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NAS CECIL FIELD
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FINAL LETTER REPORT REGARDING IMPLEMENTATION OF CHEMICAL INJECTION USING DIRECT PUSH TECHNOLOGY AT BP WELL SITES NAS CECIL FIELD FL

12/19/2011

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PITT-12-11-057

December 19, 2011

Project Number 112G02267

David Grabka
Remedial Project Manager
Technical Review/Federal Facilities,
Florida Department of Environmental Protection
2600 Blairstone Road
Tallahassee, FL 32399-2400

Reference: CLEAN Contract Number N62470-08-D-1001
Contract Task Order JM09

Subject: Implementation of Chemical Injection Using Direct Push Technology
BP Wells Site
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

On behalf of the Navy, Tetra Tech, Inc. (Tetra Tech) is pleased to submit this report documenting the implementation of chemical injection using direct push technology (DPT) at the BP Wells Site. This Implementation Report was prepared for Naval Facilities Engineering Command Southeast (NAVFAC SE) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62470-08-D-1001.

The primary objective of this report is to document the injection of Regenesis' Oxygen Release Compound (ORC™) Advanced which was conducted in accordance with the approved Work Plan submitted by Tetra Tech on June 14, 2011. The slurry was injected at 26 points to treat a volatile organic compound (VOC) plume located within the vicinity of monitoring wells CEF-BP-1S and CEF-BP-6S, which have concentrations exceeding the natural attenuation default concentrations (NADCs) and have not shown any significant reductions in contamination levels since July 2008 as shown on Figure 1.

BACKGROUND

The BP Wells Site is located on the north-south flightline, southeast of Building 880. During assessment activities in 1999 and 2000, five shallow wells (CEF-BP-1S through CEF-BP-4S and CEF-BP-6S) and one intermediate well (CEF-BP-5I) were installed at the site and subsequently sampled. The groundwater was determined to be contaminated with petroleum-related hydrocarbons. After this initial assessment, Tetra Tech conducted a Site Assessment to identify the extent of groundwater contamination and the groundwater flow direction (Tetra Tech, 2000).

Based on the results of the Site Assessment, a Natural Attenuation Monitoring Plan (NAMP) was prepared and submitted in 2000 to Florida Department of Environmental Protection (FDEP), which issued a NAMP Approval Order (NAMPAO) on August 31, 2000. In accordance with this NAMPAO, Tetra Tech performed the first two semi-annual monitoring events in April and October 2001. Hydrocarbon concentrations [1,2,4-trimethylbenzene (TMB); 1,3,5-TMB; ethylbenzene; toluene; and total xylenes] in groundwater exceeded FDEP NADCs during both sampling events. The second monitoring report recommended that a Remedial Action Plan (RAP) be prepared for this site because contaminant concentrations at the source well (CEF-BP-1S) were greater than NADCs, and because there was a significant increase in contaminant

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concentrations from April 2001 to October 2001. On February 20, 2002, FDEP concurred that a RAP was warranted. A treatability study was recommended and approved to evaluate the effectiveness of in-situ enhanced bioremediation as a possible remedy to be included in the RAP, and a work plan was prepared and approved. The treatability study was conducted between October 2002 and November 2003. Injection wells CEF-BP-7S through CEF-BP-9S were installed during the treatability study. Three in-situ oxygen curtain (iSOC) diffusers were installed in wells CEF-BP-7S through CEF-BP-9S, which were located about 10 to 15 feet from CEF-BP-5I, CEF-BP-1S, and CEF-BP-6S, respectively. The results of these oxygen injections were evaluated by Tetra Tech in the April 2004 Enhanced Natural Attenuation Treatability Study Evaluation Report for the BP Wells Site, and it was determined that remediation efforts were not completely successful. Further groundwater monitoring at the BP Wells Site was not completed until the November 2006 event, which was conducted in conjunction with the adjacent Tank G82 Site groundwater sampling. Groundwater analytical results confirmed that natural attenuation was occurring at the BP Wells Site, and that concentrations of contaminants of concern (COCs) were decreasing over time.

In May 2008, CH2MHill Constructors, Inc. (CH2MHill) submitted an updated NAMP for Building 82 (Tank G82) and BP Wells that recommended long-term semi-annual groundwater sampling for the following COCs based on the results of the November 2006 groundwater sampling event:

- Benzene, toluene, ethylbenzene, and xylenes (BTEX) and naphthalene via United States Environmental Protection Agency (U.S. EPA) Method 8260B.
- Polycyclic Aromatic Hydrocarbons (PAHs) including 1-methylnaphthalene and 2-methylnaphthalene via U.S. EPA Method 8270 Selected Ion Monitoring (SIM).
- Total recoverable petroleum hydrocarbons (TRPH) via the Florida Petroleum-Range Organics (FL-PRO) Method.
- Natural attenuation parameters including dissolved methane (Method RSK 175), nitrate/nitrite and sulfate (U.S. EPA Method 300.0).

Semi-annual sampling in accordance with the updated NAMP began in July 2008. FDEP Groundwater Cleanup Target Levels (GCTLs) for ethylbenzene, total xylenes, naphthalene, 1,2,4-TMB, 1,3,5-TMB, and isopropylbenzene were exceeded in the source well (CEF-BP-1S) during the July 2008 sampling event. The July 2008 concentration of isopropylbenzene in downgradient well CEF-BP-6S also slightly exceeded its GCTL.

During the January 2009 sampling event, GCTLs and NADCs for ethylbenzene, xylenes, isopropylbenzene, 1,2,4-TMB, and 1,3,5-TMB were exceeded at CEF-BP-1S. GCTLs for several other COCs were also exceeded at CEF-BP-1S and CEF-BP-6S.

During the July 2009 sampling event, GCTLs and NADCs for 1,2,4-TMB, 1,3,5-TMB, isopropylbenzene, and xylenes were exceeded at CEF-BP-1S. The GCTLs for several COCs were exceeded at CEF-BP-1S, CEF-BP-6S, CEF-BP-7S, and CEF-BP-9S.

During the January 2010 sampling event, GCTLs and NADCs for total xylenes, 1,2,4-TMB, 1,3,5-TMB, and isopropylbenzene were exceeded in source well CEF-BP-1S, and several COCs exceeded GCTLs at CEF-BP-1S and CEF-BP-6S. Concentrations of 1,2,4-TMB and isopropylbenzene also exceeded NADCs at CEF-BP-6S.

In April 2010, Tetra Tech submitted the Uniform Federal Policy Sampling and Analysis Plan (UFP-SAP) (approved by FDEP in May 2010), which recommended long-term semi-annual monitoring of the following COCs based on discussions at the August 2009 Data Quality Objective (DQO) Meeting:

- VOCs - ethylbenzene, isopropylbenzene, 1,2,4-TMB, 1,3,5-TMB, and total xylenes via U.S. EPA Method 8260B).
- PAHs - 2-methylnaphthalene and naphthalene via U.S. EPA Method 8270 SIM.

- TRPH via the FL-PRO Method.

Based on discussions at the February 2010 Base Realignment and Closure (BRAC) Cleanup Team (BCT) meeting (Decision No. 777, Minute 2603) regarding exceedances at downgradient well CEF-BP-6S, additional wells were proposed. The UFP-SAP was not yet submitted as final, but had already been approved by the Navy Chemist; therefore, a Field Task Modification Request (FTMR) was prepared. FTMR No. 01 submitted by Tetra Tech in May 2010 recommended the installation of two shallow groundwater monitoring wells downgradient of CEF-BP-6S, and the collection of four soil samples in the vicinity of CEF-BP-1S (to be analyzed for the same COCs listed in the UFP-SAP, with the addition of 1-methylnaphthalene) to establish a new downgradient groundwater monitoring point for the shallow zone of the surficial aquifer, and to ensure that a continuing soil source was not contributing to groundwater contamination. The locations of the groundwater monitoring wells and soil samples were confirmed at the May 2010 BCT meeting (Minute 2621).

On July 19, 2010, in accordance with FTMR No. 01, a total of four soil samples were collected (one from each of four borings): CEF-BP-SS01 located adjacent to CEF-BP-1S; and CEF-BP-SS02, CEF-BP-SS03, and CEF-BP-SS04 located approximately 10 feet west, northwest, and north, respectively, from CEF-BP-1S. No borings were installed south or east of CEF-BP-1S because Building 838 and the flightline are located in those directions. Soil samples were collected at 1-foot intervals until the water table was encountered [approximately 4.5 feet below ground surface (bgs)], and tested with an organic vapor analyzer-flame ionization detector (OVA-FID). Four soil samples were then collected, one from each boring, from the depth at which the maximum OVA-FID readings were detected. At the locations where no readings were greater than the background concentration for methane, the soil samples were collected from the depth 1-foot above the water table.

Concentrations reported by the laboratory for soil samples collected during this sampling event were compared to FDEP Soil Cleanup Target Levels (SCTLs). Concentrations of benzo(a) pyrene equivalents (BaPEqs) exceeded the residential SCTL of 0.1 mg/kg in soil sample CEF-BP-SS01. TRPH concentrations exceeded residential and leachability SCTLs in both CEF-BP-SS01 and CEF-BP-SS04. No other analytes were detected in excess of SCTLs in any of the other soil samples, as reported in the Groundwater Monitoring and Supplemental Soil Sampling Report, 1st Semi-Annual, 3rd Year – July 2010 report. TRPH was not detected at levels greater than GCTLs in groundwater.

During the November 2010 BCT meeting, it was decided that wells CEF-BP-7S and CEF-BP-8S no longer required monitoring, but water levels would continue to be measured in these wells. It was also decided that no further action with regards to soils was required at this time (BCT, 2010c). An FTMR was prepared to reflect this change to the monitoring program.

During the January 2011 sampling event, GCTLs for total xylenes, 1,2,4-TMB, 1,3,5-TMB, isopropylbenzene, naphthalene and ethylbenzene were exceeded in groundwater from source well CEF-BP-1S. GCTLs for 1,2,4-TMB, isopropylbenzene, 1,3,5-TMB, ethylbenzene, total xylenes and naphthalene were exceeded in CEF-BP-6S. Concentrations of 1,2,4-TMB, isopropylbenzene and total xylenes in groundwater from CEF-BP-6S also exceeded NADCs (Tetra Tech, 2011).

It was agreed upon during the May 2011 BTC Meeting that ORC™ Advanced would be appropriate for use at the BP Wells Site. It was decided that an ORC™ Advanced Injection Work Plan would be prepared by Tetra Tech and submitted for regulatory review to identify necessary actions to take place during the injection event. The document was approved on July 14, 2011. Tetra Tech coordinated with Jacksonville Aviation Authority (JAA) and their contractors, and scheduled the implementation of the Work Plan activities to occur between demolition activities and construction activities at the BP Well Site. Construction activities include the building of a new hangar in the area surrounding the site.

FIELD OPERATIONS

This section and attachments provide information regarding monitoring well abandonment and the injection of ORC™ Advanced using DPT at the BP Well Site. The procedure was implemented to address ethylbenzene, total xylenes, 1,2,4-TMB, 1,3,5-TMB, isopropylbenzene and naphthalene contamination in groundwater at levels exceeding FDEP NADCs as shown on Figures 1 and 2. Site photographs showing the Site prior to construction and during ORC Advanced injection are provided in Attachment A.

A construction kickoff meeting was held on October 25, 2011. Eight of the eleven monitoring wells at the BP well site were identified in the area of proposed demolition and construction. The proposed construction activities would have damaged or destroyed the wells in the proposed area; therefore, on October 26, 2011, the following eight monitoring wells were abandoned using in-situ grouting methods: CEF-BP-1S, CEF-BP-5I, and CEF-BP-6S through CEF-BP-11S. CEF-BP-7S, CEF-BP-8S and CEF-BP-9S were previously used as in-situ oxygen curtain treatment wells. All of the abandoned wells were grouted using Portland cement type 1 from the bottom to the top using a geoprobe pump. The wells were grouted to fill the manhole in order to be flush with the surrounding area, except for CEF-BP-7S, CEF-BP-8S and CEF-BP-9S. Figure 3 shows the monitoring well locations. Well abandonment field data sheets and logs are provided in Attachment B.

Demolition activities began the week following the well abandonment activities, and were completed within 2 weeks. The injection of ORC Advanced was conducted immediately after completion of the demolition and during final site preparation activities. Specifically, the chemical injection activities were conducted from November 15, 2011 through November 18, 2011. Zebra Environmental was subcontracted to assist in the chemical injection activities. The 24 ORC™ Advanced injection points are shown on Figure 4. The layout was designed to treat a 1,200 square-foot area with the injection points spaced 7 feet apart and the rows spaced 8 feet apart, which covers the area with the highest COC exceedances. Two additional injection points were added west of the oil-water separator and positioned mid-point between the southernmost row and the middle row for a total of 26 points.

Utility clearance was conducted and verified via hand auger to a depth of 5 feet at the injection points prior to DPT probe advancement.

The ORC™ Advanced was injected as a slurry mixture made onsite: 75 pounds of ORC™ Advanced was added to approximately 21 gallons of water per injection location. The drilling crew began injections at the southeastern point in the southern row. Approximately 2 to 3 gallons of water were added into each point prior to and after the slurry injection to prime and clear the lines. Each injection was from a depth of 20 feet bgs to the top of the water table. The depths of the injections were offset at 20 feet to 16 feet, 16 feet to 12 feet, and 12 feet to 8 feet bgs. The injection volumes were 5 gallons at the 20 feet to 16 feet interval, 10 gallons at the 16 feet to 12 feet interval, and 10 gallons at the 12 feet to 8 feet interval. All twenty-six injection points were backfilled with neat grout to the surface after injection completion.

A minor amount of day lighting (the term used to describe when product injected below ground surface breaks through to the surface) of the ORC™ Advanced slurry was observed at three injection locations as identified in the field notes in Attachment C. There were two injection points in the northern row that would not accept the final 5 gallons of ORC™ Advanced mixture. The product was therefore injected into subsequent locations conducted the same day. ORC™ Advanced injection field data sheets and logs are provided in Attachment C.

Upon completion of the injection activities, the area was cleared of all equipment and supplies and a final site walk was conducted prior to departure. It was identified by JAA that the oil water separator was evaluated and was planned to be abandoned in place prior to construction of the new hangar. The oil water separator was abandoned in place prior to December 15, 2011, as confirmed via e-mail by JAA's Cecil Airport Manager, Rusty Chandler. It is anticipated that the new hangar construction will begin in

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December 2011 and be completed in late March 2012. Upon completion of the hangar, JAA will install three new monitoring wells at the locations shown on Figure 5. After monitoring well installation, groundwater samples will be collected in accordance with the long term monitoring plan contained in the UFP-SAP and FTMRs.

If you have any questions regarding this submittal, please feel free to contact me at (412) 921-8163 or via e-mail at Robert.Simcik@tetratech.com.

Sincerely,

Robert F. Simcik, P.E.
Task Order Manager

Attachments (3)

c: A. Sanford, BRAC PMO SE (electronic copy)
M. Davidson, BRAC PMO SE (electronic copy)
S. Martin, NAVFAC Atlantic (electronic copy)
D. Vaughn-Wright, U.S, EPA (electronic copy)
M. Halil, CH2M Hill (electronic copy)
S. Currie, Tetra Tech CTO JM09 project file (1 copy, unbound)
J. Trepanowski, Tetra Tech
M. Jonnet, Tetra Tech (electronic copy)
M. Boerio, Tetra Tech (electronic copy)
J. Johnson, Tetra Tech (1 copy for Information Repository)

CERTIFICATION

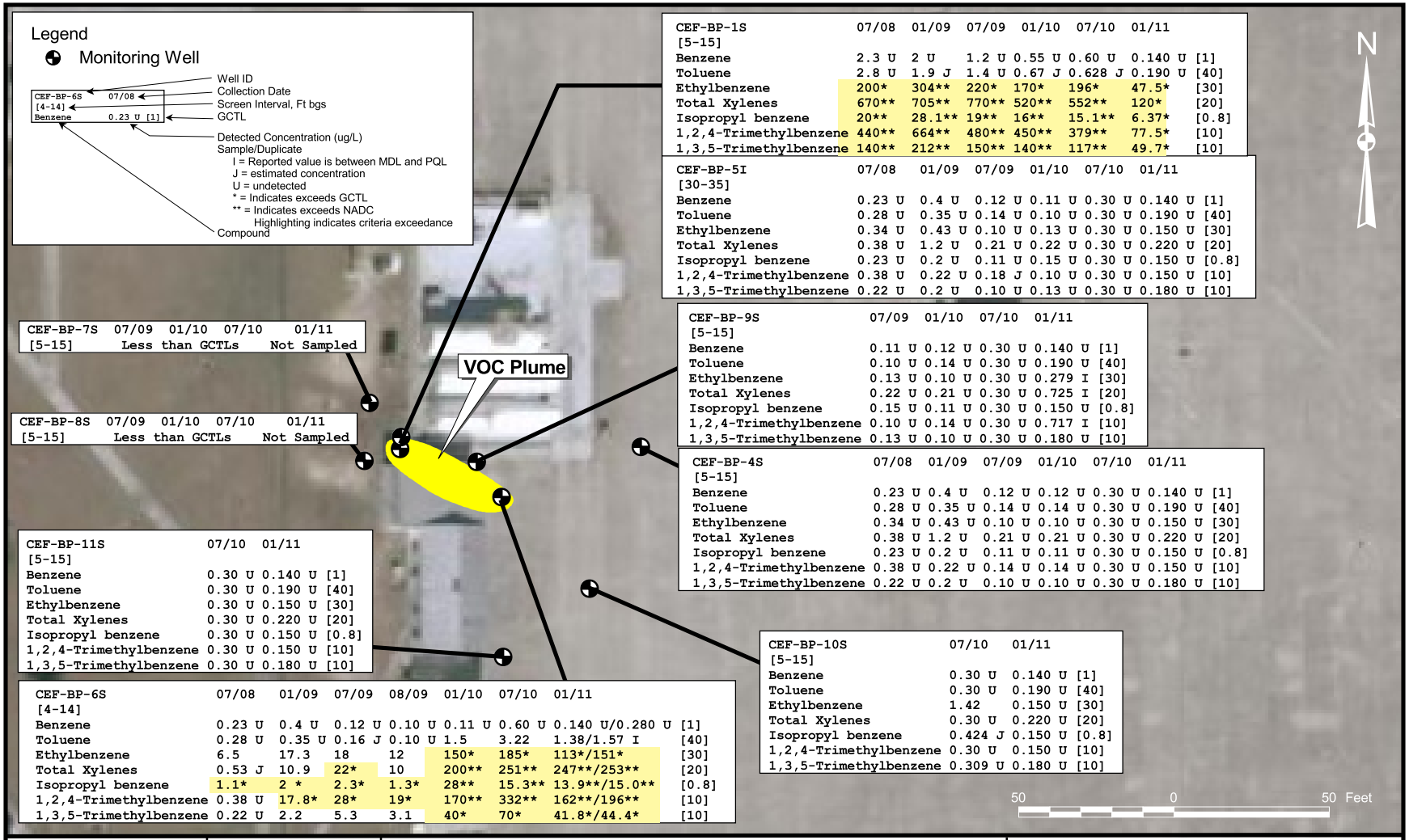
The information contained herein is based on the investigation data and information obtained from previously submitted reports. If conditions are determined to exist that differ from those described, the undersigned engineer should be notified to evaluate the effects of any additional information on the information described in this report. This Implementation Report was submitted for the BP Wells Site at Former Naval Air Station Cecil Field, Jacksonville, Florida, and should not be construed to apply to any other site.

ROBERT FRANK SIMCIK LICENSE No. 00061263 STATE OF FLORIDA ENGINEER

12/8/11

Robert F. Simcik, P.E.
P.E. License Number 61263

FIGURES



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CHECKED BY	DATE	APPROVED BY	DATE
COST/SCHEDULE-AREA		APPROVED BY	DATE
SCALE		DRAWING NO.	REV
AS NOTED		FIGURE 1	0

VOC ANALYTICAL RESULTS - GROUNDWATER
BP WELLS SITE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

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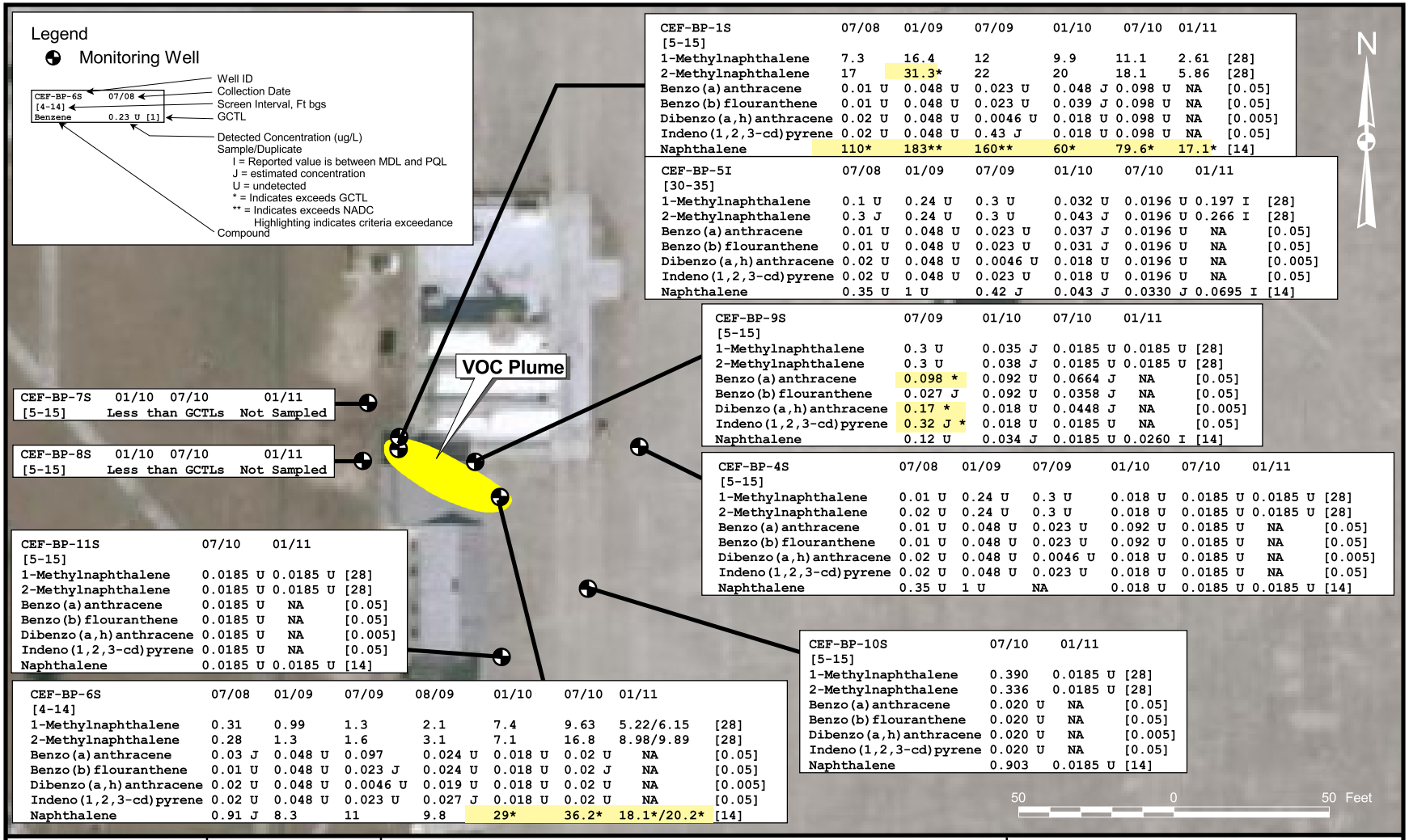

CEF-BP-1S	07/08	01/09	07/09	01/10	07/10	01/11	
[5-15]							
1-Methylnaphthalene	7.3	16.4	12	9.9	11.1	2.61	[28]
2-Methylnaphthalene	17	31.3*	22	20	18.1	5.86	[28]
Benzo(a)anthracene	0.01 U	0.048 U	0.023 U	0.048 J	0.098 U	NA	[0.05]
Benzo(b)flouranthene	0.01 U	0.048 U	0.023 U	0.039 J	0.098 U	NA	[0.05]
Dibenzo(a,h)anthracene	0.02 U	0.048 U	0.0046 U	0.018 U	0.098 U	NA	[0.005]
Indeno(1,2,3-cd)pyrene	0.02 U	0.048 U	0.43 J	0.018 U	0.098 U	NA	[0.05]
Naphthalene	110*	183**	160**	60*	79.6*	17.1*	[14]

CEF-BP-5I	07/08	01/09	07/09	01/10	07/10	01/11	
[30-35]							
1-Methylnaphthalene	0.1 U	0.24 U	0.3 U	0.032 U	0.0196 U	0.197 I	[28]
2-Methylnaphthalene	0.3 J	0.24 U	0.3 U	0.043 J	0.0196 U	0.266 I	[28]
Benzo(a)anthracene	0.01 U	0.048 U	0.023 U	0.037 J	0.0196 U	NA	[0.05]
Benzo(b)flouranthene	0.01 U	0.048 U	0.023 U	0.031 J	0.0196 U	NA	[0.05]
Dibenzo(a,h)anthracene	0.02 U	0.048 U	0.0046 U	0.018 U	0.0196 U	NA	[0.005]
Indeno(1,2,3-cd)pyrene	0.02 U	0.048 U	0.023 U	0.018 U	0.0196 U	NA	[0.05]
Naphthalene	0.35 U	1 U	0.42 J	0.043 J	0.0330 J	0.0695 I	[14]

CEF-BP-9S	07/09	01/10	07/10	01/11	
[5-15]					
1-Methylnaphthalene	0.3 U	0.035 J	0.0185 U	0.0185 U	[28]
2-Methylnaphthalene	0.3 U	0.038 J	0.0185 U	0.0185 U	[28]
Benzo(a)anthracene	0.098 *	0.092 U	0.0664 J	NA	[0.05]
Benzo(b)flouranthene	0.027 J	0.092 U	0.0358 J	NA	[0.05]
Dibenzo(a,h)anthracene	0.17 *	0.018 U	0.0448 J	NA	[0.005]
Indeno(1,2,3-cd)pyrene	0.32 J *	0.018 U	0.0185 U	NA	[0.05]
Naphthalene	0.12 U	0.034 J	0.0185 U	0.0260 I	[14]

CEF-BP-4S	07/08	01/09	07/09	01/10	07/10	01/11	
[5-15]							
1-Methylnaphthalene	0.01 U	0.24 U	0.3 U	0.018 U	0.0185 U	0.0185 U	[28]
2-Methylnaphthalene	0.02 U	0.24 U	0.3 U	0.018 U	0.0185 U	0.0185 U	[28]
Benzo(a)anthracene	0.01 U	0.048 U	0.023 U	0.092 U	0.0185 U	NA	[0.05]
Benzo(b)flouranthene	0.01 U	0.048 U	0.023 U	0.092 U	0.0185 U	NA	[0.05]
Dibenzo(a,h)anthracene	0.02 U	0.048 U	0.0046 U	0.018 U	0.0185 U	NA	[0.005]
Indeno(1,2,3-cd)pyrene	0.02 U	0.048 U	0.023 U	0.018 U	0.0185 U	NA	[0.05]
Naphthalene	0.35 U	1 U	NA	0.018 U	0.0185 U	0.0185 U	[14]

CEF-BP-7S	01/10	07/10	01/11
[5-15]	Less than GCTLs		Not Sampled

CEF-BP-8S	01/10	07/10	01/11
[5-15]	Less than GCTLs		Not Sampled

CEF-BP-11S	07/10	01/11	
[5-15]			
1-Methylnaphthalene	0.0185 U	0.0185 U	[28]
2-Methylnaphthalene	0.0185 U	0.0185 U	[28]
Benzo(a)anthracene	0.0185 U	NA	[0.05]
Benzo(b)flouranthene	0.0185 U	NA	[0.05]
Dibenzo(a,h)anthracene	0.0185 U	NA	[0.005]
Indeno(1,2,3-cd)pyrene	0.0185 U	NA	[0.05]
Naphthalene	0.0185 U	0.0185 U	[14]

CEF-BP-10S	07/10	01/11	
[5-15]			
1-Methylnaphthalene	0.390	0.0185 U	[28]
2-Methylnaphthalene	0.336	0.0185 U	[28]
Benzo(a)anthracene	0.020 U	NA	[0.05]
Benzo(b)flouranthene	0.020 U	NA	[0.05]
Dibenzo(a,h)anthracene	0.020 U	NA	[0.005]
Indeno(1,2,3-cd)pyrene	0.020 U	NA	[0.05]
Naphthalene	0.903	0.0185 U	[14]

CEF-BP-6S	07/08	01/09	07/09	08/09	01/10	07/10	01/11	
[4-14]								
1-Methylnaphthalene	0.31	0.99	1.3	2.1	7.4	9.63	5.22/6.15	[28]
2-Methylnaphthalene	0.28	1.3	1.6	3.1	7.1	16.8	8.98/9.89	[28]
Benzo(a)anthracene	0.03 J	0.048 U	0.097	0.024 U	0.018 U	0.02 U	NA	[0.05]
Benzo(b)flouranthene	0.01 U	0.048 U	0.023 J	0.024 U	0.018 U	0.02 J	NA	[0.05]
Dibenzo(a,h)anthracene	0.02 U	0.048 U	0.0046 U	0.019 U	0.018 U	0.02 U	NA	[0.005]
Indeno(1,2,3-cd)pyrene	0.02 U	0.048 U	0.023 U	0.027 J	0.018 U	0.02 U	NA	[0.05]
Naphthalene	0.91 J	8.3	11	9.8	29*	36.2*	18.1*/20.2*	[14]

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PAH ANALYTICAL RESULTS - GROUNDWATER
BP WELLS SITE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

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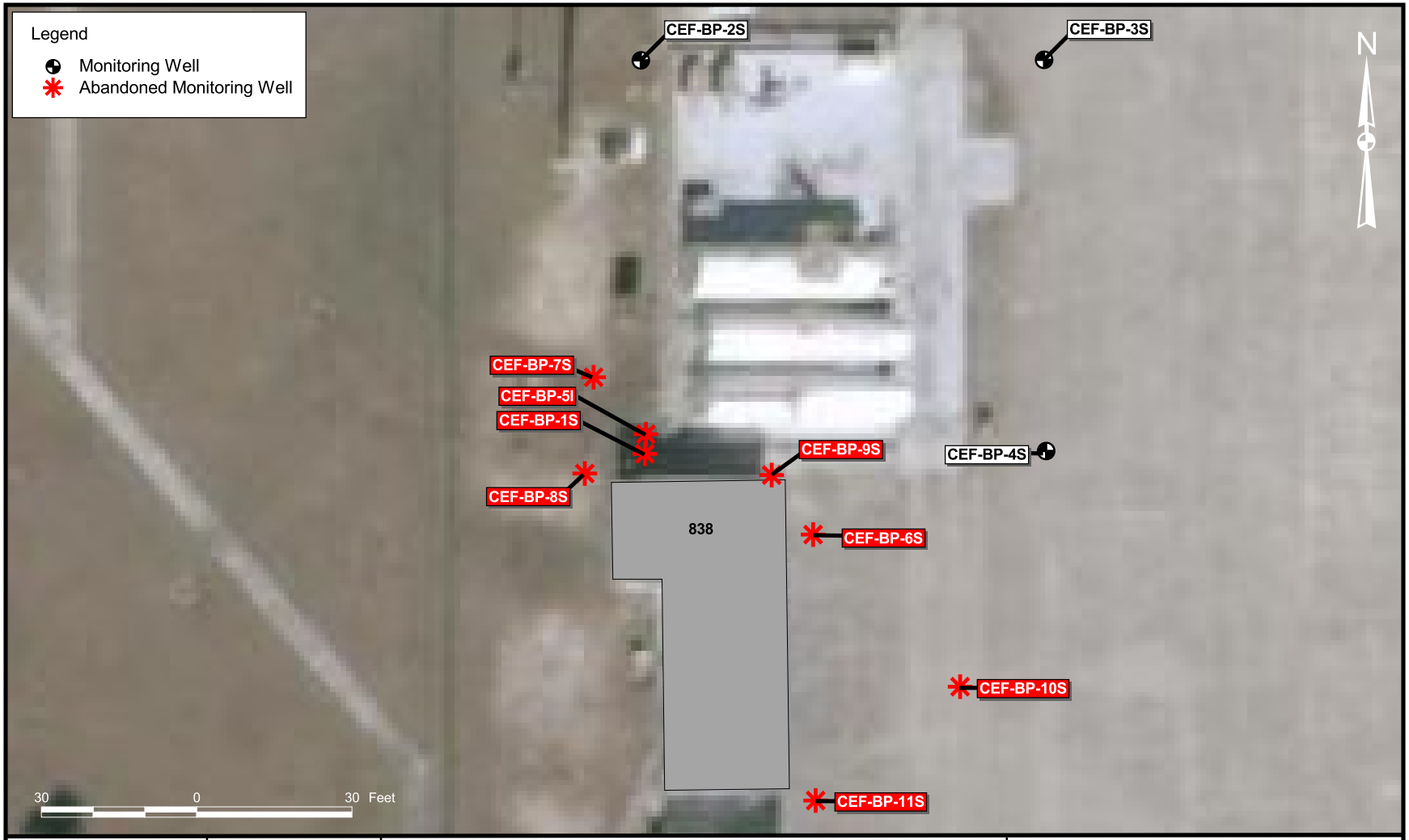

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MONITORING WELL LOCATION MAP
BP WELLS SITE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

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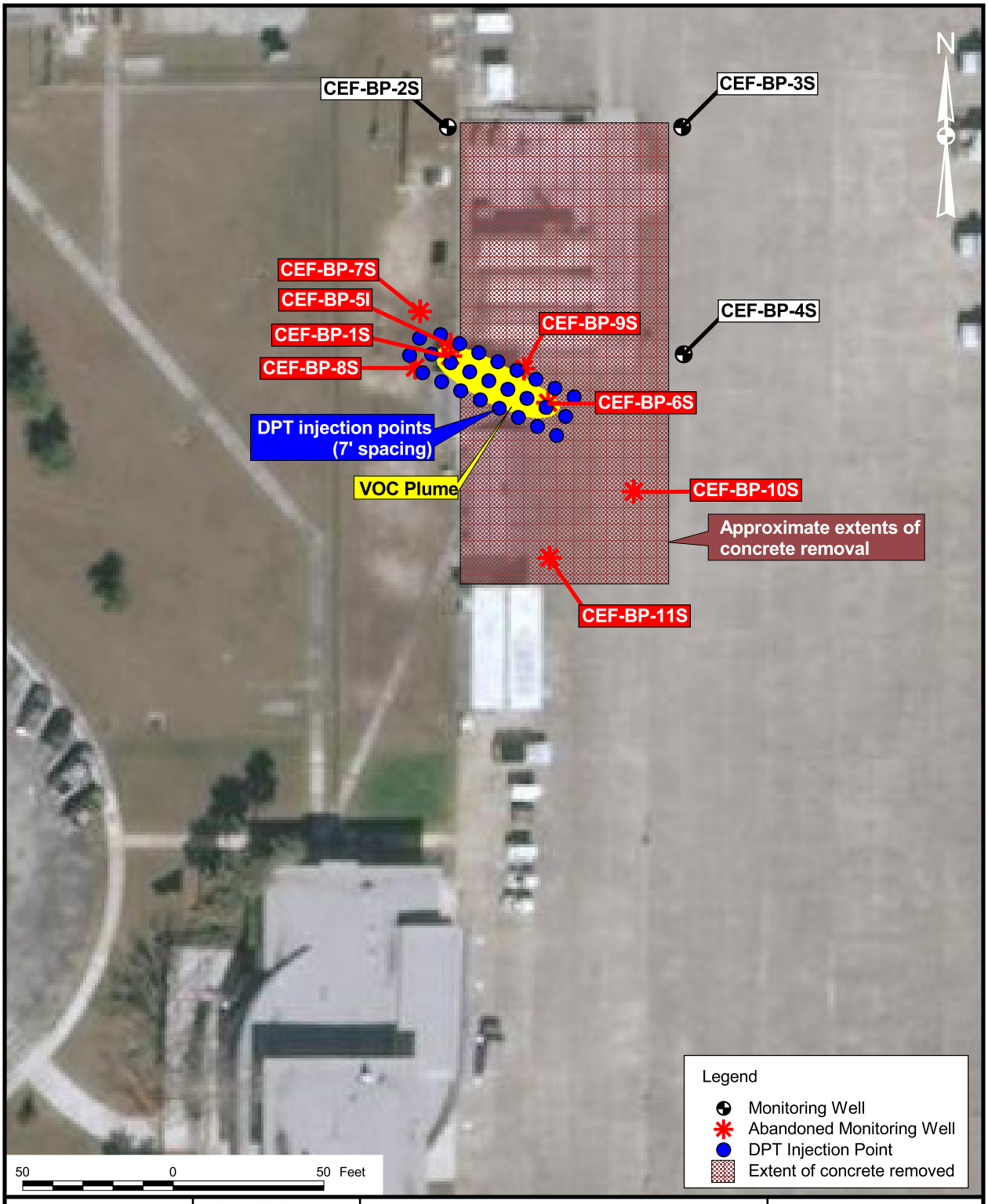

DRAWN BY: MJJ	DATE: 28Nov11	DPT ORC INJECTION SITE MAP BP WELLS SITE NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER: 2267
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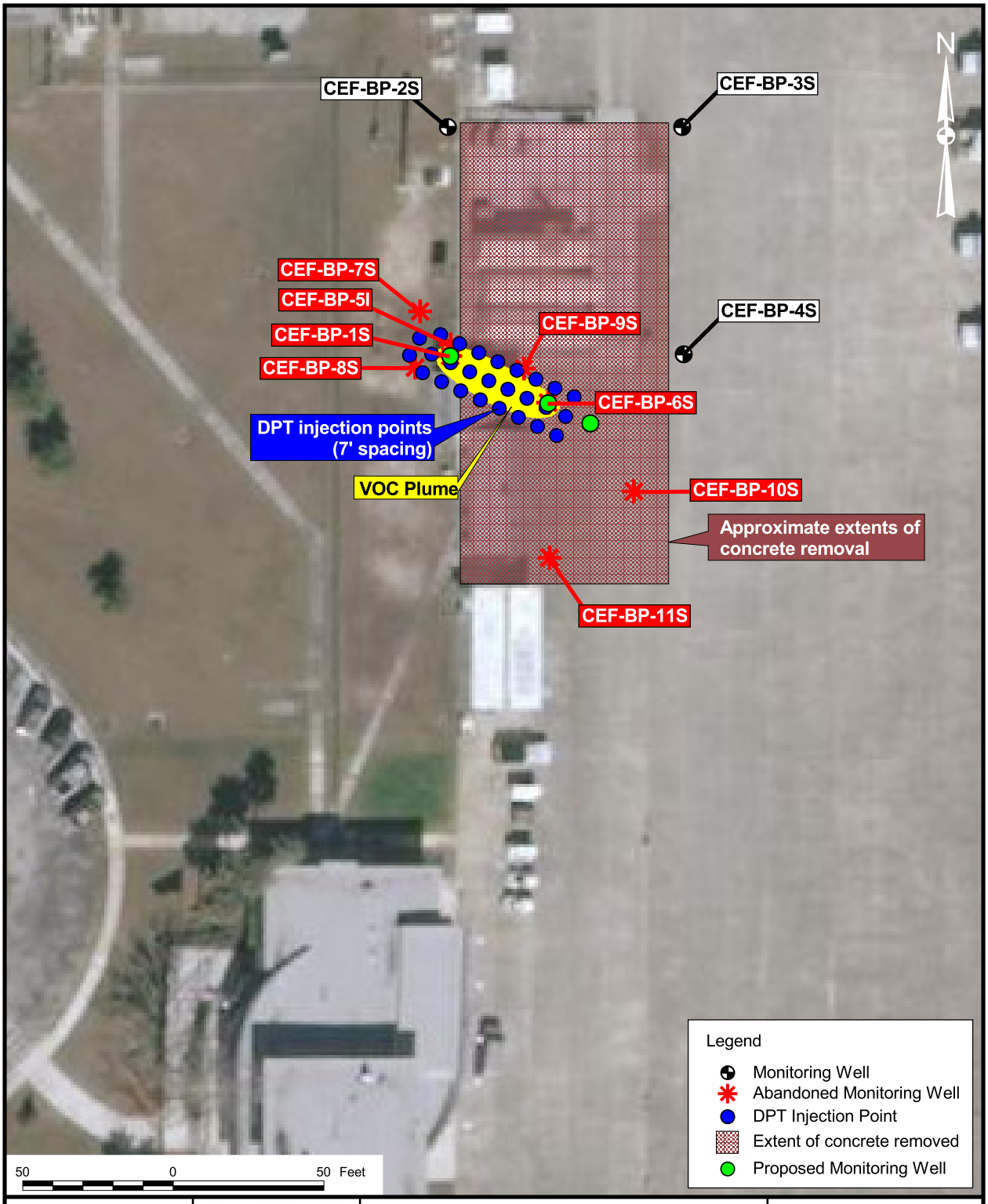

DRAWN BY MJJ	DATE 28Nov11	DPT ORC INJECTION SITE MAP AND PROPOSED NEW MONITORING WELLS BP WELLS SITE NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 2267
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SCALE AS NOTED			DRAWING NO. FIGURE 5 / REV 0

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ATTACHMENT A

SITE PHOTOGRAPHS

SITE PHOTOS

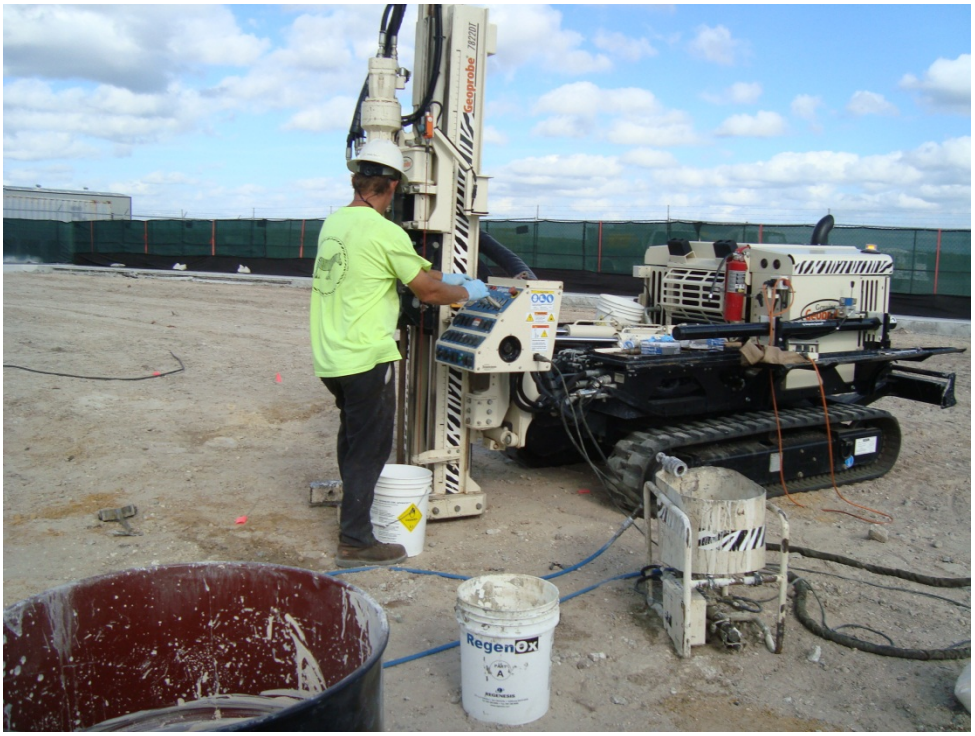
BP Well site prior to building and apron demolition for new hanger project.

BP Well Site after demolition prior to chemical injection. Standing at locations of abandoned monitoring wells CEF-BP-9S and CEF-BP-6S.

SITE PHOTOS

DPT chemical injection point locations.

SITE PHOTOS



Chemical Injection using DPT

Exposed concrete vault prior to abandonment and pin flag showing additional injection points upgradient of oil water separator.

ATTACHMENT B

WELL ABANDONMENT FIELD DATA SHEETS

1126022.67

NAS CECIL FIELD
BP WELLS MW ABANDONMENT

26 OCTOBER 2011

PERSONNEL: ZACH SCRIBNER (TTALLS); JASON REINHART (PROBE DOMAIN)
VEHICLE: RENTAL - 2011 DODGE RAM
PPE: LEVEL "D"
WEATHER: OVERCAST 63°F AT ARRIVAL; 64°F PARTLY SUNNY - DEPARTURE
OBJECTIVE: ABANDON EIGHT (8) MW'S AT BP WELLS SITE (2) DETERMINED BY

0710 ZS DEPARTED TT OFFICE TO MEET JR AT NAS CF
0750 ZS ARRIVED ON BASE AT TOWER (BLDG 82) AND OBTAINED TWO CONTRACTOR PASSES
0800 ZS MET JR IN THE PARKING LOT NEAR THE TOWER AND HELD A SAFETY MEETING BEFORE DEPARTING FOR SITE
0818 ZS + JR MET TOM TONEY (TT) AT A FENCED IN AREA CONTAINING THE BP WELLS SITE; TT INSTRUCTED ZS + JR TO RETURN TO THE PARKING LOT AND ENTER THE CONSTRUCTION/BP WELLS SITE AT THE POINT WHERE THE FENCING WAS BEING REMOVED (≈40' WEST OF CEF-BP-8$).
0840 ZS AND JR ONSITE (FENCING TOOK LONGER THAN EXPECTED TO REMOVE); ZS BEGAN OPENING THE DESIGNATED MW'S TO BE ABANDONED AND RECEIVED ADDITIONAL ONSITE VERIFICATION FROM TT THAT ALL + ONLY THE 8 MWS PREVIOUSLY DETERMINED WAS ALL HE WANTED ABANDONED JR BEGAN SETTING UP THE GEOPROBE PUMP AND PORTLAND CEMENT (GROUT) TO ABANDON MW'S (SEE TABLE BELOW FOR WELL ABANDONMENT INFORMATION).

WELL I.D.	START TIME	FINISH TIME	WELL DEPTH	GROUT FILLED INTERVAL	H2O LEVEL (GROUT AMOUNT)	SQ FT OF GROUT	GROUT FILLER
CEF-BP-8$ (*)	0850	0900	15'	0-15'	6.27	~15.7	PORTLAND CEMENT TYPE I
CEF-BP-7$ (*)	0902	0911	15'	0-15'	6.04'	~15.7	" " "
CEF-BP-5I	0915	0931	34.39'	0-34.39'	6.28	~36'	" " "
CEF-BP-1$	0934	0948	14.72'	0-14.72	5.87'	~15.4	" " "
CEF-BP-9$ (*)	0954	1003	15'	0-15'	6.35'	~15.7	" " "
CEF-BP-6$	1005	1016	14.2'	0-14.2'	6.61'	~14.9	" " "
CEF-BP-10$	1018	1026	14.98'	14.98-0	6.73'	~4	" " "
CEF-BP-11$	1027	1037	14.97'	0-14.97	6.45	~4	" " "

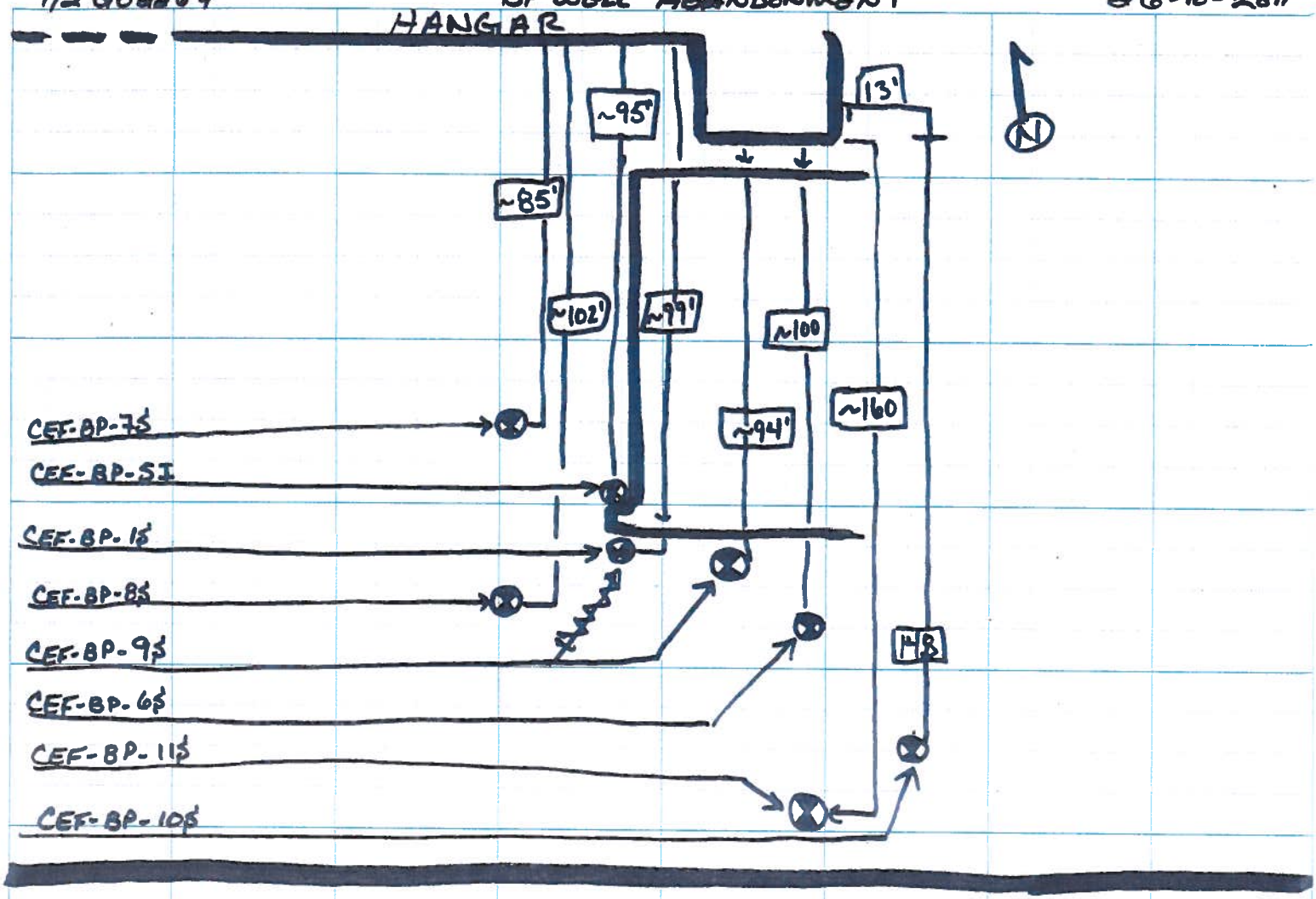
(*) = REPRESENTS OLD I-SOC TREATMENT WELLS + ADDITIONAL "GROUT" WAS USED TO SEAL THE BOTTOM OF THE LARGER MANHOLES.

NOTE: ALL WELLS ABANDONED WERE GROUTED FROM THE BOTTOM OF THE MW TO UP TO THE TOP OF THE MW, AND ALL FINISHED WELLS (EXCEPT 7$, 8$, 9$) WERE GROUTED TO FILL THE MANHOLE SO IT WOULD BE FLUSH WITH THE SURROUNDING AREA.

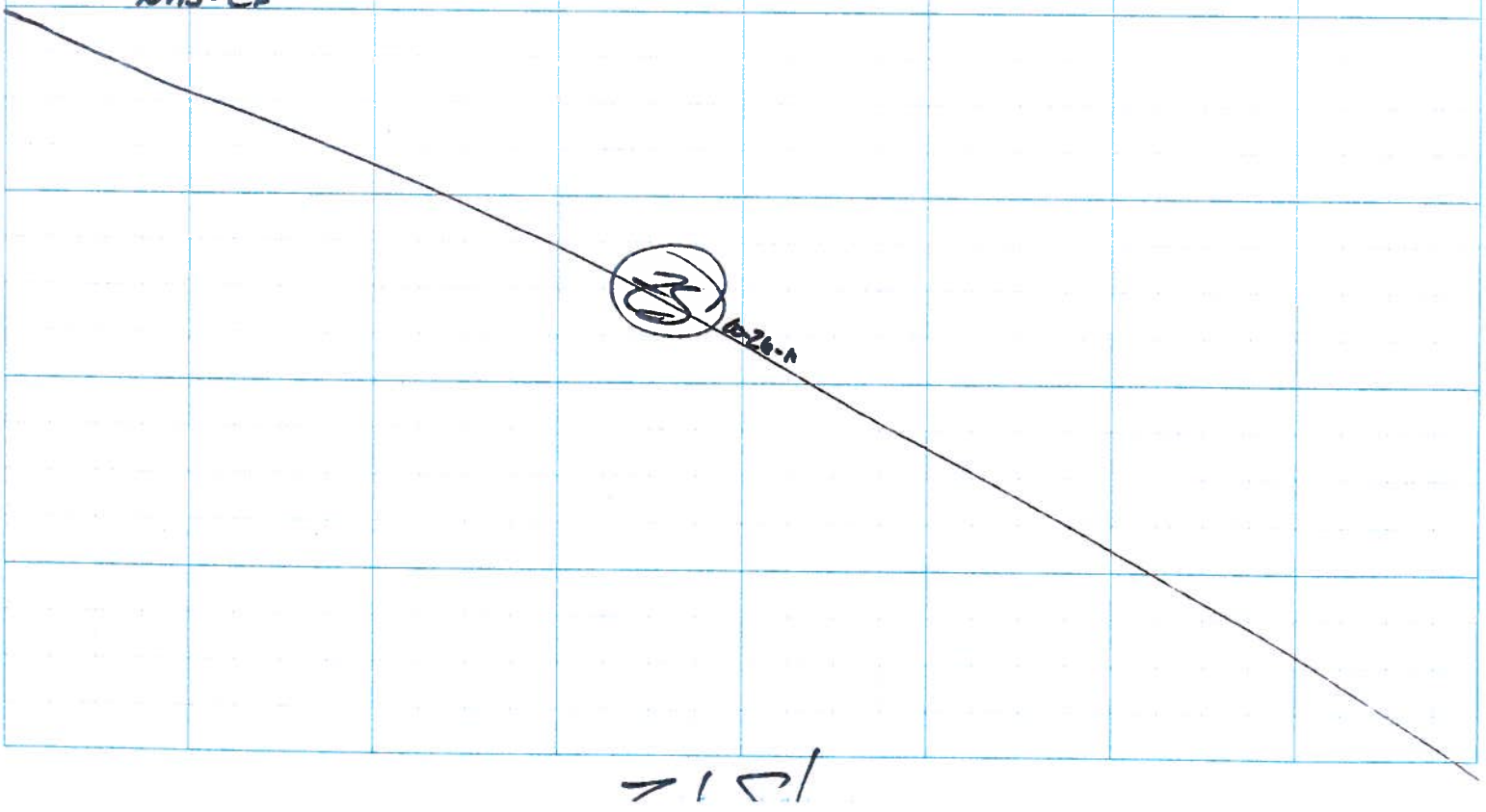
1040 ZS + JR BEGAN SITE CLEANUP.
1115 JR DEPARTED SITE; ZS REMAINED TO GATHER GEOSPATIAL INFO FOR MW'S

NAS CF

112G02267 BP WELL ABANDONMENT 26-10-2011



1205 ZS DEPARTED SITE, RETURNED CONTRACTOR PASSES AND DEPARTED NAS-CF



7 of 21

Tetra Tech NUS, Inc.

DAILY ACTIVITIES RECORD

PROJECT NAME:	CTO JM09	**PROJECT NUMBER:**	112G02267
CLIENT:	U.S. NAVY	**LOCATION:**	BP WELLS
DATE:	10-26-2011	**ARRIVAL TIME:**	0800
Tt NUS PERSONNEL:	Z. SCRIBNER	**DEPARTURE TIME:**	1115
CONTRACTOR:	PROBE DOMAIN	**DRILLER:**	J. RINEHART

ITEM	QUANTITY ESTIMATE	QUANTITY TODAY	PREVIOUS TOTAL QUANTITY	CUMULATIVE QUANTITY TO DATE
MW ABANDONMENT 2"-SHALLOW (~15')	~~5~~	5	0	5
MW ABANDONMENT 1"-SHALLOW (~15')	2	2	0	2
MW ABANDONMENT 2"-INTERMEDIATE(35')	1	1	0	1

COMMENTS:

APPROVED BY:

Tt NUS REPRESENTATIVE

DRILLER

DATE: 10-26-2011

WELL ABANDONMENT FORM

Project Name: JM09 Job Number: 112G02267

Site/Building Number: BP WELLS Client: U.S. NAVY

WELL INFORMATION

Well Number: CEF-BP-85 Static Water Level: 6.27

Well Diameter: 2" Well Depth: 15'

Casing Material: SCHEDULE 40 PVC Screen Length: @ 5'-15' (10')

Well Completion: Flush-mount X Stick-up ____ Bumper Posts: (Yes/No) NO

ID/Markings on Well: NONE

Reason for Abandonment: UPCOMING CONSTRUCTION ACTIVITIES AT SITE ! LIKELY DAMAGE + DESTRUCTION OF WELLS WILL OCCUR

METHOD OF ABANDONMENT

In-Situ Grouting: X Casing Removal & Grouting: _____ Overdrill & Grouting: _____

Other (Explain): _____

Type and Amount of Plugging Material and Date(s) of Abandonment: PORTLAND CEMENT TYPE I 10-26-2011

Surface Conditions: Unpaved, unlandscaped X Unpaved, landscaped _____

Paved, concrete _____ Paved, asphalt _____

Type of Restoration Performed: _____

Additional Notes/Comments:

USED A GEOPROBE PUMP TO INSTALL GROUT FROM THE BOTTOM OF THE WELL TO THE TOP

Contractor Representative: JASON RINEHART Date: 10-26-2011

Tetra Tech Representative: ZACH SCRIBNER Date: 10-26-2011

WELL ABANDONMENT FORM

Project Name: CTO JM09
Site/Building Number: BP WELLS
Job Number: 112G02267
Client: U.S. NAVY

WELL INFORMATION

Well Number: CEF-BP-7S
Well Diameter: 2"
Casing Material: SCHEDULE 40 PVC
Well Completion: Flush-mount X Stick-up ____
ID/Markings on Well: N/O
Static Water Level: 6.04
Well Depth: 15'
Screen Length: 5-15' (10')
Bumper Posts: (Yes/No) NO

Reason for Abandonment: UPCOMING CONSTRUCTION ACTIVITIES AT SITE & LIKELY DAMAGE + DESTRUCTION OF WELLS

METHOD OF ABANDONMENT

In-Situ Grouting: X Casing Removal & Grouting: ____ Overdrill & Grouting: ____
Other (Explain): ____

Type and Amount of Plugging Material and Date(s) of Abandonment: PORTLAND CEMENT TYPE I 10-26-2011

Surface Conditions: Unpaved, unlandscaped X Unpaved, landscaped ____
Paved, concrete ____ Paved, asphalt ____

Type of Restoration Performed: ____

Additional Notes/Comments:

USED A GEOPROBE PUMP TO "GROUT" FROM THE BOTTOM UP

Contractor Representative: JASON RENEHART Date: 10-26-2011

Tetra Tech Representative: ZACH SCRIBNER Date: 10-26-2011

WELL ABANDONMENT FORM

Project Name: CTO JM09 Job Number: 112G02267

Site/Building Number: BP WELLS Client: U.S. NAVY

WELL INFORMATION

Well Number: CEE-BP-5I Static Water Level: 6.28

Well Diameter: 2" Well Depth: 34.39

Casing Material: SCHEDULE 40 PVC Screen Length: 29.39-34.39 (5')

Well Completion: Flush-mount X Stick-up ____ Bumper Posts: (Yes/No) NO

ID/Markings on Well: NONE

Reason for Abandonment: UPCOMING CONSTRUCTION ACTIVITIES AT SITE AND LIKELY DAMAGE + DESTRUCTION OF WELLS

METHOD OF ABANDONMENT

In-Situ Grouting: X Casing Removal & Grouting: ____ Overdrill & Grouting: ____

Other (Explain): ____

Type and Amount of Plugging Material and Date(s) of Abandonment: PORTLAND CEMENT TYPE I 10-26-2011

Surface Conditions: Unpaved, unlandscaped X Unpaved, landscaped ____

Paved, concrete ____ Paved, asphalt ____

Type of Restoration Performed: ____

Additional Notes/Comments:

USED A GEOPROBE PUMP TO INSTALL "GROUT" FROM THE BOTTOM UP

Contractor Representative: JASON RINEHART Date: 10-26-2011

Tetra Tech Representative: ZACH SCRIBNER Date: 10-26-2011

WELL ABANDONMENT FORM

Project Name: CTO JM09 Job Number: 112G02267

Site/Building Number: BP WELLS Client: U.S. NAVY

WELL INFORMATION

Well Number: CEF-BP-15 Static Water Level: 5.87'

Well Diameter: 2" Well Depth: 14.72

Casing Material: SCHEDULE 40 PVC Screen Length: 4.72 - 14.72 (10)

Well Completion: Flush-mount X Stick-up ____ Bumper Posts: (Yes/No) NO

ID/Markings on Well: NONE

Reason for Abandonment: UPCOMING CONSTRUCTION ACTIVITIES AT SITE ! LIKELY DAMAGE/ DESTRUCTION OF WELLS

METHOD OF ABANDONMENT

In-Situ Grouting: X Casing Removal & Grouting: _____ Overdrill & Grouting: _____

Other (Explain): _____

Type and Amount of Plugging Material and Date(s) of Abandonment: PORTLAND CEMENT TYPE I 10-26-2011

Surface Conditions: Unpaved, unlandscaped X Unpaved, landscaped _____

Paved, concrete _____ Paved, asphalt _____

Type of Restoration Performed: _____

Additional Notes/Comments:

USED A GEOPROBE PUMP TO "GROUT" FROM THE BOTTOM UP

Contractor Representative: JASON RINEHART Date: 10-26-2011

Tetra Tech Representative: ZACH SCRIONER Date: 10-26-2011

WELL ABANDONMENT FORM

Project Name: CTO JM09 Job Number: 112G02267

Site/Building Number: BP WELLS Client: U.S. NAVY

WELL INFORMATION

Well Number: CEE-BP-9S Static Water Level: 6.35

Well Diameter: 2" Well Depth: 15'

Casing Material: SCHEDULE 40 PVC Screen Length: 5'-15' (10')

Well Completion: Flush-mount X Stick-up ____ Bumper Posts: (Yes/No) NO

ID/Markings on Well: NONE

Reason for Abandonment: UPCOMING CONSTRUCTION ACTIVITIES AT SITE & LIKELY DAMAGE/DESTRUCTION OF WELLS

METHOD OF ABANDONMENT

In-Situ Grouting: X Casing Removal & Grouting: _____ Overdrill & Grouting: _____

Other (Explain): _____

Type and Amount of Plugging Material and Date(s) of Abandonment: PORTLAND CEMENT TYPE I, 10-26-2011

Surface Conditions: Unpaved, unlandscaped _____ Unpaved, landscaped _____

Paved, concrete X Paved, asphalt _____

Type of Restoration Performed: _____

Additional Notes/Comments:

USED A GEOPROBE PUMP TO "GROUT" WELLS FROM THE BOTTOM UP.

Contractor Representative: JASON BENEHART Date: 10-26-2011

Tetra Tech Representative: ZACH SCRIANER Date: 10-26-2011

WELL ABANDONMENT FORM

Project Name: CTO JM09 Job Number: 112G02267

Site/Building Number: BP WELLS Client: U.S. NAVY

WELL INFORMATION

Well Number: CEE-BP-6S Static Water Level: 6.61

Well Diameter: 2" Well Depth: 14.2

Casing Material: SCHEDULE 40 PVC Screen Length: 4.2 - 14.2 (10')

Well Completion: Flush-mount X Stick-up ____ Bumper Posts: (Yes/No) NO

ID/Markings on Well: NO

Reason for Abandonment: UPCOMING CONSTRUCTION ACTIVITIES AT SITE AND LIKELY DAMAGE + DESTRUCTION OF MWS

METHOD OF ABANDONMENT

In-Situ Grouting: X Casing Removal & Grouting: _____ Overdrill & Grouting: _____

Other (Explain): _____

Type and Amount of Plugging Material and Date(s) of Abandonment: PORTLAND CEMENT TYPE I 10-26-2011

Surface Conditions: Unpaved, unlandscaped _____ Unpaved, landscaped _____

Paved, concrete X Paved, asphalt _____

Type of Restoration Performed: _____

Additional Notes/Comments:

USED A GEOPROBE PUMP TO "GROUT" WELLS FROM THE BOTTOM UP

Contractor Representative: JASON RINEHART Date: 10-26-2011

Tetra Tech Representative: ZACH SCRIBNER Date: 10-26-2011

WELL ABANDONMENT FORM

Project Name: CTO JM09 Job Number: 112G02267

Site/Building Number: BP WELLS Client: U.S. NAVY

WELL INFORMATION

Well Number: CEF-BP-10S Static Water Level: ≅ 10.73

Well Diameter: 1" Well Depth: 14.98

Casing Material: SCHEDULE 40 PVC Screen Length: 4.98-14.98 (10'

Well Completion: Flush-mount X Stick-up ____ Bumper Posts: (Yes/No) NO

ID/Markings on Well: ON CONCRETE NEXT TO WELL (IN CONCRETE)

Reason for Abandonment: UPCOMING CONSTRUCTION ACTIVITIES AT SITE & UNAVOIDABLE DAMAGE/DESTRUCTION OF WELLS

METHOD OF ABANDONMENT

In-Situ Grouting: X Casing Removal & Grouting: _____ Overdrill & Grouting: _____

Other (Explain): _____

Type and Amount of Plugging Material and Date(s) of Abandonment: PORTLAND CEMENT TYPE I 10-26-2011

Surface Conditions: Unpaved, unlandscaped _____ Unpaved, landscaped _____

Paved, concrete X Paved, asphalt _____

Type of Restoration Performed: _____

Additional Notes/Comments:

USED A GEOPROBE PUMP TO "GROUT" WELLS FROM THE BOTTOM UP

Contractor Representative: JASON PINEHART Date: 10-26-2011

Tetra Tech Representative: ZACH SCRIBNER Date: 10-26-2011

WELL ABANDONMENT FORM

Project Name: CTO JM09 Job Number: 112G02267

Site/Building Number: BP WELLS Client: U.S. NAVY

WELL INFORMATION

Well Number: CEF-BP-11S Static Water Level: 6.45

Well Diameter: 1" Well Depth: 14.97'

Casing Material: SCHEDULE 40 PVC Screen Length: 4.97'-14.97' (10')

Well Completion: Flush-mount X Stick-up ___ Bumper Posts: (Yes/No) NO

ID/Markings on Well: IN CONCRETE AROUND WELL MAN HOLE

Reason for Abandonment: UPCOMING CONSTRUCTION ACTIVITIES AT SITE / UNAVOIDABLE DAMAGE + DESTRUCTION OF WELLS

METHOD OF ABANDONMENT

In-Situ Grouting: X Casing Removal & Grouting: ___ Overdrill & Grouting: ___

Other (Explain): ___

Type and Amount of Plugging Material and Date(s) of Abandonment: PORTLAND CEMENT TYPE I 10-26-2011

Surface Conditions: Unpaved, unlandscaped ___ Unpaved, landscaped ___

Paved, concrete X Paved, asphalt ___

Type of Restoration Performed: ___

Additional Notes/Comments:

USED A GEOPROBE PUMP TO "GROUT" WELLS FROM THE BOTTOM UP

Contractor Representative: JASON RINEHART / [signature] Date: 10-26-2011

Tetra Tech Representative: ZACH SCRIBNER / [signature] Date: 10-26-2011

ATTACHMENT C

ORC™ ADVANCED INJECTION FIELD DATA SHEETS

BP Wells Set up 11-15-11

Personnel : Dave Sieffert
Sub : Zebra Eno (Driller)
Brian + Don

Obj : H4S + Set up

1300 AT office Zebra personnel present. Begin to discuss work plan & H4S plan

1400 Read through H4S plan and sub signed forms. They understand Contaminants ... & Have map to hospital & phone list provided.

1438 AT well Set up for tomorrow.

1500 off to get ORC from Site 16.

1525 ORC contained in trailer round DPT rig out to store ORC.
Have H2O from spigot. Ran hose to injection area

1545 Working on pump (Geo pump)

1700 Ready for work - leave site. - Site secure
I placed Flags at boring locations Monday
The ~~borings~~ ~~flags~~ grid worked out perfectly based on injection map. Injection points are near wells as seen on injection map.

82

BP ORC INJECTION 11-16-11

Personnel : Dave Sickler
Zebra Brian
D&O

PPE : Level "D"

Weather: PT Sunny 80°F

Obj : Inject ORC to 20 ft depth
75 lbs + 21 gal H_2O per hole. Holes 7 ft apart & rows A B C & ft apart 24 injection points.

0720 Tetratech on site

0834 Drillers on site - Conduct H&S - Discuss where to go if an energency happens

0845 Begin work

0908 Issues with pump.

1300 Pump working begin 1st injection. Begin at most SE point. This is a down gradient point. Injecting 75 lbs + 21 gal H_2O. Have measured out what 21 gal is in mixing drum & will fill to appropriate volume. Have hand augered 15 borings to 4 ft bls. ~~with~~

1340 Inject 1st ~~bore~~ hole -- (20-16) (16-12) (12-8)

H_2O table 5.8 ft bls in well G82 new 3. ORC came up to land surface during final injection of 12-8 ft had to push down & inject at 16-12 ft bls to get all ORC into ground.

All persons wearing proper ppe

1351 Begin second injection - Currently working on most southern line of injection points.

I have GPS'ed wells 7, 8, 9, 10, 11 wells appear to have good coordinates.

1410 Jeff Howe on site

1445 Blow out again on second hole near surface cracked (surface) upper formation to cause release.

Will have to inject ~ 8-10 gal below 12 ft interval. for hole to accept all ORC

Decide to inject { 5 gal at 20-16 interval
10 gal at 16-12 interval
5 gal 14-10 interval
5 gal 12-8 with some ORC to flow into Silent Zone at 6.5 ft bls

BP INJECTION

11-16-11

1530	injecting 3rd hole
1550	Injection went as planned no day-lighting. Clearing & moving.
1602	Pushed to 20 ft bls & begin ORC injection. Mixing each hole prior to injection.
1638	Pushing down to 20 - 5th Hole
1715	Complete 5th hole & moved to 6th - Injection going into ground very well.
1717	Begin push to 20 ft for 6th ~~DSF~~ injection All injections are along southern line of injection points.
1725	AT 20 ft - Inject 2-3 gal H2O & then ORC this is typical for all injections
1810	Complete 6th injection - Dark out side pack up.
1822	Jeff Knox off site.
1833	off site - Site secure.

BP ORC INJECTIONS - Cecil 11-17-11

Personnel : Dave Siefken
Zebra : Dan & Brian
Weather : Mostly sunny 75°F
PPE : Level "D"

Obj : Inject ORC at 24 locations to 20 Ft bls

0715 Dave Siefken on site - Rained last night so ground is moist. - Completed 6 injections yesterday.
Have 18 to complete, not sure if we will finish today.
Toney Construction workers on site as usual.
↳ 904-396-3004

0808 Brilless on site - Conduct tail gate H&S meeting.
Go over Eye protection & location of hospital & First Aid.

0815 Begin to get ready. Will continue injection pattern of push to 20 w/ 4 ft injection screen.

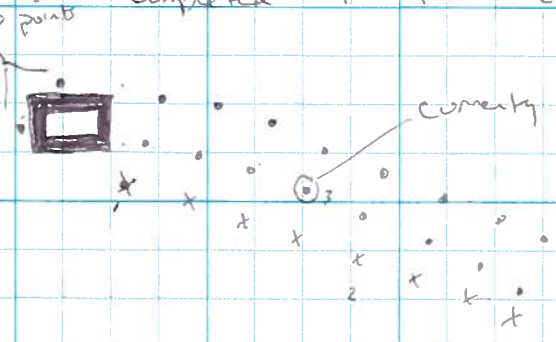
20-16 ft (1) buckets
16-12 ft (2) buckets
12-8 ft (2) buckets

This injection pattern is one that puts most ORC near the upper zone of the surficial aquifer.
Prior to injecting & once all ORC is injected 2-3 gal of liquid H_2O is added to

0833 Begin push to 20 ft 7th hole 1st of the day
Still working on 1st row (the most southern)
Mixing ORC specifically for each injection point using ~21 gal H_2O for 75 lbs of ORC. Calibrated drum

0838 All persons wearing proper ppe when drilling

1007 ~~Start~~ Talked w/ Rob - decide to move 2 points west of oil water separator. New locations are at mid point of 2 rows.
Completed 1st Row of (8) injection points. Move to



CECIL BP Wells ORC-INS 11-17-11

1100 Move to New injection point : 4th of the ~~day~~

1215 Completed 4th injection west well.
Move to ~~location~~ extra boring added beyond

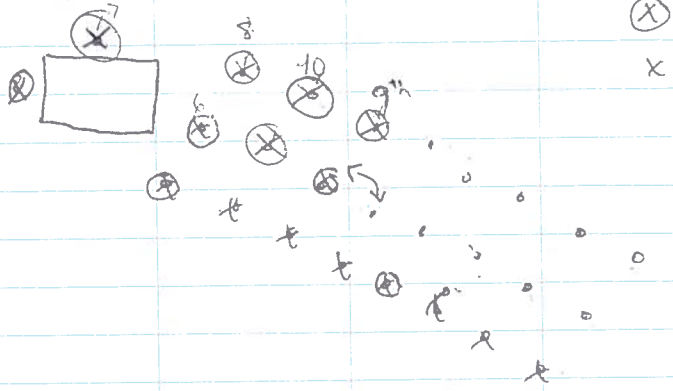
1245 oil water seperator.

1245 Drillers pulling Bags out of buckets

1312 Start injecting

1355 Done 1st Extra hole 5th of day
Jeff on site -

1430 Dave Siefken off Site



(X) Done today
X Done yesterday

1445 completed 6th hole, moved to 7th hole

1510 hole complete, began injection ~~moved to 8th hole~~ JS with ORC

1540 completed injection, moved to 8th hole

1545 commenced push on 8th hole

1550 Pushed to depth, began injection with ORC

1615 completed injection

1625 moved to 9th hole Began push

1635 Pushed to depth, began injection with ORC

1700 Product blew out at 5' with about 5 gal left will carry it over to next hole

1705 moved to hole 10, began push

1712 Pushed to depth, began injection

1740 Completed injection, met refusal for last few gallons, spread remaining mix in other holes

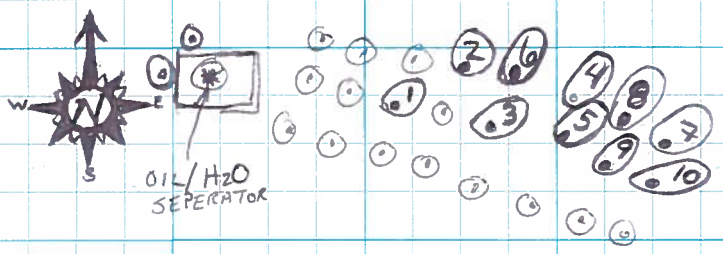
1800 Secured from operations for the day

1825 Departed site

ORC Injection BP - Ceil 11-18-11

Personnel D Siefken & Zach Scribner
PPE Level "D"
Weather Windy PT Sunny 60°

0715 Tetra Tech on site - No drillers
0800 Drillers on site.
0815 H&S done questioned drillers on first Aide They knew where to go. Also discuss PPE
0835 Drillers preparing for the day. Have 10 injection points to go



① < Injections Done/Completed

Note * Oil Water Seperator is 10 Ft X 14 Ft

0900 Begin ~~injecting~~ pushing to 20 FT AT LOCATION 1 (SEE MAP FOR LOC.)
0906 Begin injecting
0945 COMPLETED INJECTION AT LOCATION 1
0950 SEALED TOP OF LOCATION 1 & BEGAN HANDAUGERING/DAYLIGHTING AT LOCATION 2 ; DECON'D EQUIPMENT
0955 BEGAN PUSHING TO 20FT AT LOCATION 2
1004 BEGAN INJECTING AT LOCATION 2
1037 COMPLETED LOCATION 2 & BEGAN DAYLIGHTING/HAND AUGERING AT LOCATION 3 ; DECON'D EQUIPMENT
1044 BEGAN PUSHING TO 20FT AT LOCATION 3.
1058 BEGAN INJECTING AT LOCATION 3
1139 SEALED/COMPLETED LOCATION 3 ; BEGAN DAYLIGHTING/HAND AUGERING AT LOCATION 4 TO CLEAR UTILITIES ; DECON'D EQUIPMENT
1145 BEGAN PUSHING TO 20FT. AT LOCATION 4
1153 BEGAN INJECTING AT LOCATION 4 AND HANDAUGERING (DAYLIGHTING) TO CLEAR UTILITIES AT LOCATION 5
1220 COMPLETED INSECTION AT LOCATION 4 ; SEALED TOP OF LOCATION ; DECON'D EQUIPME
1226 BEGAN PUSHING TO 20 FT AT LOCATION 5
1238 BEGAN INSECTING AT LOCATION 5 AND DAYLIGHTING/HAND AUGERING AT LOCATION 6 TO CLEAR UTILITIES
1257 COMPLETED INJECTION AT LOCATION 5, SEALED TOP OF LOCATION AND DECON'D EQUIPMENT
1306 BEGAN PUSHING TO 20FT AT LOCATION 6

BP WELLS - NAS CF

1126G2267 ORC INJECTIONS 18 Nov 2011

1314 BEGAN INJECTING AT LOCATION 6 AND DAYLIGHTING/HAND AUGERING TO CLEAR UTILITIES AT LOCATION 7

1333 COMPLETED INJECTION AT LOCATION 6; SEALED TOP OF LOCATION AND DECON'D EQUIPMENT

1345 BEGAN PUSHING TO 20 FT AT LOCATION 7

1354 BEGAN INJECTING AT LOCATION 7 AND DAYLIGHTING/HAND AUGERING TO CLEAR UTILITIES AT LOCATION 8

1420 COMPLETED INJECTION AT LOCATION 7; SEALED TOP OF LOCATION AND DECON'D EQUIPMENT

1426 BEGAN PUSHING TO 20 FT AT LOCATION 8

1433 BEGAN INJECTING AT LOCATION 8 AND DAYLIGHTING/HAND AUGERING TO CLEAR UTILITIES AT LOCATION 9

1454 COMPLETED INJECTION AT LOCATION 8; SEALED TOP OF LOCATION AND DECON'D EQUIPMENT

1502 BEGAN PUSHING TO 20 FT AT LOCATION 9

1518 BEGAN INJECTING AT LOCATION 9, AND DAYLIGHTED/HAND AUGERED TO CLEAR UTILITIES AT LOCATION 10

1529 COMPLETED INJECTION AT LOCATION 9; SEALED LOCATION AND DECON'D EQUIPMENT

1536 BEGAN PUSHING TO 20 FT AT LOCATION 10

1547 BEGAN INJECTING AT LOCATION 10 AND STARTED SITE CLEAN-UP FOR DEMOBILIZATION FROM BP WELLS SITE

1611 COMPLETED INJECTION AT LOCATION 10, SEALED LOCATION AND DECON'D EQUIPMENT; CONTINUED SITE CLEAN-UP FOR DEMOBILIZATION.

1715 TT + ZEBRA DEPART SITE

11-18-11

ZEBRA: Daily Project Report

Project Day & Date: TUE 11/15/11

ZEBRA Office: 7995 Crew Base: TAMPA

Z#: 19885 ZEBRA Unit #/Type: GP37 / 7822 TRACK

PROJECT NAME: ORC INJECTION

PROJECT LOCATION: FORMER NAS CECIL FEILD JACKSONVILLE, FL

CLIENT/OFFICE: TETRA TECH NUS / JACKSONVILLE

Client Project #

Client PM: Client Site Contact: DAVID SIEFKEN

Name/Company	Start	Arrive	Leave	Finish	Total Site Time	OT	Client Intl
DANIEL MULLIN ZEBRA		1300					
BRIAN THOMAS ZEBRA		1300					
Other Personnel On Site:							
DAVID SIEFKEN TETRATECH							

Description of Work (detailed):

TO OFFICE FOR H&S MEETING
MOB TO CECIL FEILD OFFLOAD TRACK + DRUMS
P/U ORC FROM OTHER LOCATION
SITE WALK
OFF SITE @ 1700

APP DGW:

MATERIALS	QTY. USED	UNIT	EQUIPMENT	
MC Liners		Liners	Air Knife / Vac Ex	
Expendable Points		Points	Core Drill / Generator / Demo Saw	
"x 5' PVC Screen		PC's	Decon Pads	
"x 5' PVC Riser		PC's	Pump / Type	
PVC Points		Points	Steam / Pressure Washer	
Flush Mount Well Box/J-Plug		Boxes	Trailer (Decon / Utility)	
Tubing		Rolls	OTHER:	
Sand		Bags		
Bentonite/Hole Plug		Bags		
Asphalt/Blacktop		Bags		
Portland Cement/Concrete		Bags		
Drums (55 Gal.)				

Probe Tools Damaged / Lost:

Number of Points	Number of Samples	Soils	GW	Soil Vapor	Wells Installed Describe:

Field Verification:

ZEBRA: Daniel Mullin CLIENT (Print): ZACH SCRIBNER

(Sign):

ZEBRA: Daily Project Report

Project Day & Date: THUR 11/17/11

ZEBRA Office: 7995 Crew Base: TAMPA

Z#: 19885 ZEBRA Unit #/Type: GP37 / 7822 TRACK

PROJECT NAME: ORC INJECTION

PROJECT LOCATION: FORMER NAS CECIL FEILD JACKSONVILLE, FL

CLIENT/OFFICE: TETRA TECH NUS / JACKSONVILLE

Client Project # CLEAN CONTRACT # N62470-08-D-1001

Client PM: _____ Client Site Contact: DAVID SIEFKEN

Name/Company	Start	Arrive	Leave	Finish	Total Site Time	OT	Client Intl
DANIEL MULLIN ZEBRA		0800	1845		10.25		
BRIAN THOMAS ZEBRA							
Other Personnel On Site:							
DAVID SIEFKEN TETRATECH							

Description of Work (detailed):

10 LOCATIONS HAND AUGER 0-5' BLS

10 LOCATIONS ORC INJECTION FROM 20'-5' BLS 75lbs ORC w/21 GAL WATER PER LOCATION.

BACKFILL ALL LOCATIONS W/ NEAT GROUT TO SURFACE.

APP DGW:

MATERIALS	QTY. USED	UNIT	EQUIPMENT	
MC Liners		Liners	Air Knife / Vac Ex	
Expendable Points GW	11	Points	Core Drill / Generator / Demo Saw	
"x 5' PVC Screen		PC's	Decon Pads	
"x 5' PVC Riser		PC's	Pump / Type_____	
PVC Points		Points	Steam / Pressure Washer	
Flush Mount Well Box/J-Plug		Boxes	Trailer (Decon / Utility)	
Tubing		Rolls	OTHER:	
Sand 20/30	1	Bags		
Bentonite/Hole Plug		Bags		
Asphalt/Blacktop		Bags		
Portland Cement/~~Concrete~~	1	94 Bags		
Drums (55 Gal.)				

Probe Tools Damaged / Lost:

Number of Points	Number of Samples	Soils	GW	Soil Vapor	~~Wells~~ Installed Describe:
10	/	/	/	/	INJECTION

Field Verification:

ZEBRA: Daniel Mullin CLIENT (Print): ZACH SCRIBNER

(Sign): _____

Day & Date: TUE 11/15/11

ZEBRA: First Walk...First Thing, Everyday.

When you arrive at a project site, the first task at the beginning of each day is to walk the site with our client's representative. Taking a few minutes to review the scope of work and discuss site specific safety concerns will ensure a safe and productive work day. Use this form as a checklist to confirm utility markouts, contaminant concerns, and traffic patterns. Be sure to have all participants sign the bottom of the form before you start working for the day.

Z#: 19885

Client Site Contact: DAVID SIEFKEN

Company: TETRA TECH NUS, INC.

Cell Phone No.: 904-334-7260

Site Address/Description: FORMER NAS CECIL FEILD JACKSONVILLE, FL

Actual Work Location ☒ Private Property ☐ Public Property ☐ Both, Public & Private

Markouts Called in by ☐ ZEBRA ☐ Client Markout Conf.#'s _____

Markout Visible ☐ Gas ☐ Elec. ☐ Water ☐ Sewer ☐ Fiber/Phone ☐ Other _____

Is Private Property Supplied With (Circle For Yes)	GAS	ELEC.	WATER	
Has A Private Utility Locating Firm Been Retained?	☐ YES	☒ NO	If "YES", who?	
Have Subsurface Utilities Been Marked On Private Property?	☒ YES	☐ NO		
Are Meters / Shut-off Valves Visible?	☐ YES	☒ NO	If "YES", which utilities?	
Does Client/Property Owner Have Current "As-built" Drawings?	☐ YES	☐ NO		
Is Preclearing Required For All Locations?	☒ YES	☐ NO	Client Initials:	

How Will Preclearing Be Accomplished? HAND AUGER Depth Required: 5'

Overhead Hazards: ☒ None ☐ Observed - Describe _____

Site Specific Hazards: SLIPS, TRIPS, FALLS UNEVEN GROUND. PRESSURIZED HOSES

Safety Concerns:

A) Contaminant Concerns ETHYLBENZENE, XYLENE, 1-2-4-TMP, 1-3-5-TMB, ISOPROPYLBENZENE + NAPHTHALENE

B) PPE Level ☒ D ☐ Other, Please Describe _____

C) High Traffic Area ☐ YES ☒ NO Traffic Control Devices (list): _____

D) Injection Products ORC

E) Splash Protection ☒ YES ☐ NO - Explain _____

	NAME	COMPANY	SIGNATURE	EMAIL
1.	DANIEL MULLIN	ZEBRA ENV	Daniel Mullin	DMULLIN@ZEBRAENV.COM
2.	ZACH SCRIBNER	TETRA TECH		ZACH.SCRIBNER@TETRATECH.COM
3.				
4.				

Work SAFE...Home SAFE.

ZEBRA: Daily Project Report

Project Day & Date: WED 11/16/11

ZEBRA Office: 7995 Crew Base: TAMPA

Z#: 19885 ZEBRA Unit #/Type: GP37 / 7822 TRACK

PROJECT NAME: ORC INJECTION

PROJECT LOCATION: FORMER NAS CECIL FEILD JACKSONVILLE, FL

CLIENT/OFFICE: TETRA TECH / JACKONVILLE

Client Project # CLEAN CONTRACT # N62470-08-D-1001

Client PM: Client Site Contact: DAVID SIEFKEN

Name/Company	Start	Arrive	Leave	Finish	Total Site Time	OT	Client Intl
DANIEL MULLIN ZEBRA		0830	1830				
BRIAN THOMAS ZEBRA							
Other Personnel On Site:							
DAVID SIEFKEN TETRA TECH							

Description of Work (detailed):

14 LOCATIONS HAND AUGER 0'-5' BLS

6 LOCATIONS ORC INJECTION FROM 20'-5' BLS 75 LBS ORC W/ 21 GAL WATER PER LOCATION. 3 LOCATIONS OFFSET TO COMPLETE PUMPING.

BACKFILL ALL LOCATIONS W/ NEAT GROUT TO SURFACE.

APP DGW:

MATERIALS	QTY. USED	UNIT	EQUIPMENT	
MC Liners		Liners	Air Knife / Vac Ex	
Expendable Points GW	9	Points	Core Drill / Generator / Demo Saw	
"x 5' PVC Screen		PC's	Decon Pads	
"x 5' PVC Riser		PC's	Pump / Type GS 500	X
PVC Points		Points	Steam / Pressure Washer	
Flush Mount Well Box/J-Plug		Boxes	Trailer (Decon / Utility)	
Tubing		Rolls	OTHER:	
Sand 20/30	1	Bags		
Bentonite/Hole Plug		Bags		
Asphalt/Blacktop		Bags		
Portland Cement/~~Concrete~~	1	Bags		
Drums (55 Gal.)				

Probe Tools Damaged / Lost:

Number of Points	Number of Samples	Soils	GW	Soil Vapor	~~Wells~~ Installed Describe: INJECTION
6	/	/	/	/	6

Field Verification:

ZEBRA: Daniel Mullin CLIENT (Print): ZACH SCRIBNER

(Sign):

ZEBRA

DAILY PROJECT REPORT

Project Day & Date FRI 11/18/11

ZEBRA Office 7995 Crew Base TAMPA Z# 19885 ZEBRA Unit #/Type GP37 ~~7822~~ FRAC

CLIENT / OFFICE TETRA TECH NUS / JACKSONVILLE Client Project # CLEAN N62470-08-D-10

PROJECT NAME ORC INJECTION

PROJECT LOCATION FORMER NAS CECIL FIELD JACKSONVILLE FL

Client PM: ROB SIMCIK Client Site Contact: DAVID SIEFKEN

ZEBRA PERSONNEL ON SITE:

Name/Company	Start	Arrive	Leave	Finish	Total Site Time	OT	Client Init.
DANIEL MULLIN ZEBRA		0745	1715				
BRIAN THOMAS ZEBRA							
Other Personnel On Site:							
DAVID SIEFKEN TETRA TECH							
ZACH SCRIBNER TETRA TECH							

Description of Work (detailed):

10 LOCATION ORC INJECTION FROM 20-5' BLS
W/ 75 LBS ORC W/ 21 GAL WATER PER LOCATION

BACKFILL ALL LOCATIONS W/ NEAT GROUT TO SURFACE

APP. DGW:

MATERIALS	QTY. USED	UNIT	EQUIPMENT	
MC Liners		Liners	Drill Steel	
LB Liners		Liners	Core Drill	
GW Expendable Points	10	Points	Generator	
____" x 5' PVC Screen		PC's	GS 1000/2000 Grout Pump	
____" x 5' PVC Riser		PC's	Steam Genny	
____ PVC points		Points	Rupe Pump	
____ Flush Mount Well Box		Boxes	Water Level Indicator	
20/30 SAND	1		P.I.D.	
			Trailer (Decon/Utility)	
PORTLAND CEMENT	1.5			

Probe Tools Damaged / Lost:

Number of Points	Number of Samples	Soil MC	Soil LB	GW	Wells Installed	Soil Gas	Sparge Points	Misc. INJ.
10	/	/	/	/	/	/	/	10

Field Verification:

ZEBRA: Daniel Mullin CLIENT: (Print) ZACH SCRIBNER

(Sign) ZCS