Mayport Partnering Meeting
## March 2012

# Groundwater Background Study

*DQO Overview*

- Purpose, Path & Goal
- Brief review of NAVSTA Mayport History and Geo/Hydro Setting
- Target Analytes in Groundwater
- Background Monitoring Well Selection
- Sampling Design & Rationale
- Statistical Approach following FDEP & Navy Guidance
- DQO Consensus Points

# Groundwater Background Study

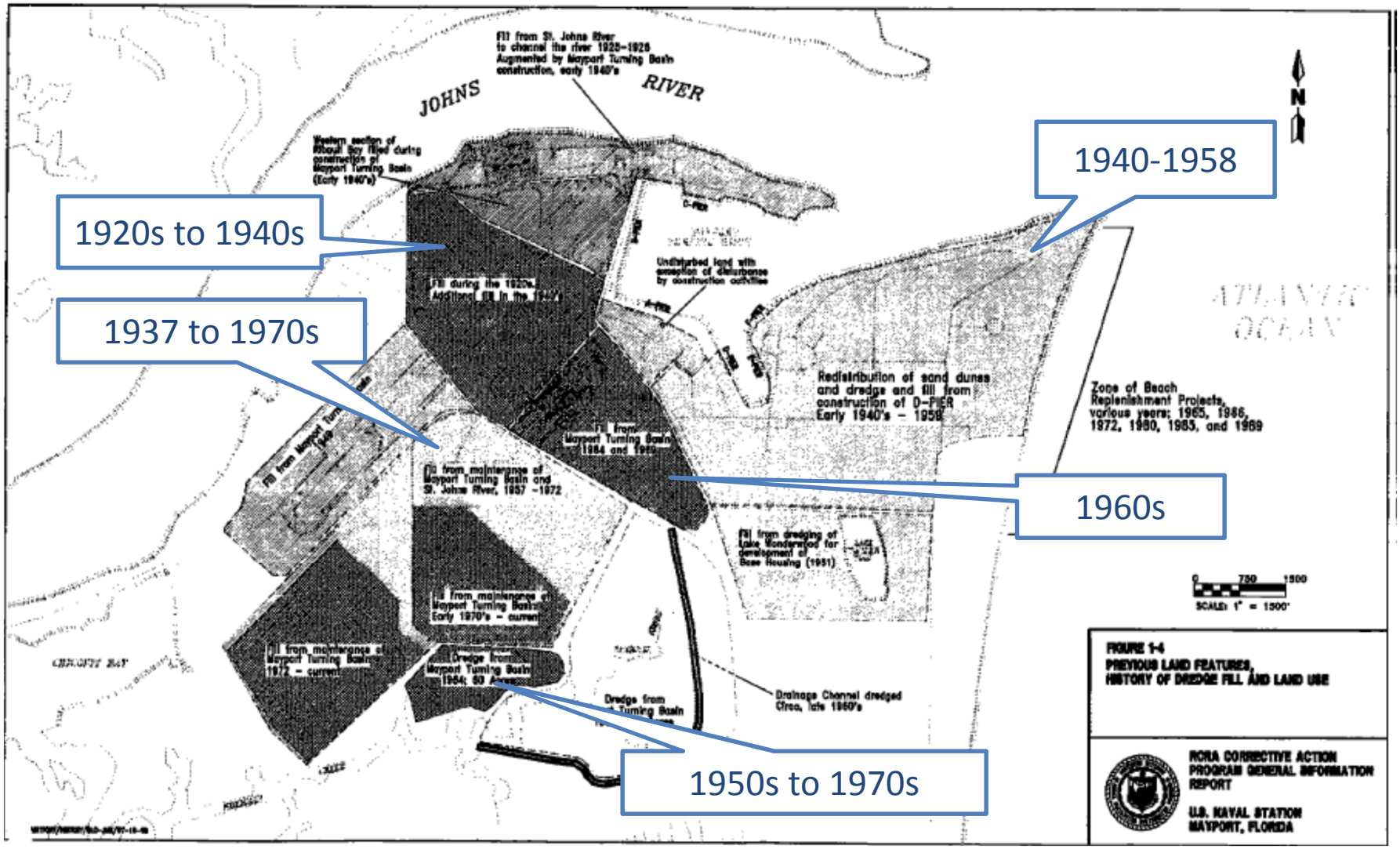
## *Purpose, Path & Goal*

- (**Purpose**): Determine the background groundwater concentrations of naturally occurring Target Analytes (metals/inorganics).
- (**Path**): Background Study – Select background wells, collect sufficient sample data, and evaluate the data using statistical approaches.
- (**Goal**): To calculate background screening value(s) i.e. 2xMean or Maximum and present results in the Groundwater Study Report.

# Brief NAVSTA Mayport Overview

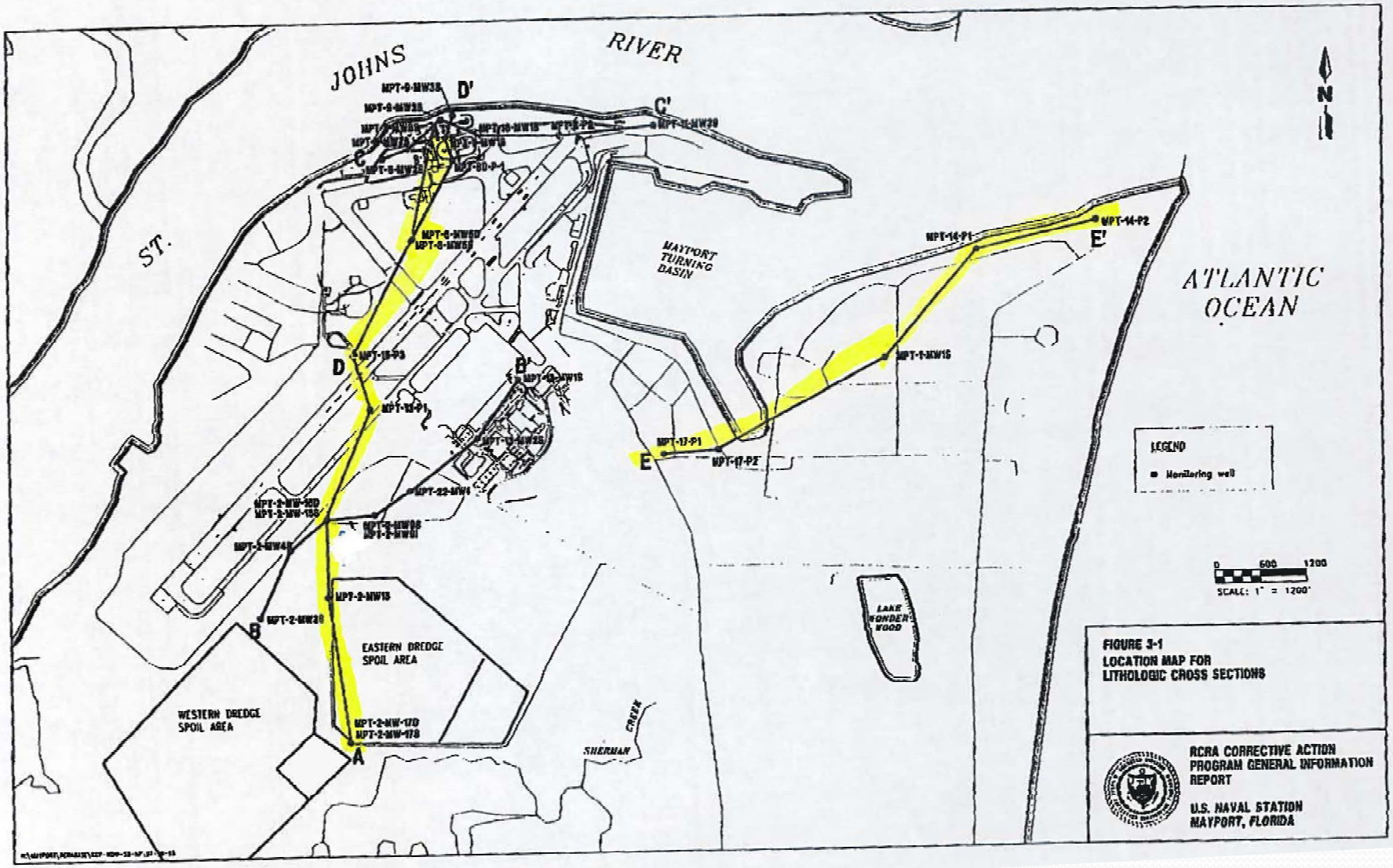
- Operational since 1942
- Situated on 3,400 acres with 56 SWMUs, 8 AOCs, UST sites
- Dredging material used as fill base-wide
- Industrial Activities (Waste Water Treatment, Ship and Aircraft Maintenance & Repair, Fuel Storage, Former Landfills, Housing, Waste Storage)
- Approx. 400 Existing Monitoring Wells

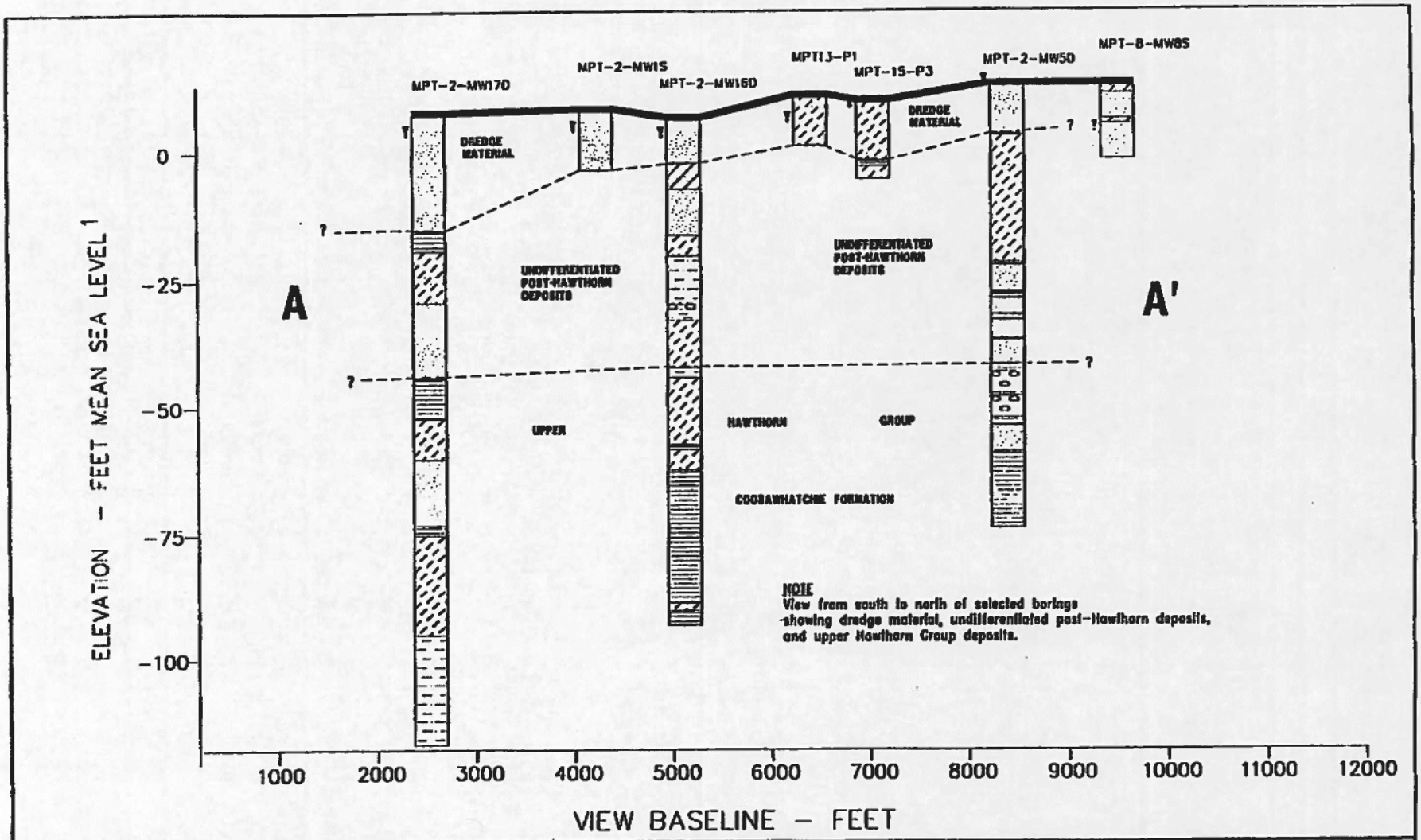
# Initial Installation and subsequent filling



# *NAVSTA Mayport Geo/Hydro Setting*

- Surficial Aquifer depth ranges from approx. surface-45’
- Preliminary Geological X-Sections indicate clay lenses are scattered throughout the base


ST. JOHNS RIVER
ATLANTIC OCEAN
MAYPORT TURNING BASIN
LAKE WONDERWOOD
EASTERN DREDGE SPOIL AREA
WESTERN DREDGE SPOIL AREA
SHERMAN CREEK
A
B
B'
C
C'
D
D'
E
E'
N
LEGEND
Monitoring well
0 600 1200
SCALE: 1" = 1200'
FIGURE 3-1
LOCATION MAP FOR
LITHOLOGIC CROSS SECTIONS
RCRA CORRECTIVE ACTION
PROGRAM GENERAL INFORMATION
REPORT
U.S. NAVAL STATION
MAYPORT, FLORIDA



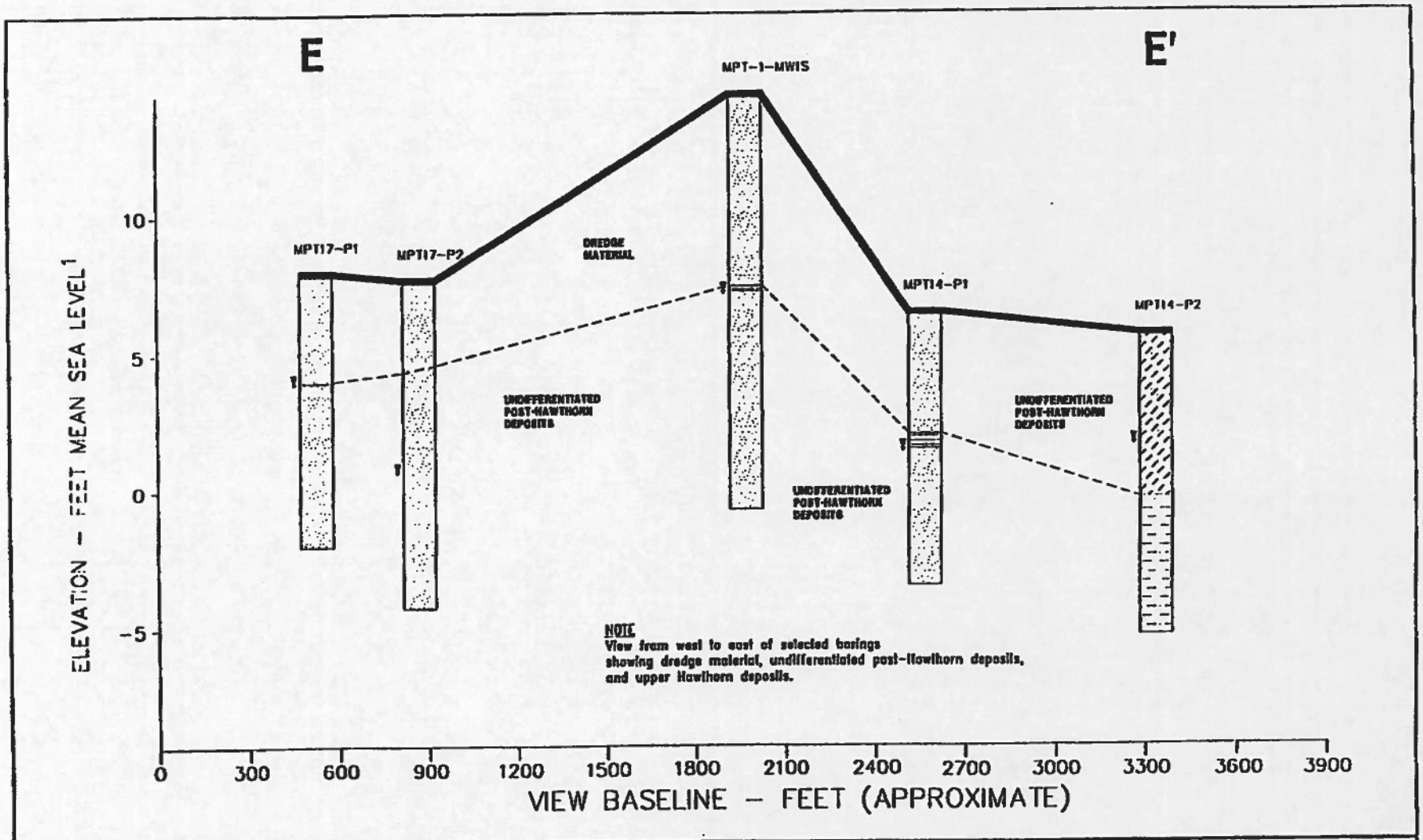

Note:
1 = National Geodetic Vertical Datum, 1929.

**FIGURE 3-3**
**CROSS SECTION A-A',**
**GROUP I AND GROUP II SWMUs**

**RCRA CORRECTIVE ACTION PROGRAM GENERAL INFORMATION REPORT**

**U.S. NAVAL STATION MAYPORT FLORIDA**

MPT_RCRA.GIR
ASW.07.95




Note:
1 = National Geodetic Vertical Datum, 1929.

**FIGURE 3-7**
**CROSS SECTION E-E',**
**GROUP III SWMUs**

**RCRA CORRECTIVE ACTION PROGRAM GENERAL INFORMATION REPORT**

**U.S. NAVAL STATION MAYPORT FLORIDA**

MPT_RCRA.GIR
ASW.07.95

3-8

# Target Analytes in Groundwater

| Metals/parameters to be included in study | |
|---|---|
| Arsenic | Chromium |
| Ammonia | Silver |
| Aluminum | Lead |
| Antimony (lab detection above GCTL) | Vanadium |
| Chloride* | Zinc |
| Iron | |
| Manganese | |
| Sodium* | |
| Sulfate | |
| Thallium (lab detection above GCTL) | |
| *To be excluded based on Sea Water Concentrations | |

# Seawater Composition

| Chemical Ion Contributing to Seawater Salinity | Concentration in (parts per thousand) in average seawater | Concentration in ppm (approx. mg/L)* | Concentration in ppm (approx. mg/L)** | Proposed Background Concentration (mg/L) |
|---|---|---|---|---|
| Chloride | 19.345 | 19,345 | 19,400 | **19,400** |
| Sodium | 10.752 | 10,752 | 10,800 | **10,800** |

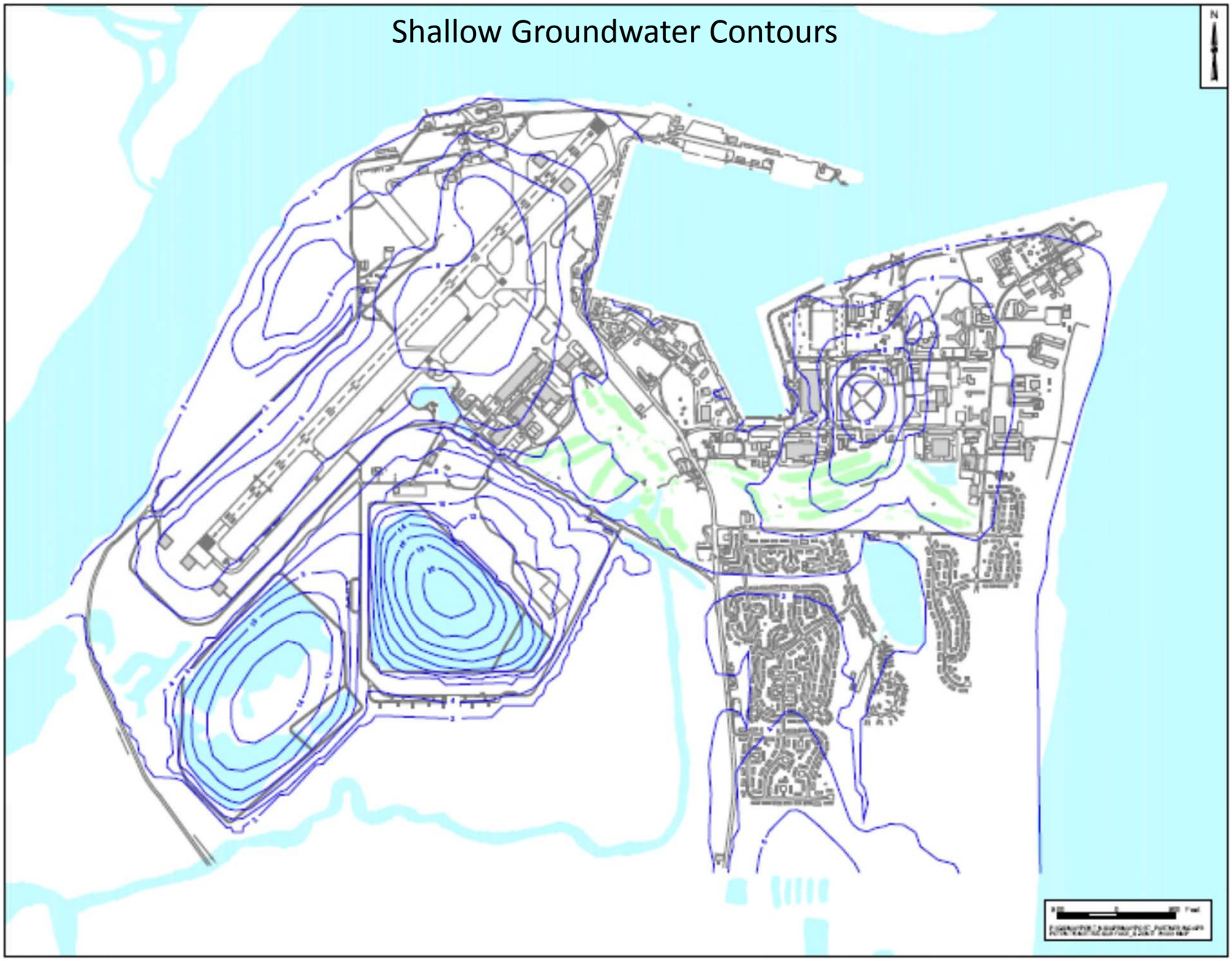
* Castro & Huber, Marine Biology

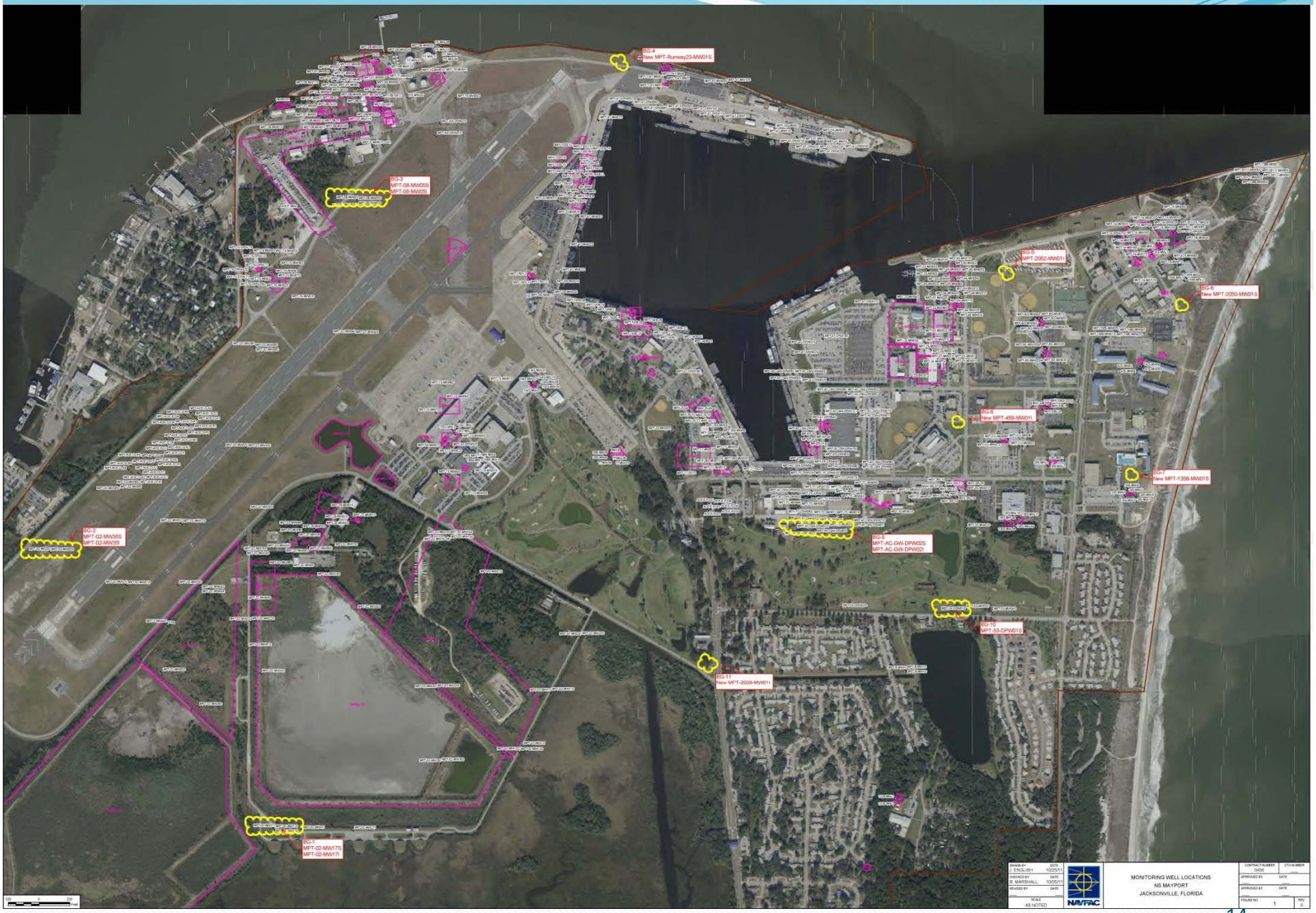
**Oceanplasma.org

# *Background Well Selection (Per FDEP & Navy Guidance)*

- Wells chosen upgradient and/or sidegradient of SWMUs/AOCs, and within base boundaries
- Wells representative of Surficial Aquifer Background Unit

# Shallow Groundwater Contours




BG-4
New MPT-Runway23-MW01S
BG-3
MPT-08-MW05S
MPT-08-MW05I
BG-2
MPT-02-MW35S
MPT-02-MW35I
BG-1
MPT-02-MW17S
MPT-02-MW17I
BG-5
MPT-2062-MW01I
BG-6
New MPT-2050-MW01S
BG-8
New MPT-459-MW01I
BG-7
New MPT-1358-MW01S
BG-9
MPT-AC-GW-DPW02S
MPT-AC-GW-DPW02I
BG-10
MPT-53-DPW01S
BG-11
New MPT-2039-MW01I
DRAWN BY
J. ENGLISH
10/25/11
CHECKED BY
B. MARSHALL
10/25/11
REVISED BY
DATE
SCALE
AS NOTED
NAVFAC
MONITORING WELL LOCATIONS
NS MAYPORT
JACKSONVILLE, FLORIDA
CONTRACT NUMBER
(5420)
CTO NUMBER
APPROVED BY
DATE
FIGURE NO.
1
REV
0

# Background Wells

| Background Well ID | Depth | Screen Interval Depth BLS | Background Area |
|---|---|---|---|
| MPT-02-MW17S | S | 3-13 | BG-1 |
| MPT-02-MW17I | I | 25-30 | |
| MPT-02-MW35S | S | 2-12 | BG-2 |
| MPT-02-MW35I | I | 25-30 | |
| MPT-08-MW05S | S | 2-12 | BG-3 |
| MPT-08-MW05I | I | 25-30 | |
| MPT-Runway23-MW01S | S | 5-15 | BG-4 |
| MPT-2062-MW01I | I | 35-40 | BG-5 |
| MPT-2050-MW01S | S | 5-15 | BG-6 |
| MPT-1358-MW01S | S | 5-15 | BG-7 |
| MPT-459-MW01I | I | 35-40 | BG-8 |
| MPT-AC-GW-DPW02S | S | 2-12 | BG-9 |
| MPT-AC-GW-DPW02I | I | 30-35 | |
| MPT-53-DPW01S | S | ~2-12 | BG-10 |
| MPT-2039I | I | 35-40 | BG-11 |
| | | | |
| | Totals: | | |
| | Shallow | 8 | (3 new) |
| | Intermediate | 7 | (3 new) |
| | Grand Total | 15 | |

# Problem Statement

Currently the groundwater background condition is not known:

- Collect enough data to estimate the background groundwater concentration of each metals of interest
- Establish a protocol for using the background data generated for this project

## *Sample Design & Rationale*

- Sample for Target Analytes
- Per FDEP draft guidance - Minimum of 3 wells sampled quarterly for 1 yr.
- Sample (15) wells in Surficial Background Unit (shallow & intermediate wells) quarterly over ½ year for 30 samples
- Geochemical parameters (pH, DO, ORP, Temp., conductivity, turbidity) collected
- Applying acceptable approach to statistical evaluation of background dataset

# Analytic Approach

- **Decision Rule #1 : Acceptability of Background Wells and Concentration**
  - If the analysis produced technically defensible and reliable estimates of the background concentration ranges for each target analyte then develop report  which contains: background maximum , twice mean, summary statistics, recommended Substantial Difference, Summary Statistics, guidance for comparative analysis.
  - If the background ranges are not acceptable to the Project Team, then the deficiencies should be identified, additional data should be collected if necessary, and the background analysis steps should be repeated.

# Analytic Approach

- **Decision Rule # 2: Individual Comparisons**
  - If the SWMU/AOC maximum detected target analyte concentration is equal to or below the background maximum detected target analyte concentration or is equal to or below twice the mean background concentration then no further action is required for that detected target analyte.
    - $AOC_M$ <=$Background_M$ or $2xMean_M$
  - If the maximum detected target analyte concentration is above the background concentration but the exceedance is not high enough to be obviously inconsistent with the background population, then the Comparative Method will be utilized (Navy, 2004 ; FDEP ,2009).

# Analytic Approach

- **Decision Rule # 3: Comparative Method – Statistical Test Selection**
  - If the SWMU/AOC data set and the appropriate background data set meet the requirements for one or more of the statistical tests presented in Table 4-1 of the Guidance for Environmental Background Analysis Volume III Groundwater (Navy, 2004) and the FDEP guidance (March, 2009) then the statistical testing most appropriate for the two data sets will be conducted. If the site data set or the appropriate background data set do not meet these requirements, then deficiencies should be identified, additional data should be collected if necessary, and the background analysis steps should be repeated.

# Consensus Points

1. Surficial Aquifer Wells Only for Background Dataset
2. Background Sample Areas = 11
3. Background Sample Wells = 15
4. Two quarters of sampling for 30 samples (with evaluation for whether additional samples are required)
5. ~~Background concentrations of Na(10,800mg/L) and Cl(19,400mg/L)~~
6. Statistical Result (Use higher of 2x Mean or Maximum Concentration)
7. Specific statistical test not listed in the SAP
   - Test(s) dependent upon data characteristics (e.g. distribution type) and selected from FDEP 2009 draft guidance and DON 2004 guidance.
8. Substantial Difference or "S" per sensitivity analysis
9. Report Contents: background maximum , twice mean, recommended Substantial Difference, Summary Statistics, data sets, guidance for comparative analysis

# APPENDIX B

# FIELD FORMS AND NOTES

Tetra Tech, Inc.

WELL No.: MPT-2062-MW01I

# MONITORING WELL CONSTRUCTION LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT: | NAVSTA Mayport | DRILLING Co.: | EDS, Inc. | BORING No.: | |
| PROJECT No.: | 112G03797 | DRILLER: | G.Pennington | DATE COMPLETED: | 10/22/12 |
| SITE: | Base Wide | DRILLING METHOD: | HSA Rig | NORTHING: | |
| GEOLOGIST: | B. Olson | DEV. METHOD: | Pumping | EASTING: | |

Not to Scale

Elevation / Depth of Top of Riser: ~3.4'

Elevation / Height of Top of Surface Casing: ~3.1'

I.D. of Surface Casing: 4" inside square

Type of Surface Casing: Square Metal Protective Riser with bollards

Type of Surface Seal: Concrete

I.D. of Riser: 2"

Type of Riser: PVC Sch 40

Borehole Diameter: 8"

Type of Backfill: Portland Cement

Elevation / Depth of Seal: 1.5 ft bls

Type of Seal: Bentonite and 30/65 Sand

Elevation / Depth of Top of Filter Pack: 32 ft bls

Elevation / Depth of Top of Screen: 35 ft bls

Type of Screen: 2" PVC Sch 40

Slot Size x Length: 10 slot, 5 feet length

I.D. of Screen: 2"

Type of Filter Pack: 20/30 Sand

Elevation / Depth of Bottom of Screen: 40 ft bls

Elevation / Depth of Bottom of Filter Pack: N/A

Type of Backfill Below Well:

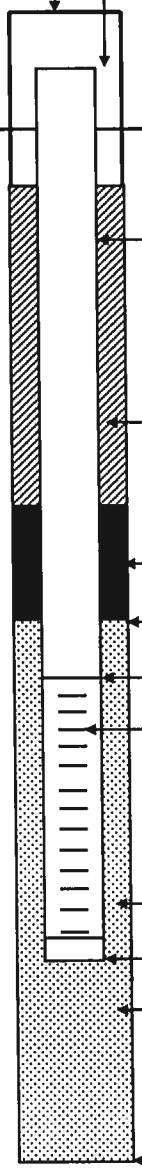
Elevation / Total Depth of Borehole: 40 ft bls

Tetra Tech, Inc.

WELL No.: MPT-459-MW01I

# MONITORING WELL CONSTRUCTION LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT: | NAVSTA Mayport | DRILLING Co.: | EDS, Inc. | BORING No.: | |
| PROJECT No.: | 112G03797 | DRILLER: | G.Pennington | DATE COMPLETED: | 10/23/12 |
| SITE: | Base Wide | DRILLING METHOD: | HSA Rig | NORTHING: | |
| GEOLOGIST: | B. Olson | DEV. METHOD: | Pumping | EASTING: | |



Not to Scale

Elevation / Depth of Top of Riser: ~3.4'/

Elevation / Height of Top of Surface Casing: ~3.1'/

I.D. of Surface Casing: 4" inside square

Type of Surface Casing: Square Metal Protective Riser with bollards

Type of Surface Seal: Concrete

I.D. of Riser: 2"

Type of Riser: PVC Sch 40

Borehole Diameter: 8"

Type of Backfill: Portland Cement

Elevation / Depth of Seal: 1.5 ft bls/

Type of Seal: Bentonite and 30/65 Sand

Elevation / Depth of Top of Filter Pack: 32 ft bls/

Elevation / Depth of Top of Screen: 35 ft bls/

Type of Screen: 2" PVC Sch 40

Slot Size x Length: 10 slot, 5 feet length

I.D. of Screen: 2"

Type of Filter Pack: 20/30 Sand

Elevation / Depth of Bottom of Screen: 40 ft bls/

Elevation / Depth of Bottom of Filter Pack: N/A/

Type of Backfill Below Well:

Elevation / Total Depth of Borehole: 40 ft bls/

Tetra Tech, Inc.

WELL No.: MPT-2039-MW01I

# MONITORING WELL CONSTRUCTION LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT: | NAVSTA Mayport | DRILLING Co.: | EDS, Inc. | BORING No.: | |
| PROJECT No.: | 112G03797 | DRILLER: | G.Pennington | DATE COMPLETED: | 10/25/12 |
| SITE: | Base Wide | DRILLING METHOD: | HSA Rig | NORTHING: | |
| GEOLOGIST: | B. Olson | DEV. METHOD: | Pumping | EASTING: | |

Not to Scale

Elevation / Depth of Top of Riser: ~3.4'/

Elevation / Height of Top of Surface Casing: ~3.1'/

I.D. of Surface Casing: 4" inside square

Type of Surface Casing: Square Metal Protective Riser with bollards

Type of Surface Seal: Concrete

I.D. of Riser: 2"

Type of Riser: PVC Sch 40

Borehole Diameter: 8"

Type of Backfill: Portland Cement

Elevation / Depth of Seal: 1.5 ft bls/

Type of Seal: Bentonite and 30/65 Sand

Elevation / Depth of Top of Filter Pack: 32 ft bls/

Elevation / Depth of Top of Screen: 35 ft bls/

Type of Screen: 2" PVC Sch 40

Slot Size x Length: 10 slot, 5 feet length

I.D. of Screen: 2"

Type of Filter Pack: 20/30 Sand

Elevation / Depth of Bottom of Screen: 40 ft bls/

Elevation / Depth of Bottom of Filter Pack: N/A/

Type of Backfill Below Well:

Elevation / Total Depth of Borehole: 40 ft bls/

Tetra Tech, Inc.

WELL No.: MPT-02-MW35I

# MONITORING WELL CONSTRUCTION LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT: | NAVSTA Mayport | DRILLING Co.: | EDS, Inc. | BORING No.: | |
| PROJECT No.: | 112G03797 | DRILLER: | G.Pennington | DATE COMPLETED: | 10/23/12 |
| SITE: | Base Wide | DRILLING METHOD: | HSA Rig | NORTHING: | |
| GEOLOGIST: | B. Olson | DEV. METHOD: | Pumping | EASTING: | |

Not to Scale

Elevation / Depth of Top of Riser: ~3.4'/

Elevation / Height of Top of Surface Casing: ~3.1'/

I.D. of Surface Casing: 4" inside square

Type of Surface Casing: Square Metal Protective Riser with bollards

Type of Surface Seal: Concrete

I.D. of Riser: 2"

Type of Riser: PVC Sch 40

Borehole Diameter: 8"

Type of Backfill: Portland Cement

Elevation / Depth of Seal: 1.5 ft bls/

Type of Seal: Bentonite and 30/65 Sand

Elevation / Depth of Top of Filter Pack: 23 ft bls/

Elevation / Depth of Top of Screen: 25 ft bls/

Type of Screen: 2" PVC Sch 40

Slot Size x Length: 10 slot, 5 feet length

I.D. of Screen: 2"

Type of Filter Pack: 20/30 Sand

Elevation / Depth of Bottom of Screen: 30 ft bls/

Elevation / Depth of Bottom of Filter Pack: N/A/

Type of Backfill Below Well:

Elevation / Total Depth of Borehole: 30 ft bls/

Tetra Tech, Inc.

WELL No.: MPT-02-MW35S

# MONITORING WELL CONSTRUCTION LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT: | NAVSTA Mayport | DRILLING Co.: | EDS, Inc. | BORING No.: | |
| PROJECT No.: | 112G03797 | DRILLER: | G.Pennington | DATE COMPLETED: | 10/24/12 |
| SITE: | Base Wide | DRILLING METHOD: | HSA Rig | NORTHING: | |
| GEOLOGIST: | B. Olson | DEV. METHOD: | Pumping | EASTING: | |

Not to Scale

Elevation / Depth of Top of Riser: ~3.4'/

Elevation / Height of Top of Surface Casing: ~3.1'/

I.D. of Surface Casing: 4" inside square

Type of Surface Casing: Square Metal Protective Riser with bollards

Type of Surface Seal: Concrete

I.D. of Riser: 2"

Type of Riser: PVC Sch 40

Borehole Diameter: 8"

Type of Backfill: Portland Cement

Elevation / Depth of Seal: 1.5 ft bls/

Type of Seal: Bentonite and 30/65 Sand

Elevation / Depth of Top of Filter Pack: 4 ft bls/

Elevation / Depth of Top of Screen: 5 ft bls/

Type of Screen: 2" PVC Sch 40

Slot Size x Length: 10 slot, 10 feet length

I.D. of Screen: 2"

Type of Filter Pack: 20/30 Sand

Elevation / Depth of Bottom of Screen: 15 ft bls/

Elevation / Depth of Bottom of Filter Pack: N/A/

Type of Backfill Below Well:

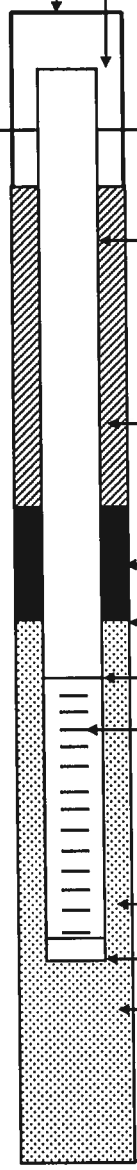
Elevation / Total Depth of Borehole: 15 ft bls/

Tetra Tech, Inc.

WELL No.: MPT-RUNWAY23-MW01S

# MONITORING WELL CONSTRUCTION LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT: | NAVSTA Mayport | DRILLING Co.: | EDS, Inc. | BORING No.: | |
| PROJECT No.: | 112G03797 | DRILLER: | G.Pennington | DATE COMPLETED: | 10/24/12 |
| SITE: | Base Wide | DRILLING METHOD: | HSA Rig | NORTHING: | |
| GEOLOGIST: | B. Olson | DEV. METHOD: | Pumping | EASTING: | |



Not to Scale

Elevation / Depth of Top of Riser: ~3.4'/

Elevation / Height of Top of Surface Casing: ~3.1'/

I.D. of Surface Casing: 4" inside square

Type of Surface Casing: Square Metal Protective Riser with bollards

Type of Surface Seal: Concrete

I.D. of Riser: 2"

Type of Riser: PVC Sch 40

Borehole Diameter: 8"

Type of Backfill: Portland Cement

Elevation / Depth of Seal: 1.5 ft bls/

Type of Seal: Bentonite and 30/65 Sand

Elevation / Depth of Top of Filter Pack: 4 ft bls/

Elevation / Depth of Top of Screen: 5 ft bls/

Type of Screen: 2" PVC Sch 40

Slot Size x Length: 10 slot, 10 feet length

I.D. of Screen: 2"

Type of Filter Pack: 20/30 Sand

Elevation / Depth of Bottom of Screen: 15 ft bls/

Elevation / Depth of Bottom of Filter Pack: N/A/

Type of Backfill Below Well:

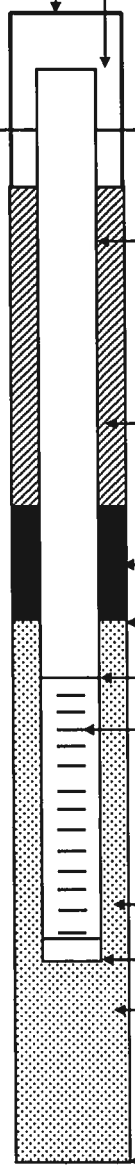
Elevation / Total Depth of Borehole: 15 ft bls/

Tetra Tech, Inc.

WELL No.: MPT-2050-MW01S

# MONITORING WELL CONSTRUCTION LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT: | NAVSTA Mayport | DRILLING Co.: | EDS, Inc. | BORING No.: | |
| PROJECT No.: | 112G03797 | DRILLER: | G.Pennington | DATE COMPLETED: | 10/24/12 |
| SITE: | Base Wide | DRILLING METHOD: | HSA Rig | NORTHING: | |
| GEOLOGIST: | B. Olson | DEV. METHOD: | Pumping | EASTING: | |



Not to Scale

Elevation / Depth of Top of Riser: ~3.4'/

Elevation / Height of Top of Surface Casing: ~3.1'/

I.D. of Surface Casing: 4" inside square

Type of Surface Casing: Square Metal Protective Riser with bollards

Type of Surface Seal: Concrete

I.D. of Riser: 2"

Type of Riser: PVC Sch 40

Borehole Diameter: 8"

Type of Backfill: Portland Cement

Elevation / Depth of Seal: 1.5 ft bls/

Type of Seal: Bentonite and 30/65 Sand

Elevation / Depth of Top of Filter Pack: 4 ft bls/

Elevation / Depth of Top of Screen: 5 ft bls/

Type of Screen: 2" PVC Sch 40

Slot Size x Length: 10 slot, 10 feet length

I.D. of Screen: 2"

Type of Filter Pack: 20/30 Sand

Elevation / Depth of Bottom of Screen: 15 ft bls/

Elevation / Depth of Bottom of Filter Pack: N/A/

Type of Backfill Below Well:

Elevation / Total Depth of Borehole: 15 ft bls/

Tetra Tech, Inc.

WELL No.: MPT-1358-MW01S

# MONITORING WELL CONSTRUCTION LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT: | NAVSTA Mayport | DRILLING Co.: | EDS, Inc. | BORING No.: | |
| PROJECT No.: | 112G03797 | DRILLER: | G.Pennington | DATE COMPLETED: | 10/23/12 |
| SITE: | Base Wide | DRILLING METHOD: | HSA Rig | NORTHING: | |
| GEOLOGIST: | B. Olson | DEV. METHOD: | Pumping | EASTING: | |

Not to Scale

Elevation / Depth of Top of Riser: ~3.4'

Elevation / Height of Top of Surface Casing: ~3.1'

I.D. of Surface Casing: 4" inside square

Type of Surface Casing: Square Metal Protective Riser with bollards

Type of Surface Seal: Concrete

I.D. of Riser: 2"

Type of Riser: PVC Sch 40

Borehole Diameter: 8"

Type of Backfill: Portland Cement

Elevation / Depth of Seal: 1.5 ft bls

Type of Seal: Bentonite and 30/65 Sand

Elevation / Depth of Top of Filter Pack: 4 ft bls

Elevation / Depth of Top of Screen: 5 ft bls

Type of Screen: 2" PVC Sch 40

Slot Size x Length: 10 slot, 10 feet length

I.D. of Screen: 2"

Type of Filter Pack: 20/30 Sand

Elevation / Depth of Bottom of Screen: 15 ft bls

Elevation / Depth of Bottom of Filter Pack: N/A

Type of Backfill Below Well:

Elevation / Total Depth of Borehole: 15 ft bls

Tetra Tech, Inc.

WELL No.: MPT-53-DPW01RS

# MONITORING WELL CONSTRUCTION LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT: | NAVSTA Mayport | DRILLING Co.: | EDS, Inc. | BORING No.: | |
| PROJECT No.: | 112G03797 | DRILLER: | G.Pennington | DATE COMPLETED: | 10/23/12 |
| SITE: | Base Wide | DRILLING METHOD: | HSA Rig | NORTHING: | |
| GEOLOGIST: | B. Olson | DEV. METHOD: | Pumping | EASTING: | |

Not to Scale

Elevation / Depth of Top of Riser: ~3.4'/

Elevation / Height of Top of Surface Casing: ~3.1'/

I.D. of Surface Casing: 4" inside square

Type of Surface Casing: Square Metal Protective Riser with bollards

Type of Surface Seal: Concrete

I.D. of Riser: 2"

Type of Riser: PVC Sch 40

Borehole Diameter: 8"

Type of Backfill: Portland Cement

Elevation / Depth of Seal: 1.5 ft bls/

Type of Seal: Bentonite and 30/65 Sand

Elevation / Depth of Top of Filter Pack: 4 ft bls/

Elevation / Depth of Top of Screen: 5 ft bls/

Type of Screen: 2" PVC Sch 40

Slot Size x Length: 10 slot, 10 feet length

I.D. of Screen: 2"

Type of Filter Pack: 20/30 Sand

Elevation / Depth of Bottom of Screen: 15 ft bls/

Elevation / Depth of Bottom of Filter Pack: N/A/

Type of Backfill Below Well:

Elevation / Total Depth of Borehole: 15 ft bls/

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida | |
|---|---|---|
| WELL NO: MPT-AC-GW-DPW02S | SAMPLE ID: MPT- AC-GW-DPW02S- 11052012 | DATE: 11/5/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 1" | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: feet to feet 11.15 | STATIC DEPTH TO WATER (feet): 4.20 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( 11.15 feet – 4.20 feet) X 0.151 liters/foot = 1.05 liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 11' | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 5.3' | PURGING INITIATED AT: 1135 | PURGING ENDED AT: 1201 | TOTAL VOLUME PURGED (liters): 5.2 L |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1135 | 0 | 0 | 200 | 4.20' | – | – | – | – | – | – | – |
| 1145 | 2 | 2 | 200 | 4.28' | – | – | – | – | 3.84 | – | – |
| 1155 | 2 | 4 | 200 | 4.28' | 6.57 | 26.65 | 736 | 0.27 | 5.16 | clear | none |
| 1158 | 0.6 | 4.6 | 200 | 4.28' | 6.55 | 25.81 | 734 | 0.26 | 5.45 | " | " |
| 1201 | 0.6 | 5.2 | 200 | 4.28' | 6.56 | 25.91 | 732 | 0.25 | 5.30 | " | " |
| | | | | | | | | | | | |
| 1205 | Sample time | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605
**PURGING EQUIPMENT CODES:** B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): [signature] | SAMPLING INITIATED AT: 1205 | SAMPLING ENDED AT: 1213 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 5.3' | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: _____ µm |
| FIELD DECONTAMINATION: PUMP Y N | TUBING Y N (replaced) | DUPLICATE or MS/MSD: Y N | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

**SAMPLING EQUIPMENT CODES:** APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: **Mayport Background Study** | SITE LOCATION: **NAVSTA Mayport, Jacksonville, Florida** |
| WELL NO: **MPT-AC-GW-DPW02I** | SAMPLE ID: **MPT- AC-GW-DPW02I- 11052012** DATE: 11/5/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: feet to feet 34.3 | STATIC DEPTH TO WATER (feet): 4.28' | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( ~~36~~ 48 feet – feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( 0.00529 liters/foot X 36' feet) + 1 liters = 1.2 liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 32' | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 32' | PURGING INITIATED AT: 1220 | PURGING ENDED AT: 1236 | TOTAL VOLUME PURGED (liters): 3.2 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1220 | 0 | ~~200~~ 48 | 200 | 4.28' | - | - | - | - | - | - | - |
| 1230 | 2 | 2 | 200 | 5.01' | 7.17 | 25.40 | 718 | 0.60 | 13.6 | Clear | None |
| 1233 | 0.6 | 2.6 | 200 | 5.02 | 7.12 | 25.44 | 717 | 0.32 | 4.98 | " | " |
| 1236 | 0.6 | 3.2 | 200 | 5.02' | 7.12 | 25.42 | 717 | 0.26 | 3.08 | " | " |
| | | | | | | | | | | | |
| 1240 Sample Time | | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605

**PURGING EQUIPMENT CODES:** B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): [signature] | SAMPLING INITIATED AT: 1240 | SAMPLING ENDED AT: 1247 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 32' | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N (circle N) Filtration Equipment Type: | FILTER SIZE: _____ µm |

FIELD DECONTAMINATION: PUMP Y (circle Y) N TUBING Y (circle Y) N (replaced) DUPLICATE or MS/MSD: Y N (circle N)

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

**SAMPLING EQUIPMENT CODES:** APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida |
| WELL NO: MPT-53-DPWR01S | SAMPLE ID: MPT- 53-DPWR01S- 11052012 — DATE: 11/5/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 8.3 feet to feet 18.3 | STATIC DEPTH TO WATER (feet): 7.45' | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( 18.3 feet – 7.45 feet) X 0.605 liters/foot = 6.57 liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 18' | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 8.5' | PURGING INITIATED AT: 1320 | PURGING ENDED AT: 1359 | TOTAL VOLUME PURGED (liters): 9.8L |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1320 | 0 | 0 | 300 | 7.45' | – | – | – | – | – | – | – |
| 1342 | 6.6 | 6.6 | 200 | 7.49' | 7.00 | 24.15 | 2520 | 0.54 | 21.5 | Clear | None |
| 1347 | 1 | 7.6 | 200 | 7.49' | 7.01 | 24.10 | 2488 | 0.44 | 19.3 | " | " |
| 1350 | 0.6 | 8.2 | 200 | 7.49' | 7.01 | 24.05 | 2470 | 0.33 | 15.7 | " | " |
| 1353 | 0.6 | 8.8 | 200 | 7.49' | 7.02 | 24.04 | 2467 | 0.34 | 13.9 | " | " |
| 1356 | 0.6 | 9.2 | 200 | 7.49' | 7.02 | 24.09 | 2461 | 0.35 | 12.3 | " | " |
| 1359 | 0.6 | 9.8 | 200 | 7.49' | 7.02 | 24.13 | 2458 | 0.40 | 9.72 | " | " |
| | | | | | | | | | | | |
| 1400 | Sample | Time | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605
**PURGING EQUIPMENT CODES:** B = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): AJ Booth | SAMPLING INITIATED AT: 1400 | SAMPLING ENDED AT: 1406 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 8.5 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y (N) Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: Y (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory. * Stickup well - all water levels taken from elevated T.O.C

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: **Mayport Background Study** | SITE LOCATION: **NAVSTA Mayport, Jacksonville, Florida** |
| WELL NO: **MPT-459-MW01I** | SAMPLE ID: **MPT-459-MW01I-110512012** DATE: 11/5/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 39.3' feet to feet 44.3' | STATIC DEPTH TO WATER (feet): 10.34' | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + (0.00529 liters/foot X 46 feet) + 1 liters = 1.25 liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 42' | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 42' | PURGING INITIATED AT: 1455 | PURGING ENDED AT: 1519 | TOTAL VOLUME PURGED (liters): 4.8 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1455 | 0 | 0 | ~~300~~ 200 | 10.34' | - | - | - | - | - | - | - |
| 1505 | 2 | 2 | 200 | 10.65 | - | - | - | - | 9.67 | - | - |
| 1510 | 1 | 3 | 200 | 10.65' | 7.56 | 23.31 | 1448 | 0.32 | 8.35 | Clear | None |
| 1513 | 0.6 | 3.6 | 200 | 10.65' | 7.58 | 23.18 | 1442 | 0.27 | 7.38 | " | " |
| 1516 | 0.6 | 4.2 | 200 | 10.65' | 7.60 | 23.13 | 1438 | 0.26 | 7.05 | " | " |
| 1519 | 0.6 | 4.8 | 200 | 10.65' | 7.62 | 23.08 | 1439 | 0.24 | 6.79 | " | |
| | | | | | | | | | | | |
| 1520 Sample Time | | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605
**PURGING EQUIPMENT CODES:** B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): [signature] | SAMPLING INITIATED AT: 1520 | SAMPLING ENDED AT: 1530 |
|---|---|---|---|

PUMP OR TUBING DEPTH IN WELL (feet):
TUBING MATERIAL CODE: Teflon Poly (circle one)
FIELD-FILTERED: Y N Filtration Equipment Type: FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced) DUPLICATE or MS/MSD: Y N

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory. * Stick up well - water levels taken from elevated T.O.C

**MATERIAL CODES:** AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

**SAMPLING EQUIPMENT CODES:** APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida | |
|---|---|---|
| WELL NO: MPT-2039-MW01I | SAMPLE ID: MPT- 2039-MW01I- 11052012 | DATE: 11/5/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH 34.4 feet to feet 44.4 | STATIC DEPTH TO WATER (feet): 9.67' | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + (0.00529 liters/foot X 46 feet) + 1 liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 42' | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 42' | PURGING INITIATED AT: 1540 | PURGING ENDED AT: 1626 | TOTAL VOLUME PURGED (liters): 9.2 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1540 | 0 | 0 | 200 | 9.67 | - | - | - | - | - | - | - |
| 1600 | 4 | 4 | 200 | 9.72 | - | - | - 3078 | - | 38 | - | - |
| 1610 | 2 | 6 | 200 | " | 6.75 | 22.74 | 30850 | 0.23 | 29.5 | clear | none |
| 1620 | 2 | 8 | 200 | " | 6.77 | 22.41 | 30724 | 0.19 | 8.67 | " | " |
| 1623 | 0.6 | 8.6 | 200 | " | 6.77 | 22.42 | 30726 | 0.17 | 6.24 | " | " |
| 1626 | 0.6 | 9.2 | 200 | " | 6.77 | 22.41 | 30725 | 0.18 | 5.31 | " | " |
| 1630 Sample Time | | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605
**PURGING EQUIPMENT CODES:** B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): [signature] | SAMPLING INITIATED AT: 1630 | SAMPLING ENDED AT: 1635 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 42' | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP Y N | TUBING Y N (replaced) | DUPLICATE or MS/MSD: Y N | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.
* Stick up well - water levels taken from elevated TOC
* very high conductivity, re-checked with calibration solution to make sure readings were correct

**MATERIAL CODES:** AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

**SAMPLING EQUIPMENT CODES:** APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida | |
|---|---|---|
| WELL NO: MPT-2062-MW01I | SAMPLE ID: MPT- 2062-MW01I- 11062012 | DATE: 11/6/2012 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: feet to feet 42.7 | STATIC DEPTH TO WATER (feet): 14.19 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + (0.00529 liters/foot X 44' feet) + 1 liters = 1.24 liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 42' | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 40.2' | PURGING INITIATED AT: 1042 | PURGING ENDED AT: 1111 ~~1047~~ MB | TOTAL VOLUME PURGED (liters): 5.8 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1042 | 0 | 0 | 200 | 14.19 | - | - | - | - | - | - | - |
| 1105 | 4.6 | 4.6 | 200 | 14.21 | 6.98 | 22.85 | 963 | 0.99 | 19.5 | clear | none |
| 1108 | 0.6 | 5.2 | 200 | 14.21 | 6.97 | 22.78 | 964 | 0.80 | 15.8 | " | " |
| 1111 | 0.6 | 5.8 | 200 | 14.21 | 6.97 | 22.79 | 964 | 0.78 | 14.1 | " | " |
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| 1115 | Sample Time | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605

**PURGING EQUIPMENT CODES:** B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): [signature] | SAMPLING INITIATED AT: 1115 | SAMPLING ENDED AT: 1135 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 40.2' | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: _____ µm |
| FIELD DECONTAMINATION: PUMP Y N | TUBING Y N (replaced) | DUPLICATE or MS/MSD: Y N | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
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REMARKS:
All sample container s pre-preserved as supplied by the laboratory.
*Stickup well- Water levels taken from elevated TOC
*MS/MSD collected

**MATERIAL CODES:** AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

**SAMPLING EQUIPMENT CODES:** APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida | |
|---|---|---|
| WELL NO: MPT-2050-MW01S | SAMPLE ID: MPT- 2050-MW01S- 11062012 | DATE: 11/6/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 9.3' feet to feet 19.3' | STATIC DEPTH TO WATER (feet): 9.09' | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( 19.3 feet – 9.09' feet) X 0.605 liters/foot = 6.18 liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10.2 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10.2 | PURGING INITIATED AT: 1215 | PURGING ENDED AT: 1241 | TOTAL VOLUME PURGED (liters): 8.1 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or mS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1215 | 0 | 0 | 300 | 9.09' | - | - | - | - | - | - | - |
| 1230 | 4.5 | 4.5 | 300 | 9.18' | - | - | - | - | 11.7 | - | - |
| 1236 | 1.8 | 6.3 | 300 | 9.10' | 7.23 | 24.60 | 624 | 1.00 | 8.38 | Clear | None |
| 1239 | 0.9 | 7.2 | 300 | 9.10' | 7.23 | 24.61 | 625 | 0.94 | 7.56 | " | " |
| 1241 | 0.9 | 8.1 | 300 | 9.10' | 7.23 | 24.68 | 626 | 0.85 | 6.11 | " | " |
| | | | | | | | | | | | |
| | 1245 Sample Time | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605

**PURGING EQUIPMENT CODES:** B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): [signature] | SAMPLING INITIATED AT: 1245 | SAMPLING ENDED AT: 1250 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 10.2' | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: ____ µm |

FIELD DECONTAMINATION: PUMP (Y) N TUBING (Y) N (replaced) DUPLICATE or MS/MSD: Y (N)

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory. * Stick up well-water levels taken from elevated TOC

**MATERIAL CODES:** AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

**SAMPLING EQUIPMENT CODES:** APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida |
| WELL NO: MPT-Runway23-MW01S | SAMPLE ID: MPT- Runway23-MW01S-20121106 — DATE: 11/6/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 9.75 feet to feet 18.75 | STATIC DEPTH TO WATER (feet): 12.09' | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( 18.75 feet – 12.09 feet) X 0.605 liters/foot = 4.03 liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 13.1 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 13.1 | PURGING INITIATED AT: 1315 | PURGING ENDED AT: 1344 | TOTAL VOLUME PURGED (liters): 5.8 L |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1315 | 0 | 0 | 200 | 12.09 | - | - | - | - | - | - | - |
| 1325 | 2 | 2 | 200 | 12.10 | - | - | - | - | 3.78 | Clear | None |
| 1338 | 2.6 | 4.6 | 200 | 12.10 | 7.24 | 26.92 | 793 | 0.85 | 2.86 | " | " |
| 1341 | 0.6 | 5.2 | 200 | 12.10 | 7.23 | 26.95 | 791 | 0.74 | 2.29 | " | " |
| 1344 | 0.6 | 5.8 | 200 | 12.10 | 7.23 | 26.89 | 789 | 0.67 | 2.44 | | |
| 1345 | Sample Time | | | | | | | | | | |

**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605

**PURGING EQUIPMENT CODES:** B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): [signature] | SAMPLING INITIATED AT: 1345 ~~1350~~ AB | SAMPLING ENDED AT: 1350 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 13.1' | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: Y (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory. *Stick up well - water levels taken from elevated TOC

**MATERIAL CODES:** AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

**SAMPLING EQUIPMENT CODES:** APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida | |
|---|---|---|
| WELL NO: MPT-02-MW35RS | SAMPLE ID: MPT-02-MW35RS- 11062012 | DATE: 11/6/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 8.65 feet to feet 18.65 | STATIC DEPTH TO WATER (feet): 8.53' | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( 18.65 feet – 8.53 feet) X 0.605 liters/foot = 6.13 liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 18' | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9.6' | PURGING INITIATED AT: 1408 | PURGING ENDED AT: | TOTAL VOLUME PURGED (liters): |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1408 | 0 | 0 | 200 | 8.53 | - | - | - | - | - | - | - |
| 1425 | 3.4 | 3.4 | 200 | 8.56 | - | - | - | - | 3.22 | Clear | None |
| 1440 | | | 200 | 8.56 | 7.29 | 25.17 | 589 | 0.37 | 1.87 | " | " |
| 1443 | 0.6 | | 200 | 8.56 | 7.29 | 25.14 | 589 | 0.35 | 1.32 | " | " |
| 1446 | 0.6 | | 200 | 8.56 | 7.29 | 24.99 | 588 | 0.33 | 1.18 | | |
| 1450 Sample Time | | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"**= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605

**PURGING EQUIPMENT CODES:** B = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): AJBooth | SAMPLING INITIATED AT: 1450 | SAMPLING ENDED AT: 1456 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 9.6' | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: _____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: Y (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory. * Stickup well - water levels taken from elevated TOC

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; T = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; B = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: **Mayport Background Study** | SITE LOCATION: **NAVSTA Mayport, Jacksonville, Florida** |
| WELL NO: **MPT-02-MW35RI** | SAMPLE ID: **MPT-02-MW35RI-** 1106 2012 — DATE: 11/6/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 28.5 feet to feet 33.5' | STATIC DEPTH TO WATER (feet): 9.04' | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + (0.00529 liters/foot X 35 feet) + 1 liters = 1.2 liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 31' | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 31' | PURGING INITIATED AT: 1458 | PURGING ENDED AT: 1536 | TOTAL VOLUME PURGED (liters): 7.6 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1458 | 0 | 0 | 200 | 9.04' | - | - | - | - | - | - | - |
| 1530 | 6.4 | 6.4 | 200 | 9.69' | 6.71 | 23.28 | 21047 | 1.09 | 3.67 | Clear | None |
| 1533 | 0.6 | 7.0 | 200 | 9.69' | 6.71 | 23.30 | 21091 | 1.10 | 3.10 | " | " |
| 1536 | 0.6 | 7.6 | 200 | 9.69' | 6.71 | 23.20 | 21126 | 1.10 | 3.25 | " | " |
| | | | | | | | | | | | |
| | 1540 | Sample Time | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605

**PURGING EQUIPMENT CODES:** B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): [signature] | SAMPLING INITIATED AT: 1540 | SAMPLING ENDED AT: 1546 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 31' | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP Y N | TUBING Y N (replaced) | DUPLICATE or MS/MSD: Y N | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
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REMARKS:
All sample container s pre-preserved as supplied by the laboratory. * Stick up well - water levels taken from elevated TOC

**MATERIAL CODES:** AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

**SAMPLING EQUIPMENT CODES:** APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: **Mayport Background Study** | SITE LOCATION: **NAVSTA Mayport, Jacksonville, Florida** |
| WELL NO: **MPT-02-MW17S** | SAMPLE ID: **MPT-02-MW17S-** 20121107 — DATE: 11/7/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: feet to feet 12.9' | STATIC DEPTH TO WATER (feet): 3.47' | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( 12.9' feet – 3.47 feet) X 0.605 liters/foot = 5.7 liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 12' | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 4.6' | PURGING INITIATED AT: 1025 | PURGING ENDED AT: 1121 | TOTAL VOLUME PURGED (liters): 16.8 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1025 | 0 | 0 | 300 | 3.47' | - | - | - | - | - | - | - |
| 1050 | 7.5 | 7.5 | 300 | 3.54' | - | - | - | - | 37.2 | Cloudy | None |
| 1110 | 6 | 13.5 | 300 | 3.54' | 7.10 | 23.97 | 1963 | 0.86 | 13.0 | Clear | " |
| 1115 | 1.5 | 15 | 300 | 3.54' | 7.10 | 24.04 | 1997 | 0.78 | 8.35 | " | " |
| 1118 | 0.9 | 15.9 | 300 | 3.54' | 7.10 | 23.97 | 2019 | 0.79 | 9.01 | " | " |
| 1121 | 0.9 | 16.8 | 300 | 3.54' | 7.10 | 23.97 | 2022 | 0.79 | 7.28 | " | " |
| | | | | | | | | | | | |
| 1123 Sample Time | | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605

**PURGING EQUIPMENT CODES:** B = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): [signature] | SAMPLING INITIATED AT: 1123 | SAMPLING ENDED AT: 1129 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 4.6' | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y (N) Filtration Equipment Type: | FILTER SIZE: _____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: Y (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; T = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; B = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida |
| WELL NO: MPT-02-MW17I | SAMPLE ID: MPT-02-MW17I- 11072012 — DATE: 11/7/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: feet to feet 29.95' | STATIC DEPTH TO WATER (feet): 4.84' | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( 0.00529 liters/foot X 31' feet) + liters = 1.17 liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 27.5' | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 27.5' | PURGING INITIATED AT: 1130 | PURGING ENDED AT: 1200 | TOTAL VOLUME PURGED (liters): 9.0 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1130 | 0 | 0 | 300 | 4.84' | - | - | - | - | - | - | - |
| 1140 | 3 | 3 | 300 | 4.96' | 6.52 | 22.77 | 31509 | 0.72 | 2.97 | Clear | None |
| 1150 | 3 | 6 | 300 | 4.96' | 6.52 | 22.75 | 32360 | 0.61 | 2.74 | " | " |
| 1155 | 1.5 | 7.5 | 300 | 4.96' | 6.52 | 22.75 | 32473 | 0.52 | 1.71 | " | " |
| 1200 | 1.5 | 9.0 | 300 | 4.96' | 6.52 | 22.74 | 32549 | 0.44 | 2.19 | " | " |
| | | | | | | | | | | | |
| | 1202 | Sample Time | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605

**PURGING EQUIPMENT CODES:** B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): [signature] | SAMPLING INITIATED AT: 1202 | SAMPLING ENDED AT: 1210 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 27.5' | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: _____ µm |
| FIELD DECONTAMINATION: PUMP Y N | TUBING Y N (replaced) | DUPLICATE or MS/MSD: Y N | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

**SAMPLING EQUIPMENT CODES:** APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida |
| WELL NO: MPT-1358-MW01S | SAMPLE ID: MPT- 1358-MW01S- H 072012 — DATE: 11/7/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: feet to feet 19.15 | STATIC DEPTH TO WATER (feet): 10.92' | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( 19.15 feet – 10.92' feet) X 0.605 liters/foot = 4.98 liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 19' | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 12' | PURGING INITIATED AT: 1305 | PURGING ENDED AT: 1339 | TOTAL VOLUME PURGED (liters): 6.8 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1305 | 0 | 0 | 200 | 10.92' | - | - | - | - | - | - | - |
| 1325 | 4 | 4 | 200 | 10.96' | - | - | - | - | 6.10 | Clear | None |
| 1330 | 1 | 5 | 200 | 10.97' | 7.16 | 23.96 | 940 | 1.28 | 5.05 | " | " |
| 1333 | 0.6 | 5.6 | 200 | 10.97' | 7.14 | 24.08 | 921 | 1.27 | 5.05 | " | " |
| 1336 | 0.6 | 6.2 | 200 | 10.97' | 7.14 | 23.97 | 898 | 1.19 | 4.62 | " | " |
| 1339 | 0.6 | 6.8 | 200 | 10.97' | 7.11 | 23.97 | 894 | 1.10 | 4.00 | " | " |
| | | | | | | | | | | | |
| 1340 Sample Time | | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605
**PURGING EQUIPMENT CODES:** B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): [signature] | SAMPLING INITIATED AT: 1340 | SAMPLING ENDED AT: 1351 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 12' | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: _____ µm |
| FIELD DECONTAMINATION: PUMP Y N | TUBING Y N (replaced) | DUPLICATE or MS/MSD: Y N | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory. * DUPlicate collected MPT - DUP - 11072012

**MATERIAL CODES:** AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

**SAMPLING EQUIPMENT CODES:** APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida | |
|---|---|---|
| WELL NO: MPT-08-MW05S | SAMPLE ID: MPT-08-MW05S- 20121109 | DATE: 11/9/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: feet to feet 15.4' | STATIC DEPTH TO WATER (feet): 6.95' | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( 15.4 feet – 6.95 feet) X 0.605 liters/foot = 5.12 liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 15' | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 8.2' | PURGING INITIATED AT: 0930 | PURGING ENDED AT: 0954 ~~0955~~ | TOTAL VOLUME PURGED (liters): 7.2 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0930 | 0 | 0 | 300 | 6.95' | - | - | - | - | - | - | - |
| 0946 | 5.4 | 5.4 | 300 | 7.18' | 6.90 | 23.77 | 1255 | 0.81 | 7.67 | Clear | None |
| 0951 | 0.9 | 6.3 | 300 | 7.19' | 6.91 | 23.80 | 1253 | 0.65 | 4.50 | " | " |
| 0954 | 0.9 | 7.2 | 300 | 7.19' | 6.92 | 23.79 | 1249 | 0.50 | 3.57 | " | " |
| | | | | | | | | | | | |
| 0955 | Sample | Time | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605

**PURGING EQUIPMENT CODES:** B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): AJ Booth | SAMPLING INITIATED AT: 0955 | SAMPLING ENDED AT: 1000 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 8.2' | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: _____ µm |
| FIELD DECONTAMINATION: PUMP Y N | TUBING Y N (replaced) | DUPLICATE or MS/MSD: Y N | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

**SAMPLING EQUIPMENT CODES:** APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida |
| WELL NO: MPT-08-MW05I | SAMPLE ID: MPT-08-MW05I- 20121109 — DATE: 11/8/12 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: feet to feet 30.3' | STATIC DEPTH TO WATER (feet): 8.91' | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + (0.00529 liters/foot X 32' feet) + 1 liters = 1.17 liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 30' | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 27.5' | PURGING INITIATED AT: 1000 | PURGING ENDED AT: 1021 | TOTAL VOLUME PURGED (liters): 4.2 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000 | 0 | 0 | 200 | 8.91' | – | – | – | – | – | – | – |
| 1015 | 3 | 3 | 200 | 9.01' | 7.21 | 22.68 | 1086 | 0.31 | 1.84 | Clear | None |
| 1016 | 0.6 | 3.6 | 200 | 9.01' | 7.20 | 22.73 | 1085 | 0.24 | 1.45 | " | " |
| 1021 | 0.6 | 4.2 | 200 | 9.01' | 7.21 | 22.74 | 1084 | 0.22 | 1.60 | " | " |
| | | | | | | | | | | | |
| 1023 Sample Time | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| | | | | | | | | | | | |

**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"**= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605

**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: AJ Booth /Tetra Tech | SAMPLER(S) SIGNATURE(S): [signature] | SAMPLING INITIATED AT: 1023 | SAMPLING ENDED AT: 1029 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 27.5' | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N — Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP Y N | TUBING Y N (replaced) | DUPLICATE or MS/MSD: Y N | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Tetra Tech NUS, Inc.

# EQUIPMENT CALIBRATION LOG

PROJECT NAME : NAVSTA Mayport - Background Study

INSTRUMENT NAME/MODEL: YSI 556 MPS / Lamotte 2020e

SITE NAME:

MANUFACTURER: YSI, Lamotte

PROJECT No.: 112603797

SERIAL NUMBER: 11E100179, 12907

| Date of Calibration | Instrument I.D. Number | Person Performing Calibration | Instrument Settings | | Instrument Readings | | Calibration Standard (Lot No.) | Remarks and Comments |
|---|---|---|---|---|---|---|---|---|
| | | | Pre-calibration | Post-calibration | Pre-calibration | Post-calibration | | |
| 11/5/12 | YSI | A. Booth | pH | 4.0 | 4.13 | 4.00 | 9910 | exp 09/2013 |
| | 11E100179 | | pH | 7.0 | 6.84 | 7.00 | 9886 | exp 09/2013 |
| | | | pH | 10.0 | 10.18 | 10.0 | 9912 | exp 09/2013 |
| | | | Cond. | 1.413 mS/cm | 1.409 | 1.413 | 9914 | exp 09/2013 |
| | | | DO | 100% | 104.2 | 100 | | |
| 11/5/12 | Lamotte 2020e | A. Booth | Turb | 10.0 | 12.0 | 10.0 | | |
| | 12907 | | Turb. | 1.0 | 1.07 | Err2 | | |
| | | | Turb. | 0.0 | 1.41 | Err2 | | |
| 11/6/12 | YSI | A. Booth | pH | 4.0 | 4.06 | 4.0 | 9910 | 9/2013 |
| | 11E100179 | | pH | 7.0 | 6.90 | 7.0 | 9886 | 9/2013 |
| | | | pH | 10.0 | 10.21 | 10.0 | 9912 | 9/2013 |
| | | | Cond. | 1.413 | 1.452 | 1.413 | 9914 | 9/2013 |
| | | | D.O. | 100% | 95.9 | 100 | | |
| 11/6/12 | LaMotte 2020e | A. Booth | Turb. | 10.0 | 17.0 | 10.0 | | |
| | 12907 | | Turb. | 1.0 | 1.38 | Err2 | | |
| | | | Turb. | 0.0 | 0.87 | Err2 | | |
| 11/7/12 | YSI | A. Booth | pH | 4.0 | 4.05 | 4.0 | 9910 | 09/13 |
| | 11E100179 | | pH | 7.0 | 6.84 | 7.0 | 9886 | 09/13 |
| | | | pH | 10.0 | 10.27 | 10.0 | 9912 | 09/13 |
| | | | Cond. | 1.413 | 1.163 | 1.413 | 9914 | 09/13 |
| | | | D.O. | 100% | 106.3 | 100% | | |
| 11/7/12 | LaMotte 2020e | A. Booth | Turb | 10.0 | 16.9 | 10.0 | | |
| | 12907 | | Turb | 1.0 | 1.82 | Err2 | | |
| | | | Turb | 0.0 | 0.73 | Err2 | | |
| 11/9/12 | YSI | A. Booth | pH | 4.0 | 4.12 | 4.0 | 9910 | 09/13 |
| | 11E100179 | | pH | 7.0 | 6.72 | 7.0 | 9886 | 09/13 |
| | | | pH | 10.0 | 10.27 | 10.0 | 9912 | 09/13 |
| | | | Cond | 1.413 | 1.128 | 1.413 | 9914 | 09/13 |
| | | | DO. | 100% | 103.6 | 100% | | |
| 11/9/12 | LaMotte 2020e | A. Booth | Turb | 10.0 | 8.66 | 10.0 | | |
| | 12907 | | Turb | 1.0 | 1.07 | Err2 | | |
| | | | Turb | 0.0 | 0.57 | Err2 | | |

Tetra Tech NUS, Inc.

# GROUNDWATER LEVEL MEASUREMENT SHEET

**Project Name:** NAVSTA Mayport - Background Study
**Project No.:** 112G03797
**Location:** NAVSTA Mayport
**Personnel:** AS Boom
**Weather Conditions:** Sunny
**Measuring Device:** Heron Skinny Dipper
**Tidally Influenced:** Yes ___ No ___
**Remarks:**

| Well or Piezometer Number | Date | Time | Elevation of Reference Point (feet)* | Total Well Depth (feet)* | Water Level Indicator Reading (feet)* | Thickness of Free Product (feet)* | Groundwater Elevation (feet)* | Comments |
|---|---|---|---|---|---|---|---|---|
| 08-MW05S | 11/9/12 | 0930 | | 15.40' | 6.95' | - | | ~~*~~ AB |
| 08-MW05I | 11/9/12 | 0940 | | 30.31' | 8.91' | - | | |
| 2039-MW01I | 11/9/12 | 1110 | | 44.50' | 9.74' | - | | * |
| 53-DPWR01S | 11/9/12 | 1120 | | 18.35' | 7.49' | - | | * |
| 1358-MW01S | 11/9/12 | 1130 | | 13.64' ~~6.55~~ AB | ~~13.64~~ 6.33' AB | - | | |
| 459-MW01I | 11/9/12 | 1138 | | 42.97' ~~10.44~~ AB | 10.44' ~~42.97~~ AB | - | | * |
| 2062-MW01I | 11/9/12 | 1150 | | 42.61' ~~13.37~~ AB | ~~42.61~~ 13.37' AB | - | | * |
| 2050-MW01S | 11/9/12 | 1203 | | 19.30' | 9.16' | - | | * |
| AC-GW-DPW02S | 11/9/12 | 1218 | | 11.16' | 4.30' | - | | |
| AC-GW-DPW02I | 11/9/12 | 1221 | | 34.33' | 4.39' | - | | |
| 02-17S | 11/9/12 | 1234 | | 13.00' | 3.54' | - | | |
| 02-17I | 11/9/12 | 1236 | | 29.95' | 4.98' | - | | |
| 02-35RS | 11/9/12 | 1248 | | 18.75' ~~33.5~~ AB | 8.52' ~~9.08~~ AB | - | | * |
| 02-35RI | 11/9/12 | 1250 | | 33.5' | 9.08' | - | | * |
| Runway 23-MW01S | 11/9/12 | 1300 | | 18.65' ~~12.41~~ AB | 12.41' ~~18.65~~ AB | | | * |
| | | | | | | | | |
| | | | | | | | | |
| *=Denotes Stick up well - water levels taken from elevated TOC | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |

* All measurements to the nearest 0.01 foot

Page ____ of ____

TETRA TECH NUS, INC.

# CHAIN OF CUSTODY

NUMBER № 2470

PAGE 1 OF 2

| PROJECT NO: | FACILITY: | PROJECT MANAGER | PHONE NUMBER | LABORATORY NAME AND CONTACT: |
|---|---|---|---|---|
| 112G03797 | NAVSTA Mayport | Ben Marshall | (904) 636-6125 | Empirical Laboratories |
| SAMPLERS (SIGNATURE) | | FIELD OPERATIONS LEADER | PHONE NUMBER | ADDRESS |
| AJ Booth | | AJ Booth | (904) 636-6125 | 621 Mainstream Drive, Suite 270 |
| | | CARRIER/WAYBILL NUMBER | | CITY, STATE |
| | | | | Nashville, TN 37228 |

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P, P, P

PRESERVATIVE USED: HNO3, H2SO4, -

TYPE OF ANALYSIS: Tot. Metals (6010C), Ammonia (SM4500-NH3B), Anions - Sulfate (300.0)

| DATE YEAR 2012 | TIME | SAMPLE ID | LOCATION ID | TOP DEPTH (FT) | BOTTOM DEPTH (FT) | MATRIX (GW, SO, SW, SD, QC, ETC.) | COLLECTION METHOD GRAB (G) COMP (C) | No. OF CONTAINERS | Tot. Metals (6010C) | Ammonia (SM4500-NH3B) | Anions - Sulfate (300.0) | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/05 | 1205 | MPT-AC-GW-DPW02S-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | *Cool to 4°C |
| 11/05 | 1240 | MPT-AC-GW-DPW02I-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 11/05 | 1400 | MPT-53-DPWR01S-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 11/05 | 1520 | MPT-459-MW01I-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 11/05 | 1630 | MPT-2039-MW01I-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 11/06 | 1115 | MPT-2062-MW01I-20121105 | | | | GW | G | 9 | 3 | 3 | 3 | | | | | | * MS/MSD Collected |
| 11/06 | 1245 | MPT-2050-MW01S-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 11/06 | 1345 | MPT-Runway23-MW01S-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 11/06 | 1450 | MPT-02-MW35RS-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 11/06 | 1540 | MPT-02-MW35RI-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 11/07 | 1123 | MPT-02-MW17S-20121107 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 11/07 | 1202 | MPT-02-MW17I-20121107 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 11/07 | 1340 | MPT-1358-MW01S-20121107 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |

| | DATE | TIME | | DATE | TIME |
|---|---|---|---|---|---|
| 1. RELINQUISHED BY AJ Booth | 11/9/12 | 1200 | 1. RECEIVED BY | | |
| 2. RELINQUISHED BY | | | 2. RECEIVED BY | | |
| 3. RELINQUISHED BY | | | 3. RECEIVED BY | | |

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER NS - 2471 | PAGE 2 OF 2

| PROJECT NO: | FACILITY: | PROJECT MANAGER | PHONE NUMBER | LABORATORY NAME AND CONTACT: |
|---|---|---|---|---|
| 112G03797 | NAVSTA Mayport | Ben Marshall | (904) 636-6125 | Empirical Laboratories |
| SAMPLERS (SIGNATURE) | | FIELD OPERATIONS LEADER | PHONE NUMBER | ADDRESS |
| Andrew Booth | | AJ Booth | (904) 636-6125 | 621 Mainstream Drive, Suite 270 |
| | | CARRIER/WAYBILL NUMBER | | CITY, STATE |
| | | | | Nashville, TN 37228 |

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

| DATE YEAR | TIME | SAMPLE ID | LOCATION ID | TOP DEPTH (FT) | BOTTOM DEPTH (FT) | MATRIX (GW, SO, SW, SD, QC, ETC.) | COLLECTION METHOD GRAB (G) COMP (C) | No. OF CONTAINERS | Tot Metals (6010C) | Ammonia (SM4500 NH3BG) | Anions-Sulfate (300.0) | | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONTAINER TYPE PLASTIC (P) or GLASS (G) | | | | | | | | | P | P | P | | | | | | | |
| PRESERVATIVE USED | | | | | | | | | HNO3 | H2SO4 | - | | | | | | | |
| TYPE OF ANALYSIS | | | | | | | | | | | | | | | | | | |
| 11/07 | 0000 | MPT-DUP-20121107 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | | * Duplicate collected |
| 11/06 | 1100 | MPT-Background-RB-20121108 | | | | QC | G | 3 | 1 | 1 | 1 | | | | | | | * Rinsate Blank |

| 1. RELINQUISHED BY | DATE | TIME | 1. RECEIVED BY | DATE | TIME |
|---|---|---|---|---|---|
| Andrew Booth | 11/8/12 | 1200 | | | |
| 2. RELINQUISHED BY | DATE | TIME | 2. RECEIVED BY | DATE | TIME |
| | | | | | |
| 3. RELINQUISHED BY | DATE | TIME | 3. RECEIVED BY | DATE | TIME |
| | | | | | |

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

**TETRA TECH NUS, INC.** | **CHAIN OF CUSTODY** | **NUMBER** № 2473 | **PAGE** 1 **OF** 1

| PROJECT NO: | FACILITY: | PROJECT MANAGER | PHONE NUMBER | LABORATORY NAME AND CONTACT: |
|---|---|---|---|---|
| 112603797 | NAVSTA Mayport | Ben Marshall | (904) 636-6125 | Empirical Laboratories |
| SAMPLERS (SIGNATURE) | | FIELD OPERATIONS LEADER | PHONE NUMBER | ADDRESS |
| Andy Booth | | AJ Booth | (901) 636-6125 | 621 Mainstream Drive, Suite 270 |
| | | CARRIER/WAYBILL NUMBER | | CITY, STATE |
| | | | | Nashville, TN 37228 |

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

| DATE YEAR 2012 | TIME | SAMPLE ID | LOCATION ID | TOP DEPTH (FT) | BOTTOM DEPTH (FT) | MATRIX (GW, SO, SW, SD, QC, ETC.) | COLLECTION METHOD GRAB (G) COMP (C) | No. OF CONTAINERS | Tot. Metals (6010C) | Ammonia (SM4500 NH3B/G) | Amons-Sulfide (9030A) | | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONTAINER TYPE PLASTIC (P) or GLASS (G) | | | | | | | | | P | P | P | | | | | | | |
| PRESERVATIVE USED | | | | | | | | | HNO3 | H2SO4 | - | | | | | | | |
| 11/09 | 0955 | MPT-08-MW05S-20121109 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | | * cool to 4°C |
| 11/09 | 1023 | MPT-08-MW05I-20121109 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | | |

| 1. RELINQUISHED BY | DATE | TIME | 1. RECEIVED BY | DATE | TIME |
|---|---|---|---|---|---|
| Andrew Booth | 11/12/12 | 1500 | | | |
| 2. RELINQUISHED BY | DATE | TIME | 2. RECEIVED BY | DATE | TIME |
| | | | | | |
| 3. RELINQUISHED BY | DATE | TIME | 3. RECEIVED BY | DATE | TIME |
| | | | | | |

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

(8) NAVSTA - MAYPORT, Quarterly GW Monitering 112603797 11/5/12

Personnel: AJ Booth
Truck: POV 2006 F-250 Company Truck
PPE: Level "D"
Weather: Sunny, 75°
Obj: Mayport GW Monitering

1025 Depart office for NAVSTA Mayport
1105 Arrive at NAVSTA Mayport Site AC
1110 Begin setting up, and calibrating YSI + Turbidity Meter
1130 Calibration complete, set up at well MPT-AC-GW-DPW02S & begin purging. See table for sampling details:

| Well I.D. | Sample I.D. | Begin Purge | End Purge | Sample Time | Analyses | Notes |
|---|---|---|---|---|---|---|
| MPT-AC-GW-DPW02S | MPT-AC-GW-DPW02S-11052012 | 1135 | 1201 | 1205 | 1, 2, 3 | |
| MPT-AC-GW-DPW02I | MPT-AC-GW-DPW02I-11052012 | 1220 | 1236 | 1240 | 1, 2, 3 | |
| MPT-53-DPW01S | MPT-53-DPW01S-11052012 | 1320 | 1359 | 1400 | 1, 2, 3 | |
| MPT-459-MW01I | MPT-459-MW01I-11052012 | 1455 | 1519 | 1520 | 1, 2, 3 | |
| MPT-2039-MW01I | MPT-2039-MW01I-11052012 | 1540 | 1626 | 1630 | 1, 2, 3 | ** |

*Analyses key: 1=Tot. Metals (6010C), 2=Ammonia (SM4500NH3B6), 3=Anions-Sulfate (300.0)
Notes: ** = very high conductivity readings, re-checked calibration checked twice to ensure proper readings, PM gives "ok" to sample

1605 Batteries changed in YSI, re-check calibration with calibration solutions
1635 Sampling complete, begin packing up
1645 Depart NAVSTA Mayport for office
1745 Arrive back at office

AJB

AJBooth

NAVSTA-Mayport: GW monitoring 112603797 11/6/12

Personnel: AJ Booth
Truck: POV
PPE: Level "D"
Weather: Cloudy, 55°
Obj: Mayport GW Monitoring

0730 Depart for NAVSTA Mayport
0930 Arrive at NAVSTA Mayport, begin wait for rain to subside to begin calibration
0930 Rain stopped, begin calibrating equipment
1010 Calibration complete
1015 Arrive at well MPT-2062-MW01I, begin set-up. See table for sampling details:

| Well I.D. | Sample I.D. | Start Purge | End Purge | Sample Time | Analyses | Notes |
|---|---|---|---|---|---|---|
| MPT-2062-MW01I | MPT-2062-MW01I-11062012 | 1042 | 1111 | 1115 | 1, 2, 3 | MS/MSD Collec |
| MPT-2050-MW01S | MPT-2050-MW01S-11062012 | 1215 | 1241 | 1245 | 1, 2, 3 | |
| MPT-Runway23-MW01S | MPT-Runway23-MW01S-11062012 | 1315 | 1344 | 1345 | 1, 2, 3 | |
| MPT-02-MW35RS | MPT-02-MW35RS-11062012 | 1408 | 1446 | 1450 | 1, 2, 3 | |
| MPT-02-MW35RI | MPT-02-MW35RI-11062012 | 1458 | 1536 | 1540 | 1, 2, 3 | ** |

* Analyses key: 1= Tot. Metals (6010C), 2= Ammonia (SM4500 NH3B/G), 3= Sulfate (300.0)
Notes: ** = Very high conductivity, checked with calibration solution, to ensure proper reading

1558 Sampling complete, begin packing up equipment
1615 Depart NAVSTA Mayport

AJB

(10) NAVSTA Mayport - GW Sampling 112603247 11/7/12

Personnel: AJ Booth
Truck: POV
PPE: Level "D"
Weather: windy, 65°
Obj: Continue GW Quarterly Sampling

0645 Depart ~~NAVSTA Mp~~ office AB for NAVSTA Mayport
0720 Arrive at NAVSTA Mayport
0725 Begin calibrating sampling equipment
0820 Calibration complete, awaiting response for clearance to sample wells near SWMU 8 & SWMU 9
0920 No word from contact to sample at oily waste treatment plant, head to munitions building to gain clearance to sample wells in munition storage area
0945 Access to munition storage area granted
1015 Set up on well MPT-02-MW175, see table for sampling details:

| Well ID | Sample ID | Start Purge | End Purge | Sample Time | Analyses | Notes |
|---|---|---|---|---|---|---|
| MPT-02-MW17S | MPT-02-MW17S-20121107 | 1025 | 1121 | 1123 | 1,2,3 | |
| MPT-02-MW17I | MPT-02-MW17I-20121107 | 1130 | 1200 | 1202 | 1,2,3 | |
| MPT-1358-MW01S | MPT-1358-MW01S-20121107 | 1305 | 1339 | 1340 | 1,2,3 | ** |

Analyses Key: 1= Tot. Metals (6010C), 2= Ammonia (SM4500 NH3BG), 3= Anions-Sulfate (300.0)
Notes: ** = Duplicate collected at well MPT-1358-MW01S, Sample ID = MPT-DUP-20121107

1400 Sampling complete, begin packing up equipment
1415 Equipment packed, begin organizing and updating paperwork
1445 Paperwork updated, still awaiting clearance to sample at oily wastewater treatment plant
1515 No word from oily wastewater treatment plant, depart for office
1600 Arrive back at office

AJB

(11)

NAVSTA Mayport - Well Adjustments 112603797 11/8/12

Personnel: AJ Booth & Dave Siefken
Truck: POV
PPE: Level "D"
Weather: 65°, Sunny
Obj: Flush Mount well MPT-1358-MW01S

1045 Depart office
1050 Stop to ice & package samples from Monday-Wed groundwater sampling events, rinsate blank collected (ID = MPT-Background-RB-20121108)
1115 Samples packaged up, depart for Fed-Ex
1135 Samples relinquished to Fed-Ex
1200 Break for lunch
1230 Finished with lunch, continue to Dave Siefken's house to conduct building of well pad frame
1300 Pad frame complete, depart NAVSTA Mayport
1320 Arrive at well MPT-1358-MW01S, begin converting stick-up well to flush mounted well
1500 Paul Malewicki stops by to approve of flush mounted well
1515 well pad adjustments complete, depart for office
1555 Arrive back at office

AJB

AJB

Tetra Tech NUS, Inc.

# DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : NAVSTA Mayport

SITE NAME: Background study

PROJECT No.: 112603767

INSTRUMENT NAME/MODEL: YSI 556 MPS

MANUFACTURER:

SERIAL NUMBER: See below

| Date of Calibration | Instrument Name and Model | Instrument I.D. Number | Person Performing Calibration | Instrument Settings | | Instrument Readings | | Calibration Standard (Lot No.) | Remarks and Comments |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Pre-calibration | Post-calibration | Pre-calibration | Post-calibration | | |
| 2/28/13 | YSI 556 MPS | 06M153840 | K | pH 7.0 | 6.92 | 7.60 | 6.98 | 2AE799 | |
| | | | | pH 10.0 | 10.14 | 10.00 | 9.96 | 2AE901 | |
| | | | | Cond. ~~1.413~~ 1000 | 1024 | 1000 | 1011 | 2AE907 | |
| | | | | ORP 240 | | | | | |
| | | | | D.O. 100% | 106.1% | 100.1% | 94.6 | | |
| | Lamotte 2020e | ME 10051 | | 10.0 NTU | 10.96 | 10.00 | 13.9 | C147379 | |
| | | | | 1.0 NTU | 1.08 | 1.00 | 1.03 | C149725 | |
| | | | | | | | | | |
| | YSI 556 MPS | 06M153840 | | pH 7.0 | 6.99 | 7.00 | | 2AE799 | |
| | | | | pH 10.0 | 9.96 | 10.0 | | 2AE901 | |
| | | | | Cond. ~~1.413~~ 1000 | 1010 | 1000 | | 2AE907 | |
| | | | | ORP 240 | | | | | |
| | | | | D.O. 100% | 93.1 | 100.2% | | | |
| | Lamotte 2020e | ME10051 | | 10.0 NTU | 13.9 | 10.0 | | C147379 | |
| | | | | 1.0 NTU | 1.03 | 1.0 | | C149725 | |
| | | | | | | | | | |
| | | | | | | | | | |

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: **Mayport Background Study** | SITE LOCATION: **NAVSTA Mayport, Jacksonville, Florida** |
| WELL NO: **MPT-AC-GW-DPW02I** | SAMPLE ID: **MPT- AC-GW-DPW02I-022813** DATE: 2-28-13 |

## PURGING DATA

| | | | | |
|---|---|---|---|---|
| WELL DIAMETER (inches): ~~2~~ 3/4" | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: feet to 30 feet 34.2 | STATIC DEPTH TO WATER (feet): 4.29 | PURGE PUMP TYPE: PP |

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) 3x = 3.57L = liters + ( 0.00529 liters/foot X 36 feet) + 1.6 liters = 1.19L liters

| | | | | |
|---|---|---|---|---|
| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 32.5 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 32.5 | PURGING INITIATED AT: 1330 | PURGING ENDED AT: 1346 | TOTAL VOLUME PURGED (liters): 3.2 |

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1330 | 0 | 0 | 200 | 4.29 | | | | | 10.53 | | |
| 1340 | 2.0 | 2.0 | 200 | 4.39 | 7.25 | 23.27 | 715 | 0.17 | 4.71 | Clr | none |
| 1343 | .6 | 2.6 | 200 | 4.39 | 7.26 | 23.33 | 716 | 0.17 | 3.92 | clr | none |
| 1346 | .6 | 3.2 | 200 | 4.39 | 7.26 | 23.30 | 716 | 0.17 | 3.70 | clr | none |
| | | | | | | | | | | | |
| 1350 | Sample time | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"**= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605

**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| | | | |
|---|---|---|---|
| SAMPLED BY (PRINT) / AFFILIATION: RJ + JK /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1350 | SAMPLING ENDED AT: 1355 |
| PUMP OR TUBING DEPTH IN WELL (feet): 32.5 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y (N) Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: Y (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida |
| WELL NO: MPT-AC-GW-DPW02S | SAMPLE ID: MPT- AC-GW-DPW02S-022813 DATE: 2-28-13 |

## PURGING DATA

| WELL DIAMETER (inches): 3/4" | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 2 feet to 11.2 feet (Tag at) | STATIC DEPTH TO WATER (feet): 4.29 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( 11.2 feet – 2 feet) X 0.0757 liters/foot = 0.70L liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 5 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 5 | PURGING INITIATED AT: 1335 | PURGING ENDED AT: 1356 | TOTAL VOLUME PURGED (liters): 4.2 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1335 | — | — | 200 | 4.39 | — | | | | | | |
| 1350 | 3.0 | 3.0 | 200 | 4.39 | 6.79 | 20.85 | 624 | 0.75 | 0.98 | — | — |
| 1353 | .6 | 3.6 | 200 | 4.39 | 6.78 | 20.84 | 624 | 0.75 | 0.86 | — | — |
| 1356 | .6 | 4.2 | 200 | 4.39 | 6.78 | 20.83 | 625 | 0.75 | 0.81 | — | — |
| | | | | | | | | | | | |
| 1400 | Sample time | | | | | | | | | | |

**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"**= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605
**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: Jeff Kroll /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1400 | SAMPLING ENDED AT: 1410 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 5 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: Y (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: **Mayport Background Study** | SITE LOCATION: **NAVSTA Mayport, Jacksonville, Florida** |
| WELL NO: **MPT-Runway23-MW01S** | SAMPLE ID: **MPT- Runway23-MW01S-** 022813 DATE: 2/28/13 |

## PURGING DATA

| WELL DIAMETER (Inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 5 feet to 15 feet | STATIC DEPTH TO WATER (feet): 2.23 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( 15 feet – 2.23 feet) X .227 liters/foot = 2.89 liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 4.00 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 4 | PURGING INITIATED AT: 0845 | PURGING ENDED AT: 0921 | TOTAL VOLUME PURGED (liters): 7.2 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0845 | – | – | 200 | 2.23 | | | | | | | |
| 0915 | 6.0 | 6.0 | 200 | 2.69 | 7.46 | 22.14 | 676 | 0.13 | 2.25 | – | – |
| 0918 | .6 | 6.6 | 200 | 2.71 | 7.45 | 22.10 | 675 | 0.13 | 2.25 | – | – |
| 0921 | .6 | 7.2 | 200 | 2.71 | 7.46 | 22.02 | 674 | 0.13 | 1.90 | – | – |
| | | | | | | | | | | | |
| 0926 | sample time | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"**= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605

**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: Jeff Kronn /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 0926 | SAMPLING ENDED AT: 0940 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 4 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP Y N | TUBING Y N (replaced) | DUPLICATE or MS/MSD Y N | Dup01 |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida | |
|---|---|---|
| WELL NO: MPT-02-MW17I | SAMPLE ID: MPT-02-MW17I- 022813 | DATE: 2/28/13 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 25 feet to 30 feet | STATIC DEPTH TO WATER (feet): 3.87 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( 30 feet – 3.87 feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) 3x: 3.55 = liters + ( liters/foot X feet) + liters = 1.185 liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 28 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 28 | PURGING INITIATED AT: 1130 | PURGING ENDED AT: 1151 | TOTAL VOLUME PURGED (liters): 4.2 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1130 | — | — | 200 | 3.87 | — | | | | | | |
| 1145 | 3.0 | 3.0 | 200 | 3.93 | 6.71 | 22.30 | 25224 | 0.19 | 2.11 | yellow | — |
| 1148 | .6 | 3.6 | 200 | 3.93 | 6.70 | 22.38 | 25289 | 0.19 | 1.34 | yellow | — |
| 1151 | .6 | 4.2 | 200 | 3.93 | 6.70 | 22.35 | 25288 | 0.19 | 1.18 | yellow | — |
| | | | | | | | | | | | |
| 1155 | sample time | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): 0.75" = 0.0757; 1" = 0.151; 1.25" = 0.227; 2" = 0.605; 3" = 0.37; 4" = 1.40; 5" = 3.861; 6" = 5.564; 12"= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): 1/8" = 0.00227; 3/16" = 0.00529; 1/4" = 0.00984; 5/16" = 0.0151; 3/8" = 0.0227; 1/2" = 0.0378; 5/8" = 0.0605
**PURGING EQUIPMENT CODES:** B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: Jeff Krone /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1155 | SAMPLING ENDED AT: 1200 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 28 | TUBING MATERIAL CODE: Teflon/Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: Y (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

**SAMPLING EQUIPMENT CODES:** APP = After Penstaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: **Mayport Background Study** | SITE LOCATION: **NAVSTA Mayport, Jacksonville, Florida** |
| WELL NO: **MPT-02-MW17S** | SAMPLE ID: **MPT-02-MW17S-** 022813 DATE: 2/28/13 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 5 feet to 15 feet | STATIC DEPTH TO WATER (feet): 3.68 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = 5.63 liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 4 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 5 | PURGING INITIATED AT: 1135 | PURGING ENDED AT: 1206 | TOTAL VOLUME PURGED (liters): 6.2 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1135 | – | – | 200 | 3.68 | | | | | | | |
| 1200 | 5.0 | 5.0 | 200 | 3.91 | 7.08 | 20.75 | 2473 | 1.67 | 2.17 | yellow | – |
| 1203 | .6 | 5.6 | 200 | 3.91 | 7.07 | 20.77 | 2480 | 1.66 | 2.34 | yellow | – |
| 1206 | .6 | 6.2 | 200 | 3.90 | 7.07 | 20.75 | 2493 | 3.23 | 3.23 | yellow | – |
| 1210 | Sample | time | | | | | | | | | |

**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"** = 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605

**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: Jeff Kranz /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1210 | SAMPLING ENDED AT: 1215 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 5 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y (N) Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: Y (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: **Mayport Background Study** | SITE LOCATION: **NAVSTA Mayport, Jacksonville, Florida** |
| WELL NO: **MPT-02-MW35RI** | SAMPLE ID: **MPT-02-MW35RI-**0301 13 — DATE: 3/1/13 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 29 feet to feet 34.2 | STATIC DEPTH TO WATER (feet): 9.61 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) 3X = 3.48
= liters + ( liters/foot X feet) + liters = 1.16 liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 32 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 32 | PURGING INITIATED AT: 1225 | PURGING ENDED AT: 1246 | TOTAL VOLUME PURGED (liters): 4.2 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or mS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1225 | — | — | 200 | 9.61 | — | | | | | | |
| 1240 | 3.0 | 3.0 | 200 | 9.91 | 6.98 | 22.16 | 208 40 | 0.29 | 2.08 | — | sulfur |
| 1243 | .6 | 3.6 | 200 | 9.91 | 6.97 | 22.24 | 208 890 | 0.29 | 2.02 | — | sulfur |
| 1246 | 6 | 4.2 | 200 | 9.91 | 6.97 | 22.18 | 208 887 | 0.28 | 0.74 | — | sulfur |
| | | | | | | | | | | | |
| 1250 | sample time | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"**= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605

**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: Jeff Krone /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1250 | SAMPLING ENDED AT: 1255 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 32 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y (N) Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: Y (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; T = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida | |
|---|---|---|
| WELL NO: MPT-02-MW35RS | SAMPLE ID: MPT-02-MW35RS-030113 | DATE: 03/1/13 |

## PURGING DATA

| WELL DIAMETER (Inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 9 feet to 18.7 feet | STATIC DEPTH TO WATER (feet): 8.29 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = 6.29 liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9 | PURGING INITIATED AT: 1220 | PURGING ENDED AT: 1256 | TOTAL VOLUME PURGED (liters): 7.2 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1220 | — | — | 200 | 8.29 | | | | | | | |
| 1250 | 6.0 | 6.0 | 200 | 8.31 | 7.41 | 20.62 | 723 | 0.15 | 6.57 | Clr | mild sulfur |
| 1253 | .6 | 6.6 | 200 | 8.31 | 7.41 | 20.54 | 709 | 0.15 | 2.25 | Clr | " |
| 1256 | .6 | 7.2 | 200 | 8.31 | 7.38 | 20.64 | 707 | 0.14 | 2.11 | Clr | " |
| | | | | | | | | | | | |
| 1300 | sample time | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"** = 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605
**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: Jeff Krone /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1300 | SAMPLING ENDED AT: 1305 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 9 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: Y (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: **Mayport Background Study** | SITE LOCATION: **NAVSTA Mayport, Jacksonville, Florida** |
| WELL NO: **MPT-08-MW05I** | SAMPLE ID: **MPT-08-MW05I-** 030113 — DATE: 3/1/13 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 25.5 feet to feet 30.5 | STATIC DEPTH TO WATER (feet): 9.90 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) 0
= ( feet – feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) 3x = 2.06L = liters + ( 0.00529 liters/foot X 35 feet) + 0.5 liters = 0.69L liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 27 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 28 | PURGING INITIATED AT: 1055 | PURGING ENDED AT: 1111 | TOTAL VOLUME PURGED (liters): 2.6 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1055 | 0 | 0 | 200 | 9.90 | | | | | | | |
| 1105 | 2.0 | 2.0 | 100 | 9.95 | 7.38 | 21.49 | 801 | 0.41 | 4.87 | – | – |
| 1108 | 0.3 | 2.3 | 100 | 9.96 | 7.37 | 21.51 | 801 | 0.40 | 0.76 | – | – |
| 1111 | 0.3 | 2.6 | 100 | 9.96 | 7.37 | 21.56 | 800 | 0.40 | 0.71 | – | – |
| | | | | | | | | | | | |
| 1115 | Sample Time | | | | | | | | | | |

**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"**= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605
**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: Jeff Kran /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1115 | SAMPLING ENDED AT: 1120 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 28 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N (circle N) Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP Y (circle Y) N | TUBING Y (circle Y) N (replaced) | DUPLICATE or MS/MSD: Y N (circle N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida | |
|---|---|---|
| WELL NO: MPT-08-MW05S | SAMPLE ID: MPT-08-MW05S-030113 | DATE: 3/1/13 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 5.5 feet to 15.5 feet | STATIC DEPTH TO WATER (feet): 8.37 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH 15.5 – STATIC DEPTH TO WATER 8.37) X WELL CAPACITY 0.605 = 4.32 L
(only fill out if applicable)
= ( 15.5 feet – 8.37 feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 12 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 13 | PURGING INITIATED AT: 1050 | PURGING ENDED AT: | TOTAL VOLUME PURGED (liters): |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1050 | 0 | 0 | 200 | 8.37 | — | — | — | — | — | — | — |
| 1100 | 2.0 | 2.0 | 200 | 8.65 | — | — | — | — | 1.12 | — | — |
| 1110 | 2.0 | 4.0 | 100 | 8.65 | — | — | — | — | 2.44 | clr | none |
| 1112 | 0.2 | 4.2 | 100 | 8.65 | 7.40 | 21.09 | 580 | 0.44 | 1.17 | clr | — |
| 1114 | 0.2 | 4.4 | 100 | 8.65 | 7.40 | 21.14 | 581 | 0.43 | 0.73 | clr | — |
| 1116 | 0.2 | 4.6 | 100 | 8.65 | 7.40 | 21.17 | 581 | 0.43 | 0.66 | clr | — |
| 1125 | Sample | Time | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"** = 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605

**PURGING EQUIPMENT CODES:** B = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: Jeff Kron /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1125 | SAMPLING ENDED AT: 1130 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 13 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y (N) Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: Y (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
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REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; T = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; B = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: **Mayport Background Study** | SITE LOCATION: **NAVSTA Mayport, Jacksonville, Florida** |
| WELL NO: **MPT-53-DPWR01S** | SAMPLE ID: **MPT- 53-DPWR01S-** 030113 — DATE: 3/1/13 |

## PURGING DATA

| WELL DIAMETER (Inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 8 feet to 18.6 feet | STATIC DEPTH TO WATER (feet): 6.79 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE:** 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY = 7.15 L
(only fill out if applicable)
= ( 18.6 feet – 6.79 feet) X 0.605 liters/foot = liters

**EQUIPMENT VOLUME PURGE:** 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 12.5 | PURGING INITIATED AT: 1320 | PURGING ENDED AT: 1345 | TOTAL VOLUME PURGED (liters): 7.9 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1320 | 0 | 0 | 300 | 6.79 | — | — | — | — | — | — | — |
| 1330 | 3.0 | 3.0 | 300 | 6.81 | — | — | — | — | 10.48 | Clr | none |
| 1340 | 3.0 | 6.0 | 300 | 6.81 | — | — | — | — | 2.90 | Clr | none |
| 1345 | 1.5 | 7.5 | 100 | 6.80 | 7.22 | 19.60 | 1374 | 0.67 | 2.03 | Clr | none |
| 1347 | 0.2 | 7.7 | 100 | 6.80 | 7.24 | 19.52 | 1369 | 0.71 | 1.77 | Clr | none |
| 1349 | 0.2 | 7.9 | 100 | 6.80 | 7.25 | 19.45 | 1355 | 0.81 | 1.51 | Clr | none |
| | | | | | | | | | | | |
| 1350 | Sample Time | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"**= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605

**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: Pete Tahir / Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1350 | SAMPLING ENDED AT: 1355 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 13 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y (N) Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: Y (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida | |
|---|---|---|
| WELL NO: MPT-459-MW01I | SAMPLE ID: MPT-459-MW01I- | DATE: 2-28-13 |

## PURGING DATA

| WELL DIAMETER (Inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: feet to 30 feet 35 | STATIC DEPTH TO WATER (feet): 10.98 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) 3x = 2.15 L ( feet – feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) = liters + ( 0.00529 liters/foot X 40 feet) + 0.5 liters = 0.72 L liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 31 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 32.5 | PURGING INITIATED AT: 1440 | PURGING ENDED AT: 1456 | TOTAL VOLUME PURGED (liters): 3.2L |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1440 | 0 | 0 | 200 | 10.98 | | | | | | | |
| 1450 | 2.0 | 2.0 | | 10.89 | 7.68 | 22.86 | 1835 | 0.19 | 1.77 | Clr | none |
| 1452 | 2.4 | 2.4 | | 10.85 | 7.67 | 22.81 | 1871 | 0.20 | 1.70 | Clr | none |
| 1454 | 0.4 | 2.8 | | 10.85 | 7.68 | 22.65 | 1826 | 0.19 | 1.25 | Clr | none |
| 1456 | 0.4 | 3.2 | | 10.85 | 7.68 | 22.72 | 1805 | 0.19 | 1.21 | Clr | none |
| | | | | | | | | | | | |
| 1500 | Sample Time | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"**= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605

**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1500 | SAMPLING ENDED AT: 1505 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 32.5 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N (circle) Filtration Equipment Type: | FILTER SIZE: ____ µm |

FIELD DECONTAMINATION: PUMP (Y) N TUBING (Y) N (replaced) DUPLICATE or MS/MSD: Y (N)

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
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REMARKS:
All sample container s pre-preserved as supplied by the laboratory. Tag on well pad says MPT-458-1I Location appears correct, but called Ben Marshal to verify

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: **Mayport Background Study** | SITE LOCATION: **NAVSTA Mayport, Jacksonville, Florida** |
| WELL NO: **MPT-1358-MW01S** | SAMPLE ID: **MPT- 1358-MW01S-** 0228 13 . DATE: 2/28/13 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 4 feet to 13.7 feet | STATIC DEPTH TO WATER (feet): 6.59 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = 4.36 liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 7 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 7 | PURGING INITIATED AT: 1500 | PURGING ENDED AT: 1526 | TOTAL VOLUME PURGED (liters): 5.2 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1500 | — | — | 200 | 6.59 | — | — | — | — | — | — | — |
| 1520 | 4.0 | 4.0 | 200 | 6.57 | 7.09 | 21.77 | 945 | 0.29 | 5.47 | Clr | none |
| 1523 | .6 | 4.6 | 200 | 6.57 | 7.08 | 21.60 | 946 | 0.29 | 5.13 | Clr | none |
| 1526 | .6 | 5.2 | 200 | 6.57 | 7.08 | 21.66 | 945 | 0.29 | 4.79 | Clr | none |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1530 | Sample time | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"**= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605

**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: Jeff Kronk /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1530 | SAMPLING ENDED AT: 1540 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 7 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y (N) Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: Y (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: **Mayport Background Study** | SITE LOCATION: **NAVSTA Mayport, Jacksonville, Florida** |
| WELL NO: **MPT-2039-MW01I** | SAMPLE ID: **MPT- 2039-MW01I-** 022813 DATE: 2/28/13 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 5 feet to 15 feet | STATIC DEPTH TO WATER (feet): 3.41 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = 1.1 liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 6 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 6 | PURGING INITIATED AT: 1020 | PURGING ENDED AT: 1036 | TOTAL VOLUME PURGED (liters): 3.2 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1020 | — | — | 200 | 3.41 | | | | | | | |
| 1030 | 2.0 | 2.0 | 200 | 3.56 | 6.89 | 21.53 | 30776 | 0.05 | 7.20 | — | — |
| 1033 | .6 | 2.6 | 200 | 3.57 | 6.89 | 21.56 | 30848 | 0.05 | 6.61 | — | — |
| 1036 | .6 | 3.2 | 200 | 3.56 | 6.89 | 21.61 | 30893 | 0.05 | 5.73 | - | - |
| | | | | | | | | | | | |
| 1040 | Sample time | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"**= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605

**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: Jeff Kroz /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1040 | SAMPLING ENDED AT: 1100 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 6 | TUBING MATERIAL CODE: Teflon/Poly (circle one) | FIELD-FILTERED: Y (N) Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD: (Y) (N) | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: Mayport Background Study | SITE LOCATION: NAVSTA Mayport, Jacksonville, Florida |
| WELL NO: MPT-2050-MW01S | SAMPLE ID: MPT- 2050-MW01S-022813 DATE: 2/28/13 |

## PURGING DATA

| | | | | |
|---|---|---|---|---|
| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: feet to 9 feet 19 | STATIC DEPTH TO WATER (feet): 5.75 | PURGE PUMP TYPE: PP |

**WELL VOLUME PURGE:** 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = 5.2 liters

**EQUIPMENT VOLUME PURGE:** 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= liters + ( liters/foot X feet) + liters = liters

| | | | | |
|---|---|---|---|---|
| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 12 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 15 | PURGING INITIATED AT: ~~1610~~ 1545 | PURGING ENDED AT: 1616 | TOTAL VOLUME PURGED (liters): 6.2 |

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1545 | – | – | 200 | 5.75 | | | | | | | |
| 1610 | 5.0 | 5.0 | 200 | 5.72 | 7.18 | 20.83 | 702 | 3.85 | 2.58 | Clr | none |
| 1613 | .6 | 5.6 | 200 | 5.72 | 7.18 | 20.69 | 703 | 3.86 | 2.00 | Clr | none |
| 1616 | .6 | 6.2 | 200 | 5.72 | 7.18 | 20.65 | 703 | 3.87 | 1.95 | Clr | none |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1620 | Sample time | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"**= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605

**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| | | | |
|---|---|---|---|
| SAMPLED BY (PRINT) / AFFILIATION: RJ JK /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1620 | SAMPLING ENDED AT: 1630 |
| PUMP OR TUBING DEPTH IN WELL (feet): 15 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y (N) Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP (Y) N | TUBING (Y) N (replaced) | DUPLICATE or MS/MSD (Y) N Dup 02 | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

Form FD 9000-24

# GROUNDWATER SAMPLING LOG

| | |
|---|---|
| SITE NAME: **Mayport Background Study** | SITE LOCATION: **NAVSTA Mayport, Jacksonville, Florida** |
| WELL NO: **MPT-2062-MW01I** | SAMPLE ID: **MPT- 2062-MW01I-** 030113 DATE: 3/1/13 |

## PURGING DATA

| WELL DIAMETER (Inches): 2 | TUBING DIAMETER (inches): 3/16 | WELL SCREEN INTERVAL DEPTH: 38 feet to feet: 43 | STATIC DEPTH TO WATER (feet): 14.82 | PURGE PUMP TYPE: PP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( feet – feet) X liters/foot = 1. liters

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) 3x=3.71 = liters + ( liters/foot X feet) + liters = 1.23 liters

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 40 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 40 | PURGING INITIATED AT: 1340 | PURGING ENDED AT: 1406 | TOTAL VOLUME PURGED (liters): |
|---|---|---|---|---|

| TIME | VOLUME PURGED (liters) | CUMUL. VOLUME PURGED (mL/min) | PURGE RATE (lpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. (circle units) µmhos/cm or µS/cm | DISSOLVED OXYGEN (circle units) mg/L or % saturation | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1340 | — | — | 200 | 14.82 | — | | | | | | |
| 1400 | 4.0 | 4.0 | 200 | 14.89 | 7.20 | 21.44 | 902 | 0.24 | 2.68 | — | — |
| 1403 | .6 | 4.6 | 200 | 14.89 | 7.20 | 21.50 | 901 | 0.27 | 2.60 | — | — |
| 1406 | .6 | 5.2 | 200 | 14.89 | 7.19 | 21.49 | 9.01 | 0.27 | 2.60 | — | — |
| | | | | | | | | | | | |
| 1410 | Sample time | | | | | | | | | | |
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**WELL CAPACITY** (Liters Per Foot): **0.75"** = 0.0757; **1"** = 0.151; **1.25"** = 0.227; **2"** = 0.605; **3"** = 0.37; **4"** = 1.40; **5"** = 3.861; **6"** = 5.564; **12"**= 22.25
**TUBING INSIDE DIA. CAPACITY** (Ltr./Ft.): **1/8"** = 0.00227; **3/16"** = 0.00529; **1/4"** = 0.00984; **5/16"** = 0.0151; **3/8"** = 0.0227; **1/2"** = 0.0378; **5/8"** = 0.0605
**PURGING EQUIPMENT CODES:** **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

## SAMPLING DATA

| SAMPLED BY (PRINT) / AFFILIATION: Jeff Krone /Tetra Tech | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: 1410 | SAMPLING ENDED AT: 1420 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 40 | TUBING MATERIAL CODE: Teflon Poly (circle one) | FIELD-FILTERED: Y N Filtration Equipment Type: | FILTER SIZE: ____ µm |
| FIELD DECONTAMINATION: PUMP Y N | TUBING Y N (replaced) | DUPLICATE or MS/MSD: Y N | |

| SAMPLE CONTAINER SPECIFICATION | | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | | | |
| GW | 1 | PE | 500 mL | HNO3 | N/A | N/A | EPA 6010C (Metals) | APP | < 100 |
| GW | 1 | PE | 250 mL | H2SO4 | N/A | N/A | SM4500 NH3BG (Ammonia) | APP | < 100 |
| GW | 1 | PE | 500 mL | ICE | N/A | N/A | US EPA 300.0 (Sulfate) | APP | < 100 |
| | | | | | | | | | |
| | | | | | | | | | |

REMARKS:
All sample container s pre-preserved as supplied by the laboratory.

**MATERIAL CODES:** **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

**SAMPLING EQUIPMENT CODES:** **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

**NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
**pH:** ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**Revision Date: February 12, 2009**

TETRA TECH NUS, INC.

# CHAIN OF CUSTODY

NUMBER № 2694



PROJECT NO: 112603797

FACILITY: NAVSTA Mayport

SAMPLERS (SIGNATURE)

PROJECT MANAGER: Ben Marshall

PHONE NUMBER: 904 636 6125

FIELD OPERATIONS LEADER: Jeff Kranc

PHONE NUMBER: 904 699 7473

CARRIER/WAYBILL NUMBER

LABORATORY NAME AND CONTACT: Emorical / Brian Richard

ADDRESS: 621 Mainstream Drive Suite 270

CITY, STATE: Nashville TN 37228

STANDARD TAT ☒

RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P P P

PRESERVATIVE USED: HNO3 — H2SO4

TYPE OF ANALYSIS

| DATE YEAR 2013 | TIME | SAMPLE ID | LOCATION ID | TOP DEPTH (FT) | BOTTOM DEPTH (FT) | MATRIX (GW, SO, SW, SD, QC, ETC.) | COLLECTION METHOD GRAB (G) COMP (C) | No. OF CONTAINERS | Total Metals * (6010 C) | Arsenic (6010 C) | Ammonia (350.1) Sulfate (300.0) | NH3 (350.1) | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3/1 | 1250 | MPT-02-MW35I-030113 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | cool to 4°C |
| 3/1 | 1300 | MPT-02-MW35RS-030113 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 3/1 | 1350 | MPT-53-DPWR01S-030113 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 3/1 | 1410 | MPT-2062-MW01I-030113 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 3/1 | 1600 | MPT-Rinsate01-030113 | | | | QC | G | 3 | 1 | 1 | 1 | | | | | | |

| | DATE | TIME | | DATE | TIME |
|---|---|---|---|---|---|
| 1. RELINQUISHED BY | 3/4/13 | 1600 | 1. RECEIVED BY | | |
| 2. RELINQUISHED BY | | | 2. RECEIVED BY | | |
| 3. RELINQUISHED BY | | | 3. RECEIVED BY | | |

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R

FORM NO. TtNUS-001

TETRA TECH NUS, INC.

# CHAIN OF CUSTODY

NUMBER № 2693



| | | | | |
|---|---|---|---|---|
| PROJECT NO: 112603797 | FACILITY: NAVSTA Mayport | PROJECT MANAGER: Ben Marshall | PHONE NUMBER: 904 636 6125 | LABORATORY NAME AND CONTACT: Empirical / Brian Richard |
| SAMPLERS (SIGNATURE) | | FIELD OPERATIONS LEADER: Jeff Krone | PHONE NUMBER: 904 699 7473 | ADDRESS: 621 Mainstream Drive Suite 270 |
| | | CARRIER/WAYBILL NUMBER | | CITY, STATE: Nashville, TN 37228 |

STANDARD TAT ☐
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P P P

PRESERVATIVE USED: HNO3 — H2SO4

TYPE OF ANALYSIS: Total metals (6010C) * / Anions (300.0) sulfate / Ammonia (SM4500NH3 G)

| DATE YEAR 2013 | TIME | SAMPLE ID | LOCATION ID | TOP DEPTH (FT) | BOTTOM DEPTH (FT) | MATRIX (GW, SO, SW, SD, QC, ETC.) | COLLECTION METHOD GRAB (G) COMP (C) | No. OF CONTAINERS | Total metals (6010C) * | Anions (300.0) sulfate | Ammonia (SM4500NH3 G) | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2/28 | 0926 | MPT-Runway23-MW01S-022813 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | Cool to 4° C |
| 2/28 | 0000 | MPT-DUP01-022813 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 2/28 | 1040 | MPT-2039-MW01I-022813 | | | | GW | G | 9 | 3 | 3 | 3 | | | | | | MS/MSD |
| 2/28 | 1155 | MPT-02-MW17I-022813 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 2/28 | 1210 | MPT-02-MW17S-022813 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 2/28 | 1350 | MPT-AC-GW-DPW02I-022813 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 2/28 | 1400 | MPT-AC-GW-DPW02S-022813 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 2/28 | 1500 | MPT-459-MW01I-022813 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 2/28 | 1530 | MPT-1358-MW01S-022813 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 2/28 | 1620 | MPT-2050-MW01S-022813 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 2/28 | 0000 | MPT-DUP02-022813 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 3/1 | 1125 | MPT-08-MW05S-030113 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |
| 3/1 | 1115 | MPT-08-MW05I-030113 | | | | GW | G | 3 | 1 | 1 | 1 | | | | | | |

| | DATE | TIME | | DATE | TIME |
|---|---|---|---|---|---|
| 1. RELINQUISHED BY | 3/4/13 | 1600 | 1. RECEIVED BY | | |
| 2. RELINQUISHED BY | | | 2. RECEIVED BY | | |
| 3. RELINQUISHED BY | | | 3. RECEIVED BY | | |

COMMENTS: *See attached list

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

NAVSTA Mayport Background Study 28 Feb 13

Personnel: Jeff Krone and Pete Johnson
Truck: F-250 and POV
PPE: Level D
Weather: Sunny, breezy 60°
Objective: Groundwater Sampling

0700 Departed home for Mayport
0750 Arrived at NAVSTA, Began calibration
0855 Completed calibration, began sampling event. See table below for details.

| Well ID | Sample ID | Start | Stop | Sample time | Analyses |
|---|---|---|---|---|---|
| Runway 23 | MPT-Runway23-MW01$-022813 | 0845 | 0921 * | 0926 | 1 2 3 |
| 2039 MW01I | MPT-2039-MW01I-022813 | 1020 | 1036 * * | 1040 | 1 2 3 |
| 02-MW17I | MPT-02-MW17I-022813 | 1130 | 1151 | 1155 | 1 2 3 |
| 02-MW17$ | MPT-02-MW17$-022813 | 1135 | 1206 | 1210 | 1 2 3 |
| ACDPW 02I | MPT-ACDPW-GW-MW02I-022813 | 1330 | 1356 | 1355 | 1 2 3 |
| ACDPW02$ | MPT-AC-GW-DPWMW02$-022813 | 1335 | 1356 | 1400 | 1 2 3 |
| 459-MW01I | MPT-459-MW01I-022813 | 1440 | 1456 | 1500 | 1 2 3 |
| 1358 MW01$ | MPT-1358-MW01$-022813 | 1500 | 1526 | 1530 | 1 2 3 |
| 2050 MW01$ | MPT-2050-MW01$-022813 * Dup2 | ~~1620~~ 1545 | 1616 | 1620 | 1 2 3 |

Analysis Key 1=Total metals 2: Anions 3: Ammonia
* Indicates duplicate * * Indicates MS/MSD

1700 Completed sampling for the day, departed NAVSTA
1740 Arrived at office

NAUSTA Mayport Background Study 1 March 13

Personnel: Jeff Klone & Pete Johnson
Truck: F-250
PPE: Level D
Weather: Partly cloudy 60°
Objective: GW Sampling

0700 Departed home for NAUSTA
0809 Arrived at NAUSTA gate, unable to access the Station due to expired Rapid gate card
0820 Contacted Paul Malewicki and Rapidgate to get in to Station
0920 Admitted in and began calibration, escorted by Teg to wells in flight line
1030 Resumed sampling event, calibration complete. See table below for details

| Well ID | Sample ID | Start | Stop | Sample time | Analyses |
|---|---|---|---|---|---|
| 02-MW055 | MPT-02-MW055-030113 | 1050 | 1125 | 1125 | 1,2,3 |
| 02-MW061 | MPT-02-MW061-030113 | 1055 | 1111 | 1115 | 1,2,3 |
| 02-MW35I | MPT-02-MW35I-030113 | 1225 | 1246 | 1250 | 1,2,3 |
| 02-MW35R | MPT-02-MW35R-030113 | 1220 | 1256 | 1300 | 1,2,3 |
| Rinsate | MPT-Rinsate01-030113 | | | 1600 | 1,2,3 |
| 53-DPWR01S | MPT-53-DPWR01S-030113 | 1320 | 1349 | 1350 | 1,2,3 |
| 2062-MW01I | MPT-2062-MW01I-030113 | 1340 | 1406 | 1410 | 1,2,3 |

Analysis guide 1= Total metals 2= Anions 3= Ammonia

1430 Completed sampling event, packed samples and equipment for transport
1600 Completed Free Product survey and IDW inspection and departed NAUSTA
1640 Arrived at office

4 March 13

1600 Relinquished samples to Empirical via FEDEX Airbill.

Out by 1-28-13

# EMPIRICAL LABORATORIES, LLC BOTTLE KIT FORM

**Completed By:** BKR **Project:** **NAS Mayport CTOJM71**

**Client / Job#:** TTNUS/ CTO JM71 **Shipping Contact / Address / Tel#:**

**Contact Name/#:** Ben Marshall
**Shipping Method:** Fed Ex-Ground
**Date to Client By:** 1/30/2013
**VOC Trip Blank Sets Needed:**
**Org. Free Water Litres Needed:**
**Number of Coolers Required:**
**MS/MSD Required:** yes
**Navy Stds. Bottle COA Required:** yes

Tetra Tech/ Ben Marshall
8640 Philips Highway, Suite 16
Jacksonville, FL 32256
904-636-6125

***Please include blank labels, COCs, custody seals, temperature blanks, and return address labels.***

## Bottle Kit Method Listing

| Individual Methods or Group of Methods | Matrix | # of Samples | # of Cont. per Sample | Container Type / Preservative | Initials (Kit Prep) | 2nd Check (Kit Prep) |
|---|---|---|---|---|---|---|
| Tot. metals(6010C) | water | 22 | 1 | 250 ml plastic/ HNO3/ Cool to 4C | TH | |
| Anions(300.0)-Sulfate | water | 22 | 1 | 250 ml plastic/ Cool to 4C | TH | |
| Ammonia (SM4500NH3BG) | water | 22 | 1 | 250 ml plastic/ H2SO4/ Cool to 4C | TH | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
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| | | | | | | |
| | | | | | | |

**Special Instructions:**

**Be sure to include temp. blanks. Questions, contact Brian Richard @ 877-345-1113**

112603797 SURVEY APRIL 5, 2013

PERSONNEL: K. WEICHERT (SSO) TENUS
J. MAFFETT,
TRUCK: POV
PPE: LEVEL "D"
WEATHER: 58° COOL, LIGHT RAIN
EQUIP: RTK
OBJ: OBTAIN SURVEY DATA FOR BACKGROUND STUDY WELLS

0800 KW AT NAVSTA MAYPORT - PHONES SURVEYORS.
- SURVEYORS IN ROUTE NEAR NAVSTA MAYPORT
0830 CONTRACTOR GATE REQUESTS WORK ORDER - KW GIVES NAVFAC SE AND. P. MALAWIKI'S NAME.
0835 KW CALLS P. MALAWIKI + LINDA - EMAIL IS RE SENT TO CONTRACTOR GATE
0900 CREW BADGED IN, PROCEEDS TO MONUMENT LOCATION
0908 MONUMENT LOCATED, HEAVY RAIN AT SITE PREVENTS SETUP OF RTK UNIT
1015 RTK SET UP - CREW BEGINS LOGGING
1245 FIRST ROUND OF SHOTS DONE, CREW BACK AT BASE STATION RE CHECK BG 4 FOR ACCURACY.
1250 CHECK IS GOOD, CREW LOADS UP RTK AND MOVES TO 2ND MONUMENT.
1310 2ND MONUMENT ESTABLISHED, CREW BEGINS LOGGING.
1600 - WORK COMPLETE, ALL CREW DEPARTS SITE

KPW

# APPENDIX C

# LABORATORY ANALYTICAL REPORTS

*ANALYTICAL DATA PACKAGE*
SDG # 1211085

**PROJECT NAME:** NAS MAYPORT CTO JM71
**PROJECT LOCATION:** JACKSONVILLE, FL

**SUBMITTAL TO:**
Vanessa Good
Tetra Tech NUS, Inc.
Foster Plaza 7
661 Andersen Drive
Pittsburgh, PA 15220

**SUBMITTAL BY:**
Empirical Laboratories, LLC (EL)
621 Mainstream Drive, Suite 270
Nashville, TN 37228
Tel (615)345-1115
Fax (866)417-0548

**LABORATORY CONTACT PERSON:**
Project Manager: Brian Richard
Tel (615)345-1115
Fax (866)417-0548
Email: brichard@empirlabs.com

Original Report Date: December 3, 2012
Report Revision #: N/A
Revision Date: N/A
Total # of Pages: 136

**THIS DOCUMENT MEETS DoD QSM 4.2 STANDARDS**

*The results relate to only the samples associated with the referenced SDG and the submitted data has been produced in accordance with laboratory procedures. The Laboratory's Technical Lab Director, Mr. Rick Davis, is responsible for the final data produced and reported. His signature is listed at the end of the Case Narrative within the Analytical Data Package. If applicable to this report package, details on report revisions and the information on subcontracted analysis are listed in the package Case Narrative. This report shall not be reproduced, except in full, without the written approval of Empirical Laboratories, LLC.*

**L-A-B Accredited Certificate Number L2226**

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## Sample Delivery Group Case Narrative

### Receipt Information

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. There were no subcontracted analyses for this SDG.

### Changes to the Revision

This is an original submittal of the final report package.

### Analytical Information

All samples were prepped (where applicable) and analyzed within the standard allowed holding times, unless noted within the exceptions listed below. The laboratory analyzed all samples within the program and method guidelines. Sample prep and dilution information is provided within the final results report and at the beginning of each form set. The following information is provided specific to individual methods:

### Chromatographic Flags for Manual Integration:

The following letters are used to denote manual integrations on the laboratory's raw data in association with chromatographic integrations:

**A:** The peak was manually integrated as it was not integrated in the original chromatogram.
**B:** The peak was manually integrated due to resolution or coelution issues in the original chromatogram.
**C:** The peak was manually integrated to correct the baseline from the original chromatogram.
**D:** The peak was manually integrated to identify the correct peak as the wrong peak was identified in the original chromatogram.
**E:** The peak was manually integrated to include the entire peak as the original chromatogram only integrated part of the peak.

**SW6010C:**
The following matrix spikes exceeded criteria:
**2K19018-MS1 (1211085-06)** with a positive bias for Iron

No additional anomalies or deviations are noted and the proper data qualifiers have been applied.

**Wet Chemistry:**
No anomalies or deviations are noted.

**Data Qualifiers**
As applicable and where required, the following general qualifiers are associated with the sample results. Additional qualifiers will be specified within the reporting sections of the data package or within the body of the Case Narrative.

## Analytical Report Terms and Qualifiers

**DL:** The detection limit (DL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The DL is supported by the method detection limit (MDL) which is determined from analysis of a sample containing the analyte in a given matrix.

**LOD:** The Limit of Detection is an estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory-dependent. This definition is further clarified in the DoD QSM 4.2 revisions as the smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.

**LOQ:** The Limit of Quantitation is the minimum level, concentration, or quantity of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. This term is further clarified within the DoD QSM 4.2 as the lowest concentration that produces a quantitative result within specified limits of precision and bias.

*****: Exceeding quality control criteria are associated with the reported result.

**B**: The presence of a "B" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the correct sample result might be less than the reported result and, perhaps, zero. **For Florida DEP reports this qualifier is "V".**

**D:** When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".

**E:** The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with an "E". Usually the sample will be rerun at a dilution to quantitate the flagged compound. **For Florida DEP reports this qualifier is "L".**

**H1**: The result was analyzed outside of the EPA recommended holding time.

**H2**: The result was extracted outside of the EPA recommended holding time.

**H3**: The sample for this analyte was received outside of the EPA recommended holding time.

**J:** The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The mass spectral data pass the identification criteria showing that the compound is present, but the calculated result is less than the LOQ. One should feel confident that the result is greater than zero and less than the LOQ. **For Florida DEP reports this qualifier is "I".**

**M**: Indicates that the sample matrix interfered with the quantitation of the analyte. In dual column analysis the result is reported from the column with the lower concentration. In inorganics, it indicates that the parameters DL/LOD/LOQ have been raised.

**N:** The MS/MSD accuracy and/or precision are outside criteria. The predigested spike recovery is not within control limits for the associated parameter.

**P**: The associated numerical value is an estimated quantity. There is greater than a 40% difference between the two GC columns for the detected concentrations. The higher of the two values is reported unless matrix interference is obvious or for HPLC analysis where the primary column is reported.

**Q**: The relative percent difference (RPD) and/or percent recovery exceeded limits in the associated Blank Spike and/or Blank Spike Duplicate.

**S**: The associated internal standard exceeded criteria.

**U**: The presence of a "U" indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the DL.

**X**: The parameter shows a potential positive bias on a reported concentration due to an ICV or CCV exceeding the upper control limit on the high side.

**Y**: The parameter shows a potential negative bias on a reported concentration due to an ICV or CCV exceeding the lower control limit on the low side.

**Z**: The parameter shows lack of confirmation/detection, which may be due to a negative bias in the ICV or CCV which exceeds the lower control limit.

**LIMS Definitions / Naming Conventions:**

The following are general naming conventions that are used throughout the laboratory; however, on a method by method basis, there are additional QAQC items that are named in a consistent format.

**BLK**: LIMS assigns a unique identifier to the Method Blank by naming it as the letters BLK appended to the Batch ID. A Method Blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The Method Blank is used to assess for possible contamination during preparation and/or analysis steps. Method Blanks within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally.

**BS**: LIMS assigns a unique identifier to the Blank Spike by naming it as the letters BS appended to the Batch ID. The Blank Spike or Lab Control Sample is a controlled analyte-free matrix, which is spiked with known and verified concentrations of target analytes. Spiking concentrations can be referenced in the method SOP. The BS is used to evaluate the viability of analytes taken through the entire prep (when applicable) and analytical process. Blank Spikes within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally. A duplicate Blank Spike will be designated as a BSD.

**MS**: The LIMS assigns each Client sample with a unique identifier. The Matrix Spike is designated with a MS at the end of the sample's unique identifier. The Matrix Spike sample is used to assess the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. A duplicate Matrix Spike will be designated as a MSD.

**IDs**: The LIMS assigns each Client sample with a unique identifier. The letter "RE" may potentially be appended to the end of the LIMS Sample ID. And "**RE"** implies that the sample was either re-prepped, re-analyzed straight, or re-analyzed at a dilution. Subsequent re-analysis for the sample will be appended with a numerical value beginning with 1 that will increase incrementally. Eg: RE1, RE2, RE3, etc.

**Statement of Data Authenticity:**
I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in this Case Narrative, as verified by my signature below. During absences, Ms. Marcia K. McGinnity or an approved technical designee is authorized to sign this Statement of Data Authenticity.

_____
Mr. Rick D. Davis
Laboratory Technical Director / VP Operations

# Sample Receipt Information

1211085

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER № 2470 | PAGE 1 OF 2

| PROJECT NO: | FACILITY: | PROJECT MANAGER | PHONE NUMBER | LABORATORY NAME AND CONTACT: |
|---|---|---|---|---|
| 112G03797 | NAVSTA Mayport | Ben Marshall | (904) 636-6125 | Empirical Laboratories |
| SAMPLERS (SIGNATURE) | | FIELD OPERATIONS LEADER | PHONE NUMBER | ADDRESS |
| AndyBooth | | AJ Booth | (904) 636-6125 | 621 Mainstream Drive, Suite 270 |
| | | CARRIER/WAYBILL NUMBER | | CITY, STATE |
| | | | | Nashville, TN 37228 |

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

| DATE YEAR 2012 | TIME | SAMPLE ID | LOCATION ID | TOP DEPTH (FT) | BOTTOM DEPTH (FT) | MATRIX (GW, SO, SW, SD, QC, ETC.) | COLLECTION METHOD GRAB (G) COMP (C) | No. OF CONTAINERS | Tot. Metals (6010C) | Ammonia (SM450-NH3B) | Anions-Sulfate (300.0) | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONTAINER TYPE PLASTIC (P) or GLASS (G) | | | | | | | | | P | P | P | | | | | | |
| PRESERVATIVE USED | | | | | | | | | HNO3 | H2SO4 | - | | | | | | |
| 11/05 | 1205 | MPT-AC-GW-DPW02S-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | 01 | | | | * Cool to 4°C |
| 11/05 | 1240 | MPT-ACGW-DPW02I-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | 02 | | | | |
| 11/05 | 1400 | MPT-53-DPWR01S-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | 03 | | | | |
| 11/05 | 1520 | MPT-459-MW01I-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | 04 | | | | |
| 11/05 | 1630 | MPT-2039-MW01I-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | 05 | | | | |
| 11/06 | 1115 | MPT-2062-MW01I-20121105 | | | | GW | G | 9 | 3 | 3 | 3 | | 06 | | | | * MS/MSD Collected |
| 11/06 | 1245 | MPT-2050-MW01S-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | 07 | | | | |
| 11/06 | 1345 | MPT-Runway23-MW01S-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | 08 | | | | |
| 11/06 | 1450 | MPT-02-MW35RS-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | 09 | | | | |
| 11/06 | 1540 | MPT-02-MW35RI-20121105 | | | | GW | G | 3 | 1 | 1 | 1 | | 10 | | | | |
| 11/07 | 1123 | MPT-02-MW17S-20121107 | | | | GW | G | 3 | 1 | 1 | 1 | | 11 | | | | |
| 11/07 | 1202 | MPT-02-MW17I-20121107 | | | | GW | G | 3 | 1 | 1 | 1 | | 12 | | | | |
| 11/07 | 1340 | MPT-1358-MW01S-20121107 | | | | GW | G | 3 | 1 | 1 | 1 | | 13 | | | | |

| | DATE | TIME | | DATE | TIME |
|---|---|---|---|---|---|
| 1. RELINQUISHED BY AndyBooth | 11/8/12 | 1200 | 1. RECEIVED BY | | |
| 2. RELINQUISHED BY | | | 2. RECEIVED BY | | |
| 3. RELINQUISHED BY | | | 3. RECEIVED BY | 11/9/12 | 0830 |

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

1211085

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER № 2471 | PAGE 2 OF 2

| PROJECT NO: | FACILITY: | PROJECT MANAGER | PHONE NUMBER | LABORATORY NAME AND CONTACT: |
|---|---|---|---|---|
| 112G03797 | NAVSTA Mayport | Ben MacShall | (904) [redacted]-6125 | Empirical Laboratories |
| SAMPLERS (SIGNATURE) | | FIELD OPERATIONS LEADER | PHONE NUMBER | ADDRESS |
| Andy Booth | | AJ Booth | (904)636-6125 | 621 Mainstream Drive, Suite 270 |
| | | CARRIER/WAYBILL NUMBER | | CITY, STATE |
| | | | | Nashville, TN 37228 |

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

| DATE YEAR | TIME | SAMPLE ID | LOCATION ID | TOP DEPTH (FT) | BOTTOM DEPTH (FT) | MATRIX (GW, SO, SW, SD, QC, ETC.) | COLLECTION METHOD GRAB (G) COMP (C) | No. OF CONTAINERS | Tot. Metals (6010C) | Ammonia (SM4500 NH3BG) | Anions-Sulfate (300.0) | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONTAINER TYPE PLASTIC (P) or GLASS (G) | | | | | | | | | P | P | P | | | | | | |
| PRESERVATIVE USED | | | | | | | | | HNO3 | H2SO4 | - | | | | | | |
| 11/07 | 0000 | MPT-DUP-20121107 | | | | GW | G | 3 | 1 | 1 | 1 | | 14 | | | | * Duplicate collected |
| 11/06 | 1100 | MPT-Background-RB-20121108 | | | | QC | G | 3 | 1 | 1 | 1 | | 15 | | | | * Rinsate Blank |

| | DATE | TIME | | DATE | TIME |
|---|---|---|---|---|---|
| 1. RELINQUISHED BY Andy Booth | 11/8/12 | 1200 | 1. RECEIVED BY | | |
| 2. RELINQUISHED BY | DATE | TIME | 2. RECEIVED BY | DATE | TIME |
| 3. RELINQUISHED BY | DATE | TIME | 3. RECEIVED BY | 11/9/12 | 0830 |

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

### 8.3.2 Analytical SOP Requirements and Analytical Services Table

(UFP-QAPP Manual Section 3.1.1 – Worksheets #19 and 30)

**Empirical point of contact, e-mail address, and phone number:** Brian Richard, brichard@empirlabs.com, 615-345-1113, Ext. 249
**Address:** Empirical Laboratories, LLC, 621 Mainstream Drive, Suite 270 Nashville, TN 37228
**Data Package Turnaround time:** 21 days
**Tentative Sampling Dates:** August 2012 and November 2012

| Matrix | Analytical Group | Analytical and Preparation Method/ SOP Reference [1] | Containers (number, size, and type) | Sample Volume (units) | Preservation Requirements (chemical, temperature, light protected) | Maximum Holding Time (preparation/ analysis) |
|---|---|---|---|---|---|---|
| Groundwater | Metals | SW-846 3005A/ 6010C Empirical SOP-100/105 | One 500-milliliter (mL) plastic bottle | 50 mL | Nitric acid ($HNO_3$) to pH <2; Cool to above freezing and ≤ 6 °C | 180 days to analysis |
| | Ammonia | SM4500 NH3BG/ Empirical SOP-176 | One 250 mL plastic bottle | 50 mL | Sulfuric acid ($H_2SO_4$) to pH <2; Cool to above freezing and ≤ 6°C | 28 days to analysis |
| | Sulfate | USEPA 300.0/ Empirical SOP-145 | One 500 mL plastic bottle | 5 mL for each analyte | Cool to above freezing and ≤ 6 °C | 28 days to analysis |

**Notes:**
1 Specify the appropriate reference letter or number from the Analytical SOP References Table (Section 10).

### 8.3.3 Field Quality Control Sample Summary Table

(UFP-QAPP Manual Section 3.1.1 – Worksheet #20)

| Matrix | Analytical Group | Number of Sampling Locations | Number of Field Duplicates | Number of MS/MSDs[1] | Number of Field Blanks | Number of Equipment Rinsate Blanks | Number of VOC Trip Blanks | Total Number of Samples to Lab |
|---|---|---|---|---|---|---|---|---|
| Groundwater – First quarterly event | Metals, sulfate, and ammonia | 15 | 2 | 1/1 | 0 | 1 | N/A | 18 |
| Groundwater – Second quarterly event | Metals, sulfate, and ammonia | 15 | 2 | 1/1 | 0 | 1 | N/A | 18 |

1 Although MS/MSD samples are not typically considered field QC samples, they are included here because location determination is often established in the field. MS/MSD samples are not included in the total number of samples sent to the laboratory.

## 9 -- Reference Limits and Evaluation Tables

(UFP-QAPP Manual Section 2.8.1 – Worksheet # 15)

**Matrix: Groundwater**
**Analytical: Metals**

| Analyte | CAS Number | PAL (µg/L) | PAL Reference | PQLGs (µg/L) | Empirical LOQ (µg/L) | Empirical LOD (µg/L) | Empirical DL (µg/L) |
|---|---|---|---|---|---|---|---|
| ALUMINUM | 7429-90-5 | 200 | FDEP GCTL | 67 | 50 | 25 | 12.5 |
| ANTIMONY | 7440-36-0 | 6 | FDEP GCTL | 2.0 | 2.5 | 2 | 1.25 |
| ARSENIC | 7440-38-2 | 10 | FDEP GCTL | 3.3 | 2.5 | 1.5 | 0.75 |
| CHROMIUM | 7440-47-3 | 100 | FDEP GCTL | 33 | 2.5 | 1 | 0.5 |
| IRON | 7439-89-6 | 300 | FDEP GCTL | 100 | 25 | 15 | 7.5 |
| LEAD | 7439-92-1 | 15 | FDEP GCTL | 5.0 | 0.75 | 0.75 | 0.375 |
| MANGANESE | 7439-96-5 | 50 | FDEP GCTL | 17 | 3.75 | 1.5 | 0.75 |
| SILVER | 7440-22-4 | 100 | FDEP GCTL | 33 | 2.5 | 0.5 | 0.25 |
| THALLIUM | 7440-28-0 | 2 | FDEP GCTL | 0.67 | 2.0 | 1 | 0.75 |
| VANADIUM | 7440-62-2 | 49 | FDEP GCTL | 16 | 3.125 | 2.5 | 1.25 |
| ZINC | 7440-66-6 | 5,000 | FDEP GCTL | 1,700 | 5.0 | 2.5 | 1.25 |

**Matrix: Groundwater**
**Analytical: Miscellaneous**

| Analyte | CAS Number | PAL (µg/L) | PAL Reference | PQLGs (µg/L) | Empirical LOQ (µg/L) | Empirical LOD (µg/L) | Empirical DL (µg/L) |
|---|---|---|---|---|---|---|---|
| AMMONIA | 7664-41-7 | 2800 | FDEP GCTL | 930 | 300 | 150 | 110 |
| SULFATE | 14808-79-8 | 250000 | FDEP GCTL | 8300 | 2500 | 1000 | 330 |

CAS = Chemical Abstracts Number
PQLG = Practical Quantitation Limit Goal

The PAL references for groundwater are as follows: FDEP GCTL: Groundwater Contaminant Target Level, F.A.C. 62-777 GW-Table I (FDEP, 2005).

Please note that data will be reported at the LOQ and DL with non-detected data being the DL followed by a "U" qualifier as per Florida state regulations. The LOD is presented for completeness and compliance with the DoD Quality Systems Manual for Environmental Laboratories (DoD QSM), Version 4.2.

**EMPIRICAL LABORATORIES**
**COOLER RECEIPT FORM**

Cooler Received/Opened On: 11/09/12 @ 0830 Workorder# 1211085

1. Tracking # 9929 (last 4 digits, FedEx)

   Courier: ___FED-EX

2. Temperature of rep. sample or temp blank when opened: 0.6 °C + *correction factor (+ 0.2)* = 0.8 °C

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

   If yes, how many and where: 1-FRONT

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial) _____

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

   Were these signed and dated correctly? YES...NO...NA

8. Packing material used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13. a. Were VOA vials received? YES...NO...NA

    b. Was there any observable headspace present in any VOA vial? YES...NO...NA

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # 2

I certify that I unloaded the cooler and answered questions 7-14 (initial) _____

15. a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

    b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) _____

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) _____

I certify that I attached a label with the unique LIMS number to each container (initial) _____

I certify that I have performed a second check of the LIMS information against the COC to confirm accuracy (initial) _____

21. Were there Non-Conformance issues at login? YES NO Was a NCR generated? YES NO...#_____

**Additional Details:**

# EMPIRICAL LABORATORIES
## COOLER RECEIPT FORM

Cooler Received/Opened On: 11/09/12 @ 0830

Workorder# 1211085

1. Tracking # 4930 (last 4 digits, FedEx)

   Courier: ___FED-EX

2. Temperature of rep. sample or temp blank when opened: 0.4 °C + *correction factor (+ 0.2)* = 0.6 °C

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES ...NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

   If yes, how many and where: 1-FRONT

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial) _____

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

   Were these signed and dated correctly? YES...NO...NA

8. Packing material used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13. a. Were VOA vials received? YES...NO...NA

    b. Was there any observable headspace present in any VOA vial? YES...NO...NA

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # 1

I certify that I unloaded the cooler and answered questions 7-14 (initial) _____

15. a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

    b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) _____

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) _____

I certify that I attached a label with the unique LIMS number to each container (initial) _____

I certify that I have performed a second check of the LIMS information against the COC to confirm accuracy (initial) _____

21. Were there Non-Conformance issues at login? YES NO Was a NCR generated? YES NO #_____

**Additional Details:**

WORK ORDER

Printed: 11/12/2012 3:02:52PM

# 1211085

## Empirical Laboratories, LLC

**Client:** Tetra Tech, Inc. (T010)
**Project:** NAS Mayport CTO JM71
**Project Manager:** Brian Richard
**Project Number:** TET_CTOJM71

**Report To:**
Tetra Tech, Inc. (T010)
Vanessa Good
Foster Plaza 7 661 Andersen Drive
Pittsburgh, PA 15220
Phone: (412) 921-7090
Fax: (412) 921-4040

**Invoice To:**
Tetra Tech, Inc. (T010)
Accounts Payable
661 Andersen Drive
Pittsburgh, PA 15220-2745
Phone :(412) 921-8182
Fax: (412) 921-4040

Due to Client: 12/04/2012 16:00 *This is the projected due date to the client, at the time of receipt, and is for report delivery via upload, and/or email, and/or shipment to meet TAT as setup by project*

Received By: Benjamin C. Wright
Date Received: 11/09/2012 08:30
Logged In By: Benjamin C. Wright
Date Logged In: 11/09/2012 09:27

Samples Received at: **0.8°C**

| | | | |
|---|---|---|---|
| Custody Seals | Yes | Received On Ice | Yes |
| Containers Intact | Yes | | |
| COC/Labels Agree | Yes | | |
| Preservation Confirme | Yes | | |

| Method | Test Code | Due | TAT | Expires | Comments |
|---|---|---|---|---|---|
| **1211085-01 MPT-AC-GW-DPW02S-20121105 [Water] Sampled 11/05/2012 12:05 Eastern 'Client Sample'** | | | | | |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/03/2012 11:05 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/03/2012 11:05 | SO4 only |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/04/2013 11:05 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| **1211085-02 MPT-AC-GW-DPW02I-20121105 [Water] Sampled 11/05/2012 12:40 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/04/2013 11:40 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/03/2012 11:40 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/03/2012 11:40 | SO4 only |
| **1211085-03 MPT-53-DPWR01S-20121105 [Water] Sampled 11/05/2012 14:00 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/04/2013 13:00 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/03/2012 13:00 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/03/2012 13:00 | SO4 only |
| **1211085-04 MPT-459-MW01I-20121105 [Water] Sampled 11/05/2012 15:20 Eastern 'Client Sample'** | | | | | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/03/2012 14:20 | SO4 only |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/04/2013 14:20 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/03/2012 14:20 | |

# 1211085

## Empirical Laboratories, LLC

**Client:** Tetra Tech, Inc. (T010) **Project Manager:** Brian Richard
**Project:** NAS Mayport CTO JM71 **Project Number:** TET_CTOJM71

| Method | Test Code | Due | TAT | Expires | Comments |
|---|---|---|---|---|---|
| **1211085-05 MPT-2039-MW01I-20121105 [Water] Sampled 11/05/2012 16:30 Eastern 'Client Sample'** | | | | | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/03/2012 15:30 | SO4 only |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/04/2013 15:30 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/03/2012 15:30 | |
| **1211085-06 MPT-2062-MW01I-20121106 [Water] Sampled 11/06/2012 11:15 Eastern 'Client Sample'** | | | | | **MS/MSD.** |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/05/2013 10:15 | MS/MSD.MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/04/2012 10:15 | MS/MSD. |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/04/2012 10:15 | MS/MSD.SO4 only |
| **1211085-07 MPT-2050-MW01S-20121106 [Water] Sampled 11/06/2012 12:45 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/05/2013 11:45 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/04/2012 11:45 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/04/2012 11:45 | SO4 only |
| **1211085-08 MPT-Runway23-MW01S-20121106 [Water] Sampled 11/06/2012 13:45 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/05/2013 12:45 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/04/2012 12:45 | SO4 only |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/04/2012 12:45 | |
| **1211085-09 MPT-02-MW35RS-20121106 [Water] Sampled 11/06/2012 14:50 Eastern 'Client Sample'** | | | | | |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/04/2012 13:50 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/04/2012 13:50 | SO4 only |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/05/2013 13:50 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| **1211085-10 MPT-02-MW35RI-20121106 [Water] Sampled 11/06/2012 15:40 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/05/2013 14:40 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/04/2012 14:40 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/04/2012 14:40 | SO4 only |
| **1211085-11 MPT-02-MW17S-20121107 [Water] Sampled 11/07/2012 11:23 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/06/2013 10:23 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/05/2012 10:23 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/05/2012 10:23 | SO4 only |

# 1211085

## Empirical Laboratories, LLC

**Client:** Tetra Tech, Inc. (T010)
**Project:** NAS Mayport CTO JM71
**Project Manager:** Brian Richard
**Project Number:** TET_CTOJM71

| Method | Test Code | Due | TAT | Expires | Comments |
|---|---|---|---|---|---|
| **1211085-12 MPT-02-MW17I-20121107 [Water] Sampled 11/07/2012 12:02 Eastern 'Client Sample'** | | | | | |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/05/2012 11:02 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/05/2012 11:02 | SO4 only |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/06/2013 11:02 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| **1211085-13 MPT-1358-MW01S-20121107 [Water] Sampled 11/07/2012 13:40 Eastern 'Client Sample'** | | | | | |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/05/2012 12:40 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/05/2012 12:40 | SO4 only |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/06/2013 12:40 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| **1211085-14 MPT-DUP-20121107 [Water] Sampled 11/07/2012 00:00 Eastern 'Field Duplicate'** | | | | | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/04/2012 23:00 | SO4 only |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/05/2013 23:00 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/04/2012 23:00 | |
| **1211085-15 MPT-Background-RB-20121108 [Water] Sampled 11/08/2012 11:00 Eastern 'Equipment Rinsate'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 11/29/2012 14:00 | 15 | 05/07/2013 10:00 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 11/29/2012 14:00 | 15 | 12/06/2012 10:00 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 11/29/2012 14:00 | 15 | 12/06/2012 10:00 | SO4 only |

Reviewed By

Date

# Sample Delivery Group Assignment Form

**CLIENT: Tetra Tech, Inc. (T010)**
**PROJECT NAME: NAS Mayport CTO JM71**
**SDG #: 1211085**

**QC LEVEL: Level III**
**Report Due: 12/4/2012**
**Client Sample Count: 13**

| Sample Type | Sampled | Received | Lab ID | Client ID | Report Matrix | E300.0 | SM4500NH3BG | SW6010C |
|---|---|---|---|---|---|---|---|---|
| Client Sample | 11/5/2012 | 11/9/2012 | 1211085-01 | MPT-AC-GW-DPW02S-20121105 | Water | X | X | X |
| Client Sample | 11/5/2012 | 11/9/2012 | 1211085-02 | MPT-AC-GW-DPW02I-20121105 | Water | X | X | X |
| Client Sample | 11/5/2012 | 11/9/2012 | 1211085-03 | MPT-53-DPWR01S-20121105 | Water | X | X | X |
| Client Sample | 11/5/2012 | 11/9/2012 | 1211085-04 | MPT-459-MW01I-20121105 | Water | X | X | X |
| Client Sample | 11/5/2012 | 11/9/2012 | 1211085-05 | MPT-2039-MW01I-20121105 | Water | X | X | X |
| Client Sample | 11/6/2012 | 11/9/2012 | 1211085-06 | MPT-2062-MW01I-20121106 | Water | MS/MSD. | MS/MSD. | MS/MSD. |
| Client Sample | 11/6/2012 | 11/9/2012 | 1211085-07 | MPT-2050-MW01S-20121106 | Water | X | X | X |
| Client Sample | 11/6/2012 | 11/9/2012 | 1211085-08 | MPT-Runway23-MW01S-20121106 | Water | X | X | X |
| Client Sample | 11/6/2012 | 11/9/2012 | 1211085-09 | MPT-02-MW35RS-20121106 | Water | X | X | X |
| Client Sample | 11/6/2012 | 11/9/2012 | 1211085-10 | MPT-02-MW35RI-20121106 | Water | X | X | X |
| Client Sample | 11/7/2012 | 11/9/2012 | 1211085-11 | MPT-02-MW17S-20121107 | Water | X | X | X |
| Client Sample | 11/7/2012 | 11/9/2012 | 1211085-12 | MPT-02-MW17I-20121107 | Water | X | X | X |
| Client Sample | 11/7/2012 | 11/9/2012 | 1211085-13 | MPT-1358-MW01S-20121107 | Water | X | X | X |
| Field Duplicate | 11/7/2012 | 11/9/2012 | 1211085-14 | MPT-DUP-20121107 | Water | X | X | X |
| Equipment Rinsate | 11/8/2012 | 11/9/2012 | 1211085-15 | MPT-Background-RB-20121108 | Water | X | X | X |

# Data for SW6010C Forms

# Sample Extraction Data

**Prep Method: MET_3005A_LOW-SW6010C**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1211085-01 [MPT-AC-GW-DPW02S-20121105] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-02 [MPT-AC-GW-DPW02I-20121105] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-03 [MPT-53-DPWR01S-20121105] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-03RE1 [MPT-53-DPWR01S-20121105] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 5.00 | | | 11/19/12 |
| 1211085-04 [MPT-459-MW01I-20121105] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-05 [MPT-2039-MW01I-20121105] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-05RE1 [MPT-2039-MW01I-20121105] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 10.00 | | | 11/19/12 |
| 1211085-06 [MPT-2062-MW01I-20121106] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-06RE1 [MPT-2062-MW01I-20121106] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 5.00 | | | 11/19/12 |
| 1211085-07 [MPT-2050-MW01S-20121106] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-08 [MPT-Runway23-MW01S-20121106] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-09 [MPT-02-MW35RS-20121106] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-10 [MPT-02-MW35RI-20121106] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-10RE1 [MPT-02-MW35RI-20121106] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 10.00 | | | 11/19/12 |
| 1211085-11 [MPT-02-MW17S-20121107] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-11RE1 [MPT-02-MW17S-20121107] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 2.00 | | | 11/19/12 |
| 1211085-12 [MPT-02-MW17I-20121107] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-12RE1 [MPT-02-MW17I-20121107] | 2K19018 | 100.00/25.00 | 100 | 25.0 | 10.00 | | | 11/19/12 |

# Sample Extraction Data

**Prep Method: MET_3005A_LOW-SW6010C**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1211085-13 [MPT-1358-MW01S-20121107] | 2K19021 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-14 [MPT-DUP-20121107] | 2K19021 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |
| 1211085-15 [MPT-Background-RB-20121108] | 2K19021 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/19/12 |

# ANALYSIS DATA SHEET

**MPT-AC-GW-DPW02S-20121105**

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sampled: 11/05/12 12:05
% Solids: 0.00

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 1211085-01
Received: 11/09/12 08:30

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 73.7 | 12.5 | 25.0 | 50.0 | 1 | | SW6010C | 2K19018 | 11/28/12 17:52 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 17:52 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 17:52 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 17:52 |
| 7439-89-6 | Iron | 214 | 7.50 | 15.0 | 25.0 | 1 | N | SW6010C | 2K19018 | 11/28/12 17:52 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 2K19018 | 11/28/12 17:52 |
| 7439-96-5 | Manganese | 13.2 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19018 | 11/28/12 17:52 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 17:52 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 17:52 |
| 7440-62-2 | Vanadium | 2.06 | 1.25 | 2.50 | 3.12 | 1 | I | SW6010C | 2K19018 | 11/28/12 17:52 |
| 7440-66-6 | Zinc | 1.31 | 1.25 | 2.50 | 5.00 | 1 | I | SW6010C | 2K19018 | 11/28/12 17:52 |

# ANALYSIS DATA SHEET

**MPT-AC-GW-DPW02I-20121105**

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sampled: 11/05/12 12:40
% Solids: 0.00

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 1211085-02
Received: 11/09/12 08:30

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 76.9 | 12.5 | 25.0 | 50.0 | 1 | | SW6010C | 2K19018 | 11/28/12 17:56 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 17:56 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 17:56 |
| 7440-47-3 | Chromium | 1.47 | 0.500 | 1.00 | 2.50 | 1 | I | SW6010C | 2K19018 | 11/28/12 17:56 |
| 7439-89-6 | Iron | 131 | 7.50 | 15.0 | 25.0 | 1 | N | SW6010C | 2K19018 | 11/28/12 17:56 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 2K19018 | 11/28/12 17:56 |
| 7439-96-5 | Manganese | 14.9 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19018 | 11/28/12 17:56 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 17:56 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 17:56 |
| 7440-62-2 | Vanadium | 2.04 | 1.25 | 2.50 | 3.12 | 1 | I | SW6010C | 2K19018 | 11/28/12 17:56 |
| 7440-66-6 | Zinc | 1.53 | 1.25 | 2.50 | 5.00 | 1 | I | SW6010C | 2K19018 | 11/28/12 17:56 |

# ANALYSIS DATA SHEET

**MPT-53-DPWR01S-20121105**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-03 |
| Sampled: | 11/05/12 14:00 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 364 | 62.5 | 125 | 250 | 5 | D | SW6010C | 2K19018 | 11/29/12 18:48 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:14 |
| 7440-38-2 | Arsenic | 9.13 | 0.750 | 1.50 | 2.50 | 1 | | SW6010C | 2K19018 | 11/28/12 18:14 |
| 7440-47-3 | Chromium | | 2.50 | 5.00 | 12.5 | 5 | U | SW6010C | 2K19018 | 11/29/12 18:48 |
| 7439-89-6 | Iron | 1550 | 7.50 | 15.0 | 25.0 | 1 | N | SW6010C | 2K19018 | 11/28/12 18:14 |
| 7439-92-1 | Lead | | 1.88 | 3.75 | 3.75 | 5 | U | SW6010C | 2K19018 | 11/29/12 18:48 |
| 7439-96-5 | Manganese | 149 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19018 | 11/28/12 18:14 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:14 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:14 |
| 7440-62-2 | Vanadium | 2.89 | 1.25 | 2.50 | 3.12 | 1 | I | SW6010C | 2K19018 | 11/28/12 18:14 |
| 7440-66-6 | Zinc | | 6.25 | 12.5 | 25.0 | 5 | U | SW6010C | 2K19018 | 11/29/12 18:48 |

# ANALYSIS DATA SHEET

**MPT-459-MW01I-20121105**

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sampled: 11/05/12 15:20
% Solids: 0.00

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 1211085-04
Received: 11/09/12 08:30

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 192 | 12.5 | 25.0 | 50.0 | 1 | | SW6010C | 2K19018 | 11/28/12 18:19 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:19 |
| 7440-38-2 | Arsenic | 3.67 | 0.750 | 1.50 | 2.50 | 1 | | SW6010C | 2K19018 | 11/28/12 18:19 |
| 7440-47-3 | Chromium | 1.00 | 0.500 | 1.00 | 2.50 | 1 | I | SW6010C | 2K19018 | 11/28/12 18:19 |
| 7439-89-6 | Iron | 126 | 7.50 | 15.0 | 25.0 | 1 | N | SW6010C | 2K19018 | 11/28/12 18:19 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:19 |
| 7439-96-5 | Manganese | 11.4 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19018 | 11/28/12 18:19 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:19 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:19 |
| 7440-62-2 | Vanadium | 2.35 | 1.25 | 2.50 | 3.12 | 1 | I | SW6010C | 2K19018 | 11/28/12 18:19 |
| 7440-66-6 | Zinc | | 1.25 | 2.50 | 5.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:19 |

# ANALYSIS DATA SHEET

**MPT-2039-MW01I-20121105**

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sampled: 11/05/12 16:30
% Solids: 0.00

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 1211085-05
Received: 11/09/12 08:30

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 469 | 125 | 250 | 500 | 10 | D I | SW6010C | 2K19018 | 11/29/12 18:52 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:24 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:24 |
| 7440-47-3 | Chromium | | 5.00 | 10.0 | 25.0 | 10 | U | SW6010C | 2K19018 | 11/29/12 18:52 |
| 7439-89-6 | Iron | 56.2 | 7.50 | 15.0 | 25.0 | 1 | N | SW6010C | 2K19018 | 11/28/12 18:24 |
| 7439-92-1 | Lead | | 3.75 | 7.50 | 7.50 | 10 | U | SW6010C | 2K19018 | 11/29/12 18:52 |
| 7439-96-5 | Manganese | 279 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19018 | 11/28/12 18:24 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:24 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:24 |
| 7440-62-2 | Vanadium | 4.22 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 2K19018 | 11/28/12 18:24 |
| 7440-66-6 | Zinc | | 12.5 | 25.0 | 50.0 | 10 | U | SW6010C | 2K19018 | 11/29/12 18:52 |

# ANALYSIS DATA SHEET

**MPT-2062-MW01I-20121106**

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sampled: 11/06/12 11:15
% Solids: 0.00

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 1211085-06
Received: 11/09/12 08:30

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 406 | 62.5 | 125 | 250 | 5 | D | SW6010C | 2K19018 | 11/29/12 18:57 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:29 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:29 |
| 7440-47-3 | Chromium | 0.990 | 0.500 | 1.00 | 2.50 | 1 | I | SW6010C | 2K19018 | 11/28/12 18:29 |
| 7439-89-6 | Iron | 436 | 7.50 | 15.0 | 25.0 | 1 | N | SW6010C | 2K19018 | 11/28/12 18:29 |
| 7439-92-1 | Lead | | 1.88 | 3.75 | 3.75 | 5 | U | SW6010C | 2K19018 | 11/29/12 18:57 |
| 7439-96-5 | Manganese | 220 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19018 | 11/28/12 18:29 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:29 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:29 |
| 7440-62-2 | Vanadium | 1.58 | 1.25 | 2.50 | 3.12 | 1 | I | SW6010C | 2K19018 | 11/28/12 18:29 |
| 7440-66-6 | Zinc | | 6.25 | 12.5 | 25.0 | 5 | U | SW6010C | 2K19018 | 11/29/12 18:57 |

# ANALYSIS DATA SHEET

**MPT-2050-MW01S-20121106**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-07 |
| Sampled: | 11/06/12 12:45 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 151 | 12.5 | 25.0 | 50.0 | 1 | | SW6010C | 2K19018 | 11/28/12 18:54 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:54 |
| 7440-38-2 | Arsenic | 1.97 | 0.750 | 1.50 | 2.50 | 1 | I | SW6010C | 2K19018 | 11/28/12 18:54 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:54 |
| 7439-89-6 | Iron | 187 | 7.50 | 15.0 | 25.0 | 1 | N | SW6010C | 2K19018 | 11/28/12 18:54 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:54 |
| 7439-96-5 | Manganese | 21.8 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19018 | 11/28/12 18:54 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:54 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:54 |
| 7440-62-2 | Vanadium | 1.84 | 1.25 | 2.50 | 3.12 | 1 | I | SW6010C | 2K19018 | 11/28/12 18:54 |
| 7440-66-6 | Zinc | 1.27 | 1.25 | 2.50 | 5.00 | 1 | I | SW6010C | 2K19018 | 11/28/12 18:54 |

# ANALYSIS DATA SHEET

**MPT-Runway23-MW01S-20121106**

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sampled: 11/06/12 13:45
% Solids: 0.00

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 1211085-08
Received: 11/09/12 08:30

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 103 | 12.5 | 25.0 | 50.0 | 1 | | SW6010C | 2K19018 | 11/28/12 18:58 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:58 |
| 7440-38-2 | Arsenic | 5.63 | 0.750 | 1.50 | 2.50 | 1 | | SW6010C | 2K19018 | 11/28/12 18:58 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:58 |
| 7439-89-6 | Iron | 52.4 | 7.50 | 15.0 | 25.0 | 1 | N | SW6010C | 2K19018 | 11/28/12 18:58 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:58 |
| 7439-96-5 | Manganese | 12.3 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19018 | 11/28/12 18:58 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:58 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 18:58 |
| 7440-62-2 | Vanadium | 8.93 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 2K19018 | 11/28/12 18:58 |
| 7440-66-6 | Zinc | 2.61 | 1.25 | 2.50 | 5.00 | 1 | I | SW6010C | 2K19018 | 11/28/12 18:58 |

# ANALYSIS DATA SHEET

**MPT-02-MW35RS-20121106**

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sampled: 11/06/12 14:50
% Solids: 0.00

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 1211085-09
Received: 11/09/12 08:30

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 77.1 | 12.5 | 25.0 | 50.0 | 1 | | SW6010C | 2K19018 | 11/28/12 19:03 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:03 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:03 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:03 |
| 7439-89-6 | Iron | 25.9 | 7.50 | 15.0 | 25.0 | 1 | N | SW6010C | 2K19018 | 11/28/12 19:03 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:03 |
| 7439-96-5 | Manganese | 33.5 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19018 | 11/28/12 19:03 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:03 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:03 |
| 7440-62-2 | Vanadium | | 1.25 | 2.50 | 3.12 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:03 |
| 7440-66-6 | Zinc | | 1.25 | 2.50 | 5.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:03 |

# ANALYSIS DATA SHEET

**MPT-02-MW35RI-20121106**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-10 |
| Sampled: | 11/06/12 15:40 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 265 | 125 | 250 | 500 | 10 | D I | SW6010C | 2K19018 | 11/29/12 19:06 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:08 |
| 7440-38-2 | Arsenic | 11.6 | 0.750 | 1.50 | 2.50 | 1 | | SW6010C | 2K19018 | 11/28/12 19:08 |
| 7440-47-3 | Chromium | | 5.00 | 10.0 | 25.0 | 10 | U | SW6010C | 2K19018 | 11/29/12 19:06 |
| 7439-89-6 | Iron | 34.4 | 7.50 | 15.0 | 25.0 | 1 | N | SW6010C | 2K19018 | 11/28/12 19:08 |
| 7439-92-1 | Lead | | 3.75 | 7.50 | 7.50 | 10 | U | SW6010C | 2K19018 | 11/29/12 19:06 |
| 7439-96-5 | Manganese | 13.5 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19018 | 11/28/12 19:08 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:08 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:08 |
| 7440-62-2 | Vanadium | 5.25 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 2K19018 | 11/28/12 19:08 |
| 7440-66-6 | Zinc | | 12.5 | 25.0 | 50.0 | 10 | U | SW6010C | 2K19018 | 11/29/12 19:06 |

# ANALYSIS DATA SHEET

**MPT-02-MW17S-20121107**

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sampled: 11/07/12 11:23
% Solids: 0.00

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 1211085-11
Received: 11/09/12 08:30

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 275 | 25.0 | 50.0 | 100 | 2 | D | SW6010C | 2K19018 | 11/29/12 19:11 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:13 |
| 7440-38-2 | Arsenic | 8.67 | 0.750 | 1.50 | 2.50 | 1 | | SW6010C | 2K19018 | 11/28/12 19:13 |
| 7440-47-3 | Chromium | 1.09 | 0.500 | 1.00 | 2.50 | 1 | I | SW6010C | 2K19018 | 11/28/12 19:13 |
| 7439-89-6 | Iron | 1220 | 7.50 | 15.0 | 25.0 | 1 | N | SW6010C | 2K19018 | 11/28/12 19:13 |
| 7439-92-1 | Lead | | 0.750 | 1.50 | 1.50 | 2 | U | SW6010C | 2K19018 | 11/29/12 19:11 |
| 7439-96-5 | Manganese | 474 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19018 | 11/28/12 19:13 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:13 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:13 |
| 7440-62-2 | Vanadium | 3.25 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 2K19018 | 11/28/12 19:13 |
| 7440-66-6 | Zinc | 3.31 | 2.50 | 5.00 | 10.0 | 2 | D I | SW6010C | 2K19018 | 11/29/12 19:11 |

# ANALYSIS DATA SHEET

**MPT-02-MW17I-20121107**

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sampled: 11/07/12 12:02
% Solids: 0.00

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 1211085-12
Received: 11/09/12 08:30

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 364 | 125 | 250 | 500 | 10 | D I | SW6010C | 2K19018 | 11/29/12 19:15 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:18 |
| 7440-38-2 | Arsenic | 13.2 | 0.750 | 1.50 | 2.50 | 1 | | SW6010C | 2K19018 | 11/28/12 19:18 |
| 7440-47-3 | Chromium | | 5.00 | 10.0 | 25.0 | 10 | U | SW6010C | 2K19018 | 11/29/12 19:15 |
| 7439-89-6 | Iron | 12200 | 7.50 | 15.0 | 25.0 | 1 | N | SW6010C | 2K19018 | 11/28/12 19:18 |
| 7439-92-1 | Lead | | 3.75 | 7.50 | 7.50 | 10 | U | SW6010C | 2K19018 | 11/29/12 19:15 |
| 7439-96-5 | Manganese | 184 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19018 | 11/28/12 19:18 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:18 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19018 | 11/28/12 19:18 |
| 7440-62-2 | Vanadium | 2.00 | 1.25 | 2.50 | 3.12 | 1 | I | SW6010C | 2K19018 | 11/28/12 19:18 |
| 7440-66-6 | Zinc | | 12.5 | 25.0 | 50.0 | 10 | U | SW6010C | 2K19018 | 11/29/12 19:15 |

# ANALYSIS DATA SHEET

**MPT-1358-MW01S-20121107**

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sampled: 11/07/12 13:40
% Solids: 0.00

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 1211085-13
Received: 11/09/12 08:30

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 100 | 12.5 | 25.0 | 50.0 | 1 | | SW6010C | 2K19021 | 11/28/12 19:48 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:48 |
| 7440-38-2 | Arsenic | 3.57 | 0.750 | 1.50 | 2.50 | 1 | | SW6010C | 2K19021 | 11/28/12 19:48 |
| 7440-47-3 | Chromium | 0.619 | 0.500 | 1.00 | 2.50 | 1 | I | SW6010C | 2K19021 | 11/28/12 19:48 |
| 7439-89-6 | Iron | 303 | 7.50 | 15.0 | 25.0 | 1 | | SW6010C | 2K19021 | 11/28/12 19:48 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:48 |
| 7439-96-5 | Manganese | 27.5 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19021 | 11/28/12 19:48 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:48 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:48 |
| 7440-62-2 | Vanadium | 8.38 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 2K19021 | 11/28/12 19:48 |
| 7440-66-6 | Zinc | 1.92 | 1.25 | 2.50 | 5.00 | 1 | I | SW6010C | 2K19021 | 11/28/12 19:48 |

# ANALYSIS DATA SHEET

**MPT-DUP-20121107**

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sampled: 11/07/12 00:00
% Solids: 0.00

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 1211085-14
Received: 11/09/12 08:30

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 87.7 | 12.5 | 25.0 | 50.0 | 1 | | SW6010C | 2K19021 | 11/28/12 19:53 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:53 |
| 7440-38-2 | Arsenic | 4.07 | 0.750 | 1.50 | 2.50 | 1 | | SW6010C | 2K19021 | 11/28/12 19:53 |
| 7440-47-3 | Chromium | 0.527 | 0.500 | 1.00 | 2.50 | 1 | I | SW6010C | 2K19021 | 11/28/12 19:53 |
| 7439-89-6 | Iron | 294 | 7.50 | 15.0 | 25.0 | 1 | | SW6010C | 2K19021 | 11/28/12 19:53 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:53 |
| 7439-96-5 | Manganese | 29.8 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K19021 | 11/28/12 19:53 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:53 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:53 |
| 7440-62-2 | Vanadium | 8.82 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 2K19021 | 11/28/12 19:53 |
| 7440-66-6 | Zinc | 1.94 | 1.25 | 2.50 | 5.00 | 1 | I | SW6010C | 2K19021 | 11/28/12 19:53 |

# ANALYSIS DATA SHEET

**MPT-Background-RB-20121108**

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sampled: 11/08/12 11:00
% Solids: 0.00

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 1211085-15
Received: 11/09/12 08:30

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | | 12.5 | 25.0 | 50.0 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:58 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:58 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:58 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:58 |
| 7439-89-6 | Iron | 16.5 | 7.50 | 15.0 | 25.0 | 1 | I | SW6010C | 2K19021 | 11/28/12 19:58 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:58 |
| 7439-96-5 | Manganese | | 0.750 | 1.50 | 3.75 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:58 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:58 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:58 |
| 7440-62-2 | Vanadium | | 1.25 | 2.50 | 3.12 | 1 | U | SW6010C | 2K19021 | 11/28/12 19:58 |
| 7440-66-6 | Zinc | 1.41 | 1.25 | 2.50 | 5.00 | 1 | I | SW6010C | 2K19021 | 11/28/12 19:58 |

# INITIAL AND CONTINUING CALIBRATION CHECK

## SW6010C

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP

SDG: 1211085
Project: NAS Mayport CTO JM71
Calibration: 2334002
Sequence: 2K33404

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 2K33404-ICV1 | Aluminum | 10000 | 10190 | 102 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 1020 | 102 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1053 | 105 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 986.7 | 98.7 | ug/L | +/- 10.00% |
| | Iron | 10000 | 10280 | 103 | ug/L | +/- 10.00% |
| | Lead | 1000 | 965.7 | 96.6 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1001 | 100 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 486.4 | 97.3 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 959.6 | 96.0 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 996.8 | 99.7 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1029 | 103 | ug/L | +/- 10.00% |
| 2K33404-CCV1 | Aluminum | 10000 | 9821 | 98.2 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 1040 | 104 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1036 | 104 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 1014 | 101 | ug/L | +/- 10.00% |
| | Iron | 10000 | 10100 | 101 | ug/L | +/- 10.00% |
| | Lead | 1000 | 976.3 | 97.6 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 987.0 | 98.7 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 472.4 | 94.5 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 1001 | 100 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 974.5 | 97.5 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1030 | 103 | ug/L | +/- 10.00% |
| 2K33404-CCV3 | Aluminum | 10000 | 9622 | 96.2 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 1056 | 106 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1043 | 104 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 1000 | 100 | ug/L | +/- 10.00% |
| | Iron | 10000 | 9877 | 98.8 | ug/L | +/- 10.00% |
| | Lead | 1000 | 971.2 | 97.1 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 946.6 | 94.7 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 459.7 | 91.9 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 1014 | 101 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 930.8 | 93.1 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1033 | 103 | ug/L | +/- 10.00% |
| 2K33404-CCV4 | Aluminum | 10000 | 9656 | 96.6 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 1047 | 105 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1040 | 104 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 996.2 | 99.6 | ug/L | +/- 10.00% |
| | Iron | 10000 | 9919 | 99.2 | ug/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## SW6010C

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP

SDG: 1211085
Project: NAS Mayport CTO JM71
Calibration: 2334002
Sequence: 2K33404

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 2K33404-CCV4 | Lead | 1000 | 971.5 | 97.1 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 953.4 | 95.3 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 463.4 | 92.7 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 1008 | 101 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 941.9 | 94.2 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1028 | 103 | ug/L | +/- 10.00% |
| 2K33404-CCV5 | Aluminum | 10000 | 9906 | 99.1 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 1020 | 102 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1027 | 103 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 1006 | 101 | ug/L | +/- 10.00% |
| | Iron | 10000 | 10120 | 101 | ug/L | +/- 10.00% |
| | Lead | 1000 | 959.6 | 96.0 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 991.6 | 99.2 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 475.2 | 95.0 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 989.2 | 98.9 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 983.6 | 98.4 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1018 | 102 | ug/L | +/- 10.00% |
| 2K33404-CCV6 | Aluminum | 10000 | 10260 | 103 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 1002 | 100 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1013 | 101 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 1017 | 102 | ug/L | +/- 10.00% |
| | Iron | 10000 | 10440 | 104 | ug/L | +/- 10.00% |
| | Lead | 1000 | 970.2 | 97.0 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1055 | 105 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 487.6 | 97.5 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 968.9 | 96.9 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 1046 | 105 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1008 | 101 | ug/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## SW6010C

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP

SDG: 1211085
Project: NAS Mayport CTO JM71
Calibration: 2335001
Sequence: 2K33503

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 2K33503-ICV1 | Aluminum | 10000 | 10260 | 103 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 972.5 | 97.2 | ug/L | +/- 10.00% |
| | Lead | 1000 | 964.8 | 96.5 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1023 | 102 | ug/L | +/- 10.00% |
| 2K33503-CCV1 | Aluminum | 10000 | 10150 | 101 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 990.4 | 99.0 | ug/L | +/- 10.00% |
| | Lead | 1000 | 1002 | 100 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1017 | 102 | ug/L | +/- 10.00% |
| 2K33503-CCV5 | Aluminum | 10000 | 9793 | 97.9 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 957.7 | 95.8 | ug/L | +/- 10.00% |
| | Lead | 1000 | 981.1 | 98.1 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 980.7 | 98.1 | ug/L | +/- 10.00% |
| 2K33503-CCV6 | Aluminum | 10000 | 9735 | 97.3 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 937.5 | 93.7 | ug/L | +/- 10.00% |
| | Lead | 1000 | 965.7 | 96.6 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 962.4 | 96.2 | ug/L | +/- 10.00% |

# CRDL STANDARD

## SW6010C

Laboratory: Empirical Laboratories, LLC

SDG: 1211085

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Instrument ID: ME-ICP

Calibration: 2334002

Sequence: 2K33404

| Lab Sample ID | Analyte | True | Found | %R | Units | QC Limts |
|---|---|---|---|---|---|---|
| 2K33404-CRL1 | Aluminum | 100.0 | 100.0 | 100 | ug/L | 80 - 120 |
| | Antimony | 8.000 | 7.965 | 99.6 | ug/L | 80 - 120 |
| | Chromium | 4.000 | 3.819 | 95.5 | ug/L | 80 - 120 |
| | Iron | 60.00 | 59.94 | 99.9 | ug/L | 80 - 120 |
| | Manganese | 6.000 | 5.586 | 93.1 | ug/L | 80 - 120 |
| | Silver | 2.000 | 2.008 | 100 | ug/L | 80 - 120 |
| | Thallium | 4.000 | 4.611 | 115 | ug/L | 80 - 120 |
| | Vanadium | 10.00 | 9.057 | 90.6 | ug/L | 80 - 120 |
| | Zinc | 10.00 | 9.152 | 91.5 | ug/L | 80 - 120 |
| 2K33404-CRL2 | Arsenic | 5.000 | 4.463 | 89.3 | ug/L | 80 - 120 |
| | Lead | 3.000 | 3.317 | 111 | ug/L | 80 - 120 |

# CRDL STANDARD

## SW6010C

Laboratory: Empirical Laboratories, LLC

SDG: 1211085

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Instrument ID: ME-ICP

Calibration: 2335001

Sequence: 2K33503

| Lab Sample ID | Analyte | True | Found | %R | Units | QC Limts |
|---|---|---|---|---|---|---|
| 2K33503-CRL1 | Aluminum | 100.0 | 106.3 | 106 | ug/L | 80 - 120 |
| | Chromium | 4.000 | 4.003 | 100 | ug/L | 80 - 120 |
| | Lead | 3.000 | 2.813 | 93.8 | ug/L | 80 - 120 |
| | Zinc | 10.00 | 9.862 | 98.6 | ug/L | 80 - 120 |

# BLANKS
## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP
Project: NAS Mayport CTO JM71
Sequence: 2K33404
Calibration: 2334002

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K33404-ICB1 | Aluminum | -2.294 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | 0.9515 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | -0.2289 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | 0.04080 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | -0.1727 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | 0.03600 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | -0.003300 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | 0.07586 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 1.326 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | -0.0009900 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.03892 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 2K33404-CCB1 | Aluminum | 0.581 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | 0.361 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | -0.322 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | -0.00446 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | 0.874 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | -0.154 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | -0.0104 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | -0.240 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 1.49 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | -0.0485 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.0284 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 2K33404-CCB3 | Aluminum | 2.58 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | 1.03 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | -0.795 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | -0.0555 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | 0.0974 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | 0.101 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | -0.0360 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | -0.101 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 1.90 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | 0.115 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.0258 | 5.00 | 20.0 | ug/L | U | SW6010C |

# BLANKS
## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP
Project: NAS Mayport CTO JM71
Sequence: 2K33404
Calibration: 2334002

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K19018-BLK1 | Aluminum | 1.77 | 12.5 | 50.0 | ug/L | U | SW6010C |
| | Antimony | 0.255 | 1.25 | 2.50 | ug/L | U | SW6010C |
| | Arsenic | -0.252 | 0.750 | 2.50 | ug/L | U | SW6010C |
| | Chromium | -0.0120 | 0.500 | 2.50 | ug/L | U | SW6010C |
| | Iron | 0.656 | 7.50 | 25.0 | ug/L | U | SW6010C |
| | Lead | -0.0252 | 0.375 | 0.750 | ug/L | U | SW6010C |
| | Manganese | 0.659 | 0.750 | 3.75 | ug/L | U | SW6010C |
| | Silver | -0.00858 | 0.250 | 2.50 | ug/L | U | SW6010C |
| | Thallium | 0.187 | 0.750 | 2.00 | ug/L | U | SW6010C |
| | Vanadium | -0.0617 | 1.25 | 3.12 | ug/L | U | SW6010C |
| | Zinc | 0.167 | 1.25 | 5.00 | ug/L | U | SW6010C |
| 2K33404-CCB4 | Aluminum | -4.67 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | 0.210 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | -0.392 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | 0.0567 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | -0.394 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | 0.151 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | -0.00638 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | 0.0184 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 1.70 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | 0.0144 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.0380 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 2K33404-CCB5 | Aluminum | -2.99 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | 0.646 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | -0.992 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | 0.0134 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | -1.33 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | 0.358 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | -0.0142 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | -0.00207 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 2.26 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | 0.0713 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.0218 | 5.00 | 20.0 | ug/L | U | SW6010C |

# BLANKS
## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP
Project: NAS Mayport CTO JM71
Sequence: 2K33404
Calibration: 2334002

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K19021-BLK1 | Aluminum | 2.22 | 12.5 | 50.0 | ug/L | U | SW6010C |
| | Antimony | 0.0905 | 1.25 | 2.50 | ug/L | U | SW6010C |
| | Arsenic | -0.0382 | 0.750 | 2.50 | ug/L | U | SW6010C |
| | Chromium | 0.00130 | 0.500 | 2.50 | ug/L | U | SW6010C |
| | Iron | -0.00892 | 7.50 | 25.0 | ug/L | U | SW6010C |
| | Lead | 0.140 | 0.375 | 0.750 | ug/L | U | SW6010C |
| | Manganese | 0.161 | 0.750 | 3.75 | ug/L | U | SW6010C |
| | Silver | -0.00436 | 0.250 | 2.50 | ug/L | U | SW6010C |
| | Thallium | 0.441 | 0.750 | 2.00 | ug/L | U | SW6010C |
| | Vanadium | 0.0116 | 1.25 | 3.12 | ug/L | U | SW6010C |
| | Zinc | 0.187 | 1.25 | 5.00 | ug/L | U | SW6010C |
| 2K33404-CCB6 | Aluminum | -3.87 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | -0.148 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | 0.341 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | -0.0867 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | 1.78 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | -0.356 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | -0.0283 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | -0.0908 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 1.94 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | -0.0172 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.00866 | 5.00 | 20.0 | ug/L | U | SW6010C |

# BLANKS
## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP
Project: NAS Mayport CTO JM71
Sequence: 2K33503
Calibration: 2335001

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K33503-ICB1 | Aluminum | 5.395 | 50.0 | 200 | ug/L | U | SW6010C |
| | Chromium | -0.1124 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Lead | -0.2627 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Zinc | -0.02922 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 2K33503-CCB1 | Aluminum | 2.22 | 50.0 | 200 | ug/L | U | SW6010C |
| | Chromium | -0.0125 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Lead | 0.0989 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Zinc | -0.0516 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 2K33503-CCB5 | Aluminum | 6.23 | 50.0 | 200 | ug/L | U | SW6010C |
| | Chromium | 0.0320 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Lead | 0.256 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Zinc | -0.0500 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 2K33503-CCB6 | Aluminum | 4.01 | 50.0 | 200 | ug/L | U | SW6010C |
| | Chromium | 0.0655 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Lead | 0.465 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Zinc | -0.0133 | 5.00 | 20.0 | ug/L | U | SW6010C |

# ICP INTERFERENCE CHECK SAMPLE

## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Instrument ID: ME-ICP
Calibration: 2334002
Sequence: 2K33404

| Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|
| 2K33404-IFA1 | Aluminum | 500000 | 498,650.00 | 99.7 | ug/L |
| | Antimony | | 2.09 | | ug/L |
| | Arsenic | | -1.44 | | ug/L |
| | Chromium | | -1.07 | | ug/L |
| | Iron | 200000 | 197,640.00 | 98.8 | ug/L |
| | Lead | | 7.20 | | ug/L |
| | Manganese | | -3.91 | | ug/L |
| | Silver | | -0.45 | | ug/L |
| | Thallium | | -0.47 | | ug/L |
| | Vanadium | | 1.84 | | ug/L |
| | Zinc | | 6.96 | | ug/L |
| 2K33404-IFB1 | Aluminum | 500000 | 507,200.00 | 101 | ug/L |
| | Antimony | 600.0 | 662.84 | 110 | ug/L |
| | Arsenic | 100.0 | 110.66 | 111 | ug/L |
| | Chromium | 500.0 | 476.33 | 95.3 | ug/L |
| | Iron | 200000 | 198,330.00 | 99.2 | ug/L |
| | Lead | 50.00 | 55.81 | 112 | ug/L |
| | Manganese | 500.0 | 457.65 | 91.5 | ug/L |
| | Silver | 200.0 | 197.81 | 98.9 | ug/L |
| | Thallium | 100.0 | 92.60 | 92.6 | ug/L |
| | Vanadium | 500.0 | 460.71 | 92.1 | ug/L |
| | Zinc | 1000 | 1,039.80 | 104 | ug/L |

# ICP INTERFERENCE CHECK SAMPLE

## SW6010C

Laboratory: Empirical Laboratories, LLC

SDG: 1211085

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Instrument ID: ME-ICP

Calibration: 2335001

Sequence: 2K33503

| Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|
| 2K33503-IFA1 | Aluminum | 500000 | 516,590.00 | 103 | ug/L |
| | Chromium | | -1.01 | | ug/L |
| | Lead | | 2.70 | | ug/L |
| | Zinc | | 5.46 | | ug/L |
| 2K33503-IFB1 | Aluminum | 500000 | 519,110.00 | 104 | ug/L |
| | Chromium | 500.0 | 475.55 | 95.1 | ug/L |
| | Lead | 50.00 | 50.52 | 101 | ug/L |
| | Zinc | 1000 | 1,021.80 | 102 | ug/L |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

## SW6010C

**MPT-2062-MW01I-20121106**

Laboratory: Empirical Laboratories, LLC

SDG: 1211085

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Matrix: Water

Batch: 2K19018

% Solids:

Source Sample Name: **1211085-06**

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Aluminum | 500.0 | 230.4 | 819.4 | 118 | | 80 - 120 |
| Antimony | 125.0 | ND | 124.8 | 99.8 | | 80 - 120 |
| Arsenic | 125.0 | ND | 134.2 | 107 | | 80 - 120 |
| Chromium | 50.00 | 0.9901 | 46.49 | 91.0 | | 80 - 120 |
| Iron | 250.0 | 435.8 | 740.8 | 122 | N | 80 - 120 |
| Lead | 125.0 | ND | 113.1 | 90.5 | | 80 - 120 |
| Manganese | 125.0 | 219.6 | 338.1 | 94.8 | | 80 - 120 |
| Silver | 62.50 | ND | 58.88 | 94.2 | | 80 - 120 |
| Thallium | 125.0 | ND | 109.2 | 87.4 | | 80 - 120 |
| Vanadium | 125.0 | 1.585 | 113.0 | 89.1 | | 80 - 120 |
| Zinc | 125.0 | 2.660 | 127.5 | 99.8 | | 80 - 120 |

# POST DIGEST SPIKE SAMPLE RECOVERY

## SW6010C

MPT-2062-MW01I-20121106

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Matrix: Water
Laboratory ID: 2K19018-PS1
Batch: 2K19018
Lab Source ID: 1211085-06
Preparation: MET_3005A_LOW
Initial/Final: 100 mL / 25 mL

| Analyte | Spike Sample Result (SSR) (ug/L) | Sample Result (SR) (ug/L) | Spike Added (SA) (ug/L) | %R | Control Limit %R |
|---|---|---|---|---|---|
| Aluminum | 2905 | 921.8 | 2000 | 99.2 | 80 - 120 |
| Antimony | 283.6 | ND | 250.0 | 113 | 80 - 120 |
| Arsenic | 289.1 | ND | 250.0 | 115 | 80 - 120 |
| Chromium | 198.5 | 3.960 | 200.0 | 97.3 | 80 - 120 |
| Iron | 2802 | 1743 | 1000 | 106 | 80 - 120 |
| Lead | 243.2 | ND | 250.0 | 97.3 | 80 - 120 |
| Manganese | 1362 | 878.5 | 500.0 | 96.7 | 80 - 120 |
| Silver | 244.3 | ND | 250.0 | 97.8 | 80 - 120 |
| Thallium | 238.0 | ND | 250.0 | 94.9 | 80 - 120 |
| Vanadium | 482.4 | 6.338 | 500.0 | 95.2 | 80 - 120 |
| Zinc | 531.3 | 10.64 | 500.0 | 104 | 80 - 120 |

# DUPLICATES

## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Matrix: Water
Laboratory ID: 2K19018-DUP1
Batch: 2K19018
Lab Source ID: 1211085-06
Preparation: MET_3005A_LOW
Initial/Final: 100 mL / 25 mL
Source Sample Name: MPT-2062-MW01I-20121106
% Solids:

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Aluminum | 20 | | 254.0 | 9.75 | | SW6010C |
| Antimony | 20 | 2.50 U | 2.50 U | | | SW6010C |
| Arsenic | 20 | 2.50 U | 2.50 U | | | SW6010C |
| Chromium | 20 | 0.990 I | 1.149 J | 14.8 | | SW6010C |
| Iron | 20 | 436 | 492.6 | 12.3 | | SW6010C |
| Lead | 20 | | 0.750 U | | | SW6010C |
| Manganese | 20 | 220 | 239.9 | 8.84 | | SW6010C |
| Silver | 20 | 2.50 U | 2.50 U | | | SW6010C |
| Thallium | 20 | 2.00 U | 2.00 U | | | SW6010C |
| Vanadium | 20 | 1.58 I | 1.726 J | 8.53 | | SW6010C |
| Zinc | 20 | | 2.811 J | 5.52 | | SW6010C |

# LCS / LCS DUPLICATE RECOVERY

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 2K19018 | Laboratory ID: | 2K19018-BS1 |
| Preparation: | MET_3005A_LOW | Initial/Final: | 100 mL / 25 mL |

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Aluminum | 40.00 | 39.25 | 98.1 | 80 - 120 |
| Antimony | 5.000 | 4.980 | 99.6 | 80 - 120 |
| Arsenic | 5.000 | 4.462 | 89.2 | 80 - 120 |
| Chromium | 4.000 | 4.000 | 100 | 80 - 120 |
| Iron | 20.00 | 21.32 | 107 | 80 - 120 |
| Lead | 5.000 | 4.715 | 94.3 | 80 - 120 |
| Manganese | 10.00 | 9.303 | 93.0 | 80 - 120 |
| Silver | 5.000 | 4.776 | 95.5 | 80 - 120 |
| Thallium | 5.000 | 5.055 | 101 | 80 - 120 |
| Vanadium | 10.00 | 8.922 | 89.2 | 80 - 120 |
| Zinc | 10.00 | 10.03 | 100 | 80 - 120 |

# LCS / LCS DUPLICATE RECOVERY

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 2K19021 | Laboratory ID: | 2K19021-BS1 |
| Preparation: | MET_3005A_LOW | Initial/Final: | 100 mL / 25 mL |

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Aluminum | 40.00 | 42.98 | 107 | 80 - 120 |
| Antimony | 5.000 | 4.768 | 95.4 | 80 - 120 |
| Arsenic | 5.000 | 4.590 | 91.8 | 80 - 120 |
| Chromium | 4.000 | 3.922 | 98.1 | 80 - 120 |
| Iron | 20.00 | 20.62 | 103 | 80 - 120 |
| Lead | 5.000 | 4.786 | 95.7 | 80 - 120 |
| Manganese | 10.00 | 9.769 | 97.7 | 80 - 120 |
| Silver | 5.000 | 4.784 | 95.7 | 80 - 120 |
| Thallium | 5.000 | 5.027 | 101 | 80 - 120 |
| Vanadium | 10.00 | 9.530 | 95.3 | 80 - 120 |
| Zinc | 10.00 | 9.682 | 96.8 | 80 - 120 |

# SERIAL DILUTION

## SW6010C

MPT-2062-MW01I-20121106

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Matrix: Water
Laboratory ID: 2K19018-DUP2
Sequence: 2K33404
Lab Source ID: 1211085-06
Preparation: MET_3005A_LOW
Initial/Final: 100 / 25

| Analyte | Initial Sample Result (I) ug/L | Serial Dilution Result (S) ug/L | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|
| Antimony | ND | ND | | | SW6010C | 10.00 |
| Arsenic | ND | ND | | | SW6010C | 10.00 |
| Chromium | 3.9604 | ND | | | SW6010C | 10.00 |
| Iron | 1743.1 | 1860.9 | 6.76 | | SW6010C | 10.00 |
| Manganese | 878.51 | 951.4 | 8.3 | | SW6010C | 10.00 |
| Silver | ND | ND | | | SW6010C | 10.00 |
| Thallium | ND | ND | | | SW6010C | 10.00 |
| Vanadium | 6.3381 | ND | | | SW6010C | 10.00 |

# SERIAL DILUTION

## SW6010C

MPT-2062-MW01I-20121106

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sequence: 2K33503
Preparation: MET_3005A_LOW

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 2K19018-DUP3
Lab Source ID: 1211085-06RE1
Initial/Final: 100 / 25

| Analyte | Initial Sample Result (I) ug/L | Serial Dilution Result (S) ug/L | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|
| Aluminum | 324.58 | 380.72 | 17.3 | | SW6010C | 10.00 |
| Lead | ND | ND | | | SW6010C | 10.00 |
| Zinc | ND | ND | | | SW6010C | 10.00 |

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1211085

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/30/2011

| Analyte | Wave-length (nm) | Interelement Correction Factors for: | | | | |
|---|---|---|---|---|---|---|
| | | Al | Ca | Fe | Mg | Ag |
| Aluminum | 396.1 | 0.0000000 | 0.869677 | 0.000043 | 0.0000000 | 0.0000000 |
| Antimony | 206.8 | -0.000010 | 0.0000000 | 0.000026 | 0.0000000 | 0.0000000 |
| Arsenic | 189.0 | -0.000012 | 0.0000000 | -0.000011 | 0.0000000 | 0.0000000 |
| Chromium | 267.7 | 0.0000000 | 0.0000000 | 0.000003 | 0.0056080 | 0.0000000 |
| Iron | 261.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Lead | 220.3 | 0.000274 | 0.002914 | 0.000021 | 0.000325 | 0.0000000 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.000032 | 0.0000000 | 0.0000000 |
| Silver | 328.0 | 0.0000000 | 0.0000000 | 0.0000020 | 0.0000000 | 0.0000000 |
| Thallium | 190.8 | -0.000001 | 0.0000000 | 0.000006 | 0.0000000 | 0.0000000 |
| Vanadium | 292.4 | 0.0000000 | 0.0000000 | 0.000008 | 0.0000000 | 0.0000000 |
| Zinc | 206.2 | 0.000019 | 0.000827 | -0.000001 | 0.0000000 | 0.0000000 |

Comments:

FORM XA-IN

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1211085

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/30/2011

| Analyte | Wave-length (nm) | Interelement Correction Factors for: As | B | Ba | Be | Cd |
|---|---|---|---|---|---|---|
| Aluminum | 396.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Antimony | 206.8 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Arsenic | 189.0 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Chromium | 267.7 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | -0.000214 |
| Iron | 261.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Lead | 220.3 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Silver | 328.0 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Thallium | 190.8 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Vanadium | 292.4 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Zinc | 206.2 | 0.0000000 | 0.0000000 | 0.0000000 | 0.000019 | 0.000425 |

Comments:

FORM XA-IN

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10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1211085

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/30/2011

| Analyte | Wave-length (nm) | Interelement Correction Factors for: | | | | |
|---|---|---|---|---|---|---|
| | | Co | Cr | Cu | K | Mn |
| Aluminum | 396.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Antimony | 206.8 | 0.0000000 | 0.015738 | 0.0000000 | 0.0000000 | 0.0000000 |
| Arsenic | 189.0 | 0.0000000 | 0.000109 | 0.0000000 | 0.0000000 | 0.0000000 |
| Chromium | 267.7 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.000372 |
| Iron | 261.1 | 0.0000000 | -0.000701 | 0.0000000 | 0.0000000 | -0.000794 |
| Lead | 220.3 | -0.000077 | 0.0000000 | 0.000101 | 0.0000000 | 0.000116 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Silver | 328.0 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.000134 |
| Thallium | 190.8 | 0.005049 | 0.000317 | 0.0000000 | 0.0000000 | -0.002372 |
| Vanadium | 292.4 | 0.0000000 | -0.007620 | 0.0000000 | 0.0000000 | -0.000580 |
| Zinc | 206.2 | 0.0000000 | -0.000271 | 0.000537 | 0.0000000 | 0.0000000 |

Comments:

FORM XA-IN

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1211085

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/30/2011

| Analyte | Wave-length (nm) | Interelement Correction Factors for: | | | | |
|---|---|---|---|---|---|---|
| | | Mo | Na | Ni | Pb | Sb |
| Aluminum | 396.1 | 0.046342 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Antimony | 206.8 | -0.009714 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Arsenic | 189.0 | 0.000136 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Chromium | 267.7 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Iron | 261.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Lead | 220.3 | -0.002028 | 0.0000000 | 0.000100 | 0.0000000 | 0.0000000 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Silver | 328.0 | -0.0000460 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Thallium | 190.8 | 0.000023 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Vanadium | 292.4 | -0.000106 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Zinc | 206.2 | 0.000173 | 0.0000000 | 0.0000000 | 0.0000000 | 0.000004 |

Comments:

FORM XA-IN

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10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1211085

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/30/2011

| Analyte | Wave-length (nm) | Interelement Correction Factors for: | | | | |
|---|---|---|---|---|---|---|
| | | Se | Sn | Ti | Tl | V |
| Aluminum | 396.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Antimony | 206.8 | 0.0000000 | 0.0000000 | 0.000028 | 0.0000000 | 0.000048 |
| Arsenic | 189.0 | 0.0000000 | 0.0000000 | 0.0000750 | 0.0000000 | 0.000084 |
| Chromium | 267.7 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | -0.000115 |
| Iron | 261.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Lead | 220.3 | 0.0000000 | 0.0000000 | -0.000006 | 0.0000000 | -0.000072 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Silver | 328.0 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | -0.004279 |
| Thallium | 190.8 | 0.0000000 | 0.0000000 | -0.001307 | 0.0000000 | -0.001980 |
| Vanadium | 292.4 | 0.0000000 | 0.0000000 | 0.000737 | 0.0000000 | 0.0000000 |
| Zinc | 206.2 | -0.000008 | 0.0000000 | 0.0000000 | 0.0000000 | 0.000016 |

Comments:

FORM XA-IN

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10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1211085

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/30/2011

| Analyte | Wave-length (nm) | Interelement Correction Factors for: Zn | | | | |
|---|---|---|---|---|---|---|
| Aluminum | 396.1 | 0.0000000 | | | | |
| Antimony | 206.8 | 0.0000000 | | | | |
| Arsenic | 189.0 | -0.000011 | | | | |
| Chromium | 267.7 | 0.0000000 | | | | |
| Iron | 261.1 | 0.0000000 | | | | |
| Lead | 220.3 | 0.0000000 | | | | |
| Manganese | 257.6 | 0.0000000 | | | | |
| Silver | 328.0 | 0.0000000 | | | | |
| Thallium | 190.8 | 0.0000000 | | | | |
| Vanadium | 292.4 | 0.0000000 | | | | |
| Zinc | 206.2 | 0.0000000 | | | | |

Comments:

FORM XA-IN

# ICP-AES AND ICP-MS LINEAR RANGES (QUARTERLY)

Lab Name: Empirical Laboratories, LLC

Client: Tetra Tech, Inc. (T010) SDG: 1211085

Project: NAS Mayport CTO JM71

ICP Instrument ID: ME-ICP Date: 12/30/2011

| Analyte | Integ. Time (Sec.) | Concentration ug/L | M |
|---|---|---|---|
| Aluminum | 15 | 500000 | P |
| Antimony | 15 | 10000 | P |
| Arsenic | 15 | 10000 | P |
| Chromium | 15 | 10000 | P |
| Iron | 15 | 500000 | P |
| Lead | 15 | 10000 | P |
| Manganese | 15 | 10000 | P |
| Silver | 15 | 2000 | P |
| Thallium | 15 | 10000 | P |
| Vanadium | 15 | 10000 | P |
| Zinc | 15 | 10000 | P |

# PREPARATION BATCH SUMMARY

## SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1211085

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 2K19018 Batch Matrix: Water Preparation: MET_3005A_LOW

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-AC-GW-DPW02S-20121105 | 1211085-01 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-AC-GW-DPW02I-20121105 | 1211085-02 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-53-DPWR01S-20121105 | 1211085-03 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-53-DPWR01S-20121105 | 1211085-03RE1 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-459-MW01I-20121105 | 1211085-04 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-2039-MW01I-20121105 | 1211085-05 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-2039-MW01I-20121105 | 1211085-05RE1 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-2062-MW01I-20121106 | 1211085-06 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-2062-MW01I-20121106 | 1211085-06RE1 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-2050-MW01S-20121106 | 1211085-07 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-Runway23-MW01S-20121106 | 1211085-08 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-02-MW35RS-20121106 | 1211085-09 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-02-MW35RI-20121106 | 1211085-10 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-02-MW35RI-20121106 | 1211085-10RE1 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-02-MW17S-20121107 | 1211085-11 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-02-MW17S-20121107 | 1211085-11RE1 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-02-MW17I-20121107 | 1211085-12 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-02-MW17I-20121107 | 1211085-12RE1 | 11/19/12 09:22 | 100.00 | 25.00 |
| Blank | 2K19018-BLK1 | 11/19/12 09:22 | 100.00 | 25.00 |
| LCS | 2K19018-BS1 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-2062-MW01I-20121106 | 2K19018-DUP1 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-2062-MW01I-20121106 | 2K19018-DUP2 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-2062-MW01I-20121106 | 2K19018-DUP3 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-2062-MW01I-20121106 | 2K19018-MS1 | 11/19/12 09:22 | 100.00 | 25.00 |
| MPT-2062-MW01I-20121106 | 2K19018-PS1 | 11/19/12 09:22 | 100.00 | 25.00 |

# PREPARATION BATCH SUMMARY

## SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1211085

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 2K19021 Batch Matrix: Water Preparation: MET_3005A_LOW

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-1358-MW01S-20121107 | 1211085-13 | 11/19/12 10:05 | 100.00 | 25.00 |
| MPT-DUP-20121107 | 1211085-14 | 11/19/12 10:05 | 100.00 | 25.00 |
| MPT-Background-RB-20121108 | 1211085-15 | 11/19/12 10:05 | 100.00 | 25.00 |
| Blank | 2K19021-BLK1 | 11/19/12 10:05 | 100.00 | 25.00 |
| LCS | 2K19021-BS1 | 11/19/12 10:05 | 100.00 | 25.00 |

# ANALYSIS SEQUENCE SUMMARY
## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 2K33404 | Instrument: | ME-ICP |
| Calibration: | 2334002 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Cal Standard | 2K33404-CAL1 | 11-28-12A-001 | 11/28/12 12:16 |
| Cal Standard | 2K33404-CAL2 | 11-28-12A-002 | 11/28/12 12:20 |
| Cal Standard | 2K33404-CAL3 | 11-28-12A-003 | 11/28/12 12:25 |
| Cal Standard | 2K33404-CAL4 | 11-28-12A-004 | 11/28/12 12:30 |
| Cal Standard | 2K33404-CAL5 | 11-28-12A-005 | 11/28/12 12:35 |
| Cal Standard | 2K33404-CAL6 | 11-28-12A-006 | 11/28/12 12:40 |
| Cal Standard | 2K33404-CAL7 | 11-28-12A-007 | 11/28/12 12:45 |
| Cal Standard | 2K33404-CAL8 | 11-28-12A-008 | 11/28/12 12:50 |
| Initial Cal Check | 2K33404-ICV1 | 11-28-12B-001 | 11/28/12 13:19 |
| Initial Cal Blank | 2K33404-ICB1 | 11-28-12B-002 | 11/28/12 13:36 |
| Instrument RL Check | 2K33404-CRL1 | 11-28-12B-004 | 11/28/12 13:46 |
| Instrument RL Check | 2K33404-CRL2 | 11-28-12B-005 | 11/28/12 13:50 |
| Interference Check A | 2K33404-IFA1 | 11-28-12B-006 | 11/28/12 14:00 |
| Interference Check B | 2K33404-IFB1 | 11-28-12B-007 | 11/28/12 14:05 |
| Calibration Check | 2K33404-CCV1 | 11-28-12B-009 | 11/28/12 14:15 |
| Calibration Blank | 2K33404-CCB1 | 11-28-12B-010 | 11/28/12 14:22 |
| Calibration Check | 2K33404-CCV3 | 11-28-12B-040 | 11/28/12 16:52 |
| Calibration Blank | 2K33404-CCB3 | 11-28-12B-041 | 11/28/12 17:00 |
| Blank | 2K19018-BLK1 | 11-28-12B-042 | 11/28/12 17:05 |
| LCS | 2K19018-BS1 | 11-28-12B-043 | 11/28/12 17:09 |
| MPT-AC-GW-DPW02S-20121105 | 1211085-01 | 11-28-12B-052 | 11/28/12 17:52 |
| MPT-AC-GW-DPW02I-20121105 | 1211085-02 | 11-28-12B-053 | 11/28/12 17:56 |
| Calibration Check | 2K33404-CCV4 | 11-28-12B-054 | 11/28/12 18:02 |
| Calibration Blank | 2K33404-CCB4 | 11-28-12B-055 | 11/28/12 18:10 |
| MPT-53-DPWR01S-20121105 | 1211085-03 | 11-28-12B-056 | 11/28/12 18:14 |
| MPT-459-MW01I-20121105 | 1211085-04 | 11-28-12B-057 | 11/28/12 18:19 |
| MPT-2039-MW01I-20121105 | 1211085-05 | 11-28-12B-058 | 11/28/12 18:24 |
| MPT-2062-MW01I-20121106 | 1211085-06 | 11-28-12B-059 | 11/28/12 18:29 |
| MPT-2062-MW01I-20121106 | 2K19018-DUP1 | 11-28-12B-060 | 11/28/12 18:34 |
| MPT-2062-MW01I-20121106 | 2K19018-MS1 | 11-28-12B-061 | 11/28/12 18:39 |
| MPT-2062-MW01I-20121106 | 2K19018-PS1 | 11-28-12B-062 | 11/28/12 18:43 |
| MPT-2062-MW01I-20121106 | 2K19018-DUP2 | 11-28-12B-063 | 11/28/12 18:49 |

# ANALYSIS SEQUENCE SUMMARY

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 2K33404 | Instrument: | ME-ICP |
| Calibration: | 2334002 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| MPT-2050-MW01S-20121106 | 1211085-07 | 11-28-12B-064 | 11/28/12 18:54 |
| MPT-Runway23-MW01S-20121106 | 1211085-08 | 11-28-12B-065 | 11/28/12 18:58 |
| MPT-02-MW35RS-20121106 | 1211085-09 | 11-28-12B-066 | 11/28/12 19:03 |
| MPT-02-MW35RI-20121106 | 1211085-10 | 11-28-12B-067 | 11/28/12 19:08 |
| MPT-02-MW17S-20121107 | 1211085-11 | 11-28-12B-068 | 11/28/12 19:13 |
| MPT-02-MW17I-20121107 | 1211085-12 | 11-28-12B-069 | 11/28/12 19:18 |
| Calibration Check | 2K33404-CCV5 | 11-28-12B-070 | 11/28/12 19:25 |
| Calibration Blank | 2K33404-CCB5 | 11-28-12B-071 | 11/28/12 19:33 |
| Blank | 2K19021-BLK1 | 11-28-12B-072 | 11/28/12 19:37 |
| LCS | 2K19021-BS1 | 11-28-12B-073 | 11/28/12 19:42 |
| MPT-1358-MW01S-20121107 | 1211085-13 | 11-28-12B-074 | 11/28/12 19:48 |
| MPT-DUP-20121107 | 1211085-14 | 11-28-12B-075 | 11/28/12 19:53 |
| MPT-Background-RB-20121108 | 1211085-15 | 11-28-12B-076 | 11/28/12 19:58 |
| Calibration Check | 2K33404-CCV6 | 11-28-12B-088 | 11/28/12 20:55 |
| Calibration Blank | 2K33404-CCB6 | 11-28-12B-089 | 11/28/12 21:03 |

# ANALYSIS SEQUENCE SUMMARY

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 2K33503 | Instrument: | ME-ICP |
| Calibration: | 2335001 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Cal Standard | 2K33503-CAL1 | 11-29-12A-001 | 11/29/12 11:10 |
| Cal Standard | 2K33503-CAL2 | 11-29-12A-002 | 11/29/12 11:15 |
| Cal Standard | 2K33503-CAL3 | 11-29-12A-003 | 11/29/12 11:19 |
| Cal Standard | 2K33503-CAL4 | 11-29-12A-004 | 11/29/12 11:24 |
| Cal Standard | 2K33503-CAL5 | 11-29-12A-005 | 11/29/12 11:29 |
| Cal Standard | 2K33503-CAL6 | 11-29-12A-006 | 11/29/12 11:34 |
| Initial Cal Check | 2K33503-ICV1 | 11-29-12B-001 | 11/29/12 12:13 |
| Initial Cal Blank | 2K33503-ICB1 | 11-29-12B-002 | 11/29/12 12:20 |
| Instrument RL Check | 2K33503-CRL1 | 11-29-12B-003 | 11/29/12 12:25 |
| Interference Check A | 2K33503-IFA1 | 11-29-12B-007 | 11/29/12 12:44 |
| Interference Check B | 2K33503-IFB1 | 11-29-12B-008 | 11/29/12 12:49 |
| Calibration Check | 2K33503-CCV1 | 11-29-12B-010 | 11/29/12 13:00 |
| Calibration Blank | 2K33503-CCB1 | 11-29-12B-011 | 11/29/12 13:07 |
| Calibration Check | 2K33503-CCV5 | 11-29-12C-029 | 11/29/12 18:30 |
| Calibration Blank | 2K33503-CCB5 | 11-29-12C-030 | 11/29/12 18:39 |
| MPT-53-DPWR01S-20121105 | 1211085-03RE1 | 11-29-12C-032 | 11/29/12 18:48 |
| MPT-2039-MW01I-20121105 | 1211085-05RE1 | 11-29-12C-033 | 11/29/12 18:52 |
| MPT-2062-MW01I-20121106 | 1211085-06RE1 | 11-29-12C-034 | 11/29/12 18:57 |
| MPT-2062-MW01I-20121106 | 2K19018-DUP3 | 11-29-12C-035 | 11/29/12 19:02 |
| MPT-02-MW35RI-20121106 | 1211085-10RE1 | 11-29-12C-036 | 11/29/12 19:06 |
| MPT-02-MW17S-20121107 | 1211085-11RE1 | 11-29-12C-037 | 11/29/12 19:11 |
| MPT-02-MW17I-20121107 | 1211085-12RE1 | 11-29-12C-038 | 11/29/12 19:15 |
| Calibration Check | 2K33503-CCV6 | 11-29-12C-041 | 11/29/12 19:31 |
| Calibration Blank | 2K33503-CCB6 | 11-29-12C-042 | 11/29/12 19:39 |

# INITIAL CALIBRATION DATA

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 2334002 | Instrument: | ME-ICP |
| Matrix: | Solid | Calibration Dates: | 11/28/12 12:16 11/28/12 12:50 |

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF |
| Aluminum | 0 | 0 | 5000 | 2.0822E-05 | 10000 | 2.0764E-05 | | | 500000 | 2.0202E-05 | | |
| Antimony | 0 | 0 | 100 | 0.0006212 | 1000 | 6.5843E-04 | | | | | 10000 | 6.4804E-04 |
| Arsenic | 0 | 0 | 100 | 0.0003327 | 1000 | 3.5851E-04 | | | | | 10000 | 0.0003493 |
| Barium | 0 | 0 | 50 | 0.0111978 | 1000 | 0.010954 | 5000 | 0.0111076 | | | | |
| Beryllium | 0 | 0 | 100 | 0.002284 | 1000 | 0.0022851 | | | | | 10000 | 0.0021833 |
| Boron | 0 | 0 | 50 | 0.000012 | 1000 | 1.209E-05 | | | | | 5000 | 1.1954E-05 |
| Cadmium | 0 | 0 | 100 | 0.017099 | 1000 | 0.017423 | | | | | 10000 | 0.016524 |
| Calcium | 0 | 0 | 1100 | 5.188182E-05 | 50000 | 4.9678E-05 | | | | | 10000 | |
| Chromium | 0 | 0 | 100 | 0.0000484 | 1000 | 4.665E-05 | | | | | 10000 | 4.6101E-05 |
| Cobalt | 0 | 0 | 100 | 0.0046096 | 1000 | 0.0045706 | | | | | 10000 | 0.0046301 |
| Copper | 0 | 0 | 100 | 0.0000682 | 1000 | 6.197E-05 | | | | | 10000 | 6.174E-05 |
| Iron | 0 | 0 | 5100 | 1.87902E-05 | 10000 | 1.8052E-05 | | | 500000 | 1.73658E-05 | 10000 | |
| Lead | 0 | 0 | 100 | 0.001188 | 1000 | 0.0011665 | | | | | 10000 | 0.0011942 |
| Magnesium | 0 | 0 | 5100 | | 50000 | 2.0842E-06 | | | 500000 | 2.1006E-06 | 10000 | |
| Manganese | 0 | 0 | 100 | 0.0002023 | 1000 | 0.000197 | 10000 | 1.9316E-04 | | | 10000 | |
| Molybdenum | 0 | 0 | 100 | 0.0035177 | 1000 | 0.0036733 | | | | | 10000 | 0.0035955 |
| Nickel | 0 | 0 | 100 | 0.003277 | 1000 | 0.0032769 | | | | | 10000 | 0.0032876 |
| Potassium | 0 | 0 | 1000 | 1.291E-05 | 10000 | 1.4186E-05 | | | | | | |
| Selenium | 0 | 0 | 100 | 0.0003412 | 1000 | 3.5164E-04 | | | | | 10000 | 3.4186E-04 |
| Silver | 0 | 0 | 20 | 0.000058 | 500 | 5.406E-05 | 2000 | 5.704E-05 | | | | |
| Sodium | 0 | 0 | 1000 | | 50000 | 5.0638E-05 | | | | | | |
| Thallium | 0 | 0 | 100 | 0.0007792 | 1000 | 7.6228E-04 | | | | | 10000 | 0.0007754 |
| Tin | 0 | 0 | 50 | 0.0012152 | 1000 | 0.0012814 | | | | | 5000 | 1.26086E-03 |
| Titanium | 0 | 0 | 100 | 0.0001566 | 1000 | 1.4977E-04 | | | | | 10000 | 1.4885E-04 |
| Vanadium | 0 | 0 | 100 | 0.0000315 | 1000 | 3.129E-05 | | | | | 10000 | 3.0975E-05 |
| Zinc | 0 | 0 | 100 | 0.0070693 | 1000 | 0.0072108 | | | | | 10000 | 0.0070385 |
| Strontium | 0 | 0 | 100 | 0.001276 | 1000 | 0.001267 | | | | | 10000 | 0.001239 |
| Lithium | 0 | 0 | 100 | 0.0000176 | 1000 | 1.746E-05 | | | | | 10000 | 1.7558E-05 |

# INITIAL CALIBRATION DATA (Continued)

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 2334002 | Instrument: | ME-ICP |
| Matrix: | Solid | Calibration Dates: | 11/28/12 12:16 11/28/12 12:50 |

| Compound | Level 07 | | Level 08 | | Level 09 | | Level 10 | | Level 11 | | Level 12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF |
| Aluminum | | | | | | | | | | | | |
| Antimony | | | | | | | | | | | | |
| Arsenic | | | | | | | | | | | | |
| Barium | | | | | | | | | | | | |
| Beryllium | | | | | | | | | | | | |
| Boron | | | | | | | | | | | | |
| Cadmium | | | | | | | | | | | | |
| Calcium | 100000 | | 500000 | 4.8032E-05 | | | | | | | | |
| Chromium | | | | | | | | | | | | |
| Cobalt | | | | | | | | | | | | |
| Copper | | | | | | | | | | | | |
| Iron | | | | | | | | | | | | |
| Lead | | | | | | | | | | | | |
| Magnesium | | | 100000 | 2.0136E-06 | | | | | | | | |
| Manganese | | | | | | | | | | | | |
| Molybdenum | | | | | | | | | | | | |
| Nickel | | | | | | | | | | | | |
| Potassium | 100000 | 1.4408E-05 | | | | | | | | | | |
| Selenium | | | | | | | | | | | | |
| Silver | | | | | | | | | | | | |
| Sodium | 100000 | 4.9942E-05 | 500000 | 4.875E-05 | | | | | | | | |
| Thallium | | | | | | | | | | | | |
| Tin | | | | | | | | | | | | |
| Titanium | | | | | | | | | | | | |
| Vanadium | | | | | | | | | | | | |
| Zinc | | | | | | | | | | | | |
| Strontium | | | | | | | | | | | | |
| Lithium | | | | | | | | | | | | |

# INITIAL CALIBRATION DATA (Continued)

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 2334002 | Instrument: | ME-ICP |
| Matrix: | Solid | Calibration Dates: | 11/28/12 12:16 11/28/12 12:50 |

| Compound | Mean RF | RF RSD | Mean RT | RT RSD | Linear r | Quad COD | LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 1.5447E-05 | 66.69124 | 4.47516 | 167.8776 | 0.9999997 | | 0.998 | |
| Antimony | 4.819175E-04 | 66.74608 | 7.810508 | 175.4156 | 0.9999962 | | 0.998 | |
| Arsenic | 2.601275E-04 | 66.79297 | 6.026648 | 166.5631 | 0.9999913 | | 0.998 | |
| Barium | 8.31485E-03 | 66.67766 | 1.213348 | 138.7676 | 0.9999911 | | 0.998 | |
| Beryllium | 0.0016881 | 66.7266 | 6.017313 | 185.2755 | 0.9999798 | | 0.998 | |
| Boron | 9.011E-06 | 66.66962 | 2.234865 | 150.553 | 0.9999954 | | 0.998 | |
| Cadmium | 0.0127615 | 66.73028 | 1.75924 | 112.5535 | 0.999972 | | 0.998 | |
| Calcium | 3.739795E-05 | 66.79993 | 1.880085 | 150.5225 | 0.9999888 | | 0.998 | |
| Chromium | 3.528775E-05 | 66.72452 | 4.034428 | 174.4952 | 0.999999 | | 0.998 | |
| Cobalt | 3.452575E-03 | 66.6705 | 4.093452 | 164.4142 | 0.9999983 | | 0.998 | |
| Copper | 4.79775E-05 | 66.95781 | 0.7596275 | 48.03803 | 0.9999997 | | 0.998 | |
| Iron | 1.3552E-05 | 66.80467 | 19.25922 | 197.46 | 0.9999994 | | 0.998 | |
| Lead | 8.87175E-04 | 66.68009 | 9.60196 | 184.4708 | 0.9999944 | | 0.998 | |
| Magnesium | 1.5496E-06 | 66.71115 | 99.99762 | 199.5063 | 0.9999265 | | 0.998 | |
| Manganese | 1.48115E-04 | 66.71466 | 4.180255 | 176.2818 | 0.9999967 | | 0.998 | |
| Molybdenum | 2.696625E-03 | 66.70828 | 14.71999 | 189.395 | 0.9999948 | | 0.998 | |
| Nickel | 2.460375E-03 | 66.66698 | 13.67154 | 187.3797 | 0.9999999 | | 0.998 | |
| Potassium | 1.0376E-05 | 66.96951 | 4.322827 | 187.178 | 0.9999995 | | 0.998 | |
| Selenium | 2.58675E-04 | 66.6922 | 64.2999 | 195.5142 | 0.9999918 | | 0.998 | |
| Silver | 4.2275E-05 | 66.78465 | 6.38792 | 169.051 | 0.999802 | | 0.998 | |
| Sodium | 3.73325E-05 | 66.69937 | 1.350715 | 110.9095 | 0.9999733 | | 0.998 | |
| Thallium | 5.7922E-04 | 66.67841 | 9.626883 | 183.2776 | 0.9999972 | | 0.998 | |
| Tin | 9.39365E-04 | 66.73169 | 2.992318 | 138.5207 | 0.9999865 | | 0.998 | |
| Titanium | 1.13805E-04 | 66.73584 | 3.494705 | 180.066 | 0.9999999 | | 0.998 | |
| Vanadium | 2.344125E-05 | 66.67302 | 13.16079 | 192.1694 | 0.9999992 | | 0.998 | |
| Zinc | 5.32965E-03 | 66.68153 | 4.038703 | 162.4349 | 0.9999941 | | 0.998 | |
| Strontium | 0.0009455 | 66.68749 | 1.288525 | 112.0777 | 0.9999951 | | 0.998 | |
| Lithium | 1.31545E-05 | 66.66816 | 10.73136 | 182.9479 | 0.9999996 | | 0.998 | |

# INITIAL CALIBRATION DATA

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 2335001 | Instrument: | ME-ICP |
| Matrix: | Water | Calibration Dates: | 11/29/12 11:10 11/29/12 11:45 |

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF |
| Aluminum | 0 | 0 | 5000 | 2.2724E-05 | 10000 | 2.2831E-05 | | | 500000 | 2.2166E-05 | | |
| Antimony | 0 | 0 | 100 | 0.000624 | 1000 | 6.6336E-04 | | | | | 10000 | 0.0006564 |
| Arsenic | 0 | 0 | 100 | 0.0003545 | 1000 | 0.000387 | | | | | 10000 | 3.7841E-04 |
| Barium | 0 | 0 | 50 | 0.011246 | 1000 | 0.010942 | 5000 | 0.0110902 | | | | |
| Beryllium | 0 | 0 | 100 | 0.00225 | 1000 | 0.002269 | | | | | 10000 | 0.0022032 |
| Boron | 0 | 0 | 50 | 0.0000148 | 1000 | 1.578E-05 | | | | | 5000 | 1.548E-05 |
| Cadmium | 0 | 0 | 100 | 0.017383 | 1000 | 0.017465 | | | | | 10000 | 0.016681 |
| Calcium | 0 | 0 | 1100 | 6.32091E-05 | 50000 | 5.9134E-05 | | | | | 10000 | |
| Chromium | 0 | 0 | 100 | 0.000048 | 1000 | 4.671E-05 | | | | | 10000 | 4.6049E-05 |
| Cobalt | 0 | 0 | 100 | 0.004876 | 1000 | 0.0047698 | | | | | 10000 | 0.0048324 |
| Copper | 0 | 0 | 100 | 0.0000691 | 1000 | 6.593E-05 | | | | | 10000 | 6.647E-05 |
| Iron | 0 | 0 | 5100 | 1.873922E-05 | 10000 | 1.804E-05 | | | 500000 | 1.74842E-05 | 10000 | |
| Lead | 0 | 0 | 100 | 0.0012561 | 1000 | 0.0012037 | | | | | 10000 | 0.0012355 |
| Magnesium | 0 | 0 | 5100 | | 50000 | 2.0866E-06 | | | 500000 | 2.0986E-06 | 10000 | |
| Manganese | 0 | 0 | 100 | 0.0002602 | 1000 | 0.0002506 | 10000 | 2.4669E-04 | | | 10000 | |
| Molybdenum | 0 | 0 | 100 | 0.0035513 | 1000 | 0.0036961 | | | | | 10000 | 0.0036435 |
| Nickel | 0 | 0 | 100 | 0.0033218 | 1000 | 0.0032863 | | | | | 10000 | 0.0033145 |
| Potassium | 0 | 0 | 1000 | 1.311E-05 | 10000 | 1.4033E-05 | | | | | | |
| Selenium | 0 | 0 | 100 | 0.0003415 | 1000 | 0.0003563 | | | | | 10000 | 3.4797E-04 |
| Silver | 0 | 0 | 20 | 0.000059 | 500 | 5.468E-05 | 2000 | 5.753E-05 | | | | |
| Sodium | 0 | 0 | 1000 | | 50000 | 5.0588E-05 | | | | | | |
| Thallium | 0 | 0 | 100 | 0.0007893 | 1000 | 7.5903E-04 | | | | | 10000 | 7.7811E-04 |
| Tin | 0 | 0 | 50 | 0.0012182 | 1000 | 0.0012907 | | | | | 5000 | 1.27742E-03 |
| Titanium | 0 | 0 | 100 | 0.0001542 | 1000 | 1.4863E-04 | | | | | 10000 | 1.5202E-04 |
| Vanadium | 0 | 0 | 100 | 0.0000412 | 1000 | 4.146E-05 | | | | | 10000 | 4.0675E-05 |
| Zinc | 0 | 0 | 100 | 0.0071903 | 1000 | 0.0073018 | | | | | 10000 | 0.0071633 |
| Strontium | 0 | 0 | 100 | 0.001502 | 1000 | 0.001504 | | | | | 10000 | 0.001487 |
| Lithium | 0 | 0 | 100 | 0.0000179 | 1000 | 1.826E-05 | | | | | 10000 | 1.8225E-05 |

# INITIAL CALIBRATION DATA (Continued)

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 2335001 | Instrument: | ME-ICP |
| Matrix: | Water | Calibration Dates: | 11/29/12 11:10 11/29/12 11:45 |

| Compound | Level 07 | | Level 08 | | Level 09 | | Level 10 | | Level 11 | | Level 12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF |
| Aluminum | | | | | | | | | | | | |
| Antimony | | | | | | | | | | | | |
| Arsenic | | | | | | | | | | | | |
| Barium | | | | | | | | | | | | |
| Beryllium | | | | | | | | | | | | |
| Boron | | | | | | | | | | | | |
| Cadmium | | | | | | | | | | | | |
| Calcium | 100000 | | 500000 | 5.6948E-05 | | | | | | | | |
| Chromium | | | | | | | | | | | | |
| Cobalt | | | | | | | | | | | | |
| Copper | | | | | | | | | | | | |
| Iron | | | | | | | | | | | | |
| Lead | | | | | | | | | | | | |
| Magnesium | | | 100000 | 2.009E-06 | | | | | | | | |
| Manganese | | | | | | | | | | | | |
| Molybdenum | | | | | | | | | | | | |
| Nickel | | | | | | | | | | | | |
| Potassium | 100000 | 1.4247E-05 | | | | | | | | | | |
| Selenium | | | | | | | | | | | | |
| Silver | | | | | | | | | | | | |
| Sodium | 100000 | 4.988E-05 | 500000 | 4.8724E-05 | | | | | | | | |
| Thallium | | | | | | | | | | | | |
| Tin | | | | | | | | | | | | |
| Titanium | | | | | | | | | | | | |
| Vanadium | | | | | | | | | | | | |
| Zinc | | | | | | | | | | | | |
| Strontium | | | | | | | | | | | | |
| Lithium | | | | | | | | | | | | |

# INITIAL CALIBRATION DATA (Continued)

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 2335001 | Instrument: | ME-ICP |
| Matrix: | Water | Calibration Dates: | 11/29/12 11:10 11/29/12 11:45 |

| Compound | Mean RF | RF RSD | Mean RT | RT RSD | Linear r | Quad COD | LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 1.693025E-05 | 66.68891 | 5.934307 | 166.6606 | 0.9999997 | | 0.998 | |
| Antimony | 4.8594E-04 | 66.76003 | 5.328125 | 188.7479 | 0.999998 | | 0.998 | |
| Arsenic | 2.799775E-04 | 66.84733 | 8.1736 | 187.563 | 0.9999926 | | 0.998 | |
| Barium | 8.31955E-03 | 66.68336 | 2.412817 | 186.4852 | 0.9999916 | | 0.998 | |
| Beryllium | 1.68055E-03 | 66.68696 | 180.7652 | 199.406 | 0.9999916 | | 0.998 | |
| Boron | 1.1515E-05 | 66.76168 | 60.88726 | 196.9245 | 0.999982 | | 0.998 | |
| Cadmium | 1.288225E-02 | 66.72259 | 1.984433 | 162.421 | 0.9999796 | | 0.998 | |
| Calcium | 4.482277E-05 | 66.9175 | 4.208462 | 173.4901 | 0.9999861 | | 0.998 | |
| Chromium | 3.518975E-05 | 66.70641 | 7.480278 | 185.3852 | 0.9999984 | | 0.998 | |
| Cobalt | 3.61955E-03 | 66.67754 | 2.655707 | 173.9273 | 0.9999981 | | 0.998 | |
| Copper | 5.0375E-05 | 66.72331 | 4.850987 | 165.4955 | 0.9999988 | | 0.998 | |
| Iron | 1.356585E-05 | 66.77405 | 28.74907 | 196.0991 | 0.9999996 | | 0.998 | |
| Lead | 9.23825E-04 | 66.70748 | 16.30004 | 193.2618 | 0.9999927 | | 0.998 | |
| Magnesium | 1.54855E-06 | 66.71597 | 6.718135 | 196.6531 | 0.9999205 | | 0.998 | |
| Manganese | 1.893725E-04 | 66.73402 | 6.94882 | 180.8528 | 0.999998 | | 0.998 | |
| Molybdenum | 2.722725E-03 | 66.70289 | 15.08805 | 196.1641 | 0.9999975 | | 0.998 | |
| Nickel | 2.48065E-03 | 66.66952 | 4.601995 | 186.3771 | 0.9999993 | | 0.998 | |
| Potassium | 1.03475E-05 | 66.83693 | 6.298232 | 166.4927 | 0.9999994 | | 0.998 | |
| Selenium | 2.614425E-04 | 66.70692 | 22.20422 | 192.719 | 0.9999939 | | 0.998 | |
| Silver | 4.28025E-05 | 66.7982 | 4.67725 | 150.0972 | 0.9998207 | | 0.998 | |
| Sodium | 3.7298E-05 | 66.69848 | 13.75553 | 190.5974 | 0.9999756 | | 0.998 | |
| Thallium | 5.8161E-04 | 66.70128 | 23.85966 | 196.2626 | 0.9999935 | | 0.998 | |
| Tin | 9.4658E-04 | 66.74976 | 2.821277 | 175.1909 | 0.9999937 | | 0.998 | |
| Titanium | 1.137125E-04 | 66.69712 | 2.15702 | 175.0574 | 0.999994 | | 0.998 | |
| Vanadium | 3.083375E-05 | 66.67507 | 2.513983 | 137.8019 | 0.9999965 | | 0.998 | |
| Zinc | 5.41385E-03 | 66.67586 | 4.02456 | 187.7543 | 0.9999964 | | 0.998 | |
| Strontium | 1.12325E-03 | 66.67009 | 2.089925 | 117.9572 | 0.9999986 | | 0.998 | |
| Lithium | 1.359625E-05 | 66.67732 | 20.69422 | 188.8247 | 0.9999999 | | 0.998 | |

# PREPARATION BENCH SHEET

2K19018

**Empirical Laboratories, LLC**

**Printed: 12/2/2012 7:06:13AM**

**Instrument:**

**Matrix: Water** **Prepared using: METALS - MET_3005A_LOW** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1211001-03 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | |
| 1211026-04 | E | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | TAL list |
| 1211026-09 | E | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | TAL list |
| 1211038-04 | E | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | TAL list |
| 1211038-07 | D | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | TAL list |
| 1211046-02 | E | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | TAL list |
| 1211046-03 | D | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | TAL list |
| 1211081-01 | D | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | TAL list |
| 1211085-01 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-02 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-03 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-03RE1 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-04 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-05 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-05RE1 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-06 | I | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/MSD.MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-06 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | Added for BatchQC in: 2K19018 |
| 1211085-06RE1 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | Added 11/30/2012 by RGB |
| 1211085-06RE1 | I | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/MSD.MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-07 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-08 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-09 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |

# PREPARATION BENCH SHEET

2K19018

**Empirical Laboratories, LLC**

**Printed: 12/2/2012 7:06:13AM**

**Instrument:**

**Matrix: Water** **Prepared using: METALS - MET_3005A_LOW** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1211085-10 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-10RE1 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-11 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-11RE1 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-12 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-12RE1 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 2K19018-BLK1 | | QC | 11/19/2012 | 100 | 25 | | | | | NA | |
| 2K19018-BS1 | | QC | 11/19/2012 | 100 | 25 | 12J0554 | | 2000 | | NA | |
| 2K19018-DUP1 | | QC | 11/19/2012 | 100 | 25 | | 1211085-06 | | | NA | |
| 2K19018-DUP2 | | QC | 11/19/2012 | 100 | 25 | | 1211085-06 | | | NA | |
| 2K19018-DUP3 | | QC | 11/19/2012 | 100 | 25 | | 1211085-06RE1 | | | NA | |
| 2K19018-MS1 | | QC | 11/19/2012 | 100 | 25 | 12J0556 | 1211085-06 | 25 | | NA | |
| 2K19018-PS1 | | QC | 11/19/2012 | 100 | 25 | 12J0556 | 1211085-06 | 25 | | NA | |

**Reagents Used:**

| Standard | Description |
|---|---|
| 12I0242 | Hydrochloric Acid |
| 12K0197 | Nitric acid |

# PREPARATION BENCH SHEET

2K19021

**Empirical Laboratories, LLC**

**Printed: 12/2/2012 10:02:31AM**

**Instrument:**

**Matrix: Water** **Prepared using: METALS - MET_3005A_LOW** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1211085-13 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-14 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211085-15 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1211088-01 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211088-02 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211088-02RE1 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211088-03 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211088-04 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211088-04RE1 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211088-05 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211088-06 | Z | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/MSD. |
| 1211088-06 | Z | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | Added for BatchQC in: 2K19021 |
| 1211088-07 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211088-08 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211088-09 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211088-10 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211088-11 | I | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211089-01 | A | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211089-02 | A | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211089-03 | C | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | MS/MSD. |
| 1211089-03 | C | MET_ICP_LOW6010C_FULL | 11/19/2012 | 100 | 25 | | | | | NA | Added for BatchQC in: 2K19021 |
| 1211089-04 | A | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |

# PREPARATION BENCH SHEET

2K19021

**Empirical Laboratories, LLC**

**Printed: 12/2/2012 10:02:31AM**

**Instrument:**

**Matrix: Water** **Prepared using: METALS - MET_3005A_LOW** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1211089-05 | A | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 1211089-06 | A | MET_ICP_LOW6010B_FULL | 11/19/2012 | 100 | 25 | | | | | NA | see versions |
| 2K19021-BLK1 | | QC | 11/19/2012 | 100 | 25 | | | | | NA | |
| 2K19021-BS1 | | QC | 11/19/2012 | 100 | 25 | 12J0554 | | 2000 | | NA | |
| 2K19021-DUP1 | | QC | 11/19/2012 | 100 | 25 | | 1211088-06 | | | NA | |
| 2K19021-DUP2 | | QC | 11/19/2012 | 100 | 25 | | 1211089-03 | | | NA | |
| 2K19021-MS1 | | QC | 11/19/2012 | 100 | 25 | 12J0556 | 1211088-06 | 25 | | NA | |
| 2K19021-MS2 | | QC | 11/19/2012 | 100 | 25 | 12J0556 | 1211089-03 | 25 | | NA | |
| 2K19021-MSD1 | | QC | 11/19/2012 | 100 | 25 | 12J0556 | 1211088-06 | 25 | | NA | |
| 2K19021-MSD2 | | QC | 11/19/2012 | 100 | 25 | 12J0556 | 1211089-03 | 25 | | NA | |
| 2K19021-PS1 | | QC | 11/19/2012 | 100 | 25 | 12J0556 | 1211088-06 | 25 | | NA | |
| 2K19021-PS2 | | QC | 11/19/2012 | 100 | 25 | 12J0556 | 1211089-03 | 25 | | NA | |

**Reagents Used:**

| Standard | Description |
|---|---|
| 12I0242 | Hydrochloric Acid |
| 12K0197 | Nitric acid |

# Data for Wet Chemistry Forms

# Sample Extraction Data

**Prep Method: pNone-SM4500NH3BG**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1211085-13 [MPT-1358-MW01S-20121107] | 2K19001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/19/12 |
| 1211085-14 [MPT-DUP-20121107] | 2K19001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/19/12 |
| 1211085-15 [MPT-Background-RB-20121108] | 2K19001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/19/12 |

# Sample Extraction Data

**Prep Method: pNone-E300.0**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1211085-01 [MPT-AC-GW-DPW02S-20121105] | 2K19012 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 11/19/12 |
| 1211085-02 [MPT-AC-GW-DPW02I-20121105] | 2K19012 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 11/19/12 |
| 1211085-03 [MPT-53-DPWR01S-20121105] | 2K19012 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 11/19/12 |
| 1211085-04 [MPT-459-MW01I-20121105] | 2K19012 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 11/19/12 |
| 1211085-06 [MPT-2062-MW01I-20121106] | 2K19012 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 11/19/12 |
| 1211085-07 [MPT-2050-MW01S-20121106] | 2K19012 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 11/19/12 |
| 1211085-08 [MPT-Runway23-MW01S-20121106] | 2K19012 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 11/19/12 |
| 1211085-09 [MPT-02-MW35RS-20121106] | 2K19012 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 11/19/12 |
| 1211085-10 [MPT-02-MW35RI-20121106] | 2K19012 | 5.00/5.00 | 5.00 | 5.00 | 5.00 | | | 11/19/12 |
| 1211085-13 [MPT-1358-MW01S-20121107] | 2K19012 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 11/19/12 |
| 1211085-14 [MPT-DUP-20121107] | 2K19012 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 11/19/12 |
| 1211085-15 [MPT-Background-RB-20121108] | 2K19012 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 11/19/12 |

# Sample Extraction Data

**Prep Method: pNone-E300.0**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1211085-05RE1 [MPT-2039-MW01I-20121105] | 2K20017 | 5.00/5.00 | 5.00 | 5.00 | 10.00 | | | 11/19/12 |
| 1211085-11RE1 [MPT-02-MW17S-20121107] | 2K20017 | 5.00/5.00 | 5.00 | 5.00 | 2.00 | | | 11/19/12 |
| 1211085-12RE1 [MPT-02-MW17I-20121107] | 2K20017 | 5.00/5.00 | 5.00 | 5.00 | 10.00 | | | 11/19/12 |

# Sample Extraction Data

**Prep Method: pNone-SM4500NH3BG**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1211085-01 [MPT-AC-GW-DPW02S-20121105] | 2K26001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/26/12 |
| 1211085-02 [MPT-AC-GW-DPW02I-20121105] | 2K26001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/26/12 |
| 1211085-03 [MPT-53-DPWR01S-20121105] | 2K26001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/26/12 |
| 1211085-04 [MPT-459-MW01I-20121105] | 2K26001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/26/12 |
| 1211085-05 [MPT-2039-MW01I-20121105] | 2K26001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/26/12 |
| 1211085-06 [MPT-2062-MW01I-20121106] | 2K26001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/26/12 |
| 1211085-07 [MPT-2050-MW01S-20121106] | 2K26001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/26/12 |
| 1211085-08 [MPT-Runway23-MW01S-20121106] | 2K26001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/26/12 |
| 1211085-09 [MPT-02-MW35RS-20121106] | 2K26001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/26/12 |
| 1211085-10 [MPT-02-MW35RI-20121106] | 2K26001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/26/12 |
| 1211085-11 [MPT-02-MW17S-20121107] | 2K26001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/26/12 |
| 1211085-12 [MPT-02-MW17I-20121107] | 2K26001 | 100.00/100.00 | 100 | 100 | 1.00 | | | 11/26/12 |

# ANALYSIS DATA SHEET

**MPT-AC-GW-DPW02S-20121105**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-01 |
| Sampled: | 11/05/12 12:05 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.203 | 0.110 | 0.150 | 0.300 | 1 | I | SM4500NH3BG | 2K26001 | 11/26/12 12:01 |
| 14808-79-8 | Sulfate as SO4 | 118 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 2K19012 | 11/19/12 23:10 |

# ANALYSIS DATA SHEET

**MPT-AC-GW-DPW02I-20121105**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-02 |
| Sampled: | 11/05/12 12:40 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.924 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 2K26001 | 11/26/12 12:02 |
| 14808-79-8 | Sulfate as SO4 | 51.6 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 2K19012 | 11/19/12 23:27 |

# ANALYSIS DATA SHEET

**MPT-53-DPWR01S-20121105**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-03 |
| Sampled: | 11/05/12 14:00 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.660 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 2K26001 | 11/26/12 12:03 |
| 14808-79-8 | Sulfate as SO4 | 175 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 2K19012 | 11/19/12 23:44 |

# ANALYSIS DATA SHEET

**MPT-459-MW01I-20121105**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-04 |
| Sampled: | 11/05/12 15:20 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 2.68 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 2K26001 | 11/26/12 12:04 |
| 14808-79-8 | Sulfate as SO4 | 13.8 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 2K19012 | 11/20/12 00:02 |

# ANALYSIS DATA SHEET

**MPT-2039-MW01I-20121105**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-05 |
| Sampled: | 11/05/12 16:30 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 3.46 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 2K26001 | 11/26/12 12:05 |
| 14808-79-8 | Sulfate as SO4 | 1700 | 3.30 | 10.0 | 25.0 | 10 | D | E300.0 | 2K20017 | 11/20/12 20:46 |

# ANALYSIS DATA SHEET

**MPT-2062-MW01I-20121106**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-06 |
| Sampled: | 11/06/12 11:15 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 1.01 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 2K26001 | 11/26/12 12:06 |
| 14808-79-8 | Sulfate as SO4 | 106 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 2K19012 | 11/20/12 00:19 |

# ANALYSIS DATA SHEET

**MPT-2050-MW01S-20121106**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-07 |
| Sampled: | 11/06/12 12:45 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | | 0.110 | 0.150 | 0.300 | 1 | U | SM4500NH3BG | 2K26001 | 11/26/12 12:09 |
| 14808-79-8 | Sulfate as SO4 | 37.1 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 2K19012 | 11/20/12 02:21 |

# ANALYSIS DATA SHEET

**MPT-Runway23-MW01S-20121106**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-08 |
| Sampled: | 11/06/12 13:45 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.948 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 2K26001 | 11/26/12 12:10 |
| 14808-79-8 | Sulfate as SO4 | 55.8 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 2K19012 | 11/20/12 02:38 |

# ANALYSIS DATA SHEET

**MPT-02-MW35RS-20121106**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-09 |
| Sampled: | 11/06/12 14:50 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.841 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 2K26001 | 11/26/12 12:11 |
| 14808-79-8 | Sulfate as SO4 | 14.7 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 2K19012 | 11/20/12 02:56 |

# ANALYSIS DATA SHEET

**MPT-02-MW35RI-20121106**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-10 |
| Sampled: | 11/06/12 15:40 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 8.57 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 2K26001 | 11/26/12 12:12 |
| 14808-79-8 | Sulfate as SO4 | 120 | 1.65 | 5.00 | 12.5 | 5 | D | E300.0 | 2K19012 | 11/20/12 03:13 |

# ANALYSIS DATA SHEET

**MPT-02-MW17S-20121107**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-11 |
| Sampled: | 11/07/12 11:23 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.490 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 2K26001 | 11/26/12 12:15 |
| 14808-79-8 | Sulfate as SO4 | 358 | 0.660 | 2.00 | 5.00 | 2 | D | E300.0 | 2K20017 | 11/20/12 21:21 |

# ANALYSIS DATA SHEET

**MPT-02-MW17I-20121107**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-12 |
| Sampled: | 11/07/12 12:02 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 4.04 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 2K26001 | 11/26/12 12:16 |
| 14808-79-8 | Sulfate as SO4 | 900 | 3.30 | 10.0 | 25.0 | 10 | D | E300.0 | 2K20017 | 11/20/12 21:38 |

# ANALYSIS DATA SHEET

**MPT-1358-MW01S-20121107**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-13 |
| Sampled: | 11/07/12 13:40 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | | 0.110 | 0.150 | 0.300 | 1 | U | SM4500NH3BG | 2K19001 | 11/19/12 13:00 |
| 14808-79-8 | Sulfate as SO4 | 68.3 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 2K19012 | 11/20/12 05:50 |

# ANALYSIS DATA SHEET

**MPT-DUP-20121107**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-14 |
| Sampled: | 11/07/12 00:00 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | | 0.110 | 0.150 | 0.300 | 1 | U | SM4500NH3BG | 2K19001 | 11/19/12 13:01 |
| 14808-79-8 | Sulfate as SO4 | 69.4 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 2K19012 | 11/20/12 06:07 |

# ANALYSIS DATA SHEET

**MPT-Background-RB-20121108**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211085-15 |
| Sampled: | 11/08/12 11:00 | Received: | 11/09/12 08:30 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | | 0.110 | 0.150 | 0.300 | 1 | U | SM4500NH3BG | 2K19001 | 11/19/12 13:02 |
| 14808-79-8 | Sulfate as SO4 | | 0.330 | 1.00 | 2.50 | 1 | U | E300.0 | 2K19012 | 11/20/12 06:25 |

# INITIAL AND CONTINUING CALIBRATION CHECK

## E300.0

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: WC-IC

SDG: 1211085
Project: NAS Mayport CTO JM71
Calibration: 2314001
Sequence: 2K31404

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 2K31404-ICV1 | Sulfate as SO4 | 24.00 | 23.52 | 98.0 | mg/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: WC-Lachat

SDG: 1211085
Project: NAS Mayport CTO JM71
Calibration: 2324003
Sequence: 2K32411

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 2K32411-ICV1 | Ammonia as N | 2.000 | 2.144 | 107 | mg/L | +/- 10.00% |
| 2K32411-CCV1 | Ammonia as N | 2.000 | 2.142 | 107 | mg/L | +/- 10.00% |
| 2K32411-CCV2 | Ammonia as N | 2.000 | 2.104 | 105 | mg/L | +/- 10.00% |
| 2K32411-CCV3 | Ammonia as N | 2.000 | 2.121 | 106 | mg/L | +/- 10.00% |
| 2K32411-CCV4 | Ammonia as N | 2.000 | 2.107 | 105 | mg/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## E300.0

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: WC-IC

SDG: 1211085
Project: NAS Mayport CTO JM71
Calibration: 2314001
Sequence: 2K32510

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 2K32510-CCV1 | Sulfate as SO4 | 25.00 | 24.81 | 99.2 | mg/L | +/- 10.00% |
| 2K32510-CCV2 | Sulfate as SO4 | 25.00 | 25.01 | 100 | mg/L | +/- 10.00% |
| 2K32510-CCV3 | Sulfate as SO4 | 25.00 | 25.06 | 100 | mg/L | +/- 10.00% |
| 2K32510-CCV4 | Sulfate as SO4 | 25.00 | 24.83 | 99.3 | mg/L | +/- 10.00% |
| 2K32510-CCV5 | Sulfate as SO4 | 25.00 | 25.04 | 100 | mg/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## E300.0

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: WC-IC

SDG: 1211085
Project: NAS Mayport CTO JM71
Calibration: 2314001
Sequence: 2K33105

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 2K33105-CCV1 | Sulfate as SO4 | 25.00 | 24.82 | 99.3 | mg/L | +/- 10.00% |
| 2K33105-CCV2 | Sulfate as SO4 | 25.00 | 25.03 | 100 | mg/L | +/- 10.00% |
| 2K33105-CCV3 | Sulfate as SO4 | 25.00 | 25.14 | 101 | mg/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: WC-Lachat

SDG: 1211085
Project: NAS Mayport CTO JM71
Calibration: 2331001
Sequence: 2K33106

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 2K33106-ICV1 | Ammonia as N | 2.000 | 2.074 | 104 | mg/L | +/- 10.00% |
| 2K33106-CCV1 | Ammonia as N | 2.000 | 2.081 | 104 | mg/L | +/- 10.00% |
| 2K33106-CCV2 | Ammonia as N | 2.000 | 2.105 | 105 | mg/L | +/- 10.00% |

# CRDL STANDARD

## E300.0

Laboratory: Empirical Laboratories, LLC

SDG: 1211085

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Instrument ID: WC-IC

Calibration: 2314001

Sequence: 2K32510

| Lab Sample ID | Analyte | True | Found | %R | Units | QC Limts |
|---|---|---|---|---|---|---|
| 2K32510-CRL3 | Sulfate as SO4 | 2.500 | 2.313 | 92.5 | mg/L | 75 - 125 |

# CRDL STANDARD

## E300.0

Laboratory: Empirical Laboratories, LLC

SDG: 1211085

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Instrument ID: WC-IC

Calibration: 2314001

Sequence: 2K33105

| Lab Sample ID | Analyte | True | Found | %R | Units | QC Limts |
|---|---|---|---|---|---|---|
| 2K33105-CRL3 | Sulfate as SO4 | 2.500 | 2.202 | 88.1 | mg/L | 75 - 125 |

# METHOD BLANKS
## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Batch: 2K19001

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K19001-BLK1 | Ammonia as N | 0.0761 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |

# METHOD BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Batch: 2K19012

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K19012-BLK1 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |

# METHOD BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Batch: 2K20017

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K20017-BLK1 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |

# METHOD BLANKS
## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Batch: 2K26001

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K26001-BLK1 | Ammonia as N | 0.0107 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |

# BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Sequence: 2K31404
Calibration: 2314001
Instrument ID: WC-IC

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K31404-ICB1 | Sulfate as SO4 | 0.000 | 0.330 | 2.50 | mg/L | U | E300.0 |

# BLANKS
## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Sequence: 2K32411
Calibration: 2324003
Instrument ID: WC-Lachat

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K32411-ICB1 | Ammonia as N | -0.01282 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |
| 2K32411-CCB1 | Ammonia as N | 0.00749 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |
| 2K32411-CCB2 | Ammonia as N | -0.00844 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |
| 2K32411-CCB3 | Ammonia as N | 0.00103 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |
| 2K32411-CCB4 | Ammonia as N | 0.0114 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |

# BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Sequence: 2K32510
Calibration: 2314001
Instrument ID: WC-IC

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K32510-CCB1 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 2K32510-CCB2 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 2K32510-CCB3 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 2K32510-CCB4 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 2K32510-CCB5 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |

# BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Sequence: 2K33105
Calibration: 2314001
Instrument ID: WC-IC

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K33105-CCB1 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 2K33105-CCB2 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 2K33105-CCB3 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |

# BLANKS
## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC
SDG: 1211085
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Sequence: 2K33106
Calibration: 2331001
Instrument ID: WC-Lachat

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K33106-ICB1 | Ammonia as N | 0.03424 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |
| 2K33106-CCB1 | Ammonia as N | 0.0138 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |
| 2K33106-CCB2 | Ammonia as N | 0.0200 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

## E300.0

**MPT-2062-MW01I-20121106**

Laboratory: Empirical Laboratories, LLC

SDG: 1211085

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Matrix: Water

Batch: 2K19012

% Solids:

Source Sample Name: **1211085-06**

| ANALYTE | SPIKE ADDED (mg/L) | SAMPLE CONCENTRATION (mg/L) | MS CONCENTRATION (mg/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Sulfate as SO4 | 27.78 | 105.8 | 132.1 | 94.8 | | 80 - 120 |

| ANALYTE | SPIKE ADDED (mg/L) | MSD CONCENTRATION (mg/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Sulfate as SO4 | 27.78 | 132.9 | 97.6 | 0.580 | | 20 | 80 - 120 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

## SM4500NH3BG

**MPT-2062-MW01I-20121106**

Laboratory: Empirical Laboratories, LLC

SDG: 1211085

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Matrix: Water

Batch: 2K26001

% Solids:

Source Sample Name: **1211085-06**

| ANALYTE | SPIKE ADDED (mg/L) | SAMPLE CONCENTRATION (mg/L) | MS CONCENTRATION (mg/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Ammonia as N | 5.000 | 1.006 | 6.194 | 104 | | 75 - 125 |

| ANALYTE | SPIKE ADDED (mg/L) | MSD CONCENTRATION (mg/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Ammonia as N | 5.000 | 5.942 | 98.7 | 4.15 | | 20 | 75 - 125 |

# DUPLICATES

## E300.0

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Batch: 2K19012
Preparation: pNone
Source Sample Name: MPT-2062-MW01I-20121106

SDG: 1211085
Project: NAS Mayport CTO JM71
Laboratory ID: 2K19012-DUP1
Lab Source ID: 1211085-06
Initial/Final: 5 mL / 5 mL
% Solids:

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (mg/L) | DUPLICATE CONCENTRATION (mg/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Sulfate as SO4 | 20 | 106 | 105.4 | 0.349 | | E300.0 |

# LCS / LCS DUPLICATE RECOVERY

## SM4500NH3BG

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 2K19001 | Laboratory ID: | 2K19001-BS1 |
| Preparation: | pNone | Initial/Final: | 100 mL / 100 mL |

| ANALYTE | SPIKE ADDED (mg/L) | LCS CONCENTRATION (mg/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Ammonia as N | 5.000 | 5.126 | 103 | 80 - 120 |

# LCS / LCS DUPLICATE RECOVERY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 2K19012 | Laboratory ID: | 2K19012-BS1 |
| Preparation: | pNone | Initial/Final: | 5 mL / 5 mL |

| ANALYTE | SPIKE ADDED (mg/L) | LCS CONCENTRATION (mg/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Sulfate as SO4 | 21.00 | 20.80 | 99.0 | 90 - 110 |

# LCS / LCS DUPLICATE RECOVERY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 2K20017 | Laboratory ID: | 2K20017-BS1 |
| Preparation: | pNone | Initial/Final: | 5 mL / 5 mL |

| ANALYTE | SPIKE ADDED (mg/L) | LCS CONCENTRATION (mg/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Sulfate as SO4 | 21.00 | 20.67 | 98.4 | 90 - 110 |

# LCS / LCS DUPLICATE RECOVERY

## SM4500NH3BG

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 2K26001 | Laboratory ID: | 2K26001-BS1 |
| Preparation: | pNone | Initial/Final: | 100 mL / 100 mL |

| ANALYTE | SPIKE ADDED (mg/L) | LCS CONCENTRATION (mg/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Ammonia as N | 5.000 | 4.917 | 98.3 | 80 - 120 |

# PREPARATION BATCH SUMMARY

## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC SDG: 1211085

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 2K19001 Batch Matrix: Water Preparation: pNone

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-1358-MW01S-20121107 | 1211085-13 | 11/19/12 05:36 | 100.00 | 100.00 |
| MPT-DUP-20121107 | 1211085-14 | 11/19/12 05:36 | 100.00 | 100.00 |
| MPT-Background-RB-20121108 | 1211085-15 | 11/19/12 05:36 | 100.00 | 100.00 |
| Blank | 2K19001-BLK1 | 11/19/12 05:36 | 100.00 | 100.00 |
| LCS | 2K19001-BS1 | 11/19/12 05:36 | 100.00 | 100.00 |

# PREPARATION BATCH SUMMARY

## E300.0

Laboratory: Empirical Laboratories, LLC SDG: 1211085

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 2K19012 Batch Matrix: Water Preparation: pNone

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-AC-GW-DPW02S-20121105 | 1211085-01 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-AC-GW-DPW02I-20121105 | 1211085-02 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-53-DPWR01S-20121105 | 1211085-03 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-459-MW01I-20121105 | 1211085-04 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-2062-MW01I-20121106 | 1211085-06 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-2050-MW01S-20121106 | 1211085-07 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-Runway23-MW01S-20121106 | 1211085-08 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-02-MW35RS-20121106 | 1211085-09 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-02-MW35RI-20121106 | 1211085-10 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-1358-MW01S-20121107 | 1211085-13 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-DUP-20121107 | 1211085-14 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-Background-RB-20121108 | 1211085-15 | 11/19/12 08:05 | 5.00 | 5.00 |
| Blank | 2K19012-BLK1 | 11/19/12 08:05 | 5.00 | 5.00 |
| LCS | 2K19012-BS1 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-2062-MW01I-20121106 | 2K19012-DUP1 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-2062-MW01I-20121106 | 2K19012-MS1 | 11/19/12 08:05 | 22.50 | 25.00 |
| MPT-2062-MW01I-20121106 | 2K19012-MSD1 | 11/19/12 08:05 | 22.50 | 25.00 |

# PREPARATION BATCH SUMMARY

## E300.0

Laboratory: Empirical Laboratories, LLC SDG: 1211085

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 2K20017 Batch Matrix: Water Preparation: pNone

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-2039-MW01I-20121105 | 1211085-05RE1 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-02-MW17S-20121107 | 1211085-11RE1 | 11/19/12 08:05 | 5.00 | 5.00 |
| MPT-02-MW17I-20121107 | 1211085-12RE1 | 11/19/12 08:05 | 5.00 | 5.00 |
| Blank | 2K20017-BLK1 | 11/20/12 12:04 | 5.00 | 5.00 |
| LCS | 2K20017-BS1 | 11/20/12 12:04 | 5.00 | 5.00 |

# PREPARATION BATCH SUMMARY

## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC SDG: 1211085

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 2K26001 Batch Matrix: Water Preparation: pNone

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-AC-GW-DPW02S-20121105 | 1211085-01 | 11/26/12 05:47 | 100.00 | 100.00 |
| MPT-AC-GW-DPW02I-20121105 | 1211085-02 | 11/26/12 05:47 | 100.00 | 100.00 |
| MPT-53-DPWR01S-20121105 | 1211085-03 | 11/26/12 05:47 | 100.00 | 100.00 |
| MPT-459-MW01I-20121105 | 1211085-04 | 11/26/12 05:47 | 100.00 | 100.00 |
| MPT-2039-MW01I-20121105 | 1211085-05 | 11/26/12 05:47 | 100.00 | 100.00 |
| MPT-2062-MW01I-20121106 | 1211085-06 | 11/26/12 05:47 | 100.00 | 100.00 |
| MPT-2050-MW01S-20121106 | 1211085-07 | 11/26/12 05:47 | 100.00 | 100.00 |
| MPT-Runway23-MW01S-20121106 | 1211085-08 | 11/26/12 05:47 | 100.00 | 100.00 |
| MPT-02-MW35RS-20121106 | 1211085-09 | 11/26/12 05:47 | 100.00 | 100.00 |
| MPT-02-MW35RI-20121106 | 1211085-10 | 11/26/12 05:47 | 100.00 | 100.00 |
| MPT-02-MW17S-20121107 | 1211085-11 | 11/26/12 05:47 | 100.00 | 100.00 |
| MPT-02-MW17I-20121107 | 1211085-12 | 11/26/12 05:47 | 100.00 | 100.00 |
| Blank | 2K26001-BLK1 | 11/26/12 05:47 | 100.00 | 100.00 |
| LCS | 2K26001-BS1 | 11/26/12 05:47 | 100.00 | 100.00 |
| MPT-2062-MW01I-20121106 | 2K26001-MS1 | 11/26/12 05:47 | 100.00 | 100.00 |
| MPT-2062-MW01I-20121106 | 2K26001-MSD1 | 11/26/12 05:47 | 100.00 | 100.00 |

# ANALYSIS SEQUENCE SUMMARY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 2K31404 | Instrument: | WC-IC |
| Calibration: | 2314001 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Cal Standard | 2K31404-CAL1 | 110612-003 | 11/06/12 08:58 |
| Cal Standard | 2K31404-CAL2 | 110612-004 | 11/06/12 09:15 |
| Cal Standard | 2K31404-CAL3 | 110612-005 | 11/06/12 09:32 |
| Cal Standard | 2K31404-CAL4 | 110612-006 | 11/06/12 09:50 |
| Cal Standard | 2K31404-CAL5 | 110612-007 | 11/06/12 10:07 |
| Cal Standard | 2K31404-CAL6 | 110612-008 | 11/06/12 10:25 |
| Cal Standard | 2K31404-CAL7 | 110612-009 | 11/06/12 10:42 |
| Cal Standard | 2K31404-CAL8 | 110612-010 | 11/06/12 10:59 |
| Initial Cal Check | 2K31404-ICV1 | 110612-011 | 11/06/12 11:17 |
| Initial Cal Blank | 2K31404-ICB1 | 110612-012 | 11/06/12 11:34 |

# ANALYSIS SEQUENCE SUMMARY

## SM4500NH3BG

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 2K32411 | Instrument: | WC-Lachat |
| Calibration: | 2324003 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Cal Standard | 2K32411-CAL1 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:06 |
| Cal Standard | 2K32411-CAL2 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:07 |
| Cal Standard | 2K32411-CAL3 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:08 |
| Cal Standard | 2K32411-CAL4 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:09 |
| Cal Standard | 2K32411-CAL5 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:10 |
| Cal Standard | 2K32411-CAL6 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:11 |
| Cal Standard | 2K32411-CAL7 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:12 |
| Cal Standard | 2K32411-CAL8 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:13 |
| Initial Cal Check | 2K32411-ICV1 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:14 |
| Initial Cal Blank | 2K32411-ICB1 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:15 |
| Calibration Check | 2K32411-CCV1 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:29 |
| Calibration Blank | 2K32411-CCB1 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:30 |
| Calibration Check | 2K32411-CCV2 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:41 |
| Calibration Blank | 2K32411-CCB2 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:42 |
| LCS | 2K19001-BS1 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:43 |
| Blank | 2K19001-BLK1 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:43 |
| Calibration Check | 2K32411-CCV3 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:58 |
| Calibration Blank | 2K32411-CCB3 | M_11-19-2012_12-05-36PM-0 | 11/19/12 12:59 |
| MPT-1358-MW01S-20121107 | 1211085-13 | M_11-19-2012_12-05-36PM-0 | 11/19/12 13:00 |
| MPT-DUP-20121107 | 1211085-14 | M_11-19-2012_12-05-36PM-0 | 11/19/12 13:01 |
| MPT-Background-RB-20121108 | 1211085-15 | M_11-19-2012_12-05-36PM-0 | 11/19/12 13:02 |
| Calibration Check | 2K32411-CCV4 | M_11-19-2012_12-05-36PM-0 | 11/19/12 13:10 |
| Calibration Blank | 2K32411-CCB4 | M_11-19-2012_12-05-36PM-0 | 11/19/12 13:11 |

# ANALYSIS SEQUENCE SUMMARY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 2K32510 | Instrument: | WC-IC |
| Calibration: | 2314001 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Calibration Check | 2K32510-CCV1 | 111912-003 | 11/19/12 16:29 |
| Calibration Blank | 2K32510-CCB1 | 111912-004 | 11/19/12 16:47 |
| Instrument RL Check | 2K32510-CRL3 | 111912-007 | 11/19/12 17:39 |
| LCS | 2K19012-BS1 | 111912-008 | 11/19/12 17:56 |
| Blank | 2K19012-BLK1 | 111912-010 | 11/19/12 18:31 |
| Calibration Check | 2K32510-CCV2 | 111912-022 | 11/19/12 22:00 |
| Calibration Blank | 2K32510-CCB2 | 111912-023 | 11/19/12 22:17 |
| MPT-AC-GW-DPW02S-20121105 | 1211085-01 | 111912-026 | 11/19/12 23:10 |
| MPT-AC-GW-DPW02I-20121105 | 1211085-02 | 111912-027 | 11/19/12 23:27 |
| MPT-53-DPWR01S-20121105 | 1211085-03 | 111912-028 | 11/19/12 23:44 |
| MPT-459-MW01I-20121105 | 1211085-04 | 111912-029 | 11/20/12 00:02 |
| MPT-2062-MW01I-20121106 | 1211085-06 | 111912-030 | 11/20/12 00:19 |
| MPT-2062-MW01I-20121106 | 2K19012-MS1 | 111912-031 | 11/20/12 00:37 |
| MPT-2062-MW01I-20121106 | 2K19012-MSD1 | 111912-032 | 11/20/12 00:54 |
| MPT-2062-MW01I-20121106 | 2K19012-DUP1 | 111912-033 | 11/20/12 01:11 |
| Calibration Check | 2K32510-CCV3 | 111912-034 | 11/20/12 01:29 |
| Calibration Blank | 2K32510-CCB3 | 111912-035 | 11/20/12 01:46 |
| MPT-2050-MW01S-20121106 | 1211085-07 | 111912-037 | 11/20/12 02:21 |
| MPT-Runway23-MW01S-20121106 | 1211085-08 | 111912-038 | 11/20/12 02:38 |
| MPT-02-MW35RS-20121106 | 1211085-09 | 111912-039 | 11/20/12 02:56 |
| MPT-02-MW35RI-20121106 | 1211085-10 | 111912-040 | 11/20/12 03:13 |
| Calibration Check | 2K32510-CCV4 | 111912-046 | 11/20/12 04:58 |
| Calibration Blank | 2K32510-CCB4 | 111912-047 | 11/20/12 05:15 |
| MPT-1358-MW01S-20121107 | 1211085-13 | 111912-049 | 11/20/12 05:50 |
| MPT-DUP-20121107 | 1211085-14 | 111912-050 | 11/20/12 06:07 |
| MPT-Background-RB-20121108 | 1211085-15 | 111912-051 | 11/20/12 06:25 |
| Calibration Check | 2K32510-CCV5 | 111912-057 | 11/20/12 08:09 |
| Calibration Blank | 2K32510-CCB5 | 111912-058 | 11/20/12 08:27 |

# ANALYSIS SEQUENCE SUMMARY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 2K33105 | Instrument: | WC-IC |
| Calibration: | 2314001 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Calibration Check | 2K33105-CCV1 | 112012-003 | 11/20/12 14:06 |
| Calibration Blank | 2K33105-CCB1 | 112012-004 | 11/20/12 14:23 |
| Instrument RL Check | 2K33105-CRL3 | 112012-007 | 11/20/12 15:15 |
| LCS | 2K20017-BS1 | 112012-008 | 11/20/12 15:32 |
| Blank | 2K20017-BLK1 | 112012-010 | 11/20/12 16:07 |
| Calibration Check | 2K33105-CCV2 | 112012-022 | 11/20/12 19:36 |
| Calibration Blank | 2K33105-CCB2 | 112012-023 | 11/20/12 19:54 |
| MPT-2039-MW01I-20121105 | 1211085-05RE1 | 112012-026 | 11/20/12 20:46 |
| MPT-02-MW17S-20121107 | 1211085-11RE1 | 112012-028 | 11/20/12 21:21 |
| MPT-02-MW17I-20121107 | 1211085-12RE1 | 112012-029 | 11/20/12 21:38 |
| Calibration Check | 2K33105-CCV3 | 112012-034 | 11/20/12 23:05 |
| Calibration Blank | 2K33105-CCB3 | 112012-035 | 11/20/12 23:22 |

# ANALYSIS SEQUENCE SUMMARY

## SM4500NH3BG

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211085 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 2K33106 | Instrument: | WC-Lachat |
| Calibration: | 2331001 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Cal Standard | 2K33106-CAL1 | M_11-26-2012_11-48-57AM-0 | 11/26/12 11:50 |
| Cal Standard | 2K33106-CAL2 | M_11-26-2012_11-48-57AM-0 | 11/26/12 11:51 |
| Cal Standard | 2K33106-CAL3 | M_11-26-2012_11-48-57AM-0 | 11/26/12 11:52 |
| Cal Standard | 2K33106-CAL4 | M_11-26-2012_11-48-57AM-0 | 11/26/12 11:53 |
| Cal Standard | 2K33106-CAL5 | M_11-26-2012_11-48-57AM-0 | 11/26/12 11:54 |
| Cal Standard | 2K33106-CAL6 | M_11-26-2012_11-48-57AM-0 | 11/26/12 11:55 |
| Cal Standard | 2K33106-CAL7 | M_11-26-2012_11-48-57AM-0 | 11/26/12 11:56 |
| Initial Cal Check | 2K33106-ICV1 | M_11-26-2012_11-48-57AM-0 | 11/26/12 11:57 |
| Cal Standard | 2K33106-CAL8 | M_11-26-2012_11-48-57AM-0 | 11/26/12 11:57 |
| Initial Cal Blank | 2K33106-ICB1 | M_11-26-2012_11-48-57AM-0 | 11/26/12 11:58 |
| Blank | 2K26001-BLK1 | M_11-26-2012_11-48-57AM-0 | 11/26/12 11:59 |
| LCS | 2K26001-BS1 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:00 |
| MPT-AC-GW-DPW02S-20121105 | 1211085-01 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:01 |
| MPT-AC-GW-DPW02I-20121105 | 1211085-02 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:02 |
| MPT-53-DPWR01S-20121105 | 1211085-03 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:03 |
| MPT-459-MW01I-20121105 | 1211085-04 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:04 |
| MPT-2039-MW01I-20121105 | 1211085-05 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:05 |
| MPT-2062-MW01I-20121106 | 1211085-06 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:06 |
| MPT-2062-MW01I-20121106 | 2K26001-MS1 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:07 |
| MPT-2062-MW01I-20121106 | 2K26001-MSD1 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:08 |
| MPT-2050-MW01S-20121106 | 1211085-07 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:09 |
| MPT-Runway23-MW01S-20121106 | 1211085-08 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:10 |
| MPT-02-MW35RS-20121106 | 1211085-09 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:11 |
| MPT-02-MW35RI-20121106 | 1211085-10 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:12 |
| Calibration Check | 2K33106-CCV1 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:13 |
| Calibration Blank | 2K33106-CCB1 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:14 |
| MPT-02-MW17S-20121107 | 1211085-11 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:15 |
| MPT-02-MW17I-20121107 | 1211085-12 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:16 |
| Calibration Check | 2K33106-CCV2 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:20 |
| Calibration Blank | 2K33106-CCB2 | M_11-26-2012_11-48-57AM-0 | 11/26/12 12:21 |

# PREPARATION BENCH SHEET

2K19001

**Empirical Laboratories, LLC**

**Printed: 11/27/2012 3:14:17PM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1211036-15 | AF | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | MS/MSD |
| 1211066-01 | K | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211066-03 | K | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211066-05 | AF | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | MS/MSD |
| 1211066-07 | K | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211066-09 | K | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211066-11 | K | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211074-01 | K | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211074-03 | K | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211074-05 | K | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211085-13 | B | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211085-14 | B | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211085-15 | B | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211091-01 | J | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211091-03 | K | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211131-01 | A | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 10 | 100 | | | | | NA | |
| 1211131-03 | A | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211139-01 | A | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 10 | 100 | | | | | NA | |
| 1211139-03 | A | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 100 | 100 | | | | | NA | |
| 1211139-04 | A | WC_AMMONIA_PHENATE_45 | 11/19/2012 | 10 | 100 | | | | | NA | |
| 2K19001-BLK1 | | QC | 11/19/2012 | 100 | 100 | | | | | NA | 9.47 |
| 2K19001-BLK2 | | QC | 11/19/2012 | 100 | 100 | | | | | NA | |

# PREPARATION BENCH SHEET

2K19001

**Empirical Laboratories, LLC**

**Printed: 11/27/2012 3:14:17PM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2K19001-BS1 | | QC | 11/19/2012 | 100 | 100 | 12J0868 | | 100000 | | NA | 9.45 |
| 2K19001-MS1 | | QC | 11/19/2012 | 100 | 100 | 12A0397 | 1211036-15 | 500 | | NA | 9.47 |
| 2K19001-MS2 | | QC | 11/19/2012 | 100 | 100 | 12A0397 | 1211066-05 | 500 | | NA | 9.55 |
| 2K19001-MSD1 | | QC | 11/19/2012 | 100 | 100 | 12A0397 | 1211036-15 | 500 | | NA | 9.56 |
| 2K19001-MSD2 | | QC | 11/19/2012 | 100 | 100 | 12A0397 | 1211066-05 | 500 | | NA | 9.47 |

**Reagents Used:**

| Standard | Description |
|---|---|
| 12B0874 | pH 4.0 Buffer |
| 12B0877 | 10.00 pH Buffer |
| 12G0038 | 10 N NaOH |
| 12G0053 | 1N H2SO4 |
| 12G0621 | 1N NaOH Solution |
| 12I0495 | Boric Acid |
| 12I0537 | NH3 Sodium Nitroprusside Reagent |
| 12J0158 | pH 7.0 Buffer Yellow |
| 12J0895 | NH3 Buffer |
| 12K0255 | Borate Buffer |
| 12K0543 | NH3 Sodium Phenolate Reagent |
| 12K0657 | NH3 Sodium Hypochlorite Reagent |

# PREPARATION BENCH SHEET

2K19012

**Empirical Laboratories, LLC**

**Printed: 11/28/2012 9:00:48AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1211085-01 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-02 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-03 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-04 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-05 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-06 | C | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | MS/MSD.SO4 only |
| 1211085-07 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-08 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-09 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-10 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-11 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-12 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-13 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-14 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-15 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211091-01 | I | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | Cl, SO4 |
| 1211091-03 | J | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | Cl, SO4 |
| 1211093-01 | C | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | Cl SO4/ version set up for SO4 only |
| 1211133-01 | J | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | Cl, SO4 |
| 1211146-01 | J | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | Cl, SO4 |
| 2K19012-BLK1 | | QC | 11/19/2012 | 5 | 5 | | | | | NA | |
| 2K19012-BS1 | | QC | 11/19/2012 | 5 | 5 | 12K0289 | | 5000 | | NA | |

# PREPARATION BENCH SHEET

2K19012

**Empirical Laboratories, LLC**

**Printed: 11/28/2012 9:00:48AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2K19012-DUP1 | | QC | 11/19/2012 | 5 | 5 | | 1211085-06 | | | NA | |
| 2K19012-DUP2 | | QC | 11/19/2012 | 5 | 5 | | 1211091-01 | | | NA | |
| 2K19012-MS1 | | QC | 11/19/2012 | 22.5 | 25 | 12J0966 | 1211085-06 | 2500 | | NA | |
| 2K19012-MS2 | | QC | 11/19/2012 | 22.5 | 25 | 12J0966 | 1211091-01 | 2500 | | NA | |
| 2K19012-MSD1 | | QC | 11/19/2012 | 22.5 | 25 | 12J0966 | 1211085-06 | 2500 | | NA | |
| 2K19012-MSD2 | | QC | 11/19/2012 | 22.5 | 25 | 12J0966 | 1211091-01 | 2500 | | NA | |

**Reagents Used:**

| Standard | Description |
|---|---|

# PREPARATION BENCH SHEET

2K20017

**Empirical Laboratories, LLC**

**Printed: 11/28/2012 9:02:22AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1211085-05RE1 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-11RE1 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211085-12RE1 | A | WC_ANIONS_300.0 (Regular) | 11/19/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211088-04RE3 | G | WC_ANIONS_9056 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Cl & SO4 |
| 1211093-04RE1 | C | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Cl SO4/ version set up for SO4 only |
| 1211093-06RE1 | C | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Cl SO4/ version set up for SO4 only |
| 1211120-01 | A | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211120-02 | A | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | SO4 only |
| 1211141-01 | C | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Cl SO4/ version set up for SO4 only |
| 1211141-02 | C | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Cl SO4/ version set up for SO4 only |
| 1211141-03 | C | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Cl SO4/ version set up for SO4 only |
| 1211141-04 | C | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Cl SO4/ version set up for SO4 only |
| 1211141-05 | C | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Cl SO4/ version set up for SO4 only |
| 1211141-06 | C | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Cl SO4/ version set up for SO4 only |
| 1211141-07 | C | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Cl SO4/ version set up for SO4 only |
| 1211141-08 | C | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Cl SO4/ version set up for SO4 only |
| 1211166-01 | J | WC_ANIONS_300.0 (Short Hol | 11/20/2012 | 5 | 5 | | | | | NA | Added for BatchQC in: 2K20017 |
| 1211166-01 | J | WC_ANIONS_9056 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Added for BatchQC in: 2K20017 |
| 1211166-01 | J | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Cl, SO4 |
| 1211167-01 | A | WC_ANIONS_300.0 (Short Hol | 11/20/2012 | 5 | 5 | | | | | NA | see version |
| 1211167-02 | A | WC_ANIONS_300.0 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Added for BatchQC in: 2K20017 |
| 1211167-02 | A | WC_ANIONS_300.0 (Short Hol | 11/20/2012 | 5 | 5 | | | | | NA | see version |

# PREPARATION BENCH SHEET

2K20017

**Empirical Laboratories, LLC**

**Printed: 11/28/2012 9:02:22AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1211167-02 | A | WC_ANIONS_9056 (Regular) | 11/20/2012 | 5 | 5 | | | | | NA | Added for BatchQC in: 2K20017 |
| 1211168-04 | B | WC_ANIONS_300.0 (Short Hol | 11/20/2012 | 5 | 5 | | | | | NA | see versions |
| 2K20017-BLK1 | | QC | 11/20/2012 | 5 | 5 | | | | | NA | |
| 2K20017-BS1 | | QC | 11/20/2012 | 5 | 5 | 12K0289 | | 5000 | | NA | |
| 2K20017-DUP1 | | QC | 11/20/2012 | 5 | 5 | | 1211167-02 | | | NA | |
| 2K20017-DUP2 | | QC | 11/20/2012 | 5 | 5 | | 1211166-01 | | | NA | |
| 2K20017-MS1 | | QC | 11/20/2012 | 22.5 | 25 | 12J0966 | 1211167-02 | 2500 | | NA | |
| 2K20017-MS2 | | QC | 11/20/2012 | 22.5 | 25 | 12J0966 | 1211166-01 | 2500 | | NA | |
| 2K20017-MSD1 | | QC | 11/20/2012 | 22.5 | 25 | 12J0966 | 1211167-02 | 2500 | | NA | |
| 2K20017-MSD2 | | QC | 11/20/2012 | 22.5 | 25 | 12J0966 | 1211166-01 | 2500 | | NA | |

**Reagents Used:**

| Standard | Description |
|---|---|

From 2K19023 on 11/20/2012 by ELJ

# PREPARATION BENCH SHEET

2K26001

**Empirical Laboratories, LLC**

**Printed: 11/28/2012 9:04:33AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1211085-01 | B | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211085-02 | B | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211085-03 | B | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211085-04 | B | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211085-05 | B | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211085-06 | D | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | MS/MSD. |
| 1211085-07 | B | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211085-08 | B | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211085-09 | B | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211085-10 | B | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211085-11 | B | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211085-12 | B | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211166-01 | K | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211167-01 | B | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211167-02 | B | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 1211175-01 | A | WC_AMMONIA_PHENATE_45 | 11/26/2012 | 100 | 100 | | | | | NA | |
| 2K26001-BLK1 | | QC | 11/26/2012 | 100 | 100 | | | | | NA | 9.49 |
| 2K26001-BS1 | | QC | 11/26/2012 | 100 | 100 | 12J0868 | | 100000 | | NA | 9.45 |
| 2K26001-MS1 | | QC | 11/26/2012 | 100 | 100 | 12A0397 | 1211085-06 | 500 | | NA | 9.42 |
| 2K26001-MSD1 | | QC | 11/26/2012 | 100 | 100 | 12A0397 | 1211085-06 | 500 | | NA | 9.41 |

# PREPARATION BENCH SHEET

2K26001

**Empirical Laboratories, LLC**

**Printed: 11/28/2012 9:04:33AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|

**Reagents Used:**

| Standard | Description |
|---|---|
| 12B0874 | pH 4.0 Buffer |
| 12B0877 | 10.00 pH Buffer |
| 12G0038 | 10 N NaOH |
| 12G0053 | 1N H2SO4 |
| 12G0621 | 1N NaOH Solution |
| 12I0495 | Boric Acid |
| 12I0537 | NH3 Sodium Nitroprusside Reagent |
| 12J0158 | pH 7.0 Buffer Yellow |
| 12J0895 | NH3 Buffer |
| 12K0255 | Borate Buffer |
| 12K0543 | NH3 Sodium Phenolate Reagent |
| 12K0787 | NH3 Sodium Hypochlorite Reagent |

*ANALYTICAL DATA PACKAGE*
SDG # 1211119

**PROJECT NAME:** NAS MAYPORT CTO JM71
**PROJECT LOCATION:** JACKSONVILLE, FL

**SUBMITTAL TO:**
Vanessa Good
Tetra Tech NUS, Inc.
Foster Plaza 7
661 Andersen Drive
Pittsburgh, PA 15220

**SUBMITTAL BY:**
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Original Report Date: December 3, 2012
Report Revision #: N/A
Revision Date: N/A
Total # of Pages: 40

**THIS DOCUMENT MEETS DoD QSM 4.2 STANDARDS**

*The results relate to only the samples associated with the referenced SDG and the submitted data has been produced in accordance with laboratory procedures. The Laboratory's Technical Lab Director, Mr. Rick Davis, is responsible for the final data produced and reported. His signature is listed at the end of the Case Narrative within the Analytical Data Package. If applicable to this report package, details on report revisions and the information on subcontracted analysis are listed in the package Case Narrative. This report shall not be reproduced, except in full, without the written approval of Empirical Laboratories, LLC.*

**L-A-B Accredited Certificate Number L2226**

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## Sample Delivery Group Case Narrative

### Receipt Information

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. There were no subcontracted analyses for this SDG.

### Changes to the Revision

This is an original submittal of the final report package.

### Analytical Information

All samples were prepped (where applicable) and analyzed within the standard allowed holding times, unless noted within the exceptions listed below. The laboratory analyzed all samples within the program and method guidelines. Sample prep and dilution information is provided within the final results report and at the beginning of each form set. The following information is provided specific to individual methods:

### Chromatographic Flags for Manual Integration:

The following letters are used to denote manual integrations on the laboratory's raw data in association with chromatographic integrations:

**A:** The peak was manually integrated as it was not integrated in the original chromatogram.
**B:** The peak was manually integrated due to resolution or coelution issues in the original chromatogram.
**C:** The peak was manually integrated to correct the baseline from the original chromatogram.
**D:** The peak was manually integrated to identify the correct peak as the wrong peak was identified in the original chromatogram.
**E:** The peak was manually integrated to include the entire peak as the original chromatogram only integrated part of the peak.

**SW6010C:**
No anomalies or deviations are noted.

**Data Qualifiers**
As applicable and where required, the following general qualifiers are associated with the sample results. Additional qualifiers will be specified within the reporting sections of the data package or within the body of the Case Narrative.

## Analytical Report Terms and Qualifiers

**DL:** The detection limit (DL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The DL is supported by the method detection limit (MDL) which is determined from analysis of a sample containing the analyte in a given matrix.

**LOD:** The Limit of Detection is an estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory-dependent. This definition is further clarified in the DoD QSM 4.2 revisions as the smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.

**LOQ:** The Limit of Quantitation is the minimum level, concentration, or quantity of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. This term is further clarified within the DoD QSM 4.2 as the lowest concentration that produces a quantitative result within specified limits of precision and bias.

*****: Exceeding quality control criteria are associated with the reported result.

**B**: The presence of a "B" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the correct sample result might be less than the reported result and, perhaps, zero. **For Florida DEP reports this qualifier is "V".**

**D:** When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".

**E:** The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with an "E". Usually the sample will be rerun at a dilution to quantitate the flagged compound. **For Florida DEP reports this qualifier is "L".**

**H1**: The result was analyzed outside of the EPA recommended holding time.

**H2**: The result was extracted outside of the EPA recommended holding time.

**H3**: The sample for this analyte was received outside of the EPA recommended holding time.

**J:** The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The mass spectral data pass the identification criteria showing that the compound is present, but the calculated result is less than the LOQ. One should feel confident that the result is greater than zero and less than the LOQ. **For Florida DEP reports this qualifier is "I".**

**M**: Indicates that the sample matrix interfered with the quantitation of the analyte. In dual column analysis the result is reported from the column with the lower concentration. In inorganics, it indicates that the parameters DL/LOD/LOQ have been raised.

**N:** The MS/MSD accuracy and/or precision are outside criteria. The predigested spike recovery is not within control limits for the associated parameter.

**P**: The associated numerical value is an estimated quantity. There is greater than a 40% difference between the two GC columns for the detected concentrations. The higher of the two values is reported unless matrix interference is obvious or for HPLC analysis where the primary column is reported.

**Q**: The relative percent difference (RPD) and/or percent recovery exceeded limits in the associated Blank Spike and/or Blank Spike Duplicate.

**S**: The associated internal standard exceeded criteria.

**U**: The presence of a "U" indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the DL.

**X**: The parameter shows a potential positive bias on a reported concentration due to an ICV or CCV exceeding the upper control limit on the high side.

**Y**: The parameter shows a potential negative bias on a reported concentration due to an ICV or CCV exceeding the lower control limit on the low side.

**Z**: The parameter shows lack of confirmation/detection, which may be due to a negative bias in the ICV or CCV which exceeds the lower control limit.

**LIMS Definitions / Naming Conventions:**

The following are general naming conventions that are used throughout the laboratory; however, on a method by method basis, there are additional QAQC items that are named in a consistent format.

**BLK**: LIMS assigns a unique identifier to the Method Blank by naming it as the letters BLK appended to the Batch ID. A Method Blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The Method Blank is used to assess for possible contamination during preparation and/or analysis steps. Method Blanks within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally.

**BS**: LIMS assigns a unique identifier to the Blank Spike by naming it as the letters BS appended to the Batch ID. The Blank Spike or Lab Control Sample is a controlled analyte-free matrix, which is spiked with known and verified concentrations of target analytes. Spiking concentrations can be referenced in the method SOP. The BS is used to evaluate the viability of analytes taken through the entire prep (when applicable) and analytical process. Blank Spikes within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally. A duplicate Blank Spike will be designated as a BSD.

**MS**: The LIMS assigns each Client sample with a unique identifier. The Matrix Spike is designated with a MS at the end of the sample's unique identifier. The Matrix Spike sample is used to assess the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. A duplicate Matrix Spike will be designated as a MSD.

**IDs**: The LIMS assigns each Client sample with a unique identifier. The letter "RE" may potentially be appended to the end of the LIMS Sample ID. And "**RE"** implies that the sample was either re-prepped, re-analyzed straight, or re-analyzed at a dilution. Subsequent re-analysis for the sample will be appended with a numerical value beginning with 1 that will increase incrementally. Eg: RE1, RE2, RE3, etc.

**Statement of Data Authenticity:**
I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in this Case Narrative, as verified by my signature below. During absences, the Data Quality Manager, Technical Directors or Project Managers are authorized to sign this Statement of Data Authenticity.

_____
Mr. Rick D. Davis
Laboratory Technical Director / VP Operations

# Sample Receipt Information

121119

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER № 2472 | PAGE 1 OF 1

| PROJECT NO: | FACILITY: | PROJECT MANAGER | PHONE NUMBER | LABORATORY NAME AND CONTACT: |
|---|---|---|---|---|
| 112G03797 | NAVSTA Mayport | Diane Feans | (904) 636-6125 | Empirical Laboratories |
| SAMPLERS (SIGNATURE) | | FIELD OPERATIONS LEADER | PHONE NUMBER | ADDRESS |
| Andy Booth | | AJ Booth | (904) 636-6125 | 621 MainStream Drive, Suite 270 |
| | | CARRIER/WAYBILL NUMBER | | CITY, STATE |
| | | | | Nashville, TN 37228 |

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P P

PRESERVATIVE USED: $HNO_3$ $HNO_3$

| DATE YEAR 2012 | TIME | SAMPLE ID | LOCATION ID | TOP DEPTH (FT) | BOTTOM DEPTH (FT) | MATRIX (GW, SO, SW, SD, QC, ETC.) | COLLECTION METHOD GRAB (G) COMP (C) | No. OF CONTAINERS | TYPE OF ANALYSIS: Iron only (6010C) | Iron and Manganese only (6010C) | | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/09 | 1408 | MPT-09-MW06S-20121109 | | | | GW | G | 1 | | 1 | | | | | 01 | | *cool to 4°C |
| 11/09 | 1510 | MPT-09-MW05S-20121109 | | | | GW | G | 1 | 1 | | | | | | 02 | | |
| 11/09 | 1545 | MPT-08-MW21S-20121109 | | | | GW | G | 1 | 1 | | | | | | 03 | | |

| 1. RELINQUISHED BY | DATE | TIME | 1. RECEIVED BY | DATE | TIME |
|---|---|---|---|---|---|
| Andy Booth | 11/12/12 | 1500 | | | |
| 2. RELINQUISHED BY | DATE | TIME | 2. RECEIVED BY | DATE | TIME |
| | | | | | |
| 3. RELINQUISHED BY | DATE | TIME | 3. RECEIVED BY | DATE | TIME |
| | | | Jack Deville Jr. | 11-13-12 | 820 |

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

**EMPIRICAL LABORATORIES**
**COOLER RECEIPT FORM**

Cooler Received/Opened On: 11/13/12 @ 0820 Workorder# 1211119

1. Tracking # 1130 (last 4 digits, FedEx)

   Courier: ___FED-EX

2. Temperature of rep. sample or temp blank when opened: 1.2 °C + *correction factor (+ 0.2)* = 1.4 °C

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

   If yes, how many and where: 1-FRONT

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial) _____

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

   Were these signed and dated correctly? YES...NO...NA

8. Packing material used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13. a. Were VOA vials received? YES...NO...NA

    b. Was there any observable headspace present in any VOA vial? YES...NO...NA

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # —

I certify that I unloaded the cooler and answered questions 7-14 (initial) JD

15. a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

    b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) JD

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) JD

I certify that I attached a label with the unique LIMS number to each container (initial) JD

I certify that I have performed a second check of the LIMS information against the COC to confirm accuracy (initial) _____

21. Were there Non-Conformance issues at login? YES NO Was a NCR generated? YES NO ...# —

**Additional Details:**

WORK ORDER

Printed: 12/2/2012 12:00:26PM

# 1211119

## Empirical Laboratories, LLC

**Client:** Tetra Tech, Inc. (T010)
**Project:** NAS Mayport CTO JM71

**Project Manager:** Brian Richard
**Project Number:** TET_CTOJM71

**Report To:**
Tetra Tech, Inc. (T010)
Vanessa Good
Foster Plaza 7 661 Andersen Drive
Pittsburgh, PA 15220
Phone: (412) 921-7090
Fax: (412) 921-4040

**Invoice To:**
Tetra Tech, Inc. (T010)
Accounts Payable
661 Andersen Drive
Pittsburgh, PA 15220-2745
Phone :(412) 921-8182
Fax: (412) 921-4040

Due to Client: 12/06/2012 16:00 *This is the projected due date to the client, at the time of receipt, and is for report delivery via upload, and/or email, and/or shipment to meet TAT as setup by project*

Received By: Jack Deville
Date Received: 11/13/2012 08:20
Logged In By: Jack Deville
Date Logged In: 11/13/2012 09:22

Samples Received at: **1.4°C**

| | | | |
|---|---|---|---|
| Custody Seals | Yes | Received On Ice | Yes |
| Containers Intact | Yes | | |
| COC/Labels Agree | Yes | | |
| Preservation Confir | Yes | | |

| Method | Test Code | Due | TAT | Expires | Comments |
|---|---|---|---|---|---|
| **1211119-01 MPT-09-MW06S-20121109 [Water] Sampled 11/09/2012 14:08 Eastern 'Client Sample'** | | | | | **Fe and Mn only** |
| SW6010C | MET_ICP_LOW6010C_FULL | 12/03/2012 14:00 | 15 | 05/08/2013 13:08 | Fe and Mn only |
| **1211119-02 MPT-09-MW05S-20121109 [Water] Sampled 11/09/2012 15:10 Eastern 'Client Sample'** | | | | | **Fe only** |
| SW6010C | MET_ICP_LOW6010C_FULL | 12/03/2012 14:00 | 15 | 05/08/2013 14:10 | Fe only |
| **1211119-03 MPT-08-MW21S-20121109 [Water] Sampled 11/09/2012 15:45 Eastern 'Client Sample'** | | | | | **Fe only** |
| SW6010C | MET_ICP_LOW6010C_FULL | 12/03/2012 14:00 | 15 | 05/08/2013 14:45 | Fe only |

Reviewed By

Date

# Sample Delivery Group Assignment Form

**CLIENT: Tetra Tech, Inc. (T010)**
**PROJECT NAME: NAS Mayport CTO JM71**
**SDG #: 1211119**

**QC LEVEL: Level III**
**Report Due: 12/6/2012**
**Client Sample Count: 3**

| Sample Type | Sampled | Received | Lab ID | Client ID | Lab Matrix | Report Matrix | SW6010C |
|---|---|---|---|---|---|---|---|
| Client Sample | 11/9/2012 | 11/13/2012 | 1211119-01 | MPT-09-MW06S-20121109 | Water | Water | X |
| Client Sample | 11/9/2012 | 11/13/2012 | 1211119-02 | MPT-09-MW05S-20121109 | Water | Water | X |
| Client Sample | 11/9/2012 | 11/13/2012 | 1211119-03 | MPT-08-MW21S-20121109 | Water | Water | X |

# Data for SW6010C Forms

# Sample Extraction Data

**Prep Method: MET_3005A_LOW-SW6010C**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1211119-01 [MPT-09-MW06S-20121109] | 2K26010 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/26/12 |
| 1211119-02 [MPT-09-MW05S-20121109] | 2K26010 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/26/12 |
| 1211119-03 [MPT-08-MW21S-20121109] | 2K26010 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 11/26/12 |

# ANALYSIS DATA SHEET

**MPT-09-MW06S-20121109**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211119 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211119-01 |
| Sampled: | 11/09/12 14:08 | Received: | 11/13/12 08:20 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7439-89-6 | Iron | 744 | 7.50 | 15.0 | 25.0 | 1 | | SW6010C | 2K26010 | 11/29/12 17:55 |
| 7439-96-5 | Manganese | 98.0 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 2K26010 | 11/29/12 17:55 |

# ANALYSIS DATA SHEET

**MPT-09-MW05S-20121109**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211119 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211119-02 |
| Sampled: | 11/09/12 15:10 | Received: | 11/13/12 08:20 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7439-89-6 | Iron | 19.3 | 7.50 | 15.0 | 25.0 | 1 | I | SW6010C | 2K26010 | 11/29/12 17:59 |

# ANALYSIS DATA SHEET

**MPT-08-MW21S-20121109**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211119 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1211119-03 |
| Sampled: | 11/09/12 15:45 | Received: | 11/13/12 08:20 |
| % Solids: | 0.00 | | |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7439-89-6 | Iron | 11100 | 7.50 | 15.0 | 25.0 | 1 | | SW6010C | 2K26010 | 11/29/12 18:19 |

# INITIAL AND CONTINUING CALIBRATION CHECK

## SW6010C

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP

SDG: 1211119
Project: NAS Mayport CTO JM71
Calibration: 2335001
Sequence: 2K33503

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 2K33503-ICV1 | Iron | 10000 | 10300 | 103 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1004 | 100 | ug/L | +/- 10.00% |
| 2K33503-CCV1 | Iron | 10000 | 9892 | 98.9 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1027 | 103 | ug/L | +/- 10.00% |
| 2K33503-CCV3 | Iron | 10000 | 10100 | 101 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 971.5 | 97.2 | ug/L | +/- 10.00% |
| 2K33503-CCV4 | Iron | 10000 | 9876 | 98.8 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 971.7 | 97.2 | ug/L | +/- 10.00% |
| 2K33503-CCV5 | Iron | 10000 | 9507 | 95.1 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 978.7 | 97.9 | ug/L | +/- 10.00% |

# CRDL STANDARD

## SW6010C

Laboratory: Empirical Laboratories, LLC

SDG: 1211119

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Instrument ID: ME-ICP

Calibration: 2335001

Sequence: 2K33503

| Lab Sample ID | Analyte | True | Found | %R | Units | QC Limts |
|---|---|---|---|---|---|---|
| 2K33503-CRL1 | Iron | 60.00 | 61.05 | 102 | ug/L | 80 - 120 |
| | Manganese | 6.000 | 6.368 | 106 | ug/L | 80 - 120 |

# BLANKS
## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1211119
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP
Project: NAS Mayport CTO JM71
Sequence: 2K33503
Calibration: 2335001

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 2K33503-ICB1 | Iron | -0.8103 | 30.0 | 100 | ug/L | U | SW6010C |
| | Manganese | 0.01769 | 3.00 | 15.0 | ug/L | U | SW6010C |
| 2K33503-CCB1 | Iron | -1.37 | 30.0 | 100 | ug/L | U | SW6010C |
| | Manganese | 0.00671 | 3.00 | 15.0 | ug/L | U | SW6010C |
| 2K33503-CCB3 | Iron | -1.34 | 30.0 | 100 | ug/L | U | SW6010C |
| | Manganese | 0.00880 | 3.00 | 15.0 | ug/L | U | SW6010C |
| 2K26010-BLK1 | Iron | 0.306 | 7.50 | 25.0 | ug/L | U | SW6010C |
| | Manganese | 0.0119 | 0.750 | 3.75 | ug/L | U | SW6010C |
| 2K33503-CCB4 | Iron | -1.75 | 30.0 | 100 | ug/L | U | SW6010C |
| | Manganese | 0.0412 | 3.00 | 15.0 | ug/L | U | SW6010C |
| 2K33503-CCB5 | Iron | -0.485 | 30.0 | 100 | ug/L | U | SW6010C |
| | Manganese | 0.00686 | 3.00 | 15.0 | ug/L | U | SW6010C |

# ICP INTERFERENCE CHECK SAMPLE

## SW6010C

Laboratory: Empirical Laboratories, LLC

SDG: 1211119

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Instrument ID: ME-ICP

Calibration: 2335001

Sequence: 2K33503

| Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|
| 2K33503-IFA1 | Iron | 200000 | 194,860.00 | 97.4 | ug/L |
| | Manganese | | -3.21 | | ug/L |
| 2K33503-IFB1 | Iron | 200000 | 194,170.00 | 97.1 | ug/L |
| | Manganese | 500.0 | 484.70 | 96.9 | ug/L |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

## SW6010C

**MPT-09-MW05S-20121109**

Laboratory: Empirical Laboratories, LLC

SDG: 1211119

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Matrix: Water

Batch: 2K26010

% Solids:

Source Sample Name: **1211119-02**

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Iron | 250.0 | 19.33 | 276.7 | 103 | | 80 - 120 |

# POST DIGEST SPIKE SAMPLE RECOVERY

## SW6010C

MPT-09-MW05S-20121109

Laboratory: Empirical Laboratories, LLC
SDG: 1211119
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Matrix: Water
Laboratory ID: 2K26010-PS1
Batch: 2K26010
Lab Source ID: 1211119-02
Preparation: MET_3005A_LOW
Initial/Final: 100 mL / 25 mL

| Analyte | Spike Sample Result (SSR) (ug/L) | Sample Result (SR) (ug/L) | Spike Added (SA) (ug/L) | %R | Control Limit %R |
|---|---|---|---|---|---|
| Iron | 1072 | 77.30 | 1000 | 99.4 | 80 - 120 |

# DUPLICATES

## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1211119
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Matrix: Water
Laboratory ID: 2K26010-DUP1
Batch: 2K26010
Lab Source ID: 1211119-03
Preparation: MET_3005A_LOW
Initial/Final: 100 mL / 25 mL
Source Sample Name: MPT-08-MW21S-20121109
% Solids:

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Iron | 20 | 11100 | 10990 | 0.665 | | SW6010C |

# LCS / LCS DUPLICATE RECOVERY

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211119 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 2K26010 | Laboratory ID: | 2K26010-BS1 |
| Preparation: | MET_3005A_LOW | Initial/Final: | 100 mL / 25 mL |

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Iron | 20.00 | 19.71 | 98.5 | 80 - 120 |
| Manganese | 10.00 | 10.17 | 102 | 80 - 120 |

# SERIAL DILUTION

## SW6010C

MPT-09-MW05S-20121109

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sequence: 2K33503
Preparation: MET_3005A_LOW

SDG: 1211119
Project: NAS Mayport CTO JM71
Laboratory ID: 2K26010-DUP2
Lab Source ID: 1211119-02
Initial/Final: 100 / 25

| Analyte | Initial Sample Result (I) ug/L | Serial Dilution Result (S) ug/L | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|
| Iron | 77.301 | ND | | | SW6010C | 10.00 |

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1211119

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/30/2011

| Analyte | Wave-length (nm) | Interelement Correction Factors for: | | | | |
|---|---|---|---|---|---|---|
| | | Al | Ca | Fe | Mg | Ag |
| Iron | 261.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.000032 | 0.0000000 | 0.0000000 |

Comments:

FORM XA-IN

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1211119

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/30/2011

| Analyte | Wave-length (nm) | Interelement Correction Factors for: As | B | Ba | Be | Cd |
|---|---|---|---|---|---|---|
| Iron | 261.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

Comments:

FORM XA-IN

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1211119

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/30/2011

| Analyte | Wave-length (nm) | Interelement Correction Factors for: | | | | |
|---|---|---|---|---|---|---|
| | | Co | Cr | Cu | K | Mn |
| Iron | 261.1 | 0.0000000 | -0.000701 | 0.0000000 | 0.0000000 | -0.000794 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

Comments:

FORM XA-IN

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1211119

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/30/2011

| Analyte | Wave-length (nm) | Interelement Correction Factors for: | | | | |
|---|---|---|---|---|---|---|
| | | Mo | Na | Ni | Pb | Sb |
| Iron | 261.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

Comments:

FORM XA-IN

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1211119

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/30/2011

| Analyte | Wave-length (nm) | Interelement Correction Factors for: | | | | |
|---|---|---|---|---|---|---|
| | | Se | Sn | Ti | Tl | V |
| Iron | 261.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

Comments:

FORM XA-IN

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1211119

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/30/2011

| Analyte | Wave-length (nm) | Interelement Correction Factors for: Zn | | | | |
|---|---|---|---|---|---|---|
| Iron | 261.1 | 0.0000000 | | | | |
| Manganese | 257.6 | 0.0000000 | | | | |

Comments:

FORM XA-IN

# ICP-AES AND ICP-MS LINEAR RANGES (QUARTERLY)

Lab Name: Empirical Laboratories, LLC

Client: Tetra Tech, Inc. (T010) SDG: 1211119

Project: NAS Mayport CTO JM71

ICP Instrument ID: ME-ICP Date: 12/30/2011

| Analyte | Integ. Time (Sec.) | Concentration ug/L | M |
|---|---|---|---|
| Iron | 15 | 500000 | P |
| Manganese | 15 | 10000 | P |

# PREPARATION BATCH SUMMARY

## SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1211119

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 2K26010 Batch Matrix: Water Preparation: MET_3005A_LOW

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-09-MW06S-20121109 | 1211119-01 | 11/26/12 09:18 | 100.00 | 25.00 |
| MPT-09-MW05S-20121109 | 1211119-02 | 11/26/12 09:18 | 100.00 | 25.00 |
| MPT-08-MW21S-20121109 | 1211119-03 | 11/26/12 09:18 | 100.00 | 25.00 |
| Blank | 2K26010-BLK1 | 11/26/12 09:18 | 100.00 | 25.00 |
| LCS | 2K26010-BS1 | 11/26/12 09:18 | 100.00 | 25.00 |
| MPT-08-MW21S-20121109 | 2K26010-DUP1 | 11/26/12 09:18 | 100.00 | 25.00 |
| MPT-09-MW05S-20121109 | 2K26010-DUP2 | 11/26/12 09:18 | 100.00 | 25.00 |
| MPT-09-MW05S-20121109 | 2K26010-MS1 | 11/26/12 09:18 | 100.00 | 25.00 |
| MPT-09-MW05S-20121109 | 2K26010-PS1 | 11/26/12 09:18 | 100.00 | 25.00 |

# ANALYSIS SEQUENCE SUMMARY

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211119 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 2K33503 | Instrument: | ME-ICP |
| Calibration: | 2335001 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Cal Standard | 2K33503-CAL1 | 11-29-12A-001 | 11/29/12 11:10 |
| Cal Standard | 2K33503-CAL2 | 11-29-12A-002 | 11/29/12 11:15 |
| Cal Standard | 2K33503-CAL3 | 11-29-12A-003 | 11/29/12 11:19 |
| Cal Standard | 2K33503-CAL4 | 11-29-12A-004 | 11/29/12 11:24 |
| Cal Standard | 2K33503-CAL5 | 11-29-12A-005 | 11/29/12 11:29 |
| Cal Standard | 2K33503-CAL6 | 11-29-12A-006 | 11/29/12 11:34 |
| Initial Cal Check | 2K33503-ICV1 | 11-29-12B-001 | 11/29/12 12:13 |
| Initial Cal Blank | 2K33503-ICB1 | 11-29-12B-002 | 11/29/12 12:20 |
| Instrument RL Check | 2K33503-CRL1 | 11-29-12B-003 | 11/29/12 12:25 |
| Interference Check A | 2K33503-IFA1 | 11-29-12B-007 | 11/29/12 12:44 |
| Interference Check B | 2K33503-IFB1 | 11-29-12B-008 | 11/29/12 12:49 |
| Calibration Check | 2K33503-CCV1 | 11-29-12B-010 | 11/29/12 13:00 |
| Calibration Blank | 2K33503-CCB1 | 11-29-12B-011 | 11/29/12 13:07 |
| Calibration Check | 2K33503-CCV3 | 11-29-12B-044 | 11/29/12 15:58 |
| Calibration Blank | 2K33503-CCB3 | 11-29-12B-045 | 11/29/12 16:05 |
| Blank | 2K26010-BLK1 | 11-29-12C-001 | 11/29/12 16:13 |
| LCS | 2K26010-BS1 | 11-29-12C-002 | 11/29/12 16:18 |
| Calibration Check | 2K33503-CCV4 | 11-29-12C-013 | 11/29/12 17:10 |
| Calibration Blank | 2K33503-CCB4 | 11-29-12C-014 | 11/29/12 17:19 |
| MPT-09-MW06S-20121109 | 1211119-01 | 11-29-12C-022 | 11/29/12 17:55 |
| MPT-09-MW05S-20121109 | 1211119-02 | 11-29-12C-023 | 11/29/12 17:59 |
| MPT-09-MW05S-20121109 | 2K26010-MS1 | 11-29-12C-024 | 11/29/12 18:04 |
| MPT-09-MW05S-20121109 | 2K26010-PS1 | 11-29-12C-025 | 11/29/12 18:09 |
| MPT-09-MW05S-20121109 | 2K26010-DUP2 | 11-29-12C-026 | 11/29/12 18:14 |
| MPT-08-MW21S-20121109 | 1211119-03 | 11-29-12C-027 | 11/29/12 18:19 |
| MPT-08-MW21S-20121109 | 2K26010-DUP1 | 11-29-12C-028 | 11/29/12 18:24 |
| Calibration Check | 2K33503-CCV5 | 11-29-12C-029 | 11/29/12 18:30 |
| Calibration Blank | 2K33503-CCB5 | 11-29-12C-030 | 11/29/12 18:39 |

# INITIAL CALIBRATION DATA

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211119 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 2335001 | Instrument: | ME-ICP |
| Matrix: | Water | Calibration Dates: | 11/29/12 11:10 11/29/12 11:45 |

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF |
| Aluminum | 0 | 0 | 5000 | 2.2724E-05 | 10000 | 2.2831E-05 | | | 500000 | 2.2166E-05 | | |
| Antimony | 0 | 0 | 100 | 0.000624 | 1000 | 6.6336E-04 | | | | | 10000 | 0.0006564 |
| Arsenic | 0 | 0 | 100 | 0.0003545 | 1000 | 0.000387 | | | | | 10000 | 3.7841E-04 |
| Barium | 0 | 0 | 50 | 0.011246 | 1000 | 0.010942 | 5000 | 0.0110902 | | | | |
| Beryllium | 0 | 0 | 100 | 0.00225 | 1000 | 0.002269 | | | | | 10000 | 0.0022032 |
| Boron | 0 | 0 | 50 | 0.0000148 | 1000 | 1.578E-05 | | | | | 5000 | 1.548E-05 |
| Cadmium | 0 | 0 | 100 | 0.017383 | 1000 | 0.017465 | | | | | 10000 | 0.016681 |
| Calcium | 0 | 0 | 1100 | 6.32091E-05 | 50000 | 5.9134E-05 | | | | | 10000 | |
| Chromium | 0 | 0 | 100 | 0.000048 | 1000 | 4.671E-05 | | | | | 10000 | 4.6049E-05 |
| Cobalt | 0 | 0 | 100 | 0.004876 | 1000 | 0.0047698 | | | | | 10000 | 0.0048324 |
| Copper | 0 | 0 | 100 | 0.0000691 | 1000 | 6.593E-05 | | | | | 10000 | 6.647E-05 |
| Iron | 0 | 0 | 5100 | 1.873922E-05 | 10000 | 1.804E-05 | | | 500000 | 1.74842E-05 | 10000 | |
| Lead | 0 | 0 | 100 | 0.0012561 | 1000 | 0.0012037 | | | | | 10000 | 0.0012355 |
| Magnesium | 0 | 0 | 5100 | | 50000 | 2.0866E-06 | | | 500000 | 2.0986E-06 | 10000 | |
| Manganese | 0 | 0 | 100 | 0.0002602 | 1000 | 0.0002506 | 10000 | 2.4669E-04 | | | 10000 | |
| Molybdenum | 0 | 0 | 100 | 0.0035513 | 1000 | 0.0036961 | | | | | 10000 | 0.0036435 |
| Nickel | 0 | 0 | 100 | 0.0033218 | 1000 | 0.0032863 | | | | | 10000 | 0.0033145 |
| Potassium | 0 | 0 | 1000 | 1.311E-05 | 10000 | 1.4033E-05 | | | | | | |
| Selenium | 0 | 0 | 100 | 0.0003415 | 1000 | 0.0003563 | | | | | 10000 | 3.4797E-04 |
| Silver | 0 | 0 | 20 | 0.000059 | 500 | 5.468E-05 | 2000 | 5.753E-05 | | | | |
| Sodium | 0 | 0 | 1000 | | 50000 | 5.0588E-05 | | | | | | |
| Thallium | 0 | 0 | 100 | 0.0007893 | 1000 | 7.5903E-04 | | | | | 10000 | 7.7811E-04 |
| Tin | 0 | 0 | 50 | 0.0012182 | 1000 | 0.0012907 | | | | | 5000 | 1.27742E-03 |
| Titanium | 0 | 0 | 100 | 0.0001542 | 1000 | 1.4863E-04 | | | | | 10000 | 1.5202E-04 |
| Vanadium | 0 | 0 | 100 | 0.0000412 | 1000 | 4.146E-05 | | | | | 10000 | 4.0675E-05 |
| Zinc | 0 | 0 | 100 | 0.0071903 | 1000 | 0.0073018 | | | | | 10000 | 0.0071633 |
| Strontium | 0 | 0 | 100 | 0.001502 | 1000 | 0.001504 | | | | | 10000 | 0.001487 |
| Lithium | 0 | 0 | 100 | 0.0000179 | 1000 | 1.826E-05 | | | | | 10000 | 1.8225E-05 |

# INITIAL CALIBRATION DATA (Continued)

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211119 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 2335001 | Instrument: | ME-ICP |
| Matrix: | Water | Calibration Dates: | 11/29/12 11:10 11/29/12 11:45 |

| Compound | Level 07 | | Level 08 | | Level 09 | | Level 10 | | Level 11 | | Level 12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF |
| Aluminum | | | | | | | | | | | | |
| Antimony | | | | | | | | | | | | |
| Arsenic | | | | | | | | | | | | |
| Barium | | | | | | | | | | | | |
| Beryllium | | | | | | | | | | | | |
| Boron | | | | | | | | | | | | |
| Cadmium | | | | | | | | | | | | |
| Calcium | 100000 | | 500000 | 5.6948E-05 | | | | | | | | |
| Chromium | | | | | | | | | | | | |
| Cobalt | | | | | | | | | | | | |
| Copper | | | | | | | | | | | | |
| Iron | | | | | | | | | | | | |
| Lead | | | | | | | | | | | | |
| Magnesium | | | 100000 | 2.009E-06 | | | | | | | | |
| Manganese | | | | | | | | | | | | |
| Molybdenum | | | | | | | | | | | | |
| Nickel | | | | | | | | | | | | |
| Potassium | 100000 | 1.4247E-05 | | | | | | | | | | |
| Selenium | | | | | | | | | | | | |
| Silver | | | | | | | | | | | | |
| Sodium | 100000 | 4.988E-05 | 500000 | 4.8724E-05 | | | | | | | | |
| Thallium | | | | | | | | | | | | |
| Tin | | | | | | | | | | | | |
| Titanium | | | | | | | | | | | | |
| Vanadium | | | | | | | | | | | | |
| Zinc | | | | | | | | | | | | |
| Strontium | | | | | | | | | | | | |
| Lithium | | | | | | | | | | | | |

# INITIAL CALIBRATION DATA (Continued)

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1211119 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 2335001 | Instrument: | ME-ICP |
| Matrix: | Water | Calibration Dates: | 11/29/12 11:10 11/29/12 11:45 |

| Compound | Mean RF | RF RSD | Mean RT | RT RSD | Linear r | Quad COD | LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 1.693025E-05 | 66.68891 | 5.934307 | 166.6606 | 0.9999997 | | 0.998 | |
| Antimony | 4.8594E-04 | 66.76003 | 5.328125 | 188.7479 | 0.999998 | | 0.998 | |
| Arsenic | 2.799775E-04 | 66.84733 | 8.1736 | 187.563 | 0.9999926 | | 0.998 | |
| Barium | 8.31955E-03 | 66.68336 | 2.412817 | 186.4852 | 0.9999916 | | 0.998 | |
| Beryllium | 1.68055E-03 | 66.68696 | 180.7652 | 199.406 | 0.9999916 | | 0.998 | |
| Boron | 1.1515E-05 | 66.76168 | 60.88726 | 196.9245 | 0.999982 | | 0.998 | |
| Cadmium | 1.288225E-02 | 66.72259 | 1.984433 | 162.421 | 0.9999796 | | 0.998 | |
| Calcium | 4.482277E-05 | 66.9175 | 4.208462 | 173.4901 | 0.9999861 | | 0.998 | |
| Chromium | 3.518975E-05 | 66.70641 | 7.480278 | 185.3852 | 0.9999984 | | 0.998 | |
| Cobalt | 3.61955E-03 | 66.67754 | 2.655707 | 173.9273 | 0.9999981 | | 0.998 | |
| Copper | 5.0375E-05 | 66.72331 | 4.850987 | 165.4955 | 0.9999988 | | 0.998 | |
| Iron | 1.356585E-05 | 66.77405 | 28.74907 | 196.0991 | 0.9999996 | | 0.998 | |
| Lead | 9.23825E-04 | 66.70748 | 16.30004 | 193.2618 | 0.9999927 | | 0.998 | |
| Magnesium | 1.54855E-06 | 66.71597 | 6.718135 | 196.6531 | 0.9999205 | | 0.998 | |
| Manganese | 1.893725E-04 | 66.73402 | 6.94882 | 180.8528 | 0.999998 | | 0.998 | |
| Molybdenum | 2.722725E-03 | 66.70289 | 15.08805 | 196.1641 | 0.9999975 | | 0.998 | |
| Nickel | 2.48065E-03 | 66.66952 | 4.601995 | 186.3771 | 0.9999993 | | 0.998 | |
| Potassium | 1.03475E-05 | 66.83693 | 6.298232 | 166.4927 | 0.9999994 | | 0.998 | |
| Selenium | 2.614425E-04 | 66.70692 | 22.20422 | 192.719 | 0.9999939 | | 0.998 | |
| Silver | 4.28025E-05 | 66.7982 | 4.67725 | 150.0972 | 0.9998207 | | 0.998 | |
| Sodium | 3.7298E-05 | 66.69848 | 13.75553 | 190.5974 | 0.9999756 | | 0.998 | |
| Thallium | 5.8161E-04 | 66.70128 | 23.85966 | 196.2626 | 0.9999935 | | 0.998 | |
| Tin | 9.4658E-04 | 66.74976 | 2.821277 | 175.1909 | 0.9999937 | | 0.998 | |
| Titanium | 1.137125E-04 | 66.69712 | 2.15702 | 175.0574 | 0.999994 | | 0.998 | |
| Vanadium | 3.083375E-05 | 66.67507 | 2.513983 | 137.8019 | 0.9999965 | | 0.998 | |
| Zinc | 5.41385E-03 | 66.67586 | 4.02456 | 187.7543 | 0.9999964 | | 0.998 | |
| Strontium | 1.12325E-03 | 66.67009 | 2.089925 | 117.9572 | 0.9999986 | | 0.998 | |
| Lithium | 1.359625E-05 | 66.67732 | 20.69422 | 188.8247 | 0.9999999 | | 0.998 | |

# PREPARATION BENCH SHEET

2K26010

**Empirical Laboratories, LLC**

**Printed: 12/2/2012 10:17:13AM**

**Instrument:**

**Matrix: Water** **Prepared using: METALS - MET_3005A_LOW** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1211089-07 | A | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211089-08 | A | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211089-09 | A | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211089-10 | A | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211089-11 | A | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211089-12 | A | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211089-13 | A | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211089-14 | A | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211089-15 | A | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211097-01 | I | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211097-01RE1 | I | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211097-02 | I | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211097-03 | I | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211097-04 | I | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211097-05 | I | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211097-06 | I | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211097-07 | I | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211097-08 | I | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | see versions |
| 1211119-01 | A | MET_ICP_LOW6010C_FULL | 11/26/2012 | 100 | 25 | | | | | NA | Fe and Mn only |
| 1211119-02 | A | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | Added for BatchQC in: 2K26010 |
| 1211119-02 | A | MET_ICP_LOW6010C_FULL | 11/26/2012 | 100 | 25 | | | | | NA | Fe only |
| 1211119-03 | A | MET_ICP_LOW6010B_FULL | 11/26/2012 | 100 | 25 | | | | | NA | Added for BatchQC in: 2K26010 |

# PREPARATION BENCH SHEET

2K26010

**Empirical Laboratories, LLC**

**Printed: 12/2/2012 10:17:13AM**

**Instrument:**

**Matrix: Water** **Prepared using: METALS - MET_3005A_LOW** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1211119-03 | A | MET_ICP_LOW6010C_FULL | 11/26/2012 | 100 | 25 | | | | | NA | Fe only |
| 2K26010-BLK1 | | QC | 11/26/2012 | 100 | 25 | | | | | NA | |
| 2K26010-BS1 | | QC | 11/26/2012 | 100 | 25 | 12J0554 | | 2000 | | NA | |
| 2K26010-DUP1 | | QC | 11/26/2012 | 100 | 25 | | 1211119-03 | | | NA | |
| 2K26010-DUP2 | | QC | 11/26/2012 | 100 | 25 | | 1211119-02 | | | NA | |
| 2K26010-MS1 | | QC | 11/26/2012 | 100 | 25 | 12J0556 | 1211119-02 | 25 | | NA | |
| 2K26010-PS1 | | QC | 11/26/2012 | 100 | 25 | 12J0556 | 1211119-02 | 25 | | NA | |

**Reagents Used:**

| Standard | Description |
|---|---|
| 12K0197 | Nitric acid |
| 12K0720 | Hydrochloric Acid |

# ERRATA SHEET

The Empirical Laboratories, LLC *ANALYTICAL DATA PACKAGE* SDG # 1303017 dated March 22, 2013, and the included chain-of-custody forms show the sample_id for monitoring well MPT-02-MW35RI as MPT-02-MW35I-030113. The correct sample_id is MPT-02-MW35RI-030113.

This Errata Sheet was prepared by Tetra Tech, Inc. on May 16, 2013.

*ANALYTICAL DATA PACKAGE*
SDG # 1303017

**PROJECT NAME:** NAS MAYPORT CTO JM71
**PROJECT LOCATION:** JACKSONVILLE, FL

**SUBMITTAL TO:**
Vanessa Good
Tetra Tech, Inc.
Foster Plaza 7
661 Andersen Drive
Pittsburgh, PA 15220

**SUBMITTAL BY:**
Empirical Laboratories, LLC (EL)
621 Mainstream Drive, Suite 270
Nashville, TN 37228
Tel (615)345-1115
Fax (866)417-0548

**LABORATORY CONTACT PERSON:**
Project Manager: Brian Richard
Tel (615)345-1115
Fax (866)417-0548
Email: brichard@empirlabs.com

Original Report Date: March 22, 2013
Report Revision #: N/A
Revision Date: N/A
Total # of Pages: 169

**THIS DOCUMENT MEETS DoD QSM 4.2 STANDARDS**

*The results relate to only the samples associated with the referenced SDG and the submitted data has been produced in accordance with laboratory procedures. The Laboratory's Technical Lab Director, Mr. Rick Davis, is responsible for the final data produced and reported. His signature is listed at the end of the Case Narrative within the Analytical Data Package. If applicable to this report package, details on report revisions and the information on subcontracted analysis are listed in the package Case Narrative. This report shall not be reproduced, except in full, without the written approval of Empirical Laboratories, LLC.*

**L-A-B Accredited Certificate Number L2226**

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## Sample Delivery Group Case Narrative

### Receipt Information

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. There were no subcontracted analyses for this SDG.

Did not receive sample MPT-RUNWAY23-MW01S-022813 but did receive 2 set of MPT-DUP01-022813. One set of MPT-DUP01-022813 was logged in as MPT-RUNWAY23-MW01S-022813 based on the times on the sample containers.

### Changes to the Revision

This is an original submittal of the final report package.

### Analytical Information

All samples were prepped (where applicable) and analyzed within the standard allowed holding times, unless noted within the exceptions listed below. The laboratory analyzed all samples within the program and method guidelines. Sample prep and dilution information is provided within the final results report and at the beginning of each form set. The following information is provided specific to individual methods:

### Chromatographic Flags for Manual Integration:

The following letters are used to denote manual integrations on the laboratory's raw data in association with chromatographic integrations:

**A:** The peak was manually integrated as it was not integrated in the original chromatogram.
**B:** The peak was manually integrated due to resolution or coelution issues in the original chromatogram.
**C:** The peak was manually integrated to correct the baseline from the original chromatogram.
**D:** The peak was manually integrated to identify the correct peak as the wrong peak was identified in the original chromatogram.
**E:** The peak was manually integrated to include the entire peak as the original chromatogram only integrated part of the peak.

**SW6010C:**

The following compounds are qualified with an M to indicate that the DL was raised due to interference:
**Lead** in 1303017-02

The following continuing calibration verifications exceeded criteria:
**3C07103-CCV3** with a positive bias for Manganese
**3C07103-CCV5** with a positive bias for Iron
**3C07313-CCV7** with a positive bias for Chromium, Iron, and Zinc
**3C07313-CCV8** with a positive bias for Iron and Zinc

The following matrix spikes exceeded criteria:
**3C06507-MS1 (1303017-03)** with a positive bias for Antimony, Arsenic, and Silver and a negative bias for Thallium

The following post spikes exceeded criteria:
**3C06507-PS1 (1303017-03)** with a positive bias for Antimony, Arsenic, and Silver and a negative bias for Thallium

The following duplicates exceeded relative percent difference criteria:
**3C06507-DUP1 (1303017-03)** for Iron

The following serial dilution exceeded criteria:
**3C06507-DUP2 (1303017-03)** for Manganese

No additional anomalies or deviations are noted and the proper data qualifiers have been applied.

**Wet Chemistry:**

No anomalies or deviations are noted.

**Data Qualifiers**
As applicable and where required, the following general qualifiers are associated with the sample results. Additional qualifiers will be specified within the reporting sections of the data package or within the body of the Case Narrative.

## Analytical Report Terms and Qualifiers

**DL:** The detection limit (DL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The DL is supported by the method detection limit (MDL) which is determined from analysis of a sample containing the analyte in a given matrix.

**LOD:** The Limit of Detection is an estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory-dependent. This definition is further clarified in the DoD QSM 4.2 revisions as the smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.

**LOQ:** The Limit of Quantitation is the minimum level, concentration, or quantity of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. This term is further clarified within the DoD QSM 4.2 as the lowest concentration that produces a quantitative result within specified limits of precision and bias.

*****: Exceeding quality control criteria are associated with the reported result.

**B**: The presence of a "B" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the correct sample result might be less than the reported result and, perhaps, zero. **For Florida DEP reports this qualifier is "V".**

**D:** When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".

**E:** The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with an "E". Usually the sample will be rerun at a dilution to quantitate the flagged compound. **For Florida DEP reports this qualifier is "L".**

**H1**: The result was analyzed outside of the EPA recommended holding time.

**H2**: The result was extracted outside of the EPA recommended holding time.

**H3**: The sample for this analyte was received outside of the EPA recommended holding time.

**J:** The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The mass spectral data pass the identification criteria showing that the compound is present, but the calculated result is less than the LOQ. One should feel confident that the result is greater than zero and less than the LOQ. **For Florida DEP reports this qualifier is "I".**

**M**: Indicates that the sample matrix interfered with the quantitation of the analyte. In dual column analysis the result is reported from the column with the lower concentration. In inorganics, it indicates that the parameters DL/LOD/LOQ have been raised.

**N:** The MS/MSD accuracy and/or precision are outside criteria. The predigested spike recovery is not within control limits for the associated parameter.

**P**: The associated numerical value is an estimated quantity. There is greater than a 40% difference between the two GC columns for the detected concentrations. The higher of the two values is reported unless matrix interference is obvious or for HPLC analysis where the primary column is reported.

**Q**: The relative percent difference (RPD) and/or percent recovery exceeded limits in the associated Blank Spike and/or Blank Spike Duplicate.

**S**: The associated internal standard exceeded criteria.

**U**: The presence of a "U" indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the DL.

**X**: The parameter shows a potential positive bias on a reported concentration due to an ICV or CCV exceeding the upper control limit on the high side.

**Y**: The parameter shows a potential negative bias on a reported concentration due to an ICV or CCV exceeding the lower control limit on the low side.

**Z**: The parameter shows lack of confirmation/detection, which may be due to a negative bias in the ICV or CCV which exceeds the lower control limit.

**LIMS Definitions / Naming Conventions:**

The following are general naming conventions that are used throughout the laboratory; however, on a method by method basis, there are additional QAQC items that are named in a consistent format.

**BLK**: LIMS assigns a unique identifier to the Method Blank by naming it as the letters BLK appended to the Batch ID. A Method Blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The Method Blank is used to assess for possible contamination during preparation and/or analysis steps. Method Blanks within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally.

**BS**: LIMS assigns a unique identifier to the Blank Spike by naming it as the letters BS appended to the Batch ID. The Blank Spike or Lab Control Sample is a controlled analyte-free matrix, which is spiked with known and verified concentrations of target analytes. Spiking concentrations can be referenced in the method SOP. The BS is used to evaluate the viability of analytes taken through the entire prep (when applicable) and analytical process. Blank Spikes within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally. A duplicate Blank Spike will be designated as a BSD.

**MS**: The LIMS assigns each Client sample with a unique identifier. The Matrix Spike is designated with a MS at the end of the sample's unique identifier. The Matrix Spike sample is used to assess the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. A duplicate Matrix Spike will be designated as a MSD.

**IDs**: The LIMS assigns each Client sample with a unique identifier. The letter "RE" may potentially be appended to the end of the LIMS Sample ID. And "**RE"** implies that the sample was either re-prepped, re-analyzed straight, or re-analyzed at a dilution. Subsequent re-analysis for the sample will be appended with a numerical value beginning with 1 that will increase incrementally. Eg: RE1, RE2, RE3, etc.

**Statement of Data Authenticity:**
I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in this Case Narrative, as verified by my signature below. During absences, the Data Quality Manager, Technical Directors or Project Managers are authorized to sign this Statement of Data Authenticity.

_____
Mr. Rick D. Davis
Laboratory Technical Director / VP Operations

# Sample Receipt Information

1303017

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER № 2693 | PAGE 1 OF 2

| | | | | |
|---|---|---|---|---|
| PROJECT NO: 112603797 | FACILITY: NAVSTA Mayport | PROJECT MANAGER: Ben Marshall | PHONE NUMBER: 904 636 6125 | LABORATORY NAME AND CONTACT: Empirical / Brian Richard |
| SAMPLERS (SIGNATURE) | | FIELD OPERATIONS LEADER: J. A. Kron | PHONE NUMBER: 904 699 7473 | ADDRESS: 621 Mainstream Drive Suite 270 |
| | | CARRIER/WAYBILL NUMBER | | CITY, STATE: Nashville, TN 37228 |

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P P P

PRESERVATIVE USED: HNO3 — H2SO4

TYPE OF ANALYSIS: Total Metals (6010C) * | Ammonia (300.0) Sulfate (SM4500NH3B G)

| DATE YEAR 2013 | TIME | SAMPLE ID | LOCATION ID | TOP DEPTH (FT) | BOTTOM DEPTH (FT) | MATRIX (GW, SO, SW, SD, QC, ETC.) | COLLECTION METHOD GRAB (G) COMP (C) | No. OF CONTAINERS | Total Metals (6010C) * | Ammonia (300.0) | Sulfate (SM4500NH3B G) | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2/28 | 0926 | MPT-Runway23-MW01S-022813 | | | | GW | G | 3 | 1 | 1 | 1 | - | 01 | | | | Cool to 4°C |
| 2/28 | 0000 | MPT-DUP01-022813 | | | | GW | G | 3 | 1 | 1 | 1 | - | 02 | | | | |
| 2/28 | 1040 | MPT-2039-MW01I-022813 | | | | GW | G | 3 | 3 | 3 | 3 | - | 03 | | | | MS/MSD |
| 2/28 | 1155 | MPT-02-MW17I-022813 | | | | GW | G | 3 | 1 | 1 | 1 | - | 04 | | | | |
| 2/28 | 0910 | MPT-02-MW17S-022813 | | | | GW | G | 3 | 1 | 1 | 1 | - | 05 | | | | |
| 2/28 | 1350 | MPT-AC-GW-OPW02I-022813 | | | | GW | G | 3 | 1 | 1 | 1 | - | 06 | | | | |
| 2/28 | 1400 | MPT-AC-GW-OPW02S-022813 | | | | GW | G | 3 | 1 | 1 | 1 | - | 07 | | | | |
| 2/28 | 1500 | MPT-459-MW01I-022813 | | | | GW | G | 3 | 1 | 1 | 1 | - | 08 | | | | |
| 2/28 | 1530 | MPT-1358-MW01S-022813 | | | | GW | G | 3 | 1 | 1 | 1 | - | 09 | | | | |
| 2/28 | 1620 | MPT-2050-MW01S-022813 | | | | GW | G | 3 | 1 | 1 | 1 | - | 10 | | | | |
| 2/28 | 0000 | MPT-DUP02-022813 | | | | GW | G | 3 | 1 | 1 | 1 | - | 11 | | | | |
| 3/1 | 1125 | MPT-08-MW05S-030113 | | | | GW | G | 3 | 1 | 1 | 1 | - | 12 | | | | |
| 3/1 | 1115 | MPT-08-MW05I-030113 | | | | GW | G | 3 | 1 | 1 | 1 | - | 13 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 1. RELINQUISHED BY | DATE 3/4/13 | TIME 1600 | 1. RECEIVED BY | DATE | TIME |
| 2. RELINQUISHED BY | DATE | TIME | 2. RECEIVED BY | DATE | TIME |
| 3. RELINQUISHED BY | DATE | TIME | 3. RECEIVED BY | DATE 3/5/13 | TIME 0835 |

COMMENTS
*See attached list

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

1303017

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER № 2694 | PAGE 2 OF 2

| | | | | |
|---|---|---|---|---|
| PROJECT NO: 112G03797 | FACILITY: NAVSTA Mayport | PROJECT MANAGER Ben Marshall | PHONE NUMBER 904 636 6125 | LABORATORY NAME AND CONTACT: Empirical / Brian Richard |
| SAMPLERS (SIGNATURE) | | FIELD OPERATIONS LEADER Jeff Kroll | PHONE NUMBER 904 699 7423 | ADDRESS 621 Mainstream Drive Suite 270 |
| | | CARRIER/WAYBILL NUMBER | | CITY, STATE Nashville TN 37228 |

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P P P

PRESERVATIVE USED: HNO3 — H2SO4

TYPE OF ANALYSIS

| DATE YEAR 2013 | TIME | SAMPLE ID | LOCATION ID | TOP DEPTH (FT) | BOTTOM DEPTH (FT) | MATRIX (GW, SO, SW, SD, QC, ETC.) | COLLECTION METHOD GRAB (G) COMP (C) | No. OF CONTAINERS | Total Metals * | Cadmium (3010 C) | Ammonia (350.1) Sulfate (SM4500 NH 3 B E) | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3/1 | 1250 | MPT-02-MW35I-030113 | | | | GW | G | 3 | 1 | 1 | 1 | — | 14 | | | | cool to 4°C |
| 3/1 | 1300 | MPT-02-MW35RS-030113 | | | | GW | G | 3 | 1 | 1 | 1 | — | 15 | | | | |
| 3/1 | 1350 | MPT-53-DPWR015-030113 | | | | GW | G | 3 | 1 | 1 | 1 | — | 16 | | | | |
| 3/1 | 1410 | MPT-2062-MW01I-030113 | | | | GW | G | 3 | 1 | 1 | 1 | — | 17 | | | | |
| 3/1 | 1600 | MPT-Rinsate01-030113 | | | | QC | G | 3 | 1 | 1 | 1 | — | 18 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 1. RELINQUISHED BY | DATE 3/4/13 | TIME 1600 | 1. RECEIVED BY | DATE | TIME |
| 2. RELINQUISHED BY | DATE | TIME | 2. RECEIVED BY | DATE | TIME |
| 3. RELINQUISHED BY | DATE | TIME | 3. RECEIVED BY | DATE 3/5/13 | TIME 0835 |

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

1303017

## 8.3.2 Analytical SOP Requirements and Analytical Services Table

(UFP-QAPP Manual Section 3.1.1 – Worksheets #19 and 30)

**Empirical point of contact, e-mail address, and phone number:** Brian Richard, brichard@empirlabs.com, 615-345-1113, Ext. 249
**Address:** Empirical Laboratories, LLC, 621 Mainstream Drive, Suite 270 Nashville, TN 37228
**Data Package Turnaround time:** 21 days
**Tentative Sampling Dates:** August 2012 and November 2012

| Matrix | Analytical Group | Analytical and Preparation Method/ SOP Reference [1] | Containers (number, size, and type) | Sample Volume (units) | Preservation Requirements (chemical, temperature, light protected) | Maximum Holding Time (preparation/ analysis) |
|---|---|---|---|---|---|---|
| Groundwater | Metals | SW-846 3005A/ 6010C Empirical SOP-100/105 | One 500-milliliter (mL) plastic bottle | 50 mL | Nitric acid ($HNO_3$) to pH <2; Cool to above freezing and ≤ 6 °C | 180 days to analysis |
| | Ammonia | SM4500 NH3BG/ Empirical SOP-176 | One 250 mL plastic bottle | 50 mL | Sulfuric acid ($H_2SO_4$) to pH <2; Cool to above freezing and ≤ 6°C | 28 days to analysis |
| | Sulfate | USEPA 300.0/ Empirical SOP-145 | One 500 mL plastic bottle | 5 mL for each analyte | Cool to above freezing and ≤ 6 °C | 28 days to analysis |

**Notes:**
1 Specify the appropriate reference letter or number from the Analytical SOP References Table (Section 10).

## 8.3.3 Field Quality Control Sample Summary Table

(UFP-QAPP Manual Section 3.1.1 – Worksheet #20)

| Matrix | Analytical Group | Number of Sampling Locations | Number of Field Duplicates | Number of MS/MSDs[1] | Number of Field Blanks | Number of Equipment Rinsate Blanks | Number of VOC Trip Blanks | Total Number of Samples to Lab |
|---|---|---|---|---|---|---|---|---|
| Groundwater – First quarterly event | Metals, sulfate, and ammonia | 15 | 2 | 1/1 | 0 | 1 | N/A | 18 |
| Groundwater – Second quarterly event | Metals, sulfate, and ammonia | 15 | 2 | 1/1 | 0 | 1 | N/A | 18 |

1 Although MS/MSD samples are not typically considered field QC samples, they are included here because location determination is often established in the field. MS/MSD samples are not included in the total number of samples sent to the laboratory.

13O3017

## 9 -- Reference Limits and Evaluation Tables

(UFP-QAPP Manual Section 2.8.1 – Worksheet # 15)

**Matrix: Groundwater**
**Analytical: Metals**

| Analyte | CAS Number | PAL (µg/L) | PAL Reference | PQLGs (µg/L) | Empirical LOQ (µg/L) | Empirical LOD (µg/L) | Empirical DL (µg/L) |
|---|---|---|---|---|---|---|---|
| ALUMINUM | 7429-90-5 | 200 | FDEP GCTL | 67 | 50 | 25 | 12.5 |
| ANTIMONY | 7440-36-0 | 6 | FDEP GCTL | 2.0 | 2.5 | 2 | 1.25 |
| ARSENIC | 7440-38-2 | 10 | FDEP GCTL | 3.3 | 2.5 | 1.5 | 0.75 |
| CHROMIUM | 7440-47-3 | 100 | FDEP GCTL | 33 | 2.5 | 1 | 0.5 |
| IRON | 7439-89-6 | 300 | FDEP GCTL | 100 | 25 | 15 | 7.5 |
| LEAD | 7439-92-1 | 15 | FDEP GCTL | 5.0 | 0.75 | 0.75 | 0.375 |
| MANGANESE | 7439-96-5 | 50 | FDEP GCTL | 17 | 3.75 | 1.5 | 0.75 |
| SILVER | 7440-22-4 | 100 | FDEP GCTL | 33 | 2.5 | 0.5 | 0.25 |
| THALLIUM | 7440-28-0 | 2 | FDEP GCTL | 0.67 | 2.0 | 1 | 0.75 |
| VANADIUM | 7440-62-2 | 49 | FDEP GCTL | 16 | 3.125 | 2.5 | 1.25 |
| ZINC | 7440-66-6 | 5,000 | FDEP GCTL | 1,700 | 5.0 | 2.5 | 1.25 |

**Matrix: Groundwater**
**Analytical: Miscellaneous**

| Analyte | CAS Number | PAL (µg/L) | PAL Reference | PQLGs (µg/L) | Empirical LOQ (µg/L) | Empirical LOD (µg/L) | Empirical DL (µg/L) |
|---|---|---|---|---|---|---|---|
| AMMONIA | 7664-41-7 | 2800 | FDEP GCTL | 930 | 300 | 150 | 110 |
| SULFATE | 14808-79-8 | 250000 | FDEP GCTL | 8300 | 2500 | 1000 | 330 |

CAS = Chemical Abstracts Number
PQLG = Practical Quantitation Limit Goal

The PAL references for groundwater are as follows: FDEP GCTL: Groundwater Contaminant Target Level, F.A.C. 62-777 GW-Table I (FDEP, 2005).

Please note that data will be reported at the LOQ and DL with non-detected data being the DL followed by a "U" qualifier as per Florida state regulations. The LOD is presented for completeness and compliance with the DoD Quality Systems Manual for Environmental Laboratories (DoD QSM), Version 4.2.

**EMPIRICAL LABORATORIES**
**COOLER RECEIPT FORM**

Cooler Received/Opened On: 03/05/13 @ 0835 Workorder# 1303017

1. Tracking # 3346 (last 4 digits, FedEx)

   Courier: ___FEDEX

2. Temperature of rep. sample or temp blank when opened: 1.1 °C + *correction factor (+ 0.2)* = 1.3 °C

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA

4. Were custody seals on outside of cooler? YES NO NA

   If yes, how many and where: 2-FRONT & BACK

5. Were the seals intact, signed, and dated correctly? YES NO NA

6. Were custody papers inside cooler? YES NO NA

I certify that I opened the cooler and answered questions 1-6 (initial) _____

7. Were custody seals on containers: YES NO and Intact YES NO NA

   Were these signed and dated correctly? YES NO NA

8. Packing material used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES NO NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES NO NA

12. Did all container labels and tags agree with custody papers? YES NO NA *

13. a. Were VOA vials received? YES NO NA

    b. Was there any observable headspace present in any VOA vial? YES NO NA

14. Was there a Trip Blank in this cooler? YES NO NA If multiple coolers, sequence # 1

I certify that I unloaded the cooler and answered questions 7-14 (initial) _____

15. a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES NO NA

    b. Did the bottle labels indicate that the correct preservatives were used YES NO NA

16. Was residual chlorine present? YES NO NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) _____

17. Were custody papers properly filled out (ink, signed, etc)? YES NO NA

18. Did you sign the custody papers in the appropriate place? YES NO NA

19. Were correct containers used for the analysis requested? YES NO NA

20. Was sufficient amount of sample sent in each container? YES NO NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) _____

I certify that I attached a label with the unique LIMS number to each container (initial) _____

I certify that I have performed a second check of the LIMS information against the COC to confirm accuracy (initial) _____

21. Were there Non-Conformance issues at login? YES NO Was a NCR generated? YES NO #_____

**Additional Details:** * DID NOT RECEIVE "MPT-RUNWAY23-MW019-022813" BUT RECEIVED 2 SETS OF "MPT-DUP01-022813."

**EMPIRICAL LABORATORIES**
**COOLER RECEIPT FORM**

Cooler Received/Opened On: 03/05/13 @ 0835 Workorder# 1303017

1. Tracking # 9922 (last 4 digits, FedEx)

   Courier: ___FEDEX

2. Temperature of rep. sample or temp blank when opened: 3.3 °C + *correction factor (+ 0.2)* = 3.5 °C

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES (NO) NA

4. Were custody seals on outside of cooler? (YES) NO NA

   If yes, how many and where: 2 - FRONT; BACK

5. Were the seals intact, signed, and dated correctly? (YES) NO NA

6. Were custody papers inside cooler? YES (NO) NA

I certify that I opened the cooler and answered questions 1-6 (initial) BW

7. Were custody seals on containers: YES (NO) and Intact YES NO (NA)

   Were these signed and dated correctly? YES NO (NA)

8. Packing material used? Bubblewrap (Plastic bag) Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: (Ice) Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? (YES) NO NA

11. Were all container labels complete (#, date, signed, pres., etc)? (YES) NO NA

12. Did all container labels and tags agree with custody papers? (YES) NO NA

13. a. Were VOA vials received? YES (NO) NA

    b. Was there any observable headspace present in any VOA vial? YES NO (NA)

14. Was there a Trip Blank in this cooler? YES NO (NA) If multiple coolers, sequence # 2

I certify that I unloaded the cooler and answered questions 7-14 (initial) [illegible]

15. a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? (YES) NO NA

    b. Did the bottle labels indicate that the correct preservatives were used (YES) NO NA

16. Was residual chlorine present? YES NO (NA)

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) [illegible]

17. Were custody papers properly filled out (ink, signed, etc)? (YES) NO NA

18. Did you sign the custody papers in the appropriate place? (YES) NO NA

19. Were correct containers used for the analysis requested? (YES) NO NA

20. Was sufficient amount of sample sent in each container? (YES) NO NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) [illegible]

I certify that I attached a label with the unique LIMS number to each container (initial) [illegible]

I certify that I have performed a second check of the LIMS information against the COC to confirm accuracy (initial) [illegible]

21. Were there Non-Conformance Issues at login? YES (NO) Was a NCR generated? YES (NO) #_____

**Additional Details:**

WORK ORDER

Printed: 3/8/2013 6:48:03AM

# 1303017

## Empirical Laboratories, LLC

**Client:** Tetra Tech, Inc. (T010)
**Project:** NAS Mayport CTO JM71
**Project Manager:** Brian Richard
**Project Number:** TET_CTOJM71

**Report To:**
Tetra Tech, Inc. (T010)
Vanessa Good
Foster Plaza 7 661 Andersen Drive
Pittsburgh, PA 15220
Phone: (412) 921-7090
Fax: (412) 921-4040

**Invoice To:**
Tetra Tech, Inc. (T010)
Accounts Payable
661 Andersen Drive
Pittsburgh, PA 15220-2745
Phone :(412) 921-8182
Fax: (412) 921-4040

Due to Client: 03/26/2013 16:00 *This is the projected due date to the client, at the time of receipt, and is for report delivery via upload, and/or email, and/or shipment to meet TAT as setup by project*

Received By: Benjamin C. Wright
Date Received: 03/05/2013 08:35
Logged In By: Benjamin C. Wright
Date Logged In: 03/05/2013 10:38

Samples Received at: **1.3°C**

| | | | |
|---|---|---|---|
| Custody Seals | Yes | Received On Ice | Yes |
| Containers Intact | Yes | | |
| COC/Labels Agree | Yes | | |
| Preservation Confirme | Yes | | |

| Method | Test Code | Due | TAT | Expires | Comments |
|---|---|---|---|---|---|
| **1303017-01 MPT-RUNWAY23-MW01S-022813 [Water] Sampled 02/28/2013 09:26 Eastern 'Client Sample'** | | | | | **Labeled as MPT-DUP01-022813** |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/28/2013 08:26 | |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/27/2013 08:26 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/28/2013 08:26 | SO4 only |
| **1303017-02 MPT-DUP01-022813 [Water] Sampled 02/28/2013 00:00 Eastern 'Field Duplicate'** | | | | | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/27/2013 23:00 | SO4 only |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/27/2013 23:00 | |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/26/2013 23:00 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| **1303017-03 MPT-2039-MW01I-022813 [Water] Sampled 02/28/2013 10:40 Eastern 'Client Sample'** | | | | | **MS/MSD.** |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/27/2013 09:40 | MS/MSD.MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/28/2013 09:40 | MS/MSD.SO4 only |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/28/2013 09:40 | MS/MSD. |
| **1303017-04 MPT-02-MW17I-022813 [Water] Sampled 02/28/2013 11:55 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/27/2013 10:55 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/28/2013 10:55 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/28/2013 10:55 | SO4 only |

# 1303017

## Empirical Laboratories, LLC

**Client:** Tetra Tech, Inc. (T010) **Project Manager:** Brian Richard
**Project:** NAS Mayport CTO JM71 **Project Number:** TET_CTOJM71

| Method | Test Code | Due | TAT | Expires | Comments |
|---|---|---|---|---|---|
| **1303017-05 MPT-02-MW17S-022813 [Water] Sampled 02/28/2013 12:10 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/27/2013 11:10 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/28/2013 11:10 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/28/2013 11:10 | SO4 only |
| **1303017-06 MPT-AC-GW-DPW02I-022813 [Water] Sampled 02/28/2013 13:50 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/27/2013 12:50 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/28/2013 12:50 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/28/2013 12:50 | SO4 only |
| **1303017-07 MPT-AC-GW-DPW02S-022813 [Water] Sampled 02/28/2013 14:00 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/27/2013 13:00 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/28/2013 13:00 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/28/2013 13:00 | SO4 only |
| **1303017-08 MPT-459-MW01I-022813 [Water] Sampled 02/28/2013 15:00 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/27/2013 14:00 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/28/2013 14:00 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/28/2013 14:00 | SO4 only |
| **1303017-09 MPT-1358-MW01S-022813 [Water] Sampled 02/28/2013 15:30 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/27/2013 14:30 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/28/2013 14:30 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/28/2013 14:30 | SO4 only |
| **1303017-10 MPT-2050-MW01S-022813 [Water] Sampled 02/28/2013 16:20 Eastern 'Client Sample'** | | | | | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/28/2013 15:20 | SO4 only |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/27/2013 15:20 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/28/2013 15:20 | |
| **1303017-11 MPT-DUP02-022813 [Water] Sampled 02/28/2013 00:00 Eastern 'Field Duplicate'** | | | | | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/27/2013 23:00 | SO4 only |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/27/2013 23:00 | |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/26/2013 23:00 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |

# 1303017

## Empirical Laboratories, LLC

**Client:** Tetra Tech, Inc. (T010)
**Project:** NAS Mayport CTO JM71
**Project Manager:** Brian Richard
**Project Number:** TET_CTOJM71

| Method | Test Code | Due | TAT | Expires | Comments |
|---|---|---|---|---|---|
| **1303017-12 MPT-08-MW05S-030113 [Water] Sampled 03/01/2013 11:25 Eastern 'Client Sample'** | | | | | |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/29/2013 10:25 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/29/2013 10:25 | SO4 only |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/28/2013 10:25 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| **1303017-13 MPT-08-MW05I-030113 [Water] Sampled 03/01/2013 11:15 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/28/2013 10:15 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/29/2013 10:15 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/29/2013 10:15 | SO4 only |
| **1303017-14 MPT-02-MW35I-030113 [Water] Sampled 03/01/2013 12:50 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/28/2013 11:50 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/29/2013 11:50 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/29/2013 11:50 | SO4 only |
| **1303017-15 MPT-02-MW35RS-030113 [Water] Sampled 03/01/2013 13:00 Eastern 'Client Sample'** | | | | | |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/29/2013 12:00 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/29/2013 12:00 | SO4 only |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/28/2013 12:00 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| **1303017-16 MPT-53-DPWR01S-030113 [Water] Sampled 03/01/2013 13:50 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/28/2013 12:50 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/29/2013 12:50 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/29/2013 12:50 | SO4 only |
| **1303017-17 MPT-2062-MW01I-030113 [Water] Sampled 03/01/2013 14:10 Eastern 'Client Sample'** | | | | | |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/29/2013 13:10 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/29/2013 13:10 | SO4 only |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/28/2013 13:10 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| **1303017-18 MPT-RINSATE01-030113 [Water] Sampled 03/01/2013 16:00 Eastern 'Client Sample'** | | | | | |
| SW6010C | MET_ICP_LOW6010C_FULL | 03/21/2013 14:00 | 15 | 08/28/2013 15:00 | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| SM4500NH3BG | WC_AMMONIA_PHENATE_4500NH3BG | 03/21/2013 14:00 | 15 | 03/29/2013 15:00 | |
| E300.0 | WC_ANIONS_300.0 (Regular) | 03/21/2013 14:00 | 15 | 03/29/2013 15:00 | SO4 only |

Reviewed By

Date

# Sample Delivery Group Assignment Form

**CLIENT: Tetra Tech, Inc. (T010)**
**PROJECT NAME: NAS Mayport CTO JM71**
**SDG #: 1303017**

**QC LEVEL: Level III**
**Report Due: 3/26/2013**
**Client Sample Count: 16**

| Sample Type | Sampled | Received | Lab ID | Client ID | Report Matrix | E300.0 | SM4500NH3BG | SW6010C |
|---|---|---|---|---|---|---|---|---|
| Client Sample | 2/28/2013 | 3/5/2013 | 1303017-01 | MPT-RUNWAY23-MW01S-022813 | Water | X | X | X |
| Field Duplicate | 2/28/2013 | 3/5/2013 | 1303017-02 | MPT-DUP01-022813 | Water | X | X | X |
| Client Sample | 2/28/2013 | 3/5/2013 | 1303017-03 | MPT-2039-MW01I-022813 | Water | MS/MSD. | MS/MSD. | MS/MSD. |
| Client Sample | 2/28/2013 | 3/5/2013 | 1303017-04 | MPT-02-MW17I-022813 | Water | X | X | X |
| Client Sample | 2/28/2013 | 3/5/2013 | 1303017-05 | MPT-02-MW17S-022813 | Water | X | X | X |
| Client Sample | 2/28/2013 | 3/5/2013 | 1303017-06 | MPT-AC-GW-DPW02I-022813 | Water | X | X | X |
| Client Sample | 2/28/2013 | 3/5/2013 | 1303017-07 | MPT-AC-GW-DPW02S-022813 | Water | X | X | X |
| Client Sample | 2/28/2013 | 3/5/2013 | 1303017-08 | MPT-459-MW01I-022813 | Water | X | X | X |
| Client Sample | 2/28/2013 | 3/5/2013 | 1303017-09 | MPT-1358-MW01S-022813 | Water | X | X | X |
| Client Sample | 2/28/2013 | 3/5/2013 | 1303017-10 | MPT-2050-MW01S-022813 | Water | X | X | X |
| Field Duplicate | 2/28/2013 | 3/5/2013 | 1303017-11 | MPT-DUP02-022813 | Water | X | X | X |
| Client Sample | 3/1/2013 | 3/5/2013 | 1303017-12 | MPT-08-MW05S-030113 | Water | X | X | X |
| Client Sample | 3/1/2013 | 3/5/2013 | 1303017-13 | MPT-08-MW05I-030113 | Water | X | X | X |
| Client Sample | 3/1/2013 | 3/5/2013 | 1303017-14 | MPT-02-MW35I-030113 | Water | X | X | X |
| Client Sample | 3/1/2013 | 3/5/2013 | 1303017-15 | MPT-02-MW35RS-030113 | Water | X | X | X |
| Client Sample | 3/1/2013 | 3/5/2013 | 1303017-16 | MPT-53-DPWR01S-030113 | Water | X | X | X |
| Client Sample | 3/1/2013 | 3/5/2013 | 1303017-17 | MPT-2062-MW01I-030113 | Water | X | X | X |
| Client Sample | 3/1/2013 | 3/5/2013 | 1303017-18 | MPT-RINSATE01-030113 | Water | X | X | X |

# Data for SW6010C Forms

# Sample Extraction Data

**Prep Method: MET_3005A_LOW-SW6010C**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1303017-01 [MPT-RUNWAY23-MW01S-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/06/13 |
| 1303017-02 [MPT-DUP01-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/06/13 |
| 1303017-03 [MPT-2039-MW01I-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/06/13 |
| 1303017-03RE1 [MPT-2039-MW01I-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 25.00 | | | 03/06/13 |
| 1303017-04 [MPT-02-MW17I-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/06/13 |
| 1303017-04RE1 [MPT-02-MW17I-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 10.00 | | | 03/06/13 |
| 1303017-05 [MPT-02-MW17S-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/06/13 |
| 1303017-05RE1 [MPT-02-MW17S-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 5.00 | | | 03/06/13 |
| 1303017-06 [MPT-AC-GW-DPW02I-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/06/13 |
| 1303017-07 [MPT-AC-GW-DPW02S-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/06/13 |
| 1303017-08 [MPT-459-MW01I-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/06/13 |
| 1303017-09 [MPT-1358-MW01S-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/06/13 |
| 1303017-09RE1 [MPT-1358-MW01S-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 2.00 | | | 03/06/13 |
| 1303017-10 [MPT-2050-MW01S-022813] | 3C06507 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/06/13 |

# Sample Extraction Data

**Prep Method: MET_3005A_LOW-SW6010C**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1303017-11 [MPT-DUP02-022813] | 3C07006 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/07/13 |
| 1303017-12 [MPT-08-MW05S-030113] | 3C07006 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/07/13 |
| 1303017-13 [MPT-08-MW05I-030113] | 3C07006 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/07/13 |
| 1303017-14 [MPT-02-MW35I-030113] | 3C07006 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/07/13 |
| 1303017-14RE1 [MPT-02-MW35I-030113] | 3C07006 | 100.00/25.00 | 100 | 25.0 | 10.00 | | | 03/07/13 |
| 1303017-15 [MPT-02-MW35RS-030113] | 3C07006 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/07/13 |
| 1303017-16 [MPT-53-DPWR01S-030113] | 3C07006 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/07/13 |
| 1303017-17 [MPT-2062-MW01I-030113] | 3C07006 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/07/13 |
| 1303017-17RE1 [MPT-2062-MW01I-030113] | 3C07006 | 100.00/25.00 | 100 | 25.0 | 2.00 | | | 03/07/13 |
| 1303017-18 [MPT-RINSATE01-030113] | 3C07006 | 100.00/25.00 | 100 | 25.0 | 1.00 | | | 03/07/13 |

# ANALYSIS DATA SHEET

**MPT-RUNWAY23-MW01S-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-01 |
| Sampled: | 02/28/13 09:26 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 23.0 | 12.5 | 25.0 | 50.0 | 1 | I | SW6010C | 3C06507 | 03/11/13 14:48 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 14:48 |
| 7440-38-2 | Arsenic | 2.23 | 0.750 | 1.50 | 2.50 | 1 | IN | SW6010C | 3C06507 | 03/11/13 14:48 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 3C06507 | 03/11/13 14:48 |
| 7439-89-6 | Iron | 306 | 7.50 | 15.0 | 25.0 | 1 | * | SW6010C | 3C06507 | 03/11/13 14:48 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 3C06507 | 03/11/13 14:48 |
| 7439-96-5 | Manganese | 17.9 | 0.750 | 1.50 | 3.75 | 1 | E X | SW6010C | 3C06507 | 03/11/13 14:48 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 14:48 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | UN | SW6010C | 3C06507 | 03/11/13 14:48 |
| 7440-62-2 | Vanadium | | 1.25 | 2.50 | 3.12 | 1 | U | SW6010C | 3C06507 | 03/11/13 14:48 |
| 7440-66-6 | Zinc | | 1.25 | 2.50 | 5.00 | 1 | U | SW6010C | 3C06507 | 03/11/13 14:48 |

# ANALYSIS DATA SHEET

**MPT-DUP01-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-02 |
| Sampled: | 02/28/13 00:00 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 25.6 | 12.5 | 25.0 | 50.0 | 1 | I | SW6010C | 3C06507 | 03/11/13 14:53 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 14:53 |
| 7440-38-2 | Arsenic | 2.31 | 0.750 | 1.50 | 2.50 | 1 | IN | SW6010C | 3C06507 | 03/11/13 14:53 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 3C06507 | 03/11/13 14:53 |
| 7439-89-6 | Iron | 222 | 7.50 | 15.0 | 25.0 | 1 | * | SW6010C | 3C06507 | 03/11/13 14:53 |
| 7439-92-1 | Lead | | 0.500 | 0.750 | 0.750 | 1 | M U | SW6010C | 3C06507 | 03/11/13 14:53 |
| 7439-96-5 | Manganese | 15.2 | 0.750 | 1.50 | 3.75 | 1 | E X | SW6010C | 3C06507 | 03/11/13 14:53 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 14:53 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | UN | SW6010C | 3C06507 | 03/11/13 14:53 |
| 7440-62-2 | Vanadium | | 1.25 | 2.50 | 3.12 | 1 | U | SW6010C | 3C06507 | 03/11/13 14:53 |
| 7440-66-6 | Zinc | | 1.25 | 2.50 | 5.00 | 1 | U | SW6010C | 3C06507 | 03/11/13 14:53 |

# ANALYSIS DATA SHEET

**MPT-2039-MW01I-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-03 |
| Sampled: | 02/28/13 10:40 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 331 | 312 | 625 | 1250 | 25 | D I | SW6010C | 3C06507 | 03/13/13 18:07 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 14:58 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 14:58 |
| 7440-47-3 | Chromium | | 12.5 | 25.0 | 62.5 | 25 | X U | SW6010C | 3C06507 | 03/13/13 18:07 |
| 7439-89-6 | Iron | 63.5 | 7.50 | 15.0 | 25.0 | 1 | * | SW6010C | 3C06507 | 03/11/13 14:58 |
| 7439-92-1 | Lead | | 9.38 | 18.8 | 18.8 | 25 | U | SW6010C | 3C06507 | 03/13/13 18:07 |
| 7439-96-5 | Manganese | 343 | 0.750 | 1.50 | 3.75 | 1 | E X | SW6010C | 3C06507 | 03/11/13 14:58 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 14:58 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | UN | SW6010C | 3C06507 | 03/11/13 14:58 |
| 7440-62-2 | Vanadium | 4.26 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 3C06507 | 03/11/13 14:58 |
| 7440-66-6 | Zinc | | 31.2 | 62.5 | 125 | 25 | X U | SW6010C | 3C06507 | 03/13/13 18:07 |

# ANALYSIS DATA SHEET

**MPT-02-MW17I-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-04 |
| Sampled: | 02/28/13 11:55 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 160 | 125 | 250 | 500 | 10 | D I | SW6010C | 3C06507 | 03/13/13 18:21 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:24 |
| 7440-38-2 | Arsenic | 13.1 | 0.750 | 1.50 | 2.50 | 1 | N | SW6010C | 3C06507 | 03/11/13 15:24 |
| 7440-47-3 | Chromium | | 5.00 | 10.0 | 25.0 | 10 | X U | SW6010C | 3C06507 | 03/13/13 18:21 |
| 7439-89-6 | Iron | 13100 | 7.50 | 15.0 | 25.0 | 1 | * | SW6010C | 3C06507 | 03/11/13 15:24 |
| 7439-92-1 | Lead | | 3.75 | 7.50 | 7.50 | 10 | U | SW6010C | 3C06507 | 03/13/13 18:21 |
| 7439-96-5 | Manganese | 179 | 0.750 | 1.50 | 3.75 | 1 | E X | SW6010C | 3C06507 | 03/11/13 15:24 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:24 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:24 |
| 7440-62-2 | Vanadium | 1.38 | 1.25 | 2.50 | 3.12 | 1 | I | SW6010C | 3C06507 | 03/11/13 15:24 |
| 7440-66-6 | Zinc | | 12.5 | 25.0 | 50.0 | 10 | X U | SW6010C | 3C06507 | 03/13/13 18:21 |

# ANALYSIS DATA SHEET

**MPT-02-MW17S-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-05 |
| Sampled: | 02/28/13 12:10 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 83.1 | 62.5 | 125 | 250 | 5 | D I | SW6010C | 3C06507 | 03/13/13 18:26 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:30 |
| 7440-38-2 | Arsenic | 4.47 | 0.750 | 1.50 | 2.50 | 1 | N | SW6010C | 3C06507 | 03/11/13 15:30 |
| 7440-47-3 | Chromium | | 2.50 | 5.00 | 12.5 | 5 | X U | SW6010C | 3C06507 | 03/13/13 18:26 |
| 7439-89-6 | Iron | 743 | 7.50 | 15.0 | 25.0 | 1 | * | SW6010C | 3C06507 | 03/11/13 15:30 |
| 7439-92-1 | Lead | | 1.88 | 3.75 | 3.75 | 5 | U | SW6010C | 3C06507 | 03/13/13 18:26 |
| 7439-96-5 | Manganese | 883 | 0.750 | 1.50 | 3.75 | 1 | E X | SW6010C | 3C06507 | 03/11/13 15:30 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:30 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:30 |
| 7440-62-2 | Vanadium | 4.09 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 3C06507 | 03/11/13 15:30 |
| 7440-66-6 | Zinc | | 6.25 | 12.5 | 25.0 | 5 | X U | SW6010C | 3C06507 | 03/13/13 18:26 |

# ANALYSIS DATA SHEET

**MPT-AC-GW-DPW02I-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-06 |
| Sampled: | 02/28/13 13:50 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 30.2 | 12.5 | 25.0 | 50.0 | 1 | I | SW6010C | 3C06507 | 03/11/13 15:35 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:35 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:35 |
| 7440-47-3 | Chromium | 1.93 | 0.500 | 1.00 | 2.50 | 1 | I | SW6010C | 3C06507 | 03/11/13 15:35 |
| 7439-89-6 | Iron | 109 | 7.50 | 15.0 | 25.0 | 1 | * | SW6010C | 3C06507 | 03/11/13 15:35 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 3C06507 | 03/11/13 15:35 |
| 7439-96-5 | Manganese | 17.5 | 0.750 | 1.50 | 3.75 | 1 | E X | SW6010C | 3C06507 | 03/11/13 15:35 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:35 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:35 |
| 7440-62-2 | Vanadium | 2.46 | 1.25 | 2.50 | 3.12 | 1 | I | SW6010C | 3C06507 | 03/11/13 15:35 |
| 7440-66-6 | Zinc | 1.68 | 1.25 | 2.50 | 5.00 | 1 | I | SW6010C | 3C06507 | 03/11/13 15:35 |

# ANALYSIS DATA SHEET

**MPT-AC-GW-DPW02S-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-07 |
| Sampled: | 02/28/13 14:00 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 17.7 | 12.5 | 25.0 | 50.0 | 1 | I | SW6010C | 3C06507 | 03/11/13 15:40 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:40 |
| 7440-38-2 | Arsenic | 1.60 | 0.750 | 1.50 | 2.50 | 1 | IN | SW6010C | 3C06507 | 03/11/13 15:40 |
| 7440-47-3 | Chromium | 0.542 | 0.500 | 1.00 | 2.50 | 1 | I | SW6010C | 3C06507 | 03/11/13 15:40 |
| 7439-89-6 | Iron | 45.4 | 7.50 | 15.0 | 25.0 | 1 | * | SW6010C | 3C06507 | 03/11/13 15:40 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 3C06507 | 03/11/13 15:40 |
| 7439-96-5 | Manganese | 20.1 | 0.750 | 1.50 | 3.75 | 1 | E X | SW6010C | 3C06507 | 03/11/13 15:40 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:40 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:40 |
| 7440-62-2 | Vanadium | 8.53 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 3C06507 | 03/11/13 15:40 |
| 7440-66-6 | Zinc | 1.33 | 1.25 | 2.50 | 5.00 | 1 | I | SW6010C | 3C06507 | 03/11/13 15:40 |

# ANALYSIS DATA SHEET

**MPT-459-MW01I-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-08 |
| Sampled: | 02/28/13 15:00 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 101 | 12.5 | 25.0 | 50.0 | 1 | | SW6010C | 3C06507 | 03/11/13 15:45 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:45 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:45 |
| 7440-47-3 | Chromium | 1.20 | 0.500 | 1.00 | 2.50 | 1 | I | SW6010C | 3C06507 | 03/11/13 15:45 |
| 7439-89-6 | Iron | 53.3 | 7.50 | 15.0 | 25.0 | 1 | * | SW6010C | 3C06507 | 03/11/13 15:45 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 3C06507 | 03/11/13 15:45 |
| 7439-96-5 | Manganese | 13.6 | 0.750 | 1.50 | 3.75 | 1 | X E | SW6010C | 3C06507 | 03/11/13 15:45 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:45 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:45 |
| 7440-62-2 | Vanadium | 3.52 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 3C06507 | 03/11/13 15:45 |
| 7440-66-6 | Zinc | | 1.25 | 2.50 | 5.00 | 1 | U | SW6010C | 3C06507 | 03/11/13 15:45 |

# ANALYSIS DATA SHEET

**MPT-1358-MW01S-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-09 |
| Sampled: | 02/28/13 15:30 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 33.4 | 25.0 | 50.0 | 100 | 2 | D I | SW6010C | 3C06507 | 03/13/13 18:36 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:50 |
| 7440-38-2 | Arsenic | 2.63 | 0.750 | 1.50 | 2.50 | 1 | N | SW6010C | 3C06507 | 03/11/13 15:50 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 3C06507 | 03/11/13 15:50 |
| 7439-89-6 | Iron | 1090 | 7.50 | 15.0 | 25.0 | 1 | * | SW6010C | 3C06507 | 03/11/13 15:50 |
| 7439-92-1 | Lead | | 0.750 | 1.50 | 1.50 | 2 | U | SW6010C | 3C06507 | 03/13/13 18:36 |
| 7439-96-5 | Manganese | 59.5 | 0.750 | 1.50 | 3.75 | 1 | E X | SW6010C | 3C06507 | 03/11/13 15:50 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:50 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:50 |
| 7440-62-2 | Vanadium | 2.16 | 1.25 | 2.50 | 3.12 | 1 | I | SW6010C | 3C06507 | 03/11/13 15:50 |
| 7440-66-6 | Zinc | | 2.50 | 5.00 | 10.0 | 2 | X U | SW6010C | 3C06507 | 03/13/13 18:36 |

# ANALYSIS DATA SHEET

**MPT-2050-MW01S-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-10 |
| Sampled: | 02/28/13 16:20 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 49.1 | 12.5 | 25.0 | 50.0 | 1 | I | SW6010C | 3C06507 | 03/11/13 15:55 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:55 |
| 7440-38-2 | Arsenic | 2.00 | 0.750 | 1.50 | 2.50 | 1 | IN | SW6010C | 3C06507 | 03/11/13 15:55 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 3C06507 | 03/11/13 15:55 |
| 7439-89-6 | Iron | 93.8 | 7.50 | 15.0 | 25.0 | 1 | * | SW6010C | 3C06507 | 03/11/13 15:55 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 3C06507 | 03/11/13 15:55 |
| 7439-96-5 | Manganese | 3.96 | 0.750 | 1.50 | 3.75 | 1 | E X | SW6010C | 3C06507 | 03/11/13 15:55 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:55 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | UN | SW6010C | 3C06507 | 03/11/13 15:55 |
| 7440-62-2 | Vanadium | 3.23 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 3C06507 | 03/11/13 15:55 |
| 7440-66-6 | Zinc | | 1.25 | 2.50 | 5.00 | 1 | U | SW6010C | 3C06507 | 03/11/13 15:55 |

# ANALYSIS DATA SHEET

**MPT-DUP02-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-11 |
| Sampled: | 02/28/13 00:00 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 46.3 | 12.5 | 25.0 | 50.0 | 1 | I | SW6010C | 3C07006 | 03/11/13 17:55 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 17:55 |
| 7440-38-2 | Arsenic | 1.91 | 0.750 | 1.50 | 2.50 | 1 | I | SW6010C | 3C07006 | 03/11/13 17:55 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 17:55 |
| 7439-89-6 | Iron | 80.2 | 7.50 | 15.0 | 25.0 | 1 | X | SW6010C | 3C07006 | 03/11/13 17:55 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 3C07006 | 03/11/13 17:55 |
| 7439-96-5 | Manganese | 3.90 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 3C07006 | 03/11/13 17:55 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 17:55 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 3C07006 | 03/11/13 17:55 |
| 7440-62-2 | Vanadium | 3.15 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 3C07006 | 03/11/13 17:55 |
| 7440-66-6 | Zinc | | 1.25 | 2.50 | 5.00 | 1 | U | SW6010C | 3C07006 | 03/11/13 17:55 |

# ANALYSIS DATA SHEET

**MPT-08-MW05S-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-12 |
| Sampled: | 03/01/13 11:25 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | | 12.5 | 25.0 | 50.0 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:00 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:00 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:00 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:00 |
| 7439-89-6 | Iron | 108 | 7.50 | 15.0 | 25.0 | 1 | X | SW6010C | 3C07006 | 03/11/13 18:00 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:00 |
| 7439-96-5 | Manganese | 48.7 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 3C07006 | 03/11/13 18:00 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:00 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:00 |
| 7440-62-2 | Vanadium | | 1.25 | 2.50 | 3.12 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:00 |
| 7440-66-6 | Zinc | | 1.25 | 2.50 | 5.00 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:00 |

# ANALYSIS DATA SHEET

**MPT-08-MW05I-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-13 |
| Sampled: | 03/01/13 11:15 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | | 12.5 | 25.0 | 50.0 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:05 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:05 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:05 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:05 |
| 7439-89-6 | Iron | 22.5 | 7.50 | 15.0 | 25.0 | 1 | X I | SW6010C | 3C07006 | 03/11/13 18:05 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:05 |
| 7439-96-5 | Manganese | 13.1 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 3C07006 | 03/11/13 18:05 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:05 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:05 |
| 7440-62-2 | Vanadium | | 1.25 | 2.50 | 3.12 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:05 |
| 7440-66-6 | Zinc | 4.62 | 1.25 | 2.50 | 5.00 | 1 | I | SW6010C | 3C07006 | 03/11/13 18:05 |

# ANALYSIS DATA SHEET

**MPT-02-MW35I-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-14 |
| Sampled: | 03/01/13 12:50 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 80.0 | 12.5 | 25.0 | 50.0 | 1 | | SW6010C | 3C07006 | 03/11/13 18:10 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:10 |
| 7440-38-2 | Arsenic | 3.40 | 0.750 | 1.50 | 2.50 | 1 | | SW6010C | 3C07006 | 03/11/13 18:10 |
| 7440-47-3 | Chromium | | 5.00 | 10.0 | 25.0 | 10 | X U | SW6010C | 3C07006 | 03/13/13 19:29 |
| 7439-89-6 | Iron | 57.4 | 7.50 | 15.0 | 25.0 | 1 | X | SW6010C | 3C07006 | 03/11/13 18:10 |
| 7439-92-1 | Lead | | 3.75 | 7.50 | 7.50 | 10 | U | SW6010C | 3C07006 | 03/13/13 19:29 |
| 7439-96-5 | Manganese | 13.5 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 3C07006 | 03/11/13 18:10 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:10 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:10 |
| 7440-62-2 | Vanadium | 3.97 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 3C07006 | 03/11/13 18:10 |
| 7440-66-6 | Zinc | | 12.5 | 25.0 | 50.0 | 10 | X U | SW6010C | 3C07006 | 03/13/13 19:29 |

# ANALYSIS DATA SHEET

**MPT-02-MW35RS-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-15 |
| Sampled: | 03/01/13 13:00 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 19.6 | 12.5 | 25.0 | 50.0 | 1 | I | SW6010C | 3C07006 | 03/11/13 18:16 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:16 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:16 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:16 |
| 7439-89-6 | Iron | 16.4 | 7.50 | 15.0 | 25.0 | 1 | X I | SW6010C | 3C07006 | 03/11/13 18:16 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:16 |
| 7439-96-5 | Manganese | 41.4 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 3C07006 | 03/11/13 18:16 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:16 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:16 |
| 7440-62-2 | Vanadium | | 1.25 | 2.50 | 3.12 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:16 |
| 7440-66-6 | Zinc | | 1.25 | 2.50 | 5.00 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:16 |

# ANALYSIS DATA SHEET

**MPT-53-DPWR01S-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-16 |
| Sampled: | 03/01/13 13:50 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 139 | 12.5 | 25.0 | 50.0 | 1 | | SW6010C | 3C07006 | 03/11/13 18:21 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:21 |
| 7440-38-2 | Arsenic | 10.0 | 0.750 | 1.50 | 2.50 | 1 | | SW6010C | 3C07006 | 03/11/13 18:21 |
| 7440-47-3 | Chromium | 1.33 | 0.500 | 1.00 | 2.50 | 1 | I | SW6010C | 3C07006 | 03/11/13 18:21 |
| 7439-89-6 | Iron | 942 | 7.50 | 15.0 | 25.0 | 1 | X | SW6010C | 3C07006 | 03/11/13 18:21 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:21 |
| 7439-96-5 | Manganese | 110 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 3C07006 | 03/11/13 18:21 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:21 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:21 |
| 7440-62-2 | Vanadium | 7.30 | 1.25 | 2.50 | 3.12 | 1 | | SW6010C | 3C07006 | 03/11/13 18:21 |
| 7440-66-6 | Zinc | | 1.25 | 2.50 | 5.00 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:21 |

# ANALYSIS DATA SHEET

**MPT-2062-MW01I-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-17 |
| Sampled: | 03/01/13 14:10 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 44.2 | 25.0 | 50.0 | 100 | 2 | D I | SW6010C | 3C07006 | 03/13/13 19:38 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:26 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:26 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:26 |
| 7439-89-6 | Iron | 104 | 7.50 | 15.0 | 25.0 | 1 | X | SW6010C | 3C07006 | 03/11/13 18:26 |
| 7439-92-1 | Lead | | 0.750 | 1.50 | 1.50 | 2 | U | SW6010C | 3C07006 | 03/13/13 19:38 |
| 7439-96-5 | Manganese | 223 | 0.750 | 1.50 | 3.75 | 1 | | SW6010C | 3C07006 | 03/11/13 18:26 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:26 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:26 |
| 7440-62-2 | Vanadium | | 1.25 | 2.50 | 3.12 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:26 |
| 7440-66-6 | Zinc | | 2.50 | 5.00 | 10.0 | 2 | X U | SW6010C | 3C07006 | 03/13/13 19:38 |

# ANALYSIS DATA SHEET

**MPT-RINSATE01-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-18 |
| Sampled: | 03/01/13 16:00 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (ug/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | | 12.5 | 25.0 | 50.0 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:31 |
| 7440-36-0 | Antimony | | 1.25 | 2.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:31 |
| 7440-38-2 | Arsenic | | 0.750 | 1.50 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:31 |
| 7440-47-3 | Chromium | | 0.500 | 1.00 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:31 |
| 7439-89-6 | Iron | | 7.50 | 15.0 | 25.0 | 1 | X U | SW6010C | 3C07006 | 03/11/13 18:31 |
| 7439-92-1 | Lead | | 0.375 | 0.750 | 0.750 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:31 |
| 7439-96-5 | Manganese | | 0.750 | 1.50 | 3.75 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:31 |
| 7440-22-4 | Silver | | 0.250 | 0.500 | 2.50 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:31 |
| 7440-28-0 | Thallium | | 0.750 | 1.00 | 2.00 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:31 |
| 7440-62-2 | Vanadium | | 1.25 | 2.50 | 3.12 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:31 |
| 7440-66-6 | Zinc | | 1.25 | 2.50 | 5.00 | 1 | U | SW6010C | 3C07006 | 03/11/13 18:31 |

# INITIAL AND CONTINUING CALIBRATION CHECK

## SW6010C

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP

SDG: 1303017
Project: NAS Mayport CTO JM71
Calibration: 3073001
Sequence: 3C07103

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 3C07103-ICV1 | Aluminum | 10000 | 10130 | 101 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 1049 | 105 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1078 | 108 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 970.4 | 97.0 | ug/L | +/- 10.00% |
| | Iron | 10000 | 10420 | 104 | ug/L | +/- 10.00% |
| | Lead | 1000 | 984.0 | 98.4 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1040 | 104 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 505.2 | 101 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 992.2 | 99.2 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 1008 | 101 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1034 | 103 | ug/L | +/- 10.00% |
| 3C07103-CCV1 | Aluminum | 10000 | 9951 | 99.5 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 1068 | 107 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1063 | 106 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 999.8 | 100 | ug/L | +/- 10.00% |
| | Iron | 10000 | 10360 | 104 | ug/L | +/- 10.00% |
| | Lead | 1000 | 997.0 | 99.7 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1034 | 103 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 493.1 | 98.6 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 1033 | 103 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 1014 | 101 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1033 | 103 | ug/L | +/- 10.00% |
| 3C07103-CCV2 | Aluminum | 10000 | 10220 | 102 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 961.5 | 96.2 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 990.9 | 99.1 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 1063 | 106 | ug/L | +/- 10.00% |
| | Iron | 10000 | 10870 | 109 | ug/L | +/- 10.00% |
| | Lead | 1000 | 984.2 | 98.4 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1096 | 110 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 503.9 | 101 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 991.4 | 99.1 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 1043 | 104 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1073 | 107 | ug/L | +/- 10.00% |
| 3C07103-CCV3 | Aluminum | 10000 | 10600 | 106 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 978.0 | 97.8 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1006 | 101 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 1033 | 103 | ug/L | +/- 10.00% |
| | Iron | 10000 | 10980 | 110 | ug/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## SW6010C

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP

SDG: 1303017
Project: NAS Mayport CTO JM71
Calibration: 3073001
Sequence: 3C07103

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 3C07103-CCV3 | Lead | 1000 | 993.4 | 99.3 | ug/L | +/- 10.00% |
| | **Manganese** | **1000** | **1112** | **111** | **ug/L** | +/- 10.00% |
| | Silver | 500.0 | 513.6 | 103 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 983.7 | 98.4 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 1024 | 102 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1045 | 104 | ug/L | +/- 10.00% |
| 3C07103-CCV4 | Aluminum | 10000 | 10240 | 102 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 1032 | 103 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1042 | 104 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 1034 | 103 | ug/L | +/- 10.00% |
| | Iron | 10000 | 10890 | 109 | ug/L | +/- 10.00% |
| | Lead | 1000 | 999.6 | 100 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1076 | 108 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 509.8 | 102 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 1016 | 102 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 1039 | 104 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1051 | 105 | ug/L | +/- 10.00% |
| 3C07103-CCV5 | Aluminum | 10000 | 10110 | 101 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 1018 | 102 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1024 | 102 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 1056 | 106 | ug/L | +/- 10.00% |
| | **Iron** | **10000** | **11060** | **111** | **ug/L** | +/- 10.00% |
| | Lead | 1000 | 989.8 | 99.0 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1062 | 106 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 505.8 | 101 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 1008 | 101 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 1059 | 106 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1060 | 106 | ug/L | +/- 10.00% |
| 3C07103-CCV6 | Aluminum | 10000 | 9886 | 98.9 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 1037 | 104 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1040 | 104 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 1046 | 105 | ug/L | +/- 10.00% |
| | Iron | 10000 | 10840 | 108 | ug/L | +/- 10.00% |
| | Lead | 1000 | 992.2 | 99.2 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1069 | 107 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 504.1 | 101 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 1023 | 102 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 1045 | 105 | ug/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## SW6010C

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP

SDG: 1303017
Project: NAS Mayport CTO JM71
Calibration: 3073001
Sequence: 3C07103

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 3C07103-CCV6 | Zinc | 1000 | 1055 | 106 | ug/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## SW6010C

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP

SDG: 1303017
Project: NAS Mayport CTO JM71
Calibration: 3073004
Sequence: 3C07313

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 3C07313-ICV1 | Aluminum | 10000 | 10050 | 101 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 1012 | 101 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1043 | 104 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 1010 | 101 | ug/L | +/- 10.00% |
| | Iron | 10000 | 10350 | 104 | ug/L | +/- 10.00% |
| | Lead | 1000 | 974.2 | 97.4 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1063 | 106 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 506.0 | 101 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 950.6 | 95.1 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 985.0 | 98.5 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1005 | 101 | ug/L | +/- 10.00% |
| 3C07313-CCV1 | Aluminum | 10000 | 9978 | 99.8 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 1014 | 101 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1022 | 102 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 1000 | 100 | ug/L | +/- 10.00% |
| | Iron | 10000 | 10180 | 102 | ug/L | +/- 10.00% |
| | Lead | 1000 | 987.4 | 98.7 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1064 | 106 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 480.0 | 96.0 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 985.4 | 98.5 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 994.4 | 99.4 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1005 | 101 | ug/L | +/- 10.00% |
| 3C07313-CCV6 | Aluminum | 10000 | 9929 | 99.3 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 928.9 | 92.9 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 962.4 | 96.2 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 1049 | 105 | ug/L | +/- 10.00% |
| | Iron | 10000 | 10810 | 108 | ug/L | +/- 10.00% |
| | Lead | 1000 | 957.7 | 95.8 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1091 | 109 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 489.6 | 97.9 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 943.0 | 94.3 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 1007 | 101 | ug/L | +/- 10.00% |
| | Zinc | 1000 | 1016 | 102 | ug/L | +/- 10.00% |
| 3C07313-CCV7 | Aluminum | 10000 | 9896 | 99.0 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 924.9 | 92.5 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 980.4 | 98.0 | ug/L | +/- 10.00% |
| | **Chromium** | **1000** | **1110** | **111** | **ug/L** | +/- 10.00% |
| | **Iron** | **10000** | **11780** | **118** | **ug/L** | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## SW6010C

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP

SDG: 1303017
Project: NAS Mayport CTO JM71
Calibration: 3073004
Sequence: 3C07313

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 3C07313-CCV7 | Lead | 1000 | 951.1 | 95.1 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1053 | 105 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 522.4 | 104 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 968.0 | 96.8 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 954.4 | 95.4 | ug/L | +/- 10.00% |
| | **Zinc** | **1000** | **1108** | **111** | **ug/L** | +/- 10.00% |
| 3C07313-CCV8 | Aluminum | 10000 | 9752 | 97.5 | ug/L | +/- 10.00% |
| | Antimony | 1000 | 956.3 | 95.6 | ug/L | +/- 10.00% |
| | Arsenic | 1000 | 1026 | 103 | ug/L | +/- 10.00% |
| | Chromium | 1000 | 1079 | 108 | ug/L | +/- 10.00% |
| | **Iron** | **10000** | **11840** | **118** | **ug/L** | +/- 10.00% |
| | Lead | 1000 | 965.0 | 96.5 | ug/L | +/- 10.00% |
| | Manganese | 1000 | 1042 | 104 | ug/L | +/- 10.00% |
| | Silver | 500.0 | 527.3 | 105 | ug/L | +/- 10.00% |
| | Thallium | 1000 | 1018 | 102 | ug/L | +/- 10.00% |
| | Vanadium | 1000 | 969.7 | 97.0 | ug/L | +/- 10.00% |
| | **Zinc** | **1000** | **1162** | **116** | **ug/L** | +/- 10.00% |

# CRDL STANDARD

## SW6010C

Laboratory: Empirical Laboratories, LLC

SDG: 1303017

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Instrument ID: ME-ICP

Calibration: 3073001

Sequence: 3C07103

| Lab Sample ID | Analyte | True | Found | %R | Units | QC Limts |
|---|---|---|---|---|---|---|
| 3C07103-CRL1 | Aluminum | 100.0 | 102.5 | 103 | ug/L | 80 - 120 |
| | Antimony | 8.000 | 8.407 | 105 | ug/L | 80 - 120 |
| | Chromium | 4.000 | 3.755 | 93.9 | ug/L | 80 - 120 |
| | Iron | 60.00 | 63.88 | 106 | ug/L | 80 - 120 |
| | Lead | 3.000 | 2.599 | 86.6 | ug/L | 80 - 120 |
| | Manganese | 6.000 | 6.374 | 106 | ug/L | 80 - 120 |
| | Silver | 2.000 | 1.876 | 93.8 | ug/L | 80 - 120 |
| | Thallium | 4.000 | 4.510 | 113 | ug/L | 80 - 120 |
| | Vanadium | 10.00 | 10.15 | 101 | ug/L | 80 - 120 |
| | Zinc | 10.00 | 10.29 | 103 | ug/L | 80 - 120 |
| 3C07103-CRL2 | Arsenic | 5.000 | 4.978 | 99.6 | ug/L | 80 - 120 |

# CRDL STANDARD

## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Instrument ID: ME-ICP
Calibration: 3073004
Sequence: 3C07313

| Lab Sample ID | Analyte | True | Found | %R | Units | QC Limts |
|---|---|---|---|---|---|---|
| 3C07313-CRL1 | Aluminum | 100.0 | 102.0 | 102 | ug/L | 80 - 120 |
| | Antimony | 8.000 | 8.947 | 112 | ug/L | 80 - 120 |
| | Chromium | 4.000 | 4.008 | 100 | ug/L | 80 - 120 |
| | Iron | 60.00 | 61.96 | 103 | ug/L | 80 - 120 |
| | Lead | 3.000 | 2.957 | 98.6 | ug/L | 80 - 120 |
| | Manganese | 6.000 | 6.656 | 111 | ug/L | 80 - 120 |
| | Silver | 2.000 | 1.894 | 94.7 | ug/L | 80 - 120 |
| | Thallium | 4.000 | 4.432 | 111 | ug/L | 80 - 120 |
| | Vanadium | 10.00 | 9.755 | 97.5 | ug/L | 80 - 120 |
| | Zinc | 10.00 | 9.922 | 99.2 | ug/L | 80 - 120 |
| 3C07313-CRL2 | Arsenic | 5.000 | 5.491 | 110 | ug/L | 80 - 120 |

# BLANKS
## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP
Project: NAS Mayport CTO JM71
Sequence: 3C07103
Calibration: 3073001

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C07103-ICB1 | Aluminum | -5.382 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | 0.2518 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | 0.3975 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | -0.2097 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | 0.2668 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | -0.1234 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | -0.02407 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | -0.2740 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 1.355 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | 0.06923 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | -0.04424 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 3C07103-CCB1 | Aluminum | -3.78 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | -0.128 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | 0.358 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | 0.0236 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | -0.0256 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | -0.195 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | 0.0248 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | -0.230 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 1.26 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | 0.0216 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.0247 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 3C06507-BLK1 | Aluminum | 0.0569 | 12.5 | 50.0 | ug/L | U | SW6010C |
| | Antimony | 0.116 | 1.25 | 2.50 | ug/L | U | SW6010C |
| | Arsenic | 0.00332 | 0.750 | 2.50 | ug/L | U | SW6010C |
| | Chromium | -0.0253 | 0.500 | 2.50 | ug/L | U | SW6010C |
| | Iron | 0.0740 | 7.50 | 25.0 | ug/L | U | SW6010C |
| | Lead | 0.0217 | 0.375 | 0.750 | ug/L | U | SW6010C |
| | Manganese | 0.0160 | 0.750 | 3.75 | ug/L | U | SW6010C |
| | Silver | -0.0692 | 0.250 | 2.50 | ug/L | U | SW6010C |
| | Thallium | 0.0918 | 0.750 | 2.00 | ug/L | U | SW6010C |
| | Vanadium | 0.0227 | 1.25 | 3.12 | ug/L | U | SW6010C |
| | Zinc | 0.352 | 1.25 | 5.00 | ug/L | U | SW6010C |

# BLANKS
## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP
Project: NAS Mayport CTO JM71
Sequence: 3C07103
Calibration: 3073001

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C07103-CCB2 | Aluminum | -9.73 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | -0.249 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | -0.0336 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | -0.0954 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | -1.97 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | -0.523 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | -0.0207 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | -0.204 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 1.33 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | -0.00895 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.0344 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 3C07103-CCB3 | Aluminum | -7.93 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | 0.0360 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | 0.451 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | 0.0343 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | 0.686 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | 0.0890 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | 0.0692 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | -0.192 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 2.28 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | 0.176 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.225 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 3C07103-CCB4 | Aluminum | 0.0800 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | 0.577 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | 0.495 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | 0.0176 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | -0.670 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | -0.158 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | -0.0186 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | -0.0364 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 1.25 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | 0.143 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.0691 | 5.00 | 20.0 | ug/L | U | SW6010C |

# BLANKS
## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP
Project: NAS Mayport CTO JM71
Sequence: 3C07103
Calibration: 3073001

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C07006-BLK1 | Aluminum | 0.178 | 12.5 | 50.0 | ug/L | U | SW6010C |
| | Antimony | 0.0939 | 1.25 | 2.50 | ug/L | U | SW6010C |
| | Arsenic | 0.0479 | 0.750 | 2.50 | ug/L | U | SW6010C |
| | Chromium | 0.0593 | 0.500 | 2.50 | ug/L | U | SW6010C |
| | Iron | 0.442 | 7.50 | 25.0 | ug/L | U | SW6010C |
| | Lead | 0.0204 | 0.375 | 0.750 | ug/L | U | SW6010C |
| | Manganese | 0.0155 | 0.750 | 3.75 | ug/L | U | SW6010C |
| | Silver | -0.0635 | 0.250 | 2.50 | ug/L | U | SW6010C |
| | Thallium | 0.242 | 0.750 | 2.00 | ug/L | U | SW6010C |
| | Vanadium | 0.0100 | 1.25 | 3.12 | ug/L | U | SW6010C |
| | Zinc | 0.493 | 1.25 | 5.00 | ug/L | U | SW6010C |
| 3C07103-CCB5 | Aluminum | -5.38 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | 0.187 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | 0.172 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | -0.0486 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | -1.48 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | 0.0503 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | -0.00298 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | -0.0298 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 1.85 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | -0.00951 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.214 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 3C07103-CCB6 | Aluminum | -5.51 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | 0.282 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | 0.0987 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | -0.150 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | -1.27 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | 0.247 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | -0.0296 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | -0.0884 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 2.28 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | 0.131 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.144 | 5.00 | 20.0 | ug/L | U | SW6010C |

# BLANKS
## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP
Project: NAS Mayport CTO JM71
Sequence: 3C07313
Calibration: 3073004

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C07313-ICB1 | Aluminum | -2.762 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | 1.574 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | -0.1766 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | 0.05530 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | -1.440 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | -0.07753 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | -0.01785 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | -0.04992 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 0.8594 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | -0.01674 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | -0.1120 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 3C07313-CCB1 | Aluminum | 0.806 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | 2.50 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | 0.588 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | 0.185 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | -0.771 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | 0.283 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | 0.0897 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | 0.0384 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 1.28 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | 0.0657 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | -0.0111 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 3C07313-CCB6 | Aluminum | 9.61 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | 2.42 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | 0.581 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | 0.412 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | 0.0200 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | 0.559 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | 0.513 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | 0.210 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 1.17 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | 0.328 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.168 | 5.00 | 20.0 | ug/L | U | SW6010C |

# BLANKS
## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Instrument ID: ME-ICP
Project: NAS Mayport CTO JM71
Sequence: 3C07313
Calibration: 3073004

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C07313-CCB7 | Aluminum | -7.28 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | -1.76 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | 0.446 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | 0.418 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | 0.418 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | 0.366 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | 0.108 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | 0.156 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 0.747 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | 0.523 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.190 | 5.00 | 20.0 | ug/L | U | SW6010C |
| 3C07313-CCB8 | Aluminum | -8.88 | 50.0 | 200 | ug/L | U | SW6010C |
| | Antimony | -1.27 | 5.00 | 10.0 | ug/L | U | SW6010C |
| | Arsenic | 0.313 | 3.00 | 10.0 | ug/L | U | SW6010C |
| | Chromium | 0.250 | 2.00 | 10.0 | ug/L | U | SW6010C |
| | Iron | -3.58 | 30.0 | 100 | ug/L | U | SW6010C |
| | Lead | 0.468 | 1.50 | 3.00 | ug/L | U | SW6010C |
| | Manganese | 0.0774 | 3.00 | 15.0 | ug/L | U | SW6010C |
| | Silver | 0.107 | 1.00 | 10.0 | ug/L | U | SW6010C |
| | Thallium | 1.58 | 3.00 | 8.00 | ug/L | U | SW6010C |
| | Vanadium | 0.608 | 5.00 | 12.5 | ug/L | U | SW6010C |
| | Zinc | 0.184 | 5.00 | 20.0 | ug/L | U | SW6010C |

# ICP INTERFERENCE CHECK SAMPLE

## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Instrument ID: ME-ICP
Calibration: 3073001
Sequence: 3C07103

| Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|
| 3C07103-IFA1 | Aluminum | 500000 | 465,560.00 | 93.1 | ug/L |
| | Antimony | | -0.35 | | ug/L |
| | Arsenic | | -2.13 | | ug/L |
| | Chromium | | -1.00 | | ug/L |
| | Iron | 200000 | 184,560.00 | 92.3 | ug/L |
| | Lead | | 2.13 | | ug/L |
| | Manganese | | -1.51 | | ug/L |
| | Silver | | -0.72 | | ug/L |
| | Thallium | | 2.47 | | ug/L |
| | Vanadium | | 1.39 | | ug/L |
| | Zinc | | -2.82 | | ug/L |
| 3C07103-IFB1 | Aluminum | 500000 | 490,830.00 | 98.2 | ug/L |
| | Antimony | 600.0 | 673.12 | 112 | ug/L |
| | Arsenic | 100.0 | 108.85 | 109 | ug/L |
| | Chromium | 500.0 | 456.29 | 91.3 | ug/L |
| | Iron | 200000 | 196,500.00 | 98.2 | ug/L |
| | Lead | 50.00 | 51.63 | 103 | ug/L |
| | Manganese | 500.0 | 467.10 | 93.4 | ug/L |
| | Silver | 200.0 | 204.27 | 102 | ug/L |
| | Thallium | 100.0 | 87.58 | 87.6 | ug/L |
| | Vanadium | 500.0 | 469.45 | 93.9 | ug/L |
| | Zinc | 1000 | 987.08 | 98.7 | ug/L |

# ICP INTERFERENCE CHECK SAMPLE

## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Instrument ID: ME-ICP
Calibration: 3073004
Sequence: 3C07313

| Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|
| 3C07313-IFA1 | Aluminum | 500000 | 505,900.00 | 101 | ug/L |
| | Antimony | | -1.98 | | ug/L |
| | Arsenic | | -2.72 | | ug/L |
| | Chromium | | -0.71 | | ug/L |
| | Iron | 200000 | 196,310.00 | 98.2 | ug/L |
| | Lead | | 1.70 | | ug/L |
| | Manganese | | -1.33 | | ug/L |
| | Silver | | -0.13 | | ug/L |
| | Thallium | | 1.15 | | ug/L |
| | Vanadium | | 1.21 | | ug/L |
| | Zinc | | -2.38 | | ug/L |
| 3C07313-IFB1 | Aluminum | 500000 | 503,560.00 | 101 | ug/L |
| | Antimony | 600.0 | 627.71 | 105 | ug/L |
| | Arsenic | 100.0 | 105.47 | 105 | ug/L |
| | Chromium | 500.0 | 455.98 | 91.2 | ug/L |
| | Iron | 200000 | 194,900.00 | 97.4 | ug/L |
| | Lead | 50.00 | 45.74 | 91.5 | ug/L |
| | Manganese | 500.0 | 489.15 | 97.8 | ug/L |
| | Silver | 200.0 | 201.66 | 101 | ug/L |
| | Thallium | 100.0 | 83.60 | 83.6 | ug/L |
| | Vanadium | 500.0 | 462.05 | 92.4 | ug/L |
| | Zinc | 1000 | 940.01 | 94.0 | ug/L |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

## SW6010C

**MPT-2039-MW01I-022813**

Laboratory: Empirical Laboratories, LLC

SDG: 1303017

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Matrix: Water

Batch: 3C06507

% Solids:

Source Sample Name: **1303017-03**

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Aluminum | 500.0 | ND | 427.5 | 85.5 | | 80 - 120 |
| Antimony | 125.0 | ND | 179.9 | 144 | N | 80 - 120 |
| Arsenic | 125.0 | ND | 194.8 | 156 | N | 80 - 120 |
| Chromium | 50.00 | ND | 41.08 | 82.2 | | 80 - 120 |
| Iron | 250.0 | 63.53 | 333.8 | 108 | | 80 - 120 |
| Lead | 125.0 | ND | 105.7 | 84.6 | | 80 - 120 |
| Manganese | 125.0 | 342.6 | 459.9 | 93.8 | | 80 - 120 |
| Silver | 62.50 | ND | 97.78 | 156 | N | 80 - 120 |
| Thallium | 125.0 | ND | 94.07 | 75.3 | N | 80 - 120 |
| Vanadium | 125.0 | 4.263 | 119.1 | 91.9 | | 80 - 120 |
| Zinc | 125.0 | ND | 121.4 | 97.1 | | 80 - 120 |

# POST DIGEST SPIKE SAMPLE RECOVERY

## SW6010C

MPT-2039-MW01I-022813

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Matrix: Water
Laboratory ID: 3C06507-PS1
Batch: 3C06507
Lab Source ID: 1303017-03
Preparation: MET_3005A_LOW
Initial/Final: 100 mL / 25 mL

| Analyte | Spike Sample Result (SSR) (ug/L) | Sample Result (SR) (ug/L) | Spike Added (SA) (ug/L) | %R | Control Limit %R |
|---|---|---|---|---|---|
| Aluminum | 1706 | ND | 2000 | 117 | 80 - 120 |
| **Antimony** | **393.6** | **ND** | **250.0** | **157** | **80 - 120** |
| **Arsenic** | **402.9** | **ND** | **250.0** | **162** | **80 - 120** |
| Chromium | 161.4 | ND | 200.0 | 84.3 | 80 - 120 |
| Iron | 1266 | 254.1 | 1000 | 101 | 80 - 120 |
| Lead | 218.8 | ND | 250.0 | 87.9 | 80 - 120 |
| Manganese | 1798 | 1371 | 500.0 | 85.4 | 80 - 120 |
| **Silver** | **429.2** | **ND** | **250.0** | **172** | **80 - 120** |
| **Thallium** | **194.3** | **ND** | **250.0** | **77.5** | **80 - 120** |
| Vanadium | 471.7 | 17.05 | 500.0 | 90.9 | 80 - 120 |
| Zinc | 495.3 | ND | 500.0 | 98.2 | 80 - 120 |

# DUPLICATES

## SW6010C

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Batch: 3C06507
Preparation: MET_3005A_LOW
Source Sample Name: MPT-2039-MW01I-022813

SDG: 1303017
Project: NAS Mayport CTO JM71
Laboratory ID: 3C06507-DUP1
Lab Source ID: 1303017-03
Initial/Final: 100 mL / 25 mL
% Solids:

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Antimony | 20 | 2.50 U | 2.50 U | | | SW6010C |
| Arsenic | 20 | 2.50 U | 2.50 U | | | SW6010C |
| Iron | 20 | 63.5 | 99.09 | 43.7 | * | SW6010C |
| Manganese | 20 | 343 | 356.8 X | 4.05 | | SW6010C |
| Silver | 20 | 2.50 U | 2.50 U | | | SW6010C |
| Thallium | 20 | 2.00 U | 2.00 U | | | SW6010C |
| Vanadium | 20 | 4.26 | 4.457 | 4.45 | | SW6010C |

# DUPLICATES

## SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Matrix: Water
Laboratory ID: 3C06507-DUP3
Batch: 3C06507
Lab Source ID: 1303017-03RE1
Preparation: MET_3005A_LOW
Initial/Final: 100 mL / 25 mL
Source Sample Name: MPT-2039-MW01I-022813
% Solids:

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Aluminum | 20 | 331 I | 371.5 JD | 11.6 | | SW6010C |
| Chromium | 20 | 62.5 U | 62.5 UX | | | SW6010C |
| Lead | 20 | 18.8 U | 18.8 U | | | SW6010C |
| Zinc | 20 | 125 U | 125 UX | | | SW6010C |

# LCS / LCS DUPLICATE RECOVERY

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 3C06507 | Laboratory ID: | 3C06507-BS1 |
| Preparation: | MET_3005A_LOW | Initial/Final: | 100 mL / 25 mL |

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Aluminum | 40.00 | 40.50 | 101 | 80 - 120 |
| Antimony | 5.000 | 5.277 | 106 | 80 - 120 |
| Arsenic | 5.000 | 5.054 | 101 | 80 - 120 |
| Chromium | 4.000 | 3.996 | 99.9 | 80 - 120 |
| Iron | 20.00 | 21.81 | 109 | 80 - 120 |
| Lead | 5.000 | 4.997 | 99.9 | 80 - 120 |
| Manganese | 10.00 | 10.83 | 108 | 80 - 120 |
| Silver | 5.000 | 5.137 | 103 | 80 - 120 |
| Thallium | 5.000 | 5.245 | 105 | 80 - 120 |
| Vanadium | 10.00 | 9.865 | 98.6 | 80 - 120 |
| Zinc | 10.00 | 10.77 | 108 | 80 - 120 |

# LCS / LCS DUPLICATE RECOVERY

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 3C07006 | Laboratory ID: | 3C07006-BS1 |
| Preparation: | MET_3005A_LOW | Initial/Final: | 100 mL / 25 mL |

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Aluminum | 40.00 | 39.58 | 99.0 | 80 - 120 |
| Antimony | 5.000 | 4.868 | 97.4 | 80 - 120 |
| Arsenic | 5.000 | 5.121 | 102 | 80 - 120 |
| Chromium | 4.000 | 3.943 | 98.6 | 80 - 120 |
| Iron | 20.00 | 21.63 | 108 | 80 - 120 |
| Lead | 5.000 | 4.834 | 96.7 | 80 - 120 |
| Manganese | 10.00 | 10.37 | 104 | 80 - 120 |
| Silver | 5.000 | 4.970 | 99.4 | 80 - 120 |
| Thallium | 5.000 | 4.865 | 97.3 | 80 - 120 |
| Vanadium | 10.00 | 9.479 | 94.8 | 80 - 120 |
| Zinc | 10.00 | 10.42 | 104 | 80 - 120 |

# SERIAL DILUTION

## SW6010C

MPT-2039-MW01I-022813

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Matrix: Water
Laboratory ID: 3C06507-DUP2
Sequence: 3C07103
Lab Source ID: 1303017-03
Preparation: MET_3005A_LOW
Initial/Final: 100 / 25

| Analyte | Initial Sample Result (I) ug/L | Serial Dilution Result (S) ug/L | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|
| Antimony | ND | ND | | | SW6010C | 10.00 |
| Arsenic | ND | ND | | | SW6010C | 10.00 |
| Iron | 254.11 | 283.72 | 11.7 | | SW6010C | 10.00 |
| Manganese | 1370.6 | 1524 | 11.2 | E | SW6010C | 10.00 |
| Silver | ND | ND | | | SW6010C | 10.00 |
| Thallium | ND | ND | | | SW6010C | 10.00 |
| Vanadium | 17.053 | ND | | | SW6010C | 10.00 |

# SERIAL DILUTION

## SW6010C

MPT-2039-MW01I-022813

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Sequence: 3C07313
Preparation: MET_3005A_LOW

SDG: 1303017
Project: NAS Mayport CTO JM71
Laboratory ID: 3C06507-DUP4
Lab Source ID: 1303017-03RE1
Initial/Final: 100 / 25

| Analyte | Initial Sample Result (I) ug/L | Serial Dilution Result (S) ug/L | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|
| Aluminum | 52.912 | ND | | | SW6010C | 10.00 |
| Chromium | ND | ND | | | SW6010C | 10.00 |
| Lead | ND | ND | | | SW6010C | 10.00 |
| Zinc | ND | ND | | | SW6010C | 10.00 |

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1303017

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/21/2012

| Analyte | Wave-length (nm) | Interelement Correction Factors for: | | | | |
|---|---|---|---|---|---|---|
| | | Al | Ca | Fe | Mg | Ag |
| Aluminum | 396.1 | 0.0000000 | 0.977544 | 0.000043 | 0.0000000 | 0.0000000 |
| Antimony | 206.8 | 0.000004 | 0.0000000 | -0.000014 | 0.0000000 | 0.0000000 |
| Arsenic | 189.0 | -0.000009 | 0.0000000 | -0.000008 | 0.0000000 | 0.0000000 |
| Chromium | 267.7 | 0.0000000 | 0.0000000 | 0.000003 | 0.005608 | 0.0000000 |
| Iron | 261.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Lead | 220.3 | 0.000253 | 0.002914 | 0.000020 | 0.000325 | 0.0000000 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.000028 | 0.0000000 | 0.0000000 |
| Silver | 328.0 | 0.0000000 | 0.0000000 | 0.000002 | 0.0000000 | 0.0000000 |
| Thallium | 190.8 | 0.000006 | 0.0000000 | 0.000018 | 0.0000000 | 0.0000000 |
| Vanadium | 292.4 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Zinc | 206.2 | 0.000019 | 0.000827 | -0.000001 | 0.0000000 | 0.0000000 |

Comments:

FORM XA-IN

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1303017

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/21/2012

| Analyte | Wave-length (nm) | Interelement Correction Factors for: As | B | Ba | Be | Cd |
|---|---|---|---|---|---|---|
| Aluminum | 396.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Antimony | 206.8 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Arsenic | 189.0 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Chromium | 267.7 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | -0.000214 |
| Iron | 261.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Lead | 220.3 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Silver | 328.0 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Thallium | 190.8 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Vanadium | 292.4 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Zinc | 206.2 | 0.0000000 | 0.0000000 | 0.0000000 | 0.008258 | 0.000425 |

Comments:

FORM XA-IN

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1303017

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/21/2012

| Analyte | Wave-length (nm) | Interelement Correction Factors for: | | | | |
|---|---|---|---|---|---|---|
| | | Co | Cr | Cu | K | Mn |
| Aluminum | 396.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Antimony | 206.8 | 0.0000000 | 0.030035 | 0.0000000 | 0.0000000 | 0.0000000 |
| Arsenic | 189.0 | 0.0000000 | 0.000754 | 0.0000000 | 0.0000000 | 0.0000000 |
| Chromium | 267.7 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.000596 |
| Iron | 261.1 | 0.0000000 | -0.000701 | 0.0000000 | 0.0000000 | -0.000794 |
| Lead | 220.3 | -0.000077 | 0.0000000 | 0.000399 | 0.0000000 | 0.000116 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Silver | 328.0 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.000150 |
| Thallium | 190.8 | 0.002500 | 0.000203 | 0.0000000 | 0.0000000 | 0.000826 |
| Vanadium | 292.4 | 0.0000000 | -0.008813 | 0.0000000 | 0.0000000 | -0.000616 |
| Zinc | 206.2 | 0.0000000 | 0.000032 | 0.000003 | 0.0000000 | 0.0000000 |

Comments:

FORM XA-IN

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1303017

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/21/2012

| Analyte | Wave-length (nm) | Interelement Correction Factors for: | | | | |
|---|---|---|---|---|---|---|
| | | Mo | Na | Ni | Pb | Sb |
| Aluminum | 396.1 | 0.041890 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Antimony | 206.8 | -0.003387 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Arsenic | 189.0 | 0.004645 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Chromium | 267.7 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Iron | 261.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Lead | 220.3 | -0.001107 | 0.0000000 | 0.000120 | 0.0000000 | 0.0000000 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Silver | 328.0 | -0.000046 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Thallium | 190.8 | 0.000023 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Vanadium | 292.4 | -0.000106 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Zinc | 206.2 | 0.000173 | 0.0000000 | 0.000200 | 0.0000000 | 0.000004 |

Comments:

FORM XA-IN

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1303017

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/21/2012

| Analyte | Wave-length (nm) | Interelement Correction Factors for: | | | | |
|---|---|---|---|---|---|---|
| | | Se | Sn | Ti | Tl | V |
| Aluminum | 396.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Antimony | 206.8 | 0.0000000 | 0.0000000 | 0.000923 | 0.0000000 | 0.000048 |
| Arsenic | 189.0 | 0.0000000 | 0.0000000 | 0.000075 | 0.0000000 | 0.000084 |
| Chromium | 267.7 | 0.0000000 | 0.0000000 | 0.000123 | 0.0000000 | -0.000018 |
| Iron | 261.1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Lead | 220.3 | 0.0000000 | 0.0000000 | -0.000006 | 0.0000000 | -0.000126 |
| Manganese | 257.6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Silver | 328.0 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | -0.003767 |
| Thallium | 190.8 | 0.0000000 | 0.0000000 | -0.000719 | 0.0000000 | 0.000618 |
| Vanadium | 292.4 | 0.0000000 | 0.0000000 | 0.000197 | 0.0000000 | 0.0000000 |
| Zinc | 206.2 | -0.000008 | 0.0000000 | 0.0000000 | 0.0000000 | 0.000226 |

Comments:

FORM XA-IN

USEPA - CLP

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: Tetra Tech, Inc. (T010)

SDG No.: 1303017

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 12/21/2012

| Analyte | Wave-length (nm) | Interelement Correction Factors for: Zn | | | | |
|---|---|---|---|---|---|---|
| Aluminum | 396.1 | 0.0000000 | | | | |
| Antimony | 206.8 | 0.0000000 | | | | |
| Arsenic | 189.0 | -0.000011 | | | | |
| Chromium | 267.7 | 0.0000000 | | | | |
| Iron | 261.1 | 0.0000000 | | | | |
| Lead | 220.3 | 0.0000000 | | | | |
| Manganese | 257.6 | 0.0000000 | | | | |
| Silver | 328.0 | 0.0000000 | | | | |
| Thallium | 190.8 | 0.0000000 | | | | |
| Vanadium | 292.4 | 0.0000000 | | | | |
| Zinc | 206.2 | 0.0000000 | | | | |

Comments:

FORM XA-IN

# ICP-AES AND ICP-MS LINEAR RANGES (QUARTERLY)

Lab Name: Empirical Laboratories, LLC

Client: Tetra Tech, Inc. (T010) SDG: 1303017

Project: NAS Mayport CTO JM71

ICP Instrument ID: ME-ICP Date: 12/21/2012

| Analyte | Integ. Time (Sec.) | Concentration ug/L | M |
|---|---|---|---|
| Aluminum | 15 | 500000 | P |
| Antimony | 15 | 10000 | P |
| Arsenic | 15 | 10000 | P |
| Chromium | 15 | 10000 | P |
| Iron | 15 | 500000 | P |
| Lead | 15 | 10000 | P |
| Manganese | 15 | 10000 | P |
| Silver | 15 | 2000 | P |
| Thallium | 15 | 10000 | P |
| Vanadium | 15 | 10000 | P |
| Zinc | 15 | 10000 | P |

# PREPARATION BATCH SUMMARY

## SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1303017

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 3C06507 Batch Matrix: Water Preparation: MET_3005A_LOW

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-RUNWAY23-MW01S-022813 | 1303017-01 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-DUP01-022813 | 1303017-02 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-2039-MW01I-022813 | 1303017-03 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-2039-MW01I-022813 | 1303017-03RE1 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-02-MW17I-022813 | 1303017-04 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-02-MW17I-022813 | 1303017-04RE1 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-02-MW17S-022813 | 1303017-05 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-02-MW17S-022813 | 1303017-05RE1 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-AC-GW-DPW02I-022813 | 1303017-06 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-AC-GW-DPW02S-022813 | 1303017-07 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-459-MW01I-022813 | 1303017-08 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-1358-MW01S-022813 | 1303017-09 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-1358-MW01S-022813 | 1303017-09RE1 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-2050-MW01S-022813 | 1303017-10 | 03/06/13 09:33 | 100.00 | 25.00 |
| Blank | 3C06507-BLK1 | 03/06/13 09:33 | 100.00 | 25.00 |
| LCS | 3C06507-BS1 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-2039-MW01I-022813 | 3C06507-DUP1 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-2039-MW01I-022813 | 3C06507-DUP2 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-2039-MW01I-022813 | 3C06507-DUP3 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-2039-MW01I-022813 | 3C06507-DUP4 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-2039-MW01I-022813 | 3C06507-MS1 | 03/06/13 09:33 | 100.00 | 25.00 |
| MPT-2039-MW01I-022813 | 3C06507-PS1 | 03/06/13 09:33 | 100.00 | 25.00 |

# PREPARATION BATCH SUMMARY

## SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1303017

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 3C07006 Batch Matrix: Water Preparation: MET_3005A_LOW

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-DUP02-022813 | 1303017-11 | 03/07/13 09:25 | 100.00 | 25.00 |
| MPT-08-MW05S-030113 | 1303017-12 | 03/07/13 09:25 | 100.00 | 25.00 |
| MPT-08-MW05I-030113 | 1303017-13 | 03/07/13 09:25 | 100.00 | 25.00 |
| MPT-02-MW35I-030113 | 1303017-14 | 03/07/13 09:25 | 100.00 | 25.00 |
| MPT-02-MW35I-030113 | 1303017-14RE1 | 03/07/13 09:25 | 100.00 | 25.00 |
| MPT-02-MW35RS-030113 | 1303017-15 | 03/07/13 09:25 | 100.00 | 25.00 |
| MPT-53-DPWR01S-030113 | 1303017-16 | 03/07/13 09:25 | 100.00 | 25.00 |
| MPT-2062-MW01I-030113 | 1303017-17 | 03/07/13 09:25 | 100.00 | 25.00 |
| MPT-2062-MW01I-030113 | 1303017-17RE1 | 03/07/13 09:25 | 100.00 | 25.00 |
| MPT-RINSATE01-030113 | 1303017-18 | 03/07/13 09:25 | 100.00 | 25.00 |
| Blank | 3C07006-BLK1 | 03/07/13 09:25 | 100.00 | 25.00 |
| LCS | 3C07006-BS1 | 03/07/13 09:25 | 100.00 | 25.00 |

# ANALYSIS SEQUENCE SUMMARY
## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 3C07103 | Instrument: | ME-ICP |
| Calibration: | 3073001 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Cal Standard | 3C07103-CAL1 | 031113A-002 | 03/11/13 09:34 |
| Cal Standard | 3C07103-CAL2 | 031113A-003 | 03/11/13 09:39 |
| Cal Standard | 3C07103-CAL3 | 031113A-004 | 03/11/13 09:44 |
| Cal Standard | 3C07103-CAL4 | 031113A-005 | 03/11/13 09:49 |
| Cal Standard | 3C07103-CAL5 | 031113A-006 | 03/11/13 09:54 |
| Cal Standard | 3C07103-CAL6 | 031113A-007 | 03/11/13 10:00 |
| Initial Cal Check | 3C07103-ICV1 | 031113B-001 | 03/11/13 10:48 |
| Initial Cal Blank | 3C07103-ICB1 | 031113B-002 | 03/11/13 10:55 |
| Instrument RL Check | 3C07103-CRL1 | 031113B-003 | 03/11/13 11:00 |
| Instrument RL Check | 3C07103-CRL2 | 031113B-004 | 03/11/13 11:05 |
| Interference Check A | 3C07103-IFA1 | 031113B-005 | 03/11/13 11:16 |
| Interference Check B | 3C07103-IFB1 | 031113B-006 | 03/11/13 11:33 |
| Calibration Check | 3C07103-CCV1 | 031113B-008 | 03/11/13 11:43 |
| Calibration Blank | 3C07103-CCB1 | 031113B-009 | 03/11/13 11:51 |
| Blank | 3C06507-BLK1 | 031113B-010 | 03/11/13 11:55 |
| LCS | 3C06507-BS1 | 031113B-011 | 03/11/13 12:00 |
| Calibration Check | 3C07103-CCV2 | 031113B-024 | 03/11/13 13:13 |
| Calibration Blank | 3C07103-CCB2 | 031113B-025 | 03/11/13 13:23 |
| Calibration Check | 3C07103-CCV3 | 031113B-040 | 03/11/13 14:34 |
| Calibration Blank | 3C07103-CCB3 | 031113B-041 | 03/11/13 14:42 |
| MPT-RUNWAY23-MW01S-022813 | 1303017-01 | 031113C-001 | 03/11/13 14:48 |
| MPT-DUP01-022813 | 1303017-02 | 031113C-002 | 03/11/13 14:53 |
| MPT-2039-MW01I-022813 | 1303017-03 | 031113C-003 | 03/11/13 14:58 |
| MPT-2039-MW01I-022813 | 3C06507-DUP1 | 031113C-004 | 03/11/13 15:03 |
| MPT-2039-MW01I-022813 | 3C06507-MS1 | 031113C-005 | 03/11/13 15:08 |
| MPT-2039-MW01I-022813 | 3C06507-PS1 | 031113C-006 | 03/11/13 15:13 |
| MPT-2039-MW01I-022813 | 3C06507-DUP2 | 031113C-007 | 03/11/13 15:20 |
| MPT-02-MW17I-022813 | 1303017-04 | 031113C-008 | 03/11/13 15:24 |
| MPT-02-MW17S-022813 | 1303017-05 | 031113C-009 | 03/11/13 15:30 |
| MPT-AC-GW-DPW02I-022813 | 1303017-06 | 031113C-010 | 03/11/13 15:35 |
| MPT-AC-GW-DPW02S-022813 | 1303017-07 | 031113C-011 | 03/11/13 15:40 |
| MPT-459-MW01I-022813 | 1303017-08 | 031113C-012 | 03/11/13 15:45 |

# ANALYSIS SEQUENCE SUMMARY

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 3C07103 | Instrument: | ME-ICP |
| Calibration: | 3073001 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| MPT-1358-MW01S-022813 | 1303017-09 | 031113C-013 | 03/11/13 15:50 |
| MPT-2050-MW01S-022813 | 1303017-10 | 031113C-014 | 03/11/13 15:55 |
| Calibration Check | 3C07103-CCV4 | 031113C-015 | 03/11/13 16:01 |
| Calibration Blank | 3C07103-CCB4 | 031113C-016 | 03/11/13 16:08 |
| Blank | 3C07006-BLK1 | 031113C-017 | 03/11/13 16:13 |
| LCS | 3C07006-BS1 | 031113C-018 | 03/11/13 16:17 |
| Calibration Check | 3C07103-CCV5 | 031113C-033 | 03/11/13 17:33 |
| Calibration Blank | 3C07103-CCB5 | 031113C-034 | 03/11/13 17:41 |
| MPT-DUP02-022813 | 1303017-11 | 031113C-037 | 03/11/13 17:55 |
| MPT-08-MW05S-030113 | 1303017-12 | 031113C-038 | 03/11/13 18:00 |
| MPT-08-MW05I-030113 | 1303017-13 | 031113C-039 | 03/11/13 18:05 |
| MPT-02-MW35I-030113 | 1303017-14 | 031113C-040 | 03/11/13 18:10 |
| MPT-02-MW35RS-030113 | 1303017-15 | 031113C-041 | 03/11/13 18:16 |
| MPT-53-DPWR01S-030113 | 1303017-16 | 031113C-042 | 03/11/13 18:21 |
| MPT-2062-MW01I-030113 | 1303017-17 | 031113C-043 | 03/11/13 18:26 |
| MPT-RINSATE01-030113 | 1303017-18 | 031113C-044 | 03/11/13 18:31 |
| Calibration Check | 3C07103-CCV6 | 031113C-045 | 03/11/13 18:36 |
| Calibration Blank | 3C07103-CCB6 | 031113C-046 | 03/11/13 18:44 |

# ANALYSIS SEQUENCE SUMMARY

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 3C07313 | Instrument: | ME-ICP |
| Calibration: | 3073004 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Cal Standard | 3C07313-CAL1 | 031313A-001 | 03/13/13 09:39 |
| Cal Standard | 3C07313-CAL2 | 031313A-002 | 03/13/13 09:44 |
| Cal Standard | 3C07313-CAL3 | 031313A-003 | 03/13/13 09:49 |
| Cal Standard | 3C07313-CAL4 | 031313A-004 | 03/13/13 09:54 |
| Cal Standard | 3C07313-CAL5 | 031313A-005 | 03/13/13 09:59 |
| Cal Standard | 3C07313-CAL6 | 031313A-006 | 03/13/13 10:05 |
| Initial Cal Check | 3C07313-ICV1 | 031313B-001 | 03/13/13 10:54 |
| Initial Cal Blank | 3C07313-ICB1 | 031313B-002 | 03/13/13 11:01 |
| Instrument RL Check | 3C07313-CRL1 | 031313B-003 | 03/13/13 11:06 |
| Instrument RL Check | 3C07313-CRL2 | 031313B-004 | 03/13/13 11:11 |
| Interference Check A | 3C07313-IFA1 | 031313B-005 | 03/13/13 11:16 |
| Interference Check B | 3C07313-IFB1 | 031313B-006 | 03/13/13 11:23 |
| Calibration Check | 3C07313-CCV1 | 031313B-008 | 03/13/13 11:34 |
| Calibration Blank | 3C07313-CCB1 | 031313B-009 | 03/13/13 11:41 |
| Calibration Check | 3C07313-CCV6 | 031313B-081 | 03/13/13 17:50 |
| Calibration Blank | 3C07313-CCB6 | 031313B-082 | 03/13/13 17:57 |
| MPT-2039-MW01I-022813 | 1303017-03RE1 | 031313B-084 | 03/13/13 18:07 |
| MPT-2039-MW01I-022813 | 3C06507-DUP3 | 031313B-085 | 03/13/13 18:12 |
| MPT-2039-MW01I-022813 | 3C06507-DUP4 | 031313B-086 | 03/13/13 18:16 |
| MPT-02-MW17I-022813 | 1303017-04RE1 | 031313B-087 | 03/13/13 18:21 |
| MPT-02-MW17S-022813 | 1303017-05RE1 | 031313B-088 | 03/13/13 18:26 |
| MPT-1358-MW01S-022813 | 1303017-09RE1 | 031313B-090 | 03/13/13 18:36 |
| Calibration Check | 3C07313-CCV7 | 031313B-095 | 03/13/13 19:01 |
| Calibration Blank | 3C07313-CCB7 | 031313B-096 | 03/13/13 19:08 |
| MPT-02-MW35I-030113 | 1303017-14RE1 | 031313B-100 | 03/13/13 19:29 |
| MPT-2062-MW01I-030113 | 1303017-17RE1 | 031313B-102 | 03/13/13 19:38 |
| Calibration Check | 3C07313-CCV8 | 031313B-107 | 03/13/13 20:03 |
| Calibration Blank | 3C07313-CCB8 | 031313B-108 | 03/13/13 20:10 |

# INITIAL CALIBRATION DATA

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 3073001 | Instrument: | ME-ICP |
| Matrix: | Water | Calibration Dates: | 3/11/13 9:34 3/11/13 10:12 |

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF |
| Aluminum | 0 | 0 | 5000 | 1.7746E-05 | 10000 | 1.8313E-05 | | | 500000 | 1.7373E-05 | | |
| Antimony | 0 | 0 | 100 | 0.000702 | 1000 | 7.6597E-04 | | | | | 10000 | 7.5248E-04 |
| Arsenic | 0 | 0 | 100 | 0.0003744 | 1000 | 4.0687E-04 | | | | | 10000 | 3.9353E-04 |
| Barium | 0 | 0 | 50 | 0.0119546 | 1000 | 0.011782 | 5000 | 0.0120278 | | | | |
| Beryllium | 0 | 0 | 100 | 0.0018495 | 1000 | 0.0019053 | | | | | 10000 | 0.001845 |
| Boron | 0 | 0 | 50 | 0.000014 | 1000 | 1.499E-05 | | | | | 5000 | 1.4382E-05 |
| Cadmium | 0 | 0 | 100 | 0.017174 | 1000 | 0.017264 | | | | | 10000 | 0.015896 |
| Calcium | 0 | 0 | 1100 | 5.200909E-05 | 50000 | 5.0218E-05 | | | | | 10000 | |
| Chromium | 0 | 0 | 100 | 0.0000374 | 1000 | 3.667E-05 | | | | | 10000 | 3.7061E-05 |
| Cobalt | 0 | 0 | 100 | 0.0050012 | 1000 | 0.0049939 | | | | | 10000 | 0.0049798 |
| Copper | 0 | 0 | 100 | 0.0000685 | 1000 | 6.373E-05 | | | | | 10000 | 6.1102E-05 |
| Iron | 0 | 0 | 5100 | 1.397255E-05 | 10000 | 1.3677E-05 | | | 500000 | 1.28534E-05 | 10000 | |
| Lead | 0 | 0 | 100 | 0.0011759 | 1000 | 0.0011667 | | | | | 10000 | 0.0011742 |
| Magnesium | 0 | 0 | 5100 | | 50000 | 1.5042E-06 | | | 500000 | 1.53272E-06 | 10000 | |
| Manganese | 0 | 0 | 100 | 0.0002222 | 1000 | 2.1685E-04 | 10000 | 2.0108E-04 | | | 10000 | |
| Molybdenum | 0 | 0 | 100 | 0.0039029 | 1000 | 0.004071 | | | | | 10000 | 0.0039637 |
| Nickel | 0 | 0 | 100 | 0.0035623 | 1000 | 0.0035796 | | | | | 10000 | 0.0035764 |
| Potassium | 0 | 0 | 1000 | 1.162E-05 | 10000 | 1.2269E-05 | | | | | | |
| Selenium | 0 | 0 | 100 | 0.0003945 | 1000 | 4.0165E-04 | | | | | 10000 | 3.8305E-04 |
| Silver | 0 | 0 | 20 | 0.0000495 | 500 | 4.806E-05 | 2000 | 4.8775E-05 | | | | |
| Sodium | 0 | 0 | 1000 | | 50000 | 5.0986E-05 | | | | | | |
| Thallium | 0 | 0 | 100 | 0.0007985 | 1000 | 8.0758E-04 | | | | | 10000 | 8.1383E-04 |
| Tin | 0 | 0 | 50 | 0.0012128 | 1000 | 0.0012559 | | | | | 5000 | 1.25242E-03 |
| Titanium | 0 | 0 | 100 | 0.000166 | 1000 | 1.6399E-04 | | | | | 10000 | 1.5766E-04 |
| Vanadium | 0 | 0 | 100 | 0.000033 | 1000 | 3.347E-05 | | | | | 10000 | 3.3785E-05 |
| Zinc | 0 | 0 | 100 | 0.0066878 | 1000 | 0.0067315 | | | | | 10000 | 0.0065528 |
| Strontium | 0 | 0 | 100 | 0.001371 | 1000 | 0.001402 | | | | | 10000 | 0.0014 |
| Lithium (outside certification) | 0 | 0 | 100 | 0.0000256 | 1000 | 2.637E-05 | | | | | 10000 | 2.6419E-05 |

# INITIAL CALIBRATION DATA (Continued)

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 3073001 | Instrument: | ME-ICP |
| Matrix: | Water | Calibration Dates: | 3/11/13 9:34 3/11/13 10:12 |

| Compound | Level 07 | | Level 08 | | Level 09 | | Level 10 | | Level 11 | | Level 12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF |
| Aluminum | | | | | | | | | | | | |
| Antimony | | | | | | | | | | | | |
| Arsenic | | | | | | | | | | | | |
| Barium | | | | | | | | | | | | |
| Beryllium | | | | | | | | | | | | |
| Boron | | | | | | | | | | | | |
| Cadmium | | | | | | | | | | | | |
| Calcium | 100000 | | 500000 | 4.681E-05 | | | | | | | | |
| Chromium | | | | | | | | | | | | |
| Cobalt | | | | | | | | | | | | |
| Copper | | | | | | | | | | | | |
| Iron | | | | | | | | | | | | |
| Lead | | | | | | | | | | | | |
| Magnesium | | | 100000 | 1.4388E-06 | | | | | | | | |
| Manganese | | | | | | | | | | | | |
| Molybdenum | | | | | | | | | | | | |
| Nickel | | | | | | | | | | | | |
| Potassium | 100000 | 1.2175E-05 | | | | | | | | | | |
| Selenium | | | | | | | | | | | | |
| Silver | | | | | | | | | | | | |
| Sodium | 100000 | 4.8867E-05 | 500000 | 4.7624E-05 | | | | | | | | |
| Thallium | | | | | | | | | | | | |
| Tin | | | | | | | | | | | | |
| Titanium | | | | | | | | | | | | |
| Vanadium | | | | | | | | | | | | |
| Zinc | | | | | | | | | | | | |
| Strontium | | | | | | | | | | | | |
| Lithium (outside certification) | | | | | | | | | | | | |

# INITIAL CALIBRATION DATA (Continued)

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 3073001 | Instrument: | ME-ICP |
| Matrix: | Water | Calibration Dates: | 3/11/13 9:34 3/11/13 10:12 |

| Compound | Mean RF | RF RSD | Mean RT | RT RSD | Linear r | Quad COD | LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 1.3358E-05 | 66.72941 | 10.33636 | 178.3663 | 0.9999991 | | 0.998 | |
| Antimony | 5.551125E-04 | 66.85091 | 6.27425 | 187.7326 | 0.999995 | | 0.998 | |
| Arsenic | 0.0002937 | 66.82089 | 6.826277 | 189.1962 | 0.9999862 | | 0.998 | |
| Barium | 0.0089411 | 66.67663 | 2.181665 | 166.2458 | 0.9999817 | | 0.998 | |
| Beryllium | 1.39995E-03 | 66.69545 | 24.10372 | 194.3647 | 0.9999893 | | 0.998 | |
| Boron | 1.0843E-05 | 66.77259 | 31.48132 | 196.8566 | 0.9999199 | | 0.998 | |
| Cadmium | 0.0125835 | 66.85128 | 1.837243 | 156.6696 | 0.9999312 | | 0.998 | |
| Calcium | 3.725927E-05 | 66.91743 | 1.167342 | 102.6999 | 0.9999485 | | 0.998 | |
| Chromium | 2.778275E-05 | 66.67531 | 4.629235 | 174.7364 | 0.9999987 | | 0.998 | |
| Cobalt | 3.743725E-03 | 66.66709 | 2.407015 | 173.2747 | 0.9999999 | | 0.998 | |
| Copper | 4.8333E-05 | 66.96703 | 0.5532275 | 77.60525 | 0.9999883 | | 0.998 | |
| Iron | 1.012574E-05 | 66.83047 | 206.418 | 199.1564 | 0.9999988 | | 0.998 | |
| Lead | 0.0008792 | 66.66822 | 34.88221 | 198.1871 | 0.9999996 | | 0.998 | |
| Magnesium | 1.11893E-06 | 66.7592 | 43.55837 | 198.2193 | 0.9998454 | | 0.998 | |
| Manganese | 1.600325E-04 | 66.90163 | 52.56617 | 198.5992 | 0.9999444 | | 0.998 | |
| Molybdenum | 0.0029844 | 66.70733 | 12.71784 | 195.1354 | 0.9999922 | | 0.998 | |
| Nickel | 2.679575E-03 | 66.66726 | 7.518668 | 190.8999 | 1 | | 0.998 | |
| Potassium | 9.016E-06 | 66.74229 | 2.211907 | 133.0241 | 0.9999987 | | 0.998 | |
| Selenium | 0.0002948 | 66.71729 | 3.233175 | 171.3068 | 0.9999794 | | 0.998 | |
| Silver | 3.658375E-05 | 66.68603 | 9.39582 | 191.9778 | 0.9999832 | | 0.998 | |
| Sodium | 3.686925E-05 | 66.77288 | 11.73071 | 181.0315 | 0.9999497 | | 0.998 | |
| Thallium | 6.049775E-04 | 66.67479 | 4.952073 | 183.1484 | 0.9999996 | | 0.998 | |
| Tin | 9.3028E-04 | 66.69978 | 4.75249 | 182.1199 | 0.9999993 | | 0.998 | |
| Titanium | 1.219125E-04 | 66.73037 | 1.637283 | 126.6681 | 0.9999867 | | 0.998 | |
| Vanadium | 2.506375E-05 | 66.67909 | 41.92242 | 196.9159 | 0.9999993 | | 0.998 | |
| Zinc | 4.993025E-03 | 66.68407 | 0.5975925 | 106.6642 | 0.9999932 | | 0.998 | |
| Strontium | 1.04325E-03 | 66.68049 | 1.70545 | 110.8963 | 0.9999999 | | 0.998 | |
| Lithium (outside certification) | 1.959725E-05 | 66.69413 | 30.65143 | 195.3774 | 0.9999999 | | 0.998 | |

# INITIAL CALIBRATION DATA

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 3073004 | Instrument: | ME-ICP |
| Matrix: | Water | Calibration Dates: | 3/13/13 9:39 3/13/13 10:17 |

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF |
| Aluminum | 0 | 0 | 5000 | 2.1344E-05 | 10000 | 2.1748E-05 | | | 500000 | 2.1606E-05 | | |
| Antimony | 0 | 0 | 100 | 0.0005488 | 1000 | 0.0006671 | | | | | 10000 | 6.7006E-04 |
| Arsenic | 0 | 0 | 100 | 0.0003447 | 1000 | 3.7037E-04 | | | | | 10000 | 3.5986E-04 |
| Barium | 0 | 0 | 50 | 0.0104806 | 1000 | 0.010094 | 5000 | 0.0102066 | | | | |
| Beryllium | 0 | 0 | 100 | 0.0021179 | 1000 | 0.0021704 | | | | | 10000 | 0.0020976 |
| Boron | 0 | 0 | 50 | 0.0000146 | 1000 | 1.566E-05 | | | | | 5000 | 1.5322E-05 |
| Cadmium | 0 | 0 | 100 | 0.014233 | 1000 | 0.013951 | | | | | 10000 | 0.01292 |
| Calcium | 0 | 0 | 1100 | 4.860909E-05 | 50000 | 4.6354E-05 | | | | | 10000 | |
| Chromium | 0 | 0 | 100 | 0.000038 | 1000 | 3.666E-05 | | | | | 10000 | 3.6084E-05 |
| Cobalt | 0 | 0 | 100 | 0.0053163 | 1000 | 0.0052233 | | | | | 10000 | 0.0052913 |
| Copper | 0 | 0 | 100 | 0.0000758 | 1000 | 7.244E-05 | | | | | 10000 | 7.1906E-05 |
| Iron | 0 | 0 | 5100 | 1.266275E-05 | 10000 | 1.2041E-05 | | | 500000 | 1.15026E-05 | 10000 | |
| Lead | 0 | 0 | 100 | 0.0012773 | 1000 | 0.0012413 | | | | | 10000 | 0.0012683 |
| Magnesium | 0 | 0 | 5100 | | 50000 | 1.0992E-06 | | | 500000 | 1.15302E-06 | 10000 | |
| Manganese | 0 | 0 | 100 | 0.0002686 | 1000 | 2.6037E-04 | 10000 | 2.4399E-04 | | | 10000 | |
| Molybdenum | 0 | 0 | 100 | 0.0031254 | 1000 | 0.0031664 | | | | | 10000 | 0.0031116 |
| Nickel | 0 | 0 | 100 | 0.0032565 | 1000 | 0.0031952 | | | | | 10000 | 0.0032141 |
| Potassium | 0 | 0 | 1000 | 9.97E-06 | 10000 | 1.0131E-05 | | | | | | |
| Selenium | 0 | 0 | 100 | 0.000413 | 1000 | 4.1354E-04 | | | | | 10000 | 4.0413E-04 |
| Silver | 0 | 0 | 20 | 0.000043 | 500 | 4.064E-05 | 2000 | 4.156E-05 | | | | |
| Sodium | 0 | 0 | 1000 | | 50000 | 4.4868E-05 | | | | | | |
| Thallium | 0 | 0 | 100 | 0.000698 | 1000 | 6.8323E-04 | | | | | 10000 | 6.8903E-04 |
| Tin | 0 | 0 | 50 | 0.0011388 | 1000 | 0.0011626 | | | | | 5000 | 1.16256E-03 |
| Titanium | 0 | 0 | 100 | 0.0001913 | 1000 | 1.8708E-04 | | | | | 10000 | 1.8827E-04 |
| Vanadium | 0 | 0 | 100 | 0.0000417 | 1000 | 4.107E-05 | | | | | 10000 | 4.1505E-05 |
| Zinc | 0 | 0 | 100 | 0.0055684 | 1000 | 0.0054686 | | | | | 10000 | 0.005282 |
| Strontium | 0 | 0 | 100 | 0.001637 | 1000 | 0.00166 | | | | | 10000 | 0.001632 |
| Lithium (outside certification) | 0 | 0 | 100 | 0.0000269 | 1000 | 2.739E-05 | | | | | 10000 | 2.7735E-05 |

# INITIAL CALIBRATION DATA (Continued)

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 3073004 | Instrument: | ME-ICP |
| Matrix: | Water | Calibration Dates: | 3/13/13 9:39 3/13/13 10:17 |

| Compound | Level 07 | | Level 08 | | Level 09 | | Level 10 | | Level 11 | | Level 12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF | ug/L | RF |
| Aluminum | | | | | | | | | | | | |
| Antimony | | | | | | | | | | | | |
| Arsenic | | | | | | | | | | | | |
| Barium | | | | | | | | | | | | |
| Beryllium | | | | | | | | | | | | |
| Boron | | | | | | | | | | | | |
| Cadmium | | | | | | | | | | | | |
| Calcium | 100000 | | 500000 | 4.362E-05 | | | | | | | | |
| Chromium | | | | | | | | | | | | |
| Cobalt | | | | | | | | | | | | |
| Copper | | | | | | | | | | | | |
| Iron | | | | | | | | | | | | |
| Lead | | | | | | | | | | | | |
| Magnesium | | | 100000 | 1.0708E-06 | | | | | | | | |
| Manganese | | | | | | | | | | | | |
| Molybdenum | | | | | | | | | | | | |
| Nickel | | | | | | | | | | | | |
| Potassium | 100000 | 1.0059E-05 | | | | | | | | | | |
| Selenium | | | | | | | | | | | | |
| Silver | | | | | | | | | | | | |
| Sodium | 100000 | 4.3019E-05 | 500000 | 4.2036E-05 | | | | | | | | |
| Thallium | | | | | | | | | | | | |
| Tin | | | | | | | | | | | | |
| Titanium | | | | | | | | | | | | |
| Vanadium | | | | | | | | | | | | |
| Zinc | | | | | | | | | | | | |
| Strontium | | | | | | | | | | | | |
| Lithium (outside certification) | | | | | | | | | | | | |

# INITIAL CALIBRATION DATA (Continued)

## SW6010C

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Calibration: | 3073004 | Instrument: | ME-ICP |
| Matrix: | Water | Calibration Dates: | 3/13/13 9:39 3/13/13 10:17 |

| Compound | Mean RF | RF RSD | Mean RT | RT RSD | Linear r | Quad COD | LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 1.61745E-05 | 66.6747 | 7.43115 | 176.6987 | 1 | | 0.998 | |
| Antimony | 4.7149E-04 | 67.73427 | 1.393597 | 115.1925 | 0.9999987 | | 0.998 | |
| Arsenic | 2.687325E-04 | 66.78187 | 6.150918 | 187.6691 | 0.9999894 | | 0.998 | |
| Barium | 0.0076953 | 66.70004 | 3.062082 | 175.8751 | 0.999994 | | 0.998 | |
| Beryllium | 1.596475E-03 | 66.69435 | 6.876905 | 171.9304 | 0.9999882 | | 0.998 | |
| Boron | 1.13955E-05 | 66.77946 | 18.7282 | 190.5163 | 0.9999767 | | 0.998 | |
| Cadmium | 0.010276 | 66.8925 | 2.33748 | 144.5858 | 0.9999425 | | 0.998 | |
| Calcium | 3.464577E-05 | 66.92617 | 1.981743 | 102.6766 | 0.9999621 | | 0.998 | |
| Chromium | 2.7686E-05 | 66.72968 | 3.365308 | 162.9336 | 0.9999981 | | 0.998 | |
| Cobalt | 3.957725E-03 | 66.67406 | 3.542988 | 180.7156 | 0.9999982 | | 0.998 | |
| Copper | 5.50365E-05 | 66.74019 | 0.8206725 | 46.22104 | 0.9999998 | | 0.998 | |
| Iron | 9.051586E-06 | 66.87205 | 80.87565 | 197.7408 | 0.9999991 | | 0.998 | |
| Lead | 9.46725E-04 | 66.68624 | 6.197245 | 182.8972 | 0.9999952 | | 0.998 | |
| Magnesium | 8.30755E-07 | 66.79289 | 17.73991 | 195.2478 | 0.9998061 | | 0.998 | |
| Manganese | 1.9324E-04 | 66.87649 | 28.37737 | 195.1153 | 0.9999598 | | 0.998 | |
| Molybdenum | 2.35085E-03 | 66.67401 | 19.58786 | 195.1514 | 0.9999969 | | 0.998 | |
| Nickel | 2.41645E-03 | 66.6751 | 5.911605 | 186.2049 | 0.9999996 | | 0.998 | |
| Potassium | 7.54E-06 | 66.67239 | 10.97111 | 178.5728 | 0.9999994 | | 0.998 | |
| Selenium | 3.076675E-04 | 66.68141 | 3.989865 | 185.2278 | 0.9999958 | | 0.998 | |
| Silver | 0.0000313 | 66.73884 | 5.838003 | 173.086 | 0.9999618 | | 0.998 | |
| Sodium | 3.248075E-05 | 66.76458 | 6.826618 | 167.2582 | 0.9999574 | | 0.998 | |
| Thallium | 5.17565E-04 | 66.677 | 6.953245 | 185.3483 | 0.9999992 | | 0.998 | |
| Tin | 8.6599E-04 | 66.67923 | 2.409473 | 164.3209 | 0.9999999 | | 0.998 | |
| Titanium | 1.416625E-04 | 66.67846 | 1.798808 | 94.37426 | 0.9999992 | | 0.998 | |
| Vanadium | 3.106875E-05 | 66.67205 | 0.978735 | 84.32039 | 0.9999987 | | 0.998 | |
| Zinc | 4.07975E-03 | 66.73013 | 1.148218 | 117.4116 | 0.9999892 | | 0.998 | |
| Strontium | 1.23225E-03 | 66.67401 | 4.7914 | 149.5649 | 0.9999971 | | 0.998 | |
| Lithium (outside certification) | 2.050625E-05 | 66.6876 | 22.78396 | 196.6011 | 0.9999988 | | 0.998 | |

# PREPARATION BENCH SHEET

3C06507

**Empirical Laboratories, LLC**

**Printed: 3/22/2013 12:52:08PM**

**Instrument:**

**Matrix: Water** **Prepared using: METALS - MET_3005A_LOW** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1302193-01 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | see versions |
| 1302193-01RE1 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | see versions |
| 1302193-01RE2 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/19/2013 by BLQ |
| 1302193-02 | C | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | |
| 1302193-02RE1 | C | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/12/2013 by BLQ |
| 1302193-02RE2 | C | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/21/2013 by BLQ |
| 1302193-03 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | see versions |
| 1302193-03RE1 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | see versions |
| 1302193-03RE2 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/19/2013 by BLQ |
| 1302193-04 | C | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | |
| 1302193-04RE1 | C | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/12/2013 by BLQ |
| 1302193-04RE2 | C | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/21/2013 by BLQ |
| 1302193-05 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | see versions |
| 1302193-05RE1 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | see versions |
| 1302193-05RE2 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/19/2013 by BLQ |
| 1302193-06 | C | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | |
| 1302193-06RE1 | C | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/12/2013 by BLQ |
| 1302193-06RE2 | C | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/21/2013 by BLQ |
| 1302193-07 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | see versions |
| 1302193-08 | C | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | |
| 1302204-01 | B | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | see versions |
| 1302204-01RE1 | B | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | see versions |

# PREPARATION BENCH SHEET

3C06507

**Empirical Laboratories, LLC**

**Printed: 3/22/2013 12:52:08PM**

**Instrument:**

**Matrix: Water** **Prepared using: METALS - MET_3005A_LOW** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1302204-01RE2 | B | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/19/2013 by BLQ |
| 1302204-02 | C | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | |
| 1302204-02RE1 | C | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/12/2013 by BLQ |
| 1302204-02RE2 | C | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/21/2013 by BLQ |
| 1303017-01 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-02 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-03 | I | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | Added for BatchQC in: 3C06507 |
| 1303017-03 | I | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/MSD.MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-03RE1 | I | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/MSD.MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-03RE1 | I | MET_ICP_LOW6010C_FULL_I | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/12/2013 by BLQ |
| 1303017-03RE2 | I | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/19/2013 by BLQ |
| 1303017-04 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-04RE1 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-04RE2 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/19/2013 by BLQ |
| 1303017-05 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-05RE1 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-06 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-07 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-08 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-08RE1 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | Added 3/14/2013 by BLQ |
| 1303017-09 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-09RE1 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |

# PREPARATION BENCH SHEET

3C06507

**Empirical Laboratories, LLC**

**Printed: 3/22/2013 12:52:08PM**

**Instrument:**

**Matrix: Water** **Prepared using: METALS - MET_3005A_LOW** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1303017-10 | C | MET_ICP_LOW6010C_FULL | 03/06/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 3C06507-BLK1 | | QC | 03/06/2013 | 100 | 25 | | | | | NA | |
| 3C06507-BS1 | | QC | 03/06/2013 | 100 | 25 | 13B0275 | | 2000 | | NA | |
| 3C06507-DUP1 | | QC | 03/06/2013 | 100 | 25 | | 1303017-03 | | | NA | |
| 3C06507-DUP2 | | QC | 03/06/2013 | 100 | 25 | | 1303017-03 | | | NA | Added 3/12/2013 by BLQ |
| 3C06507-DUP3 | | QC | 03/06/2013 | 100 | 25 | | 1303017-03RE1 | | | NA | Added 3/14/2013 by BLQ |
| 3C06507-DUP4 | | QC | 03/06/2013 | 100 | 25 | | 1303017-03RE1 | | | NA | Added 3/14/2013 by BLQ |
| 3C06507-DUP5 | | QC | 03/06/2013 | 100 | 25 | | 1303017-03RE2 | | | NA | Added 3/19/2013 by BLQ |
| 3C06507-DUP6 | | QC | 03/06/2013 | 100 | 25 | | 1303017-03RE2 | | | NA | Added 3/19/2013 by BLQ |
| 3C06507-MS1 | | QC | 03/06/2013 | 100 | 25 | 13B0277 | 1303017-03 | 25 | | NA | |
| 3C06507-MSD1 | | QC | 03/06/2013 | 100 | 25 | 13B0277 | 1303017-03 | 25 | | NA | |
| 3C06507-PS1 | | QC | 03/06/2013 | 100 | 25 | 13B0277 | 1303017-03 | 25 | | NA | |

**Reagents Used:**

| Standard | Description |
|---|---|
| 12K0197 | Nitric acid |
| 13B0306 | Hydrochloric Acid |
| 13C0081 | Hydrogen Peroxide 30% |

# PREPARATION BENCH SHEET

3C07006

**Empirical Laboratories, LLC**

**Printed: 3/22/2013 12:53:58PM**

**Instrument:**

**Matrix: Water** **Prepared using: METALS - MET_3005A_LOW** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1303001-01 | D | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | see versions |
| 1303001-02 | C | MET_ICP_LOW6010C_FULL_I | 03/07/2013 | 100 | 25 | | | | | NA | |
| 1303001-03 | D | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | see versions |
| 1303001-03RE1 | D | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | Added 3/14/2013 by BLQ |
| 1303001-03RE2 | D | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | Added 3/19/2013 by BLQ |
| 1303001-04 | B | MET_ICP_LOW6010C_FULL_I | 03/07/2013 | 100 | 25 | | | | | NA | |
| 1303001-04RE1 | B | MET_ICP_LOW6010C_FULL_I | 03/07/2013 | 100 | 25 | | | | | NA | Added 3/14/2013 by BLQ |
| 1303001-04RE2 | B | MET_ICP_LOW6010C_FULL_I | 03/07/2013 | 100 | 25 | | | | | NA | Added 3/21/2013 by BLQ |
| 1303001-05 | D | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | see versions |
| 1303001-06 | C | MET_ICP_LOW6010C_FULL_I | 03/07/2013 | 100 | 25 | | | | | NA | |
| 1303006-01 | L | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | MS/MSD, see versions |
| 1303006-01 | L | MET_ICP_LOW6010C_FULL_I | 03/07/2013 | 100 | 25 | | | | | NA | Added for BatchQC in: 3C07006 |
| 1303006-01RE1 | L | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | Added 3/14/2013 by BLQ |
| 1303006-01RE1 | L | MET_ICP_LOW6010C_FULL_I | 03/07/2013 | 100 | 25 | | | | | NA | Added 3/14/2013 by BLQ |
| 1303006-03 | D | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | see versions |
| 1303006-04 | C | MET_ICP_LOW6010C_FULL_I | 03/07/2013 | 100 | 25 | | | | | NA | |
| 1303014-01 | D | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | see versions |
| 1303014-01RE1 | D | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | Added 3/14/2013 by BLQ |
| 1303014-02 | C | MET_ICP_LOW6010C_FULL_I | 03/07/2013 | 100 | 25 | | | | | NA | |
| 1303014-02RE1 | C | MET_ICP_LOW6010C_FULL_I | 03/07/2013 | 100 | 25 | | | | | NA | Added 3/14/2013 by BLQ |
| 1303014-03 | D | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | see versions |
| 1303017-11 | C | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |

# PREPARATION BENCH SHEET

3C07006

**Empirical Laboratories, LLC**

**Printed: 3/22/2013 12:53:58PM**

**Instrument:**

**Matrix: Water** **Prepared using: METALS - MET_3005A_LOW** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1303017-12 | C | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-13 | C | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-14 | C | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-14RE1 | C | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | Added 3/14/2013 by BLQ |
| 1303017-14RE2 | C | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | Added 3/19/2013 by BLQ |
| 1303017-15 | C | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-16 | C | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-16RE1 | C | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | Added 3/14/2013 by BLQ |
| 1303017-17 | C | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 1303017-17RE1 | C | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | Added 3/14/2013 by BLQ |
| 1303017-18 | C | MET_ICP_LOW6010C_FULL | 03/07/2013 | 100 | 25 | | | | | NA | MS/Dup Al,Sb,As,Cr,Fe,Pb,Mn,Ag,Tl,V,Zn |
| 3C07006-BLK1 | | QC | 03/07/2013 | 100 | 25 | | | | | NA | |
| 3C07006-BS1 | | QC | 03/07/2013 | 100 | 25 | 13B0275 | | 2000 | | NA | |
| 3C07006-DUP1 | | QC | 03/07/2013 | 100 | 25 | | 1303006-01 | | | NA | |
| 3C07006-DUP2 | | QC | 03/07/2013 | 100 | 25 | | 1303006-01RE1 | | | NA | |
| 3C07006-MS1 | | QC | 03/07/2013 | 100 | 25 | 13B0277 | 1303006-01 | 25 | | NA | |
| 3C07006-MSD1 | | QC | 03/07/2013 | 100 | 25 | 13B0277 | 1303006-01 | 25 | | NA | |
| 3C07006-PS1 | | QC | 03/07/2013 | 100 | 25 | 13B0277 | 1303006-01 | 25 | | NA | |

**Reagents Used:**

| Standard | Description |
|---|---|
| 12K0197 | Nitric acid |
| 13B0306 | Hydrochloric Acid |

# Data for Wet Chemistry Forms

# Sample Extraction Data

**Prep Method: pNone-E300.0**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1303017-01 [MPT-RUNWAY23-MW01S-022813] | 3C06509 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/06/13 |
| 1303017-02 [MPT-DUP01-022813] | 3C06509 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/06/13 |
| 1303017-06 [MPT-AC-GW-DPW02I-022813] | 3C06509 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/06/13 |
| 1303017-07 [MPT-AC-GW-DPW02S-022813] | 3C06509 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/06/13 |
| 1303017-08 [MPT-459-MW01I-022813] | 3C06509 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/06/13 |
| 1303017-09 [MPT-1358-MW01S-022813] | 3C06509 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/06/13 |
| 1303017-10 [MPT-2050-MW01S-022813] | 3C06509 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/06/13 |
| 1303017-11 [MPT-DUP02-022813] | 3C06509 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/06/13 |
| 1303017-12 [MPT-08-MW05S-030113] | 3C06509 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/06/13 |
| 1303017-13 [MPT-08-MW05I-030113] | 3C06509 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/06/13 |
| 1303017-14 [MPT-02-MW35I-030113] | 3C06509 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/06/13 |
| 1303017-15 [MPT-02-MW35RS-030113] | 3C06509 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/06/13 |
| 1303017-16 [MPT-53-DPWR01S-030113] | 3C06509 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/06/13 |

# Sample Extraction Data

**Prep Method: pNone-E300.0**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1303017-17 [MPT-2062-MW01I-030113] | 3C08009 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/08/13 |
| 1303017-18 [MPT-RINSATE01-030113] | 3C08009 | 5.00/5.00 | 5.00 | 5.00 | 1.00 | | | 03/08/13 |

# Sample Extraction Data

**Prep Method: pNone-SM4500NH3BG**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1303017-01 [MPT-RUNWAY23-MW01S-022813] | 3C12004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/12/13 |
| 1303017-02 [MPT-DUP01-022813] | 3C12004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/12/13 |
| 1303017-03 [MPT-2039-MW01I-022813] | 3C12004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/12/13 |
| 1303017-04 [MPT-02-MW17I-022813] | 3C12004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/12/13 |
| 1303017-05 [MPT-02-MW17S-022813] | 3C12004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/12/13 |
| 1303017-06 [MPT-AC-GW-DPW02I-022813] | 3C12004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/12/13 |

# Sample Extraction Data

**Prep Method: pNone-E300.0**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1303017-04RE1 [MPT-02-MW17I-022813] | 3C12020 | 5.00/5.00 | 5.00 | 5.00 | 5.00 | | | 03/06/13 |
| 1303017-05RE1 [MPT-02-MW17S-022813] | 3C12020 | 5.00/5.00 | 5.00 | 5.00 | 5.00 | | | 03/06/13 |

# Sample Extraction Data

**Prep Method: pNone-E300.0**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1303017-03RE2 [MPT-2039-MW01I-022813] | 3C13011 | 5.00/5.00 | 5.00 | 5.00 | 10.00 | | | 03/06/13 |

# Sample Extraction Data

**Prep Method: pNone-SM4500NH3BG**

| Lab Number [Field ID] | Batch | Nominal Initial/Final | Initial [mL] | Final [mL] | Dilution | % Solids | Notes | Date |
|---|---|---|---|---|---|---|---|---|
| 1303017-07 [MPT-AC-GW-DPW02S-022813] | 3C18004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/18/13 |
| 1303017-08 [MPT-459-MW01I-022813] | 3C18004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/18/13 |
| 1303017-09 [MPT-1358-MW01S-022813] | 3C18004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/18/13 |
| 1303017-10 [MPT-2050-MW01S-022813] | 3C18004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/18/13 |
| 1303017-11 [MPT-DUP02-022813] | 3C18004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/18/13 |
| 1303017-12 [MPT-08-MW05S-030113] | 3C18004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/18/13 |
| 1303017-13 [MPT-08-MW05I-030113] | 3C18004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/18/13 |
| 1303017-14 [MPT-02-MW35I-030113] | 3C18004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/18/13 |
| 1303017-15 [MPT-02-MW35RS-030113] | 3C18004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/18/13 |
| 1303017-16 [MPT-53-DPWR01S-030113] | 3C18004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/18/13 |
| 1303017-17 [MPT-2062-MW01I-030113] | 3C18004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/18/13 |
| 1303017-18 [MPT-RINSATE01-030113] | 3C18004 | 100.00/100.00 | 100 | 100 | 1.00 | | | 03/18/13 |

# ANALYSIS DATA SHEET

**MPT-RUNWAY23-MW01S-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-01 |
| Sampled: | 02/28/13 09:26 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 1.32 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 3C12004 | 03/12/13 14:50 |
| 14808-79-8 | Sulfate as SO4 | 32.7 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C06509 | 03/06/13 15:42 |

# ANALYSIS DATA SHEET

**MPT-DUP01-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-02 |
| Sampled: | 02/28/13 00:00 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 1.27 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 3C12004 | 03/12/13 14:51 |
| 14808-79-8 | Sulfate as SO4 | 32.5 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C06509 | 03/06/13 16:52 |

# ANALYSIS DATA SHEET

**MPT-2039-MW01I-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-03 |
| Sampled: | 02/28/13 10:40 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 3.64 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 3C12004 | 03/12/13 14:52 |
| 14808-79-8 | Sulfate as SO4 | 1730 | 3.30 | 10.0 | 25.0 | 10 | D | E300.0 | 3C13011 | 03/13/13 18:44 |

# ANALYSIS DATA SHEET

**MPT-02-MW17I-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-04 |
| Sampled: | 02/28/13 11:55 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 3.90 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 3C12004 | 03/12/13 14:54 |
| 14808-79-8 | Sulfate as SO4 | 888 | 1.65 | 5.00 | 12.5 | 5 | D | E300.0 | 3C12020 | 03/12/13 21:40 |

# ANALYSIS DATA SHEET

**MPT-02-MW17S-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-05 |
| Sampled: | 02/28/13 12:10 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.437 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 3C12004 | 03/12/13 14:55 |
| 14808-79-8 | Sulfate as SO4 | 618 | 1.65 | 5.00 | 12.5 | 5 | D | E300.0 | 3C12020 | 03/12/13 21:58 |

# ANALYSIS DATA SHEET

**MPT-AC-GW-DPW02I-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-06 |
| Sampled: | 02/28/13 13:50 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.877 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 3C12004 | 03/12/13 14:56 |
| 14808-79-8 | Sulfate as SO4 | 49.9 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C06509 | 03/06/13 18:54 |

# ANALYSIS DATA SHEET

**MPT-AC-GW-DPW02S-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-07 |
| Sampled: | 02/28/13 14:00 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.218 | 0.110 | 0.150 | 0.300 | 1 | I | SM4500NH3BG | 3C18004 | 03/18/13 14:43 |
| 14808-79-8 | Sulfate as SO4 | 80.7 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C06509 | 03/06/13 19:11 |

# ANALYSIS DATA SHEET

**MPT-459-MW01I-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-08 |
| Sampled: | 02/28/13 15:00 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 3.03 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 3C18004 | 03/18/13 14:45 |
| 14808-79-8 | Sulfate as SO4 | 20.8 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C06509 | 03/06/13 19:28 |

# ANALYSIS DATA SHEET

**MPT-1358-MW01S-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-09 |
| Sampled: | 02/28/13 15:30 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.131 | 0.110 | 0.150 | 0.300 | 1 | I | SM4500NH3BG | 3C18004 | 03/18/13 14:47 |
| 14808-79-8 | Sulfate as SO4 | 170 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C06509 | 03/06/13 20:20 |

# ANALYSIS DATA SHEET

**MPT-2050-MW01S-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-10 |
| Sampled: | 02/28/13 16:20 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | | 0.110 | 0.150 | 0.300 | 1 | U | SM4500NH3BG | 3C18004 | 03/18/13 14:48 |
| 14808-79-8 | Sulfate as SO4 | 75.9 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C06509 | 03/06/13 20:38 |

# ANALYSIS DATA SHEET

**MPT-DUP02-022813**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-11 |
| Sampled: | 02/28/13 00:00 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | | 0.110 | 0.150 | 0.300 | 1 | U | SM4500NH3BG | 3C18004 | 03/18/13 14:49 |
| 14808-79-8 | Sulfate as SO4 | 73.6 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C06509 | 03/06/13 20:55 |

# ANALYSIS DATA SHEET

**MPT-08-MW05S-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-12 |
| Sampled: | 03/01/13 11:25 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.575 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 3C18004 | 03/18/13 14:50 |
| 14808-79-8 | Sulfate as SO4 | 27.6 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C06509 | 03/06/13 21:13 |

# ANALYSIS DATA SHEET

**MPT-08-MW05I-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-13 |
| Sampled: | 03/01/13 11:15 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 1.72 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 3C18004 | 03/18/13 14:51 |
| 14808-79-8 | Sulfate as SO4 | 51.1 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C06509 | 03/06/13 22:22 |

# ANALYSIS DATA SHEET

**MPT-02-MW35I-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-14 |
| Sampled: | 03/01/13 12:50 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 8.58 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 3C18004 | 03/18/13 14:52 |
| 14808-79-8 | Sulfate as SO4 | 23.2 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C06509 | 03/06/13 22:40 |

# ANALYSIS DATA SHEET

**MPT-02-MW35RS-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-15 |
| Sampled: | 03/01/13 13:00 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.802 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 3C18004 | 03/18/13 14:53 |
| 14808-79-8 | Sulfate as SO4 | 11.9 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C06509 | 03/06/13 22:57 |

# ANALYSIS DATA SHEET

**MPT-53-DPWR01S-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-16 |
| Sampled: | 03/01/13 13:50 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.374 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 3C18004 | 03/18/13 14:54 |
| 14808-79-8 | Sulfate as SO4 | 67.9 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C06509 | 03/06/13 15:59 |

# ANALYSIS DATA SHEET

**MPT-2062-MW01I-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-17 |
| Sampled: | 03/01/13 14:10 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | 0.930 | 0.110 | 0.150 | 0.300 | 1 | | SM4500NH3BG | 3C18004 | 03/18/13 14:57 |
| 14808-79-8 | Sulfate as SO4 | 103 | 0.330 | 1.00 | 2.50 | 1 | | E300.0 | 3C08009 | 03/08/13 18:30 |

# ANALYSIS DATA SHEET

**MPT-RINSATE01-030113**

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | Laboratory ID: | 1303017-18 |
| Sampled: | 03/01/13 16:00 | Received: | 03/05/13 08:35 |

| CAS NO. | Analyte | Conc. (mg/L) | DL | LOD | LOQ | D.F. | Q | Method | Batch | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 7664-41-7 | Ammonia as N | | 0.110 | 0.150 | 0.300 | 1 | U | SM4500NH3BG | 3C18004 | 03/18/13 14:58 |
| 14808-79-8 | Sulfate as SO4 | | 0.330 | 1.00 | 2.50 | 1 | U | E300.0 | 3C08009 | 03/08/13 18:48 |

# INITIAL AND CONTINUING CALIBRATION CHECK

## E300.0

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: WC-IC

SDG: 1303017
Project: NAS Mayport CTO JM71
Calibration: 3031002
Sequence: 3A03108

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 3A03108-ICV1 | Sulfate as SO4 | 21.00 | 21.01 | 100 | mg/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## E300.0

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: WC-IC

SDG: 1303017
Project: NAS Mayport CTO JM71
Calibration: 3031002
Sequence: 3C07015

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 3C07015-CCV1 | Sulfate as SO4 | 25.00 | 25.33 | 101 | mg/L | +/- 10.00% |
| 3C07015-CCV2 | Sulfate as SO4 | 25.00 | 25.19 | 101 | mg/L | +/- 10.00% |
| 3C07015-CCV3 | Sulfate as SO4 | 25.00 | 25.00 | 100 | mg/L | +/- 10.00% |
| 3C07015-CCV4 | Sulfate as SO4 | 25.00 | 25.25 | 101 | mg/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: WC-Lachat

SDG: 1303017
Project: NAS Mayport CTO JM71
Calibration: 3071002
Sequence: 3C07111

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 3C07111-ICV1 | Ammonia as N | 2.000 | 2.140 | 107 | mg/L | +/- 10.00% |
| 3C07111-CCV1 | Ammonia as N | 2.000 | 2.091 | 105 | mg/L | +/- 10.00% |
| 3C07111-CCV2 | Ammonia as N | 2.000 | 2.102 | 105 | mg/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## E300.0

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: WC-IC

SDG: 1303017
Project: NAS Mayport CTO JM71
Calibration: 3031002
Sequence: 3C07707

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 3C07707-CCV1 | Sulfate as SO4 | 25.00 | 25.56 | 102 | mg/L | +/- 10.00% |
| 3C07707-CCV2 | Sulfate as SO4 | 25.00 | 25.36 | 101 | mg/L | +/- 10.00% |
| 3C07707-CCV3 | Sulfate as SO4 | 25.00 | 25.44 | 102 | mg/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: WC-Lachat

SDG: 1303017
Project: NAS Mayport CTO JM71
Calibration: 3077001
Sequence: 3C07711

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 3C07711-ICV1 | Ammonia as N | 2.000 | 2.069 | 103 | mg/L | +/- 10.00% |
| 3C07711-CCV1 | Ammonia as N | 2.000 | 2.087 | 104 | mg/L | +/- 10.00% |
| 3C07711-CCV2 | Ammonia as N | 2.000 | 2.094 | 105 | mg/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## E300.0

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: WC-IC

SDG: 1303017
Project: NAS Mayport CTO JM71
Calibration: 3031002
Sequence: 3C07808

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 3C07808-CCV1 | Sulfate as SO4 | 25.00 | 25.42 | 102 | mg/L | +/- 10.00% |
| 3C07808-CCV2 | Sulfate as SO4 | 25.00 | 25.16 | 101 | mg/L | +/- 10.00% |
| 3C07808-CCV3 | Sulfate as SO4 | 25.00 | 25.13 | 101 | mg/L | +/- 10.00% |

# INITIAL AND CONTINUING CALIBRATION CHECK

## E300.0

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Instrument ID: WC-IC

SDG: 1303017
Project: NAS Mayport CTO JM71
Calibration: 3031002
Sequence: 3C07903

| Lab Sample ID | Analyte | True | Found | %R | Units | Control Limit |
|---|---|---|---|---|---|---|
| 3C07903-CCV1 | Sulfate as SO4 | 25.00 | 25.76 | 103 | mg/L | +/- 10.00% |
| 3C07903-CCV2 | Sulfate as SO4 | 25.00 | 25.55 | 102 | mg/L | +/- 10.00% |
| 3C07903-CCV3 | Sulfate as SO4 | 25.00 | 25.77 | 103 | mg/L | +/- 10.00% |

# CRDL STANDARD

## E300.0

Laboratory: Empirical Laboratories, LLC

SDG: 1303017

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Instrument ID: WC-IC

Calibration: 3031002

Sequence: 3C07015

| Lab Sample ID | Analyte | True | Found | %R | Units | QC Limts |
|---|---|---|---|---|---|---|
| 3C07015-CRL3 | Sulfate as SO4 | 2.500 | 2.357 | 94.3 | mg/L | 75 - 125 |

# CRDL STANDARD

## E300.0

Laboratory: Empirical Laboratories, LLC

SDG: 1303017

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Instrument ID: WC-IC

Calibration: 3031002

Sequence: 3C07707

| Lab Sample ID | Analyte | True | Found | %R | Units | QC Limts |
|---|---|---|---|---|---|---|
| 3C07707-CRL3 | Sulfate as SO4 | 2.500 | 2.417 | 96.7 | mg/L | 75 - 125 |

# CRDL STANDARD

## E300.0

Laboratory: Empirical Laboratories, LLC

SDG: 1303017

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Instrument ID: WC-IC

Calibration: 3031002

Sequence: 3C07808

| Lab Sample ID | Analyte | True | Found | %R | Units | QC Limts |
|---|---|---|---|---|---|---|
| 3C07808-CRL3 | Sulfate as SO4 | 2.500 | 2.244 | 89.8 | mg/L | 75 - 125 |

# CRDL STANDARD

## E300.0

Laboratory: Empirical Laboratories, LLC

SDG: 1303017

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Instrument ID: WC-IC

Calibration: 3031002

Sequence: 3C07903

| Lab Sample ID | Analyte | True | Found | %R | Units | QC Limts |
|---|---|---|---|---|---|---|
| 3C07903-CRL3 | Sulfate as SO4 | 2.500 | 2.252 | 90.1 | mg/L | 75 - 125 |

# METHOD BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Batch: 3C06509

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C06509-BLK1 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |

# METHOD BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Batch: 3C08009

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C08009-BLK1 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |

# METHOD BLANKS
## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Batch: 3C12004

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C12004-BLK1 | Ammonia as N | -0.0379 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |

# METHOD BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Batch: 3C12020

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C12020-BLK1 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |

# METHOD BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Batch: 3C13011

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C13011-BLK1 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |

# METHOD BLANKS
## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Batch: 3C18004

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C18004-BLK1 | Ammonia as N | -0.000784 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |

# BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Sequence: 3A03108
Calibration: 3031002
Instrument ID: WC-IC

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3A03108-ICB1 | Sulfate as SO4 | 0.000 | 0.330 | 2.50 | mg/L | U | E300.0 |

# BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Sequence: 3C07015
Calibration: 3031002
Instrument ID: WC-IC

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C07015-CCB1 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 3C07015-CCB2 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 3C07015-CCB3 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 3C07015-CCB4 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |

# BLANKS
## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Sequence: 3C07111
Calibration: 3071002
Instrument ID: WC-Lachat

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C07111-ICB1 | Ammonia as N | -0.006044 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |
| 3C07111-CCB1 | Ammonia as N | -0.00980 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |
| 3C07111-CCB2 | Ammonia as N | -0.0118 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |

# BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Sequence: 3C07707
Calibration: 3031002
Instrument ID: WC-IC

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C07707-CCB1 | Sulfate as SO4 | -0.205 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 3C07707-CCB2 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 3C07707-CCB3 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |

# BLANKS
## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Sequence: 3C07711
Calibration: 3077001
Instrument ID: WC-Lachat

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C07711-ICB1 | Ammonia as N | -0.01052 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |
| 3C07711-CCB1 | Ammonia as N | -0.00290 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |
| 3C07711-CCB2 | Ammonia as N | -0.00905 | 0.110 | 0.300 | mg/L | U | SM4500NH3BG |

# BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Sequence: 3C07808
Calibration: 3031002
Instrument ID: WC-IC

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C07808-CCB1 | Sulfate as SO4 | -0.248 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 3C07808-CCB2 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 3C07808-CCB3 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |

# BLANKS
## E300.0

Laboratory: Empirical Laboratories, LLC
SDG: 1303017
Client: Tetra Tech, Inc. (T010)
Project: NAS Mayport CTO JM71
Sequence: 3C07903
Calibration: 3031002
Instrument ID: WC-IC

| Lab Sample ID | Analyte | Found | MDL | MRL | Units | C | Method |
|---|---|---|---|---|---|---|---|
| 3C07903-CCB1 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 3C07903-CCB2 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |
| 3C07903-CCB3 | Sulfate as SO4 | 0.00 | 0.330 | 2.50 | mg/L | U | E300.0 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

## E300.0

**MPT-08-MW05S-030113**

Laboratory: Empirical Laboratories, LLC

SDG: 1303017

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Matrix: Water

Batch: 3C06509

% Solids:

Source Sample Name: **1303017-12**

| ANALYTE | SPIKE ADDED (mg/L) | SAMPLE CONCENTRATION (mg/L) | MS CONCENTRATION (mg/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Sulfate as SO4 | 27.78 | 27.59 | 55.28 | 99.7 | | 80 - 120 |

| ANALYTE | SPIKE ADDED (mg/L) | MSD CONCENTRATION (mg/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Sulfate as SO4 | 27.78 | 54.95 | 98.5 | 0.599 | | 20 | 80 - 120 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

## SM4500NH3BG

**MPT-2039-MW01I-022813**

Laboratory: Empirical Laboratories, LLC

SDG: 1303017

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Matrix: Water

Batch: 3C12004

% Solids:

Source Sample Name: **1303017-03**

| ANALYTE | SPIKE ADDED (mg/L) | SAMPLE CONCENTRATION (mg/L) | MS CONCENTRATION (mg/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Ammonia as N | 5.000 | 3.641 | 7.526 | 77.7 | | 75 - 125 |

| ANALYTE | SPIKE ADDED (mg/L) | MSD CONCENTRATION (mg/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Ammonia as N | 5.000 | 7.676 | 80.7 | 1.97 | | 20 | 75 - 125 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

## E300.0

**MPT-2039-MW01I-022813**

Laboratory: Empirical Laboratories, LLC

SDG: 1303017

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Matrix: Water

Batch: 3C13011

% Solids:

Source Sample Name: **1303017-03RE2**

| ANALYTE | SPIKE ADDED (mg/L) | SAMPLE CONCENTRATION (mg/L) | MS CONCENTRATION (mg/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Sulfate as SO4 | 277.8 | 1726 | 1930 | 73.5 | | 80 - 120 |

| ANALYTE | SPIKE ADDED (mg/L) | MSD CONCENTRATION (mg/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Sulfate as SO4 | 277.8 | 1936 | 75.5 | 0.286 | | 20 | 80 - 120 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

## SM4500NH3BG

**MPT-AC-GW-DPW02S-022813**

Laboratory: Empirical Laboratories, LLC

SDG: 1303017

Client: Tetra Tech, Inc. (T010)

Project: NAS Mayport CTO JM71

Matrix: Water

Batch: 3C18004

% Solids:

Source Sample Name: **1303017-07**

| ANALYTE | SPIKE ADDED (mg/L) | SAMPLE CONCENTRATION (mg/L) | MS CONCENTRATION (mg/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Ammonia as N | 5.000 | 0.2185 | 5.216 | 100 | | 75 - 125 |

MPT-08-MW05S-030113

# DUPLICATES

## E300.0

Laboratory: Empirical Laboratories, LLC

Client: Tetra Tech, Inc. (T010)

Matrix: Water

Batch: 3C06509

Preparation: pNone

Source Sample Name: MPT-08-MW05S-030113

SDG: 1303017

Project: NAS Mayport CTO JM71

Laboratory ID: 3C06509-DUP2

Lab Source ID: 1303017-12

Initial/Final: 5 mL / 5 mL

% Solids:

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (mg/L) | DUPLICATE CONCENTRATION (mg/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Sulfate as SO4 | 20 | 27.6 | 27.56 | 0.116 | | E300.0 |

# DUPLICATES

## E300.0

Laboratory: Empirical Laboratories, LLC
Client: Tetra Tech, Inc. (T010)
Matrix: Water
Batch: 3C13011
Preparation: pNone
Source Sample Name: MPT-2039-MW01I-022813

SDG: 1303017
Project: NAS Mayport CTO JM71
Laboratory ID: 3C13011-DUP1
Lab Source ID: 1303017-03RE2
Initial/Final: 5 mL / 5 mL
% Solids:

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (mg/L) | DUPLICATE CONCENTRATION (mg/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Sulfate as SO4 | 20 | 1730 | 1721 D | 0.287 | | E300.0 |

MPT-459-MW01I-02281

# DUPLICATES

## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC

Client: Tetra Tech, Inc. (T010)

Matrix: Water

Batch: 3C18004

Preparation: pNone

Source Sample Name: MPT-459-MW01I-022813

SDG: 1303017

Project: NAS Mayport CTO JM71

Laboratory ID: 3C18004-DUP1

Lab Source ID: 1303017-08

Initial/Final: 100 mL / 100 mL

% Solids:

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (mg/L) | DUPLICATE CONCENTRATION (mg/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Ammonia as N | 20 | 3.03 | 2.946 | 2.91 | | SM4500NH3BG |

# LCS / LCS DUPLICATE RECOVERY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 3C06509 | Laboratory ID: | 3C06509-BS1 |
| Preparation: | pNone | Initial/Final: | 5 mL / 5 mL |

| ANALYTE | SPIKE ADDED (mg/L) | LCS CONCENTRATION (mg/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Sulfate as SO4 | 21.00 | 21.45 | 102 | 90 - 110 |

# LCS / LCS DUPLICATE RECOVERY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 3C08009 | Laboratory ID: | 3C08009-BS1 |
| Preparation: | pNone | Initial/Final: | 5 mL / 5 mL |

| ANALYTE | SPIKE ADDED (mg/L) | LCS CONCENTRATION (mg/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Sulfate as SO4 | 21.00 | 21.33 | 102 | 90 - 110 |

# LCS / LCS DUPLICATE RECOVERY

## SM4500NH3BG

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 3C12004 | Laboratory ID: | 3C12004-BS1 |
| Preparation: | pNone | Initial/Final: | 100 mL / 100 mL |

| ANALYTE | SPIKE ADDED (mg/L) | LCS CONCENTRATION (mg/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Ammonia as N | 5.000 | 4.967 | 99.3 | 80 - 120 |

# LCS / LCS DUPLICATE RECOVERY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 3C12020 | Laboratory ID: | 3C12020-BS1 |
| Preparation: | pNone | Initial/Final: | 5 mL / 5 mL |

| ANALYTE | SPIKE ADDED (mg/L) | LCS CONCENTRATION (mg/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Sulfate as SO4 | 21.00 | 20.49 | 97.6 | 90 - 110 |

# LCS / LCS DUPLICATE RECOVERY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 3C13011 | Laboratory ID: | 3C13011-BS1 |
| Preparation: | pNone | Initial/Final: | 5 mL / 5 mL |

| ANALYTE | SPIKE ADDED (mg/L) | LCS CONCENTRATION (mg/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Sulfate as SO4 | 21.00 | 20.35 | 96.9 | 90 - 110 |

# LCS / LCS DUPLICATE RECOVERY

## SM4500NH3BG

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Matrix: | Water | | |
| Batch: | 3C18004 | Laboratory ID: | 3C18004-BS1 |
| Preparation: | pNone | Initial/Final: | 100 mL / 100 mL |

| ANALYTE | SPIKE ADDED (mg/L) | LCS CONCENTRATION (mg/L) | LCS % REC. | QC LIMITS REC. |
|---|---|---|---|---|
| Ammonia as N | 5.000 | 5.117 | 102 | 80 - 120 |

# PREPARATION BATCH SUMMARY

## E300.0

Laboratory: Empirical Laboratories, LLC SDG: 1303017

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 3C06509 Batch Matrix: Water Preparation: pNone

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-RUNWAY23-MW01S-022813 | 1303017-01 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-DUP01-022813 | 1303017-02 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-AC-GW-DPW02I-022813 | 1303017-06 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-AC-GW-DPW02S-022813 | 1303017-07 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-459-MW01I-022813 | 1303017-08 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-1358-MW01S-022813 | 1303017-09 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-2050-MW01S-022813 | 1303017-10 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-DUP02-022813 | 1303017-11 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-08-MW05S-030113 | 1303017-12 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-08-MW05I-030113 | 1303017-13 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-02-MW35I-030113 | 1303017-14 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-02-MW35RS-030113 | 1303017-15 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-53-DPWR01S-030113 | 1303017-16 | 03/06/13 10:32 | 5.00 | 5.00 |
| Blank | 3C06509-BLK1 | 03/06/13 10:32 | 5.00 | 5.00 |
| LCS | 3C06509-BS1 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-08-MW05S-030113 | 3C06509-DUP2 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-08-MW05S-030113 | 3C06509-MS2 | 03/06/13 10:32 | 22.50 | 25.00 |
| MPT-08-MW05S-030113 | 3C06509-MSD2 | 03/06/13 10:32 | 22.50 | 25.00 |

# PREPARATION BATCH SUMMARY

## E300.0

Laboratory: Empirical Laboratories, LLC SDG: 1303017

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 3C08009 Batch Matrix: Water Preparation: pNone

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-2062-MW01I-030113 | 1303017-17 | 03/08/13 10:51 | 5.00 | 5.00 |
| MPT-RINSATE01-030113 | 1303017-18 | 03/08/13 10:51 | 5.00 | 5.00 |
| Blank | 3C08009-BLK1 | 03/08/13 10:51 | 5.00 | 5.00 |
| LCS | 3C08009-BS1 | 03/08/13 10:51 | 5.00 | 5.00 |

# PREPARATION BATCH SUMMARY

## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC SDG: 1303017

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 3C12004 Batch Matrix: Water Preparation: pNone

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-RUNWAY23-MW01S-022813 | 1303017-01 | 03/12/13 08:36 | 100.00 | 100.00 |
| MPT-DUP01-022813 | 1303017-02 | 03/12/13 08:36 | 100.00 | 100.00 |
| MPT-2039-MW01I-022813 | 1303017-03 | 03/12/13 08:36 | 100.00 | 100.00 |
| MPT-02-MW17I-022813 | 1303017-04 | 03/12/13 08:36 | 100.00 | 100.00 |
| MPT-02-MW17S-022813 | 1303017-05 | 03/12/13 08:36 | 100.00 | 100.00 |
| MPT-AC-GW-DPW02I-022813 | 1303017-06 | 03/12/13 08:36 | 100.00 | 100.00 |
| Blank | 3C12004-BLK1 | 03/12/13 08:36 | 100.00 | 100.00 |
| LCS | 3C12004-BS1 | 03/12/13 08:36 | 100.00 | 100.00 |
| MPT-2039-MW01I-022813 | 3C12004-MS2 | 03/12/13 08:36 | 100.00 | 100.00 |
| MPT-2039-MW01I-022813 | 3C12004-MSD2 | 03/12/13 08:36 | 100.00 | 100.00 |

# PREPARATION BATCH SUMMARY

## E300.0

Laboratory: Empirical Laboratories, LLC SDG: 1303017

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 3C12020 Batch Matrix: Water Preparation: pNone

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-02-MW17I-022813 | 1303017-04RE1 | 03/06/13 10:32 | 5.00 | 5.00 |
| MPT-02-MW17S-022813 | 1303017-05RE1 | 03/06/13 10:32 | 5.00 | 5.00 |
| Blank | 3C12020-BLK1 | 03/12/13 12:38 | 5.00 | 5.00 |
| LCS | 3C12020-BS1 | 03/12/13 12:38 | 5.00 | 5.00 |

# PREPARATION BATCH SUMMARY

## E300.0

Laboratory: Empirical Laboratories, LLC SDG: 1303017

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 3C13011 Batch Matrix: Water Preparation: pNone

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-2039-MW01I-022813 | 1303017-03RE2 | 03/06/13 10:32 | 5.00 | 5.00 |
| Blank | 3C13011-BLK1 | 03/13/13 11:29 | 5.00 | 5.00 |
| LCS | 3C13011-BS1 | 03/13/13 11:29 | 5.00 | 5.00 |
| MPT-2039-MW01I-022813 | 3C13011-DUP1 | 03/13/13 11:29 | 5.00 | 5.00 |
| MPT-2039-MW01I-022813 | 3C13011-MS1 | 03/13/13 11:29 | 22.50 | 25.00 |
| MPT-2039-MW01I-022813 | 3C13011-MSD1 | 03/13/13 11:29 | 22.50 | 25.00 |

# PREPARATION BATCH SUMMARY

## SM4500NH3BG

Laboratory: Empirical Laboratories, LLC SDG: 1303017

Client: Tetra Tech, Inc. (T010) Project: NAS Mayport CTO JM71

Batch: 3C18004 Batch Matrix: Water Preparation: pNone

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL./WEIGHT | FINAL VOL. |
|---|---|---|---|---|
| MPT-AC-GW-DPW02S-022813 | 1303017-07 | 03/18/13 08:21 | 100.00 | 100.00 |
| MPT-459-MW01I-022813 | 1303017-08 | 03/18/13 08:21 | 100.00 | 100.00 |
| MPT-1358-MW01S-022813 | 1303017-09 | 03/18/13 08:21 | 100.00 | 100.00 |
| MPT-2050-MW01S-022813 | 1303017-10 | 03/18/13 08:21 | 100.00 | 100.00 |
| MPT-DUP02-022813 | 1303017-11 | 03/18/13 08:21 | 100.00 | 100.00 |
| MPT-08-MW05S-030113 | 1303017-12 | 03/18/13 08:21 | 100.00 | 100.00 |
| MPT-08-MW05I-030113 | 1303017-13 | 03/18/13 08:21 | 100.00 | 100.00 |
| MPT-02-MW35I-030113 | 1303017-14 | 03/18/13 08:21 | 100.00 | 100.00 |
| MPT-02-MW35RS-030113 | 1303017-15 | 03/18/13 08:21 | 100.00 | 100.00 |
| MPT-53-DPWR01S-030113 | 1303017-16 | 03/18/13 08:21 | 100.00 | 100.00 |
| MPT-2062-MW01I-030113 | 1303017-17 | 03/18/13 08:21 | 100.00 | 100.00 |
| MPT-RINSATE01-030113 | 1303017-18 | 03/18/13 08:21 | 100.00 | 100.00 |
| Blank | 3C18004-BLK1 | 03/18/13 08:21 | 100.00 | 100.00 |
| LCS | 3C18004-BS1 | 03/18/13 08:21 | 100.00 | 100.00 |
| MPT-459-MW01I-022813 | 3C18004-DUP1 | 03/18/13 08:21 | 100.00 | 100.00 |
| MPT-AC-GW-DPW02S-022813 | 3C18004-MS1 | 03/18/13 08:21 | 100.00 | 100.00 |

# ANALYSIS SEQUENCE SUMMARY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 3A03108 | Instrument: | WC-IC |
| Calibration: | 3031002 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Cal Standard | 3A03108-CAL1 | 012813-007 | 01/28/13 16:31 |
| Cal Standard | 3A03108-CAL2 | 012813-008 | 01/28/13 16:49 |
| Cal Standard | 3A03108-CAL3 | 012813-009 | 01/28/13 17:06 |
| Cal Standard | 3A03108-CAL4 | 012813-010 | 01/28/13 17:24 |
| Cal Standard | 3A03108-CAL5 | 012813-011 | 01/28/13 17:41 |
| Cal Standard | 3A03108-CAL6 | 012813-012 | 01/28/13 17:58 |
| Cal Standard | 3A03108-CAL7 | 012813-013 | 01/28/13 18:16 |
| Cal Standard | 3A03108-CAL8 | 012813-014 | 01/28/13 18:33 |
| Initial Cal Check | 3A03108-ICV1 | 012813-015 | 01/28/13 18:51 |
| Initial Cal Blank | 3A03108-ICB1 | 012813-016 | 01/28/13 19:08 |

# ANALYSIS SEQUENCE SUMMARY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 3C07015 | Instrument: | WC-IC |
| Calibration: | 3031002 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Calibration Check | 3C07015-CCV1 | 030613-003 | 03/06/13 12:30 |
| Calibration Blank | 3C07015-CCB1 | 030613-004 | 03/06/13 12:48 |
| Instrument RL Check | 3C07015-CRL3 | 030613-007 | 03/06/13 13:40 |
| LCS | 3C06509-BS1 | 030613-008 | 03/06/13 13:58 |
| Blank | 3C06509-BLK1 | 030613-009 | 03/06/13 14:15 |
| MPT-RUNWAY23-MW01S-022813 | 1303017-01 | 030613-014 | 03/06/13 15:42 |
| MPT-53-DPWR01S-030113 | 1303017-16 | 030613-015 | 03/06/13 15:59 |
| Calibration Check | 3C07015-CCV2 | 030613-016 | 03/06/13 16:17 |
| Calibration Blank | 3C07015-CCB2 | 030613-017 | 03/06/13 16:34 |
| MPT-DUP01-022813 | 1303017-02 | 030613-018 | 03/06/13 16:52 |
| MPT-AC-GW-DPW02I-022813 | 1303017-06 | 030613-025 | 03/06/13 18:54 |
| MPT-AC-GW-DPW02S-022813 | 1303017-07 | 030613-026 | 03/06/13 19:11 |
| MPT-459-MW01I-022813 | 1303017-08 | 030613-027 | 03/06/13 19:28 |
| Calibration Check | 3C07015-CCV3 | 030613-028 | 03/06/13 19:46 |
| Calibration Blank | 3C07015-CCB3 | 030613-029 | 03/06/13 20:03 |
| MPT-1358-MW01S-022813 | 1303017-09 | 030613-030 | 03/06/13 20:20 |
| MPT-2050-MW01S-022813 | 1303017-10 | 030613-031 | 03/06/13 20:38 |
| MPT-DUP02-022813 | 1303017-11 | 030613-032 | 03/06/13 20:55 |
| MPT-08-MW05S-030113 | 1303017-12 | 030613-033 | 03/06/13 21:13 |
| MPT-08-MW05S-030113 | 3C06509-MS2 | 030613-034 | 03/06/13 21:30 |
| MPT-08-MW05S-030113 | 3C06509-MSD2 | 030613-035 | 03/06/13 21:48 |
| MPT-08-MW05S-030113 | 3C06509-DUP2 | 030613-036 | 03/06/13 22:05 |
| MPT-08-MW05I-030113 | 1303017-13 | 030613-037 | 03/06/13 22:22 |
| MPT-02-MW35I-030113 | 1303017-14 | 030613-038 | 03/06/13 22:40 |
| MPT-02-MW35RS-030113 | 1303017-15 | 030613-039 | 03/06/13 22:57 |
| Calibration Check | 3C07015-CCV4 | 030613-040 | 03/06/13 23:15 |
| Calibration Blank | 3C07015-CCB4 | 030613-041 | 03/06/13 23:32 |

# ANALYSIS SEQUENCE SUMMARY

## SM4500NH3BG

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 3C07111 | Instrument: | WC-Lachat |
| Calibration: | 3071002 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Cal Standard | 3C07111-CAL1 | M_3-12-2013_02-37-29PM-00 | 03/12/13 14:38 |
| Cal Standard | 3C07111-CAL2 | M_3-12-2013_02-37-29PM-00 | 03/12/13 14:39 |
| Cal Standard | 3C07111-CAL3 | M_3-12-2013_02-37-29PM-00 | 03/12/13 14:40 |
| Cal Standard | 3C07111-CAL4 | M_3-12-2013_02-37-29PM-00 | 03/12/13 14:41 |
| Cal Standard | 3C07111-CAL5 | M_3-12-2013_02-37-29PM-00 | 03/12/13 14:42 |
| Cal Standard | 3C07111-CAL6 | M_3-12-2013_02-37-29PM-00 | 03/12/13 14:43 |
| Cal Standard | 3C07111-CAL7 | M_3-12-2013_02-37-29PM-00 | 03/12/13 14:44 |
| Cal Standard | 3C07111-CAL8 | M_3-12-2013_02-37-29PM-00 | 03/12/13 14:45 |
| Initial Cal Check | 3C07111-ICV1 | M_3-12-2013_02-37-29PM-00 | 03/12/13 14:46 |
| Initial Cal Blank | 3C07111-ICB1 | M_3-12-2013_02-37-29PM-01 | 03/12/13 14:47 |
| Blank | 3C12004-BLK1 | M_3-12-2013_02-37-29PM-01 | 03/12/13 14:48 |
| LCS | 3C12004-BS1 | M_3-12-2013_02-37-29PM-01 | 03/12/13 14:49 |
| MPT-RUNWAY23-MW01S-022813 | 1303017-01 | M_3-12-2013_02-37-29PM-01 | 03/12/13 14:50 |
| MPT-DUP01-022813 | 1303017-02 | M_3-12-2013_02-37-29PM-01 | 03/12/13 14:51 |
| MPT-2039-MW01I-022813 | 1303017-03 | M_3-12-2013_02-37-29PM-01 | 03/12/13 14:52 |
| MPT-2039-MW01I-022813 | 3C12004-MSD2 | M_3-12-2013_02-37-29PM-01 | 03/12/13 14:54 |
| MPT-02-MW17I-022813 | 1303017-04 | M_3-12-2013_02-37-29PM-01 | 03/12/13 14:54 |
| MPT-02-MW17S-022813 | 1303017-05 | M_3-12-2013_02-37-29PM-01 | 03/12/13 14:55 |
| MPT-AC-GW-DPW02I-022813 | 1303017-06 | M_3-12-2013_02-37-29PM-02 | 03/12/13 14:56 |
| Calibration Check | 3C07111-CCV1 | M_3-12-2013_02-37-29PM-02 | 03/12/13 15:01 |
| Calibration Blank | 3C07111-CCB1 | M_3-12-2013_02-37-29PM-02 | 03/12/13 15:02 |
| MPT-2039-MW01I-022813 | 3C12004-MS2 | M_3-12-2013_02-37-29PM-03 | 03/12/13 15:12 |
| Calibration Check | 3C07111-CCV2 | M_3-12-2013_02-37-29PM-03 | 03/12/13 15:13 |
| Calibration Blank | 3C07111-CCB2 | M_3-12-2013_02-37-29PM-03 | 03/12/13 15:14 |

# ANALYSIS SEQUENCE SUMMARY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 3C07707 | Instrument: | WC-IC |
| Calibration: | 3031002 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Calibration Check | 3C07707-CCV1 | 030813-003 | 03/08/13 13:52 |
| Calibration Blank | 3C07707-CCB1 | 030813-004 | 03/08/13 14:09 |
| Instrument RL Check | 3C07707-CRL3 | 030813-007 | 03/08/13 15:01 |
| LCS | 3C08009-BS1 | 030813-008 | 03/08/13 15:19 |
| Blank | 3C08009-BLK1 | 030813-009 | 03/08/13 15:36 |
| Calibration Check | 3C07707-CCV2 | 030813-014 | 03/08/13 17:03 |
| Calibration Blank | 3C07707-CCB2 | 030813-015 | 03/08/13 17:21 |
| MPT-2062-MW01I-030113 | 1303017-17 | 030813-019 | 03/08/13 18:30 |
| MPT-RINSATE01-030113 | 1303017-18 | 030813-020 | 03/08/13 18:48 |
| Calibration Check | 3C07707-CCV3 | 030813-027 | 03/08/13 20:50 |
| Calibration Blank | 3C07707-CCB3 | 030813-028 | 03/08/13 21:07 |

# ANALYSIS SEQUENCE SUMMARY

## SM4500NH3BG

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 3C07711 | Instrument: | WC-Lachat |
| Calibration: | 3077001 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Cal Standard | 3C07711-CAL1 | M_3-18-2013_02-31-45PM-00 | 03/18/13 14:32 |
| Cal Standard | 3C07711-CAL2 | M_3-18-2013_02-31-45PM-00 | 03/18/13 14:33 |
| Cal Standard | 3C07711-CAL3 | M_3-18-2013_02-31-45PM-00 | 03/18/13 14:34 |
| Cal Standard | 3C07711-CAL4 | M_3-18-2013_02-31-45PM-00 | 03/18/13 14:35 |
| Cal Standard | 3C07711-CAL5 | M_3-18-2013_02-31-45PM-00 | 03/18/13 14:36 |
| Cal Standard | 3C07711-CAL6 | M_3-18-2013_02-31-45PM-00 | 03/18/13 14:37 |
| Cal Standard | 3C07711-CAL7 | M_3-18-2013_02-31-45PM-00 | 03/18/13 14:38 |
| Cal Standard | 3C07711-CAL8 | M_3-18-2013_02-31-45PM-00 | 03/18/13 14:39 |
| Initial Cal Check | 3C07711-ICV1 | M_3-18-2013_02-31-45PM-00 | 03/18/13 14:40 |
| Initial Cal Blank | 3C07711-ICB1 | M_3-18-2013_02-31-45PM-01 | 03/18/13 14:41 |
| Blank | 3C18004-BLK1 | M_3-18-2013_02-31-45PM-01 | 03/18/13 14:42 |
| LCS | 3C18004-BS1 | M_3-18-2013_02-31-45PM-01 | 03/18/13 14:43 |
| MPT-AC-GW-DPW02S-022813 | 1303017-07 | M_3-18-2013_02-31-45PM-01 | 03/18/13 14:43 |
| MPT-AC-GW-DPW02S-022813 | 3C18004-MS1 | M_3-18-2013_02-31-45PM-01 | 03/18/13 14:44 |
| MPT-459-MW01I-022813 | 1303017-08 | M_3-18-2013_02-31-45PM-01 | 03/18/13 14:45 |
| MPT-459-MW01I-022813 | 3C18004-DUP1 | M_3-18-2013_02-31-45PM-01 | 03/18/13 14:46 |
| MPT-1358-MW01S-022813 | 1303017-09 | M_3-18-2013_02-31-45PM-01 | 03/18/13 14:47 |
| MPT-2050-MW01S-022813 | 1303017-10 | M_3-18-2013_02-31-45PM-01 | 03/18/13 14:48 |
| MPT-DUP02-022813 | 1303017-11 | M_3-18-2013_02-31-45PM-01 | 03/18/13 14:49 |
| MPT-08-MW05S-030113 | 1303017-12 | M_3-18-2013_02-31-45PM-02 | 03/18/13 14:50 |
| MPT-08-MW05I-030113 | 1303017-13 | M_3-18-2013_02-31-45PM-02 | 03/18/13 14:51 |
| MPT-02-MW35I-030113 | 1303017-14 | M_3-18-2013_02-31-45PM-02 | 03/18/13 14:52 |
| MPT-02-MW35RS-030113 | 1303017-15 | M_3-18-2013_02-31-45PM-02 | 03/18/13 14:53 |
| MPT-53-DPWR01S-030113 | 1303017-16 | M_3-18-2013_02-31-45PM-02 | 03/18/13 14:54 |
| Calibration Check | 3C07711-CCV1 | M_3-18-2013_02-31-45PM-02 | 03/18/13 14:55 |
| Calibration Blank | 3C07711-CCB1 | M_3-18-2013_02-31-45PM-02 | 03/18/13 14:56 |
| MPT-2062-MW01I-030113 | 1303017-17 | M_3-18-2013_02-31-45PM-02 | 03/18/13 14:57 |
| MPT-RINSATE01-030113 | 1303017-18 | M_3-18-2013_02-31-45PM-02 | 03/18/13 14:58 |
| Calibration Check | 3C07711-CCV2 | M_3-18-2013_02-31-45PM-03 | 03/18/13 15:05 |
| Calibration Blank | 3C07711-CCB2 | M_3-18-2013_02-31-45PM-03 | 03/18/13 15:06 |

# ANALYSIS SEQUENCE SUMMARY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 3C07808 | Instrument: | WC-IC |
| Calibration: | 3031002 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Calibration Check | 3C07808-CCV1 | 031213-003 | 03/12/13 15:16 |
| Calibration Blank | 3C07808-CCB1 | 031213-004 | 03/12/13 15:34 |
| Instrument RL Check | 3C07808-CRL3 | 031213-007 | 03/12/13 16:26 |
| LCS | 3C12020-BS1 | 031213-008 | 03/12/13 16:44 |
| Blank | 3C12020-BLK1 | 031213-009 | 03/12/13 17:01 |
| Calibration Check | 3C07808-CCV2 | 031213-016 | 03/12/13 19:03 |
| Calibration Blank | 3C07808-CCB2 | 031213-017 | 03/12/13 19:21 |
| MPT-02-MW17I-022813 | 1303017-04RE1 | 031213-025 | 03/12/13 21:40 |
| MPT-02-MW17S-022813 | 1303017-05RE1 | 031213-026 | 03/12/13 21:58 |
| Calibration Check | 3C07808-CCV3 | 031213-027 | 03/12/13 22:15 |
| Calibration Blank | 3C07808-CCB3 | 031213-028 | 03/12/13 22:32 |

# ANALYSIS SEQUENCE SUMMARY

## E300.0

| | | | |
|---|---|---|---|
| Laboratory: | Empirical Laboratories, LLC | SDG: | 1303017 |
| Client: | Tetra Tech, Inc. (T010) | Project: | NAS Mayport CTO JM71 |
| Sequence: | 3C07903 | Instrument: | WC-IC |
| Calibration: | 3031002 | | |

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| Calibration Check | 3C07903-CCV1 | 031313-003 | 03/13/13 13:13 |
| Calibration Blank | 3C07903-CCB1 | 031313-004 | 03/13/13 13:31 |
| Instrument RL Check | 3C07903-CRL3 | 031313-007 | 03/13/13 14:23 |
| LCS | 3C13011-BS1 | 031313-008 | 03/13/13 14:40 |
| Blank | 3C13011-BLK1 | 031313-009 | 03/13/13 14:58 |
| Calibration Check | 3C07903-CCV2 | 031313-016 | 03/13/13 17:00 |
| Calibration Blank | 3C07903-CCB2 | 031313-017 | 03/13/13 17:17 |
| MPT-2039-MW01I-022813 | 1303017-03RE2 | 031313-022 | 03/13/13 18:44 |
| MPT-2039-MW01I-022813 | 3C13011-MS1 | 031313-023 | 03/13/13 19:02 |
| MPT-2039-MW01I-022813 | 3C13011-MSD1 | 031313-024 | 03/13/13 19:19 |
| MPT-2039-MW01I-022813 | 3C13011-DUP1 | 031313-025 | 03/13/13 19:37 |
| Calibration Check | 3C07903-CCV3 | 031313-026 | 03/13/13 19:54 |
| Calibration Blank | 3C07903-CCB3 | 031313-027 | 03/13/13 20:12 |

# PREPARATION BENCH SHEET

3C06509

**Empirical Laboratories, LLC**

**Printed: 3/21/2013 11:17:26AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1303012-01 | C | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | Cl- only OLR for Cl |
| 1303017-01 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303017-02 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303017-03 | C | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | MS/MSD.SO4 only OLR for SO4 |
| 1303017-03 | C | WC_ANIONS_300.0 (Short Hol | 03/06/2013 | 5 | 5 | | | | | NA | Added for BatchQC in: 3C06509 |
| 1303017-04 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only OLR for SO4 |
| 1303017-05 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only OLR for SO4 |
| 1303017-06 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303017-07 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303017-08 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303017-09 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303017-10 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303017-11 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303017-12 | A | WC_ANIONS_300.0 (Short Hol | 03/06/2013 | 5 | 5 | | | | | NA | Added for BatchQC in: 3C06509 |
| 1303017-12 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303017-13 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303017-14 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303017-15 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303017-16 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303026-01 | A | WC_ANIONS_300.0 (Short Hol | 03/06/2013 | 5 | 5 | | | | | NA | see version |
| 1303026-02 | A | WC_ANIONS_300.0 (Short Hol | 03/06/2013 | 5 | 5 | | | | | NA | see version |
| 1303027-04 | B | WC_ANIONS_300.0 (Short Hol | 03/06/2013 | 5 | 5 | | | | | NA | see versions |

# PREPARATION BENCH SHEET

3C06509

**Empirical Laboratories, LLC**

**Printed: 3/21/2013 11:17:26AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3C06509-BLK1 | | QC | 03/06/2013 | 5 | 5 | | | | | NA | |
| 3C06509-BS1 | | QC | 03/06/2013 | 5 | 5 | 13B0141 | | 5000 | | NA | |
| 3C06509-DUP1 | | QC | 03/06/2013 | 5 | 5 | | 1303017-03 | | | NA | |
| 3C06509-DUP2 | | QC | 03/06/2013 | 5 | 5 | | 1303017-12 | | | NA | |
| 3C06509-MS1 | | QC | 03/06/2013 | 22.5 | 25 | 13A0638 | 1303017-03 | 2500 | | NA | |
| 3C06509-MS2 | | QC | 03/06/2013 | 22.5 | 25 | 13A0638 | 1303017-12 | 2500 | | NA | |
| 3C06509-MSD1 | | QC | 03/06/2013 | 22.5 | 25 | 13A0638 | 1303017-03 | 2500 | | NA | |
| 3C06509-MSD2 | | QC | 03/06/2013 | 22.5 | 25 | 13A0638 | 1303017-12 | 2500 | | NA | |

**Reagents Used:**

| Standard | Description |
|---|---|

# PREPARATION BENCH SHEET

3C08009

**Empirical Laboratories, LLC**

**Printed: 3/21/2013 11:18:32AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1303017-17 | A | WC_ANIONS_300.0 (Regular) | 03/08/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303017-18 | A | WC_ANIONS_300.0 (Regular) | 03/08/2013 | 5 | 5 | | | | | NA | SO4 only |
| 1303033-01 | A | WC_ANIONS_300.0 (Regular) | 03/08/2013 | 5 | 5 | | | | | NA | |
| 1303033-01 | A | WC_ANIONS_300.0 (Short Hol | 03/08/2013 | 5 | 5 | | | | | NA | Added for BatchQC in: 3C08009 |
| 1303033-02 | A | WC_ANIONS_300.0 (Regular) | 03/08/2013 | 5 | 5 | | | | | NA | |
| 1303040-03 | B | WC_ANIONS_300.0 (Short Hol | 03/08/2013 | 5 | 5 | | | | | NA | see versions |
| 1303040-07 | B | WC_ANIONS_300.0 (Short Hol | 03/08/2013 | 5 | 5 | | | | | NA | see versions |
| 1303040-08 | B | WC_ANIONS_300.0 (Short Hol | 03/08/2013 | 5 | 5 | | | | | NA | see versions |
| 1303040-10 | B | WC_ANIONS_300.0 (Short Hol | 03/08/2013 | 5 | 5 | | | | | NA | see versions |
| 1303042-42 | A | WC_ANIONS_300.0 (Short Hol | 03/08/2013 | 5 | 5 | | | | | NA | NO3 only |
| 1303042-44 | A | WC_ANIONS_300.0 (Short Hol | 03/08/2013 | 5 | 5 | | | | | NA | NO3 only |
| 1303042-45 | A | WC_ANIONS_300.0 (Short Hol | 03/08/2013 | 5 | 5 | | | | | NA | NO3 only |
| 1303042-46 | A | WC_ANIONS_300.0 (Short Hol | 03/08/2013 | 5 | 5 | | | | | NA | NO3 only |
| 3C08009-BLK1 | | QC | 03/08/2013 | 5 | 5 | | | | | NA | |
| 3C08009-BS1 | | QC | 03/08/2013 | 5 | 5 | 13B0141 | | 5000 | | NA | |
| 3C08009-DUP1 | | QC | 03/08/2013 | 5 | 5 | | 1303033-01 | | | NA | |
| 3C08009-MS1 | | QC | 03/08/2013 | 22.5 | 25 | 13A0638 | 1303033-01 | 2500 | | NA | |
| 3C08009-MSD1 | | QC | 03/08/2013 | 22.5 | 25 | 13A0638 | 1303033-01 | 2500 | | NA | |

**Reagents Used:**

| Standard | Description |
|---|---|

# PREPARATION BENCH SHEET

3C12004

**Empirical Laboratories, LLC**

**Printed: 3/21/2013 11:19:32AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1303017-01 | B | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | |
| 1303017-02 | B | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | |
| 1303017-03 | F | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | MS/MSD. |
| 1303017-04 | B | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | |
| 1303017-05 | B | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | |
| 1303017-06 | B | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | |
| 1303026-01 | B | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | |
| 1303026-02 | B | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | |
| 1303027-01 | A | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 10 | 100 | | | | | NA | |
| 1303027-03 | A | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | |
| 1303027-04 | A | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 10 | 100 | | | | | NA | |
| 1303028-01 | A | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | |
| 1303037-01 | A | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | |
| 1303040-01 | A | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 10 | 100 | | | | | NA | |
| 1303040-03 | A | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | |
| 1303040-07 | A | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | |
| 1303040-08 | A | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 100 | 100 | | | | | NA | |
| 1303040-10 | A | WC_AMMONIA_PHENATE_45 | 03/12/2013 | 10 | 100 | | | | | NA | H2SO4 was added to sample 3/8/13 @ 0915 |
| 3C12004-BLK1 | | QC | 03/12/2013 | 100 | 100 | | | | | NA | |
| 3C12004-BS1 | | QC | 03/12/2013 | 100 | 100 | 13B0112 | | 100000 | | NA | |
| 3C12004-MS1 | | QC | 03/12/2013 | 100 | 100 | 13A0472 | 1303017-03 | 500 | | NA | |
| 3C12004-MS2 | | QC | 03/12/2013 | 100 | 100 | 13A0472 | 1303017-03 | 500 | | NA | |

# PREPARATION BENCH SHEET

3C12004

**Empirical Laboratories, LLC**

**Printed: 3/21/2013 11:19:32AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3C12004-MSD1 | | QC | 03/12/2013 | 100 | 100 | 13A0472 | 1303017-03 | 500 | | NA | |
| 3C12004-MSD2 | | QC | 03/12/2013 | 100 | 100 | 13A0472 | 1303017-03 | 500 | | NA | |

**Reagents Used:**

| Standard | Description |
|---|---|
| 12B0874 | pH 4.0 Buffer |
| 12B0877 | 10.00 pH Buffer |
| 12G0621 | 1N NaOH Solution |
| 12J0158 | pH 7.0 Buffer Yellow |
| 13A0230 | 10 N NaOH |
| 13A0232 | 1N H2SO4 |
| 13B0534 | NH3 Sodium Nitroprusside Reagent |
| 13B0549 | NH3 Buffer |
| 13C0001 | Borate Buffer |
| 13C0214 | Boric Acid |
| 13C0222 | NH3 Sodium Hypochlorite Reagent |
| 13C0223 | NH3 Sodium Phenolate Reagent |

# PREPARATION BENCH SHEET

3C12020

**Empirical Laboratories, LLC**

**Printed: 3/21/2013 11:22:25AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1303017-03RE1 | C | WC_ANIONS_300.0 (Short Hol | 03/12/2013 | 5 | 5 | | | | | NA | Added for BatchQC in: 3C12020 |
| 1303017-03RE1 | C | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | MS/MSD.SO4 only OLR for SO4 |
| 1303017-04RE1 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only OLR for SO4 |
| 1303017-05RE1 | A | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | SO4 only OLR for SO4 |
| 1303074-01 | A | WC_ANIONS_300.0 (Short Hol | 03/12/2013 | 5 | 5 | | | | | NA | see version |
| 1303074-02 | A | WC_ANIONS_300.0 (Short Hol | 03/12/2013 | 5 | 5 | | | | | NA | see version |
| 1303075-04 | B | WC_ANIONS_300.0 (Short Hol | 03/12/2013 | 5 | 5 | | | | | NA | see versions |
| 1303076-10 | A | WC_ANIONS_300.0 (Short Hol | 03/12/2013 | 5 | 5 | | | | | NA | NO3 only |
| 1303079-01 | A | WC_ANIONS_300.0 (Short Hol | 03/12/2013 | 5 | 5 | | | | | NA | calculation |
| 1303080-01 | A | WC_ANIONS_300.0 (Short Hol | 03/12/2013 | 5 | 5 | | | | | NA | calculation |
| 1303081-01 | A | WC_ANIONS_300.0 (Short Hol | 03/12/2013 | 5 | 5 | | | | | NA | calculation |
| 1303081-02 | A | WC_ANIONS_300.0 (Short Hol | 03/12/2013 | 5 | 5 | | | | | NA | calculation |
| 1303081-03 | A | WC_ANIONS_300.0 (Short Hol | 03/12/2013 | 5 | 5 | | | | | NA | calculation |
| 3C12020-BLK1 | | QC | 03/12/2013 | 5 | 5 | | | | | NA | |
| 3C12020-BS1 | | QC | 03/12/2013 | 5 | 5 | 13B0141 | | 5000 | | NA | |
| 3C12020-DUP1 | | QC | 03/12/2013 | 22.5 | 25 | | 1303017-03RE1 | | | NA | |
| 3C12020-MS1 | | QC | 03/12/2013 | 22.5 | 25 | 13A0638 | 1303017-03RE1 | 12500 | | NA | |
| 3C12020-MSD1 | | QC | 03/12/2013 | 22.5 | 25 | 13A0638 | 1303017-03RE1 | 12500 | | NA | |

**Reagents Used:**

| Standard | Description |
|---|---|

# PREPARATION BENCH SHEET

3C13011

**Empirical Laboratories, LLC**

**Printed: 3/21/2013 11:24:40AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1303017-03RE2 | C | WC_ANIONS_300.0 (Short Hol | 03/13/2013 | 5 | 5 | | | | | NA | Added for BatchQC in: 3C13011 |
| 1303017-03RE2 | C | WC_ANIONS_300.0 (Regular) | 03/06/2013 | 5 | 5 | | | | | NA | MS/MSD.SO4 only OLR for SO4 |
| 1303087-01 | A | WC_ANIONS_300.0 (Regular) | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-01 | A | WC_ANIONS_300.0 (Short Hol | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-02 | A | WC_ANIONS_300.0 (Regular) | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-02 | A | WC_ANIONS_300.0 (Short Hol | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-03 | A | WC_ANIONS_300.0 (Regular) | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-03 | A | WC_ANIONS_300.0 (Short Hol | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-04 | A | WC_ANIONS_300.0 (Regular) | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-04 | A | WC_ANIONS_300.0 (Short Hol | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-05 | A | WC_ANIONS_300.0 (Short Hol | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-05 | A | WC_ANIONS_300.0 (Regular) | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-06 | A | WC_ANIONS_300.0 (Short Hol | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-06 | A | WC_ANIONS_300.0 (Regular) | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-07 | A | WC_ANIONS_300.0 (Regular) | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-07 | A | WC_ANIONS_300.0 (Short Hol | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-08 | A | WC_ANIONS_300.0 (Regular) | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-08 | A | WC_ANIONS_300.0 (Short Hol | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-09 | A | WC_ANIONS_300.0 (Regular) | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303087-09 | A | WC_ANIONS_300.0 (Short Hol | 03/13/2013 | 5 | 5 | | | | | NA | |
| 1303088-04 | B | WC_ANIONS_300.0 (Short Hol | 03/13/2013 | 5 | 5 | | | | | NA | see versions |
| 3C13011-BLK1 | | QC | 03/13/2013 | 5 | 5 | | | | | NA | |

# PREPARATION BENCH SHEET

3C13011

**Empirical Laboratories, LLC**

**Printed: 3/21/2013 11:24:40AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3C13011-BS1 | | QC | 03/13/2013 | 5 | 5 | 13B0141 | | 5000 | | NA | |
| 3C13011-DUP1 | | QC | 03/13/2013 | 5 | 5 | | 1303017-03RE2 | | | NA | |
| 3C13011-MS1 | | QC | 03/13/2013 | 22.5 | 25 | 13A0638 | 1303017-03RE2 | 25000 | | NA | |
| 3C13011-MSD1 | | QC | 03/13/2013 | 22.5 | 25 | 13A0638 | 1303017-03RE2 | 25000 | | NA | |

**Reagents Used:**

| Standard | Description |
|---|---|

# PREPARATION BENCH SHEET

3C18004

**Empirical Laboratories, LLC**

**Printed: 3/21/2013 11:25:54AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1303017-07 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303017-08 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303017-09 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303017-10 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303017-11 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303017-12 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303017-13 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303017-14 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303017-15 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303017-16 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303017-17 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303017-18 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303074-01 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303074-02 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303075-01 | A | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 10 | 100 | | | | | NA | |
| 1303075-03 | A | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 1303075-04 | A | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 10 | 100 | | | | | NA | |
| 1303077-01 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 10 | 100 | | | | | NA | |
| 1303078-01 | B | WC_AMMONIA_PHENATE_45 | 03/18/2013 | 100 | 100 | | | | | NA | |
| 3C18004-BLK1 | | QC | 03/18/2013 | 100 | 100 | | | | | NA | |
| 3C18004-BS1 | | QC | 03/18/2013 | 100 | 100 | 13B0112 | | 100000 | | NA | |
| 3C18004-DUP1 | | QC | 03/18/2013 | 100 | 100 | | 1303017-08 | | | NA | |

# PREPARATION BENCH SHEET

3C18004

**Empirical Laboratories, LLC**

**Printed: 3/21/2013 11:25:54AM**

**Instrument:**

**Matrix: Water** **Prepared using: WC - pNone** **(No Surrogate)**

| Lab Number | Cont ID | Analysis | Prepared | Initial (mL) | Final (mL) | Spike ID | Source ID | ul Spike | ul Surrogate | PH | Extraction Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3C18004-MS1 | | QC | 03/18/2013 | 100 | 100 | 13A0472 | 1303017-07 | 500 | | NA | |

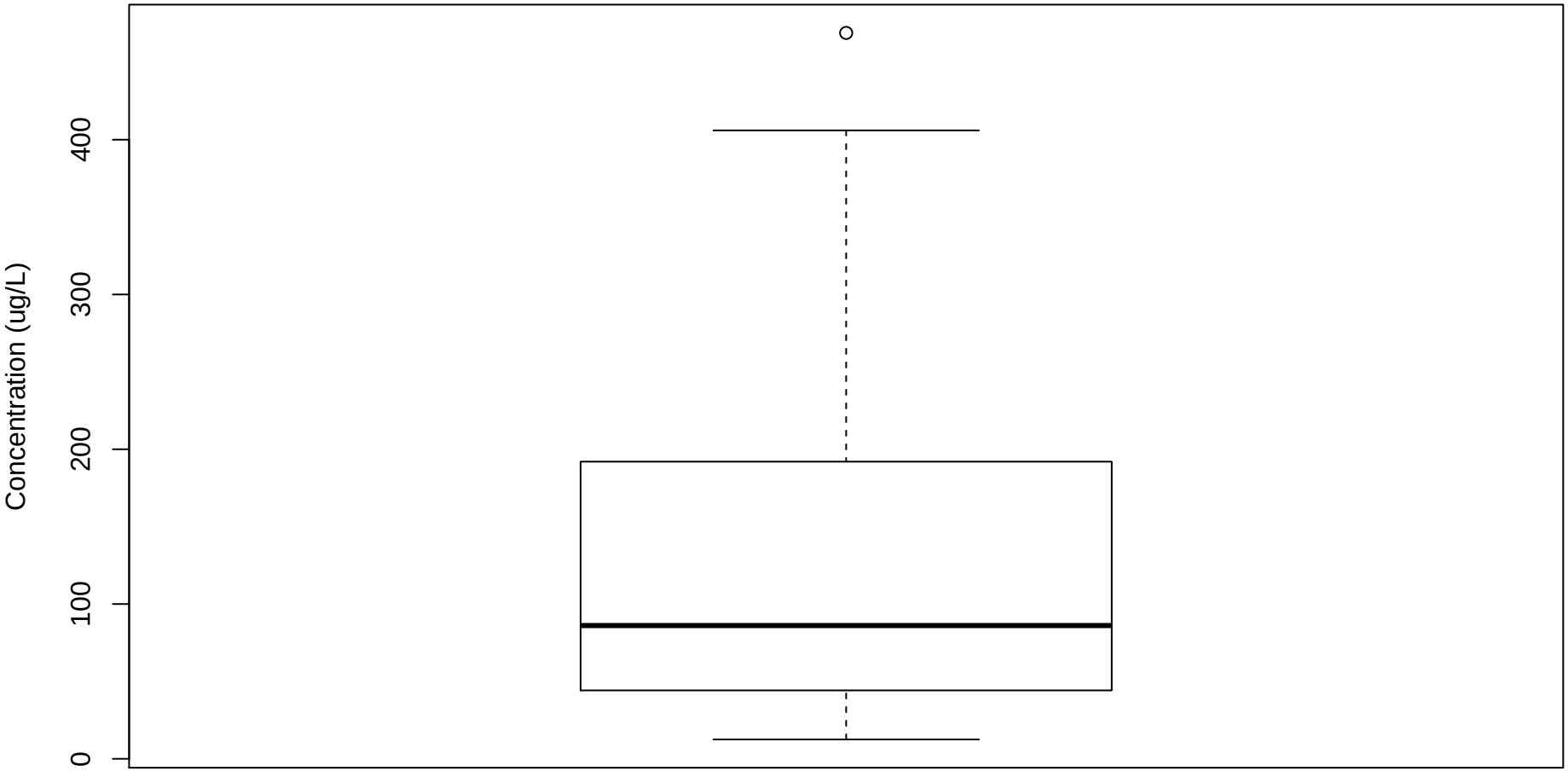
**Reagents Used:**

| Standard | Description |
|---|---|
| 12B0874 | pH 4.0 Buffer |
| 12B0877 | 10.00 pH Buffer |
| 12G0621 | 1N NaOH Solution |
| 12J0158 | pH 7.0 Buffer Yellow |
| 13A0230 | 10 N NaOH |
| 13A0232 | 1N H2SO4 |
| 13B0534 | NH3 Sodium Nitroprusside Reagent |
| 13B0549 | NH3 Buffer |
| 13C0001 | Borate Buffer |
| 13C0214 | Boric Acid |
| 13C0223 | NH3 Sodium Phenolate Reagent |
| 13C0309 | NH3 Sodium Hypochlorite Reagent |

# APPENDIX D

# OUTLIER EVALUATION RESULTS WITH BOX PLOT FIGURES

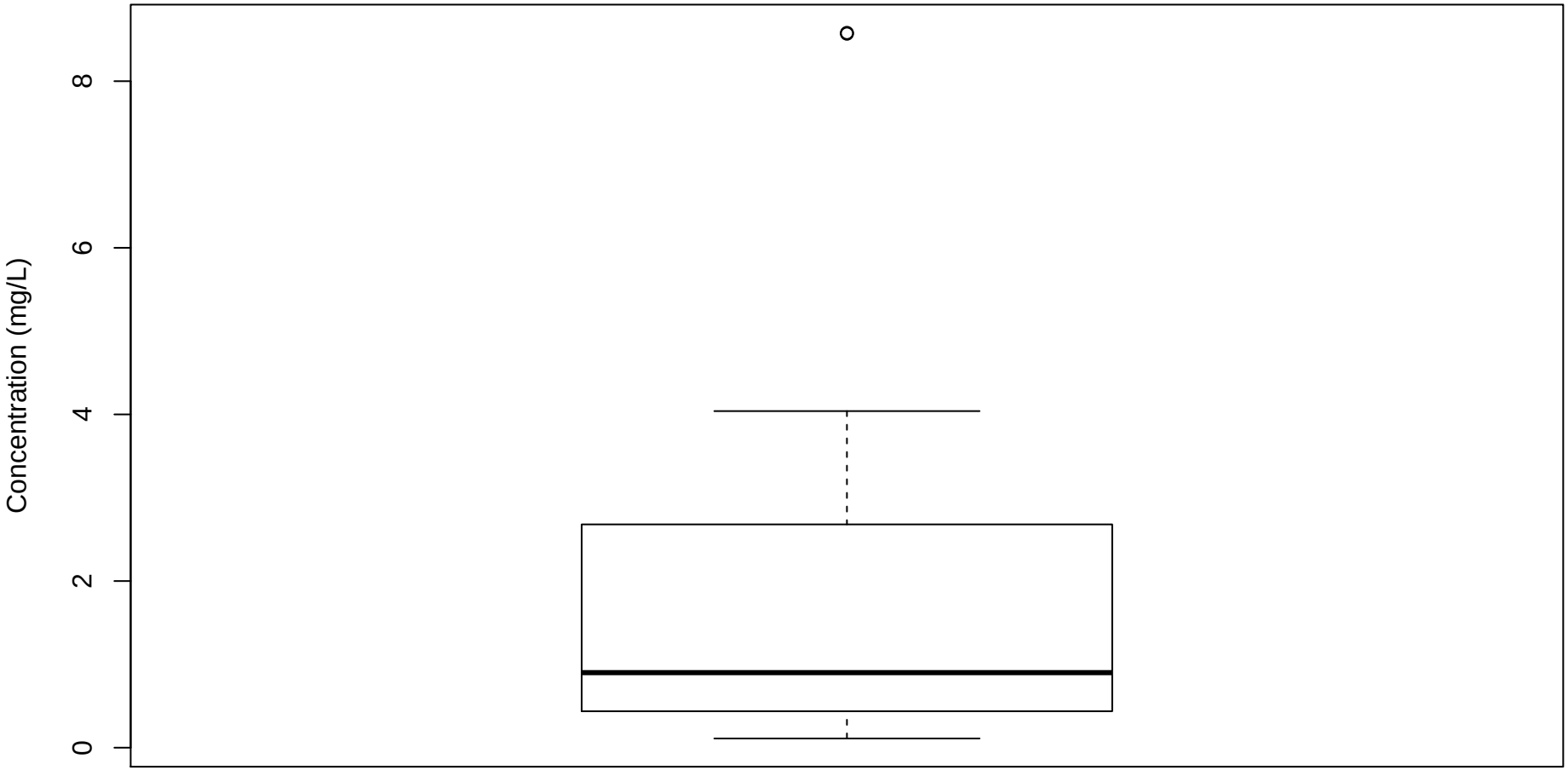
**ALUMINUM BACKGROUND GROUNDWATER BOXPLOT**
**FIGURE 1 OF 9**




ALUMINUM

NON−DETECTS PLOTTED USING DETECTION LIMIT

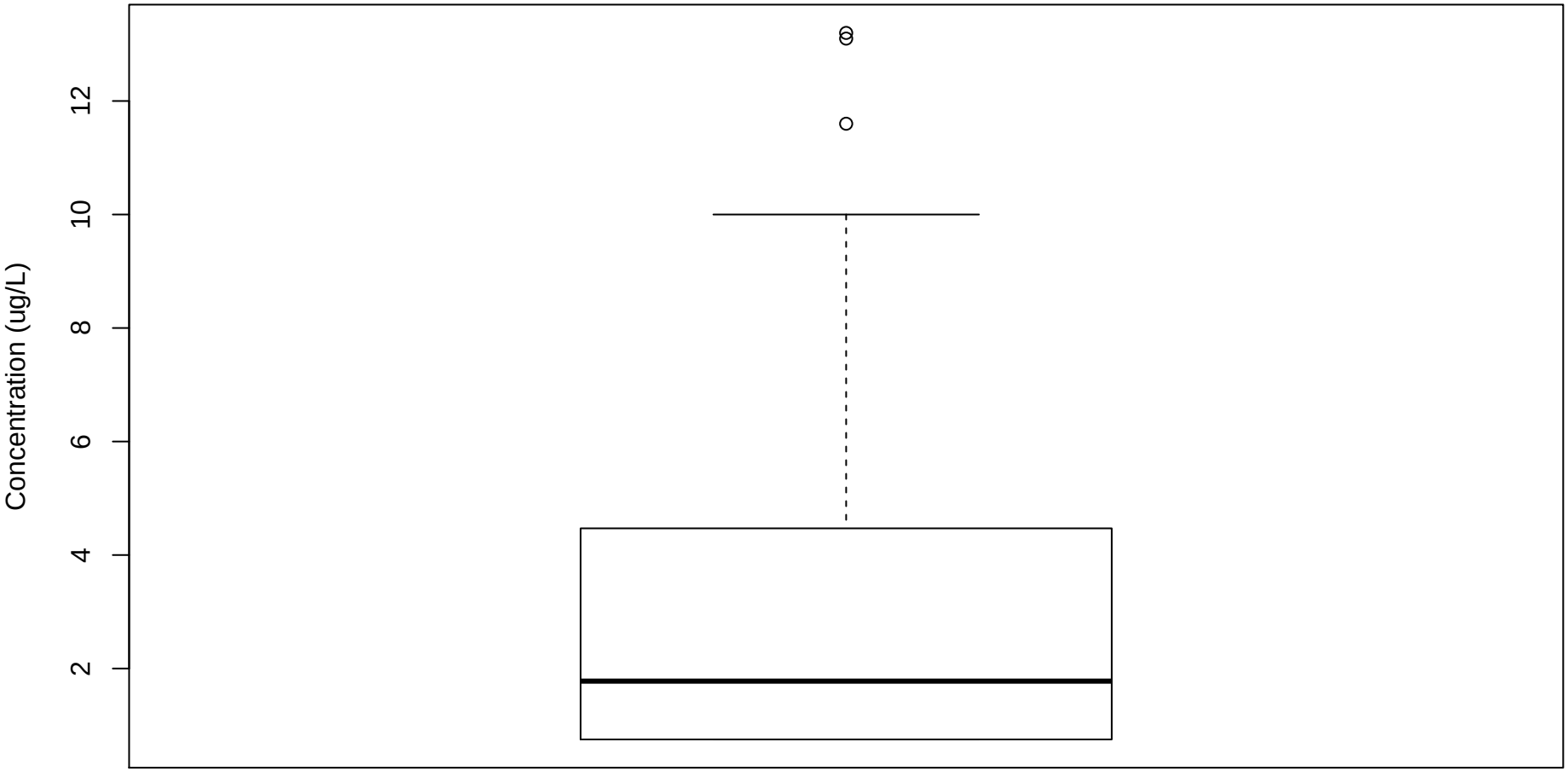
# AMMONIA BACKGROUND GROUNDWATER BOXPLOT
## FIGURE 2 OF 9




AMMONIA

NON−DETECTS PLOTTED USING DETECTION LIMIT

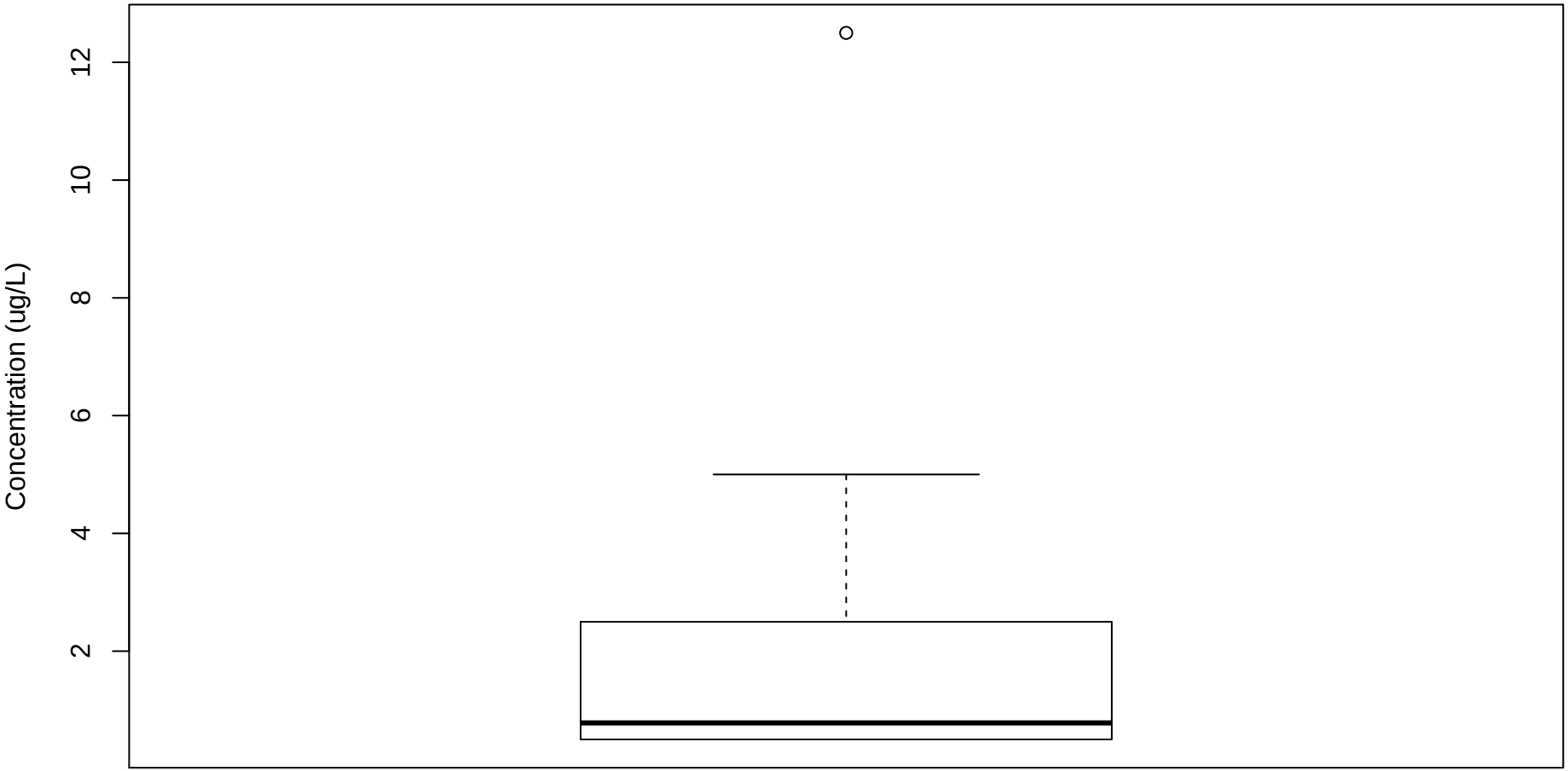
# ARSENIC BACKGROUND GROUNDWATER BOXPLOT
## FIGURE 3 OF 9




ARSENIC

NON−DETECTS PLOTTED USING DETECTION LIMIT

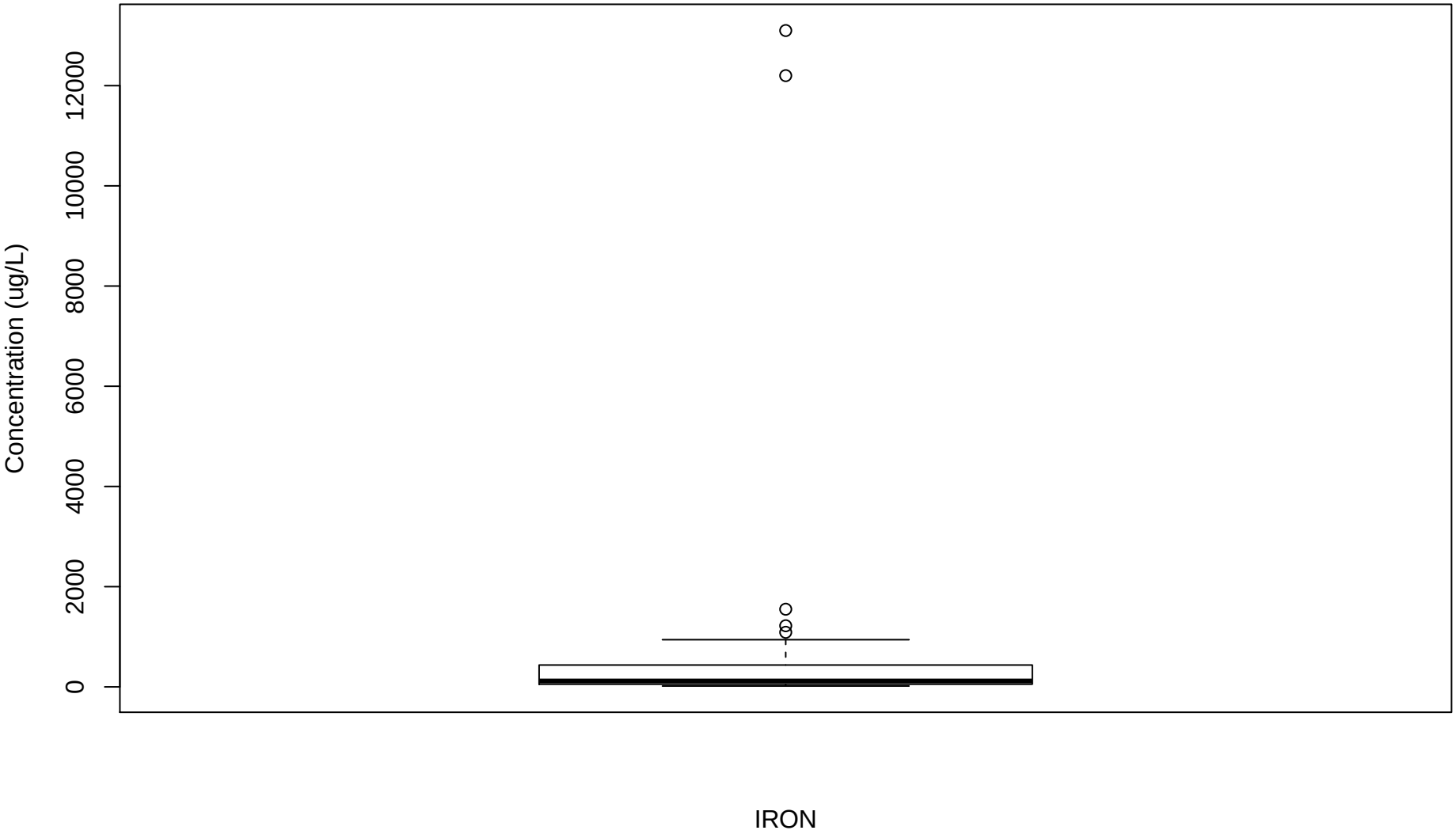
# CHROMIUM BACKGROUND GROUNDWATER BOXPLOT
## FIGURE 4 OF 9



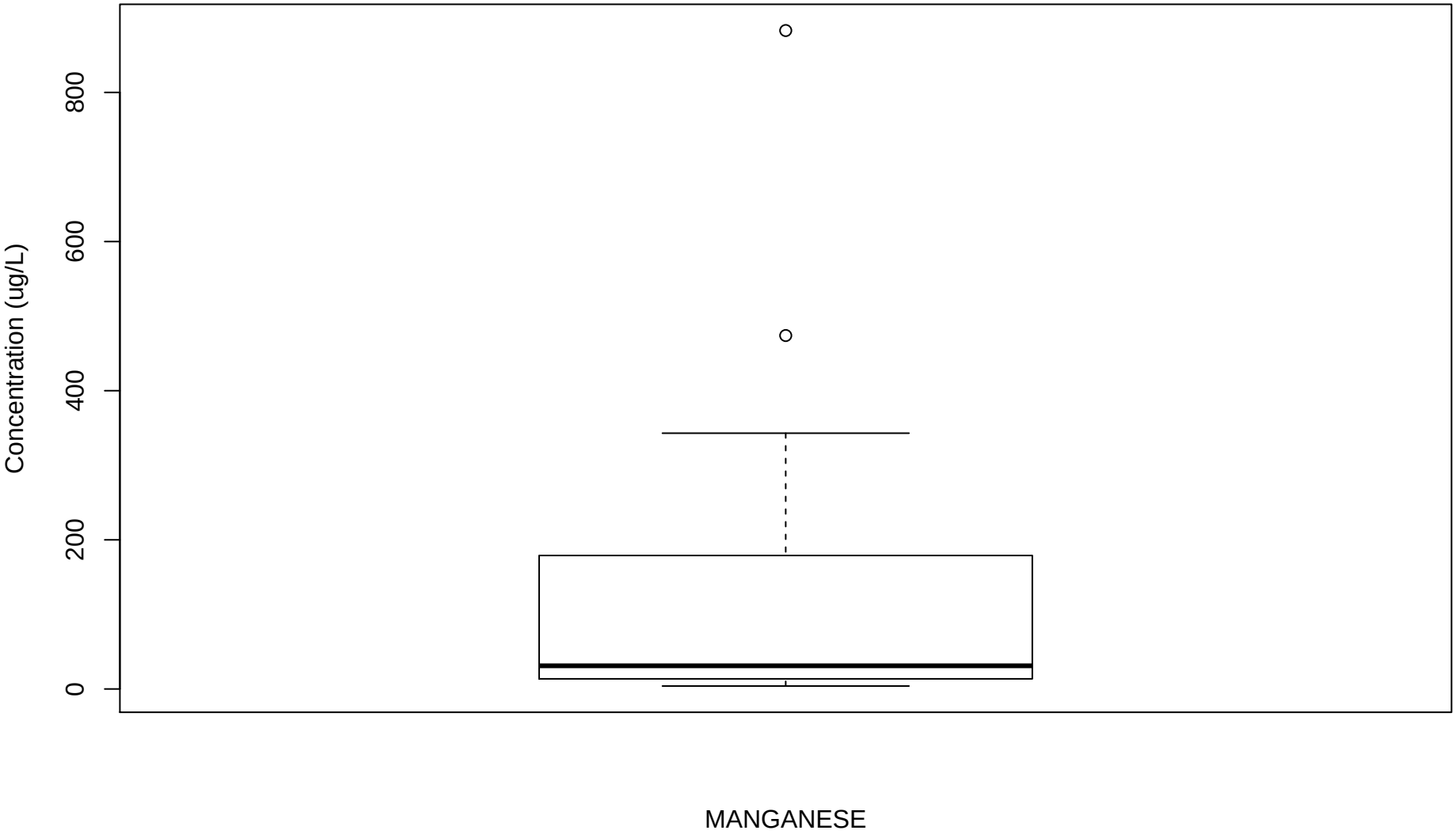

CHROMIUM

NON−DETECTS PLOTTED USING DETECTION LIMIT

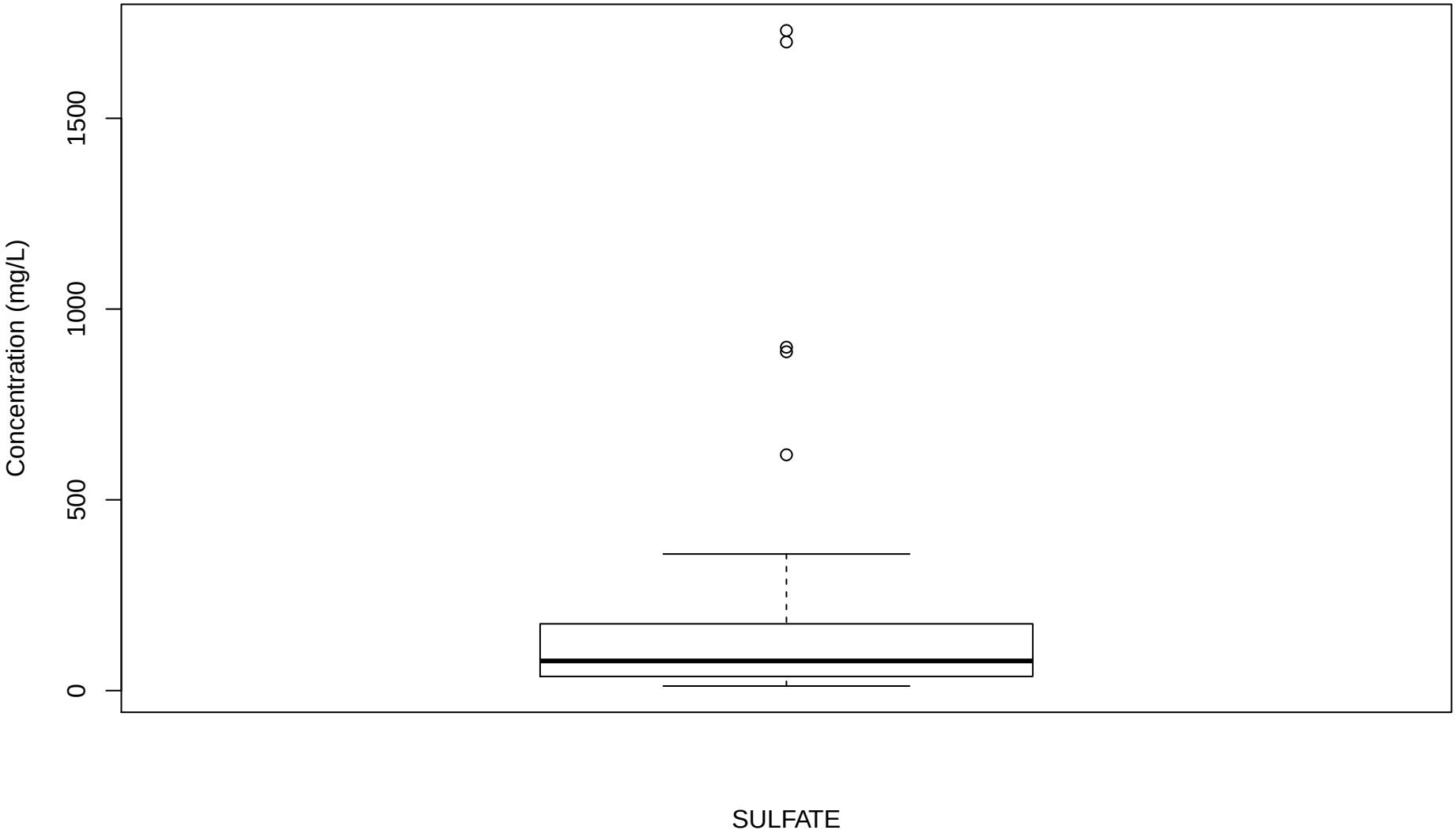
# IRON BACKGROUND GROUNDWATER BOXPLOT
# FIGURE 5 OF 9



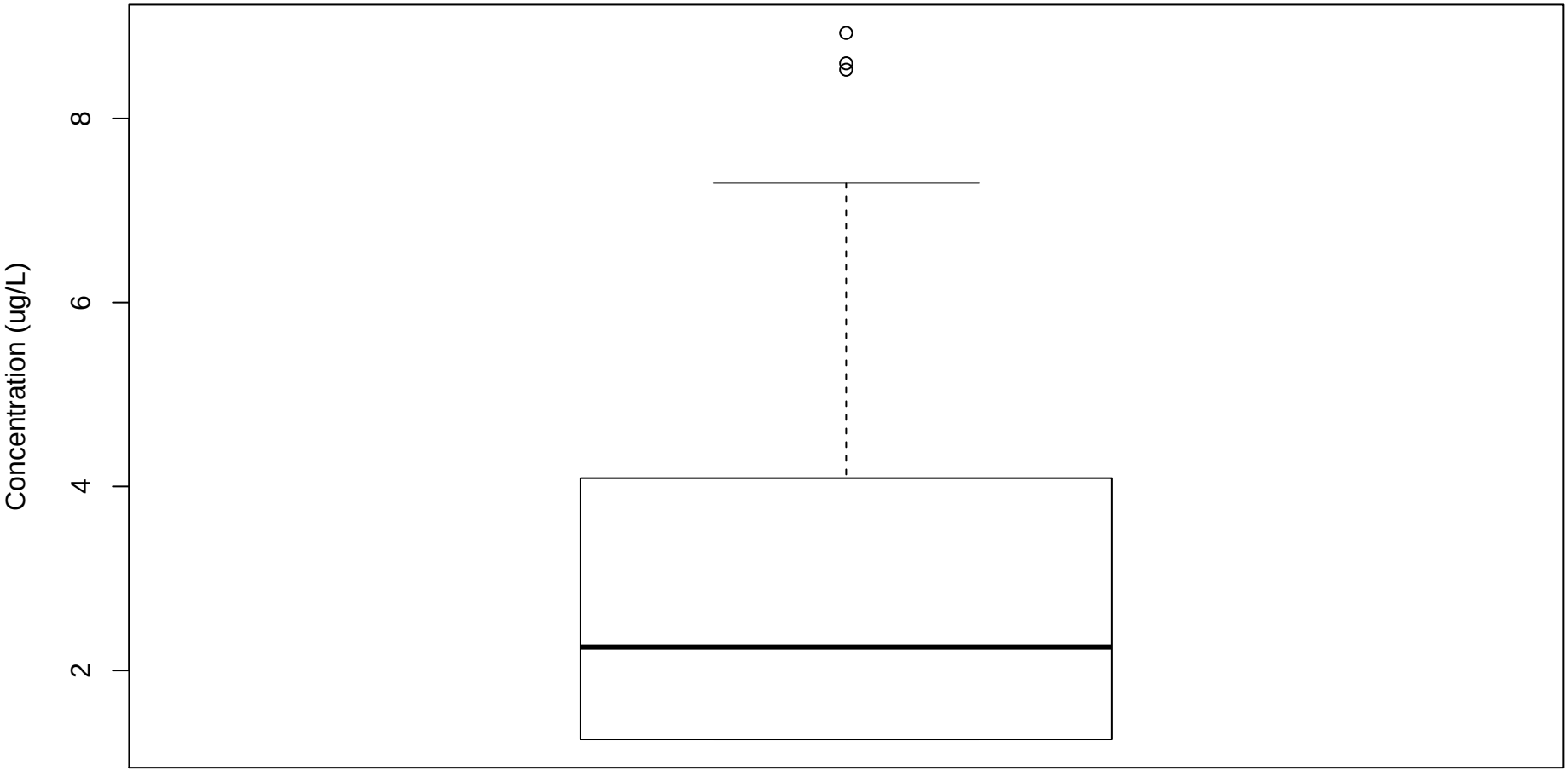
**MANGANESE BACKGROUND GROUNDWATER BOXPLOT**
**FIGURE 6 OF 9**



**SULFATE BACKGROUND GROUNDWATER BOXPLOT**
**FIGURE 7 OF 9**



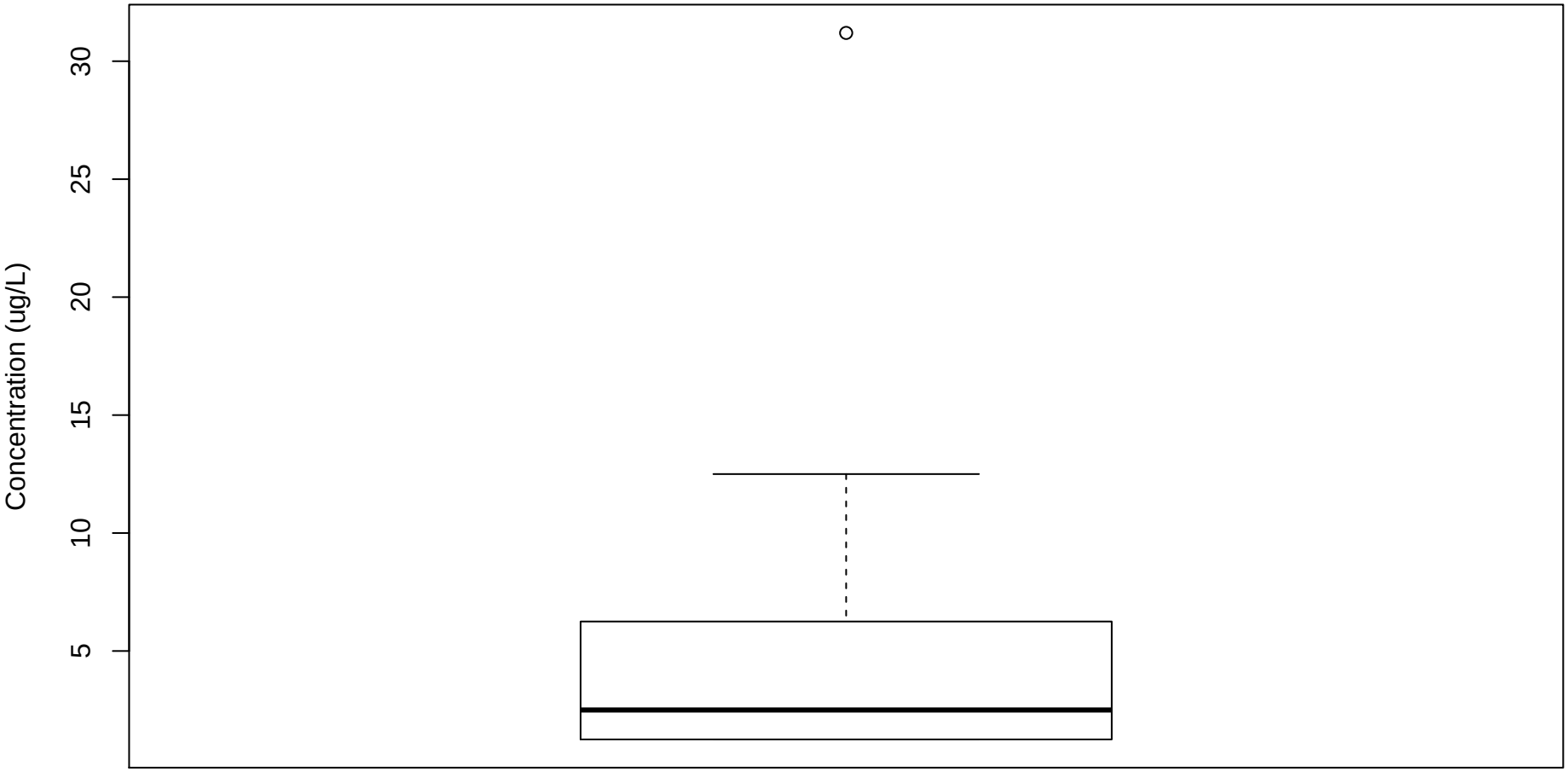
# VANADIUM BACKGROUND GROUNDWATER BOXPLOT
## FIGURE 8 OF 9




VANADIUM

NON−DETECTS PLOTTED USING DETECTION LIMIT

# ZINC BACKGROUND GROUNDWATER BOXPLOT
# FIGURE 9 OF 9




ZINC

NON−DETECTS PLOTTED USING DETECTION LIMIT

**TABLE D-1**

**UPDATED INORGANIC GROUNDWATER BACKGROUND DATA SET**
**NAVSTA MAYPORT, JACKSONVILLE, FLORIDA**

| Sample Identification | ALUMINUM (µg/L) | | AMMONIA-N (mg/L) | | ARSENIC (µg/L) | | IRON (µg/L) | | MANGANESE (µg/L) | | SULFATE (mg/L) | | VANADIUM (µg/L) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MPT-02-MW17I-022813 | 160 | J | 3.9 | | 13.1 | | Outlier | | 179 | | 888 | | 1.38 | J |
| MPT-02-MW17S-022813 | 83.1 | J | 0.437 | | 4.47 | | 743 | | Outlier | | 618 | | 4.09 | |
| MPT-02-MW35RI-030113(1) | 80 | | 8.58 | | 3.4 | | 57.4 | | 13.5 | | 23.2 | | 3.97 | |
| MPT-02-MW35RS-030113 | 19.6 | J | 0.802 | | 0.75 | U | 16.4 | J | 41.4 | | 11.9 | | 1.25 | U |
| MPT-08-MW05I-030113 | 12.5 | U | 1.72 | | 0.75 | U | 22.5 | J | 13.1 | | 51.1 | | 1.25 | U |
| MPT-08-MW05S-030113 | 12.5 | U | 0.575 | | 0.75 | U | 108 | | 48.7 | | 27.6 | | 1.25 | U |
| MPT-1358-MW01S-022813 | 33.4 | J | 0.131 | J | 2.63 | | 1090 | | 59.5 | | 170 | | 2.16 | J |
| MPT-2039-MW01I-022813 | 331 | J | 3.64 | | 0.75 | U | 63.5 | | 343 | | 1730 | | 4.26 | |
| MPT-2050-MW01S-022813-AVG | 47.7 | J | 0.11 | U | 1.955 | J | 87 | | 3.93 | | 74.75 | | 3.19 | |
| MPT-2062-MW01I-030113 | 44.2 | J | 0.93 | | 0.75 | U | 104 | | 223 | | 103 | | 1.25 | U |
| MPT-459-MW01I-022813 | 101 | | 3.03 | | 0.75 | U | 53.3 | | 13.6 | | 20.8 | | 3.52 | |
| MPT-53-DPW01RS-030113 | 139 | | 0.374 | | 10 | | 942 | | 110 | | 67.9 | | 7.3 | |
| MPT-AC-GW-DPW02I-022813 | 30.2 | J | 0.877 | | 0.75 | U | 109 | | 17.5 | | 49.9 | | 2.46 | J |
| MPT-AC-GW-DPW02S-022813 | 17.7 | J | 0.218 | J | 1.6 | J | 45.4 | | 20.1 | | 80.7 | | 8.53 | |
| MPT-RUNWAY23-MW01S-022813-AVG | 24.3 | J | 1.295 | | 2.27 | J | 264 | | 16.55 | | 32.6 | | 1.25 | U |
| MPT-02-MW17I-20121107 | 364 | J | 4.04 | | 13.2 | | Outlier | | 184 | | 900 | | 2 | J |
| MPT-02-MW17S-20121107 | 275 | | 0.49 | | 8.67 | | 1220 | | 474 | | 358 | | 3.25 | |
| MPT-02-MW35RI-20121106 | 265 | J | 8.57 | | 11.6 | | 34.4 | | 13.5 | | 120 | | 5.25 | |
| MPT-02-MW35RS-20121106 | 77.1 | | 0.841 | | 0.75 | U | 25.9 | | 33.5 | | 14.7 | | 1.25 | U |
| MPT-08-MW05I-20121109 | 85.3 | J | 1.71 | | 0.75 | U | 24.6 | J | 15.1 | | 175 | | 1.25 | U |
| MPT-08-MW05S-20121109 | 86.9 | J | 0.607 | | 0.906 | J | 237 | | 153 | | 233 | | 1.25 | U |
| MPT-1358-MW01S-20121107-AVG | 93.85 | | 0.11 | U | 3.82 | | 298.5 | | 28.65 | | 68.85 | | 8.6 | |
| MPT-2039-MW01I-20121105 | 469 | J | 3.46 | | 0.75 | U | 56.2 | | 279 | | 1700 | | 4.22 | |
| MPT-2050-MW01S-20121106 | 151 | | 0.11 | U | 1.97 | J | 187 | | 21.8 | | 37.1 | | 1.84 | J |
| MPT-2062-MW01I-20121106 | 406 | | 1.01 | | 0.75 | U | 436 | | 220 | | 106 | | 1.58 | J |
| MPT-459-MW01I-20121105 | 192 | | 2.68 | | 3.67 | | 126 | | 11.4 | | 13.8 | | 2.35 | J |
| MPT-53-DPW01RS-20121105 | 364 | | 0.66 | | 9.13 | | 1550 | | 149 | | 175 | | 2.89 | J |
| MPT-AC-GW-DPW02I-20121105 | 76.9 | | 0.924 | | 0.75 | U | 131 | | 14.9 | | 51.6 | | 2.04 | J |
| MPT-AC-GW-DPW02S-20121105 | 73.7 | | 0.203 | J | 0.75 | U | 214 | | 13.2 | | 118 | | 2.06 | J |
| MPT-RUNWAY23-MW01S-201211 | 103 | | 0.948 | | 5.63 | | 52.4 | | 12.3 | | 55.8 | | 8.93 | |

**Notes:**

J = Estimated concentration

U = Not detected

Outlier = Value removed from database. See Section 4.3 of the report.

(1) The Empirical Laboratories, LLC ANALYTICAL DATA PACKAGE SDG # 1303017 of March 22, 2013, and the included chain-of-custody forms show the sample identification for monitoring well MPT-02-MW35RI as MPT-02-MW35I-030113. The correct sample identification is MPT-02-MW35RI-030113.

# APPENDIX E

# UPDATED INORGANIC GROUNDWATER BACKGROUND DATA SET

**TABLE E-1**

**UPDATED INORGANIC GROUNDWATER BACKGROUND DATA SET**
**NAVAL STATION MAYPORT, JACKSONVILLE, FLORIDA**

| SAMPLE IDENTIFICATION | ALUMINUM (µg/L) | | AMMONIA-N (mg/L) | | ARSENIC (µg/L) | | IRON (µg/L) | | MANGANESE (µg/L) | | SULFATE (mg/L) | | VANADIUM (µg/L) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MPT-02-MW17I-022813 | 160 | J | 3.9 | | 13.1 | | 13100 | | 179 | | 888 | | 1.38 | J |
| MPT-02-MW17S-022813 | 83.1 | J | 0.437 | | 4.47 | | 743 | | Outlier | | 618 | | 4.09 | |
| MPT-02-MW35RI-030113[(1)] | 80 | | 8.58 | | 3.4 | | 57.4 | | 13.5 | | 23.2 | | 3.97 | |
| MPT-02-MW35RS-030113 | 19.6 | J | 0.802 | | 0.75 | U | 16.4 | J | 41.4 | | 11.9 | | 1.25 | U |
| MPT-08-MW05I-030113 | 12.5 | U | 1.72 | | 0.75 | U | 22.5 | J | 13.1 | | 51.1 | | 1.25 | U |
| MPT-08-MW05S-030113 | 12.5 | U | 0.575 | | 0.75 | U | 108 | | 48.7 | | 27.6 | | 1.25 | U |
| MPT-1358-MW01S-022813 | 33.4 | J | 0.131 | J | 2.63 | | 1090 | | 59.5 | | 170 | | 2.16 | J |
| MPT-2039-MW01I-022813 | 331 | J | 3.64 | | 0.75 | U | 63.5 | | 343 | | 1730 | | 4.26 | |
| MPT-2050-MW01S-022813-AVG | 47.7 | J | 0.11 | U | 1.955 | J | 87 | | 3.93 | | 74.75 | | 3.19 | |
| MPT-2062-MW01I-030113 | 44.2 | J | 0.93 | | 0.75 | U | 104 | | 223 | | 103 | | 1.25 | U |
| MPT-459-MW01I-022813 | 101 | | 3.03 | | 0.75 | U | 53.3 | | 13.6 | | 20.8 | | 3.52 | |
| MPT-53-DPW01RS-030113 | 139 | | 0.374 | | 10 | | 942 | | 110 | | 67.9 | | 7.3 | |
| MPT-AC-GW-DPW02I-022813 | 30.2 | J | 0.877 | | 0.75 | U | 109 | | 17.5 | | 49.9 | | 2.46 | J |
| MPT-AC-GW-DPW02S-022813 | 17.7 | J | 0.218 | J | 1.6 | J | 45.4 | | 20.1 | | 80.7 | | 8.53 | |
| MPT-RUNWAY23-MW01S-022813-AVG | 24.3 | J | 1.295 | | 2.27 | J | 264 | | 16.55 | | 32.6 | | 1.25 | U |
| MPT-02-MW17I-20121107 | 364 | J | 4.04 | | 13.2 | | 12200 | | 184 | | 900 | | 2 | J |
| MPT-02-MW17S-20121107 | 275 | | 0.49 | | 8.67 | | 1220 | | 474 | | 358 | | 3.25 | |
| MPT-02-MW35RI-20121106 | 265 | J | 8.57 | | 11.6 | | 34.4 | | 13.5 | | 120 | | 5.25 | |
| MPT-02-MW35RS-20121106 | 77.1 | | 0.841 | | 0.75 | U | 25.9 | | 33.5 | | 14.7 | | 1.25 | U |
| MPT-08-MW05I-20121109 | 85.3 | J | 1.71 | | 0.75 | U | 24.6 | J | 15.1 | | 175 | | 1.25 | U |
| MPT-08-MW05S-20121109 | 86.9 | J | 0.607 | | 0.906 | J | 237 | | 153 | | 233 | | 1.25 | U |
| MPT-1358-MW01S-20121107-AVG | 93.85 | | 0.11 | U | 3.82 | | 298.5 | | 28.65 | | 68.85 | | 8.6 | |
| MPT-2039-MW01I-20121105 | 469 | J | 3.46 | | 0.75 | U | 56.2 | | 279 | | 1700 | | 4.22 | |
| MPT-2050-MW01S-20121106 | 151 | | 0.11 | U | 1.97 | J | 187 | | 21.8 | | 37.1 | | 1.84 | J |
| MPT-2062-MW01I-20121106 | 406 | | 1.01 | | 0.75 | U | 436 | | 220 | | 106 | | 1.58 | J |
| MPT-459-MW01I-20121105 | 192 | | 2.68 | | 3.67 | | 126 | | 11.4 | | 13.8 | | 2.35 | J |
| MPT-53-DPW01RS-20121105 | 364 | | 0.66 | | 9.13 | | 1550 | | 149 | | 175 | | 2.89 | J |
| MPT-AC-GW-DPW02I-20121105 | 76.9 | | 0.924 | | 0.75 | U | 131 | | 14.9 | | 51.6 | | 2.04 | J |
| MPT-AC-GW-DPW02S-20121105 | 73.7 | | 0.203 | J | 0.75 | U | 214 | | 13.2 | | 118 | | 2.06 | J |
| MPT-RUNWAY23-MW01S-201211 | 103 | | 0.948 | | 5.63 | | 52.4 | | 12.3 | | 55.8 | | 8.93 | |

**Notes:**

J = Estimated concentration

U = Not detected

Outlier = Value removed from database. See Section 4.3 of the report.

(1) The Empirical Laboratories, LLC ANALYTICAL DATA PACKAGE SDG # 1303017 dated March 22, 2013, and the included chain-of-custody forms show the sample_id for monitoring well MPT-02-MW35RI as MPT-02-MW35I-030113. The correct sample_id is MPT-02-MW35RI-030113.

# APPENDIX F

# DEVELOPMENT OF SUBSTANTIAL DIFFERENCE

# APPENDIX F
# DEVELOPMENT OF SUBSTANTIAL DIFFERENCE

## 1.0 Introduction

Substantial difference, or S, is a constant that is added to a background data set when Background Test Form 2 is computed (see Section 6.0 of the Groundwater Background Study for a discussion of when Background Test Form 2 is used). A value of S was developed for each of the seven analytes contained in the Updated Data Set (see Appendix E). A sensitivity analysis was used to aid in the selection of the recommended S values presented in this appendix. These recommended S values were developed using the procedures shown in Appendix A of USEPA Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites (see also FDEP 2009 Guidance for Comparing Background and Site Chemical Concentrations in Groundwater).

## 2.0 Methods

The data sets for each of the seven analytes contained in the Updated Data Set (see Appendix E) were used in the sensitivity analysis. For example, the data set for Aluminum was used as both the "Site" and the "Background" data. Background Test Form 1 and Background Test Form 2 were performed using a Wilcoxon-Mann-Whitney Site versus Background Comparison Test. ProUCL Version 4.1.00 was used to conduct the Wilcoxon-Mann-Whitney test. The non-detected values were used as reported[1]. No values (e.g.; 1/2 the detection limit) were substituted for the non-detected values.

Under the condition of Background Test Form 1 (see Scenario A in Table F-1), the null hypothesis ($H_o$) is the mean/median Site data is less than or equal to the mean/median Background data (Site<=Background). S is not used under Background Test Form 1. ProUCL Version 4.1.00 was used to perform Background Test Form 1, and alpha was set to 0.05.

Under the condition of Background Test Form 2 (see Scenarios B1 through B4 in Table F-1), the $H_o$ is the mean/median Site data is greater than or equal to the mean/median Background data plus S. Therefore, S must be developed in order to conduct Background Test Form 2.

[1] Frequently, ½ the detection limit or some other fitted data are substituted for the reported non-detected values. This type of substitution may be appropriate for some types of data evaluation. At this point in the data set evaluation, it is not appropriate to use substituted values for non-detected results. Future users may elect to use substituted values when comparing the background data set to data associated with a solid waste management unit or an area of concern. The use of substituted values at this point in the data set evaluation may confuse future users as they may not be able to discern how various statistical results were developed.

Four different values were used for S. These values were developed as follows:

- The acceptable Relative Percent Difference (RPD) criteria for inorganic laboratory duplicates was used to develop the first S value ($S^{LD}$). The laboratory RPD is 20% and represents what is the limit of acceptable laboratory error. This 20% was taken to equal "r" in the equation shown in A.2.1 in the USEPA Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites; where $S^{LD} = r*M_b$ and r = 0.2 and $M_b$ = mean of the aluminum background data that is 140.63 mg/L (see Table 5-1 in the text of the Groundwater Background Study). Therefore, $S^{LD}$ = 28.13 mg/L (see Table F-1).

- The acceptable RPD criteria for field duplicates were used to develop the second S value ($S^{FD}$). The field RPD is 30% and represents what is the limit of acceptable field plus laboratory error. This 30% was taken to equal "r" in the equation shown in A.2.1 in the USEPA Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites; where $S^{FD} = r*M_b$ and r = 0.3 and $M_b$ = mean of the aluminum background data that is 140.63 mg/L (see Table 5-1 in the text of the Groundwater Background Study). Therefore, $S^{FD}$ = 42.19 mg/L (see Table F-1).

- The standard deviation was used to develop the third and fourth S values. As shown in the equation presented in A.2.3 in the USEPA Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites; S = r*(standard deviation) where r is a number greater than zero. The standard deviation for the aluminum background data is 131.2 mg/L. Two different values were used for r (i.e., r = 1.0 and r = 0.5). The third S value becomes $S^{SDr=1.0}$ = 1.0*131.2 = 131.2 mg/L. The fourth S value is $S^{SDr=0.5}$ = 0.5*131.2 = 65.60 mg/L.

ProUCL Version 4.1.00 was used to perform Background Test Form 2, and alpha was set to 0.05. Four separate scenarios were run on the aluminum data. For example:

- Scenario B1 used $S^{LD}$ as the S value
- Scenario B2 used $S^{FD}$ as the S value
- Scenario B3 used $S^{SDr=1.0}$ as the S value
- Scenario B4 used $S^{SDr=0.5}$ as the S value

This process was repeated for the remaining six inorganics.

## 3.0 Results

As expected, the results from Background Test Form 1 indicated that the “Site” data were <= the Background data for all seven inorganics (see Scenario A in Table F-1). The importance of the use of Background Test Form 1 is discussed in Section 6.0 of the Groundwater Background Study.

The $H_{o,}$ associated with Scenario B1 through B4 (Background Test Form 2) were rejected for arsenic, iron, manganese, sulfate, and vanadium (see Table F-1). This means the mean/median Site data is less than the mean/median Background + S. This finding suggests that any of the four values for S that are listed for arsenic, iron, manganese, sulfate, and vanadium are potentially suitable for use.

The $H_{o,}$ associated with Scenarios B2 through B4 (Background Test Form 2) were rejected for aluminum and ammonia-n (see Table F-1). This means the mean/median Site data is less than the mean/median Background + S. This finding suggests that any of the four values for S associated with Scenarios B2 through B4 are potentially suitable for use.

## 4.0 Summary and Conclusions

Four different scenarios (each with a specific and different S) were evaluated using the updated background data (see Appendix E). The S associated with Scenarios B2 through B4 (Background Test Form 2) are potentially suitable for use for all seven inorganics.

It is concluded that the S value associated with Scenario B3 ($S = S^{SDr=1.0}$) is best suited for the Naval Station Mayport groundwater inorganic background data set. As noted in Section A.2.3 in the USEPA Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites, values of r less than 1.0 may require a high number of samples. The r value associated with Scenario B3 ($S = S^{SDr=1.0}$) was 1.0, and all the other scenarios employed a r that was less than 1.0.

**TABLE F-1**

**SUBSTANTIAL DIFFERENCE SENSITIVITY ANALYSIS**
**NAVSTA MAYPORT, JACKSONVILLE, FLORIDA**

| Test Parameter and Test Outcome | Inorganic Analyte | | | | | | |
|---|---|---|---|---|---|---|---|
| | ALUMINUM (µg/L) | AMMONIA-N (mg/L) | ARSENIC (µg/L) | IRON (µg/L) | MANGANESE (µg/L) | SULFATE (mg/L) | VANADIUM (µg/L) |
| $S^{LD}$ = r *mean (r = Laboratory RPD Criteria = 0.2)[a,b] | 28.13 | 0.35 | 0.72 | 59.28 | 18.80 | 53.84 | 0.64 |
| $S^{FD}$ = r*mean (r= Field Duplicate RPD Criteria = 0.3)[c,b] | 42.19 | 0.53 | 1.08 | 88.92 | 28.20 | 80.76 | 0.96 |
| $S^{SDr=1.0}$ = r * Standard Deviation (r = 1.0 *standard deviation)[d] | 131.20 | 2.21 | 4.04 | 414.60 | 119.30 | 456.70 | 2.35 |
| $S^{SDr=0.5}$ = r * standard deviation (r = 0.5*standard deviation)[d] | 65.60 | 1.11 | 2.02 | 207.30 | 59.65 | 228.35 | 1.17 |
| Null Hypothesis ($H_0$) Evaluation | | | | | | | |
| (Scenario A) "*Form 1* $H_0$", Conclude Site <= Background | X | X | X | X | X | X | X |
| (Scenario B1) "Form 2 $H_0$" Conclude Site < Background + $S^{LD}$ | O; p = 0.079 | O; p= 0.0603 | X | X | X | X | X |
| (Scenario B2) "*Form 2* $H_0$" Conclude Site < Background + $S^{FD}$ | X | X | X | X | X | X | X |
| (Scenario B3)"Form 2 $H_0$" Conclude Site < Background + $S^{SDr=1.0}$ | X | X | X | X | X | X | X |
| (Scenario B4) "Form 2 $H_0$" Conclude Site < Background + $S^{SDr=0.5}$ | X | X | X | X | X | X | X |

**Footnotes**
(a) Relative Percent Difference (RPD) criteria for inorganic laboratory duplicates is 20% (USEPA, 2010a).
(b) See Section A.2.1 in Appendix A of USEPA 2002.
(c) The control limit of 30 percent for the RPD is used for original and duplicate field sample values (Tetra Tech, 2012).
(d) See Section A.2.3 in Appendix A of USEPA 2002.

**General Notes**
1.) X = Accept the argument; for example; in Scenario A a "X" means conclude that the concentration at the site *are less than or equal to* the concentrations in the background for the analyte under review.
2.) O = Do not accept the argument; for example, in Scenario B1 an "O" means conclude that the the concentration at the site are *greater than* than the concentrations in the background for the analyte under review.
3.) p is the "probability value" (P-value) associated with the statistical test result. Under Form 2, a p-value greater than 0.05 (the alpha value for this test) indicates that the site is more contaminated than the background.

4.) The "Site" and "Background" data are the same for each of the inorganic analytes. Under Scenarios B through F, the constant "S" was added to each each individual data point data point. No constant was added to each each individual data point data point under Scenario A.
5.)The non-detected values were used as reported. No values (e.g.;1/2 the detection limit) were substituted for the non-detected values.
6.) The Wilcoxon-Mann-Whitney Test, contained in ProUCL Version 4.1.00, was used to evaluate the "Site" and "Background" data.
7.) USEPA, 2002. Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites EPA 540-R-01-003 OSWER 9285.7-41 September 2002.
8.) USEPA, 2010a. Contract Laboratory Program, National Functional Guidelines for Inorganic Superfund Data Review, 2010. OWSER 9240.1-51. USEPA-540-R-10-011. January.
9.) Tetra Tech, 2012. Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Groundwater Background Study for Metals. Naval Station Mayport, Jacksonville, Florida.