Site Assessment Report Addendum

Cone Property aka Parrish Plantation--268 ± Acres
East of U. S. Highway 301, South of S.R. 62
Parrish, Manatee County, Florida
FDEP Project No. 298707/FDEP Site No. 266446

June 2009

LAS
LAND ASSESSMENT SERVICES, INC.

LAND ASSESSMENT SERVICES, INC.

June 18, 2009
Project No. 07-463-00684

TO: Florida Department of Environmental Protection
Southwest District
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

Attention: Mr. Robert Sellers, CHMM
Environmental Specialist II

SUBJECT: ***Site Assessment Report (SAR) Addendum***
In Accordance with Chapter 62-780 F.A.C.
Cone Property aka Parrish Plantation LLC
South of S.R. 62 and East of U.S. Highway 301
Parrish, Manatee County, Florida
FDEP Project No. 298707
FDEP Site No. 266446

Dear Mr. Sellers:

Land Assessment Services, Inc. (LAS), in response to Florida Department of Environmental Protection's (FDEP) letter dated January 29, 2009, has completed herein a *site assessment report addendum (SARA)* to its May 2008 SAR (or "report") for the above referenced site in accordance with 62-780.600 F.A.C.

LAS has included the Department's questions/remarks in this letter, and our responses. This addendum is meant to complement the SAR and it is assumed that the reader will have access to and refer to the SAR in reviewing the data presented herein. Accordingly, LAS has revised and added to the tables presented in the SAR where necessary, has generated new figures to depict new sampling locations and impacted areas, and has revised some of its previous figures to update sampling locations and add data. LAS has not revised the original SAR to include this data, but has used the Department's remarks as a general working outline, with our responses following each question/remark.

It is important to note that, where possible, and if within the budget established for this SARA by the client, LAS attempted to anticipate the Department's questions with regard to the new data gathered, and conducted further testing to confirm our results, or to provide further lateral and/or vertical delineation of the contamination detected. It is also important to note that this letter is constructed in such a manner as to briefly summarize the results, with the full detail to be found in the tables and/or figures.

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It should be understood that the SAR and this addendum cover a broad area (268 ± acres) and multiple locations (pasture and barn areas) where contaminants of concern have been detected. With regard to arsenic soil contamination present in the pasture section of the site, based on our results, it appears that this area in general has been impacted throughout, at depths extending to 8 ± feet, with no apparent "source". Accordingly, "iso-concentration" contour lines beyond a general outline of the contamination detected were not appropriate. Also, only one (1) localized area was subjected to "slug" testing (discussed in depth below) based on groundwater quality testing results.

The subject site was purchased by Parrish Plantation, LLC, with the intent of developing the property for mixed used, predominantly commercial/retail uses along U.S. Highway 301, and residential uses in the interior areas. Because of the site's dormant status at this time due to economic conditions, resources to conduct this study were limited, and were used where they could be most effective, i.e. in conducting additional sampling where necessary to provide the Department with more data, and to anticipate a possible Interim Source Removal action in the barn area. Consequently, LAS has done its best to satisfy the requirements of Chapter 62-780 F.A.C. and the January 29, 2009 review letter given these limitations.

Finally, the original SAR addressed arsenic soil contamination in the "pasture" and "grove" areas of the site in response to the perceived intent of the Department's July 8, 2007 letter, whereas the Department was in possession of a Limited Phase II environmental site assessment (ESA) dated July 30, 2004 (which was previously provided to you by others) indicating some soil organochlorine pesticide impacts in the barn area. LAS conducted an "initial screening" of the shallow soil of this area in 2007 (not in accordance with Chapter 62-780 F.A.C. requirements), the results from which were included in the Appendix of the SAR along with other bulk chemical testing data; however, these results were not discussed. This SARA addresses the contamination status of the west side of the barn area with regard to organochlorine pesticides and arsenic. It should be noted that no pesticide testing was conducted in the pasture or grove areas, and that samples collected from the barn area should have been labeled "SS" and not "SA".

Briefly, for this SARA, the following new soil, groundwater and surface water testing was conducted on the subject site:

- Installed six (6) shallow groundwater wells in the pasture area to delineate arsenic contamination around MW-6 (MW-6a and MW-6b), and to check for arsenic groundwater contamination at SA-35 (MW-7, MW-7a and MW-7b) and SA-40 (MW-8T) where arsenic was found at elevated levels in the soils in 2007.

- Installed three (3) shallow groundwater wells west of the barn to check for arsenic and pesticide impacts, primarily at soil sample locations SS-15 and SS-19, and to replace damaged TW-1 (installed for the limited Phase II ESA in 2004).

- Collected additional soil samples in accordance with Chap. 62-780 F.A.C. in the pasture area to check for arsenic impacts in areas just outside the "pasture" (SA-N, SA-S and SA-W), to confirm results at SA-22, SA-35 and SA-40, and to analyze for arsenic at one (1) of the perimeter well locations installed around MW-6 (MW-6A).

- Conducted Synthetic Precipitation Leaching Procedure (SPLP) tests on some of the new soil samples collected from the pasture, generally with the highest arsenic contents.

- Collected additional soil samples west of the barn in accordance with Chap. 62-780 F.A.C. to check for arsenic and pesticide (organochlorine) contamination, and conducted further shallow soil testing in an attempt to further delineate the contamination detected. Conducted Toxic Characteristic Leaching Procedure (TCLP) testing on selected samples to determine the "hazardous" characteristics of the toxaphene detected; and checked for BTEX and lead levels in the shallow soils at one (1) location. This BTEX/lead testing was for background data for a possible subsequent Interim Source Removal in the area.

- Conducted "slug" testing at two (2) wells in the SA-22/MW-6 area (MW-6 and MW-6a). Based on the apparent absence of shallow groundwater contamination above the state's groundwater cleanup target level (GWCTL)[1] in the barn area and at SA-35, slug testing was conducted at these locations. The monitoring well installed at SA-40 (MW-8T) was installed temporarily and late in the SARA process and removed after sampling.

- Collected surface water samples in two (2) man-made ponds, one (1) within the pasture (SW-1) and one (1) outside the pasture (SW-2).

The following are the Department's questions from the January 29, 2009 letter and our brief responses:

1. No reference is made in the Report regarding pesticides at the site. The laboratory data indicates that several pesticides including dieldrin and toxaphene are present at the site well above their respective Soil Cleanup Target Levels (SCTLs).

Due to inconsistent sampling nomenclature (soil samples in barn area should have been labeled "SS" instead of "SA"), data included in the SAR dated May 2008 was misleading. No pesticide tests were run in the grove area or the pasture area, nor were material pesticides suspected in these areas.

Toxaphene was detected in shallow soils (at 1 ± feet below land surface or BLS) at 1.7 milligrams per kilogram (mg/kg) at SS-15 in the barn area in 2004, which was reported in LAS' Limited Phase II ESA. Toxaphene was the only constituent tested using EPA Method 8081 to exceed the state's SCTL for direct residential exposure (0.9 mg/kg) at that time. Other compounds detected in July 2004, alpha-chlordane, gamma-Chlordane, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and Endosulfan II, were all well under their respective SCTLs.

LAS also checked for organophosphorus pesticides (EPA Method 8141) and chlorinated herbicides (EPA Method 8151) in the shallow soils of the barn area in July 2004 (at SS-15), and found no levels above method detection limits (all BDL).

[1] Per Chapter 62-777 Florida Administrative Code (F.A.C.)

This SARA includes and discusses additional soil testing results from the west side of the barn conducted in 2007 and 2009. Shallow soil was tested using EPA Method 8081 (organochlorine pesticides) and EPA Method 6061 (arsenic) only, based on the absence of other EPA Method 8141 and 8151 compounds in the 2004 testing results. See Appendix A for new soil sampling chemical testing results. For a summary of LAS shallow soil chemical testing results in the barn area, refer to Table 7 attached. For our sampling locations, refer to Figure 11.

Here are the contaminants of interest *detected >SCTLs* in the shallow soils west of the barn:

	Date Collected	Arsenic	Chlordane	4,4'-DDE	4,4'-DDT	Dieldrin	Toxaphene
Residential SCTL (mg/kg)		**2.1**	**2.8**	**2.9**	**2.9**	**0.060**	**0.9**
Commercial SCTL (mg/kg)		**12**	**14**	**15**	**15**	**0.3**	**4.5**
Leachability		**SPLP**	**9.6**	**5.8**	**11**	**0.002**	**31**
SS-15 1.0 ±	7/21/04						**1.7**
SS-15a 0-0.5 *0.5-2.0*	3/9/09	-- **3.9**				**0.068**	**4.6** **10**
SS-15b 0-0.5 *0.5-2.0*	4/8/09	**4.4** **2.4**					**10** --
SS-16	2/9/07	**NT**					
SS-17	2/9/07	**NT**					
SS-18	2/9/07	**NT**					
SS-19 (a) 0-0.5 *(b) 0.5-2.0*	2/9/07	**NT**				**0.84**	**74** **1.1**
SS-19a 0-0.5 *0.5-2.0*	3/9/09	-- **2.2**					**5.0** **5.2**
SS-19b 0-0.5	3/9/09	**2.2**					**3.9**
SS-19c 0-0.5	4/8/09	**3.6**					**1.3**
SS-19d 0-0.5	4/8/09	--					**2.2**
SS-20 (a) 0-0.5	2/9/07	**NT**					**3**
SS-20a 0-0.5 *0.5-2.0*	3/9/09	**4.4** --			**4.1**		**16** **1**
*SS-20b 0-0.5** *0.5-2.0**	4/8/09	**2.8** --					**4.5** **0.98**

*lab mislabeled "0 to 0.5'" sample "0.5 to 2'" and vice versa

See Figures 12-16 for graphic depictions of the contaminants detected above SCTLs (toxaphene, arsenic and dieldrin) with iso-concentration lines where appropriate.

2. Dieldrin is present at SA-19a (0.84 mg/kg) above the SCTL of 0.06 mg/kg (as of 2007).

See No. 1.

3. Toxaphene is present at SA-19a (74 mg/kg), SA-19b (1.1 mg/kg) and SA-20a (3 mg/kg) above the SCTL of .9 mg/kg (as of 2007).

See No. 1. Toxaphene was present greater than the residential SCTL at all sampling locations in the barn area (2004, 2007 and 2009) except SS-16, SS-17 and SS-18. It is important to note that these three (3) locations border the same concrete slab and argue against the pervasiveness of the contaminant across the area.

4. Toxaphene, dieldrin, 4,4'-DDE and 4,4'-DDT were detected in most of the soil samples taken at the site. Chlordane was also detected in several soil samples. Further assessment of the pesticide and arsenic impacted soils at the site is necessary.

Toxaphene, dieldrin, 4,4'-DDE and 4,4'-DDT, and chlordane were detected in the barn area in 2007; toxaphene in 2004. LAS conducted *further assessment* of pesticide and arsenic impacted soils in the barn area, and arsenic-impacted soils in the pasture area for this SARA. No further soil testing was conducted in the grove area based on previous negative results. As discussed previously, no pesticide testing was previously conducted in the grove area, or the pasture area. See Response No. 1.

5. Synthetic Precipitation Leaching Procedure (SPLP) testing did not include samples from the locations containing the highest concentrations of arsenic.

In 2007, some SPLP testing was conducted on samples collected from areas/zones in the pasture where no shallow groundwater testing was performed and arsenic values were "high" (SA-26C and SA-34C). At SS-22, MW-6 was installed, the results from which were a good indicator of actual leaching potential.

Nevertheless, during this addendum work, shallow soils were resampled at SS-22, SA-35 and SA-40 so that the results might be confirmed and SPLP tests could be run on the samples with the highest arsenic concentrations. SPLP testing was conducted on soil samples from MW-6/SA-22 (As--7.1 mg/kg), SA-35 (As—15 mg/kg) and SA-40 (As—15 mg/kg). Only the SPLP result for SA-40 (0.5' to 2' BLS) exceeded the GWCTL for As of 0.10 mg/l (0.018 mg/l). It is important to note that during this site assessment no arsenic levels were detected in excess of 29 mg/kg, the previous leachability benchmark for arsenic.

To further check for actual evidence of leaching in 2009, shallow groundwater wells MW-6a and MW-6b were installed around MW-6 (SA-22); MW-7, MW-7a and MW-7b were installed at and around SA-35; and MW-8T was temporarily hand-installed at SA-40. Results from this supplemental testing are summarized on Table 5. Samples from monitoring wells installed at SA-35 where the most significant arsenic levels were detected in the soils in 2007, did not have detectable arsenic levels. Arsenic groundwater testing at SA-22 was inconclusive/inconsistent in the MW-6 area. Arsenic groundwater contamination was detected above the GWCTL at MW-8T (SA-40) in the unfiltered sample only.

It has been our experience at similar sites that arsenic values have to be in the commercial/industrial SCTL range for significant/material/meaningful levels to result from SPLP testing. For this reason, no SPLP testing for arsenic leaching potential was conducted on samples collected in the area west of the barn, where arsenic levels did not exceed 4.4 mg/kg. Based on the soil and groundwater arsenic testing performed to-date, in our opinion, leaching potential and actual evidence of leaching has been fairly assessed in the study areas.

6. Groundwater assessment must be performed to meet the requirements outlined in Rule 62 780.600(3). F.A.C. The extent of arsenic contamination has not been delineated around MW-6. It should be noted that the concentration of arsenic in the soil at this location was 8.9 mg/kg, which is above the SCTL for arsenic and may be leaching into the groundwater.

See also Response No. 5. LAS installed monitoring wells MW-6a and MW-6b at perceived up-gradient and down-gradient locations in proximity to previously installed MW-6. MW-6 was resampled and arsenic *was not* detected. The maximum arsenic concentration in shallow soil samples recollected from the MW-6/SS-22 location was 7.1 mg/kg, on which a SPLP was performed. The SPLP result was 0.0079 I mg/l, which did not indicate significant leaching. Arsenic levels were below the GWCTL at MW-6b; while unfiltered and filtered samples from MW-6a exceeded the GWCTL of 0.010 mg/l in samples collected on March 19, 2009 and April 8, 2009 (0.015 ± mg/l). However, the maximum arsenic soil level at MW-6a was 1.4 mg/kg, and no SPLP was run. From a forensic standpoint, based on our soil, groundwater and SPLP testing in the MW-6 area, it is difficult to establish a distinct pattern for the contamination encountered, and further delineation in the area did not appear justified based on the relatively minor levels of arsenic groundwater contamination detected. See Table 5 and Figure 10. See also Appendix A for new chemical testing results; Appendix B for well installation, development and boring logs; and Appendix C for groundwater sampling logs.

LAS also installed monitoring wells at SA-35 (MW-7, MW-7a and MW-7b) and one (1) temporary well at SA-40 (MW-8T), where high arsenic levels were detected in the soils in 2007 and 2009. Arsenic levels in the shallow groundwater in the area of SA-35 did not exceed detection limits and the SPLP result for the test conducted on the arsenic sample with the highest arsenic concentration (15 mg/kg) from SA-35 (in 2009) was well below the GWCTL. The arsenic level in the unfiltered groundwater sample from MW-8T was 0.014 mg/l, higher than the GWCTL of 0.010 mg/l; however, the filtered sample level was 0.0021 I[2], well below the GWCTL. The highest arsenic soil value at this location was 15 mg/kg, on which a SPLP was performed, yielding 0.018 mg/l, indicative of possible leaching. No further delineation of arsenic shallow groundwater contamination was conducted at the SA-40 location for this SARA.

Shallow groundwater west of the barn (TW-1) was tested in 2004 for arsenic, organochlorine pesticides (EPA Method 8081), organophosphorus pesticides (EPA Method 8141), and chlorinated herbicides (EPA Method 8151). Only arsenic was detected in the shallow groundwater at 0.0022 I µg/l, well under the GWCTL for arsenic of 0.010 µg/l.

Three (1) additional wells were installed in the barn area in 2009, MW-1 to replace destroyed TW-1; MW-15 at SS-15; and MW-19 at SS-19. These monitoring wells were sampled in March 2009 and analyzed for total arsenic and organochlorine pesticides (EPA Method 8081). Organochlorine pesticides and arsenic levels fell far below GWCTLs, were not quantifiable by the laboratory, or were not detected above laboratory method detection limits. Organophosphorus pesticides and chlorinated herbicides were not analyzed based on previous negative results in 2004.

7. Updated groundwater quality iso-concentration contour maps must utilize the most recent supporting sample data from representative monitoring wells which were collected for laboratory analysis no more than 270 days prior to submittal of the SARA (Rule 62-780.600(5)a), F.A.C., and Rule 62-780.(8)(a)28, F.A.C.). Groundwater data included in the Report was more than 270 days old.

Acknowledged. All existing monitoring wells were resampled for this SARA. Surface water was also resampled at two (2) locations and tested for total arsenic (below GWCTL). New monitoring wells were installed and sampled in the pasture and barn areas. See Figure 10 for an

[2] Analyte detected below quantitation limits.

iso-concentration map for arsenic groundwater contamination in the MW-6/MW-6a area of the pasture (southeast). No other shallow groundwater contamination was detected (pesticides, herbicides, arsenic) above GWCTLs in the pasture, grove or barn areas, except at MW-8T in the western pasture, at 0.014 mg/l (unfiltered sample only), compared to the GWCTL of 0.010 mg/l.

8. Monitoring wells installed as part of site assessment, as well as all existing monitoring wells, and any additional wells installed as part of Site Rehabilitation, must be benchmarked to NAVD or NGVD, and updated well construction and groundwater elevations tables and illustrations included in the SARA (Rule 62-780.600(5)(j), F.A.C., and Rule 62-780.600(8)(a)7, F.A.C.).

Acknowledged. However, in the interest of allocating the client's limited funds to additional sampling points and chemical testing, LAS surveyed the wells installed on the property using "relative" benchmarks (client's original surveying firm no longer associated with this project). The data obtained to establish localized shallow groundwater flow direction is in our opinion credible and useful at this stage of the assessment. At a future date, these wells can be resurveyed and benchmarked to NAVD or NGVD. See revised Figure 8 for well construction details and revised Table 6 for relative groundwater elevations of most of the wells installed on-site.

9. Summary tables for well construction, groundwater level measurements from the top of casing, and groundwater elevation data must be included in the reports. These data must be maintained in tabulated format, referenced to NGVD or NAVD datum, and included in the SARA (Rule 62-780.600(3)(g), F.A.C., Rule 62-780.600(5)(i), F.A.C., and Rule 62-780.600(8)(a)8, F.A.C.).

See No. 8 for an explanation of the NGVD or NAVD datum requirement. Table 6 includes groundwater elevation and top of casing data. Figure 8 shows construction details for a typical permanent monitoring well installed on-site for the SAR and SARA. Appendix B includes well installation, development and boring logs. Appendix C includes groundwater sampling logs.

10. The results from slug tests on a minimum of three monitoring wells or from a pumping test, performed in each affected aquifer zone monitored to determine aquifer properties, and including a description of methods used, assumptions made, field data, and calculations must be included in the SARA, (Ch 62-780.600(3)(a)5, F.A.C., Rule 62- 780.600(3)(g), F.A.C., Rule 62 780.600(5)(q), F.A.C., Rule 62-780.600(8)(a)12, F.A.C.).

Two (2) slug tests were performed on wells in the area of SA-22 (MW-6 and MW-6a) where arsenic groundwater contamination was detected in excess of the GWCTL. A third slug test was not performed based on the absence of groundwater contamination in excess of GWCTLs at SA-35/MW-7 or in the barn area (both "NFA" conditions). The well temporarily installed at SA-40 (MW-8T) where arsenic groundwater contamination exceeded the GWCTL in the unfiltered sample was removed after sampling and was not present to run a subsequent slug test. Supporting data and calculations for LAS' slug testing are attached in Appendix D. See Response No. 11 below.

11. The result of a calculation of horizontal groundwater flow velocity (v) for the site, using the formula v=KI/n, where K is the average horizontal hydraulic conductivity, I is the average horizontal hydraulic gradient, and n is the estimated effective soil porosity must be included in the SARA, (Ch 62-780.600(3)(a)5, F.A.C., Rule 62-780.600(3)(g), F.A.C., Rule 62-780.600(5)(q), F.A.C., Rule 62-780.600(8)(a)13, F.A.C.).

The shallow groundwater flow direction across the MW-6 area (southeast corner of pasture) is toward the *northeast*, with an estimated average gradient over this area of approximately 0.0017 ft./ft. (distances between MW-6 and MW-6a used). With an estimated weighted average shallow aquifer horizontal permeability (i.e. hydraulic conductivity) of approximately 0.56 ft./day; an average gradient of approximately 0.0017 ft./ft.; and an estimated porosity of 25%; the shallow groundwater flow velocity in the study area is estimated to be about 1.1 to 1.5 ft./year. See Appendix D for supporting calculations.

12. The result of a calculation of vertical groundwater flow velocity (v) for the site, using the formula v = KI/n, where K is the average vertical hydraulic conductivity of a confining or semi confining zone, I is the average vertical hydraulic gradient, and n is the estimated effective soil porosity must be included in the SARA, (Ch 62-780.600(3)(a)5, F.A.C., Rule 62-780.600(3)(g), F.A.C., Rule 62-780.600(5)(q), F.A.C., Rule 62-780.600(8)(a)14, F.A.C.).

Not calculated for this SARA.

13. Updated lithologic logs and stratigraphic descriptions for each parcel must be included in the SARA (Rule 62-780.600(3)(g), F.A.C., and Rule 62-780.600(8)(a)16, F.A.C.). The descriptions must be site specific and not a generalized cross-section for Manatee County.

Boring logs associated with monitoring wells MW-4 in the grove and MW-3, MW-5 and MW-6 in the pasture were provided in the SAR on Page 8. LAS has also provided the soil profiles of for the three (3) study areas in Appendix E generated by Mortensen Engineering, Inc. (MEI) in 2004. B-21 was performed in the grove area; B-8, B-9, B-10 and B-12 were performed in the pasture area; and B-1 and B-3 were performed in the barn area. Additional boring logs for the new wells installed in the barn and pasture area are provided in Appendix B. LAS has also provided another "generalized" cross section of a geographical point in close proximity to the subject site (see Figure 17).

14. The SARA must have two or more cross sections which illustrate site specific stratigraphy and lithiology, and approximate concentrations of applicable contaminants at each parcel must be included in the SARA (Rule 62-780.600(3)(g), F.A.C., and Rule 62-780.600(8)(a)17, F.A.C.).

See No. 13. See attached new and revised figures for depictions of contaminant concentrations at the various study areas (pasture, barn) and at different depths (barn area). No revised figure was provided for the grove area as MW-4 was resampled and arsenic continued to be below GWCTL (March 2009 arsenic result BDL).

15. Summary tables of soil sampling must be included in the SARA. Soil sampling field screening and laboratory analysis must be conducted as required under the Rule 62-780.600(5)(c), F.A.C. Soil sampling for metals and semi-volatile organic compounds must be at prescribed intervals of 0-0.5 ft BLS, 0.5-2 ft BLS, 2 ft BLS to soil-groundwater interface at all sampling locations (Rule 62-780.600(5)(c), F.A.C., Rule 62-780.600(5)(f), F.A.C., and Rule 62-780.600(8)(a)19, F.A.C.).

Tables 2, 3, 4 and 7 include summaries of our soil sampling and chemical testing beginning in July 2004 and concluding in April 2009. LAS used the prescribed intervals stopping at depths perceived to be the "soil-groundwater interface" where applicable. Samples collected at SS-15b, SS-20b, SS-19c and SS-19d in the barn area, were not collected at depths lower than 2 ± feet BLS based on previous results indicating no pesticide or arsenic impacts in excess of the SCTLs at the lower depths. At the SS-20a location in the area west of the barn, LAS collected soil samples to test for lead and BTEX compounds for waste characterization purposes. These results are included in Appendix A and did not exceed the SCTLs or levels considered "hazardous" per 40 CFR.

LAS also performed TCLP tests on toxaphene at SS-15a and SS-20a and the results (0.010 mg/l and 0.0086 mg/l, respectively) were not considered to be characteristic of a hazardous waste for disposal purposes (<0.5 mg/l via EPA Method 1311/8081A). Toxaphene was not detected in the groundwater samples collected from TW-1 (in 2004), MW-1, MW-15 or MW-19 installed in the barn area.

16. Iso-concentration contour maps that illustrate the horizontal and vertical extent of soil contamination in the unsaturated zone must be included in the SARA (Rule 62-780.600(8)(a)20, F.A.C.).

See Figures 7, 10, 13 and 14.

17. Generation and proper disposal of investigative derived waste (IDW) generated during site rehabilitation activities must be managed appropriately on the site pending laboratory analytical results, and disposed of accordingly. A discussion of IDW must be included in the SARA to include the type of IDW generated, treatment and/or disposal methods, and a copy of any applicable IDW paperwork (Rule 62-780.600(5)(1), F.A.C., and Rule 62-780.600(8)(a)22, F.A.C.).

LAS did not generate IDW during this project. Well development and purge water from the impacted wells was discharged directly to the same aquifer from which it came and was not drummed. No contaminated soils were excavated, drummed or stockpiled during this project.

18. A summary table that is updated any time additional piezometers, monitoring wells, or recovery wells are installed and that summarizes the well construction details (including the top-of-casing elevation referenced to NGVD of 1929 or NAVD of 1988, depth of the top of the screen below land surface, total depth and screen length, and ground surface elevation referenced to NGVD of 1929 or NAVD of 1988) of all monitoring wells (including storage tank compliance wells or other compliance wells required by permit), piezometers, and recovery wells must be included in the SARA (Rule 62-780.600(8)(a)8, F.A.C., and Rule 62-780.600(8)(a)23, F.A.C.).

See Table 6 for a summary of monitoring well details and Figure 8 for specific monitoring well construction details. See also Response No. 8.

19. One or more scaled site maps that show any areas excavated and all groundwater and surface water sampling locations, and that illustrates the degree and extent of groundwater and surface water contamination using sufficient iso-concentration lines to help identify source area(s) as well as the extent of the plume(s) must be submitted with the SARA. The updated groundwater quality iso-concentration contour maps must utilize the most recent supporting sample data from representative monitoring wells which were collected for laboratory analysis no more than 270 days prior to submittal of the SARA (Rule 62-780.600(5)(1), F.A.C., and Rule 62-780.(8)(a)28, F.A.C.).

See attached new and revised figures for scaled site maps, some with iso-concentration lines. All existing monitoring wells were resampled for this SARA except TW-1, which was found damaged and replaced by MW-1.

20. All applicable information required by subsection 62-780.300(2), F.A.C. (Quality Assurance requirements for data submitted) must be submitted in the SARA (Rule 62-780.600(8)(a)26, F.A.C.).

Acknowledged. See Appendix F.

Summary and Conclusions

LAS has completed supplemental testing as an addendum to the SAR it submitted in May 2008, and has provided where possible the additional information and documentation requested in the Department's letter dated January 29, 2009, in accordance with Chapter 62-780 F.A.C.

Based on previous data and the new information obtained as a result of completing the necessary tasks outlined in the Department's January 29, 2009 letter, and those additional tasks thought to be prudent based on data acquired during the completion of the addendum work, LAS presents the following brief summary and conclusions.

Grove Area

Shallow soil arsenic testing was performed in 2007 at five (5) locations in the grove area and the results did not exceed the residential SCTL. Arsenic checked in one (1) shallow groundwater monitoring well (MW-4) installed in the area was below the GWCTL in samples analyzed in March 2007 and March 2009. As discussed, our sampling nomenclature was misleading in the SAR relative to the grove area, as pesticide testing *did not* occur in this area, but west of the barn. **Based on our shallow soil and shallow groundwater testing in the "grove" area, this part of the property appears free from material arsenic impacts and *should not* be subject to further assessment or institutional and engineering controls.**

Pasture Area

Arsenic soil contamination has been found throughout the section of the site we have called the "pasture" area, which was observed by review of historical aerial photographs to not have been developed with citrus groves as was the balance of the Cone property (at least back to the early 1940s). Arsenic contamination was not confined to surficial layers of soil, but was also detected at levels in excess of the SCTL at depths to 8 ± feet BLS. There was no established pattern or obvious source area for the arsenic contamination detected, although LAS focused more on testing around soil samples SA-22, SA-35 and SA-40, where higher levels were detected during initial screening in 2007. Minor arsenic groundwater contamination was detected at levels slightly above the *existing* GWCTL at MW-6 in 2007, MW-6a in 2009 and MW-8T in 2009, but not at MW-7, 7a and 7b where the highest arsenic levels were detected in soils in 2007 and 2009 (SA-35). However, at MW-6, arsenic contaminant levels were inconsistent (>GWCTL in 2007 compared to BDL in 2009). Our attempts to laterally delineate the arsenic contamination in the shallow groundwater were inconclusive at MW-6/MW-6a/MW-6b. The temporary well installed late in our SARA work at SA-40 was to obtain a complete data set there, with no intention to further delineate groundwater contamination if discovered above the GWCTL. SPLP testing was performed at various sampling points where elevated of levels were detected in the soils, but only one (1) of these tests (at SA-40 in April 2009 with a 15 mg/kg level in soil) resulted in a value that indicated possible leaching potential (0.018 mg/l). It also appears that significant migration of arsenic contamination from impacted zones is unlikely based on the low levels of arsenic obtained and LAS permeability testing.

Because of the ubiquitous nature of the arsenic found in the soils of the pasture area, and the impracticality of conducting additional lateral assessment in the section, LAS recommended in the SAR that the area be subject to institutional and engineering controls as a condition to NFA status. This addendum has further established/tightened the general lateral limits of the arsenic contamination (SA-N and SA-S were <SCTL), and previous soil testing throughout the 268 +/- acre property substantiates the applicability of only the pasture area as delineated, notwithstanding the status of the barn area (see below), for these proposed controls. Shallow groundwater testing appeared to establish a general pattern of the likely presence of <u>minor</u> arsenic contamination in the groundwater at locations where arsenic soil contamination was more concentrated, i.e. in pockets; but again, this evidence was inclusive and unpredictable, and further investigation for or delineation of isolated pockets of groundwater contamination was impractical at this stage given the likelihood of instituting I/ECs.

In summary, based on the information presented in the SAR, further confirmed and/or complemented by the sampling/chemical testing performed for this SARA, the establishment of institutional and engineering controls applicable to the "pasture" area only and NFA With Controls Without a Risk Assessment remains appropriate.

Barn Area

The Department's January 29, 2009 letter referenced toxaphene and dieldrin soil contamination in excess of the SCTL that had not been discussed in the SAR; this contamination was detected west of the barn in 2004 and/or 2007. The source of this contamination appears to have been general organochlorine pesticide and arsenical product mixing on and around a concrete slab over time. LAS performed soil testing around the slab and detected toxaphene and dieldrin (and 4,4'-DDT at one location only—SS-20a at 0-0.5') above the SCTL down to 2 ± feet BLS. LAS also detected arsenic in soils down to 2 +/- feet in the general area. No organophosphorus pesticides, chlorinated herbicides, gasoline constituents or lead were detected above residential SCTLs in the shallow soils tested from the west side of the barn. No evidence of significant leaching was encountered in the shallow groundwater sampled, as no shallow groundwater contamination above the applicable GWCTLs was detected in the area for arsenic, organochlorine and organophosphorus pesticides or chlorinated herbicides. Only dieldrin showed the potential for leaching compared to leachability levels per Chapter 62-777 F.A.C. However, dieldrin was not consistently detected at levels in excess of the SCTL at SS-15/15a and SS-19/19a during two (2) sampling events, and 4,4'-DDT was not consistently detected at levels in excess of the SCTL at SS-20/20a on two (2) sampling occasions. It would be expected if these contaminants were present in material concentrations, for the levels to be similar to those obtained for arsenic and toxaphene in the area from 2004 to 2009. SPLP testing was not run on the samples with arsenic contamination as the levels detected were not high enough based on our experience to warrant such testing.

In summary, toxaphene at levels higher than the commercial/industrial SCTL is present in surficial soils west of the barn down to 2 +/- feet BLS, but more so in the surface soils down to 0.5' BLS. Yet it is important to note that toxaphene was not in excess of the SCTL in SS-16 through SS-18. Arsenic is present in the same general area to 2 +/- feet BLS, at levels slightly higher than the residential SCTL, but substantially lower than the commercial/industrial SCTL. Neither of these contaminants present material leaching threats based on past and present leachability levels in Chapter 62-777 F.A.C., and actual shallow groundwater testing results. Based on TCLP testing on soils contaminated with toxaphene, complemented by testing for BTEX and lead, "hazardous waste" characteristic limits were not exceeded. Based on this data, it would appear appropriate during a subsequent Interim Source Removal action to strip shallow soils around the concrete pad 1 to 2 +/- feet BLS for off-site removal as a "non-hazardous" material, and the area refilled with clean soil after confirmatory sampling/chemical testing is performed.

Closing

Based on our understanding of Chapter 62-780 F.A.C., and the results presented in the SAR and the SARA, **No Further Action with Controls Without a Risk Assessment (Level II)** is appropriate for the "pasture" and "barn" areas of the site,[3] and **NFA without Controls** may be attainable in the "barn" area if a ISR is properly performed with confirmatory soil testing. As noted, the "grove" area should be *dropped from future assessment*.

[3] Soil Option IIB, Leachability Option IIB, Groundwater Option (pasture only; barn NFA) Option IID.

Other areas of the 268 ± acre tract do not appear impacted by arsenic, providing the "foreign" soil piles in the northeast corner of the site containing arsenic are properly removed from the site or deposited in the "pasture" area for later disposition under 2 feet of clean materials or in non-residential areas, i.e. road beds.

If you have any questions regarding the attached document (two originals), please contact us.

Sincerely,

LAND ASSESSMENT SERVICES, INC.

Richard C. Reynolds
Vice President

Richard A. Mortensen, P.E.
President/FL Reg. P.E. 34604

463/00684b.doc

Attachments:

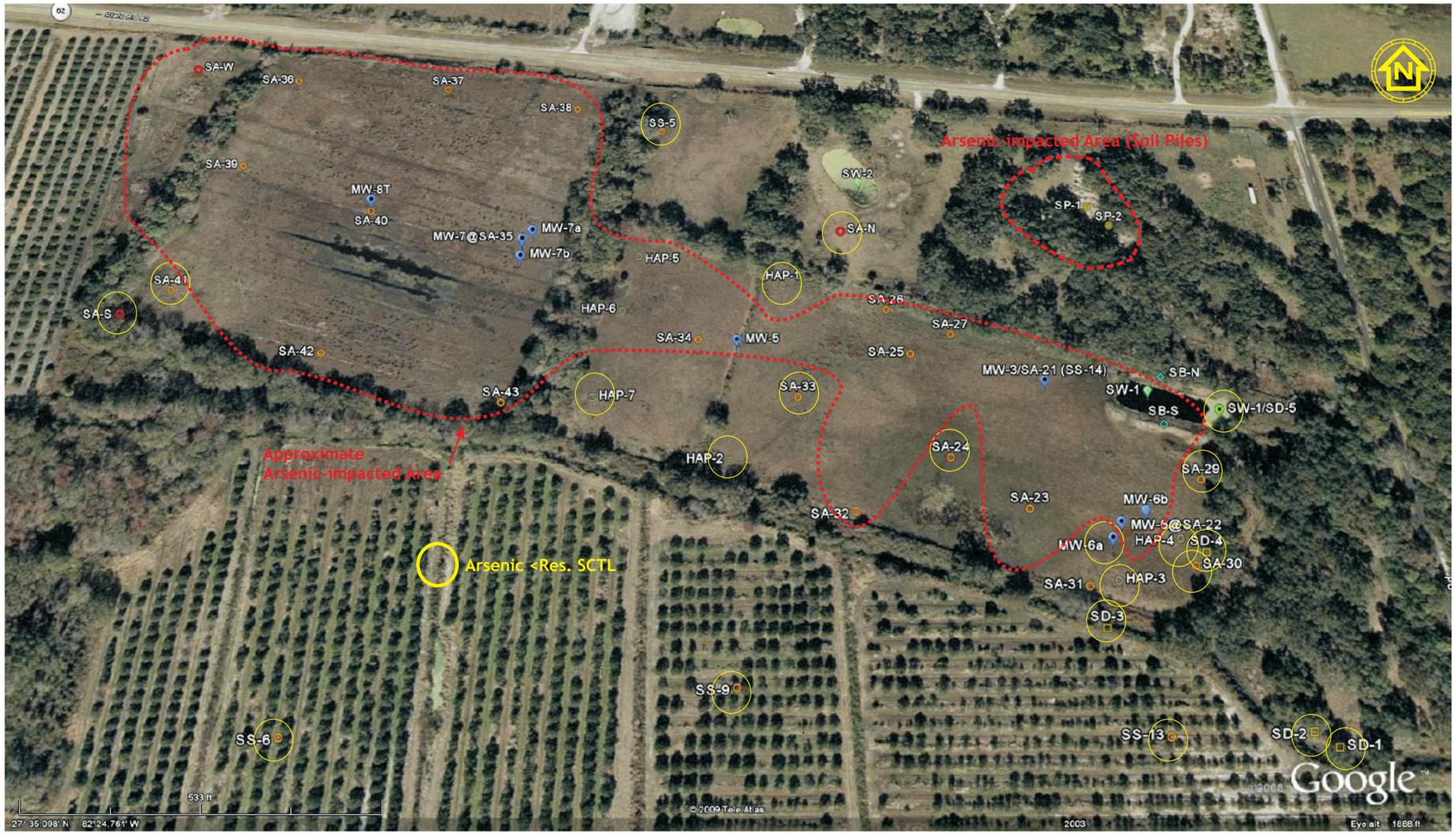
Tables: 1 (rev.), 2-3, 4 (rev.), 5 (rev.), 6 (rev.), 7 (new)
Figures: 7 (rev.), 8 (rev.), 10 (rev.), 11-17 (new)
Appendices:
Appendix A—New Chemical Testing Results
Appendix B—Well Installation, Development and Boring Logs
Appendix C—Groundwater Sampling Logs (Also contains Surface Water Log)
Appendix D—Slug Testing Data
Appendix E—Previous Preliminary Soil Study Data and Soil Profiles
Appendix F—Calibration/Maintenance Log

cc: Parrish Plantation LLC

FIGURES

Sample/ Depth (ft.)	0-.5	.5-2	4	6	8
SS-14	NT			6.6	6.9
SA-21			3.9	3.9	
SA-22	2.9	3.3	8.9	5.6	5.3
SA-23				2.4	
SA-25				4	3
SA-26			5.2		
SA-27			3		3.1
SA-28			3.8	3.9	
SA-31				2.6	
SA-32			2.8		
SA-34		3.7	3.7	2.4	
SA-35	23	17	7	4.5	
SA-36	3.7		2.6	2.3	
SA-37	3.1		3		
SA-38			2.9	10	
SA-39	7.3	2.2	3		
SA-40	5.6	7.1	6.5	3.5	
SA-42	4.3		9.7		
SA-43			5.3	4.8	
SA not shown or Blank=≤2.1 CTL					
NT=not tested					

Sample/ Depth (ft.)	0-.5	.5-2	4
HAP-5	3.9	2.6	
HAP-6	6.5	6.3	
SB-N	NT	8.1	
SB-S	NT	9.8	
SP-1	NT	3.6	
SP-2	NT	4.2	
2009			
SA-N	0.34 I	<0.20	0.63
SA-S	1.7	0.56	
SA-W	2.2	0.59	
MW-6A	0.69	1.4	
SS-22	1.5	1.4	7.1
SS-35	15	14	
SS-40	4.7	15	
NT=not tested			



Note: @ SS-5, SS-6, SS-9,and SS-13, As<2.1 mg/kg CTL 0.5 to 8 +/- ft. BLS.

FDEP Project No. 298707
FDEP Site No. 266446
LAS Project No. 07-463-00684

Arsenic Concentrations in Soil Samples Pasture Area (Revised)

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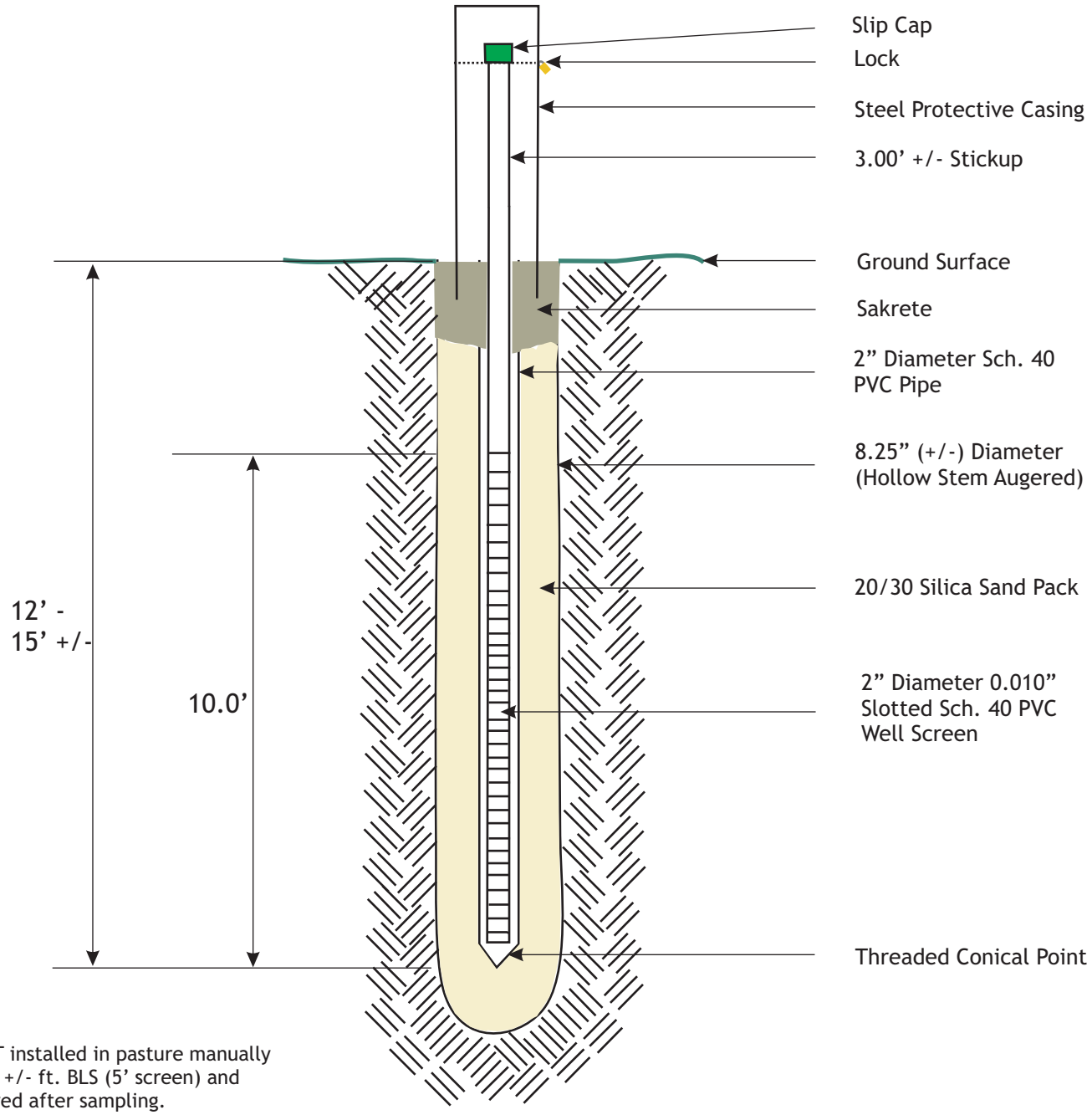
Site Assessment Report Addendum
Cone Property--268 +/- Acres
South of S.R. 62, East of U.S. Highway 301
Parrish, Manatee County, Florida
June 2009
Figure 7 (Rev.)



MW-8T installed in pasture manually to 6.5 +/- ft. BLS (5’ screen) and removed after sampling.

Monitoring Well Detail

MW-3 through MW-7
MW-1, MW-15, MW-19
MW-6a, MW-6b, MW-7a, MW-7b

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Parrish, Manatee County, Florida
June 2009
Scale: NTS
Figure 8 (Rev.)

MW=Shallow Groundwater Monitoring Well

MW-5
Unfiltered/Filtered
April 2007
0.0082 I mg/l/0.0070 I mg/l
March 2009
<0.0050 mg/l/<0.0050 mg/l

MW-3
Unfiltered/Filtered
March 2007
0.0076 I/0.0056 I
March 2009
<0.0050 mg/l/<0.0050 mg/l

All results in milligrams per liter (mg/l)
GWCTL=groundwater cleanup target limit per Chap. 62-777 F.A.C. for As is 0.010 mg/l
I=analyte detected below quantitation limits

See Figure 10 (Rev.).

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FDEP Project No. 298707
FDEP Site No. 266446
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Arsenic Concentrations in Shallow Groundwater Samples at MW-3 and MW-5

Site Assessment Report Addendum
Cone Property--268 +/- Acres
South of S.R. 62, East of U.S. Highway 301
Parrish, Manatee County, Florida
June 2009
Figure 9 (Rev.)

FDEP Project No. 298707
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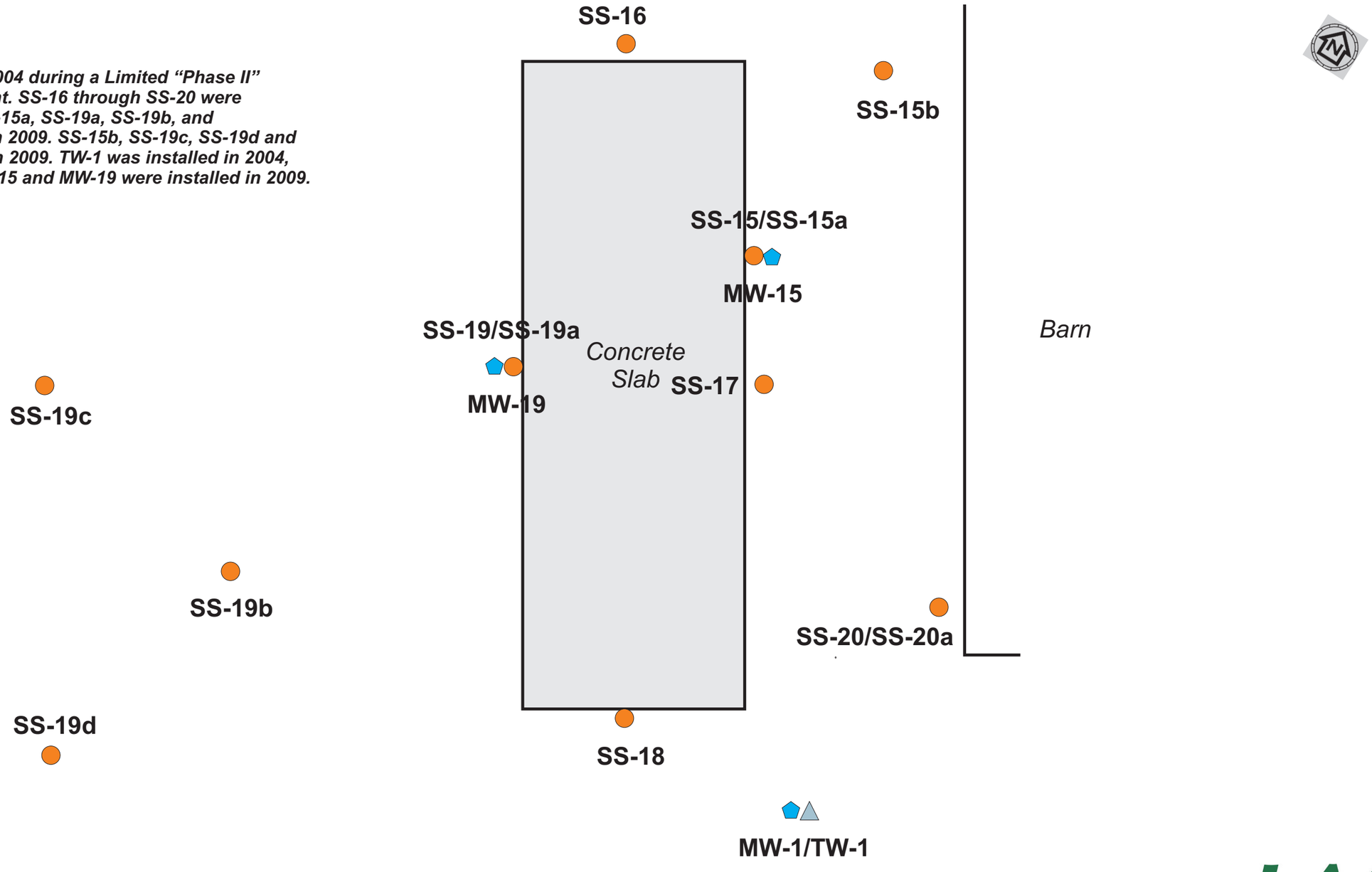
Arsenic Concentrations in Shallow Groundwater Samples at SA-22/MW-6 and Groundwater Contour

Site Assessment Report Addendum
Cone Property--268 +/- Acres
South of S.R. 62, East of U.S. Highway 301
Parrish, Manatee County, Florida
June 2009
Figure 10 (Rev.)

Note: SS-15 was collected in 2004 during a Limited "Phase II" Environmental Site Assessment. SS-16 through SS-20 were collected in February 2007. SS-15a, SS-19a, SS-19b, and SS-20a were collected in March 2009. SS-15b, SS-19c, SS-19d and SS-20b were collected in March 2009. TW-1 was installed in 2004, but was destroyed. MW-1, MW-15 and MW-19 were installed in 2009.



Shallow Soil and Groundwater Testing Locations--Barn Area

SS-20b

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FDEP Site No. 266446
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Site Assessment Report Addendum
Cone Property--268 +/- Acres
South of S.R. 62, East of U.S. Highway 301
Parrish, Manatee County, Florida
June 2009
Figure 11

Note: SS-15 was collected in 2004 at 1' +/- BLS. Samples collected from SS-15a, SS-19a, SS-19b, and SS-20a in March 2009 were at the intervals prescribed in Chap. 62-780 F.A.C. Samples collected at SS-16 through SS-20 in February 2007 were for initial "screening" purposes at depths of 0-0.5' and 0.5-2' BLS. Samples collected at SS-15b, SS-19c, SS-19d and SS-20b in April 2009 were at depths of 0-0.5' and 0.5-2' BLS based on the absence of significant contamination (>SCTL) in the lower level samples collected in the barn area in March 2009. Arsenic was not tested in 2007 based on the 2004 As level detected (<res. SCTL). EPA Method 8141 (organophosphorus pesticides) and EPA Method 8151 (chlorinated herbicides) were used in analyzing SS-15 in 2004 and no analytes were above laboratory method detection limits. Thereafter, only EPA Method 6010 (As) and EPA Method 8081 were used.

All results in milligrams per kilogram (mg/kg)
SCTL=direct exposure--residential soil cleanup target limit per Chap. 62-777 F.A.C.
NT=no tested

SS-16 (2007)
@0-2'
No Detections
>SCTL
As NT

SS-16

SS-15b (2009)
@0-.5'
As 4.4
Toxaphene 10
@.5-2'
As 2.4

SS-15b

SS-15a (2009)
@0-.5'
Dieldrin 0.068
Toxaphene 4.6
@.5-2'
As 3.9
Toxaphene 10

SS-15/SS-15a

SS-15 (2004)
@1'
Toxaphene 1.7

MW-15

SS-19a (2009)
@0-.5'
Toxaphene 5
@.5-2'
As 2.2
Toxaphene 5.2

SS-19/SS-19a

Concrete Slab

Barn

SS-19 (2007)
@0-.5'
As NT
Dieldrin 0.840
Toxaphene 74
@.5-2'
Toxaphene 1.1

MW-19

SS-17

SS-17 (2007)
@0-2'
No Detections
>SCTL
As NT

SS-20a (2009)
@0-.5'
As 4.4
4,4'-DDT 4.1*
Toxaphene 16
@.5-2'
Toxaphene 1

SS-20/SS-20a

SS-20 (2007)
@0-.5'
Toxaphene 3
@.5-2'
No Detections
>SCTL
As NT

SS-19c

SS-19c (2009)
@0-.5'
As 3.6
Toxaphene 1.3
@.5-2'
No Detections
>SCTL

SS-19b

SS-19b (2009)
@0-.5'
As 2.2
Toxaphene 3.9
@.5-2'
No Detections
>SCTL

SS-19d

SS-19d (2009)
@0-.5'
Toxaphene 2.2
@.5-2'
No Detections
>SCTL

SS-18 (2007)
@0-2'
No Detections
>SCTL
As NT

SS-18

MW-1/TW-1

SS-20b (2009)
@0-.5'
As 2.8
Toxaphene 4.5
@.5-2'
Toxaphene 0.98

SS-20b

0' 6' 12'

Organochlorine Pesticide and Arsenic Concentrations in Soil Samples Above SCTL--Barn Area*

*(*4,4'-DDT >SCTL at SS-20a 0-0.5' only)*

FDEP Project No. 298707
FDEP Site No. 266446
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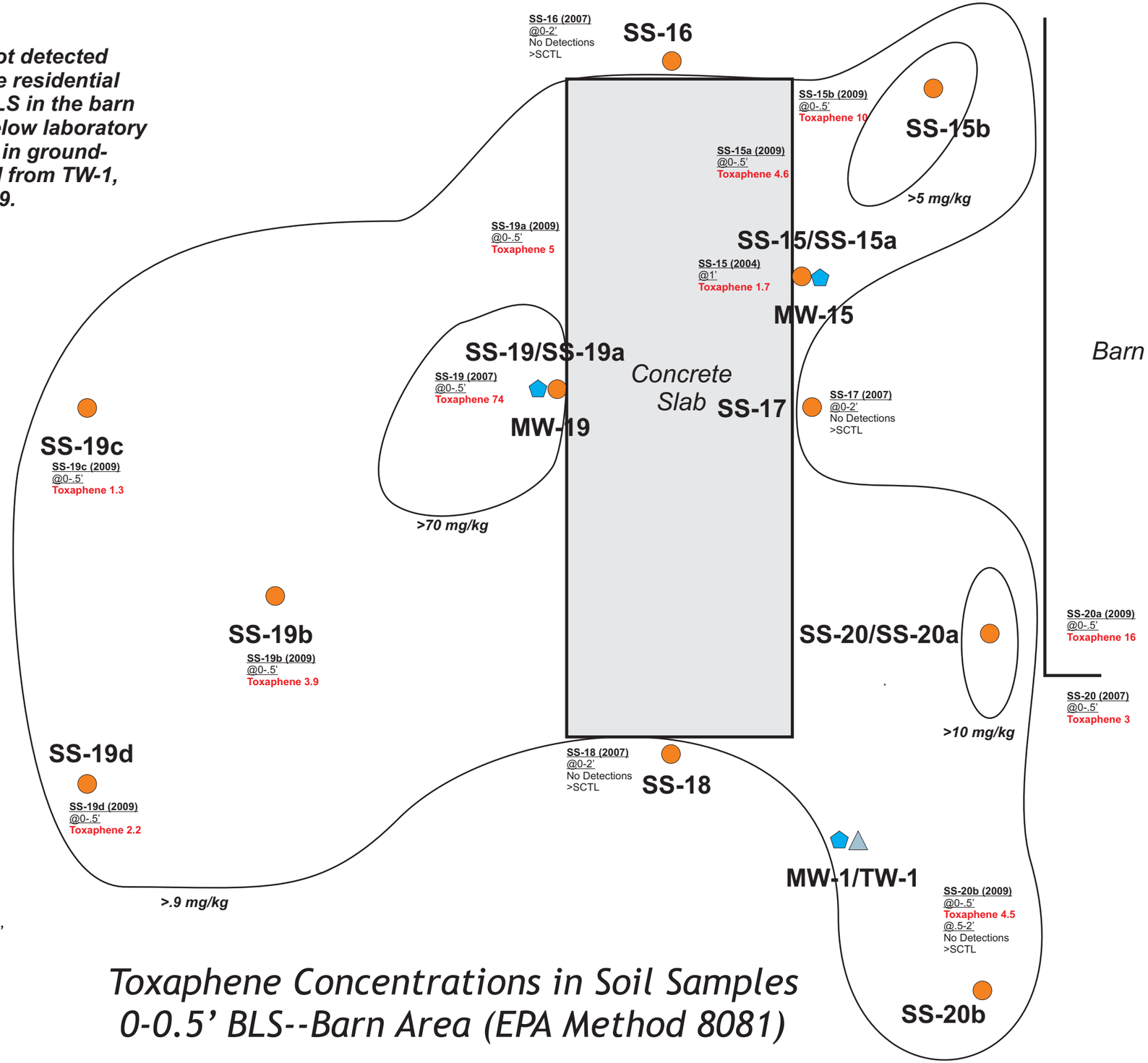
Site Assessment Report Addendum
Cone Property--268 +/- Acres
South of S.R. 62, East of U.S. Highway 301
Parrish, Manatee County, Florida
June 2009
Figure 12

Note: Toxaphene was not detected at levels in excess of the residential SCTL below 2 +/- feet BLS in the barn area. Toxaphene was below laboratory method detection limits in ground-water samples collected from TW-1, MW-1, MW-15 and MW-19.



All results in milligrams per kilogram (mg/kg)
SCTL=direct exposure--residential soil cleanup target limit for toxaphene 0.9 mg/kg per Chap. 62-777 F.A.C.

Toxaphene Concentrations in Soil Samples 0-0.5' BLS--Barn Area (EPA Method 8081)

FDEP Project No. 298707
FDEP Site No. 266446
LAS Project No. 07-463-00684

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Site Assessment Report Addendum
Cone Property--268 +/- Acres
South of S.R. 62, East of U.S. Highway 301
Parrish, Manatee County, Florida
June 2009
Figure 13

Note: Toxaphene was not detected at levels in excess of the residential SCTL below 2 +/- feet BLS in the barn area. Toxaphene was below laboratory method detection limits in ground-water samples collected from TW-1, MW-1, MW-15 and MW-19.

All results in milligrams per kilogram (mg/kg)
SCTL=direct exposure--residential soil cleanup target limit for toxaphene 0.9 mg/kg per Chap. 62-777 F.A.C.

SS-16 (2007)
@0-2'
No Detections
>SCTL

SS-16

SS-15b (2009)
@.5-2'
No detection
>SCTL

SS-15b

SS-15a (2009)
@.5-2'
Toxaphene 10

SS-15/SS-15a

SS-15 (2004)
@1'
Toxaphene 1.7

>5 mg/kg

SS-19a (2009)
@.5-2'
Toxaphene 5.2

SS-19/SS-19a

MW-15

Barn

Concrete Slab

SS-17

SS-17 (2007)
@0-2'
No Detections
>SCTL

MW-19

SS-19 (2007)
@.5-2'
Toxaphene 1.1

>5 mg/kg

SS-19c

SS-19c (2009)
@.5-2'
No Detections
>SCTL

SS-19b

SS-19b (2009)
@.5-2'
No Detections
>SCTL

SS-19d

SS-19d (2009)
@.5-2'
No Detections
>SCTL

SS-20/SS-20a

SS-20a (2009)
@.5-2'
Toxaphene 1

SS-20 (2007)
@.5-2'
No Detections
>SCTL

>.9 mg/kg

SS-18 (2007)
@0-2'
No Detections
>SCTL

SS-18

MW-1/TW-1

SS-20b (2009)
@.5-2'
No Detections
>SCTL

SS-20b

0' 6' 12'

Toxaphene Concentrations in Soil Samples 0.5-2' BLS--Barn Area (EPA Method 8081)

FDEP Project No. 298707
FDEP Site No. 266446
LAS Project No. 07-463-00684

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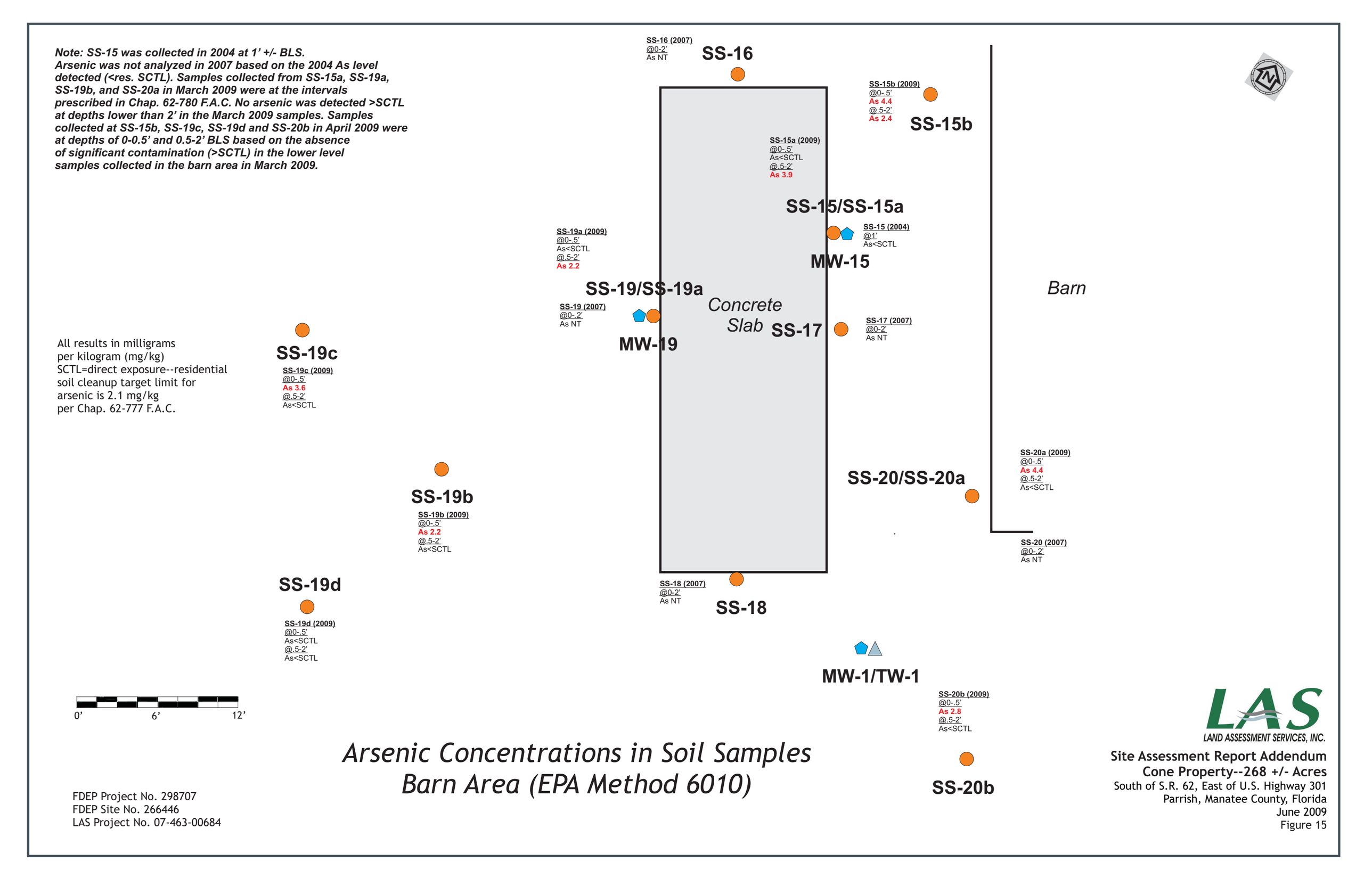
Site Assessment Report Addendum
Cone Property--268 +/- Acres
South of S.R. 62, East of U.S. Highway 301
Parrish, Manatee County, Florida
June 2009
Figure 14

Note: SS-15 was collected in 2004 at 1' +/- BLS. Arsenic was not analyzed in 2007 based on the 2004 As level detected (<res. SCTL). Samples collected from SS-15a, SS-19a, SS-19b, and SS-20a in March 2009 were at the intervals prescribed in Chap. 62-780 F.A.C. No arsenic was detected >SCTL at depths lower than 2' in the March 2009 samples. Samples collected at SS-15b, SS-19c, SS-19d and SS-20b in April 2009 were at depths of 0-0.5' and 0.5-2' BLS based on the absence of significant contamination (>SCTL) in the lower level samples collected in the barn area in March 2009.

All results in milligrams per kilogram (mg/kg)
SCTL=direct exposure--residential soil cleanup target limit for arsenic is 2.1 mg/kg per Chap. 62-777 F.A.C.



Arsenic Concentrations in Soil Samples Barn Area (EPA Method 6010)

FDEP Project No. 298707
FDEP Site No. 266446
LAS Project No. 07-463-00684

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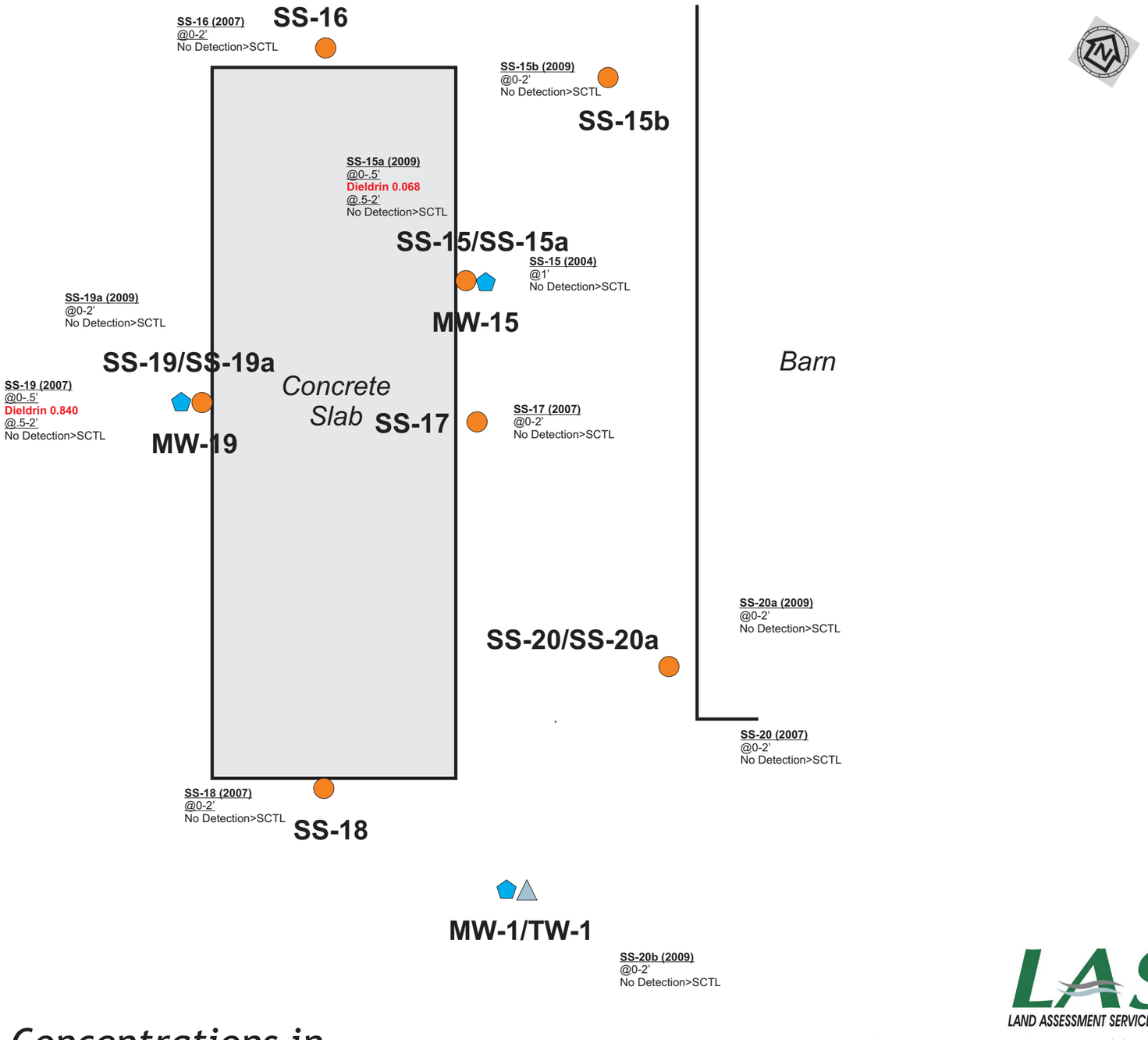
Site Assessment Report Addendum
Cone Property--268 +/- Acres
South of S.R. 62, East of U.S. Highway 301
Parrish, Manatee County, Florida
June 2009
Figure 15

Note: SS-15 was collected in 2004 at 1' +/- BLS. Samples collected from SS-15a, SS-19a, SS-19b, and SS-20a in March 2009 were at the intervals prescribed in Chap. 62-780 F.A.C. Samples collected at SS-16 through SS-20 in February 2007 were for initial "screening" purposes at depths of 0-0.5' and 0.5-2' BLS. Samples collected at SS-15b, SS-19c, SS-19d and SS-20b in April 2009 were at depths of 0-0.5' and 0.5-2' BLS based on the absence of significant contamination (>SCTL) in the lower level samples collected in the barn area in March 2009.

All results in milligrams per kilogram (mg/kg)
SCTL=direct exposure--residential soil cleanup target limit for dieldrin is 0.060 mg/kg per Chap. 62-777 F.A.C.



Dieldrin Concentrations in Soil Samples--Barn Area

FDEP Project No. 298707
FDEP Site No. 266446
LAS Project No. 07-463-00684

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Site Assessment Report Addendum
Cone Property--268 +/- Acres
South of S.R. 62, East of U.S. Highway 301
Parrish, Manatee County, Florida
June 2009
Figure 16

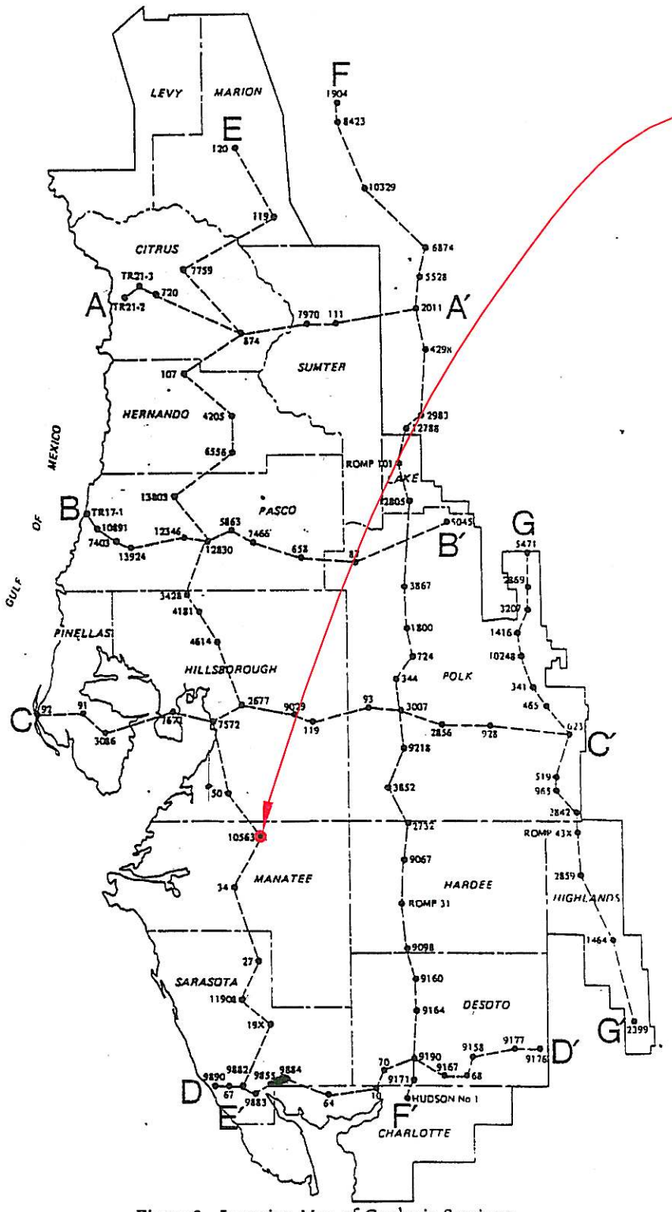

Figure 3. Location Map of Geologic Sections

VICINITY MAP

N.T.S.

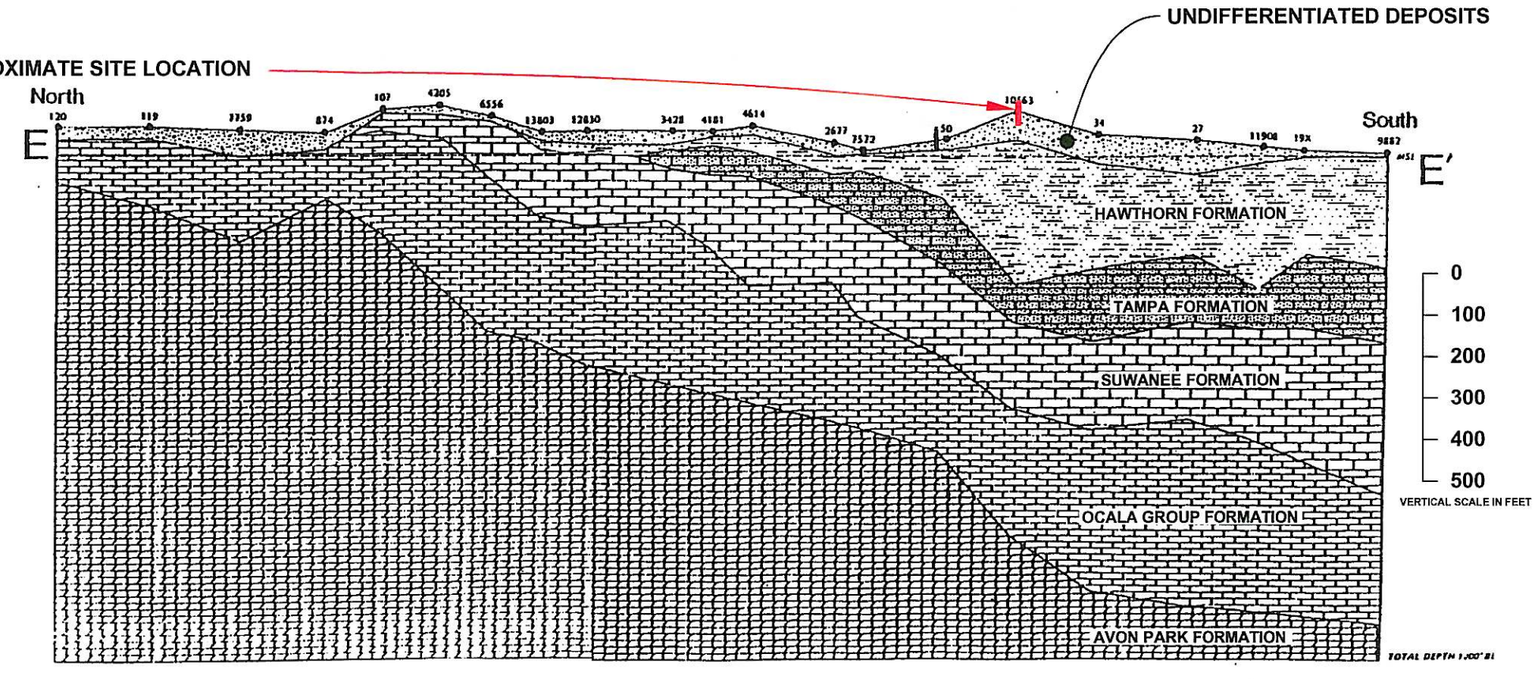

Figure 5. Geologic Sections

HORIZONTAL SCALE IN MILES

GEOLOGICAL CROSS SECTION

REFERENCE: Hydrogeology of the Southwest Florida Water Management District, March 1985 Regional Analysis Section Technical Report 85-01.

LAS
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6408 W. LINEBAUGH AVE. SUITE 104
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SITE ASSESSMENT REPORT ADDENDUM

CONE PROPERTY (268 +/- ACRES)

PARRISH, MANATEE COUNTY, FLORIDA

DATE: JUN 09 PROJ. NO: 07-463-00684 FIGURE 17

M:\DRAW\LASgeo.dwg, geo, 6/16/2009 10:22:48 AM

TABLES

TABLE 1: GPS COORDINATES ARSENIC SAMPLING LOCATIONS

Facility Name: Cone Property **FDEP Project No. 298707**

Project No. 07-463-00684 **FDEP Site No.: 266446**

Sample ID No.	Latitude (N)	Longitude (W)	Sample ID No.	Latitude (N)	Longitude (W)	Sample ID No.	Latitude (N)	Longitude (W)
HAP-1	27 35.145	82 24.742	SA-20	27 34.899	82 24.710	MW-1	25 35 6.2	82 25 27.3
HAP-2	27 35.084	82 24.760	SA-22	27 35.062	82 24.638	MW-6a	25 35 3.4	82 24 38.6
HAP-3	27 35.042	82 24.625	SA-23	27 35.069	82 24.667	MW-6b	27 35 3.9	82 24 37.9
HAP-4	27 35.060	82 24.622	SA-24	27 35.085	82 24.690	MW-7	27 35 9.5	82 24 50.0
HAP-5	27 35.156	82 24.792	SA-25	27 35.120	82 24.700	MW-7a	27 35 9.7	82 24 49.8
HAP-6	27 35.136	82 24.797	SA-26	27 35.136	82 24.707	MW-7b	27 35 9.1	82 24 50.0
HAP-7	27 35.102	82 24.806	SA-27	27 35.127	82 24.686	MW-8T	27 35.174	82 24.889
SD-1	27 35.003	82 24.589	SA-28	27 35.115	82 24.640	MW-15/SS-15,a	27 35 6.4	82 25 27.3
SD-2	27 35.016	82 24.609	SA-29	27 35.078	82 24.612	MW-19/SS-19,a	27 35 6.5	82 25 27.6
SD-3	27 35.038	82 24.657	SA-30	27 35.052	82 24.619	SS-16		
SD-4	27 35.056	82 24.615	SA-31	27 35.046	82 24.652	SS-17		
SD-5/SW-1	27 35.097	82 24.602	SA-32	27 35.068	82 24.721	SS-18		
SB-N	27 35.112	82 24.618	SA-33	27 35.105	82 24.738	SS-20		
SB-S	27 35.096	82 24.620	SA-34	27 35.125	82 24.771	SS-19b		
SP-1	27 35.176	82 24.632	SA-35	27 35.156	82 24.832	SS-19c		
SP-2	27 35.168	82 24.624	SA-36	27 35.231	82 24.926	SS-19d		
MW-3/SA-21	27 35.107	82 24.657	SA-37	27 35.227	82 24.868	SS-15b		
MW-4/SA-16	27 34.876	82 24.734	SA-38	27 35.218	82 24.818	SS-20b		
MW-5	27 35.121	82 24.758	SA-39	27 35.193	82 24.939	TW-1	27 35.103	82 25.459
MW-6	27 35.060	82 24.637	SA-40	27 35.174	82 24.889	SA-N	27 35.166	82 24.721
SA-17	27 34.899	82 24.765	SA-41	27 35.143	82 24.953	SA-S	27 35.134	82 24.968
SA-18	27 34.856	82 24.765	SA-42	27 35.120	82 24.897	SA-W	27 35.236	82 24.966
SA-19	27 34.859	82 24.709	SA-43	27 35.103	82 24.835			

blank=not recorded or not correct per Google and field measurements

TABLE 2: PREVIOUS SOIL ARSENIC CHEMICAL TESTING (2004)

Cone Property

LAS Project No. 07-463-00684
FDEP Project No. 298707
FDEP Site No.: 266446

Depth (ft.)	Sample Designation	Soil CTL	SS-1	SS-2	SS-3	SS-4	SS-5
Location			*NW Cone*	*WC Cone*	*SW Cone*	*NC Cone*	*NE Cone*
Date Collected			7/21/04	7/21/04	7/21/04	7/21/04	7/21/04
0-2	a	2.1	0.77	0.16 I	0.24 I	0.13 U	0.14 U
2-4	b	2.1	1.3	0.6	0.46 I	0.20 I	0.15 U
4-6	c	2.1	0.7	0.93	1.3	0.46	0.20 I
6-8	d	2.1	0.47 I	0.56	1.4	0.89	1.4
Depth (ft.)	Sample Designation	Soil CTL	SS-6	SS-7	SS-8	SS-9	SS-10
Location			*Cone*	*Hysmith*	*Hysmith*	*SE Cone*	*Grove*
Date Collected			7/21/04	7/21/04	7/21/04	7/21/04	7/21/04
0-2	a	2.1	0.13 U	0.15 U	0.13 U	0.13 U	**2.4**
2-4	b	2.1	0.15 U	0.12 U	0.14 U	0.14 U	0.12 U
4-6	c	2.1	0.18 I	0.15 U	0.14 U	0.23 I	0.12 U
6-8	d	2.1	0.53	0.33 I	0.57	0.48	0.25 I
Depth (ft.)	Sample Designation	Soil CTL	SS-11	SS-12	SS-13	SS-14	
Location			*Parrish*	*Parrish*	*EC Cone*	*E Pasture*	
Date Collected			7/21/04	7/21/04	7/21/04	7/21/04	
0-2	a	2.1	0.13 U	0.14 U	0.12 U	0.69	
2-4	b	2.1	0.13 U	0.42 I	0.13 U	0.15 U	
4-6	c	2.1	0.21 I	0.26 I	0.13 U	**6.6**	
6-8	d	2.1	0.43	0.19 I	0.35 I	**6.9**	

I=detected but not quantifiable. U=below laboratory detection limits. Blank=not tested

Bold=above state residential soil cleanup target level. Milligrams per kilogram (mg/kg)

Sampling methodology different than 2008 SA approach. Composited two (2) soil samples collected from each layer.

TABLE 3: SOIL ARSENIC CHEMICAL TESTING ***Cone Property--Grove***

LAS Project No. 07-463-00684
FDEP Project No. 298707
FDEP Site No.: 266446

Depth (ft.)	Sample Designation	Soil CTL	SA-10*	SA-16	SA-17	SA-18	SA-19	SA-20		
Location			*Grove*	*Grove*	*Grove*	*Grove*	*Grove*	*Grove*		
Date Collected			7/27/04	2/14/07	2/14/07	2/14/07	2/14/07	2/14/07		
0-.5	a	2.1		0.24 U	0.21 U	0.22 U	0.25 U	0.23 U		
.5-2	b	2.1	**2.4**	0.25 U	0.23 U	0.23 U	0.27 U	0.25 U		
4	c	2.1	0.12 U	0.25 U	0.24 U	0.27 U	0.39 I	0.26 U		
6	d	2.1	0.12 U	0.24 U	0.27 U	0.24 U	0.34 I	0.26 U		
8	e	2.1	0.25 I	0.25 U	0.35 I	0.25 U	0.58	0.25 U		

I=detected but not quantifiable. U=below laboratory detection limits. **Bold**=above state residential soil cleanup target level. Milligrams per kilogram (mg/kg)

Blank=not tested

*Sampling methodology different than SA approach in 2008. Composited two (2) soil samples collected from each layer.

TABLE 4: SOIL ARSENIC CHEMICAL TESTING ***Cone Property--Pasture***

LAS Project No. 07-463-00684
FDEP Project No. 298707
FDEP Site No.: 266446

Depth (ft.)	Sample Designation	Soil CTL	SS-14	SA-21	SA-22	SA-23	SA-24	SA-25
Location			*East Pasture*	*East Pasture*	*East Pasture*	*East Pasture*	*East Pasture*	*East Pasture*
Date Collected			7/21/2004**	2/14/07	2/14/07	2/14/07	2/14/07	2/14/07
0-.5	a	2.1		0.77	**2.9**	1.6	0.51	1.5
.5-2	b	2.1	0.69	1.9	**3.3**	0.85	2.1	1.1
4	c	2.1	0.15 U	**3.9**	**8.9**	2.1	2	**7.1**
6	d	2.1	**6.6**	**3.9**	**5.6**	**2.4**	1.6	**4**
8	e	2.1	**6.9**	1.5	**5.3**	1.6	1.4	**3**
Depth (ft.)	Sample Designation	Soil CTL	SA-26	SA-26C	SA-27	SA-28	SA-29	SA-30
Location			*East Pasture*	**SPLP*	*East Pasture*	*East Pasture*	*East Pasture*	*East Pasture*
Date Collected			3/22/07	3/22/07	3/22/07	3/22/07	3/22/07	3/22/07
0-.5	a	2.1	0.74		0.57	1.1	1.1	0.64
.5-2	b	2.1	0.77		0.6	0.41 I	0.93	0.86
4	c	2.1	**5.2***	0.0022 I	**3**	**3.8**	0.77	1.6
6	d	2.1	1.7		1.6	**3.9**	1.6	1.6
8	e	2.1	1		**3.1**	2.1	1.8	1.6
Depth (ft.)	Sample Designation	Soil CTL	SA-31	SA-32	SA-33	SA-34	SA-34C	SA-35
Location			*East Pasture*	*East Pasture*	*East Pasture*	*East Pasture*	**SPLP*	*West Pasture*
Date Collected			3/22/07	3/22/07	3/22/07	3/22/07	3/22/07	4/6/07
0-.5	a	2.1	0.56	0.63	1.3	1.8		**23**
.5-2	b	2.1	1	0.69	0.78	**3.7**		**17**
4	c	2.1	1	**2.8**	1.6	**3.7***	0.0048 I	**7**
6	d	2.1	**2.6**	1.3	1.2	**2.4**		**4.5**
8	e	2.1	1.5	1.3	1.3	1.9		1.5
Depth (ft.)	Sample Designation	Soil CTL	SA-36	SA-37	SA-38	SA-39	SA-40	SA-41
Location			*West Pasture*	*West Pasture*	*West Pasture*	*West Pasture*	*West Pasture*	*West Pasture*
Date Collected			5/18/07	5/18/07	5/18/07	5/18/07	5/18/07	5/18/07
0-.5	a	2.1	**3.7**	**3.1**	1.3	**7.3**	**5.6**	0.73
.5-2	b	2.1	0.54	0.48	0.44	**2.2**	**7.1**	.22 U
4	c	2.1	**2.6**	**3**	**2.9**	**3**	**6.5**	1.1
6	d	2.1	**2.3**	1.2	**10**	1.5	**3.5**	1
8	e	2.1	0.81	1.2	2.1	0.92	1	0.74
Depth (ft.)	Sample Designation	Soil CTL	SA-42	SA-43	SB-N	SB-S	SP-1	SP-2
Location			*West Pasture*	*West Pasture*	*Berm*	*Berm*	*Soil Pile*	*Soil Pile*
Date Collected			5/18/07	5/18/07	4/6/07	4/6/07	3/22/07	3/22/07
0-.5	a	2.1	**4.3**	1				
.5-2	b	2.1	1.8	0.22 U	**8.1**	**9.8**	**3.6**	**4.2**
4	c	2.1	**9.7**	**5.3**				
6	d	2.1	1.8	**4.8**				
8	e	2.1	2	0.89				

I=detected but not quantifiable. U=below laboratory detection limits. Blank=not tested.

Bold=above state residential soil cleanup target level. Milligrams per kilogram (mg/kg) except SPLP, milligrams per liter (mg/l)

*SPLP run on SA-26C and SA-34C, 0.0022 I and 0.0048 I milligrams per liter (mg/l), respectively. CTL=0.010 mg/l

**Sampling methodology different than SA approach in 2007/2009. Composited two (2) soil samples collected from each layer.

Depth (ft.)	Sample Designation	Soil CTL	SD-1	SD-2	SD-3	SD-4	SD-5
Location			*Ditch*	*Ditch*	*Ditch*	*Ditch*	*Ditch*
Date Collected			3/22/07	3/22/07	3/22/07	3/22/07	3/22/07
0-.5	a	2.1	0.30 U	0.9	0.6	0.44 I	2.1
Depth (ft.)	Sample Designation	Soil CTL	HAP-1	HAP-2	HAP-3	HAP-4	HAP-5
Location			*East Pasture*	*East Pasture*	*East Pasture*	*East Pasture*	*East Pasture*
Date Collected			3/22/07	3/22/07	3/22/07	3/22/07	4/6/07
0-.5	a	2.1	1.7	1	0.52	1.1	**3.9**
.5-2	b	2.1	1.4	0.65	1	0.85	**2.6**
Depth (ft.)	Sample Designation	Soil CTL	HAP-6	HAP-7			
Location			*East Pasture*	*East Pasture*			
Date Collected			4/6/07	4/6/07			
0-.5	a	2.1	**6.5**	1.4			
.5-2	b	2.1	**6.3**	0.83			
4	c	2.1					
6	d	2.1					
8	e	2.1					

I=detected but not quantifiable. U=below laboratory detection limits. Blank=not tested

Bold=above state residential soil cleanup target level. Milligrams per kilogram (mg/kg)

TABLE 4: SOIL ARSENIC CHEMICAL TESTING ***Cone Property-- Pasture (cont.)***

LAS Project No. 07-463-00684
FDEP Project No. 298707
FDEP Site No.: 266446

Depth (ft.)	Sample Designation	Soil CTL	SA-N	SA-S	SA-W			
Location			*N of Pasture*	*S of Pasture*	*W of Pasture*			
Date Collected			3/10/09	3/10/09	3/10/09			
0-.5	a	2.1	0.34 I	1.7	**2.2**			
.5-2	b	2.1	<0.20	0.56	0.59			
4	c	2.1	0.63	Wet	Wet			
6	d	2.1	Wet	Wet	Wet			
8	e	2.1	Wet	Wet	Wet			
Depth (ft.)	Sample Designation	Soil CTL	SA-22	SA-22	SA-22			
Location			*East Pasture*	*East Pasture*	**SPLP*			
Date Collected			2/14/07	3/10/09	3/10/09			
0-.5	a	2.1	**2.9**	1.5				
.5-2	b	2.1	**3.3**	1.4				
4	c	2.1	**8.9**	**7.1***	0.0079 I			
6	d	2.1	**5.6**	Wet				
8	e	2.1	**5.3**	Wet				
Depth (ft.)	Sample Designation	Soil CTL	SA-35	SS-35	SA-35			
Location			*West Pasture*	*West Pasture*	**SPLP*			
Date Collected			4/6/07	3/10/09	3/10/09			
0-.5	a	2.1	**23**	**15***	0.0044 I			
.5-2	b	2.1	**17**	**14**				
4	c	2.1	**7**	Wet				
6	d	2.1	**4.5**	Wet				
8	e	2.1	1.5	Wet				
Depth (ft.)	Sample Designation	Soil CTL	SA-40	SA-40	SA-40			
Location			*West Pasture*	*West Pasture*	**SPLP*			
Date Collected			5/18/07	3/10/09	3/10/09			
0-.5	a	2.1	**5.6**	**4.7**				
.5-2	b	2.1	**7.1**	**15***	**0.018**			
4	c	2.1	**6.5**	Wet				
6	d	2.1	**3.5**	Wet				
8	e	2.1	1	Wet				
Depth (ft.)	Sample Designation	Soil CTL			MW-6A			
Location					*East Pasture*			
Date Collected					4/8/09			
0-.5	a	2.1			0.69			
.5-2	b	2.1			1.4			
4	c	2.1			Wet			
6	d	2.1			Wet			
8	e	2.1			Wet			

I=detected but not quantifiable. U=below laboratory detection limits. Blank=not tested.

Bold=above state residential soil cleanup target level. Milligrams per kilogram (mg/kg) except SPLP, milligrams per liter (mg/l)

*SPLP run on SA-35 and SA-40, 0.0044 I and 0.018 milligrams per liter (mg/l), respectively. CTL=0.010 mg/l

TABLE 5: SHALLOW GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY

Facility Name: Cone Property **FDEP Project No. 298707**

Project No. 07-463-00684 **FDEP Site No.: 266446**

Sample			Arsenic		Max. As			4,4'-DDD	4,4'-DDT	Endosulfan I		
Location	Date	SA No.	Unfiltered	Filtered	in Soil	SPLP (mg/l)						
GWCTL			***0.010***	***0.010***				***0.10***	***0.10***	***42 (Total)***		
MW-4	3/1/07	SA-16	0.0035 I	0.0041 I	BDL							
MW-4	3/11/2009	SA-16	<0.0050	<0.0050								
MW-3	3/1/07	SA-21	0.0076 I	0.0056 I	3.9 mg/kg							
MW-3	3/11/2009	SA-21	<0.0050	<0.0050								
MW-5	4/6/07	SA-34	0.0082 I	0.0070 I	3.7 mg/kg	0.0048 I						
MW-5	3/19/2009	SA-34	<0.0050	<0.0050								
MW-6	4/6/07	SA-22	**0.024**	**0.020**	8.9 mg/kg							
MW-6	3/19/2009	SA-22	<0.0050	<0.0050	7.1 mg/kg	0.0079 I						
MW-6a	3/19/2009	N/A	**0.015**	**0.015**								
MW-6a	4/8/09	MW-6a	**0.014**	**0.015**	1.4 mg/kg							
MW-6b	3/19/2009	N/A	0.0053 I	0.0064 I								
MW-7	3/19/2009	SA-35	<0.0050	<0.0050	15 mg/kg	0.0044 I						
MW-7a	3/19/2009	N/A	<0.0050	<0.0050								
MW-7b	3/19/2009	N/A	<0.0050	<0.0050								
MW-8T	4/8/2009	SA-40	**0.014**	0.0098 I	15 mg/kg	**0.018**						
TW-1*	7/21/2004	N/A	0.0022 I					0.017 U	0.013 U	0.014 U		
MW-1	3/11/2009	N/A	<0.0050					0.0071 I	0.0250	<0.00067		
MW-15	3/11/2009	SS-15	<0.0050					<0.0018	<0.0035	0.0022 I		
MW-19	3/11/2009	SS-19	<0.0050					<0.0018	<0.0035	<0.00067		
SW-1	3/22/07	N/A	0.0063 I									
SW-1	3/19/2009	N/A	0.0060 I									
SW-2	3/19/2009	N/A	<0.0050									
Parameters tested:												
MW-3 thru MW-8T and SW-1 and SW-2 Arsenic Only; MW-1, MW-15, MW-19, As and EPA 8081; *TW-1 As and EPA 8081; not shown EPA 8141and 8151 results (all parameters BDL)												
GWCTL: Groundwater Cleanup Target Level per Chap. 62-777 Florida Administrative Code (F.A.C) **Bold=exceeds GWCTL** Blank=not tested												
All results milligrams per liter (mg/l or parts per million) U=below laboratory detection limits I=analyte detected below quantitation limits												

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TABLE 6: GROUNDWATER ELEVATION SUMMARY

Facility Name: Cone Property **FDEP Project No. 298707**

Project No. 07-463-00684 **FDEP Site No.: 266446**

WELL NO.	MW-3			MW-5			MW-6			MW-6a			MW-6b			MW-4		
DIAMETER	2"			2"			2"			2"			2"			2"		
WELL DEPTH	12.35'			12.42'			12.04'			15'			15'			12.35'		
SCREEN INTERVAL	10'			10'			10'			10'			10'			10'		
TOC ELEVATION	18.82'			17.65'			18.45'			18.66'			18.3'			NS		
DATE	*ELEV*	*DTW*		*ELEV*	*DTW*		*ELEV*	*DTW*		*ELEV*	*DTW*		*ELEV*	*DTW*		*ELEV*	*DTW*	
4/6/2007	14.90	3.92		13.80	3.85		15.17	3.28										
3/11/2009	12.30	6.52															7.59	
3/19/2009				11.57	6.08		12.42	6.03		12.57	6.09		12.80	5.50				
5/13/2009	11.17	7.65		10.73	6.92		11.76	6.69		11.79	6.87		11.73	6.57			8.08	

WELL NO.	MW-7			MW-7a			MW-7b			MW-8T								
DIAMETER	2"			2"			2"			2"								
WELL DEPTH (ft.)	15'			15'			15'			6.5'								
SCREEN INTERVAL	10'			10'			10'			5'								
TOC ELEVATION	16.36'			16.58'			17.79'			NS								
DATE	*ELEV*	*DTW*		*ELEV*	*DTW*		*ELEV*	*DTW*		*ELEV*	*DTW*							
3/19/2009	12.26	4.10		11.50	5.08		11.76	6.03										
4/8/2009											5.45							
5/13/2009	10.92	5.44		9.91	6.67		9.99	7.80										

WELL NO.	MW-1			MW-15			MW-19											
DIAMETER	2"			2"			2"											
WELL DEPTH (ft.)	15'			15'			15'											
SCREEN INTERVAL	10'			10'			10'											
TOC ELEVATION	23.04'			22.71'			22.27'											
DATE	*ELEV*	*DTW*		*ELEV*	*DTW*		*ELEV*	*DTW*										
3/11/2009	10.53	12.51		10.24	12.47		10.59	11.68										
5/13/2009	9.75	13.29		9.75	12.96		9.82	12.45					NS=not surveyed					

TABLE 7: SOILCHEMICAL TESTING (8081 + ARSENIC)

Cone Property--
Barn

LAS Project No. 07-463-00684
FDEP Project No. 298707
FDEP Site No.: 266446

	Parameter>>	Arsenic	alpha-BHC	beta-BHC	alpha-Chlordane	gamma-Chlordance	Chlordane	4,4'-DDD	4,4'-DDE	4,4'-DDT	Dieldrin	Endosulfan II	Endosulfan Sulfate	Heptachlor	Heptachlor Expoxide	Toxaphene
	Res SCTL>>	**2.1**	**0.1**	**0.5**	**N/A**	**N/A**	**2.8**	**4.2**	**2.9**	**2.9**	**0.06**	**450 (Total)**	**450 (Total)**	**0.2**	**0.1**	**0.9**
	C/I SCTL>>	**12**	**0.6**	**2.4**	**N/A**	**N/A**	**14**	**22**	**15**	**15**	**0.3**	**7600**	**7600**	**1**	**0.5**	**4.5**
	Leachability	***SPLP***	***0.003***	***0.001***	***N/A***	***N/A***	***9.6***	***5.8***	***18***	***11***	***0.002***	***3.8***	***3.8***	***23***	***0.6***	***31***
Sample Designation>>	SS-15															
Location: Barn	Date Collected															
Depth (ft.)	7/21/2004															
.5-2		1.7			0.0063	0.021		0.012	0.11	0.15		0.041				**1.7**
Sample Designation>>	SS-15a															
Location: Barn	Date Collected															
Depth (ft.)	3/9/2009															
0-.5		1.9			0.0025	0.018		0.066	0.45	0.25	***0.068***	0.10				**4.6**
.5-2		**3.9**				0.038 I		0.15	0.25	0.32		0.19	0.065 I			**10***
4		1.5				0.00021 I		0.00055 I	0.0037	0.0032	***0.0036***					0.13
6		0.92				0.00054 I		0.0017 I	0.0057	0.0032			0.0013 I			0.17
8		0.58				0.00028 I		0.0048	0.00040 I							0.26
Sample Designation>>	SS-15b															
Location: Barn	Date Collected															
Depth (ft.)	4/8/2009															
0-.5		**4.4**						0.13 I	0.087 I	0.073 I						**10**
.5-2		**2.4**						0.0097 I	0.011 I	0.012 I	0.014 I	0.013 I	0.00089 I			0.75

In mg/kg. Blank=not detected.I=analyte detected below quantitation limits. *TCLP for Toxaphene SS-15b at 0.5-2.0' 0.010 mg/l

TABLE 7: SOILCHEMICAL TESTING (8081 + ARSENIC)

Cone Property--
Barn (cont.)

LAS Project No. 07-463-00684
FDEP Project No. 298707
FDEP Site No.: 266446

	Parameter>>	Arsenic	alpha-BHC	beta-BHC	alpha-Chlordane	gamma-Chlordance	Chlordane	4,4'-DDD	4,4'-DDE	4,4'-DDT	Dieldrin	Endosulfan II	Endosulfan Sulfate	Heptachlor	Heptachlor Expoxide	Toxaphene
	Res SCTL>>	**2.1**	**0.1**	**0.5**	**N/A**	**N/A**	**2.8**	**4.2**	**2.9**	**2.9**	**0.06**	**450 (Total)**	**450 (Total)**	**0.2**	**0.1**	**0.9**
	C/I SCTL>>	**12**	**0.6**	**2.4**	**N/A**	**N/A**	**14**	**22**	**15**	**15**	**0.3**	**7600**	**7600**	**1**	**0.5**	**4.5**
	Leachability	***SPLP***	***0.003***	***0.001***	***N/A***	***N/A***	***9.6***	***5.8***	***18***	***11***	***0.002***	***3.8***	***3.8***	***23***	***0.6***	***31***
Sample Designation>>	SS-16															
Location: Barn	Date Collected															
Depth (ft.)	2/9/2007															
0-.5 (a)		NT					0.0360		0.0012 I							0.18
.5-2 (b)		NT							0.0019							0.14
Sample Designation>>	SS-17															
Location: Barn	Date Collected															
Depth (ft.)	2/9/2007															
0-.5 (a)		NT					0.0390		0.018	0.010						0.28
.5-2 (b)		NT							0.0021	0.00049 I	***0.0092***					0.28
Sample Designation>>	SS-18															
Location: Barn	Date Collected															
Depth (ft.)	2/9/2007															
0-.5 (a)		NT					0.0320		0.0034	0.0023	***0.0380***					0.30
.5-2 (b)		NT					0.019		0.0037	0.0021	0.00058 I					

In mg/kg. Blank=not detected. NT=not tested. I=analyte detected below quantitation limits.

TABLE 7: SOILCHEMICAL TESTING (8081 + ARSENIC)

Cone Property--
Barn (cont.)

LAS Project No. 07-463-00684
FDEP Project No. 298707
FDEP Site No.: 266446

	Parameter>>	Arsenic	alpha-BHC	beta-BHC	alpha-Chlordane	gamma-Chlordance	Chlordane	4,4'-DDD	4,4'-DDE	4,4'-DDT	Dieldrin	Endosulfan II	Endosulfan Sulfate	Heptachlor	Heptachlor Expoxide	Toxaphene
	Res SCTL>>	**2.1**	**0.1**	**0.5**	**N/A**	**N/A**	**2.8**	**4.2**	**2.9**	**2.9**	**0.06**	**450 (Total)**	**450 (Total)**	**0.2**	**0.1**	**0.9**
	C/I SCTL>>	**12**	**0.6**	**2.4**	**N/A**	**N/A**	**14**	**22**	**15**	**15**	**0.3**	**7600**	**7600**	**1**	**0.5**	**4.5**
	Leachability	***SPLP***	***0.003***	***0.001***	***N/A***	***N/A***	***9.6***	***5.8***	***18***	***11***	***0.002***	***3.8***	***3.8***	***23***	***0.6***	***31***
Sample Designation>>	SS-19															
Location: Barn	Date Collected															
Depth (ft.)	2/9/2007															
0-.5 (a)		NT							0.750	2.8 L	***0.840***					***74 L***
.5-2 (b)*		NT	0.0013 I				0.047									**1.1**
Sample Designation>>	SS-20															
Location: Barn	Date Collected															
Depth (ft.)	2/9/2007															
0-.5 (a)		NT					0.740			0.650	***0.053***				0.0240	**3**
.5-2 (b)		NT					0.260		0.0660	0.13	***0.0035***			0.0054		0.59

In mg/kg. Blank=not detected. NT=not tested. L=value above quantitation range. *SA-19 (b) 0.5'-2.0' gamma-BHC (Lindane) 0.0015 I 2/9/07 (SCTL res. 0.7, comm./ind. 2.5, leach. 0.009)

I=analyte detected below quantitation limits.

TABLE 7: SOILCHEMICAL TESTING (8081 + ARSENIC)

Cone Property--
Barn (cont.)

LAS Project No. 07-463-00684
FDEP Project No. 298707
FDEP Site No.: 266446

	Parameter>>	Arsenic	alpha-BHC	beta-BHC	alpha-Chlordane	gamma-Chlordance	Chlordane	4,4'-DDD	4,4'-DDE	4,4'-DDT	Dieldrin	Endosulfan II	Endosulfan Sulfate	Heptachlor	Heptachlor Expoxide	Toxaphene
	Res SCTL>>	**2.1**	**0.1**	**0.5**	**N/A**	**N/A**	**2.8**	**4.2**	**2.9**	**2.9**	**0.06**	**450 (Total)**	**450 (Total)**	**0.2**	**0.1**	**0.9**
	C/I SCTL>>	**12**	**0.6**	**2.4**	**N/A**	**N/A**	**14**	**22**	**15**	**15**	**0.3**	**7600**	**7600**	**1**	**0.5**	**4.5**
	Leachability	***SPLP***	***0.003***	***0.001***	***N/A***	***N/A***	***9.6***	***5.8***	***18***	***11***	***0.002***	***3.8***	***3.8***	***23***	***0.6***	***31***
Sample Designation>>	SS-19a															
Location: Barn	Date Collected															
Depth (ft.)	3/9/2009															
0-.5		1.2				0.0032		0.0068	0.16	0.12	***0.012***	0.022				**5**
.5-2		**2.2**				0.026		0.060 I	0.20	0.18		0.23				**5.2**
4		0.55							0.00042 I	0.00035 I	0.00024 I	0.00020 I				
6		0.80								0.00024 I						
8		0.67								0.00040 I						
Sample Designation>>	SS-19b															
Location: Barn	Date Collected															
Depth (ft.)	3/9/2009															
0-.5		**2.2**			0.0040	0.034		0.074 I	0.32	0.13						**3.9**
.5-2		0.92				0.0026		0.0020	0.019	0.0095	***0.0082***					0.48
4		0.47						0.00025 I	0.0015 I	0.00077 I		0.00020 I				0.060
6		0.64						0.00029 I	0.0016 I	0.00063 I						0.048
Hard Pan																
Sample Designation>>	SS-19c															
Location: Barn	Date Collected															
Depth (ft.)	4/8/2009															
0-.5		**3.6**				0.010 I		0.020 I	0.087	0.042	0.011 I	0.027				**1.3**
.5-2		0.97							0.0016 I	0.0021						0.021

In mg/kg. Blank=not detected. I=analyte detected below quantitation limits.

TABLE 7: SOILCHEMICAL TESTING (8081 + ARSENIC)

Cone Property-- Barn (cont.)

LAS Project No. 07-463-00684
FDEP Project No. 298707
FDEP Site No.: 266446

	Parameter>>	Arsenic	alpha-BHC	beta-BHC	alpha-Chlordane	gamma-Chlordance	Chlordane	4,4'-DDD	4,4'-DDE	4,4'-DDT	Dieldrin	Endosulfan II	Endosulfan Sulfate	Heptachlor	Heptachlor Expoxide	Toxaphene
	Res SCTL>>	**2.1**	**0.1**	**0.5**	**N/A**	**N/A**	**2.8**	**4.2**	**2.9**	**2.9**	**0.06**	**450 (Total)**	**450 (Total)**	**0.2**	**0.1**	**0.9**
	C/I SCTL>>	**12**	**0.6**	**2.4**	**N/A**	**N/A**	**14**	**22**	**15**	**15**	**0.3**	**7600**	**7600**	**1**	**0.5**	**4.5**
	Leachability	***SPLP***	***0.003***	***0.001***	***N/A***	***N/A***	***9.6***	***5.8***	***18***	***11***	***0.002***	***3.8***	***3.8***	***23***	***0.6***	***31***
Sample Designation>>	SS-19d															
Location: Barn	Date Collected															
Depth (ft.)	4/8/2009															
0-.5		1.4			0.0068 I	0.034 I		0.034 I	0.12	0.10	***0.051***	0.052				**2.2**
.5-2		0.79			0.0012 I					0.0015 I	0.0018				0.0011 I	0.019
Sample Designation>>	SS-20a															
Location: Barn	Date Collected															
Depth (ft.)	3/9/2009															
0-.5*		**4.4**		0.0032	0.12 I	0.34 I		0.20 I	2.3	**4.1**		0.11 I		0.0018 I	0.054 I	**16****
.5-2		1.7	0.0023	0.00079 I	0.0099	0.037	0.3	0.012	0.096	0.18		0.011		0.00059 I	0.0024	**1**
4		0.58			0.00055 I	0.0054		0.0038	0.012	0.013					0.00019 I	0.45
6		0.75		0.00020 I	0.00071 I	0.0078		0.0055	0.026	0.039					0.00085 I	0.76
Hard Pan																
Sample Designation>>	SS-20b															
Location: Barn	Date Collected															
Depth (ft.)	4/8/2009															
0-.5		**2.8**				0.024 I		0.13	0.34	0.30						**4.5**
.5-2		0.64			0.017	0.029			0.085	0.05	***0.012***				0.0029	**0.98**

*at SS-20a 0.5 +/-' BTEX and PB in soil tested. Benzene 0.014 mg/kg, toluene at 0.0074 I and PB at 16. All under SCTL.

In mg/kg. Blank=not detected. I=analyte detected below quantitation limits.**TCLP for Toxaphene SS-15b at 0.5' 0.0086 mg/l

APPENDICES

APPENDIX A – NEW CHEMICAL TESTING RESULTS

April 02, 2009

Mr. Rick Reynolds
Land Assessment Services, Inc.
6408 W. Linebaugh Avenue
Suite 104
Tampa, FL 33625

RE: Cone Property/Parrish Site Order No.: F09030348

Dear Mr. Rick Reynolds:

Pace Analytical Services, Inc received 18 samples on 3/10/2009 10:20:00 AM for the analyses presented in the following report. The results included in this report relate only to the samples received.

Analyses are performed with method-required calibration and QA/QC samples, whenever applicable. Method performance, which is based on the calibration and QA/QC data, establishes the validity and certainty of the reported sample results. These data are provided along with the sample results.

Thank you for this opportunity to let Pace Analytical Services, Inc. (Florida) be of service to you. NELAP certification #E83079. If you have any questions regarding this report, please feel free to call me, Joe Vondrick, at (386) 672-5668, extension 4809 or (386) 676-4809.

Sincerely,

Project Manager
Pace Analytical Services, Inc.
P.O. Box 468
Ormond Beach, FL 32175-0468

The test results in this report meet the requirements of the 2003 NELAC standards unless otherwise noted.

The following acronyms may be utilized within this report:

%REC	Percent Recovery
A	Absent
ABLK	Analytical Method Blank
CG	Confluent Growth
CGB	Confluent Growth Without Coliforms
CGC	Confluent Growth With Coliforms
DUP	Sample Duplicate
dw	Dry Weight
kg	Kilograms
L	Liter
LCS	Laboratory Control Spike (may also be appended with an abbreviation indicating spiking level)
MBLK	Preparation Method Blank
MDL	Laboratory Method Detection Limit
mg	Milligrams
ml	Milliliter
MS	Matrix Spike (may also be appended with an abbreviation indicating spiking level)
MSD	Matrix Spike Duplicate (may also be appended with an abbreviation indicating spiking level)
P	Present
PQL	Practical Quantitation Limit
QCS	Alternate source Calibration Verification Standard (may also be reported as analytical LCS in some a
RL	Reporting Limit
RPD	Relative Percent Difference
SPK	Spike
SUB	Indicates subcontracted analytical results
TIC	Tentatively Identified Compound
TNTC	Too Numerous To Count
ug	Micrograms

Case Narrative

CLIENT: Land Assessment Services, Inc.
Project: Cone Property/Parrish Site
Lab Order: F09030348

I. SAMPLE RECEIVING/ CUSTODY

The samples were received and processed by the Sample Custody section of the laboratory. There were no significant logistics or quality problems unless noted below. Additional request for TCLP pesticides (toxaphene only) for 2 samples; F09030348-002 -SS-15a (0.5”-2.0’) & F09030348-006 - SS-20a (0.5”)

II. ANALYTICAL DATA

The samples were analyzed according to the laboratory's Standard Operating Procedures for the methodologies requested. There were no significant logistics or quality problems unless noted below or in the text of the report.

III. QUALITY CONTROL

There were no significant quality control problems unless noted below or in the text of the report. Samples required dilution for method 8081 due to the abundance of target compounds in the matrix, which resulted in elevated reporting limits for other target compounds. Toxaphene results may be biased high due to the presence of DDT and its breakdown products.

Analytical Report

CLIENT: Land Assessment Services, Inc.
Lab Order: F09030348
Project: Cone Property/Parrish Site
Lab ID: F09030348-002

Client Sample ID: SS-15A 0.5-2.0
Collection Date: 3/9/2009 10:30:00 AM
Sample Description:
Matrix: Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/11/2009 7:37:00 A**				Analyst: **TPI**	
Arsenic	3.9		0.19	0.39	mg/Kg-dry	1	03/12/09 20:26	59999
8081/1311: PESTICIDES, TCLP		**SW1311/8081**	PrepDate: **3/31/2009 2:10:00 P**				Analyst: **CL**	
Toxaphene	0.010		0.0037	0.0050	mg/L	1	03/31/09 23:12	60476
Surr: Decachlorobiphenyl	92.1		0	70-130	%REC	1	03/31/09 23:12	60476
Surr: Tetrachloro-m-xylene	75.4		0	70-130	%REC	1	03/31/09 23:12	60476
8081: PESTICIDES, ORGANOCHLORINE		**SW8081**	PrepDate: **3/12/2009 8:30:00 A**				Analyst: **CL**	
Aldrin	BDL		0.000062	0.0018	mg/Kg-dry	1	03/13/09 03:39	60022
alpha-BHC	BDL		0.000073	0.0018	mg/Kg-dry	1	03/13/09 03:39	60022
beta-BHC	BDL		0.000082	0.0018	mg/Kg-dry	1	03/13/09 03:39	60022
delta-BHC	BDL		0.000092	0.0018	mg/Kg-dry	1	03/13/09 03:39	60022
gamma-BHC	BDL		0.00016	0.0018	mg/Kg-dry	1	03/13/09 03:39	60022
alpha-Chlordane	BDL		0.000039	0.0018	mg/Kg-dry	1	03/13/09 03:39	60022
gamma-Chlordane	0.038	I	0.0036	0.090	mg/Kg-dry	50	03/13/09 19:58	60022
Chlordane	BDL		0.017	0.018	mg/Kg-dry	1	03/13/09 03:39	60022
4,4'-DDD	0.15		0.0069	0.090	mg/Kg-dry	50	03/13/09 19:58	60022
4,4'-DDE	0.25		0.0032	0.090	mg/Kg-dry	50	03/13/09 19:58	60022
4,4'-DDT	0.32		0.0051	0.090	mg/Kg-dry	50	03/13/09 19:58	60022
Dieldrin	BDL		0.0021	0.090	mg/Kg-dry	50	03/13/09 19:58	60022
Endosulfan I	BDL		0.000027	0.0018	mg/Kg-dry	1	03/13/09 03:39	60022
Endosulfan II	0.19		0.0030	0.090	mg/Kg-dry	50	03/13/09 19:58	60022
Endosulfan sulfate	0.065	I	0.0023	0.090	mg/Kg-dry	50	03/13/09 19:58	60022
Endrin	BDL		0.000055	0.0018	mg/Kg-dry	1	03/13/09 03:39	60022
Endrin aldehyde	BDL		0.000070	0.0018	mg/Kg-dry	1	03/13/09 03:39	60022
Endrin ketone	BDL		0.000085	0.0018	mg/Kg-dry	1	03/13/09 03:39	60022
Heptachlor	BDL		0.000041	0.0018	mg/Kg-dry	1	03/13/09 03:39	60022
Heptachlor epoxide	BDL		0.00012	0.0018	mg/Kg-dry	1	03/13/09 03:39	60022
Methoxychlor	BDL		0.0011	0.0018	mg/Kg-dry	1	03/13/09 03:39	60022
Toxaphene	10		0.39	0.90	mg/Kg-dry	50	03/13/09 19:58	60022
Surr: Decachlorobiphenyl	94.2		0	15-160	%REC	1	03/13/09 03:39	60022
Surr: Tetrachloro-m-xylene	87.7		0	15-160	%REC	1	03/13/09 03:39	60022
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	94.3		0.100	0.100	%	1	03/11/09	R77052

Data Qualifier Code Key:
I Analyte detected below quantitation limits
BDL Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc.
Lab Order: F09030348
Project: Cone Property/Parrish Site
Lab ID: F09030348-006

Client Sample ID: SS-20A 0.5
Collection Date: 3/9/2009 11:30:00 AM
Sample Description:
Matrix: Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/11/2009 7:37:00 A**				Analyst: **TPI**	
Arsenic	4.4		0.21	0.42	mg/Kg-dry	1	03/12/09 20:51	59999
8081/1311: PESTICIDES, TCLP		**SW1311/8081**	PrepDate: **3/31/2009 2:10:00 P**				Analyst: **CL**	
Toxaphene	0.0086		0.0037	0.0050	mg/L	1	04/01/09 00:04	60476
Surr: Decachlorobiphenyl	109		0	70-130	%REC	1	04/01/09 00:04	60476
Surr: Tetrachloro-m-xylene	95.3		0	70-130	%REC	1	04/01/09 00:04	60476
8081: PESTICIDES, ORGANOCHLORINE		**SW8081**	PrepDate: **3/12/2009 8:30:00 A**				Analyst: **CL**	
Aldrin	BDL		0.000066	0.0019	mg/Kg-dry	1	03/13/09 02:48	60022
alpha-BHC	BDL		0.000079	0.0019	mg/Kg-dry	1	03/13/09 02:48	60022
beta-BHC	0.0032		0.000088	0.0019	mg/Kg-dry	1	03/13/09 02:48	60022
delta-BHC	BDL		0.00010	0.0019	mg/Kg-dry	1	03/13/09 02:48	60022
gamma-BHC	BDL		0.00017	0.0019	mg/Kg-dry	1	03/13/09 02:48	60022
alpha-Chlordane	0.12	I	0.0085	0.39	mg/Kg-dry	200	03/13/09 19:07	60022
gamma-Chlordane	0.34	I	0.016	0.39	mg/Kg-dry	200	03/13/09 19:07	60022
Chlordane	BDL		3.6	3.9	mg/Kg-dry	200	03/13/09 19:07	60022
4,4'-DDD	0.20	I	0.030	0.39	mg/Kg-dry	200	03/13/09 19:07	60022
4,4'-DDE	2.3		0.014	0.39	mg/Kg-dry	200	03/13/09 19:07	60022
4,4'-DDT	4.1		0.022	0.39	mg/Kg-dry	200	03/13/09 19:07	60022
Dieldrin	BDL		0.0092	0.39	mg/Kg-dry	200	03/13/09 19:07	60022
Endosulfan I	BDL		0.000029	0.0019	mg/Kg-dry	1	03/13/09 02:48	60022
Endosulfan II	0.11	I	0.013	0.39	mg/Kg-dry	200	03/13/09 19:07	60022
Endosulfan sulfate	BDL		0.000049	0.0019	mg/Kg-dry	1	03/13/09 02:48	60022
Endrin	BDL		0.000060	0.0019	mg/Kg-dry	1	03/13/09 02:48	60022
Endrin aldehyde	BDL		0.000076	0.0019	mg/Kg-dry	1	03/13/09 02:48	60022
Endrin ketone	BDL		0.000092	0.0019	mg/Kg-dry	1	03/13/09 02:48	60022
Heptachlor	0.0018	I	0.000045	0.0019	mg/Kg-dry	1	03/13/09 02:48	60022
Heptachlor epoxide	0.054	I	0.025	0.39	mg/Kg-dry	200	03/13/09 19:07	60022
Methoxychlor	BDL		0.0012	0.0019	mg/Kg-dry	1	03/13/09 02:48	60022
Toxaphene	16		1.7	3.9	mg/Kg-dry	200	03/13/09 19:07	60022
Surr: Decachlorobiphenyl	109		0	15-160	%REC	1	03/13/09 02:48	60022
Surr: Tetrachloro-m-xylene	77.6		0	15-160	%REC	1	03/13/09 02:48	60022
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	85.9		0.100	0.100	%	1	03/11/09	R77052

Data Qualifier Code Key:
I Analyte detected below quantitation limits
BDL Not Detected Above the MDL

QC Summary

F09030348

	Method	Batch ID	Method Blank		* LCS/LCSD or DUP				MS/MSD			
					% Recovery	Control Limits	RPD	RPD Limit	% Recovery	Control Limits	RPD	RPD Limit
Percent Moisture	SM2540G	R77052					1.14	10				
	SM2540G	R77052					0.141	10				
	SM2540G	R77052					0.893	10				
	SM2540G	R77052					6.45	10				
Percent Solid	SM2540G	R77052					0.017	10				
	SM2540G	R77052					0.125	10				
	SM2540G	R77052					**11.2**	10				
	SM2540G	R77052					0.108	10				
Chlordane	SW1311/8081	60476	0.00080 U	mg/L								
Endrin	SW1311/8081	60476	0.00016 U	mg/L	94.3	70-130			95.5/95.7	70-130	0.228	40
gamma-BHC	SW1311/8081	60476	0.000060 U	mg/L	90.9	70-130			90/91.4	70-130	1.6	40
Heptachlor	SW1311/8081	60476	0.000060 U	mg/L	93.5	70-130			92.2/93.1	70-130	0.889	40
Heptachlor epoxide	SW1311/8081	60476	0.000060 U	mg/L	95	70-130			95/96.3	70-130	1.37	40
Methoxychlor	SW1311/8081	60476	0.000080 U	mg/L	103	70-130			106/107	70-130	0.563	40
Toxaphene	SW1311/8081	60476	0.0037 U	mg/L								
Arsenic	SW6010	59999	0.20 U	mg/Kg	105	80-120			106/106	75-125	6.87	20
Arsenic	SW6010	60000	0.20 U	mg/Kg	106	80-120			102/105	75-125	0.197	20

* An LCSD is performed if required by the method or if there is insufficient sample volume available to perform batch matrix spikes.

I Analyte detected below quantitation limits U Not Detected Above the MDL

QC Summary

F09030348

	Method	*Batch ID*	*Method Blank*	* *LCS/LCSD or DUP*				*MS/MSD*			
				% Recovery	*Control Limits*	*RPD*	*RPD Limit*	*% Recovery*	*Control Limits*	*RPD*	*RPD Limit*
Aldrin	SW8081	60022	0.058 U µg/Kg	91.1	30-131			83.5/83.1	30-131	0.492	40
alpha-BHC	SW8081	60022	0.069 U µg/Kg								
beta-BHC	SW8081	60022	0.077 U µg/Kg								
delta-BHC	SW8081	60022	0.087 U µg/Kg								
gamma-BHC	SW8081	60022	0.15 U µg/Kg	85.4	45-133			80.8/80.1	45-133	0.78	40
alpha-Chlordane	SW8081	60022	0.037 U µg/Kg								
gamma-Chlordane	SW8081	60022	0.068 U µg/Kg								
Chlordane	SW8081	60022	16 U µg/Kg								
4,4'-DDD	SW8081	60022	0.13 U µg/Kg								
4,4'-DDE	SW8081	60022	0.061 U µg/Kg								
4,4'-DDT	SW8081	60022	0.096 U µg/Kg	99.7	41-162			133/131	41-162	1.04	40
Dieldrin	SW8081	60022	0.040 U µg/Kg	93.8	50-145			101/98.6	50-145	1.8	40
Endosulfan I	SW8081	60022	0.025 U µg/Kg								
Endosulfan II	SW8081	60022	0.057 U µg/Kg								
Endosulfan sulfate	SW8081	60022	0.043 U µg/Kg								
Endrin	SW8081	60022	0.052 U µg/Kg	95.7	50-201			90.4/87.3	50-201	3.51	40
Endrin aldehyde	SW8081	60022	0.066 U µg/Kg								
Endrin ketone	SW8081	60022	0.080 U µg/Kg								
Heptachlor	SW8081	60022	0.039 U µg/Kg	90.9	35-182			85.8/85.2	35-182	0.774	40
Heptachlor epoxide	SW8081	60022	0.11 U µg/Kg								
Methoxychlor	SW8081	60022	1.0 U µg/Kg								
Toxaphene	SW8081	60022	7.3 U µg/Kg								

* An LCSD is performed if required by the method or if there is insufficient sample volume available to perform batch matrix spikes.

I Analyte detected below quantitation limits U Not Detected Above the MDL

Joe Vondrick - Cone (Parrish Plantation) Site--TCLP Tests and New Kit Order

From: "Rick Reynolds" <las@landassessmentservices.com>
To: "'Joe Vondrick'" <Joe.Vondrick@pacelabs.com>
Date: 3/26/2009 2:25 PM
Subject: Cone (Parrish Plantation) Site--TCLP Tests and New Kit Order

Joe,

We need to run TCLP tests for toxaphene on the samples previously collected from:

Barn Area (Pace Lab Order F09030348-002)

SS-15a	0.5”-2.0’
SS-20a	0.5”

Thanks.

Call if you have questions.

Rick Reynolds

LAND ASSESSMENT SERVICES, INC.

Richard C. Reynolds, Vice President
Land Assessment Services, Inc. (affiliate of Mortensen Engineering, Inc. www.meitampa.com)
6408 W. Linebaugh Avenue
Suite 104
Tampa, Florida 33625
813-908-2233
813-908-3588 (fax)
813-335-5811 (cell)
www.landassessmentservices.com

March 27, 2009

Mr. Rick Reynolds
Land Assessment Services, Inc.
6408 W. Linebaugh Avenue
Suite 104
Tampa, FL 33625

RE: Cone Property GW/SW Order No.: F09030842

Dear Mr. Rick Reynolds:

Pace Analytical Services, Inc received 9 samples on 3/20/2009 12:05:00 PM for the analyses presented in the following report. The results included in this report relate only to the samples received.

Analyses are performed with method-required calibration and QA/QC samples, whenever applicable. Method performance, which is based on the calibration and QA/QC data, establishes the validity and certainty of the reported sample results. These data are provided along with the sample results.

Thank you for this opportunity to let Pace Analytical Services, Inc. (Florida) be of service to you. NELAP certification #E83079. If you have any questions regarding this report, please feel free to call me, Joe Vondrick, at (386) 672-5668, extension 4809 or (386) 676-4809.

Sincerely,

Project Manager
Pace Analytical Services, Inc.
P.O. Box 468
Ormond Beach, FL 32175-0468

The test results in this report meet the requirements of the 2003 NELAC standards unless otherwise noted.

The following acronyms may be utilized within this report:

%REC	Percent Recovery
A	Absent
ABLK	Analytical Method Blank
CG	Confluent Growth
CGB	Confluent Growth Without Coliforms
CGC	Confluent Growth With Coliforms
DUP	Sample Duplicate
dw	Dry Weight
kg	Kilograms
L	Liter
LCS	Laboratory Control Spike (may also be appended with an abbreviation indicating spiking level)
MBLK	Preparation Method Blank
MDL	Laboratory Method Detection Limit
mg	Milligrams
ml	Milliliter
MS	Matrix Spike (may also be appended with an abbreviation indicating spiking level)
MSD	Matrix Spike Duplicate (may also be appended with an abbreviation indicating spiking level)
P	Present
PQL	Practical Quantitation Limit
QCS	Alternate source Calibration Verification Standard (may also be reported as analytical LCS in some a
RL	Reporting Limit
RPD	Relative Percent Difference
SPK	Spike
SUB	Indicates subcontracted analytical results
TIC	Tentatively Identified Compound
TNTC	Too Numerous To Count
ug	Micrograms

Case Narrative

CLIENT: Land Assessment Services, Inc.
Project: Cone Property GW/SW
Lab Order: F09030842

I. SAMPLE RECEIVING/ CUSTODY

The samples were received and processed by the Sample Custody section of the laboratory. There were no significant logistics or quality problems unless noted below. All sample containers received for this report were collected by either the client or an agent of the client. All analytical results are provide on an "as received" basis since dissolved metals fractions were filtered in the field.

II. ANALYTICAL DATA

The samples were analyzed according to the laboratory's Standard Operating Procedures for the methodologies requested. There were no significant logistics or quality problems unless noted below or in the text of the report.

III. QUALITY CONTROL

There were no significant quality control problems unless noted below or in the text of the report.

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09030842
Project: Cone Property GW/SW

Lab ID: F09030842-001 **Collection Date:** 3/19/2009 10:47:00 AM
Client Sample ID: MW- 6B **Sample Description:** **Matrix:** Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	5.3	I	5.0	10	µg/L	1	03/23/09 18:29	60303
ICP METALS (DISSOLVED)		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	6.4	I	5.0	10	µg/L	1	03/23/09 18:40	60303

Lab ID: F09030842-002 **Collection Date:** 3/19/2009 11:17:00 AM
Client Sample ID: MW 6 **Sample Description:** **Matrix:** Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	5.0	U	5.0	10	µg/L	1	03/23/09 18:44	60303
ICP METALS (DISSOLVED)		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	5.0	U	5.0	10	µg/L	1	03/23/09 18:48	60303

Lab ID: F09030842-003 **Collection Date:** 3/19/2009 12:12:00 PM
Client Sample ID: MW 6A **Sample Description:** **Matrix:** Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	15		5.0	10	µg/L	1	03/23/09 18:51	60303
ICP METALS (DISSOLVED)		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	15		5.0	10	µg/L	1	03/23/09 18:55	60303

Data Qualifier Code Key: I Analyte detected below quantitation limits U Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09030842
Project: Cone Property GW/SW

Lab ID: F09030842-004 **Collection Date:** 3/19/2009 1:08:00 PM
Client Sample ID: MW 5 **Sample Description:** **Matrix:** Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	5.0	U	5.0	10	µg/L	1	03/23/09 18:59	60303
ICP METALS (DISSOLVED)		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	5.0	U	5.0	10	µg/L	1	03/23/09 19:03	60303

Lab ID: F09030842-005 **Collection Date:** 3/19/2009 3:50:00 PM
Client Sample ID: MW 7 **Sample Description:** **Matrix:** Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	5.0	U	5.0	10	µg/L	1	03/23/09 19:06	60303
ICP METALS (DISSOLVED)		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	5.0	U	5.0	10	µg/L	1	03/23/09 19:10	60303

Lab ID: F09030842-006 **Collection Date:** 3/19/2009 2:12:00 PM
Client Sample ID: MW 7A **Sample Description:** **Matrix:** Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	5.0	U	5.0	10	µg/L	1	03/23/09 19:14	60303
ICP METALS (DISSOLVED)		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	5.0	U	5.0	10	µg/L	1	03/23/09 19:25	60303

Data Qualifier Code Key: I Analyte detected below quantitation limits U Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09030842
Project: Cone Property GW/SW

Lab ID: F09030842-007 **Collection Date:** 3/19/2009 2:35:00 PM
Client Sample ID: MW 7B **Sample Description:** **Matrix:** Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	5.0	U	5.0	10	µg/L	1	03/23/09 19:29	60303
ICP METALS (DISSOLVED)		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	5.0	U	5.0	10	µg/L	1	03/23/09 19:32	60303

Lab ID: F09030842-008 **Collection Date:** 3/19/2009 2:46:00 PM
Client Sample ID: SW-1 **Sample Description:** **Matrix:** Surface Water

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	6.0	I	5.0	10	µg/L	1	03/23/09 19:36	60303

Lab ID: F09030842-009 **Collection Date:** 3/19/2009 2:52:00 PM
Client Sample ID: SW-2 **Sample Description:** **Matrix:** Surface Water

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/23/2009 9:10:00 A**				Analyst: **TPI**	
Arsenic	5.0	U	5.0	10	µg/L	1	03/23/09 19:40	60303

Data Qualifier Code Key: I Analyte detected below quantitation limits U Not Detected Above the MDL

QC Review Summary

F09030842

Batch ID: 60303							
	Precision		***Accuracy***				
SW6010	***% RPD***	***Limit***	***% REC***	***Low***	***High***	***MB***	***Units***
Arsenic	2.26	20					
Arsenic	2.26	20	108	80	120		
Arsenic	2.26	20	108	80	120	5.0 U	µg/L

Batch ID: 60303							
	Precision		***Accuracy***				
SW6010	***% RPD***	***Limit***	***% REC***	***Low***	***High***	***MB***	***Units***
Arsenic	2.26	20	108	80	120	5.0 U	µg/L

I Analyte detected below quantitation limits U Not Detected Above the MDL

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

FO903084 2 (LANASS)

Page: 1 of 1

1224941

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Land Assessment Services	Report To:	Attention:
Address: 6408 W. Linebaugh Ave #104	Copy To:	Company Name:
Tampa, FL		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: 813 908 2233 Fax: 813 9083588	Project Name:	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes — MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Requested Analysis Filtered (Y/N): AS (Filtered)	AS (Un Filtered)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW 6B	WT		3-19-09	1045	3-19-09	1047		2			2							1	1		
2	MW 6	WT		3-19-09	1115	3-19-09	1117		2			2							1	1		
3	MW 6A	WT		3-19-09	1210	3-19-09	1212		2			2							1	1		
4	MW 5	WT		3-19-09	1305		1308		2			2							1	1		
5	MW 7	WT		3-19-09	1348		1350		2			2							1	1		
6	MW 7A	WT			1410		1412		2			2							1	1		
7	MW 7B	WT			1433		1435		2			2							1	1		
8	SW-1	WT			1446				1			1								1		
9	SW-2	WT			1452				1			1								1		
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	EMPM Environmental	3-4-09	1600		3-4-09	1600				
		3-19-09	1355		3-19-09	1355				
		3-20-09	0900		3/20/9	1205	2.1			
							1.2	Y		Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Gray

SIGNATURE of SAMPLER: Eric Gray

DATE Signed (MM/DD/YY): 3-19-09

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

March 18, 2009

Mr. Rick Reynolds
Land Assessment Services, Inc.
6408 W. Linebaugh Avenue
Suite 104
Tampa, FL 33625

RE: Cone Property Soil 2nd set Order No.: F09030446

Dear Mr. Rick Reynolds:

Pace Analytical Services, Inc received 14 samples on 3/11/2009 1:10:00 PM for the analyses presented in the following report. The results included in this report relate only to the samples received.

Analyses are performed with method-required calibration and QA/QC samples, whenever applicable. Method performance, which is based on the calibration and QA/QC data, establishes the validity and certainty of the reported sample results. These data are provided along with the sample results.

Thank you for this opportunity to let Pace Analytical Services, Inc. (Florida) be of service to you. NELAP certification #E83079. If you have any questions regarding this report, please feel free to call me, Joe Vondrick, at (386) 672-5668, extension 4809 or (386) 676-4809.

Sincerely,

Project Manager
Pace Analytical Services, Inc.
P.O. Box 468
Ormond Beach, FL 32175-0468

The test results in this report meet the requirements of the 2003 NELAC standards unless otherwise noted.

The following acronyms may be utilized within this report:

%REC	Percent Recovery
A	Absent
ABLK	Analytical Method Blank
CG	Confluent Growth
CGB	Confluent Growth Without Coliforms
CGC	Confluent Growth With Coliforms
DUP	Sample Duplicate
dw	Dry Weight
kg	Kilograms
L	Liter
LCS	Laboratory Control Spike (may also be appended with an abbreviation indicating spiking level)
MBLK	Preparation Method Blank
MDL	Laboratory Method Detection Limit
mg	Milligrams
ml	Milliliter
MS	Matrix Spike (may also be appended with an abbreviation indicating spiking level)
MSD	Matrix Spike Duplicate (may also be appended with an abbreviation indicating spiking level)
P	Present
PQL	Practical Quantitation Limit
QCS	Alternate source Calibration Verification Standard (may also be reported as analytical LCS in some a
RL	Reporting Limit
RPD	Relative Percent Difference
SPK	Spike
SUB	Indicates subcontracted analytical results
TIC	Tentatively Identified Compound
TNTC	Too Numerous To Count
ug	Micrograms

Case Narrative

CLIENT: Land Assessment Services, Inc.
Project: Cone Property Soil 2nd set
Lab Order: F09030446

I. SAMPLE RECEIVING/ CUSTODY

The samples were received and processed by the Sample Custody section of the laboratory. There were no significant logistics or quality problems unless noted below. All sample containers received for this report were collected by either the client or an agent of the client.

II. ANALYTICAL DATA

The samples were analyzed according to the laboratory's Standard Operating Procedures for the methodologies requested. There were no significant logistics or quality problems unless noted below or in the text of the report.

III. QUALITY CONTROL

There were no significant quality control problems unless noted below or in the text of the report.

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09030446
Project: Cone Property Soil 2nd set

Lab ID: F09030446-001 **Collection Date:** 3/10/2009 11:00:00 AM
Client Sample ID: SA-22 0.5 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	1.5		0.28	0.56	mg/Kg-dry	1	03/12/09 21:55	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	68.2		0.100	0.100	%	1	03/13/09	R77121

Lab ID: F09030446-002 **Collection Date:** 3/10/2009 11:00:00 AM
Client Sample ID: SA-22 0.5-2.0 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	1.4		0.26	0.51	mg/Kg-dry	1	03/12/09 21:59	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	77.7		0.100	0.100	%	1	03/13/09	R77121

Lab ID: F09030446-003 **Collection Date:** 3/10/2009 11:00:00 AM
Client Sample ID: SA-22 4.0' **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	7.1		0.23	0.47	mg/Kg-dry	1	03/12/09 22:03	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	80.0		0.100	0.100	%	1	03/13/09	R77121

Data Qualifier Code Key: I Analyte detected below quantitation limits BDL Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09030446
Project: Cone Property Soil 2nd set

Lab ID: F09030446-004 **Collection Date:** 3/10/2009 11:20:00 AM
Client Sample ID: SA-N 0.5 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	0.34	I	0.20	0.40	mg/Kg-dry	1	03/12/09 22:06	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	96.3		0.100	0.100	%	1	03/13/09	R77121

Lab ID: F09030446-005 **Collection Date:** 3/10/2009 11:20:00 AM
Client Sample ID: SA-N 0.5-2.0 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	BDL		0.20	0.41	mg/Kg-dry	1	03/12/09 22:10	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	97.8		0.100	0.100	%	1	03/13/09	R77121

Lab ID: F09030446-006 **Collection Date:** 3/10/2009 11:20:00 AM
Client Sample ID: SA-N 4.0' **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	0.63		0.24	0.48	mg/Kg-dry	1	03/12/09 22:21	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	85.1		0.100	0.100	%	1	03/13/09	R77121

Data Qualifier Code Key: I Analyte detected below quantitation limits BDL Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09030446
Project: Cone Property Soil 2nd set

Lab ID: F09030446-007 **Collection Date:** 3/10/2009 12:00:00 PM
Client Sample ID: SA-35 0.5 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	15		0.52	1.0	mg/Kg-dry	1	03/12/09 22:25	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	39.5		0.100	0.100	%	1	03/13/09	R77121

Lab ID: F09030446-008 **Collection Date:** 3/10/2009 12:00:00 PM
Client Sample ID: SA-35 0.5-2.0 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	14		0.39	0.77	mg/Kg-dry	1	03/12/09 22:30	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	54.1		0.100	0.100	%	1	03/13/09	R77121

Lab ID: F09030446-009 **Collection Date:** 3/10/2009 12:30:00 PM
Client Sample ID: SA-40 0.5 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	4.7		0.41	0.83	mg/Kg-dry	1	03/12/09 22:35	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	47.3		0.100	0.100	%	1	03/13/09	R77121

Data Qualifier Code Key: I Analyte detected below quantitation limits BDL Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09030446
Project: Cone Property Soil 2nd set

Lab ID: F09030446-010 **Collection Date:** 3/10/2009 12:00:00 PM
Client Sample ID: SA-35 0.5-2.0 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	15		0.50	0.99	mg/Kg-dry	1	03/12/09 22:39	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	42.4		0.100	0.100	%	1	03/13/09	R77121

Lab ID: F09030446-011 **Collection Date:** 3/10/2009 1:00:00 PM
Client Sample ID: SA-S 0.5 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	1.7		0.29	0.57	mg/Kg-dry	1	03/12/09 22:43	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	72.2		0.100	0.100	%	1	03/13/09	R77121

Lab ID: F09030446-012 **Collection Date:** 3/10/2009 1:00:00 PM
Client Sample ID: SA-S 0.5-2.0 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	0.56		0.22	0.44	mg/Kg-dry	1	03/12/09 22:47	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	85.9		0.100	0.100	%	1	03/13/09	R77121

Data Qualifier Code Key: I Analyte detected below quantitation limits BDL Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09030446
Project: Cone Property Soil 2nd set

Lab ID: F09030446-013 **Collection Date:** 3/10/2009 1:30:00 PM
Client Sample ID: SA-W 0.5 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	2.2		0.25	0.50	mg/Kg-dry	1	03/12/09 22:50	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	73.5		0.100	0.100	%	1	03/13/09	R77121

Lab ID: F09030446-014 **Collection Date:** 3/10/2009 1:30:00 PM
Client Sample ID: SA-W 0.5-2.0 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/12/2009 7:59:00 A**				Analyst: **TPI**	
Arsenic	0.59		0.23	0.47	mg/Kg-dry	1	03/12/09 11:42	60035
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	82.2		0.100	0.100	%	1	03/13/09	R77121

Data Qualifier Code Key: I Analyte detected below quantitation limits BDL Not Detected Above the MDL

QC Summary

F09030446

	Method	*Batch ID*	*Method Blank*	* *LCS/LCSD or DUP*				*MS/MSD*			
				% Recovery	*Control Limits*	*RPD*	*RPD Limit*	*% Recovery*	*Control Limits*	*RPD*	*RPD Limit*
Percent Solid	SM2540G	R77121				1.15	10				
	SM2540G	R77121				0.492	10				
	SM2540G	R77121				0.516	10				
Arsenic	SW6010	60035	0.20 U mg/Kg	107	80-120			107/107	75-125	1.23	20

* An LCSD is performed if required by the method or if there is insufficient sample volume available to perform batch matrix spikes.

I Analyte detected below quantitation limits U Not Detected Above the MDL

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

F0903044G
LANASS

Page: 1 of 1

1224946

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Land Assessment Services	Report To:	Attention:
Address: 6408 W. Linebaugh Ave Suite 104 Tampa, FL 33625	Copy To:	Company Name:
Email To: lus@landassessmentservices.com	Purchase Order No.:	Address:
Phone: (813)908-2233 Fax: (813)908-3588	Project Name:	Pace Quote Reference:
Requested Due Date/TAT:	Project Number:	Pace Project Manager:
		Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test ↓ AS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SA-22 0.5, 0.5-2.0, 4.0		SL		3-10-09	11:00				3	3									3	
2	SA-N 0.5, 0.5-2.0, 4.0		SL		3-10-09	11:20				3	3									3	
3	SA-35 0.5, 0.5-2.0		SL		3-10-09	12:00				2	2									2	
4	SA-40 0.5, 0.5-2.0		SL		3-10-09	12:30				2	2									2	
5	SA-S 0.5, 0.5-2.0		SL		3-10-09	13:00				2	2									2	
6	SA-W 0.5, 0.5-2.0		SL		3-10-09	13:30				2	2									2	
7																					
8																					
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	EMPTY CONTAINERS	3-4-09	1600		3-4-09	1600	
		3-10-09	1430		3-10-09	1430	
					3.11.9	1310	S1
							34.2 N Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

June 03, 2009

Mr. Rick Reynolds
Land Assessment Services, Inc.
6408 W. Linebaugh Avenue
Suite 104
Tampa, FL 33625

RE: Cone Property/Parrish Site Order No.: F09040465

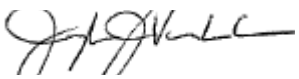
Dear Mr. Rick Reynolds:

Pace Analytical Services, Inc received 13 samples on 4/9/2009 11:00:00 AM for the analyses presented in the following report. The results included in this report relate only to the samples received.

Analyses are performed with method-required calibration and QA/QC samples, whenever applicable. Method performance, which is based on the calibration and QA/QC data, establishes the validity and certainty of the reported sample results. These data are provided along with the sample results.

Thank you for this opportunity to let Pace Analytical Services, Inc. (Florida) be of service to you. NELAP certification #E83079. If you have any questions regarding this report, please feel free to call me, Joe Vondrick, at (386) 672-5668, extension 4809 or (386) 676-4809.

Sincerely,



Project Manager
Pace Analytical Services, Inc.
P.O. Box 468
Ormond Beach, FL 32175-0468

The test results in this report meet the requirements of the 2003 NELAC standards unless otherwise noted.

The following acronyms may be utilized within this report:

%REC	Percent Recovery
A	Absent
ABLK	Analytical Method Blank
CG	Confluent Growth
CGB	Confluent Growth Without Coliforms
CGC	Confluent Growth With Coliforms
DUP	Sample Duplicate
dw	Dry Weight
kg	Kilograms
L	Liter
LCS	Laboratory Control Spike (may also be appended with an abbreviation indicating spiking level)
MBLK	Preparation Method Blank
MDL	Laboratory Method Detection Limit
mg	Milligrams
ml	Milliliter
MS	Matrix Spike (may also be appended with an abbreviation indicating spiking level)
MSD	Matrix Spike Duplicate (may also be appended with an abbreviation indicating spiking level)
P	Present
PQL	Practical Quantitation Limit
QCS	Alternate source Calibration Verification Standard (may also be reported as analytical LCS in some a
RL	Reporting Limit
RPD	Relative Percent Difference
SPK	Spike
SUB	Indicates subcontracted analytical results
TIC	Tentatively Identified Compound
TNTC	Too Numerous To Count
ug	Micrograms

Case Narrative

CLIENT: Land Assessment Services, Inc.
Project: Cone Property/Parrish Site
Lab Order: F09040465

I. SAMPLE RECEIVING/ CUSTODY

The samples were received and processed by the Sample Custody section of the laboratory. There were no significant logistics or quality problems unless noted below. All sample containers received for this report were collected by either the client or an agent of the client. All analytical results were provide on an "as received" basis since dissolved metals fractions were filtered in the field, except for soil samples where analytical results were provided on a dry weight basis. Some confusion was encountered during check-in processing of the number of samples and parameters requested on the original COC.

II. ANALYTICAL DATA

The samples were analyzed according to the laboratory's Standard Operating Procedures for the methodologies requested. There were no significant logistics or quality problems unless noted below or in the text of the report. Recommended holding time for pesticide extraction is 14 days from collection, which had passed upon notification. Samples required a dilution for method 8081 due to matrix interference or abundance of target compounds in the matrix, which resulted in elevated reporting limits for other target compounds. For these samples, the surrogate data outside method guidance criteria were due to matrix interference, as identified on the report.

III. QUALITY CONTROL

There were no significant quality control problems unless noted below or in the text of the report. The MS/MSD data outside accepted recovery limits were due to possible sample matrix effects of the selected batch QC sample, however, the associated LCS data were within guidance criteria for the method. Toxaphene UQL std removed, however sample data within curve.

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09040465
Project: Cone Property/Parrish Site

Lab ID: F09040465-001 **Collection Date:** 4/8/2009 10:25:00 AM
Client Sample ID: MW-6A **Sample Description:** **Matrix:** Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **4/10/2009 8:53:00 A**				Analyst: **TPI**	
Arsenic	0.014		0.0050	0.010	mg/L	1	04/11/09 03:10	60760
ICP METALS (DISSOLVED)		**SW6010**	PrepDate: **4/10/2009 8:53:00 A**				Analyst: **TPI**	
Arsenic	0.015		0.0050	0.010	mg/L	1	04/11/09 03:06	60760

Lab ID: F09040465-002 **Collection Date:** 4/8/2009 1:47:00 PM
Client Sample ID: MW-8T **Sample Description:** **Matrix:** Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **4/10/2009 8:53:00 A**				Analyst: **TPI**	
Arsenic	0.014		0.0050	0.010	mg/L	1	04/11/09 03:17	60760
ICP METALS (DISSOLVED)		**SW6010**	PrepDate: **4/10/2009 8:53:00 A**				Analyst: **TPI**	
Arsenic	0.0098	I	0.0050	0.010	mg/L	1	04/11/09 03:13	60760

Lab ID: F09040465-003 **Collection Date:** 4/8/2009 10:00:00 AM
Client Sample ID: MW-6A 0.5-2.0 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **4/14/2009 7:41:00 A**				Analyst: **TPI**	
Arsenic	1.4		0.25	0.49	mg/Kg-dry	1	04/16/09 03:13	60834
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	81.5		0.100	0.100	%	1	04/10/09	R77995

Data Qualifier Code Key:
I Analyte detected below quantitation limits
BDL Not Detected Above the MDL
S Spike Recovery outside accepted recovery limits

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09040465
Project: Cone Property/Parrish Site

Lab ID: F09040465-004 **Collection Date:** 4/8/2009 12:10:00 PM
Client Sample ID: SS 20A **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **4/14/2009 7:41:00 A**				Analyst: **TPI**	
Lead	16		0.24	0.48	mg/Kg-dry	1	04/16/09 03:16	60834
8260: VOLATILE ORGANIC COMPOUNDS		**SW8260**	PrepDate: **4/15/2009 8:00:00 A**				Analyst: **ALA**	
Benzene	0.014		0.0054	0.011	mg/Kg-dry	1	04/15/09 13:20	60935
Ethylbenzene	BDL		0.0060	0.011	mg/Kg-dry	1	04/15/09 13:20	60935
Toluene	0.0074	I	0.0057	0.011	mg/Kg-dry	1	04/15/09 13:20	60935
Xylenes, Total	BDL		0.011	0.032	mg/Kg-dry	1	04/15/09 13:20	60935
Surr: 4-Bromofluorobenzene	66.2		0	55-148	%REC	1	04/15/09 13:20	60935
Surr: Dibromofluoromethane	105		0	82-115	%REC	1	04/15/09 13:20	60935
Surr: Toluene-d8	88.7		0	84-117	%REC	1	04/15/09 13:20	60935
Surr: 1,2-Dichloroethane-d4	112		0	80-131	%REC	1	04/15/09 13:20	60935
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	80.6		0.100	0.100	%	1	04/10/09	R77995

Data Qualifier Code Key:
I Analyte detected below quantitation limits
BDL Not Detected Above the MDL
S Spike Recovery outside accepted recovery limits

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09040465
Project: Cone Property/Parrish Site

Lab ID: F09040465-005 **Collection Date:** 4/8/2009 12:20:00 PM
Client Sample ID: SS 20B 0-0.5' **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **4/14/2009 7:41:00 A**				Analyst: **TPI**	
Arsenic	0.64		0.22	0.44	mg/Kg-dry	1	04/16/09 03:21	60834
8081: PESTICIDES, ORGANOCHLORINE		**SW8081**	PrepDate: **5/27/2009 9:30:00 A**				Analyst: **JKR**	
Aldrin	BDL		0.000063	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
alpha-BHC	BDL		0.000075	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
beta-BHC	BDL		0.000083	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
delta-BHC	BDL		0.000094	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
gamma-BHC	BDL		0.00016	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
alpha-Chlordane	0.017		0.000040	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
gamma-Chlordane	0.029		0.00073	0.018	mg/Kg-dry	10	05/30/09 13:53	61900
Chlordane	BDL		0.017	0.018	mg/Kg-dry	1	05/30/09 14:44	61900
4,4'-DDD	BDL		0.00014	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
4,4'-DDE	0.085		0.00066	0.018	mg/Kg-dry	10	05/30/09 13:53	61900
4,4'-DDT	0.049		0.0010	0.018	mg/Kg-dry	10	05/30/09 13:53	61900
Dieldrin	0.012		0.000043	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
Endosulfan I	BDL		0.000027	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
Endosulfan II	BDL		0.000062	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
Endosulfan sulfate	BDL		0.000046	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
Endrin	BDL		0.000056	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
Endrin aldehyde	BDL		0.000071	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
Endrin ketone	BDL		0.000086	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
Heptachlor	BDL		0.000042	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
Heptachlor epoxide	0.0029		0.00012	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
Methoxychlor	BDL		0.0011	0.0018	mg/Kg-dry	1	05/30/09 14:44	61900
Toxaphene	0.98		0.079	0.18	mg/Kg-dry	10	05/30/09 13:53	61900
Surr: Decachlorobiphenyl	98.2		0	70-130	%REC	1	05/30/09 14:44	61900
Surr: Tetrachloro-m-xylene	85.6		0	70-130	%REC	1	05/30/09 14:44	61900
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	91.9		0.100	0.100	%	1	04/10/09	R77995

Data Qualifier Code Key:
I Analyte detected below quantitation limits
S Spike Recovery outside accepted recovery limits
BDL Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09040465
Project: Cone Property/Parrish Site

Lab ID: F09040465-006 **Collection Date:** 4/8/2009 12:30:00 PM
Client Sample ID: SS 19D 0.5-2.0' **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **4/14/2009 7:41:00 A**				Analyst: **TPI**	
Arsenic	0.79		0.19	0.39	mg/Kg-dry	1	04/16/09 03:26	60834
8081: PESTICIDES, ORGANOCHLORINE		**SW8081**	PrepDate: **5/8/2009 8:30:00 AM**				Analyst: **JKR**	
Aldrin	BDL		0.000063	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
alpha-BHC	BDL		0.000074	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
beta-BHC	BDL		0.000083	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
delta-BHC	BDL		0.000094	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
gamma-BHC	BDL		0.00016	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
alpha-Chlordane	0.0012	I	0.000040	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
gamma-Chlordane	BDL		0.000073	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
Chlordane	BDL		0.017	0.018	mg/Kg-dry	1	05/11/09 22:18	61469
4,4'-DDD	BDL		0.00014	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
4,4'-DDE	BDL		0.000066	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
4,4'-DDT	0.0015	I	0.00010	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
Dieldrin	0.0018		0.000043	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
Endosulfan I	BDL		0.000027	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
Endosulfan II	BDL		0.000061	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
Endosulfan sulfate	BDL		0.000046	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
Endrin	BDL		0.000056	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
Endrin aldehyde	BDL		0.000071	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
Endrin ketone	BDL		0.000086	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
Heptachlor	BDL		0.000042	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
Heptachlor epoxide	0.0011	I	0.00012	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
Methoxychlor	BDL		0.0011	0.0018	mg/Kg-dry	1	05/11/09 22:18	61469
Toxaphene	0.019		0.0079	0.018	mg/Kg-dry	1	05/13/09 15:32	61469
Surr: Decachlorobiphenyl	81.6		0	70-130	%REC	1	05/11/09 22:18	61469
Surr: Tetrachloro-m-xylene	75.7		0	70-130	%REC	1	05/11/09 22:18	61469
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	92.4		0.100	0.100	%	1	04/10/09	R77995

Data Qualifier Code Key:
I Analyte detected below quantitation limits
S Spike Recovery outside accepted recovery limits
BDL Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09040465
Project: Cone Property/Parrish Site

Lab ID: F09040465-007 **Collection Date:** 4/8/2009 12:35:00 PM
Client Sample ID: SS 19C 0.5-2.0' **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **4/14/2009 7:41:00 A**				Analyst: **TPI**	
Arsenic	0.97		0.20	0.40	mg/Kg-dry	1	04/16/09 03:29	60834
8081: PESTICIDES, ORGANOCHLORINE		**SW8081**	PrepDate: **5/8/2009 8:30:00 AM**				Analyst: **JKR**	
Aldrin	BDL		0.000061	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
alpha-BHC	BDL		0.000073	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
beta-BHC	BDL		0.000081	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
delta-BHC	BDL		0.000092	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
gamma-BHC	BDL		0.00016	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
alpha-Chlordane	BDL		0.000039	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
gamma-Chlordane	BDL		0.000072	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
Chlordane	BDL		0.017	0.018	mg/Kg-dry	1	05/11/09 22:52	61469
4,4'-DDD	BDL		0.00014	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
4,4'-DDE	0.0016	I	0.000064	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
4,4'-DDT	0.0021		0.00010	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
Dieldrin	BDL		0.000042	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
Endosulfan I	BDL		0.000026	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
Endosulfan II	BDL		0.000060	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
Endosulfan sulfate	BDL		0.000045	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
Endrin	BDL		0.000055	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
Endrin aldehyde	BDL		0.000070	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
Endrin ketone	BDL		0.000085	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
Heptachlor	BDL		0.000041	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
Heptachlor epoxide	BDL		0.00012	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
Methoxychlor	BDL		0.0011	0.0018	mg/Kg-dry	1	05/11/09 22:52	61469
Toxaphene	0.021		0.0078	0.018	mg/Kg-dry	1	05/13/09 15:49	61469
Surr: Decachlorobiphenyl	87.4		0	70-130	%REC	1	05/11/09 22:52	61469
Surr: Tetrachloro-m-xylene	76.9		0	70-130	%REC	1	05/11/09 22:52	61469
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	94.3		0.100	0.100	%	1	04/10/09	R77995

Data Qualifier Code Key:
I Analyte detected below quantitation limits
BDL Not Detected Above the MDL
S Spike Recovery outside accepted recovery limits

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09040465
Project: Cone Property/Parrish Site

Lab ID: F09040465-008 **Collection Date:** 4/8/2009 12:40:00 PM
Client Sample ID: SS 15B 0-0.5' **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate:	**4/14/2009 7:41:00 A**			Analyst: **TPI**	
Arsenic	4.4		0.23	0.47	mg/Kg-dry	1	04/16/09 03:33	60834
8081: PESTICIDES, ORGANOCHLORINE		**SW8081**	PrepDate:	**5/8/2009 8:30:00 AM**			Analyst: **JKR**	
Aldrin	BDL		0.0067	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
alpha-BHC	BDL		0.0080	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
beta-BHC	BDL		0.0089	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
delta-BHC	BDL		0.010	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
gamma-BHC	BDL		0.017	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
alpha-Chlordane	BDL		0.0043	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
gamma-Chlordane	BDL		0.0079	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
Chlordane	BDL		1.8	2.0	mg/Kg-dry	100	05/12/09 01:42	61469
4,4'-DDD	0.13	I	0.015	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
4,4'-DDE	0.087	I	0.0070	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
4,4'-DDT	0.073	I	0.011	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
Dieldrin	BDL		0.0046	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
Endosulfan I	BDL		0.0029	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
Endosulfan II	BDL		0.0066	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
Endosulfan sulfate	BDL		0.0050	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
Endrin	BDL		0.0060	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
Endrin aldehyde	BDL		0.0076	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
Endrin ketone	BDL		0.0092	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
Heptachlor	BDL		0.0045	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
Heptachlor epoxide	BDL		0.013	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
Methoxychlor	BDL		0.12	0.20	mg/Kg-dry	100	05/12/09 01:42	61469
Toxaphene	10		0.85	2.0	mg/Kg-dry	100	05/13/09 16:23	61469
Surr: Decachlorobiphenyl	0	S	0	70-130	%REC	100	05/12/09 01:42	61469
Surr: Tetrachloro-m-xylene	109		0	70-130	%REC	100	05/12/09 01:42	61469
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	86.6		0.100	0.100	%	1	04/10/09	R77995

Data Qualifier Code Key:
I Analyte detected below quantitation limits
BDL Not Detected Above the MDL
S Spike Recovery outside accepted recovery limits

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09040465
Project: Cone Property/Parrish Site

Lab ID: F09040465-009 **Collection Date:** 4/8/2009 10:00:00 AM
Client Sample ID: MW-6A 0-0.5' **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **4/14/2009 7:41:00 A**				Analyst: **TPI**	
Arsenic	0.69		0.27	0.53	mg/Kg-dry	1	04/16/09 03:38	60834
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	76.7		0.100	0.100	%	1	04/15/09	R78130

Data Qualifier Code Key:
I Analyte detected below quantitation limits
BDL Not Detected Above the MDL
S Spike Recovery outside accepted recovery limits

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09040465
Project: Cone Property/Parrish Site

Lab ID: F09040465-010 **Collection Date:** 4/8/2009 12:20:00 PM
Client Sample ID: SS-20B 0.5-2.0' **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **4/14/2009 7:41:00 A**				Analyst: **TPI**	
Arsenic	2.8		0.23	0.45	mg/Kg-dry	1	04/16/09 03:42	60834
8081: PESTICIDES, ORGANOCHLORINE		**SW8081**	PrepDate: **5/8/2009 8:30:00 AM**				Analyst: **JKR**	
Aldrin	BDL		0.0031	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
alpha-BHC	BDL		0.0037	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
beta-BHC	BDL		0.0041	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
delta-BHC	BDL		0.0047	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
gamma-BHC	BDL		0.0079	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
alpha-Chlordane	BDL		0.0020	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
gamma-Chlordane	0.024	I	0.0036	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
Chlordane	BDL		0.85	0.91	mg/Kg-dry	50	05/12/09 01:59	61469
4,4'-DDD	0.13		0.0070	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
4,4'-DDE	0.34		0.0033	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
4,4'-DDT	0.30		0.0051	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
Dieldrin	BDL		0.0021	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
Endosulfan I	BDL		0.0013	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
Endosulfan II	BDL		0.0030	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
Endosulfan sulfate	BDL		0.0023	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
Endrin	BDL		0.0028	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
Endrin aldehyde	BDL		0.0035	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
Endrin ketone	BDL		0.0043	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
Heptachlor	BDL		0.0021	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
Heptachlor epoxide	BDL		0.0059	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
Methoxychlor	BDL		0.056	0.091	mg/Kg-dry	50	05/12/09 01:59	61469
Toxaphene	4.5		0.39	0.91	mg/Kg-dry	50	05/13/09 16:40	61469
Surr: Decachlorobiphenyl	0	S	0	70-130	%REC	50	05/12/09 01:59	61469
Surr: Tetrachloro-m-xylene	84.5		0	70-130	%REC	50	05/12/09 01:59	61469
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	91.6		0.100	0.100	%	1	04/15/09	R78130

Data Qualifier Code Key:
I Analyte detected below quantitation limits
S Spike Recovery outside accepted recovery limits
BDL Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09040465
Project: Cone Property/Parrish Site

Lab ID: F09040465-011 **Collection Date:** 4/8/2009 12:30:00 PM
Client Sample ID: SS-19D 0-0.5' **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **4/14/2009 7:41:00 A**				Analyst: **TPI**	
Arsenic	1.4		0.24	0.47	mg/Kg-dry	1	04/16/09 03:54	60834
8081: PESTICIDES, ORGANOCHLORINE		**SW8081**	PrepDate: **5/8/2009 8:30:00 AM**				Analyst: **JKR**	
Aldrin	BDL		0.0016	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
alpha-BHC	BDL		0.0019	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
beta-BHC	BDL		0.0021	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
delta-BHC	BDL		0.0024	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
gamma-BHC	BDL		0.0041	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
alpha-Chlordane	0.0068	I	0.0010	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
gamma-Chlordane	0.034	I	0.0019	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
Chlordane	BDL		0.44	0.47	mg/Kg-dry	25	05/12/09 02:16	61469
4,4'-DDD	0.034	I	0.0036	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
4,4'-DDE	0.12		0.0017	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
4,4'-DDT	0.10		0.0026	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
Dieldrin	0.051		0.0011	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
Endosulfan I	BDL		0.00069	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
Endosulfan II	0.052		0.0016	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
Endosulfan sulfate	BDL		0.0012	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
Endrin	BDL		0.0014	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
Endrin aldehyde	BDL		0.0018	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
Endrin ketone	BDL		0.0022	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
Heptachlor	BDL		0.0011	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
Heptachlor epoxide	BDL		0.0031	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
Methoxychlor	BDL		0.029	0.047	mg/Kg-dry	25	05/12/09 02:16	61469
Toxaphene	2.2		0.20	0.47	mg/Kg-dry	25	05/13/09 16:57	61469
Surr: Decachlorobiphenyl	0	S	0	70-130	%REC	25	05/12/09 02:16	61469
Surr: Tetrachloro-m-xylene	67.8	S	0	70-130	%REC	25	05/12/09 02:16	61469
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	89.7		0.100	0.100	%	1	04/15/09	R78130

Data Qualifier Code Key:
I Analyte detected below quantitation limits
S Spike Recovery outside accepted recovery limits
BDL Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09040465
Project: Cone Property/Parrish Site

Lab ID: F09040465-012 **Collection Date:** 4/8/2009 12:35:00 PM
Client Sample ID: SS-19C 0-0.5' **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **4/14/2009 7:41:00 A**				Analyst: **TPI**	
Arsenic	3.6		0.26	0.53	mg/Kg-dry	1	04/16/09 03:59	60834
8081: PESTICIDES, ORGANOCHLORINE		**SW8081**	PrepDate: **5/8/2009 8:30:00 AM**				Analyst: **JKR**	
Aldrin	BDL		0.00075	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
alpha-BHC	BDL		0.00089	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
beta-BHC	BDL		0.00099	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
delta-BHC	BDL		0.0011	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
gamma-BHC	BDL		0.0019	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
alpha-Chlordane	BDL		0.00048	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
gamma-Chlordane	0.010	I	0.00087	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
Chlordane	BDL		0.20	0.22	mg/Kg-dry	10	05/12/09 02:33	61469
4,4'-DDD	0.020	I	0.0017	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
4,4'-DDE	0.087		0.00078	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
4,4'-DDT	0.042		0.0012	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
Dieldrin	0.011	I	0.00051	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
Endosulfan I	BDL		0.00032	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
Endosulfan II	0.027		0.00073	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
Endosulfan sulfate	BDL		0.00055	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
Endrin	BDL		0.00067	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
Endrin aldehyde	BDL		0.00085	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
Endrin ketone	BDL		0.0010	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
Heptachlor	BDL		0.00050	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
Heptachlor epoxide	BDL		0.0014	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
Methoxychlor	BDL		0.014	0.022	mg/Kg-dry	10	05/12/09 02:33	61469
Toxaphene	1.3		0.094	0.22	mg/Kg-dry	10	05/13/09 18:40	61469
Surr: Decachlorobiphenyl	51.9	S	0	70-130	%REC	10	05/12/09 02:33	61469
Surr: Tetrachloro-m-xylene	72.3		0	70-130	%REC	10	05/12/09 02:33	61469
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	76.5		0.100	0.100	%	1	04/15/09	R78130

Data Qualifier Code Key:
I Analyte detected below quantitation limits
S Spike Recovery outside accepted recovery limits
BDL Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc. **Lab Order:** F09040465
Project: Cone Property/Parrish Site

Lab ID: F09040465-013 **Collection Date:** 4/8/2009 12:40:00 PM
Client Sample ID: SS-15B 0.5-2.0 **Sample Description:** **Matrix:** Soil

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **4/14/2009 7:41:00 A**				Analyst: **TPI**	
Arsenic	2.4		0.22	0.43	mg/Kg-dry	1	04/16/09 04:04	60834
8081: PESTICIDES, ORGANOCHLORINE		**SW8081**	PrepDate: **5/8/2009 8:30:00 AM**				Analyst: **JKR**	
Aldrin	BDL		0.00067	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
alpha-BHC	BDL		0.00080	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
beta-BHC	BDL		0.00089	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
delta-BHC	BDL		0.0010	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
gamma-BHC	BDL		0.0017	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
alpha-Chlordane	BDL		0.00043	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
gamma-Chlordane	BDL		0.00079	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
Chlordane	BDL		0.18	0.20	mg/Kg-dry	10	05/12/09 02:51	61469
4,4'-DDD	0.0097	I	0.0015	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
4,4'-DDE	0.011	I	0.00071	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
4,4'-DDT	0.012	I	0.0011	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
Dieldrin	0.014	I	0.00046	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
Endosulfan I	BDL		0.00029	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
Endosulfan II	0.013	I	0.00066	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
Endosulfan sulfate	0.00089	I	0.00050	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
Endrin	BDL		0.00060	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
Endrin aldehyde	BDL		0.00077	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
Endrin ketone	BDL		0.00093	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
Heptachlor	BDL		0.00045	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
Heptachlor epoxide	BDL		0.0013	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
Methoxychlor	BDL		0.012	0.020	mg/Kg-dry	10	05/12/09 02:51	61469
Toxaphene	0.75		0.085	0.20	mg/Kg-dry	10	05/13/09 18:57	61469
Surr: Decachlorobiphenyl	52.3	S	0	70-130	%REC	10	05/12/09 02:51	61469
Surr: Tetrachloro-m-xylene	72.7		0	70-130	%REC	10	05/12/09 02:51	61469
SOLIDS, PERCENT		**SM2540G**	PrepDate:				Analyst: **MDE**	
Percent Solid	84.8		0.100	0.100	%	1	04/15/09	R78130

Data Qualifier Code Key:
I Analyte detected below quantitation limits
S Spike Recovery outside accepted recovery limits
BDL Not Detected Above the MDL

QC Summary

F09040465

	Method	*Batch ID*	*Method Blank*		* *LCS/LCSD or DUP*				*MS/MSD*			
					% Recovery	*Control Limits*	*RPD*	*RPD Limit*	*% Recovery*	*Control Limits*	*RPD*	*RPD Limit*
Percent Solid	SM2540G	R77995					0.774	10				
	SM2540G	R77995					4.18	10				
	SM2540G	R77995					3.74	10				
Percent Solid	SM2540G	R78130					0.588	10				
	SM2540G	R78130					1.54	10				
	SM2540G	R78130					0.257	10				
Arsenic	SW6010	60760	5.0 U	µg/L	105	80-120			106/106	75-125	0.377	20
	SW6010	60760	5.0 U	µg/L	105	80-120						
	SW6010	60760	5.0 U	µg/L	105	80-120			106/106	75-125	0.377	20
	SW6010	60760	5.0 U	µg/L	105	80-120			106/106	75-125	0.377	20
Arsenic	SW6010	60834	0.20 U	mg/Kg	108	80-120			104/103	75-125	1.26	20
Lead	SW6010	60834	0.20 U	mg/Kg	111	80-120			107/106	75-125	1.3	20

* An LCSD is performed if required by the method or if there is insufficient sample volume available to perform batch matrix spikes.

I Analyte detected below quantitation limits U Not Detected Above the MDL

QC Summary

F09040465

	Method	Batch ID	Method Blank		* LCS/LCSD or DUP				MS/MSD			
					% Recovery	Control Limits	RPD	RPD Limit	% Recovery	Control Limits	RPD	RPD Limit
Aldrin	SW8081	61469	0.058 U	µg/Kg	93.3	62.4-93.5			90.8/87.4	62.4-93.5	1.53	40
alpha-BHC	SW8081	61469	0.069 U	µg/Kg	85.2	55.1-97.5			86.2/81.9	55.1-97.5		
beta-BHC	SW8081	61469	0.077 U	µg/Kg	92.6	39.8-126.6			93.1/89.4	39.8-126.6		
delta-BHC	SW8081	61469	0.087 U	µg/Kg	88.5	25.8-124.1			86.1/82.6	25.8-124.1		
gamma-BHC	SW8081	61469	0.15 U	µg/Kg	92.3	62.1-98.2			92/88.4	62.1-98.2	1.76	40
alpha-Chlordane	SW8081	61469	0.037 U	µg/Kg	90.8	52.6-107.6			107/95	52.6-107.6		
gamma-Chlordane	SW8081	61469	0.068 U	µg/Kg	88.8	63.8-109.8			92.7/90.2	63.8-109.8		
Chlordane	SW8081	61469	16 U	µg/Kg								
4,4'-DDD	SW8081	61469	0.13 U	µg/Kg	94.1	63.6-112.1			94.6/93.8	63.6-112.1		
4,4'-DDE	SW8081	61469	0.061 U	µg/Kg	95.6	62.7-109.2			101/102	62.7-109.2		
4,4'-DDT	SW8081	61469	0.096 U	µg/Kg	92.7	70-130			97.5/96.4	70-130	1.14	40
Dieldrin	SW8081	61469	0.040 U	µg/Kg	92.7	23.6-137.7			93.5/87.4	23.6-137.7	4.39	40
Endosulfan I	SW8081	61469	0.025 U	µg/Kg	89.9	40.5-129.3			87.3/84	40.5-129.3		
Endosulfan II	SW8081	61469	0.057 U	µg/Kg	88.2	23.7-147			95.1/91.4	23.7-147		
Endosulfan sulfate	SW8081	61469	0.043 U	µg/Kg	87.5	23.2-146.6			84.5/80.5	23.2-146.6		
Endrin	SW8081	61469	0.052 U	µg/Kg	91.5	26.8-137.5			92.4/91.3	26.8-137.5	1.06	40
Endrin aldehyde	SW8081	61469	0.066 U	µg/Kg	92.2	24.4-152.7			93.2/90.8	24.4-152.7		
Endrin ketone	SW8081	61469	0.080 U	µg/Kg	92.8	24.6-152.8			90.2/88.1	24.6-152.8		

* An LCSD is performed if required by the method or if there is insufficient sample volume available to perform batch matrix spikes.

I Analyte detected below quantitation limits U Not Detected Above the MDL

QC Summary

F09040465

	Method	*Batch ID*	*Method Blank*	* *LCS/LCSD or DUP*				*MS/MSD*			
				% Recovery	*Control Limits*	*RPD*	*RPD Limit*	*% Recovery*	*Control Limits*	*RPD*	*RPD Limit*
Heptachlor	SW8081	61469	0.039 U µg/Kg	90.4	58.5-102.6			88.7/85.2	58.5-102.6	1.75	40
Heptachlor epoxide	SW8081	61469	0.11 U µg/Kg	89.5	47.1-120.8			87.3/84.5	47.1-120.8		
Methoxychlor	SW8081	61469	1.0 U µg/Kg	94.1	23.5-166			94.4/90.8	23.5-166		
Toxaphene	SW8081	61469	7.3 U µg/Kg								
Aldrin	SW8081	61900	0.058 U µg/Kg	82.2	62.4-93.5			83.8/89.3	62.4-93.5	6.3	40
alpha-BHC	SW8081	61900	0.069 U µg/Kg	79.9	55.1-97.5			77/82.8	55.1-97.5		
beta-BHC	SW8081	61900	0.077 U µg/Kg	90.5	39.8-126.6			86.2/92.9	39.8-126.6		
delta-BHC	SW8081	61900	0.087 U µg/Kg	81.5	25.8-124.1			76/81.6	25.8-124.1		
gamma-BHC	SW8081	61900	0.15 U µg/Kg	80.5	62.1-98.2			79.8/84.9	62.1-98.2	6.15	40
alpha-Chlordane	SW8081	61900	0.037 U µg/Kg	93	52.6-107.6			67.7/83.1	52.6-107.6		
gamma-Chlordane	SW8081	61900	0.068 U µg/Kg	93.2	63.8-109.8			**191**	63.8-109.8		
Chlordane	SW8081	61900	16 U µg/Kg								
4,4'-DDD	SW8081	61900	0.13 U µg/Kg	93.9	63.6-112.1			**163/184**	63.6-112.1		
4,4'-DDE	SW8081	61900	0.061 U µg/Kg	91.9	62.7-109.2			**436**	62.7-109.2		
4,4'-DDT	SW8081	61900	0.096 U µg/Kg	92.5	70-130			**244**	70-130		
Dieldrin	SW8081	61900	0.040 U µg/Kg	90.2	23.6-137.7			120/136	23.6-137.7	8.28	40
Endosulfan I	SW8081	61900	0.025 U µg/Kg	92	40.5-129.3			97.6/103	40.5-129.3		
Endosulfan II	SW8081	61900	0.057 U µg/Kg	94.1	23.7-147			**201/220**	23.7-147		
Endosulfan sulfate	SW8081	61900	0.043 U µg/Kg	93.8	23.2-146.6			131/145	23.2-146.6		

* An LCSD is performed if required by the method or if there is insufficient sample volume available to perform batch matrix spikes.

I Analyte detected below quantitation limits U Not Detected Above the MDL

QC Summary

F09040465

	Method	*Batch ID*	*Method Blank*	* *LCS/LCSD or DUP*				*MS/MSD*			
				% Recovery	*Control Limits*	*RPD*	*RPD Limit*	*% Recovery*	*Control Limits*	*RPD*	*RPD Limit*
Endrin	SW8081	61900	0.052 U µg/Kg	87.8	26.8-137.5			**154/117**	26.8-137.5	27.3	40
Endrin aldehyde	SW8081	61900	0.066 U µg/Kg	98.6	24.4-152.7			**228/274**	24.4-152.7		
Endrin ketone	SW8081	61900	0.080 U µg/Kg	91.4	24.6-152.8			121/132	24.6-152.8		
Heptachlor	SW8081	61900	0.039 U µg/Kg	88.3	58.5-102.6			85.4/90.8	58.5-102.6	6.14	40
Heptachlor epoxide	SW8081	61900	0.11 U µg/Kg	92.5	47.1-120.8			93.3/109	47.1-120.8		
Methoxychlor	SW8081	61900	1.0 U µg/Kg	97.6	23.5-166			**342/405**	23.5-166		
Benzene	SW8260	60935	2.6 U µg/Kg								
Ethylbenzene	SW8260	60935	2.8 U µg/Kg	112/107	65-130	4.04	40				
Toluene	SW8260	60935	2.7 U µg/Kg	104/101	71-130	3.15	40				
Xylenes, Total	SW8260	60935	5.1 U µg/Kg								

* An LCSD is performed if required by the method or if there is insufficient sample volume available to perform batch matrix spikes.

I Analyte detected below quantitation limits U Not Detected Above the MDL

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

F9040465
LANASS

Page: 1 of

1227371

Section A Required Client Information:

Company:	Land Assessment Serv.
Address:	6408 W. Linebaugh Ave, Tampa FL 33625
Email To:	
Phone: 813 905-2233	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	
Copy To:	
Purchase Order No.:	
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	
Pace Profile #:	

REGULATORY AGENCY

- ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
- ☐ UST ☐ RCRA ☐ OTHER ______

Site Location STATE: ______

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix code (see valid codes to left); Sample type (G=GRAB C=COMP)

Preservatives: Unpreserved, H_2SO_4, HNO_3, HCl, NaOH, $Na_2S_2O_3$, Methanol, Other

Requested Analysis Filtered (Y/N)

Item #	Sample ID	Matrix Code	Sample Type	Composite Start Date	Composite Start Time	Composite End/Grab Date	Composite End/Grab Time	Sample Temp at Collection	# of Containers	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	AS (F, H-N)	AS (Unf/Hand)	AS (0.5)	AS (0.5-2.0)	8260 VOC	PB	BTEX	AS/POH (0.5)	AS/POH (0.5-2.0)	[illegible]			Residual Chlorine (Y/N)	Pace Project No./Lab I.D.	0-0.5'	0.5-2.0'
Y/N																			N	N	N	N	Y			N	N							
1	MW-6A	WT	G	4-8-09	1020	4-8-09	1025		2	2									1	1												-1		
2	MW-8T	WT	G	4-8-09	1342	4-8-09	1347		2	2									1	1												-2		
3	MW-6A	SL	C	4-8-09	10	4-8-09			2	2											1	1											-9	-3
4	SS 20A	SL	C	4-8-09	1210	4-8-09			3														1	1	1							-4		
5	SS 20B	SL	C	4-8-09	1220				2	2																1	1						-5	-10
6	SS 19D	SL	C	4-8-09	1230				2	2																1	1						-11	-6
7	SS 19C	SL	C	4-8-09	1235				2	2																1	1						-12	-7
8	SS 15B	SL	C	4-8-09	1240				2	2																1	1						-8	-13
9																																		
10																																		
11																																		
12																																		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
F; on/Cntr. [illegible]	[signature] Pace	03-24-09	1600	[signature]	[illegible]	1600				
	[signature]	4-8-09	1440	Jackie Sansale	4/8/09	1440				
	Jackie Sansale	4/9/09	0900	[signature]	4/9/09	1100	4.1			
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

March 19, 2009

Mr. Rick Reynolds
Land Assessment Services, Inc.
6408 W. Linebaugh Avenue
Suite 104
Tampa, FL 33625

RE: Cone Property GW Order No.: F09030494

Dear Mr. Rick Reynolds:

Pace Analytical Services, Inc received 5 samples on 3/12/2009 11:45:00 AM for the analyses presented in the following report. The results included in this report relate only to the samples received.

Analyses are performed with method-required calibration and QA/QC samples, whenever applicable. Method performance, which is based on the calibration and QA/QC data, establishes the validity and certainty of the reported sample results. These data are provided along with the sample results.

Thank you for this opportunity to let Pace Analytical Services, Inc. (Florida) be of service to you. NELAP certification #E83079. If you have any questions regarding this report, please feel free to call me, Joe Vondrick, at (386) 672-5668, extension 4809 or (386) 676-4809.

Sincerely,

Project Manager
Pace Analytical Services, Inc.
P.O. Box 468
Ormond Beach, FL 32175-0468

The test results in this report meet the requirements of the 2003 NELAC standards unless otherwise noted.

The following acronyms may be utilized within this report:

%REC	Percent Recovery
A	Absent
ABLK	Analytical Method Blank
CG	Confluent Growth
CGB	Confluent Growth Without Coliforms
CGC	Confluent Growth With Coliforms
DUP	Sample Duplicate
dw	Dry Weight
kg	Kilograms
L	Liter
LCS	Laboratory Control Spike (may also be appended with an abbreviation indicating spiking level)
MBLK	Preparation Method Blank
MDL	Laboratory Method Detection Limit
mg	Milligrams
ml	Milliliter
MS	Matrix Spike (may also be appended with an abbreviation indicating spiking level)
MSD	Matrix Spike Duplicate (may also be appended with an abbreviation indicating spiking level)
P	Present
PQL	Practical Quantitation Limit
QCS	Alternate source Calibration Verification Standard (may also be reported as analytical LCS in some a
RL	Reporting Limit
RPD	Relative Percent Difference
SPK	Spike
SUB	Indicates subcontracted analytical results
TIC	Tentatively Identified Compound
TNTC	Too Numerous To Count
ug	Micrograms

Case Narrative

CLIENT: Land Assessment Services, Inc.
Project: Cone Property GW
Lab Order: F09030494

I. SAMPLE RECEIVING/ CUSTODY

The samples were received and processed by the Sample Custody section of the laboratory. There were no significant logistics or quality problems unless noted below. All sample containers received for this report were collected by either the client or an agent of the client.

II. ANALYTICAL DATA

The samples were analyzed according to the laboratory's Standard Operating Procedures for the methodologies requested. There were no significant logistics or quality problems unless noted below or in the text of the report.

III. QUALITY CONTROL

There were no significant quality control problems unless noted below or in the text of the report.

Analytical Report

CLIENT: Land Assessment Services, Inc.
Lab Order: F09030494
Project: Cone Property GW
Lab ID: F09030494-001

Client Sample ID: MW-19
Collection Date: 3/11/2009 10:45:00 AM
Sample Description:
Matrix: Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/16/2009 8:48:00 A**				Analyst: **TPI**	
Arsenic	BDL		0.0050	0.010	mg/L	1	03/17/09 18:37	60097
8081: PESTICIDES, ORGANOCHLORINE		**SW8081**	PrepDate: **3/13/2009 10:20:00**				Analyst: **CL**	
Aldrin	BDL		0.00048	0.0096	µg/L	1	03/14/09 20:47	60083
alpha-BHC	BDL		0.00029	0.0096	µg/L	1	03/14/09 20:47	60083
beta-BHC	BDL		0.00048	0.0096	µg/L	1	03/14/09 20:47	60083
delta-BHC	BDL		0.00038	0.0096	µg/L	1	03/14/09 20:47	60083
gamma-BHC	BDL		0.00019	0.0096	µg/L	1	03/14/09 20:47	60083
alpha-Chlordane	BDL		0.0012	0.0096	µg/L	1	03/14/09 20:47	60083
gamma-Chlordane	BDL		0.0015	0.0096	µg/L	1	03/14/09 20:47	60083
Chlordane	BDL		0.077	0.48	µg/L	1	03/14/09 20:47	60083
4,4'-DDD	BDL		0.0018	0.0096	µg/L	1	03/14/09 20:47	60083
4,4'-DDE	BDL		0.00086	0.0096	µg/L	1	03/14/09 20:47	60083
4,4'-DDT	BDL		0.0035	0.0096	µg/L	1	03/14/09 20:47	60083
Dieldrin	BDL		0.00048	0.0096	µg/L	1	03/14/09 20:47	60083
Endosulfan I	BDL		0.00067	0.0096	µg/L	1	03/14/09 20:47	60083
Endosulfan II	BDL		0.00067	0.0096	µg/L	1	03/14/09 20:47	60083
Endosulfan sulfate	BDL		0.00058	0.0096	µg/L	1	03/14/09 20:47	60083
Endrin	BDL		0.0016	0.0096	µg/L	1	03/14/09 20:47	60083
Endrin aldehyde	BDL		0.0068	0.0096	µg/L	1	03/14/09 20:47	60083
Endrin ketone	BDL		0.0011	0.0096	µg/L	1	03/14/09 20:47	60083
Heptachlor	BDL		0.0014	0.0096	µg/L	1	03/14/09 20:47	60083
Heptachlor epoxide	BDL		0.00038	0.0096	µg/L	1	03/14/09 20:47	60083
Methoxychlor	BDL		0.0067	0.0096	µg/L	1	03/14/09 20:47	60083
Toxaphene	BDL		0.27	0.48	µg/L	1	03/14/09 20:47	60083
Surr: Decachlorobiphenyl	79.0		0	20-155	%REC	1	03/14/09 20:47	60083
Surr: Tetrachloro-m-xylene	84.9		0	20-155	%REC	1	03/14/09 20:47	60083

Data Qualifier Code Key: I Analyte detected below quantitation limits BDL Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc.
Lab Order: F09030494
Project: Cone Property GW
Lab ID: F09030494-002

Client Sample ID: MW-1
Collection Date: 3/11/2009 11:56:00 AM
Sample Description:
Matrix: Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/16/2009 8:48:00 A**				Analyst: **TPI**	
Arsenic	BDL		0.0050	0.010	mg/L	1	03/17/09 18:40	60097
8081: PESTICIDES, ORGANOCHLORINE		**SW8081**	PrepDate: **3/13/2009 10:20:00**				Analyst: **CL**	
Aldrin	BDL		0.00048	0.0095	µg/L	1	03/14/09 21:04	60083
alpha-BHC	BDL		0.00029	0.0095	µg/L	1	03/14/09 21:04	60083
beta-BHC	BDL		0.00048	0.0095	µg/L	1	03/14/09 21:04	60083
delta-BHC	BDL		0.00038	0.0095	µg/L	1	03/14/09 21:04	60083
gamma-BHC	BDL		0.00019	0.0095	µg/L	1	03/14/09 21:04	60083
alpha-Chlordane	BDL		0.0012	0.0095	µg/L	1	03/14/09 21:04	60083
gamma-Chlordane	BDL		0.0015	0.0095	µg/L	1	03/14/09 21:04	60083
Chlordane	BDL		0.076	0.48	µg/L	1	03/14/09 21:04	60083
4,4'-DDD	0.0071	I	0.0018	0.0095	µg/L	1	03/14/09 21:04	60083
4,4'-DDE	BDL		0.00086	0.0095	µg/L	1	03/14/09 21:04	60083
4,4'-DDT	0.025		0.0034	0.0095	µg/L	1	03/14/09 21:04	60083
Dieldrin	BDL		0.00048	0.0095	µg/L	1	03/14/09 21:04	60083
Endosulfan I	BDL		0.00067	0.0095	µg/L	1	03/14/09 21:04	60083
Endosulfan II	BDL		0.00067	0.0095	µg/L	1	03/14/09 21:04	60083
Endosulfan sulfate	BDL		0.00057	0.0095	µg/L	1	03/14/09 21:04	60083
Endrin	BDL		0.0016	0.0095	µg/L	1	03/14/09 21:04	60083
Endrin aldehyde	BDL		0.0068	0.0095	µg/L	1	03/14/09 21:04	60083
Endrin ketone	BDL		0.0010	0.0095	µg/L	1	03/14/09 21:04	60083
Heptachlor	BDL		0.0014	0.0095	µg/L	1	03/14/09 21:04	60083
Heptachlor epoxide	BDL		0.00038	0.0095	µg/L	1	03/14/09 21:04	60083
Methoxychlor	BDL		0.0067	0.0095	µg/L	1	03/14/09 21:04	60083
Toxaphene	BDL		0.27	0.48	µg/L	1	03/14/09 21:04	60083
Surr: Decachlorobiphenyl	90.1		0	20-155	%REC	1	03/14/09 21:04	60083
Surr: Tetrachloro-m-xylene	85.8		0	20-155	%REC	1	03/14/09 21:04	60083

Data Qualifier Code Key:
I Analyte detected below quantitation limits
BDL Not Detected Above the MDL

Analytical Report

CLIENT: Land Assessment Services, Inc.
Lab Order: F09030494
Project: Cone Property GW
Lab ID: F09030494-003

Client Sample ID: MW-15
Collection Date: 3/11/2009 12:37:00 PM
Sample Description:
Matrix: Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/16/2009 8:48:00 A**				Analyst: **TPI**	
Arsenic	BDL		0.0050	0.010	mg/L	1	03/17/09 18:44	60097
8081: PESTICIDES, ORGANOCHLORINE		**SW8081**	PrepDate: **3/13/2009 10:20:00**				Analyst: **CL**	
Aldrin	BDL		0.00048	0.0096	µg/L	1	03/14/09 21:21	60083
alpha-BHC	BDL		0.00029	0.0096	µg/L	1	03/14/09 21:21	60083
beta-BHC	BDL		0.00048	0.0096	µg/L	1	03/14/09 21:21	60083
delta-BHC	BDL		0.00038	0.0096	µg/L	1	03/14/09 21:21	60083
gamma-BHC	BDL		0.00019	0.0096	µg/L	1	03/14/09 21:21	60083
alpha-Chlordane	BDL		0.0012	0.0096	µg/L	1	03/14/09 21:21	60083
gamma-Chlordane	BDL		0.0015	0.0096	µg/L	1	03/14/09 21:21	60083
Chlordane	BDL		0.077	0.48	µg/L	1	03/14/09 21:21	60083
4,4'-DDD	BDL		0.0018	0.0096	µg/L	1	03/14/09 21:21	60083
4,4'-DDE	BDL		0.00086	0.0096	µg/L	1	03/14/09 21:21	60083
4,4'-DDT	BDL		0.0035	0.0096	µg/L	1	03/14/09 21:21	60083
Dieldrin	BDL		0.00048	0.0096	µg/L	1	03/14/09 21:21	60083
Endosulfan I	0.0022	I	0.00067	0.0096	µg/L	1	03/14/09 21:21	60083
Endosulfan II	BDL		0.00067	0.0096	µg/L	1	03/14/09 21:21	60083
Endosulfan sulfate	BDL		0.00058	0.0096	µg/L	1	03/14/09 21:21	60083
Endrin	BDL		0.0016	0.0096	µg/L	1	03/14/09 21:21	60083
Endrin aldehyde	BDL		0.0068	0.0096	µg/L	1	03/14/09 21:21	60083
Endrin ketone	BDL		0.0011	0.0096	µg/L	1	03/14/09 21:21	60083
Heptachlor	BDL		0.0014	0.0096	µg/L	1	03/14/09 21:21	60083
Heptachlor epoxide	BDL		0.00038	0.0096	µg/L	1	03/14/09 21:21	60083
Methoxychlor	BDL		0.0067	0.0096	µg/L	1	03/14/09 21:21	60083
Toxaphene	BDL		0.27	0.48	µg/L	1	03/14/09 21:21	60083
Surr: Decachlorobiphenyl	96.3		0	20-155	%REC	1	03/14/09 21:21	60083
Surr: Tetrachloro-m-xylene	89.1		0	20-155	%REC	1	03/14/09 21:21	60083

Data Qualifier Code Key:

I Analyte detected below quantitation limits

BDL Not Detected Above the MDL

Analytical Report

CLIENT:	Land Assessment Services, Inc.	**Client Sample ID:**	MW-4
Lab Order:	F09030494	**Collection Date:**	3/11/2009 2:08:00 PM
Project:	Cone Property GW	**Sample Description:**	
Lab ID:	F09030494-004	**Matrix:**	Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/17/2009 8:05:00 A**				Analyst: **TPI**	
Arsenic	BDL		0.0050	0.010	mg/L	1	03/17/09 21:22	60106
ICP METALS (DISSOLVED)		**SW6010**	PrepDate: **3/16/2009 8:48:00 A**				Analyst: **TPI**	
Arsenic	BDL		0.0050	0.010	mg/L	1	03/17/09 18:48	60097

Data Qualifier Code Key:

I Analyte detected below quantitation limits

BDL Not Detected Above the MDL

Analytical Report

CLIENT:	Land Assessment Services, Inc.	**Client Sample ID:**	MW-3
Lab Order:	F09030494	**Collection Date:**	3/11/2009 2:42:00 PM
Project:	Cone Property GW	**Sample Description:**	
Lab ID:	F09030494-005	**Matrix:**	Groundwater

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed	Batch ID
ICP METALS		**SW6010**	PrepDate: **3/17/2009 8:05:00 A**				Analyst: **TPI**	
Arsenic	BDL		0.0050	0.010	mg/L	1	03/17/09 21:26	60106
ICP METALS (DISSOLVED)		**SW6010**	PrepDate: **3/16/2009 8:48:00 A**				Analyst: **TPI**	
Arsenic	BDL		0.0050	0.010	mg/L	1	03/17/09 18:51	60097

Data Qualifier Code Key:

I Analyte detected below quantitation limits

BDL Not Detected Above the MDL

QC Summary

F09030494

	Method	*Batch ID*	*Method Blank*		* *LCS/LCSD or DUP*				*MS/MSD*			
					% Recovery	*Control Limits*	*RPD*	*RPD Limit*	*% Recovery*	*Control Limits*	*RPD*	*RPD Limit*
Arsenic	SW6010	60097	5.0 U	µg/L	108	80-120			109/108	75-125	1.08	20
	SW6010	60097	5.0 U	µg/L	108	80-120			109/108	75-125	1.08	20
	SW6010	60097	5.0 U	µg/L	108	80-120			109/108	75-125	1.08	20
	SW6010	60097	5.0 U	µg/L	108	80-120						
Arsenic	SW6010	60106	5.0 U	µg/L	108	80-120			109/109	75-125	0	20

* An LCSD is performed if required by the method or if there is insufficient sample volume available to perform batch matrix spikes.

I Analyte detected below quantitation limits

U Not Detected Above the MDL

QC Summary

F09030494

	Method	*Batch ID*	*Method Blank*		* *LCS/LCSD or DUP*				*MS/MSD*			
					% Recovery	*Control Limits*	*RPD*	*RPD Limit*	*% Recovery*	*Control Limits*	*RPD*	*RPD Limit*
Aldrin	SW8081	60083	0.00050 U	µg/L	90.8	10-125			94.8/95.4	10-125	0.472	40
alpha-BHC	SW8081	60083	0.00030 U	µg/L								
beta-BHC	SW8081	60083	0.00050 U	µg/L								
delta-BHC	SW8081	60083	0.00040 U	µg/L								
gamma-BHC	SW8081	60083	0.00020 U	µg/L	91.6	10-144			91.2/90.5	10-144	0.82	40
alpha-Chlordane	SW8081	60083	0.0013 U	µg/L								
gamma-Chlordane	SW8081	60083	0.0016 U	µg/L								
Chlordane	SW8081	60083	0.080 U	µg/L								
4,4'-DDD	SW8081	60083	0.0019 U	µg/L								
4,4'-DDE	SW8081	60083	0.00090 U	µg/L								
4,4'-DDT	SW8081	60083	0.0036 U	µg/L	97.5	10-183			98/97.8	10-183	0.37	40
Dieldrin	SW8081	60083	0.00050 U	µg/L	97.1	10-141			96.2/96	10-141	0.24	40
Endosulfan I	SW8081	60083	0.00070 U	µg/L								
Endosulfan II	SW8081	60083	0.00070 U	µg/L								
Endosulfan sulfate	SW8081	60083	0.00060 U	µg/L								
Endrin	SW8081	60083	0.0017 U	µg/L	94.9	10-182			93.8/94.4	10-182	0.584	40
Endrin aldehyde	SW8081	60083	0.0071 U	µg/L								
Endrin ketone	SW8081	60083	0.0011 U	µg/L								
Heptachlor	SW8081	60083	0.0015 U	µg/L	91.9	10-179			94.6/95.6	10-179	0.963	40
Heptachlor epoxide	SW8081	60083	0.00040 U	µg/L								
Methoxychlor	SW8081	60083	0.0070 U	µg/L								
Toxaphene	SW8081	60083	0.28 U	µg/L								

* An LCSD is performed if required by the method or if there is insufficient sample volume available to perform batch matrix spikes.

I Analyte detected below quantitation limits U Not Detected Above the MDL

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

F090304 94
LANASS

Page: 1 of 1

1224942

Section A Required Client Information:

Company: LAS Land Assessment Service
Address: 6408 W. Linebaugh Ave Suite 104
Tampa, FL 33625
Email To: las@landassessmentservice.com
Phone: (813)908-2233 Fax: (813)908-3588
Requested Due Date/TAT:

Section B Required Project Information:

Report To:
Copy To:
Purchase Order No.:
Project Name:
Project Number:

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes MATRIX / CODE
Drinking Water DW
Water WT
Waste Water WW
Product P
Soil/Solid SL
Oil OL
Wipe WP
Air AR
Tissue TS
Other OT

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test ↓ Y/N	AS	AS	8081	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-19	WT		3-11	1040	3-11	1045		3	2		1							1		2		
2	MW-1	WT		3-11	1150	3-11	1156		3	2		1							1		2		
3	MW-15	WT		3-11	1230	3-11	1237		3	2		1							1		2		
4	MW-4	WT		3-11	1400	3-11	1408		2			2							1	1			
5	MW-3	WT		3-11	1440	3-11	1442		2			2							1	1			
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	[signature] Kinsey Environmental	3-4-09	1600	[signature]	3-4-09	1600	
	[signature]	3-11-09	1537	[signature] PACE	3/11/09	1557	
	[signature]	3-12-09	0900	[signature]	3/12/09	1145	3.1

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER:
SIGNATURE of SAMPLER:
DATE Signed (MM/DD/YY):

Temp in °C: 0.2 | Received on Ice (Y/N): Y | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N): Y

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

APPENDIX B – WELL INSTALLATION, DEVELOPMENT AND BORING LOGS

APPENDIX B - WELL INSTALLATION, DEVELOPMENT AND BORING LOGS

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA

Well Number:	Site Name:	FDEP Facility I.D. Number:	Well Install Date(s):
MW-1	CONE PROPERTY / PARRISH PLANTATION		3-10-09

Well Location and Type (check appropriate boxes):
- [X] On-Site
- [ ] Right-of-Way
- [ ] Off-Site Private Property
- [X] Above Grade (AG)
- [ ] Flush-to-Grade

If AG, list feet of riser above land surface:

Well Purpose:
- [ ] Perched Monitoring
- [X] Shallow (Water-Table) Monitoring
- [ ] Intermediate or Deep Monitoring
- [ ] Remediation or Other (describe)

Well Install Method: HOLLOW STEM AUGER

Surface Casing Install Method:

Borehole Depth (feet):	Well Depth (feet):	Borehole Diameter (inches):	Manhole Diameter (inches):	Well Pad Size:
15	15	8		2 feet by 2 feet

Riser Diameter and Material:	Riser/Screen Connections:	Riser Length:
2-INCH PVC	[X] Flush-Threaded [ ] Other (describe)	5 feet from 0 feet to 5 feet

Screen Diameter and Material:	Screen Slot Size:	Screen Length:
2-INCH PVC	0.010 - INCH	10 feet from 5 feet to 15 feet

1st Surface Casing Material: (also check: [ ] Permanent [ ] Temporary)	1st Surface Casing I.D. (inches):	1st Surface Casing Length:
		feet from 0 feet to feet

2nd Surface Casing Material: (also check: [ ] Permanent [ ] Temporary)	2nd Surface Casing I.D. (inches):	2nd Surface Casing Length:
		feet from 0 feet to feet

3rd Surface Casing Material: (also check: [ ] Permanent [ ] Temporary)	3rd Surface Casing I.D. (inches):	3rd Surface Casing Length:
		feet from 0 feet to feet

Filter Pack Material and Size:	Prepacked Filter Around Screen (check one):	Filter Pack Length:
20/30 SILICA SAND	[ ] Yes [X] No	11 feet from 4 feet to 15 feet

Filter Pack Seal Material and Size:	Filter Pack Seal Length:
30/65 SAND	1 feet from 3 feet to 4 feet

Surface Seal Material:	Surface Seal Length:
CONCRETE	0.5 feet from 0 feet to 0.5 feet

WELL DEVELOPMENT DATA

Well Development Date:	Well Development Method (check one):	
3-11-09	[ ] Surge/Pump [X] Pump [ ] Compressed Air [ ] Other (describe)	

Development Pump Type (check):	Depth to Groundwater (before developing in feet):
[X] Submersible [ ] Centrifugal [ ] Peristaltic [ ] Other (describe)	12.51 T.O.P.

Pumping Rate (gallons per minute):	Maximum Drawdown of Groundwater During Development (feet):	Well Purged Dry (check one):
1.6	1.5	[ ] Yes [X] No

Pumping Condition (check one):	Total Development Water Removed (gallons):	Development Duration (minutes):	Development Water Drummed (check one):
[X] Continuous [ ] Intermittent	35	22	[ ] Yes [X] No

Water Appearance (color and odor) At Start of Development:	Water Appearance (color and odor) At End of Development:
MILKY / NONE	CLEAR / NONE

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

Lat.
Long.

BORING LOG

Boring/Well Number: MW-1	Permit Number: 782510/2009-3519	FDEP Facility Identification Number:
Site Name: CONE PROPERTY/ PARRISH PLANTATION	Borehole Start Date: 3-10-09 End Date: 3-10-09	Borehole Start Time: 12:00 ☐ AM ☒ PM End Time: 1:30 ☐ AM ☒ PM
Environmental Contractor: LAND ASSESSMENT SERVICES	Geologist's Name:	Environmental Technician's Name: ERIC GRAY

Drilling Company: MORTENSEN ENGINEERING, INC	Pavement Thickness (inches): —	Borehole Diameter (inches): 8	Borehole Depth (feet): 15
Drilling Method(s): HSA	Apparent Borehole DTW (in feet from soil moisture content): 11	Measured Well DTW (in feet after water recharges in well): 12.1	OVA (list model and check type): ☐ FID ☐ PID

Disposition of Drill Cuttings [check method(s)]: ☐ Drum ☒ Spread ☐ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☒ Well ☐ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC							1	DRK. BRN. F. SA.	SP-SM	D	
							2				
							3	BRN. F. SA.			
							4				
							5				
							6				
							7				
							8	LGT. BRN. F. SA.			
							9			M	
							10				
							11			W	
							12				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date:
MW-1		CONE PROPERTY PARRISH PLANTATION	3-10-09 End Date: 3-10-09

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (Include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC ↓							13	LGT. BRN. F.SA.	SP - SM	S	
							14				
							15				
							16	T.O.B. @ 15.0'			
							17				
							18				
							19				
							20				
							21				
							22				
							23				
							24				
							25				
							26				
							27				
							28				
							29				
							30				

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings

Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

DEP Form # 62-522.900(3)
Form Title MONITOR WELL COMPLETION REPORT
Effective Date
DEP Application No. (Filled in by DEP)

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

MONITOR WELL COMPLETION REPORT

DATE: 3-10-09

INSTALLATION NAME: CONE PROPERTY / PARRISH PLANTATION

DEP PERMIT NUMBER: GMS NUMBER:

WELL NUMBER: MW-1 WELL NAME: MW-1

DESIGNATION: Background Immediate Compliance

LATITUDE/LONGITUDE: N 27° 35' 6.2" W 82° 25' 27.3"

AQUIFER MONITORED: SHALLOW

INSTALLATION METHOD: HOLLOW STEM AUGERS

INSTALLED BY: MORTENSEN ENGINEERING, INC. (MEI)

TOTAL DEPTH: 15 FEET (bls) DEPTH OF SCREEN: 5-15 FEET (bls)

SCREEN LENGTH: 10 FEET SCREEN SLOT SIZE: .010-INCH SCREEN TYPE: PVC

CASING DIAMETER: 2-INCH CASING TYPE: PVC

LENGTH OF CASING: 5 FEET FILTER PACK MATERIAL: 20/30 SILICA SAND

TOP OF CASING ELEVATION (MSL):

GROUND SURFACE ELEVATION (MSL): +9.30

COMPLETION DATE: 3-10-09

DESCRIBE WELL DEVELOPMENT: USING ELECTRIC SUBMERSIBLE PUMP, PUMPED 35 GALLONS IN 22 MINUTES

POST DEVELOPMENT WATER LEVER ELEVATION (MSL):

DATE AND TIME MEASURED:

REMARKS: (soils information, stratigraphy, etc.):

REPORT PREPARED BY: CARY RICHARDSON MEI (813) 908-5555
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA

Well Number: MW-6A	Site Name: CONE PROPERTY / PARRISH PLANTATION	FDEP Facility I.D. Number:	Well Install Date(s): 3-10-09

Well Location and Type (check appropriate boxes):
- [X] On-Site
- [ ] Right-of-Way
- [ ] Off-Site Private Property
- [X] Above Grade (AG)
- [ ] Flush-to-Grade

If AG, list feet of riser above land surface: 2.8 FEET

Well Purpose:
- [ ] Perched Monitoring
- [X] Shallow (Water-Table) Monitoring
- [ ] Intermediate or Deep Monitoring
- [ ] Remediation or Other (describe)

Well Install Method: HOLLOW STEM AUGER

Surface Casing Install Method: —

Borehole Depth (feet):	Well Depth (feet):	Borehole Diameter (inches):	Manhole Diameter (inches):	Well Pad Size:
15	15	8	—	2 feet by 2 feet

Riser Diameter and Material:	Riser/Screen Connections:	Riser Length:
2-INCH PVC	[X] Flush-Threaded [ ] Other (describe)	5 feet from 0 feet to 5 feet

Screen Diameter and Material:	Screen Slot Size:	Screen Length:
2-INCH PVC	0.010-INCH	10 feet from 5 feet to 15 feet

1st Surface Casing Material: (also check: [ ] Permanent [ ] Temporary)	1st Surface Casing I.D. (inches):	1st Surface Casing Length:
		____ feet from 0 feet to ____ feet

2nd Surface Casing Material: (also check: [ ] Permanent [ ] Temporary)	2nd Surface Casing I.D. (inches):	2nd Surface Casing Length:
		____ feet from 0 feet to ____ feet

3rd Surface Casing Material: (also check: [ ] Permanent [ ] Temporary)	3rd Surface Casing I.D. (inches):	3rd Surface Casing Length:
		____ feet from 0 feet to ____ feet

Filter Pack Material and Size:	Prepacked Filter Around Screen (check one):	Filter Pack Length:
20/30 SILICA SAND	[ ] Yes [X] No	11 feet from 4 feet to 15 feet

Filter Pack Seal Material and Size:	Filter Pack Seal Length:
30/65 SILICA SAND	1 feet from 3 feet to 4 feet

Surface Seal Material:	Surface Seal Length:
CONCRETE	0.5 feet from 0 feet to 0.5 feet

WELL DEVELOPMENT DATA

Well Development Date:	Well Development Method (check one):	
3-17-09	[ ] Surge/Pump [X] Pump [ ] Compressed Air [ ] Other (describe)	

Development Pump Type (check):	Depth to Groundwater (before developing in feet):
[X] Submersible [ ] Centrifugal [ ] Peristaltic [ ] Other (describe)	6.16 T.O.P.

Pumping Rate (gallons per minute):	Maximum Drawdown of Groundwater During Development (feet):	Well Purged Dry (check one):
0.6	11.2	[ ] Yes [X] No

Pumping Condition (check one):	Total Development Water Removed (gallons):	Development Duration (minutes):	Development Water Drummed (check one):
[X] Continuous [ ] Intermittent	7.5	13	[ ] Yes [X] No

Water Appearance (color and odor) At Start of Development:	Water Appearance (color and odor) At End of Development:
DRK. BRN. / NONE	BRN. / NONE

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

Lat.
Long.

BORING LOG

Boring/Well Number: MW-6A	Permit Number: 782508/2009-3518	FDEP Facility Identification Number:
Site Name: CONE PROPERTY / PARRISH PLANTATION	Borehole Start Date: 3-10-09 End Date: 3-10-09	Borehole Start Time: 10:00 ☒ AM ☐ PM End Time: 11:00 ☒ AM ☐ PM
Environmental Contractor: LAND ASSESSMENT SERVICES	Geologist's Name:	Environmental Technician's Name: ERIC GRAY
Drilling Company: MORTENSEN ENGINEERING, INC	Pavement Thickness (inches): —	Borehole Diameter (inches): 8
Drilling Method(s): HSA	Apparent Borehole DTW (in feet from soil moisture content): 6	Measured Well DTW (in feet after water recharges in well): 6.0
Borehole Depth (feet): 15	OVA (list model and check type): ☐ FID ☐ PID	

Disposition of Drill Cuttings [check method(s)]: ☐ Drum ☒ Spread ☐ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☒ Well ☐ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC							1	BLACK SANDY ORGANIC MUCK	PT	D	
							2				
							3	GRY-BRN. SILTY TO SL. CLAYEY F.SA.	SM-SC	M	
							4				
							5				
							6	GRY. F.SA. W/ PHOSPHATE GRAINS	SP-SM	W	
							7				
							8				
							9				
							10				
							11				
							12				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date:
MW-6A		CONE PROPERTY / PARRISH PLANTATION	3-10-09 End Date: 3-10-09

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (Include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC							13	GRY-BRN. SL. CLAYEY F. SA.	SM-SC	S ↓	
							14				
							15				
							16				
							17				
							18				
							19				
							20				
							21				
							22				
							23				
							24				
							25				
							26				
							27				
							28				
							29				
							30				

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings

Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

DEP Form # 62-522.900(3)
Form Title MONITOR WELL COMPLETION REPORT
Effective Date
DEP Application No. (Filled in by DEP)

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

MONITOR WELL COMPLETION REPORT

DATE: 3-10-09

INSTALLATION NAME: CONE PROPERTY / PARRISH PLANTATION

DEP PERMIT NUMBER: GMS NUMBER:

WELL NUMBER: MW-6A WELL NAME: MW-6A

DESIGNATION: Background Immediate Compliance

LATITUDE/LONGITUDE: N 27° 35' 3.4" W 82° 24' 38.6"

AQUIFER MONITORED: SHALLOW

INSTALLATION METHOD: HOLLOW STEM AUGERS

INSTALLED BY: MORTENSEN ENGINEERING, INC

TOTAL DEPTH: 15 FEET (bls) DEPTH OF SCREEN: 5-15 FEET (bls)

SCREEN LENGTH: 10 FEET SCREEN SLOT SIZE: .010-INCH SCREEN TYPE: PVC

CASING DIAMETER: 2-INCH CASING TYPE: PVC

LENGTH OF CASING: 5 FEET FILTER PACK MATERIAL: 20/30 SILICA SAND

TOP OF CASING ELEVATION (MSL): +8.66

GROUND SURFACE ELEVATION (MSL): +5.87

COMPLETION DATE: 3-10-09

DESCRIBE WELL DEVELOPMENT: USING SUBMERSIBLE PUMP, PUMPED 7.5 GALLONS IN 13 MINUTES

POST DEVELOPMENT WATER LEVER ELEVATION (MSL): +2.57

DATE AND TIME MEASURED: 3-19-09 1125

REMARKS: (soils information, stratigraphy, etc.):

REPORT PREPARED BY: CARY RICHARDSON MEI (813) 908-5555
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA

Well Number:	Site Name:	FDEP Facility I.D. Number:	Well Install Date(s):
MW-6B	CONE PROPERTY / PARRISH PLANTATION		3-16-09

Well Location and Type (check appropriate boxes):
- [X] On-Site
- [ ] Right-of-Way
- [ ] Off-Site Private Property
- [X] Above Grade (AG)
- [ ] Flush-to-Grade

If AG, list feet of riser above land surface: 2.83 FEET

Well Purpose:
- [ ] Perched Monitoring
- [X] Shallow (Water-Table) Monitoring
- [ ] Intermediate or Deep Monitoring
- [ ] Remediation or Other (describe)

Well Install Method: HOLLOW STEM AUGER

Surface Casing Install Method: —

Borehole Depth (feet):	Well Depth (feet):	Borehole Diameter (inches):	Manhole Diameter (inches):	Well Pad Size:
15	15	8	—	2 feet by 2 feet

Riser Diameter and Material: 2-INCH PVC

Riser/Screen Connections:
- [X] Flush-Threaded
- [ ] Other (describe)

Riser Length: 5 feet from 0 feet to 5 feet

Screen Diameter and Material: 2-INCH PVC

Screen Slot Size: 0.010 - INCH

Screen Length: 10 feet from 5 feet to 15 feet

1st Surface Casing Material:
also check: [ ] Permanent [ ] Temporary

1st Surface Casing I.D. (inches):

1st Surface Casing Length: ____ feet from 0 feet to ____ feet

2nd Surface Casing Material:
also check: [ ] Permanent [ ] Temporary

2nd Surface Casing I.D. (inches):

2nd Surface Casing Length: ____ feet from 0 feet to ____ feet

3rd Surface Casing Material:
also check: [ ] Permanent [ ] Temporary

3rd Surface Casing I.D. (inches):

3rd Surface Casing Length: ____ feet from 0 feet to ____ feet

Filter Pack Material and Size: 20/30 SILICA SAND

Prepacked Filter Around Screen (check one):
- [ ] Yes
- [X] No

Filter Pack Length: 11 feet from 4 feet to 15 feet

Filter Pack Seal Material and Size: 30/65 SILICA SAND

Filter Pack Seal Length: 1 feet from 3 feet to 4 feet

Surface Seal Material: CONCRETE

Surface Seal Length: 0.5 feet from 0 feet to 0.5 feet

WELL DEVELOPMENT DATA

Well Development Date: 3-17-09

Well Development Method (check one):
- [ ] Surge/Pump
- [X] Pump
- [ ] Compressed Air
- [ ] Other (describe)

Development Pump Type (check):
- [ ] Centrifugal
- [ ] Peristaltic
- [X] Submersible
- [ ] Other (describe)

Depth to Groundwater (before developing in feet): 5.69 T.O.P.

Pumping Rate (gallons per minute): 1.4

Maximum Drawdown of Groundwater During Development (feet): 12.32

Well Purged Dry (check one):
- [ ] Yes
- [X] No

Pumping Condition (check one):
- [X] Continuous
- [ ] Intermittent

Total Development Water Removed (gallons): 35

Development Duration (minutes): 25

Development Water Drummed (check one):
- [ ] Yes
- [X] No

Water Appearance (color and odor) At Start of Development: MILKY BRN / NONE

Water Appearance (color and odor) At End of Development: CLEAR / NONE

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

Lat.
Long.

BORING LOG

Boring/Well Number:	Permit Number:	FDEP Facility Identification Number:
MW-6B	782508 / 2009-3518	

Site Name:	Borehole Start Date:	Borehole Start Time:	End Date:	End Time:
CONE PROPERTY / PARRISH PLANTATION	3-16-09	10:00 ☒ AM ☐ PM	3-16-09	11:00 ☒ AM ☐ PM

Environmental Contractor:	Geologist's Name:	Environmental Technician's Name:
LAND ASSESSMENT SERVICES, INC	CARY RICHARDSON	ERIC GRAY

Drilling Company:	Pavement Thickness (inches):	Borehole Diameter (inches):	Borehole Depth (feet):
MORTENSEN ENGINEERING	—	8	15

Drilling Method(s):	Apparent Borehole DTW (in feet from soil moisture content):	Measured Well DTW (in feet after water recharges in well):	OVA (list model and check type):
HSA	6	6.3	☐ FID ☐ PID

Disposition of Drill Cuttings [check method(s)]: ☐ Drum ☒ Spread ☐ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☒ Well ☐ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC							1	DRK. BRN. ORGANIC LADEN F. SAND	SM-PT	D	
							2	DRK. BRN. SILTY TO SL. CLAYEY F. SA.	SM-SC		
							3				
							4			M	
							5	GRY. F. SA	SP-SM		
							6	DRK. BRN. SL. SI. TO SI. F. SA.		W	
							7				
							8	GRY. SILTY F SA. W/ PHOSPHATE GRAINS			
							9				
							10				
							11	GRY SANDY CLAY W/ PHOSPHATE	SC	S	
							12				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date:
MW-6B		CONE PROPERTY / PARRISH PLANTATION	3-16-09
			End Date: 3-16-09

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (Include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC ↓							13	GRY SANDY CLAY	SC	S ↓	
							14	W/ PHOSPHATE			
							15				
							16				
							17	T.O.B. @ 15.0			
							18				
							19				
							20				
							21				
							22				
							23				
							24				
							25				
							26				
							27				
							28				
							29				
							30				

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings

Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

DEP Form # 62-522.900(3)
Form Title MONITOR WELL COMPLETION REPORT
Effective Date
DEP Application No. (Filled in by DEP)

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

MONITOR WELL COMPLETION REPORT

DATE: 3-16-09

INSTALLATION NAME: CONE PROPERTY / PARRISH PLANTATION

DEP PERMIT NUMBER: GMS NUMBER:

WELL NUMBER: MW-6B WELL NAME: MW-6B

DESIGNATION: Background Immediate Compliance

LATITUDE/LONGITUDE: N27° 35' 3.9" W82° 24' 37.9"

AQUIFER MONITORED: SHALLOW

INSTALLATION METHOD: HOLLOW STEM AUGER

INSTALLED BY: MORTENSEN ENGINEERING, INC.

TOTAL DEPTH: 15 FEET (bls) DEPTH OF SCREEN: 5-15 FEET (bls)

SCREEN LENGTH: 10 FEET SCREEN SLOT SIZE: .010-INCH SCREEN TYPE: PVC

CASING DIAMETER: 2-INCH CASING TYPE: PVC

LENGTH OF CASING: 5 FEET FILTER PACK MATERIAL: 20/30 SILICA SAND

TOP OF CASING ELEVATION (MSL): +8.30

GROUND SURFACE ELEVATION (MSL): +5.47

COMPLETION DATE: 3-16-09

DESCRIBE WELL DEVELOPMENT: PUMPED 35 GALLONS IN 25 MINUTES, USING SUBMERSIBLE PUMP

POST DEVELOPMENT WATER LEVER ELEVATION (MSL): +2.80

DATE AND TIME MEASURED: 3-19-09 1010

REMARKS: (soils information, stratigraphy, etc.):

REPORT PREPARED BY: CARY RICHARDSON ME I (813) 908-5555
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA

Well Number:	Site Name:	FDEP Facility I.D. Number:	Well Install Date(s):
MW-7	CONE PROPERTY / PARRISH PLANTATION		3-16-09

Well Location and Type (check appropriate boxes):
- [x] On-Site
- [ ] Right-of-Way
- [ ] Off-Site Private Property
- [x] Above Grade (AG)
- [ ] Flush-to-Grade

If AG, list feet of riser above land surface: 2.6 FEET

Well Purpose:
- [ ] Perched Monitoring
- [x] Shallow (Water-Table) Monitoring
- [ ] Intermediate or Deep Monitoring
- [ ] Remediation or Other (describe)

Well Install Method: HOLLOW STEM AUGER

Surface Casing Install Method:

Borehole Depth (feet):	Well Depth (feet):	Borehole Diameter (inches):	Manhole Diameter (inches):	Well Pad Size:
15	15	8	–	2 feet by 2 feet

Riser Diameter and Material: 2-INCH PVC

Riser/Screen Connections:
- [x] Flush-Threaded
- [ ] Other (describe)

Riser Length: 5 feet from 0 feet to 5 feet

Screen Diameter and Material: 2-INCH PVC

Screen Slot Size: 0.010 - INCH

Screen Length: 10 feet from 5 feet to 15 feet

1st Surface Casing Material: also check: [ ] Permanent [ ] Temporary

1st Surface Casing I.D. (inches):

1st Surface Casing Length: ____ feet from 0 feet to ____ feet

2nd Surface Casing Material: also check: [ ] Permanent [ ] Temporary

2nd Surface Casing I.D. (inches):

2nd Surface Casing Length: ____ feet from 0 feet to ____ feet

3rd Surface Casing Material: also check: [ ] Permanent [ ] Temporary

3rd Surface Casing I.D. (inches):

3rd Surface Casing Length: ____ feet from 0 feet to ____ feet

Filter Pack Material and Size: 20/30 SILICA SAND

Prepacked Filter Around Screen (check one):
- [ ] Yes
- [x] No

Filter Pack Length: 11 feet from 4 feet to 15 feet

Filter Pack Seal Material and Size: 30/65 SILICA SAND

Filter Pack Seal Length: 1 feet from 3 feet to 4 feet

Surface Seal Material: CONCRETE

Surface Seal Length: 0.5 feet from 0 feet to 0.5 feet

WELL DEVELOPMENT DATA

Well Development Date:	Well Development Method (check one):	
3-16-09	[ ] Surge/Pump [x] Pump [ ] Compressed Air [ ] Other (describe)	

Development Pump Type (check):
- [x] Submersible
- [ ] Centrifugal
- [ ] Peristaltic
- [ ] Other (describe)

Depth to Groundwater (before developing in feet): 3.4 T.O.P.

Pumping Rate (gallons per minute): 2.3

Maximum Drawdown of Groundwater During Development (feet): 9.5 T.O.P.

Well Purged Dry (check one):
- [ ] Yes
- [x] No

Pumping Condition (check one):
- [x] Continuous
- [ ] Intermittent

Total Development Water Removed (gallons): 25

Development Duration (minutes): 11

Development Water Drummed (check one):
- [ ] Yes
- [x] No

Water Appearance (color and odor) At Start of Development: MILKY / NONE

Water Appearance (color and odor) At End of Development: CLEAR / NONE

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

Lat.
Long.

BORING LOG

Boring/Well Number: MW-7	Permit Number: 782508 / 2009-3518	FDEP Facility Identification Number:
Site Name: CONE PROPERTY / PARRISH PLANTATION	Borehole Start Date: 3-16-08 End Date: 3-16-08	Borehole Start Time: 12:00 ☐ AM ☒ PM End Time: 1:00 ☐ AM ☒ PM
Environmental Contractor: LAND ASSESSMENT SERVICES	Geologist's Name: CARY RICHARDSON	Environmental Technician's Name: ERIC GRAY
Drilling Company: MORTENSEN ENGINEERING	Pavement Thickness (inches): —	Borehole Diameter (inches): 8
Borehole Depth (feet): 15		
Drilling Method(s): HSA	Apparent Borehole DTW (in feet from soil moisture content): 4	Measured Well DTW (in feet after water recharges in well): 3.7
OVA (list model and check type): ☐ FID ☐ PID		

Disposition of Drill Cuttings [check method(s)]: ☐ Drum ☒ Spread ☐ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☒ Well ☐ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC							1	BLACK ORGANIC LADEN SAND	SM-PT	D	
							2	DRK. BRN. SL. CLAYEY F.SA.	SM-SC	M	
							3				
							4				
							5	GRY. SILTY TO SL. CLAYEY F.SA.	SM-SC	W	
							6				
							7				
							8				
							9				
							10	BLUE-GRN SANDY CLAY	SC	S	
							11	W/ PHOSPHATE GRAINS			
							12				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date:
MW-7		CONE PROPERTY / PARRISH PLANTATION	3-16-09 End Date: 3-16-09

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC ↓							13	BL.-GRN. SANDY CLAY	SC ↓	S ↓	
							14	W/ PHOSPHATE			
							15	GRAINS			
							16	T.O.B. @ 15.0			
							17				
							18				
							19				
							20				
							21				
							22				
							23				
							24				
							25				
							26				
							27				
							28				
							29				
							30				

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings

Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

DEP Form # 62-522.900(3)
Form Title MONITOR WELL COMPLETION REPORT
Effective Date
DEP Application No. (Filled in by DEP)

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

MONITOR WELL COMPLETION REPORT

DATE: 3-16-09

INSTALLATION NAME: CONE PROPERTY / PARRISH PLANTATION

DEP PERMIT NUMBER: GMS NUMBER:

WELL NUMBER: MW-7 WELL NAME: MW-7

DESIGNATION: Background Immediate Compliance

LATITUDE/LONGITUDE: N 27° 35' 9.5" W 82° 24' 50.0"

AQUIFER MONITORED: SHALLOW

INSTALLATION METHOD: HOLLOW STEM AUGERS

INSTALLED BY: MORTENSEN ENGINEERING, INC.

TOTAL DEPTH: 15 FEET (bls) DEPTH OF SCREEN: 5 - 15 FEET (bls)

SCREEN LENGTH: 10 FEET SCREEN SLOT SIZE: .010 - INCH SCREEN TYPE: PVC

CASING DIAMETER: 2-INCH CASING TYPE: PVC

LENGTH OF CASING: 5 FEET FILTER PACK MATERIAL: 20/30 SILICA SAND

TOP OF CASING ELEVATION (MSL): + 6.36

GROUND SURFACE ELEVATION (MSL): + 3.79

COMPLETION DATE: 3-16-09

DESCRIBE WELL DEVELOPMENT: USING SUBMERSIBLE PUMP, PUMPED 25 GALLONS IN 11 MINUTES

POST DEVELOPMENT WATER LEVER ELEVATION (MSL): + 2.26

DATE AND TIME MEASURED: 3-19-09 1323

REMARKS: (soils information, stratigraphy, etc.):

REPORT PREPARED BY: CARY RICHARDSON MEI (813) 908-5555
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA

Well Number:	Site Name:	FDEP Facility I.D. Number:	Well Install Date(s):
MW-7A	CONE PROPERTY / PARRISH PLANTATION		3-17-09

Well Location and Type (check appropriate boxes):
- [x] On-Site
- [ ] Right-of-Way
- [ ] Off-Site Private Property
- [x] Above Grade (AG)
- [ ] Flush-to-Grade

If AG, list feet of riser above land surface: 2.4 FEET

Well Purpose:
- [ ] Perched Monitoring
- [x] Shallow (Water-Table) Monitoring
- [ ] Intermediate or Deep Monitoring
- [ ] Remediation or Other (describe)

Well Install Method: HOLLOW STEM AUGER

Surface Casing Install Method:

Borehole Depth (feet):	Well Depth (feet):	Borehole Diameter (inches):	Manhole Diameter (inches):	Well Pad Size:
15	15	8	—	2 feet by 2 feet

Riser Diameter and Material:	Riser/Screen Connections:	Riser Length:
2-INCH PVC	[x] Flush-Threaded [ ] Other (describe)	5 feet from 0 feet to 5 feet

Screen Diameter and Material:	Screen Slot Size:	Screen Length:
2-INCH PVC	.010-INCH	10 feet from 5 feet to 15 feet

1st Surface Casing Material:	1st Surface Casing I.D. (inches):	1st Surface Casing Length:
also check: [ ] Permanent [ ] Temporary		____ feet from 0 feet to ____ feet

2nd Surface Casing Material:	2nd Surface Casing I.D. (inches):	2nd Surface Casing Length:
also check: [ ] Permanent [ ] Temporary		____ feet from 0 feet to ____ feet

3rd Surface Casing Material:	3rd Surface Casing I.D. (inches):	3rd Surface Casing Length:
also check: [ ] Permanent [ ] Temporary		____ feet from 0 feet to ____ feet

Filter Pack Material and Size:	Prepacked Filter Around Screen (check one):	Filter Pack Length:
20/30 SILICA SAND	[ ] Yes [x] No	11 feet from 4 feet to 15 feet

Filter Pack Seal Material and Size:	Filter Pack Seal Length:
30/65 SILICA SAND	1 feet from 3 feet to 4 feet

Surface Seal Material:	Surface Seal Length:
CONCRETE	0.5 feet from 0 feet to 0.5 feet

WELL DEVELOPMENT DATA

Well Development Date:	Well Development Method (check one):
3-17-09	[ ] Surge/Pump [x] Pump [ ] Compressed Air [ ] Other (describe)

Development Pump Type (check):	Depth to Groundwater (before developing in feet):
[x] Submersible [ ] Centrifugal [ ] Peristaltic [ ] Other (describe)	4.92 T.O.P.

Pumping Rate (gallons per minute):	Maximum Drawdown of Groundwater During Development (feet):	Well Purged Dry (check one):
2.0	12.2 T.O.P.	[ ] Yes [x] No

Pumping Condition (check one):	Total Development Water Removed (gallons):	Development Duration (minutes):	Development Water Drummed (check one):
[x] Continuous [ ] Intermittent	80	40	[ ] Yes [x] No

Water Appearance (color and odor) At Start of Development:	Water Appearance (color and odor) At End of Development:
CLOUDY BRN / NONE	CLEAR / NONE

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

Lat.
Long.

BORING LOG

Boring/Well Number: MW-7A	Permit Number: 782508 / 2009-3518	FDEP Facility Identification Number:
Site Name: CONE PROPERTY / PARRISH PLANTATION	Borehole Start Date: 3-17-09 End Date: 3-17-09	Borehole Start Time: 10:00 ☒ AM ☐ PM End Time: 11:00 ☒ AM ☐ PM
Environmental Contractor: LAND ASSESSMENT SERVICES	Geologist's Name: ERIC GRAY	Environmental Technician's Name: ERIC GRAY
Drilling Company: MORTENSEN ENGINEERING	Pavement Thickness (inches): —	Borehole Diameter (inches): 8
Borehole Depth (feet): 15		
Drilling Method(s): HSA	Apparent Borehole DTW (in feet from soil moisture content): 4	Measured Well DTW (in feet after water recharges in well): 4.9
OVA (list model and check type): ☐ FID ☐ PID		

Disposition of Drill Cuttings [check method(s)]: ☐ Drum ☒ Spread ☐ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☒ Well ☐ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC							1	DRK. BRN. ORGANIC LADEN SA.	SM-A	D	
							2	DRK. BRN. F.SA.	SM-SP		
							3			M	
							4	BRN. SILTY TO SL. CLAYEY F.SA.			
							5			W	
							6				
							7	BRN. F.SA			
							8				
							9				
							10			I	
							11			S	
							12				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date:
MW-7A		CONE / PARRISH PLANTATION	3-17-09 End Date: 3-17-09

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC ↓							13	GRY-GRY SANDY CLAY	SC ↓	S ↓	
							14				
							15				
							16	T.O.B. @ 15.0			
							17				
							18				
							19				
							20				
							21				
							22				
							23				
							24				
							25				
							26				
							27				
							28				
							29				
							30				

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings
Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

DEP Form # 62-522.900(3)
Form Title MONITOR WELL COMPLETION REPORT
Effective Date
DEP Application No. (Filled in by DEP)

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

MONITOR WELL COMPLETION REPORT

DATE: 3-17-09

INSTALLATION NAME: CONE PROPERTY / PARRISH PLANTATION

DEP PERMIT NUMBER: GMS NUMBER:

WELL NUMBER: MW-7A WELL NAME: MW-7A

DESIGNATION: Background Immediate Compliance

LATITUDE/LONGITUDE: N 27° 35' 9.7" W 82° 24' 49.8"

AQUIFER MONITORED: SHALLOW

INSTALLATION METHOD: HOLLOW STEM AUGER

INSTALLED BY: MORTENSEN ENGINEERING, INC.

TOTAL DEPTH: 15 FEET (bls) DEPTH OF SCREEN: 5-15 FEET (bls)

SCREEN LENGTH: 10 FEET SCREEN SLOT SIZE: .010-INCH SCREEN TYPE: PVC

CASING DIAMETER: 2-INCH CASING TYPE: PVC

LENGTH OF CASING: 5 FEET FILTER PACK MATERIAL: 20/30 SILICA SAND

TOP OF CASING ELEVATION (MSL): + 6.58

GROUND SURFACE ELEVATION (MSL): + 4.14

COMPLETION DATE: 3-17-09

DESCRIBE WELL DEVELOPMENT: USING SUBMERSIBLE PUMP, PUMPED 80 GALLONS IN 40 MINUTES

POST DEVELOPMENT WATER LEVER ELEVATION (MSL): +1.50

DATE AND TIME MEASURED: 3-19-09

REMARKS: (soils information, stratigraphy, etc.):

REPORT PREPARED BY: CARY RICHARDSON MEI (813) 908-5555
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA

Well Number:	Site Name:	FDEP Facility I.D. Number:	Well Install Date(s):
MW-7B	CONE PROPERTY / PARRISH PLANTATION		3-17-09

Well Location and Type (check appropriate boxes):
- [x] On-Site
- [ ] Right-of-Way
- [ ] Off-Site Private Property
- [x] Above Grade (AG)
- [ ] Flush-to-Grade

If AG, list feet of riser above land surface: 3.5 FEET

Well Purpose:
- [ ] Perched Monitoring
- [x] Shallow (Water-Table) Monitoring
- [ ] Intermediate or Deep Monitoring
- [ ] Remediation or Other (describe)

Well Install Method: HOLLOW STEM AUGER

Surface Casing Install Method:

Borehole Depth (feet):	Well Depth (feet):	Borehole Diameter (inches):	Manhole Diameter (inches):	Well Pad Size:
15	15	8	—	2 feet by 2 feet

Riser Diameter and Material:	Riser/Screen Connections:	Riser Length:
2-INCH PVC	[x] Flush-Threaded [ ] Other (describe)	5 feet from 0 feet to 5 feet

Screen Diameter and Material:	Screen Slot Size:	Screen Length:
2-INCH PVC	.010 - INCH	10 feet from 5 feet to 15 feet

1st Surface Casing Material: also check: [ ] Permanent [ ] Temporary	1st Surface Casing I.D. (inches):	1st Surface Casing Length: ____ feet from 0 feet to ____ feet
2nd Surface Casing Material: also check: [ ] Permanent [ ] Temporary	2nd Surface Casing I.D. (inches):	2nd Surface Casing Length: ____ feet from 0 feet to ____ feet
3rd Surface Casing Material: also check: [ ] Permanent [ ] Temporary	3rd Surface Casing I.D. (inches):	3rd Surface Casing Length: ____ feet from 0 feet to ____ feet

Filter Pack Material and Size:	Prepacked Filter Around Screen (check one):	Filter Pack Length:
20/30 SILICA SAND	[ ] Yes [x] No	11 feet from 4 feet to 15 feet

Filter Pack Seal Material and Size:	Filter Pack Seal Length:
30/65 SAND	1 feet from 3 feet to 4 feet

Surface Seal Material:	Surface Seal Length:
CONCRETE	0.5 feet from 0 feet to 0.5 feet

WELL DEVELOPMENT DATA

Well Development Date:	Well Development Method (check one):
3-17-09	[ ] Surge/Pump [x] Pump [ ] Compressed Air [ ] Other (describe)

Development Pump Type (check):	Depth to Groundwater (before developing in feet):
[x] Submersible [ ] Centrifugal [ ] Peristaltic [ ] Other (describe)	6.03 T.O.P.

Pumping Rate (gallons per minute):	Maximum Drawdown of Groundwater During Development (feet):	Well Purged Dry (check one):
0.6	18.0 T.O.P.	[x] Yes [ ] No

Pumping Condition (check one):	Total Development Water Removed (gallons):	Development Duration (minutes):	Development Water Drummed (check one):
[ ] Continuous [x] Intermittent	25	40	[ ] Yes [x] No

Water Appearance (color and odor) At Start of Development:	Water Appearance (color and odor) At End of Development:
MILKY BRN. / NONE	SLIGHTLY CLEAR / NONE

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

Lat.
Long.

BORING LOG

Boring/Well Number: MW-7B	Permit Number: 782508 / 2009-3518	FDEP Facility Identification Number:
Site Name: CONE / PARRISH PLANTATION	Borehole Start Date: 3-17-09 End Date: 3-17-09	Borehole Start Time: 12:00 ☐ AM ☒ PM End Time: 1:00 ☐ AM ☒ PM
Environmental Contractor: LAND ASSESSMENT SERVICES	Geologist's Name: ERIC GRAY	Environmental Technician's Name: ERIC GRAY

Drilling Company:	Pavement Thickness (inches):	Borehole Diameter (inches):	Borehole Depth (feet):
MORTENSEN ENGINEERING	—	8	15

Drilling Method(s):	Apparent Borehole DTW (in feet from soil moisture content):	Measured Well DTW (in feet after water recharges in well):	OVA (list model and check type):
HSA	5	6.0	☐ FID ☐ PID

Disposition of Drill Cuttings [check method(s)]: ☐ Drum ☒ Spread ☐ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☒ Well ☐ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC							1	DRK. BRN - BLACK SANDY ORGANIC MUCK	PT	D	
							2		—	—	
							3	DRK. BRN. SL. CLAYEY F.SA.	SM-SC	M	
							4				
							5				
							6				
							7		—	W	
							8	BRN. F.SA.			
							9		—	—	
							10	GRN. CLAY	CL/CH	S	
							11		—		
							12	GRN. SANDY CLAY	SC		

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date:
MW-7B		CONE / PARRISH PLANTATION	3-17-09 End Date: 3-17-09

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC ↓							13	GRN. SANDY CLAY	SC	S ↓	
							14				
							15	GRN CLAY	CL/CH		
							16				
							17	T.O.B. @ 15.0			
							18				
							19				
							20				
							21				
							22				
							23				
							24				
							25				
							26				
							27				
							28				
							29				
							30				

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings

Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

DEP Form # 62-522.900(3)
Form Title MONITOR WELL COMPLETION REPORT
Effective Date
DEP Application No. (Filled in by DEP)

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

MONITOR WELL COMPLETION REPORT

DATE: 3-17-09

INSTALLATION NAME: CONE PROPERTY / PARRISH PLANTATION

DEP PERMIT NUMBER: GMS NUMBER:

WELL NUMBER: MW-7B WELL NAME: MW-7B

DESIGNATION: Background Immediate Compliance

LATITUDE/LONGITUDE: N 27° 35' 9.1" W 82° 24' 50.0"

AQUIFER MONITORED: SHALLOW

INSTALLATION METHOD: HOLLOW STEM AUGERS

INSTALLED BY: MORTENSEN ENGINEERING, INC

TOTAL DEPTH: 15 FEET (bls) DEPTH OF SCREEN: 5-15 FEET (bls)

SCREEN LENGTH: 10 FEET SCREEN SLOT SIZE: .010-INCH SCREEN TYPE: PVC

CASING DIAMETER: 2-INCH CASING TYPE: PVC

LENGTH OF CASING: 5 FEET FILTER PACK MATERIAL: 20/30 SILICA SAND

TOP OF CASING ELEVATION (MSL): + 7.79

GROUND SURFACE ELEVATION (MSL): + 4.28

COMPLETION DATE: 3-17-09

DESCRIBE WELL DEVELOPMENT: USING SUBMERSIBLE PUMP, PUMPED 25 GALLONS IN 40 MINUTES

POST DEVELOPMENT WATER LEVER ELEVATION (MSL): + 1.76

DATE AND TIME MEASURED: 3-19-09 1413

REMARKS: (soils information, stratigraphy, etc.) :

REPORT PREPARED BY: CARY RICHARDSON MEI (813) 908-5555
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA

Well Number:	Site Name:	FDEP Facility I.D. Number:	Well Install Date(s):
MW-8T	CONE PROPERTY / PARRISH PLANTATION		4-8-09

Well Location and Type (check appropriate boxes):
- [X] On-Site
- [ ] Right-of-Way
- [ ] Off-Site Private Property
- [X] Above Grade (AG)
- [ ] Flush-to-Grade

If AG, list feet of riser above land surface: 3.0

Well Purpose:
- [ ] Perched Monitoring
- [X] Shallow (Water-Table) Monitoring
- [ ] Intermediate or Deep Monitoring
- [ ] Remediation or Other (describe)

Well Install Method: HAND AUGER

Surface Casing Install Method:

Borehole Depth (feet):	Well Depth (feet):	Borehole Diameter (inches):	Manhole Diameter (inches):	Well Pad Size:
6.5	6.5	4	—	____ feet by ____ feet

Riser Diameter and Material:	Riser/Screen Connections:	Riser Length:
2"-INCH PVC	[X] Flush-Threaded [ ] Other (describe)	1.5 feet from 0 feet to 1.5 feet

Screen Diameter and Material:	Screen Slot Size:	Screen Length:
2-INCH PVC	.010-INCH	5 feet from 1.5 feet to 6.5 feet

1st Surface Casing Material:	1st Surface Casing I.D. (inches):	1st Surface Casing Length:
also check: [ ] Permanent [ ] Temporary		____ feet from 0 feet to ____ feet

2nd Surface Casing Material:	2nd Surface Casing I.D. (inches):	2nd Surface Casing Length:
also check: [ ] Permanent [ ] Temporary		____ feet from 0 feet to ____ feet

3rd Surface Casing Material:	3rd Surface Casing I.D. (inches):	3rd Surface Casing Length:
also check: [ ] Permanent [ ] Temporary		____ feet from 0 feet to ____ feet

Filter Pack Material and Size:	Prepacked Filter Around Screen (check one):	Filter Pack Length:
20/30 SILICA SAND	[ ] Yes [X] No	6 feet from 0.5 feet to 6.5 feet

Filter Pack Seal Material and Size:	Filter Pack Seal Length:
NONE	____ feet from ____ feet to ____ feet

Surface Seal Material:	Surface Seal Length:
NONE / TEMPORARY WELL	____ feet from ____ feet to ____ feet

WELL DEVELOPMENT DATA

Well Development Date:	Well Development Method (check one):
4-8-09	[ ] Surge/Pump [X] Pump [ ] Compressed Air [ ] Other (describe)

Development Pump Type (check):	Depth to Groundwater (before developing in feet):
[ ] Centrifugal [X] Peristaltic [ ] Submersible [ ] Other (describe)	5.45 T.O.P.

Pumping Rate (gallons per minute):	Maximum Drawdown of Groundwater During Development (feet):	Well Purged Dry (check one):
.09	5.15 BLS	[ ] Yes [X] No

Pumping Condition (check one):	Total Development Water Removed (gallons):	Development Duration (minutes):	Development Water Drummed (check one):
[X] Continuous [ ] Intermittent	1.0	14	[ ] Yes [X] No

Water Appearance (color and odor) At Start of Development:	Water Appearance (color and odor) At End of Development:
LGT. BRN / NONE	CLEAR / NONE

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

Lat.
Long.

BORING LOG

Boring/Well Number: MW-8T	Permit Number: N/A	FDEP Facility Identification Number:
Site Name: CONE PROPERTY / PARRISH PLANTATION	Borehole Start Date: 4-8-09 End Date: 4-8-09	Borehole Start Time: ☐ AM ☐ PM End Time: ☐ AM ☐ PM
Environmental Contractor: LAND ASSESSMENT SERVICES	Geologist's Name: ERIC GRAY	Environmental Technician's Name: ERIC GRAY
Drilling Company: MORTENSEN ENGINEERING	Pavement Thickness (inches): —	Borehole Diameter (inches): 4
Borehole Depth (feet): 6.5		
Drilling Method(s): HAND AUGER	Apparent Borehole DTW (in feet from soil moisture content): 2 BLS	Measured Well DTW (in feet after water recharges in well): 2.45 BLS
OVA (list model and check type): ☐ FID ☐ PID		

Disposition of Drill Cuttings [check method(s)]: ☐ Drum ☒ Spread ☐ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☒ Well ☐ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

TEMPORARY

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC							1				
							2				
							3				
							4				
							5				
							6				
—	—	—	—	—	—	—	7	— — — — —	—	—	— —
							8	T.O.B. @			
							9	6.5 FEET			
							10				
							11				
							12				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

DEP Form # 62-522.900(3)
Form Title MONITOR WELL COMPLETION REPORT
Effective Date
DEP Application No. (Filled in by DEP)

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

MONITOR WELL COMPLETION REPORT

DATE: 4-8-09

INSTALLATION NAME: CONE PROPERTY / PARRISH PLANTATION

DEP PERMIT NUMBER: GMS NUMBER:

WELL NUMBER: MW-8T WELL NAME: MW-8T

DESIGNATION: Background Immediate Compliance

LATITUDE/LONGITUDE:

AQUIFER MONITORED: SHALLOW

INSTALLATION METHOD: HAND AUGER

INSTALLED BY: MORTENSEN ENGINEERING, INC.

TOTAL DEPTH: 6.5 FEET (bls) DEPTH OF SCREEN: 1.5 TO 6.5 FEET (bls)

SCREEN LENGTH: 5 FEET SCREEN SLOT SIZE: .010-INCH SCREEN TYPE: PVC

CASING DIAMETER: 2-INCH CASING TYPE: PVC

LENGTH OF CASING: 1.5 FEET FILTER PACK MATERIAL: 20/30

TOP OF CASING ELEVATION (MSL):

GROUND SURFACE ELEVATION (MSL):

COMPLETION DATE: 4-8-09

DESCRIBE WELL DEVELOPMENT: USING PERISTALTIC PUMP, PUMPED 1 GALLON IN 14 MINUTES.

POST DEVELOPMENT WATER LEVER ELEVATION (MSL):

DATE AND TIME MEASURED:

REMARKS: (soils information, stratigraphy, etc.):

REPORT PREPARED BY: CARY RICHARDSON MEI (813) 908-5555
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA

Well Number: MW-15	Site Name: CONE PROPERTY / PARRISH PLANTATION	FDEP Facility I.D. Number:	Well Install Date(s): 3-9-09

Well Location and Type (check appropriate boxes):
- [X] On-Site
- [ ] Right-of-Way
- [ ] Off-Site Private Property
- [X] Above Grade (AG)
- [ ] Flush-to-Grade

If AG, list feet of riser above land surface:

Well Purpose:
- [ ] Perched Monitoring
- [X] Shallow (Water-Table) Monitoring
- [ ] Intermediate or Deep Monitoring
- [ ] Remediation or Other (describe)

Well Install Method: HOLLOW STEM AUGER

Surface Casing Install Method: —

Borehole Depth (feet):	Well Depth (feet):	Borehole Diameter (inches):	Manhole Diameter (inches):	Well Pad Size:
15	15	8	—	2 feet by 2 feet

Riser Diameter and Material:	Riser/Screen Connections:	Riser Length:
2-INCH PVC	[X] Flush-Threaded [ ] Other (describe)	5 feet from 0 feet to 5 feet

Screen Diameter and Material:	Screen Slot Size:	Screen Length:
2-INCH PVC	0.010 - INCH	10 feet from 5 feet to 15 feet

1st Surface Casing Material:	1st Surface Casing I.D. (inches):	1st Surface Casing Length:
also check: [ ] Permanent [ ] Temporary		____ feet from 0 feet to ____ feet

2nd Surface Casing Material:	2nd Surface Casing I.D. (inches):	2nd Surface Casing Length:
also check: [ ] Permanent [ ] Temporary		____ feet from 0 feet to ____ feet

3rd Surface Casing Material:	3rd Surface Casing I.D. (inches):	3rd Surface Casing Length:
also check: [ ] Permanent [ ] Temporary		____ feet from 0 feet to ____ feet

Filter Pack Material and Size:	Prepacked Filter Around Screen (check one):	Filter Pack Length:
20/30 SILICA SAND	[ ] Yes [X] No	11 feet from 4 feet to 15 feet

Filter Pack Seal Material and Size:	Filter Pack Seal Length:
30/65 SILICA SAND	1 feet from 3 feet to 4 feet

Surface Seal Material:	Surface Seal Length:
CONCRETE	0.5 feet from 0 feet to 0.5 feet

WELL DEVELOPMENT DATA

Well Development Date:	Well Development Method (check one):	
3-11-09	[ ] Surge/Pump [X] Pump [ ] Compressed Air [ ] Other (describe)	

Development Pump Type (check):	Depth to Groundwater (before developing in feet):
[X] Submersible [ ] Centrifugal [ ] Peristaltic [ ] Other (describe)	12.47 T.O.P.

Pumping Rate (gallons per minute):	Maximum Drawdown of Groundwater During Development (feet):	Well Purged Dry (check one):
3.0	4.0	[ ] Yes [X] No

Pumping Condition (check one):	Total Development Water Removed (gallons):	Development Duration (minutes):	Development Water Drummed (check one):
[X] Continuous [ ] Intermittent	30	10	[ ] Yes [X] No

Water Appearance (color and odor) At Start of Development:	Water Appearance (color and odor) At End of Development:
MILKY WHT. / NONE	CLEAR / NONE

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

Lat.
Long.

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date: / End Date:
MW-15		CONE / PARRISH PLANTATION	3-9-09 / 3-9-09

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC ↓							13	LGT. GRY CLAYEY SA. W/ PHOSPHATE GRAINS	SP-SM / SM-SC	S ↓	
							14				
							15				
							16	T.O.B. @ 15.0			
							17				
							18				
							19				
							20				
							21				
							22				
							23				
							24				
							25				
							26				
							27				
							28				
							29				
							30				

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings

Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

BORING LOG

Boring/Well Number: MW-15	Permit Number: 782510 / 2009-3519	FDEP Facility Identification Number:
Site Name: CONE / PARRISH PLANTATION	Borehole Start Date: 3-9-09 End Date: 3-9-09	Borehole Start Time: 1:00 ☐ AM ☒ PM End Time: 2:00 ☐ AM ☒ PM
Environmental Contractor: LAND ASSESSMENT SERVICES	Geologist's Name: CARY RICHARDSON	Environmental Technician's Name: ERIC GRAY
Drilling Company: MORTENSEN ENGINEERING	Pavement Thickness (inches): —	Borehole Diameter (inches): 8
Borehole Depth (feet): 15		
Drilling Method(s): HSA	Apparent Borehole DTW (in feet from soil moisture content): 10	Measured Well DTW (in feet after water recharges in well): 12.1
OVA (list model and check type): ☐ FID ☐ PID		

Disposition of Drill Cuttings [check method(s)]: ☐ Drum ☒ Spread ☐ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☒ Well ☐ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC							1	DRK. BRN. F.SA	SP-SM	D	
							2				
							3	GRY-BRN. F.SA.			
							4				
							5				
							6	LGT. BRN. F.SA.			
							7			M	
							8	BRN. F.SA.			
							9				
							10			W	
							11	LGT. GRY F.SA. W/ PHOSPHATE GRAINS			
							12				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

DEP Form # 62-522.900(3)
Form Title MONITOR WELL COMPLETION REPORT
Effective Date
DEP Application No. (Filled in by DEP)

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

MONITOR WELL COMPLETION REPORT

DATE: 3-9-09

INSTALLATION NAME: CONE PROPERTY / PARRISH PLANTATION

DEP PERMIT NUMBER: GMS NUMBER:

WELL NUMBER: MW-15 WELL NAME: MW-15

DESIGNATION: Background Immediate Compliance

LATITUDE/LONGITUDE: N 27° 35' 6.4" W 82° 25'

AQUIFER MONITORED: SHALLOW GROUNDWATER

INSTALLATION METHOD: HOLLOW STEM AUGER

INSTALLED BY: MORTENSEN ENGINEERING, INC.

TOTAL DEPTH: 15 FEET (bls) DEPTH OF SCREEN: 5-15 FEET (bls)

SCREEN LENGTH: 10 FEET SCREEN SLOT SIZE: 0.010-INCH SCREEN TYPE: PVC

CASING DIAMETER: 2-INCH CASING TYPE: PVC

LENGTH OF CASING: 5 FEET FILTER PACK MATERIAL: 20/30 SILICA SAND

TOP OF CASING ELEVATION (MSL):

GROUND SURFACE ELEVATION (MSL): +9.43

COMPLETION DATE: 3-9-09

DESCRIBE WELL DEVELOPMENT: USING SUBMERSIBLE PUMP, PUMPED 30 GALLONS IN 10 MINUTES

POST DEVELOPMENT WATER LEVER ELEVATION (MSL):

DATE AND TIME MEASURED:

REMARKS: (soils information, stratigraphy, etc.):

REPORT PREPARED BY: CARY RICHARDSON MEI (813) 908-5555
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA

Well Number:	Site Name:	FDEP Facility I.D. Number:	Well Install Date(s):
MW-19	CONE PROPERTY / PARRISH PLANTATION		3-9-09

Well Location and Type (check appropriate boxes): [X] On-Site [ ] Right-of-Way [ ] Off-Site Private Property [X] Above Grade (AG) [ ] Flush-to-Grade

If AG, list feet of riser above land surface:

Well Purpose: [X] Perched Monitoring [ ] Shallow (Water-Table) Monitoring [ ] Intermediate or Deep Monitoring [ ] Remediation or Other (describe)

Well Install Method: HOLLOW STEM AUGER

Surface Casing Install Method: —

Borehole Depth (feet):	Well Depth (feet):	Borehole Diameter (inches):	Manhole Diameter (inches):	Well Pad Size:
15	15	8	—	2 feet by 2 feet

Riser Diameter and Material: 2-INCH PVC

Riser/Screen Connections: [X] Flush-Threaded [ ] Other (describe)

Riser Length: 5 feet from 0 feet to 5 feet

Screen Diameter and Material: 2-INCH PVC

Screen Slot Size: 0.010 - INCH

Screen Length: 10 feet from 5 feet to 15 feet

1st Surface Casing Material: also check: [ ] Permanent [ ] Temporary

1st Surface Casing I.D. (inches):

1st Surface Casing Length: ____ feet from 0 feet to ____ feet

2nd Surface Casing Material: also check: [ ] Permanent [ ] Temporary

2nd Surface Casing I.D. (inches):

2nd Surface Casing Length: ____ feet from 0 feet to ____ feet

3rd Surface Casing Material: also check: [ ] Permanent [ ] Temporary

3rd Surface Casing I.D. (inches):

3rd Surface Casing Length: ____ feet from 0 feet to ____ feet

Filter Pack Material and Size: 20/30 SILICA SAND

Prepacked Filter Around Screen (check one): [ ] Yes [X] No

Filter Pack Length: 11 feet from 4 feet to 15 feet

Filter Pack Seal Material and Size: 30/65 SILICA SAND

Filter Pack Seal Length: 1 feet from 3 feet to 4 feet

Surface Seal Material: CONCRETE

Surface Seal Length: 0.5 feet from 0 feet to 0.5 feet

WELL DEVELOPMENT DATA

Well Development Date: 3-11-09

Well Development Method (check one): [ ] Surge/Pump [X] Pump [ ] Compressed Air [ ] Other (describe)

Development Pump Type (check): [ ] Centrifugal [ ] Peristaltic [X] Submersible [ ] Other (describe)

Depth to Groundwater (before developing in feet): 11.68 T.O.P.

Pumping Rate (gallons per minute): 2.5

Maximum Drawdown of Groundwater During Development (feet): 5.22

Well Purged Dry (check one): [ ] Yes [X] No

Pumping Condition (check one): [X] Continuous [ ] Intermittent

Total Development Water Removed (gallons): 25

Development Duration (minutes): 10

Development Water Drummed (check one): [ ] Yes [X] No

Water Appearance (color and odor) At Start of Development: MILKY / NONE

Water Appearance (color and odor) At End of Development: CLEAR / NONE

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

Lat.
Long.

BORING LOG

Boring/Well Number: MW-19	Permit Number: 782510 / 2009-3519	FDEP Facility Identification Number:
Site Name: CONE PROPERTY / PARRISH PLANTATION	Borehole Start Date: 3-9-09 End Date: 3-9-09	Borehole Start Time: 10:30 ☒ AM ☐ PM End Time: 11:30 ☒ AM ☐ PM
Environmental Contractor: LAND ASSESSMENT SERVICES INC.	Geologist's Name: CARY M. RICHARDSON	Environmental Technician's Name: ERIC GRAY
Drilling Company: MORTENSEN ENGINEERING INC	Pavement Thickness (inches): N/A	Borehole Diameter (inches): 8
Borehole Depth (feet): 15		
Drilling Method(s): HOLLOW STEM AUGER	Apparent Borehole DTW (in feet from soil moisture content): 8	Measured Well DTW (in feet after water recharges in well): 11.7 T.O.P.
OVA (list model and check type): ☐ FID ☐ PID		

Disposition of Drill Cuttings [check method(s)]: ☐ Drum ☒ Spread ☐ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☒ Well ☐ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC	N/A	N/A	N/A	N/A	N/A	N/A	1	DRK. BRN. F. SAND	SP-SM	D	
							2	GRY. - BRN. F. SAND			
							3				
							4	LGT. BRN. F. SAND			
							5				
							6				
							7	BRN. F. SA.		M	
							8				
							9			W	
							10	LGT. GRY. F. SA. W/ PHOSPHATE GRAINS			
							11				
							12				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Boring/Well Number:	FDEP Facility Identification Number:	Site Name:	Borehole Start Date: / End Date:
MW-19		CONE PROPERTY PARRISH PLANTATION	3-9-09 / 3-9-09

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
DC	N/A	N/A	N/A	N/A	N/A	N/A	13	LGT. GRY F. SA.	SP-SM	S	
↓							14	W/ PHOSPHATE GRAINS	↓	↓	
—	—	—	—	—	—	—	15	— — — — — —	—	—	— — —
							16	T.O.B. @ 15.0'			
							17				
							18				
							19				
							20				
							21				
							22				
							23				
							24				
							25				
							26				
							27				
							28				
							29				
							30				

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings

Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

DEP Form # 62-522.900(3)
Form Title MONITOR WELL COMPLETION REPORT
Effective Date
DEP Application No. (Filled in by DEP)

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

MONITOR WELL COMPLETION REPORT

DATE: 3-9-09

INSTALLATION NAME: CONE PROPERTY / PARRISH PLANTATION

DEP PERMIT NUMBER: GMS NUMBER:

WELL NUMBER: MW-19 WELL NAME: MW-19

DESIGNATION: Background Immediate Compliance

LATITUDE/LONGITUDE: N 27° 35' 6.4" W 82° 25' 27.4"

AQUIFER MONITORED: SHALLOW GROUNDWATER

INSTALLATION METHOD: HOLLOW STEM AUGERS

INSTALLED BY: MORTENSEN ENGINEERING, INC.

TOTAL DEPTH: 15 FEET (bls) DEPTH OF SCREEN: 5-15 FEET (bls)

SCREEN LENGTH: 10 FEET SCREEN SLOT SIZE: .010-INCH SCREEN TYPE: PVC

CASING DIAMETER: 2-INCH CASING TYPE: PVC

LENGTH OF CASING: 5 FEET FILTER PACK MATERIAL: 20/30 SILICA SAND

TOP OF CASING ELEVATION (MSL):

GROUND SURFACE ELEVATION (MSL): +9.15

COMPLETION DATE: 3-9-09

DESCRIBE WELL DEVELOPMENT: USING SUBMERSIBLE PUMP, PUMPED 25 GALLONS, IN 10 MINUTES

POST DEVELOPMENT WATER LEVER ELEVATION (MSL):

DATE AND TIME MEASURED:

REMARKS: (soils information, stratigraphy, etc.) :

REPORT PREPARED BY: CARY RICHARDSON ME1 (813) 908-5555
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

MEI PROJECT NO.: _____

PROJECT NAME: Cone Property

PROJECT LOCATION: Parish

DRILLED BY: _____ START DATE: 3-10-09.

LOGGED BY: EG END DATE: _____

MEI AUGER LOG

BORING NO. SA-22 11:00

OFFSET E.O.P. _____ STA. NO. _____

0 P S

① DK GRY SLI to ORG FSA

2.5

3.0

④ DK BN SLI to SI FSA

⑤ DK BN to BN CL FSA to SA Clay

5

5.5

TOB 5.5 Due to ▽ @ 3.2'

10

15

▽ 3.2' AT TIME OF DRILLING @ MW-6 from Ground

▽ _____ DELAYED ____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: _____

CHANGE IN GROUND ELEVATION: _____

BORING NO. SA-N 11:20

OFFSET E.O.P. _____ STA. NO. _____

0 P S

① GRY SLI SI FSA

1.0

② LT GRY/LT BN SLI SI FSA

2.5

③ BN SLI SI FSA

4.0

④ DK BN SLI to SI FSA

5

TOB 4.25 due to damp soil

10

15

▽ _____ AT TIME OF DRILLING

▽ _____ DELAYED ____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: 27033.166 083° 34' 721

CHANGE IN GROUND ELEVATION: _____

MEI PROJECT NO.: _____

PROJECT NAME: Cohn Property

PROJECT LOCATION: Parish

DRILLED BY: _____ START DATE: 3-10-09

LOGGED BY: EG END DATE: _____

MEI AUGER LOG

BORING NO. SA-35 1200

OFFSET E.O.P. _____ STA. NO. _____

0	P	S	
0.5			(10) DK BN SA. ORG Muck
			(3) BN SLI SI FSA
3.0			(1) DK BN ORG FSA
4.0			TOB 4.0'
5			Due to Damp Soil
10			
15			

▽ _____ AT TIME OF DRILLING

▽ _____ DELAYED ____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: _____

CHANGE IN GROUND ELEVATION: _____

BORING NO. SA-40 1230

OFFSET E.O.P. _____ STA. NO. _____

0	P	S	
1.0			(10) DK BN ORG Muck
2.0			(3) BN+DK BN SLI SI FSA
			TOB 2.0'
			Due to Damp Soil
5			
10			
15			

▽ _____ AT TIME OF DRILLING

▽ _____ DELAYED ____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: _____

CHANGE IN GROUND ELEVATION: _____

MEI PROJECT NO.: _____

PROJECT NAME: Cone Property

PROJECT LOCATION: Parish

DRILLED BY: _____ START DATE: 3-10-09

LOGGED BY: E G END DATE: _____

MEI AUGER LOG

BORING NO. SA-S 100

OFFSET E.O.P. _____ STA. NO. _____

	P	S	
0			DK BN SA ORG Muck
1.0			(1) DK GRY SLI ORG FSA
			(3) BN SLI SI FSA
2.0			↓
			TOB 2.0'
			Due to damp soil
5			
10			
15			

▽ _____ AT TIME OF DRILLING

▽ _____ DELAYED _____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE:

27° 35 13.4 082° 24.968

CHANGE IN GROUND ELEVATION: _____

BORING NO. SA-W 130

OFFSET E.O.P. _____ STA. NO. _____

	P	S	
0			
0.5			(10) DK BN SA ORG Muck
1.0			(1) DK BN SLI to ORG FSA
			(3) BN SLI SI FSA
2.0			
			TOB 2.0'
			Due to damp soil
5			
10			
15			

▽ _____ AT TIME OF DRILLING

▽ _____ DELAYED _____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE:

27° 35 23.6 082° 24.966

CHANGE IN GROUND ELEVATION: _____

27° 35' 14.2" 082 24 58.9

K:\DRAW\SP15-SHEET 15 rev 10-11-07.dwg, Model

MEI PROJECT NO.: _____

PROJECT NAME: Cone Property

PROJECT LOCATION: Parrish

DRILLED BY: _____ START DATE: 3-9-09

LOGGED BY: EG END DATE: _____

MEI MORTENSEN ENGINEERING, INC. AUGER LOG

BORING NO. SS-15A

0 P S

1.5 (3) GRY/BN SLI SI FSA (Fill)

3.5 (3) BN SLI SI FSA

5.5 5 (2) LT BN SLI SI FSA

7 (3)(4) RD BN var. cem SLI to SI FSA

TOB 8.0'

▽ _____ AT TIME OF DRILLING T.O.B. _____

▽ _____ DELAYED ____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: _____

CHANGE IN GROUND ELEVATION: _____

BORING NO. SS-20A

0 P S

1.5 (3) GRY/BN SLI SI FSA w/ WHT Lime Rock Pebbles (Fill)

5.5 5 (3) BN SLI SI FSA

6.0 7 (4) RD BN SLI to SI FSA, var cem

TOB 6.0 Ref to Hard pan

▽ _____ AT TIME OF DRILLING T.O.B. _____

▽ _____ DELAYED ____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: _____

CHANGE IN GROUND ELEVATION: _____

BORING NO. SS-19A

0 P S

1.5 (3) GRY/BN SLI SI FSA

3.0 (3) BN SLI SI FSA

5.5 5 (2) LT BN SLI SI FSA

7 (4) RD BN var. cem SLI to SI FSA

TOB 8.0'

MW-19 ▽ 8.5 from Ground AT TIME OF DRILLING T.O.B. _____

▽ _____ DELAYED ____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: _____

CHANGE IN GROUND ELEVATION: _____

BORING NO. SS-19B

0 P S

1.5 (3) GRY/BN SLI SI FSA

3.0 (3) BN SLI SI FSA

5 (2) LT BN SLI SI FSA

6.0 7 (4) RD BN var cem SLI to SI FSA

TOB 7.0'

▽ _____ AT TIME OF DRILLING T.O.B. _____

▽ _____ DELAYED ____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: _____

CHANGE IN GROUND ELEVATION: _____

MEI PROJECT NO.: _____

PROJECT NAME: CONE PROPERTY

PROJECT LOCATION: _____

DRILLED BY: CR/ES START DATE: _____

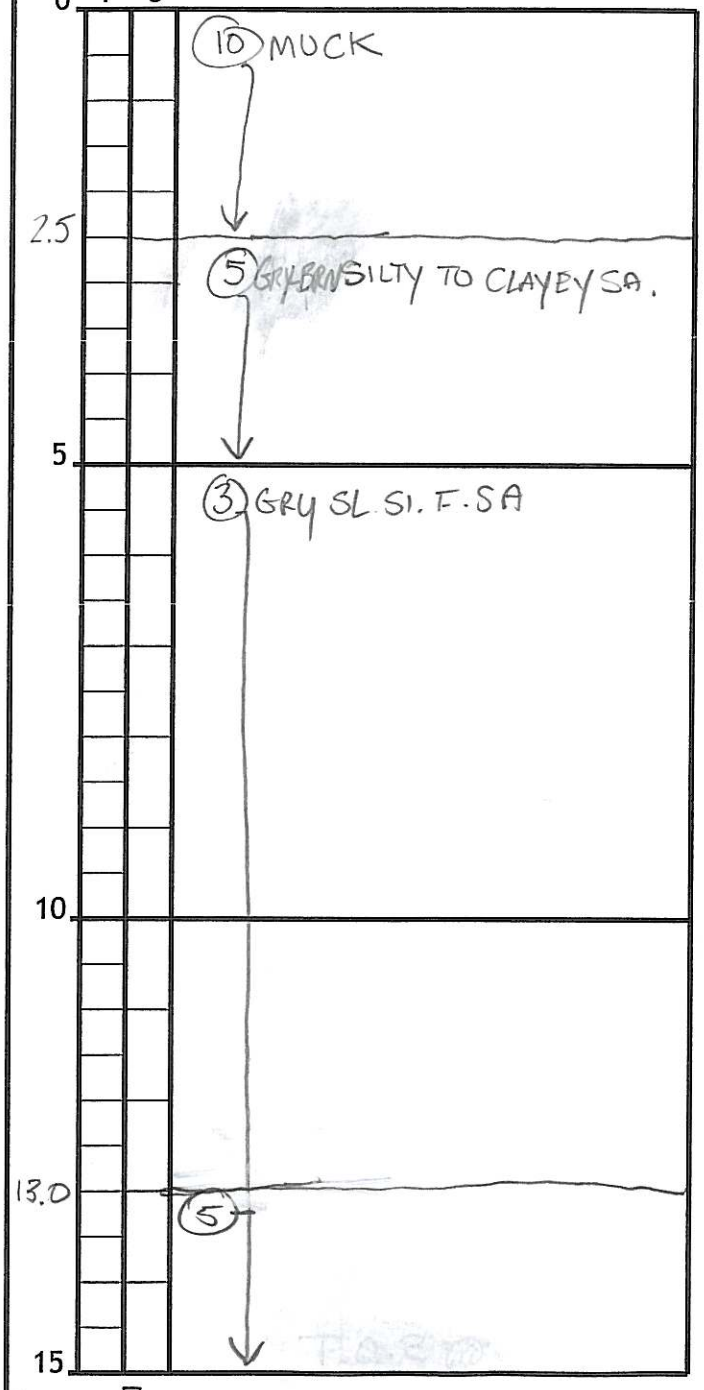
LOGGED BY: BJ END DATE: _____

MEI MORTENSEN ENGINEERING, INC.

AUGER LOG

BORING NO. MW-6A

OFFSET E.O.P. _____ STA. NO. _____



▽ _____ AT TIME OF DRILLING

▽ _____ DELAYED _____ HRS.

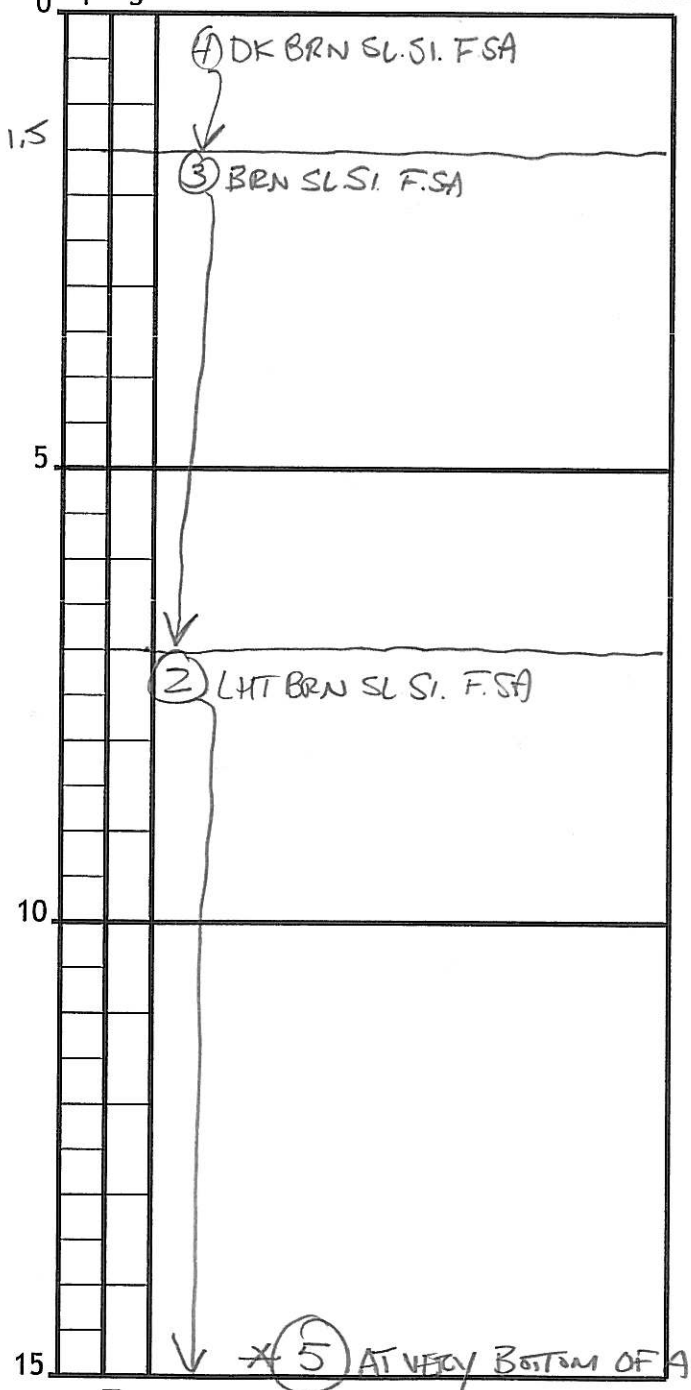
GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: _____

CHANGE IN GROUND ELEVATION: _____

BORING NO. MW-1

OFFSET E.O.P. _____ STA. NO. _____



▽ _____ AT TIME OF DRILLING

▽ _____ DELAYED _____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: _____

CHANGE IN GROUND ELEVATION: _____

K:\DRAW\SP15-SHEET 15 rev 10-11-07.dwg, Model

MEI PROJECT NO.: _____

PROJECT NAME: _____ DRILLED BY: _____ START DATE: 3-16-08

PROJECT LOCATION: _____ LOGGED BY: _____ END DATE: _____

MORTENSEN ENGINEERING, INC.
AUGER LOG

BORING NO. MW-7

OFFSET E.O.P. _____ STA. NO. _____

	P	S	
0			(10)/(11) MUCK ORGANIC LADEN SI. SAND
1.5			SILTY F.SA.
2.5			(5) DRK. BRN. SL. CLAYEY TO SILTY F.SA.
4.0			(5) GRY SILTY F.SA. TO SL. CLAYEY
5			▽ - WET @ 2.5'
10			BLUE-GRN SANDY CLAY w/ PHOSPHATE GRAINS
15			T.O.P.

▽ 3.07' AT TIME OF DRILLING

▽ _____ DELAYED ____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: _____

CHANGE IN GROUND ELEVATION: _____

BORING NO. MW-6B

OFFSET E.O.P. _____ STA. NO. _____

	P	S	
0			(11)
1.0			(5) DRK BRN SILTY TO SL. CLAYEY F.SA
4.0			(3) GRY SL. SI. TO SI. F. SA.
5			(4) DRK. BRN. SL. SI. TO SI. F.SA. ▽ - WET @ 4.0'
7.5			(3) GRY SILTY F.SA. W/ ABUND. PHOSPH. GRAINS / PEBBLES
10			(12) SANDY CLAY W/ ABUND PHOSPH. PEBBLES
15			

▽ 6.3 T.O.P. AT TIME OF DRILLING

▽ _____ DELAYED ____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: _____

CHANGE IN GROUND ELEVATION: _____

MEI PROJECT NO.: _____

PROJECT NAME: Cone Property

PROJECT LOCATION: Parish

DRILLED BY: ESCR START DATE: 3-17-09

LOGGED BY: EG END DATE: _____

MEI AUGER LOG

BORING NO. MW-7A

OFFSET E.O.P. _____ STA. NO. _____

0	P	S	
			(10) DK BN ORG FSA to SA Muck
1.5			(4) DK BN SLI to SI FSA w/ Trace of ORGanics
2.5			(5) BN SI to SLI CL FSA
5			
6.0			(3) BN SLI to SI FSA
10			
12.0			(6) GRN SA CL
			TOB 15.0
15			

▽ _____ AT TIME OF DRILLING

▽ _____ DELAYED ____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: 30' S of MW-7

CHANGE IN GROUND ELEVATION: +1'

BORING NO. MW 7B

OFFSET E.O.P. _____ STA. NO. _____

0	P	S	
			(10) DK BN ORG FSA to SA Muck
2.0			(5) DK BN to BN SI to SLI CL FSA
5			
7.0			(3) BN SLI to SI FSA
9.0			(7) GRN CL
10			
11.0			(6) GRN CL FSA to CL w/ Trace of Calc. Shells
14.0			(7) GRN Calc Clay
15			

▽ _____ AT TIME OF DRILLING

▽ _____ DELAYED ____ HRS.

GROUND ELEVATION AT STAKE: TOB 15.0

OFFSET DISTANCE AND DIRECTION FROM STAKE: 30' N of MW-7

CHANGE IN GROUND ELEVATION: +1'

MEI PROJECT NO.: _____

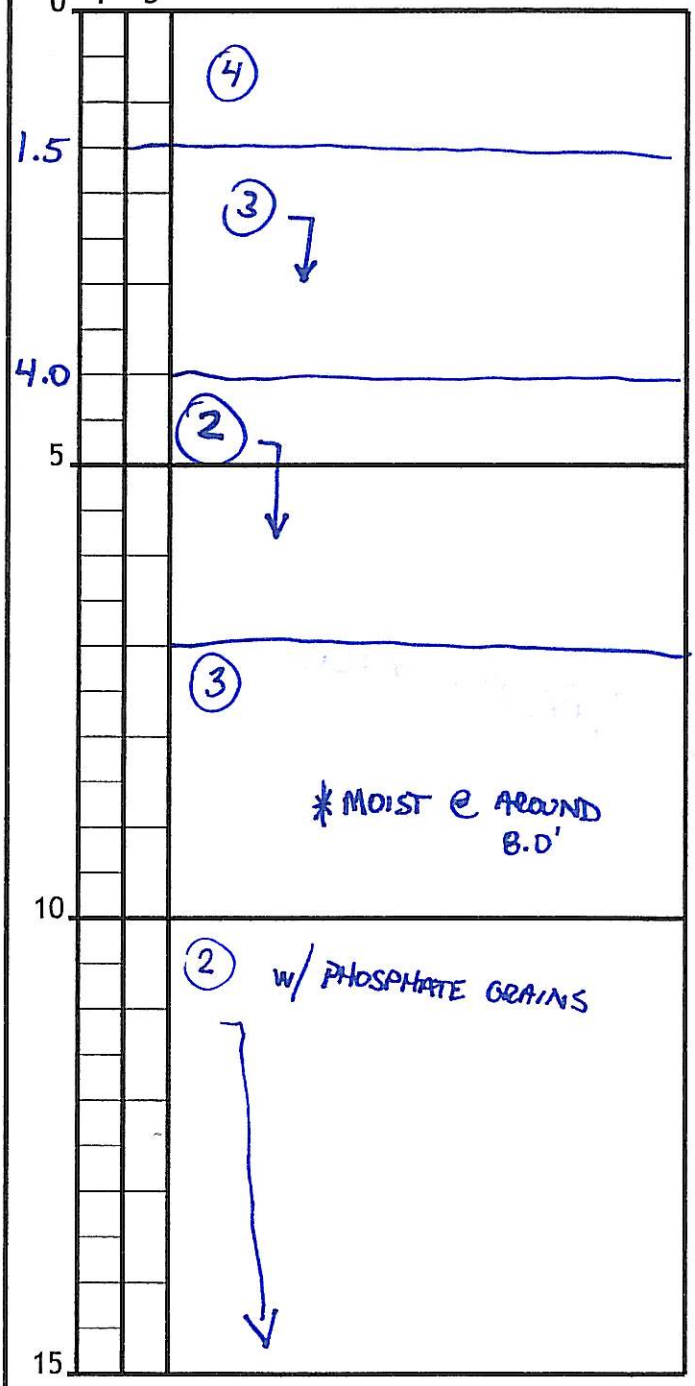
PROJECT NAME: _____ DRILLED BY: _____ START DATE: _____

PROJECT LOCATION: _____ LOGGED BY: _____ END DATE: _____

MEI MORTENSEN ENGINEERING, INC.
AUGER LOG

BORING NO. MW-19

OFFSET E.O.P. _____ STA. NO. _____



_____ AT TIME OF DRILLING

_____ DELAYED _____ HRS.

GROUND ELEVATION AT STAKE: _____

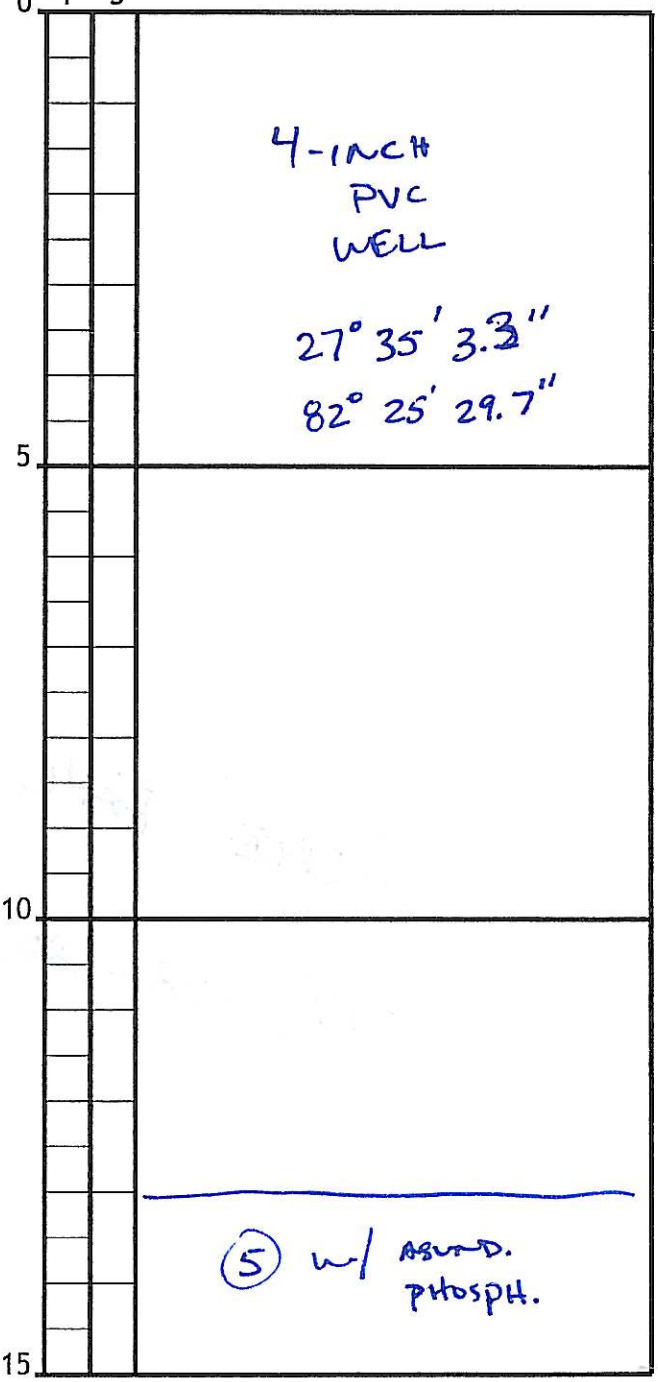
OFFSET DISTANCE AND DIRECTION FROM STAKE: _____

CHANGE IN GROUND ELEVATION: _____

27° 35' 6.4"
82° 25' 27.4"

BORING NO. MW-15

OFFSET E.O.P. _____ STA. NO. _____



_____ AT TIME OF DRILLING

_____ DELAYED _____ HRS.

GROUND ELEVATION AT STAKE: _____

OFFSET DISTANCE AND DIRECTION FROM STAKE: _____

CHANGE IN GROUND ELEVATION: _____

27° 35' 6.4"
82° 25' 27.2"

Location PARRISH, FL Date 5-13-09

Project / Client CONE PROPERTY

9:00 AM TO 11:00 AM

∇ - T.O.P.

MW-4 - 8.08
MW-5 - 6.92
MW-3 - 7.65
MW-6 - 6.69
MW-6A - 6.87
MW-6B - 6.57
MW-7 - 5.44
MW-7A - 6.67
MW-7B - 7.80
MW-19 - 12.45
MW-15 - 12.96
MW-1 - 13.29

Location PARRISH, FL Date 5-15-09

Project / Client CONE PROPERTY

BJ

MEASURED STICK-UP FOR (3) WELLS

MW-1 = 3.74'

MW-15 = 3.28'

MW-19 = 3.12'

MEI
MORTENSEN ENGINEERING, INC.

PROJECT _____ DATE _____
CLIENT _____ PROJECT NO. _____
BY USED AS BENCH MARK PAGE _____ OF _____
FOR (6A + 6B)

	T.O.P. ELEVATION	GROUND ELEVATION
MW-6 —	8.45	5.17
MW-6A —	8.66	5.87 (N. SIDE OF PROTECT. CASING)
MW-6B —	8.30	5.47 (SW CORNER OF PROTECT. CASING)
MW-5 —	7.65 (USED AS BENCHMARK FOR MW-7)	3.80
MW-7 — (LOW-DITCH LIKE FEATURE)	6.36 (USED AS BENCH MARK FOR (7A + 7B)	3.79 (E. SIDE OF PROTECT. CASING)
MW-7A —	6.58	4.14
MW-7B —	7.79	4.28
MW-3 —	8.82	4.90

APPENDIX C – GROUNDWATER SAMPLING LOGS

APPENDIX C - GROUNDWATER SAMPLING LOGS

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Cole Property	SITE LOCATION: Parish	
WELL NO: MW-1	SAMPLE ID:	DATE: 3-11-09

PURGING DATA

WELL DIAMETER (inches): 2"	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 18 feet to 13 feet	STATIC DEPTH TO WATER (feet): 12.51 TOP	PURGE PUMP TYPE OR BAILER: ESP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
= (18 feet – 12.51 feet) X 0.16 gallons/foot = 1.0 gallons

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

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 16	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 16	PURGING INITIATED AT: 1137	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1140	1.0	1.0	.24	12.52	5.54	22.40	493	0.91	280	Cloudy light	None
1142	2.0	2.0		12.75	5.20	22.33	491	0.97	36	Almost clear	1
1144	.7	2.7	.24	12.80	5.17	22.32	488	1.30	16	clear	None
1146	.6	3.3	.24	12.82	5.12	22.34	487	1.49	13	1	1

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Eric Gray LAS	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1150	SAMPLING ENDED AT: 1156
PUMP OR TUBING DEPTH IN WELL (feet): 16	SAMPLE PUMP FLOW RATE (mL per minute): 800	TUBING MATERIAL CODE: PE	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
	1	P	250mL	HNO3			As	ESP
	2	AG	1L				8081	ESP

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Cone Property	SITE LOCATION: Parish	
WELL NO: MW-3	SAMPLE ID:	DATE: 3-11-09

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
2"	3/8		6.52	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
= (14.9 feet – 6.52 feet) X 0.16 gallons/foot = gallons

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

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1418	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1425	1.4	1.4	.24	7.78	5.62	19.13	430	.64	190	cloudy	none
1427	.35	1.75	.24	8.42	5.56	19.15	429	.87	160		
1429	.75	2.5	.18	8.42	5.61	19.24	428	.92	100		
1433	.50	3.0	.16	8.42	5.53	1936	428	2.43	95		
1435	.35	3.35	.16	8.42	5.55	19.21	427	2.31	75		
1437	.25	3.60	.16	8.41	5.47	19.36	427	2.28	55		

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1440	SAMPLING ENDED AT: 1442
Eric Gray LAS	Eric		
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute): 780	TUBING MATERIAL CODE: PE, S	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
	2	P	250mL	HNO3			AS	ESP

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME:	Cone Property	SITE LOCATION:	Parish
WELL NO:	MW-4	SAMPLE ID:	DATE: 3.11.09

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
2"	3/8		7.59	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
= (15.3 feet – 7.59 feet) X 0.16 gallons/foot = 1.24 gallons

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

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
10'	10'	1318		5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1327	0.5	0.5	.12	8.8	5.20	20.55	348	0.66	110	LT BN	None
1338	.75	1.25	.12	8.8	4.97	20.76	389	0.70	350	BN	None
1340	.20	1.45	.12	8.8	4.96	20.77	390	0.83	330	"	"
1347	1.05	2.5	.12	8.8	4.87	20.74	389	1.21	180	BN	"
1353	1.25	3.75	.12	8.8	4.82	20.72	391	1.08	110	LT BN	"

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
Eric Gray	Eric Gray	1400	1408
PUMP OR TUBING DEPTH IN WELL (feet): 10'	SAMPLE PUMP FLOW RATE (mL per minute): 600	TUBING MATERIAL CODE: PE	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
	2	P	250mL	HNO3			AS	ESP

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Cone Property	SITE LOCATION: Parish	
WELL NO: MW-5	SAMPLE ID:	DATE: 3-19-09

PURGING DATA

WELL DIAMETER (inches): 2"	TUBING DIAMETER (inches): ⅜ 5/16	WELL SCREEN INTERVAL DEPTH: 5 feet to 15 feet	STATIC DEPTH TO WATER (feet): 6.08	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
= (18 feet – 6.08 feet) X 0.16 gallons/foot = 1.9 gallons

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

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10'	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1250	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or mS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1259	1.6	1.6	.20	6.70	5.87	20.36	255	0.35	5.2	Clear	None
101	.6	2.2	.20	6.70	5.82	20.24	262	0.38	3.4	1	1
103	.3	2.5	.20	6.70	5.76	20.31	263	0.38	3.0		

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Eric Gray LAS	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1305	SAMPLING ENDED AT: 1308
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute): 750	TUBING MATERIAL CODE: PE, S	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
	2	PE	250mL	HNO3			AS	

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Cone Property	SITE LOCATION: Parish	
WELL NO: MW-6	SAMPLE ID:	DATE: 3-19-09

PURGING DATA

WELL DIAMETER (inches): 2"	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 5 feet to 15 feet	STATIC DEPTH TO WATER (feet): 6.03	PURGE PUMP TYPE OR BAILER: ESP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
= (18 feet – 6.03 feet) X 0.16 gallons/foot = gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + ~~0.16~~ gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 13'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 13'	PURGING INITIATED AT: 1053	PURGING ENDED AT: 1111	TOTAL VOLUME PURGED (gallons): 3.1

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1105	2.1	2.1	.20	6.38	6.36	20.52	312	0.50	36	clear	none
1107	.4	2.5	.20	6.38	5.99	20.39	309	0.36	14	"	"
1109	.2	2.7	.20	6.39	5.93	20.42	308	0.38	11.3	"	"
1111	.4	3.1	.20	6.38	5.88	20.46	310	0.37	9.7	"	"

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Ben Gray LAS	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1115	SAMPLING ENDED AT: 1117
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute): 600	TUBING MATERIAL CODE: PE, ~~S~~	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
	2	PE	250mL	H/NO3			AS	

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Cone Property	SITE LOCATION: Parish	
WELL NO: MW 6A	SAMPLE ID:	DATE: 3-19-09

PURGING DATA

WELL DIAMETER (inches): 2"	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 15 feet to 5 feet	STATIC DEPTH TO WATER (feet): 6.09	PURGE PUMP TYPE OR BAILER: ESP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (18 feet – 6.09 feet) X .16 gallons/foot = gallons

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

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10'	PURGING INITIATED AT: 1130	PURGING ENDED AT: 1205	TOTAL VOLUME PURGED (gallons): 4.1

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1152	3.25	3.25	.18	7.40	5.44	20.37	465	4.09	80	Almost clear	None
1158	.25	3.50	.18	7.40	5.44	20.61	468	4.23	50	1	1
1200	.1	3.6	.18	7.40	5.48	20.67	469	4.16	45	1	1
1204	.4	4.0	.18	7.40	5.64	20.69	467	4.01	45	1	1

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Eric Gray LAS	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1210	SAMPLING ENDED AT: 1212
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: PE, S	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
	2	PE	250mL	HNO3			AS	

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Cone Property	SITE LOCATION: Parish	
WELL NO: MW-6A	SAMPLE ID:	DATE: 4-8-09

PURGING DATA

TOT

WELL DIAMETER (inches): 2"	TUBING DIAMETER (inches): 1/4"	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH TO WATER (feet): 6.07	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
= (18.7 feet – 6.07 feet) X 0.16 gallons/foot = 2.02 gallons

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

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 12'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 12'	PURGING INITIATED AT: 1002	PURGING ENDED AT: 1016	TOTAL VOLUME PURGED (gallons): 3.1

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1007	1.1	1.1	.22	7.35	6.31	20.63	342	4.2	3.5	clear	SULfur
1010	.65	1.75	.22	7.53	6.31	20.68	346	3.6	2.4	"	"
1013	.75	2.5	.22	7.70	6.27	20.71	348	3.1	2.6	"	"

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Erre Gray Brad Johnson	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1020	SAMPLING ENDED AT: 1025
PUMP OR TUBING DEPTH IN WELL (feet): 12'	SAMPLE PUMP FLOW RATE (mL per minute): 780	TUBING MATERIAL CODE: PE, S	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type: ____	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
	1	PE	250ml	HNO3			AS (Filtered)	PP
	1	PE	250ml	HNO3			AS (unfiltered)	PP

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Cone Property		SITE LOCATION: Parish	
WELL NO: MW-6B	SAMPLE ID:		DATE: 3-19-09

PURGING DATA

WELL DIAMETER (inches): 2"	TUBING DIAMETER (inches): 5/16	WELL SCREEN INTERVAL DEPTH: 15 feet to 5 feet	STATIC DEPTH TO WATER (feet): 5.50	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
= (18.85 TOP feet – 5.50 TOP feet) X ~~0.004~~ 0.16 gallons/foot = 1.5 gallons

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

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 15	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1015	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or ~~µS/cm~~)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1037	4.0	4.0	0.24	6.5	6.25	20.71	318	0.45	13	clear	None
1039	.25	4.25	0.24	6.5	6.23	20.53	319	0.40	11.0	"	"
1041	.25	4.50	0.24	6.5	6.23	20.49	320	0.34	9.4	"	"
1043	.50	5.00	0.24	6.5	6.23	20.42	320	0.34	8.6	"	"

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Eric Gray LAS	SAMPLER(S) SIGNATURES: Eric Gray	SAMPLING INITIATED AT: 1045	SAMPLING ENDED AT: 1047
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute): 780	TUBING MATERIAL CODE: PE, S	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
	2	PE	250mL	HNO3			AS	PP

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME:	Conc Property	SITE LOCATION:	Escambia
WELL NO:	MW-7	SAMPLE ID:	DATE: 3-19-09

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
2"	5/16	5 feet to 15 feet	4.10	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
= (18 feet – 4.10 feet) X 0.16 gallons/foot = 2.2 gallons

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

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
8'	8'	1328	13:45	3.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1336	1.5	1.5	.20	4.95	5.80	21.95	157	0.44	4.1	Clear	None
1341	1.0	2.5	.20	4.95	5.36	21.97	158	0.43	1.4		
1343	.5	3.0	.20	4.95	5.33	21.96	157	0.39	0.9		
1345	0.5	3.5	.20	4.95	5.27	21.97	157	0.39	1.1		

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
Eric Gray LAS	Eric Gray	1348	1350

PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE:
8'	800	PE, S

FIELD DECONTAMINATION: Y N
FIELD-FILTERED: Y N FILTER SIZE: ____ µm
Filtration Equipment Type: ____
DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
	2	PE	250mL	HNO3			AS	

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: MW-7A Conc Property	SITE LOCATION: Parish	
WELL NO: MW-7A	SAMPLE ID:	DATE: 3-19-09

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): 5.08	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH (top) − STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
= (18 feet − 5.08 feet) X 0.16 gallons/foot = 2.07 gallons

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

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 8'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 8'	PURGING INITIATED AT: 1353	PURGING ENDED AT: 1409	TOTAL VOLUME PURGED (gallons): 3.1

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1403	1.6	1.6	.20	5.51	5.37	20.61	270	0.40	4.2	Clear	None
1405	.65	2.25	.20	5.51	5.38	2053	275	0.26	2.9	"	"
1407	.50	2.75	.20	5.51	5.46	2050	285	0.35	1.8	"	"

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Erin Gray LAS	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1410	SAMPLING ENDED AT: 1412
PUMP OR TUBING DEPTH IN WELL (feet): 8'	SAMPLE PUMP FLOW RATE (mL per minute): 800	TUBING MATERIAL CODE: PE, S	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
	2	PE	250ML	HNO3			AS	PP

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Cone Property	SITE LOCATION: Parish	
WELL NO: MW-7B	SAMPLE ID:	DATE: 3-19-09

PURGING DATA

WELL DIAMETER (inches): 2"	TUBING DIAMETER (inches): 5/16"	WELL SCREEN INTERVAL DEPTH: 5 feet to 15 feet	STATIC DEPTH TO WATER (feet): 6.03	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
= (18 feet – 6.03 feet) X 0.16 gallons/foot = 1.9 gallons

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

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 8'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 8'	PURGING INITIATED AT: 1418	PURGING ENDED AT: 1431	TOTAL VOLUME PURGED (gallons): 3.1

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1425	1.6	1.6	.20	7.59	6.22	20.24	612	0.75	8.7	clear	none
1427	0.5	2.1	.20	7.59	6.30	20.27	630	0.73	6.3	"	"
1429	0.5	2.6	.20	7.59	6.33	2023	646	0.74	6.1	"	"
1431	0.5	3.1	.20	7.59	6.35	2022	654	0.72	5.3	"	"

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Eric Gray LAS	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1433	SAMPLING ENDED AT: 1435
PUMP OR TUBING DEPTH IN WELL (feet): 8'	SAMPLE PUMP FLOW RATE (mL per minute): 800	TUBING MATERIAL CODE: PE, S	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
	2	PE	250mL	HNO3			AS	

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME:	Cone Property	SITE LOCATION:	Parish
WELL NO:	MW-8T	SAMPLE ID:	
DATE:	4-8-09		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
2"	1/4"	4.5 feet to 9.5 feet	5.45 TOP	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH − STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (9.5 feet − 5.45 feet) X 0.16 gallons/foot = 0.7 gallons

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

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
8.5	8.5	1325	1339	1.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1330	0.15	0.15	.09	6.73	5.59	20.83	874	17.1	140	LT BN	None
1333	0.35	0.50	.09	7.50	5.52	20.80	888	15.4	80	Light Cloudy	
1337	0.35	0.85	.09	7.88	5.40	20.78	889	10.8	40	Almost Clear	
1339	0.15	1.00	.09	8.15	5.36	20.79	882	9.7	24		

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
Eric Gray Brett Johnson		1342	1347
PUMP OR TUBING DEPTH IN WELL (feet): 8.5	SAMPLE PUMP FLOW RATE (mL per minute): 208	TUBING MATERIAL CODE: PE, S	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
	1	PE	250mL	HNO3			AS (Filtered)	PP
	1	PE	250mL	HNO3			AS Unfiltered	PP

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Cone Property	SITE LOCATION: Parish	
WELL NO: MW. 15	SAMPLE ID:	DATE: 3-11-09

PURGING DATA

WELL DIAMETER (inches): 2"	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 18 feet to 13 feet	STATIC DEPTH TO WATER (feet): 12.47	PURGE PUMP TYPE OR BAILER: EST

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
= (18 feet – 12.47 TOP feet) X 0.16 gallons/foot = 1.0 gallons

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

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 16'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 16'	PURGING INITIATED AT: 12.17	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1219	1.0	1.0	.32	13.02	4.89	22.19	487	1.66	8.6	Clear	None
1223	1.25	2.25	.32	12.59	4.74	22.09	464	1.93	7.3	1	1
1225	.50	2.75	.24	12.51	4.72	22.04	461	2.08	7.1		

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Eric Gray LAS	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1230	SAMPLING ENDED AT: 1237
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute): 750	TUBING MATERIAL CODE: PE	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
	1	P	250ml	HNO3			AS	ESP
	2	AG	1L				8081	ESP

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME:	Cone Property	SITE LOCATION:	Parish	
WELL NO:	MW-19	SAMPLE ID:		DATE: 11-09

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH TO WATER (feet): 11.68 TOP	PURGE PUMP TYPE OR BAILER: ESP
2				

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
= (18 feet – 11.68 feet) X 0.16 gallons/foot = 1.0 gallons

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

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
16'	16'	10:27	1038	3

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1030	1.1	1.1	.18	12.09	5.02	21.78	394	2.35	110	cloudy WHT	None
1032	.15	1.25	.18	11.92	4.94	21.79	394	2.67	80	"	"
1035	.85	2.1	.18	11.86	4.98	21.77	391	2.88	40	Almost clear	"
1038	.50	2.6	.18	11.80	5.06	21.74	390	2.81	14	clear	

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
Eric Gray LAS	Eric Gray	1040	1045

PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute): 300	TUBING MATERIAL CODE: PE
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
	1	P	250mL	HNO3			AS	ESP
	2	AG	1L				8081	ESP

REMARKS:

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; 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)

DEP-SOP-001/01
FT 1100 Field Measurement of Hydrogen Ion Activity (pH)

Form FD 9000-7: Field Parameter Data Sheet for Surface Water

SURVEY/PROJECT: Lone Property SAMPLERS: EG / CMR METER # _____

STATION NUMBER	STATION DESCRIPTION	PARAMETER	DATE	TIME	TOTAL DEPTH	SAMPLE DEPTH	WATER TEMP	DO	%SAT DO	COND	SALINITY	PH	TURBIDITY
		UNIT	yy/mm/dd	hr:min	feet	feet	Celsius	mg/L	%	µS/cm	ppt	su	NTU
		STORET CODE	73672		81903	68	10	299	301	94	480	400	82078
SW-1	Manmade Pond		09.03.19	1446	1.5	0.5	19.5	.159	6.4	176		6.2	60
SW-2	Pond in NE corner of pasture		09/03/19	1452	1.0	0.5	22.35	0.51	5.9	135		5.6	23

FIELD CONDITIONS FOR STATION# _____ AT TIME _____:

CLOUD COVER (%): _____ WIND DIRECTION: _____ TIDAL STAGE: _____

PREVIOUS RAINFALL: _____ WIND SPEED (MPH/KNOTS): _____ WAVE CONDITIONS: _____

Note: This Sheet is used for recording Sample Data – Calibration information must also be documented

Revision Date: February 1, 2004

APPENDIX D – SLUG TESTING DATA

APPENDIX D - SLUG TESTING DATA

MW-6A = T.O.P. ELEV. = 8.66

MW-6 = T.O.P. ELEV. = 8.45

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HYDRAULIC GRADIENT + GROUNDWATER VELOCITY CALCULATIONS BASED ON BOUWER-RICE METHOD

PROJECT _____ DATE _____

CLIENT _____ PROJECT NO. _____

BY _____ PAGE _____ OF _____

$$\text{GRADIENT} = \frac{H_1 - H_2}{D}$$

H_1 = RELATIVE ELEVATION OF WATER @ POINT A (MW-6)

H_2 = RELATIVE ELEVATION OF WATER @ POINT B (MW-6A)

D = DISTANCE BETWEEN POINT A AND POINT B

$$\text{VELOCITY } (v) = \frac{Ki}{N}$$

K = ESTIMATED SHALLOW AQUIFER HYDRAULIC CONDUCTIVITY
i = HYDRAULIC GRADIENT
N = ESTIMATED SOIL POROSITY

$$\text{HYDRAULIC GRADIENT} = \frac{(\text{MW-6A}) - (\text{MW-6})}{30\text{ft}} = \frac{2.5\text{ft} - 2.45\text{ft}}{30\text{ft}} = \frac{.05\text{ft}}{30\text{ft}} = \boxed{.0017}$$

$$V_{(\text{MW-6A})} = \frac{(.430\text{ft/day})(.0017)}{.25} = \boxed{.003\text{ ft/day}} \longrightarrow \frac{.003\text{ ft}}{\text{day}} \times \frac{365\text{ days}}{1\text{ yr}} = \boxed{\frac{1.1\text{ ft}}{\text{year}}}$$

$$V_{(\text{MW-6})} = \frac{(.65\text{ft/day})(.0017)}{.25} = \boxed{.004\text{ ft/day}} \longrightarrow \frac{.004\text{ ft}}{\text{day}} \times \frac{365\text{ days}}{1\text{ yr}} = \boxed{\frac{1.5\text{ ft}}{\text{yr}}}$$

S.U. - 2.95

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MW-6

1316 = 6.0

TOTAL DEPTH → 15.00

PROJECT _____ DATE _____

CLIENT _____ 1249-1254 PROJECT NO. _____

BY _____ PAGE 1 OF 2

1226 — 6.00

0	7.67	7.77
5	7.29	7.35
10	7.09	7.13
15	6.92	7.00
20	6.74	6.87
25	6.54	6.68
30	6.42	6.56
35	6.34	6.44
40	6.28	6.37
45	6.26	6.32
50	6.20	6.27
55	6.18	6.24
(1) 60	6.16	6.23
TO	6.13	6.18
80	6.10	6.16
90	6.08	6.14
100	6.07	6.13
110	6.06	6.11
(2) 120	6.06	6.10
150	6.03	6.08
(3) 180	6.04	6.06
210	6.04	6.05
(4) 240	6.03	6.04

STOP

270

(5) 300

330

(6) 360

390

(7) 420

8 MIN

9 MIN

10 MIN

11 MIN

12 MIN

17 MIN

22 MIN

27 MIN

MW-6A

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PROJECT _____ DATE _____
CLIENT _____ PROJECT NO. _____
BY _____ 1205 - 1805: PAGE _____ OF _____

START 6.16
0 - 8.98
5 - ~~7.06~~ 8.86
10 - [redacted] 8.75
15 - [redacted] 8.85
20 - [redacted] 7.93
25 - [redacted] 7.74
30 - [redacted] 7.53
35 - [redacted] 7.40
40 - [redacted] 7.32
45 - [redacted] 7.24
50 - [redacted] 7.19
55 - [redacted] 7.12
(1) 60 - [redacted] 7.10
70 - [redacted] 7.00
80 - 6.95
90 - 6.93
100 - 6.90
110 - 6.87
(2) 120 - 6.85
150 - 6.80
(3) 180 - 6.76
210 - 6.72
(4) 240 - 6.68
270 - 6.65
(5) 300 - 6.62
330 - 6.60
(6) 360 - 6.57
390 - 6.55
(7) 420 - 6.52
(8) 480 - 6.49
(9) 540 - 6.46
(10) 600 - 6.43
(11) 660 - 6.41
(12) 720 - 6.39

17 MIN -
22 MIN -
27 MIN -
32 MIN -
37 MIN -
42 MIN -

MW-6 #1

Designation: D 5912 – 96 (Reapproved 2004)

Standard Test Method for (Analytical Procedure) Determining Hydraulic Conductivity of an Unconfined Aquifer by Overdamped Well Response to Instantaneous Change in Head (Slug)[1]

This standard is issued under the fixed designation D 5912; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method covers the determination of hydraulic conductivity from the measurement of inertial force free (overdamped) response of a well-aquifer system to a sudden change in water level in a well. Inertial force free response of the water level in a well to a sudden change in water level is characterized by recovery to initial water level in an approximate exponential manner with negligible inertial effects.

1.2 The analytical procedure in this test method is used in conjunction with the field procedure in Test Method D 4044 for collection of test data.

1.3 *Limitations*—Slug tests are considered to provide an estimate of hydraulic conductivity. The determination of storage coefficient is not possible with this test method. Because the volume of aquifer material tested is small, the values obtained are representative of materials very near the open portion of the control well.

NOTE 1—Slug tests are usually considered to provide estimates of the lower limit of the actual hydraulic conductivity of an aquifer because the test results are so heavily influenced by well efficiency and borehole skin effects near the open portion of the well. The portion of the aquifer that is tested by the slug test is limited to an area near the open portion of the well where the aquifer materials may have been altered during well installation, and therefore may significantly effect the test results. In some cases the data may be misinterpreted and result in a higher estimate of hydraulic conductivity. This is due to the reliance on early time data that is reflective of the hydraulic conductivity of the filter pack surrounding the well. This effect was discussed by Bouwer.[2] In addition, because of the reliance on early time data, in aquifers with medium to high hydraulic conductivity, the early time portion of the curve that is useful for this data analyses is too short (for example, <10 s) for accurate measurement; therefore, the test results begin to greatly underestimate the true hydraulic conductivity.

1.4 The values stated in SI units are to be regarded as the standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:* [3]

D 653 Terminology Relating to Soil, Rock, and Contained Fluids

D 4043 Guide for Selection of Aquifer-Test Methods in Determining Hydraulic Properties by Well Techniques

D 4044 Test Method (Field Procedure) for Instantaneous Change in Head (Slug Test) for Determining Hydraulic Properties of Aquifers

D 4104 Test Method (Analytical Procedure) for Determining Transmissivity of Nonleaky Confined Aquifers by Overdamped Well Response to Instantaneous Change in Head (Slug Test)

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method, see Terminology D 653.

3.2 *Symbols:Symbols and Dimensions:*

2.5 3.2.1 *A [nd]*—coefficient that is a function of L/r_w and is determined graphically.

.375 3.2.2 *B [nd]*—coefficient that is a function of L/r_w and is determined graphically.

2 3.2.3 *C [nd]*—coefficient that is a function of L/r_w and is determined graphically.

30ft 3.2.4 *D [L]*—aquifer thickness.

9ft 3.2.5 *H [L]*—distance between static water level and the base of open interval of the well.

10ft 3.2.6 *L [L]*—length of well open to aquifer.

.167ft 3.2.7 *rc [L]*—inside diameter of the portion of the well casing in which the water level changes.

[1] This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.21 on Ground Water and Vadose Zone Investigations.

Current edition approved Nov. 1, 2004. Published December 2004. Originally approved in 1996. Last previous edition approved in 1996 as D 5912–96[ε1].

[2] Bouwer, H., and Rice, R. C., "A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells," *Water Resources Research*, Vol 12, No. 3, 1976, pp. 423–428.

[3] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

3.2.8 R_e[L]—effective radius, determined empirically based on the geometry of the well, over which y is dissipated.

3.2.9 r_w[L]—radial distance from well center to original undisturbed aquifer.

3.2.10 t_f[T]—time at end point of straight-line portion of graph.

3.2.11 t_0[T]—time at beginning of straight-line portion of graph.

3.2.12 y_f[L]—head difference at end point of straight-line portion of graph.

3.2.13 y_0[L]—head difference at beginning of straight-line portion of graph.

4. Summary of Test Method

4.1 This test method describes the analytical procedure for analyzing data collected following an instantaneous change in head (slug) test in an overdamped well. The field procedures in conducting a slug test are given in Test Method D 4044. The analytical procedure consists of analyzing the recovery of water level in the well following the change in water level induced in the well.

4.2 *Solution*—The solution given by Bouwer and Rice[2] follows:

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L} \frac{1}{(t_f - t_0)} \ln \frac{y_0}{y_f} \quad (1)$$

where:

if $D > H$

$$\ln(R_e/r_w) = \left[\frac{1.1}{\ln(H/r_w)} + A + B \ln[(D - H)/r_w] \right] L/r_w^{-1} \quad (2)$$

if $D = H$

$$\ln R_e/r_w = \left[\frac{1.1}{\ln(H/r_w)} + \frac{C}{L/r_w} \right]^{-1} \quad (3)$$

NOTE 2—Other analytical solutions are given by Hvorslev[4] and Cooper et al;[5,6] however, they may differ in their assumptions and applicability.

NOTE 3—Bouwer[2] provided discussion of various applications and observations of the procedure described in this test method.

NOTE 4—Test Method D 4104 describes the analytical solution following Cooper et al.[5]

NOTE 5—The use of the symbol K for the term hydraulic conductivity is the predominant usage in ground-water literature by hydrogeologists, whereas, the symbol k is commonly used for this term in soil and rock mechanics and soil science.

5. Significance and Use

5.1 *Assumptions of Solution*:

5.1.1 Drawdown (or mounding) of the water table around the well is negligible.

5.1.2 Flow above the water table can be ignored.

5.1.3 Head losses as the water enters or leaves the well are negligible.

5.1.4 The aquifer is homogeneous and isotropic.

5.2 *Implications of Assumptions*:

5.2.1 The mathematical equations applied ignore inertial effects and assume that the water level returns to the static level in an approximate exponential manner.

5.2.2 The geometric configuration of the well and aquifer are shown in Fig. 1, that is after Fig. 1 of Bouwer and Rice.[2]

5.2.3 For filter-packed wells, Eq 1 applies to cases in which the filter pack remains saturated. If some of the filter pack is dewatered during testing, r_c^2 should be replaced by the following:

$$r_c\,(corrected) = [(1 - n)r_a^2 + nr_w^2]^{0.5} \quad (4)$$

where:

n = short-term specific yield of the filter pack,
r_a = uncorrected well casing radius, and
r_w = borehole radius.

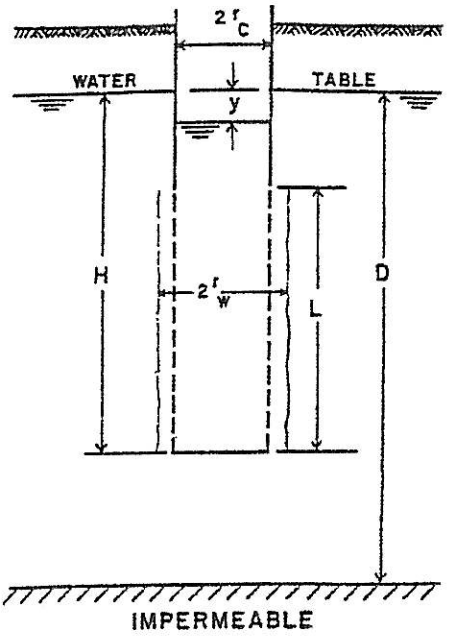
NOTE 6—Short term refers to the duration of the slug test.

6. Procedure

6.1 The overall procedure consists of conducting the slug test field procedure (see Test Method D 4044) and analysis of the field data that is addressed in this test method.

6.2 The water level data are corrected so that the difference between the original static water level and the water level during the test is known. This difference in water level at time "t" is denoted as "y_t".

6.3 The dimensionless coefficients of A, B, and C are determined graphically based on their relationship with L/r_w. An example of the curves relating A, B, and C to L/r_w is given in Fig. 2, that is after Fig. 3 of Bouwer and Rice.[2]



NOTE 1—See Fig. 1 of Footnote 2.

FIG. 1 Geometry and Symbols of a Partially Penetrating, Partially Perforated Well in Unconfined Aquifer with Gravel Pack or Developed Zone Around Perforated Section

[4] Hvorslev, M. J., "Time Lag and Soil Permeability in Ground-Water Observations," Waterways Experiment Station, Corps of Engineers, *U.S. Army, Bulletin No. 36*, 1951.

[5] Cooper, H. H., Jr., Bredehoeft, J. D., and Papadopulos, I. S., "Response of a Finite-Diameter Well to an Instantaneous Change in Water," *Water Resources Research*, Vol 3, No. 1, 1967, pp. 263–269.

[6] Bouwer, H., "The Bouwer-Rice Slug Test—An Update," *Ground Water*, Vol 27, No. 3, 1989, pp. 304–309.

MW-6 #1

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PROJECT _____ DATE _____
CLIENT _____ PROJECT NO. _____
BY _____ PAGE _____ OF _____

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L}\left(\frac{1}{t_f - t_o}\right)\ln\frac{y_o}{y_f}$$

WHERE $D > H$

$$\ln(R_e/r_w) = \left[\frac{1.1}{\ln(H/r_w)} + A + B\ln\frac{(D-H)}{r_w}\right]\left(\frac{L}{r_w}\right)^{-1}$$

$$= \left[\frac{1.1}{\ln(9ft/.33ft)} + 2.5 + (.375)\ln\frac{(30ft - 9ft)}{.33ft}\right]\left(\frac{10ft}{.33ft}\right)^{-1}$$

$$\left[\frac{1.1}{3.306} + 2.5 + (.375)(4.153)\right].033$$

$$\left[(.333) + 2.5 + 1.557\right].033 = [4.39].033 = \boxed{.145}$$

$$K = \frac{(.167ft)^2(.145)}{2(10ft)}\left(\frac{1}{.67\,MIN}\right)(1.786) = \boxed{.0005ft/MIN} \times \frac{60\,MIN}{1\,HR} \times \frac{24\,HR}{1\,DAY} = \boxed{\frac{.72ft}{DAY}}$$

MW-6 #1

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PROJECT _____ DATE DON'T NEED

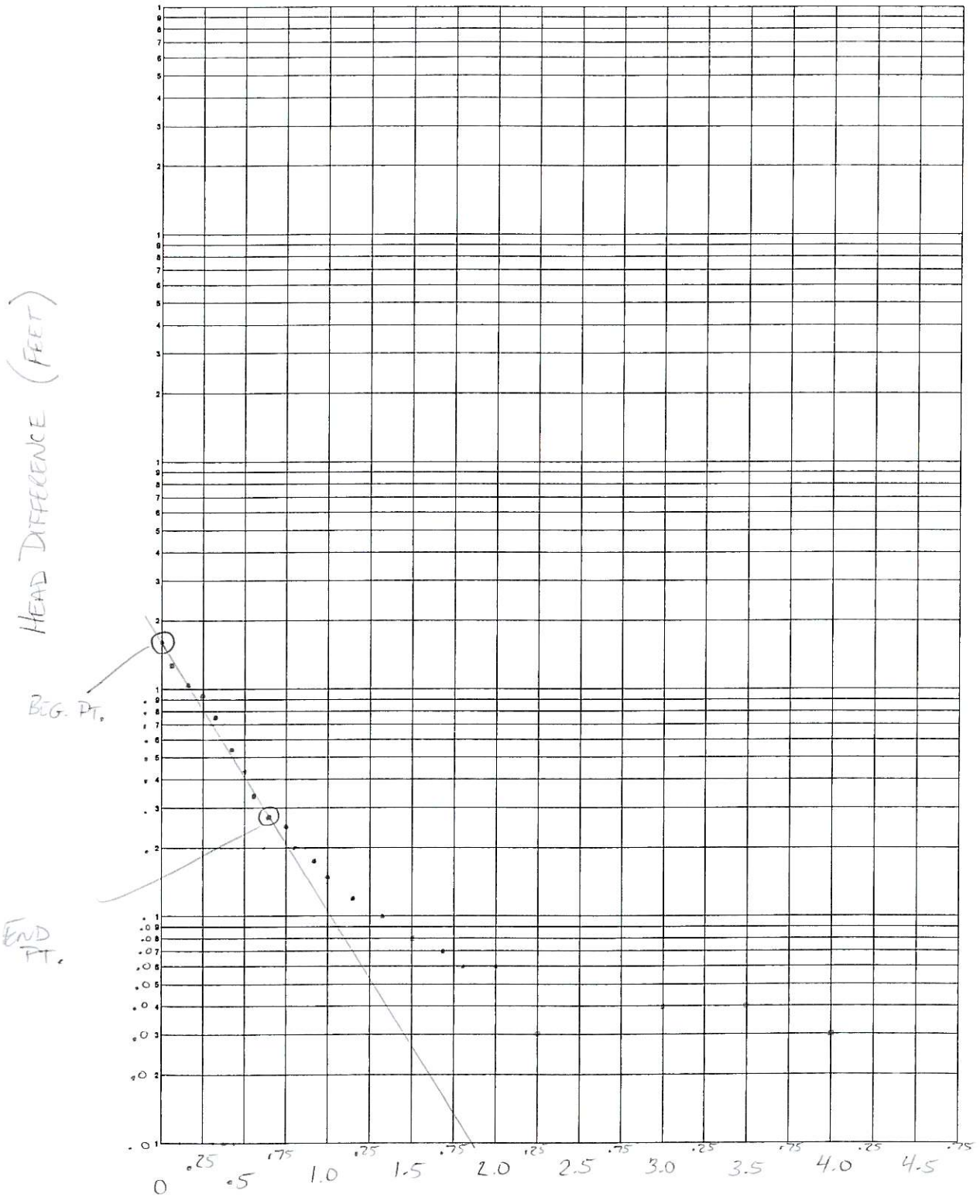
CLIENT _____ PROJECT NO. _____

BY _____ PAGE _____ OF _____

TIME	D.T.W. (T.O.P.)	D.TW - DTW BEFORE TEST (H)	H / H_0
BEFORE TEST BEGAN	6.00	0	
0	7.67	1.67	BEG. PT.
5	7.29	1.29	
10	7.09	1.09	
15	6.92	.92	
20	6.74	.74	
25	6.54	.54	
30	6.42	.42	
35	6.34	.34	
40	6.28	.28	END PT.
45	6.26	.26	
50	6.20	.20	
55	6.18	.18	
60	6.16	.16	
70	6.13	.13	
80	6.10	.10	
90	6.08	.08	
100	6.07	.07	
110	6.06	.06	
120	6.06	.06	
150	6.03	.03	
180	6.04	.04	
210	6.04	.04	
240	6.03	.03	

Semi-Logarithmic Graph Paper

Horizontal axis: Linear, 10 mm
Vertical axis: Logarithmic, 5 cycles



3.2.8 R_e[L]—effective radius, determined empirically based on the geometry of the well, over which y is dissipated.

0.33ft 3.2.9 r_w[L]—radial distance from well center to original undisturbed aquifer.

.75MIN 3.2.10 t_f[T]—time at end point of straight-line portion of graph.

0MIN 3.2.11 t_0[T]—time at beginning of straight-line portion of graph.

.32ft 3.2.12 y_f[L]—head difference at end point of straight-line portion of graph.

1.77ft 3.2.13 y_0[L]—head difference at beginning of straight-line portion of graph.

4. Summary of Test Method

4.1 This test method describes the analytical procedure for analyzing data collected following an instantaneous change in head (slug) test in an overdamped well. The field procedures in conducting a slug test are given in Test Method D 4044. The analytical procedure consists of analyzing the recovery of water level in the well following the change in water level induced in the well.

4.2 *Solution*—The solution given by Bouwer and Rice[2] follows:

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L} \frac{1}{(t_f - t_0)} \ln \frac{y_0}{y_f} \quad (1)$$

where:

if $D > H$

$$\ln(R_e/r_w) = \left[\frac{1.1}{\ln(H/r_w)} + A + B\ln[(D - H)/r_w]\right](L/r_w)^{-1} \quad (2)$$

if $D = H$

$$\ln R_e/r_w = \left[\frac{1.1}{\ln(H/r_w)} + \frac{C}{L/r_w}\right]^{-1} \quad (3)$$

NOTE 2—Other analytical solutions are given by Hvorslev[4] and Cooper et al;[5,6] however, they may differ in their assumptions and applicability.

NOTE 3—Bouwer[2] provided discussion of various applications and observations of the procedure described in this test method.

NOTE 4—Test Method D 4104 describes the analytical solution following Cooper et al.[5]

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5.1.3 Head losses as the water enters or leaves the well are negligible.

5.1.4 The aquifer is homogeneous and isotropic.

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5.2.2 The geometric configuration of the well and aquifer are shown in Fig. 1, that is after Fig. 1 of Bouwer and Rice.[2]

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$$r_c\,(corrected) = [(1 - n)r_a^2 + nr_w^2]^{0.5} \quad (4)$$

where:

n = short-term specific yield of the filter pack,
r_a = uncorrected well casing radius, and
r_w = borehole radius.

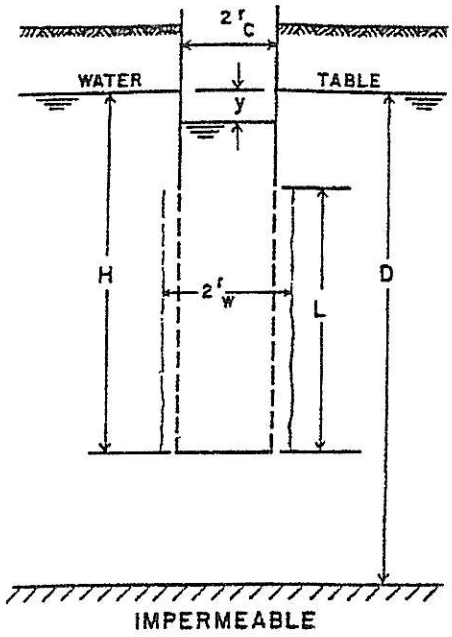
NOTE 6—Short term refers to the duration of the slug test.

6. Procedure

6.1 The overall procedure consists of conducting the slug test field procedure (see Test Method D 4044) and analysis of the field data that is addressed in this test method.

6.2 The water level data are corrected so that the difference between the original static water level and the water level during the test is known. This difference in water level at time "t" is denoted as "y_t".

6.3 The dimensionless coefficients of A, B, and C are determined graphically based on their relationship with L/r_w. An example of the curves relating A, B, and C to L/r_w is given in Fig. 2, that is after Fig. 3 of Bouwer and Rice.[2]



NOTE 1—See Fig. 1 of Footnote 2.

FIG. 1 Geometry and Symbols of a Partially Penetrating, Partially Perforated Well in Unconfined Aquifer with Gravel Pack or Developed Zone Around Perforated Section

[4] Hvorslev, M. J., "Time Lag and Soil Permeability in Ground-Water Observations," Waterways Experiment Station, Corps of Engineers, *U.S. Army, Bulletin No. 36*, 1951.

[5] Cooper, H. H., Jr., Bredehoeft, J. D., and Papadopulos, I. S., "Response of a Finite-Diameter Well to an Instantaneous Change in Water," *Water Resources Research*, Vol 3, No. 1, 1967, pp. 263–269.

[6] Bouwer, H., "The Bouwer-Rice Slug Test—An Update," *Ground Water*, Vol 27, No. 3, 1989, pp. 304–309.

H_t is the drawdown at time $t = t$ (L; ft, m, or cm)

t is the time since $H = H_0$ (T; day or s)

MW-6

The effective distance over which the induced head is dissipated, R_e, is the distance away from the well that the average value of K is being sured. However, there is no way to know what the value of R_e is for a given Bouwer (Bouwer & Rice 1976; Bouwer 1989) has presented a method of nating the dimensionless ratio $\ln(R_e/R)$ found in Equation 7–86.

SAME FOR MW-6A

If L_w is less than h, the saturated thickness of the aquifer, then

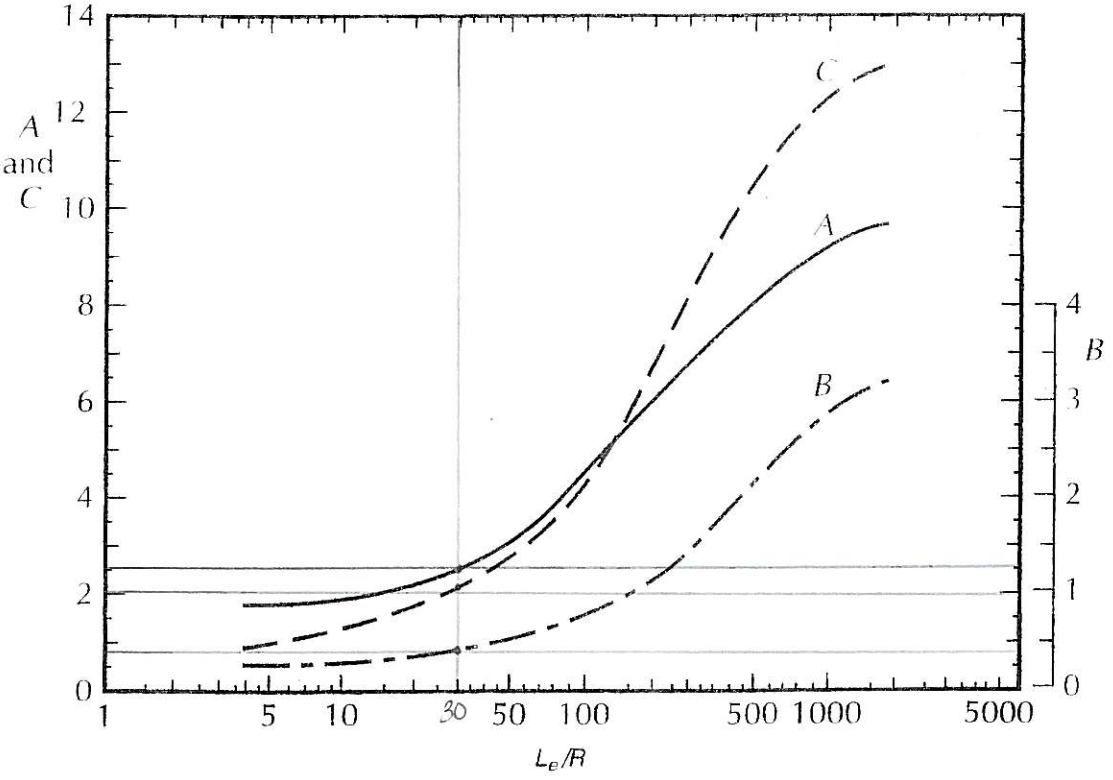
$$\ln \frac{R_e}{R} = \left[\frac{1.1}{\ln(L_w/R)} + \frac{A + B \ln[(h - L_w)/R]}{L_e/R} \right]^{-1} \quad (7\text{–}87)$$

If L_w is equal to h, then

$$\ln \frac{R_e}{R} = \left[\frac{1.1}{\ln(L_w/R)} + \frac{C}{L_e/R} \right]^{-1} \quad (7\text{–}88)$$

re A, B, and C are dimensionless numbers that can be found from Figure 7.25, re they are plotted as a function of L_e/R.

The value of H_t as a function of t is plotted on semilogarithmic paper, with n the logarithmic axis. The data pairs will fall on a straight line from small



L_E = 10ft (LENGTH OF SCREEN)

RE 7.25 Dimensionless parameters A, B, and C plotted as a function of L_e/R. These neters are used in the determination of $\ln(R_e/R)$ in Equations 7–87 and 7–88. Source: ıan Bouwer, *Ground Water* 27 (1989): 304–309. Used with permission. © 1989,

MW-6c

USE 30' FOR D
ASSUMED

Designation: D 5912 – 96 (Reapproved 2004)

Standard Test Method for (Analytical Procedure) Determining Hydraulic Conductivity of an Unconfined Aquifer by Overdamped Well Response to Instantaneous Change in Head (Slug)[1]

This standard is issued under the fixed designation D 5912; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method covers the determination of hydraulic conductivity from the measurement of inertial force free (overdamped) response of a well-aquifer system to a sudden change in water level in a well. Inertial force free response of the water level in a well to a sudden change in water level is characterized by recovery to initial water level in an approximate exponential manner with negligible inertial effects.

1.2 The analytical procedure in this test method is used in conjunction with the field procedure in Test Method D 4044 for collection of test data.

1.3 *Limitations*—Slug tests are considered to provide an estimate of hydraulic conductivity. The determination of storage coefficient is not possible with this test method. Because the volume of aquifer material tested is small, the values obtained are representative of materials very near the open portion of the control well.

NOTE 1—Slug tests are usually considered to provide estimates of the lower limit of the actual hydraulic conductivity of an aquifer because the test results are so heavily influenced by well efficiency and borehole skin effects near the open portion of the well. The portion of the aquifer that is tested by the slug test is limited to an area near the open portion of the well where the aquifer materials may have been altered during well installation, and therefore may significantly effect the test results. In some cases the data may be misinterpreted and result in a higher estimate of hydraulic conductivity. This is due to the reliance on early time data that is reflective of the hydraulic conductivity of the filter pack surrounding the well. This effect was discussed by Bouwer.[2] In addition, because of the reliance on early time data, in aquifers with medium to high hydraulic conductivity, the early time portion of the curve that is useful for this data analyses is too short (for example, <10 s) for accurate measurement; therefore, the test results begin to greatly underestimate the true hydraulic conductivity.

1.4 The values stated in SI units are to be regarded as the standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:* [3]

D 653 Terminology Relating to Soil, Rock, and Contained Fluids

D 4043 Guide for Selection of Aquifer-Test Methods in Determining Hydraulic Properties by Well Techniques

D 4044 Test Method (Field Procedure) for Instantaneous Change in Head (Slug Test) for Determining Hydraulic Properties of Aquifers

D 4104 Test Method (Analytical Procedure) for Determining Transmissivity of Nonleaky Confined Aquifers by Overdamped Well Response to Instantaneous Change in Head (Slug Test)

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method, see Terminology D 653.

3.2 *Symbols:Symbols and Dimensions:*

2.5 3.2.1 *A [nd]*—coefficient that is a function of L/r_w and is determined graphically.

.375 3.2.2 *B [nd]*—coefficient that is a function of L/r_w and is determined graphically.

2 3.2.3 *C [nd]*—coefficient that is a function of L/r_w and is determined graphically.

30 ft 3.2.4 *D [L]*—aquifer thickness.

9 ft 3.2.5 *H [L]*—distance between static water level and the base of open interval of the well.

10 ft 3.2.6 *L [L]*—length of well open to aquifer.

0.167 ft 3.2.7 *rc [L]*—inside diameter of the portion of the well casing in which the water level changes.

[1] This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.21 on Ground Water and Vadose Zone Investigations.

Current edition approved Nov. 1, 2004. Published December 2004. Originally approved in 1996. Last previous edition approved in 1996 as D 5912–96[ε1].

[2] Bouwer, H., and Rice, R. C., "A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells," *Water Resources Research*, Vol 12, No. 3, 1976, pp. 423–428.

[3] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

MW-6

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BOUWER - RICE EQUATION

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L} \frac{1}{(t_f - t_o)} \ln \frac{y_o}{y_f}$$

$r_c = .167$ ft

$L = 10$ ft

$t_f = .75$ MIN

$t_o = 0$ MIN

$y_o = 1.77$ ft

$y_f = .32$ ft

$\ln(R_e/r_w) = .144$

$A = 2.5$

$B = .375$

$C = 2$

WHERE: $D > H$

$$\ln(R_e/r_w) = \left[\frac{1.1}{\ln(H/r_w)} + A + B \ln\left[(D-H)/r_w\right]\right] L/r_w^{-1}$$

$$\left[\frac{1.1}{\ln\left(\frac{9ft}{.33ft}\right)} + 2.5 + .375\left[\ln\left(30ft - 9ft\right)/.33ft\right]\right]\left(\frac{10ft}{.33ft}\right)^{-1}$$

$$\left[\frac{1.1}{3.31} + 2.5 + .375(4.153)\right].033 =$$

$$\left[.33 + 2.5 + 1.56\right].033 = \boxed{.144} \Rightarrow \ln(R_e/r_w)$$

MW-6 #2

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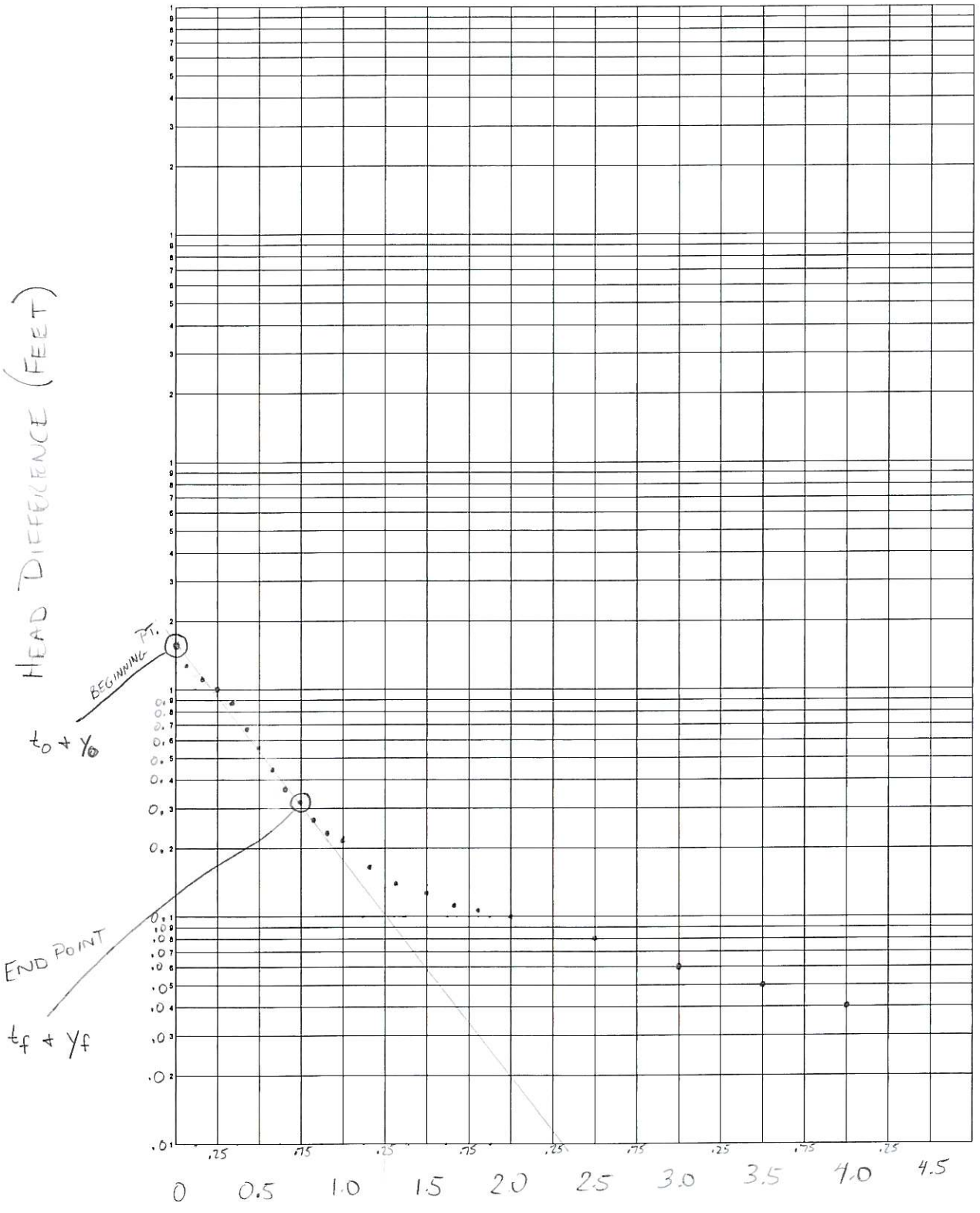
BY _____ PAGE _____ OF _____

TIME	DEPTH TO WATER (T.O.P.)	D.T.W. − D.T.W. BEFORE TEST (H)	HEAD RATIO (H/H_o)
BEFORE TEST BEGAN	6.00	0	
0	7.77	1.77 (H_o)	1
5	7.35	1.35	.76
10	7.13	1.13	.64
15	7.00	1.00	.56
20	6.87	.87	.49
25	6.68	.68	.38
30	6.56	.56	.32
35	6.44	.44	.25
40	6.37	.37	.21
45	6.32	.32	.18
50	6.27	.27	.15
55	6.24	.24	.14
60	6.23	.23	.13
70	6.18	.18	.10
80	6.16	.16	.09
90	6.14	.14	.08
100	6.13	.13	.07
110	6.11	.11	.06
120	6.10	.10	.06
150	6.08	.08	.05
180	6.06	.06	.03
210	6.05	.05	.03
240	6.04	.04	.02

W-6

Semi-Logarithmic Graph Paper

Horizontal axis: Linear, 10 mm
Vertical axis: Logarithmic, 5 cycles



MW-6 (BOUWER - RICE) METHOD

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CLIENT _____ PROJECT NO. _____

BY _____ PAGE _____ OF _____

$$K = \frac{(.167\,ft)^2\,(.144)}{2(10\,ft)} \quad \frac{1}{(.75\,MIN - 0\,MIN)} \left(\ln \frac{1.77\,ft}{.32\,ft}\right) =$$

$$\frac{(.029\,ft^3)\,(.144)}{20\,ft} \quad \frac{1}{.75\,MIN} \left(\ln 5.531\right) =$$

$$\frac{.004\,ft}{20} \left(\frac{1.33}{MIN}\right)\left(\frac{1.71}{1}\right) = \frac{.0002\,ft}{1} \left(\frac{1.33}{1\,MIN}\right)\left(\frac{1.71}{1}\right) = \boxed{\frac{.00045\,ft}{MIN}}$$

$$\frac{.00045\,ft}{MIN} \times \frac{60\,MIN}{1\,HR} \times \frac{24\,HR}{1\,DAY} = \boxed{\frac{.65\,ft}{DAY}}$$

MW-6

BOUWER-RICE METHOD

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PROJECT ASTM D5912-96(2004) DATE 5/4/09
CLIENT PROJECT NO.
BY PAGE 1 OF 2

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L}\left(\frac{1}{t_f - t_o}\right)\ln\frac{y_o}{y_f}$$

WHERE $D > H$

$$\ln(R_e/r_w) = \left[\frac{1.1}{\ln(H/r_w)} + A + B\ln\left[\frac{(D-H)}{R_w}\right]\right]\left(\frac{L}{r_w}\right)^{-1}$$

$$\ln(R_e/r_w) = \left[\frac{1.1}{\ln(9ft/.33ft)} + 2.5 + (.375)\ln\left[\frac{(30ft - 9ft)}{.33ft}\right]\right]\left(\frac{10ft}{.33ft}\right)^{-1}$$

$$= \left[\frac{1.1}{\ln(27.27)} + 2.5 + (.375)\ln\left(\frac{21ft}{.33ft}\right)\right](30.3)^{-1}$$

$$\left[\frac{1.1}{3.306} + 2.5 + (.375)(4.153)\right].033 = \boxed{.145} = \ln(R_e/r_w)$$

$$K = \frac{(.167ft)^2(.145)}{2(10ft)}\left(\frac{1}{.75\,MIN - 0\,MIN}\right)\ln\left(\frac{1.77ft}{.32ft}\right)$$

NEXT PAGE

MW-6

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BY _____ PAGE 2 OF 2

$$K = \left(\frac{.004\ ft^2}{20\ ft}\right)\left(\frac{1}{.75\ MIN}\right)(1.71)$$

$$\downarrow$$

$$(.0002\ ft)\left(\frac{1}{.75\ MIN}\right)1.71 = \boxed{.00046\ ft/MIN}$$

$$\frac{.00046\ ft}{MIN} \times \frac{60\ MIN}{1\ HR} \times \frac{24\ HR}{1\ DAY} = \boxed{\frac{.66\ ft}{DAY}}$$

Designation: D 5912 – 96 (Reapproved 2004)

MW-6A

Standard Test Method for (Analytical Procedure) Determining Hydraulic Conductivity of an Unconfined Aquifer by Overdamped Well Response to Instantaneous Change in Head (Slug)[1]

This standard is issued under the fixed designation D 5912; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method covers the determination of hydraulic conductivity from the measurement of inertial force free (overdamped) response of a well-aquifer system to a sudden change in water level in a well. Inertial force free response of the water level in a well to a sudden change in water level is characterized by recovery to initial water level in an approximate exponential manner with negligible inertial effects.

1.2 The analytical procedure in this test method is used in conjunction with the field procedure in Test Method D 4044 for collection of test data.

1.3 *Limitations*—Slug tests are considered to provide an estimate of hydraulic conductivity. The determination of storage coefficient is not possible with this test method. Because the volume of aquifer material tested is small, the values obtained are representative of materials very near the open portion of the control well.

NOTE 1—Slug tests are usually considered to provide estimates of the lower limit of the actual hydraulic conductivity of an aquifer because the test results are so heavily influenced by well efficiency and borehole skin effects near the open portion of the well. The portion of the aquifer that is tested by the slug test is limited to an area near the open portion of the well where the aquifer materials may have been altered during well installation, and therefore may significantly effect the test results. In some cases the data may be misinterpreted and result in a higher estimate of hydraulic conductivity. This is due to the reliance on early time data that is reflective of the hydraulic conductivity of the filter pack surrounding the well. This effect was discussed by Bouwer.[2] In addition, because of the reliance on early time data, in aquifers with medium to high hydraulic conductivity, the early time portion of the curve that is useful for this data analyses is too short (for example, <10 s) for accurate measurement; therefore, the test results begin to greatly underestimate the true hydraulic conductivity.

1.4 The values stated in SI units are to be regarded as the standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:* [3]

D 653 Terminology Relating to Soil, Rock, and Contained Fluids

D 4043 Guide for Selection of Aquifer-Test Methods in Determining Hydraulic Properties by Well Techniques

D 4044 Test Method (Field Procedure) for Instantaneous Change in Head (Slug Test) for Determining Hydraulic Properties of Aquifers

D 4104 Test Method (Analytical Procedure) for Determining Transmissivity of Nonleaky Confined Aquifers by Overdamped Well Response to Instantaneous Change in Head (Slug Test)

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method, see Terminology D 653.

3.2 *Symbols:Symbols and Dimensions:*

2.5 3.2.1 *A [nd]*—coefficient that is a function of L/r_w and is determined graphically.

.375 3.2.2 *B [nd]*—coefficient that is a function of L/r_w and is determined graphically.

2 3.2.3 *C [nd]*—coefficient that is a function of L/r_w and is determined graphically.

30ft 3.2.4 *D [L]*—aquifer thickness.

11.8ft 3.2.5 *H [L]*—distance between static water level and the base of open interval of the well.

10 ft 3.2.6 *L [L]*—length of well open to aquifer.

0.167ft 3.2.7 *rc [L]*—inside diameter of the portion of the well casing in which the water level changes.

[1] This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.21 on Ground Water and Vadose Zone Investigations.

Current edition approved Nov. 1, 2004. Published December 2004. Originally approved in 1996. Last previous edition approved in 1996 as D 5912–96[ε1].

[2] Bouwer, H., and Rice, R. C., "A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells," *Water Resources Research*, Vol 12, No. 3, 1976, pp. 423–428.

[3] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

3.2.8 R_e[L]—effective radius, determined empirically based on the geometry of the well, over which y is dissipated.

0.33ft 3.2.9 r_w[L]—radial distance from well center to original undisturbed aquifer.

0.5min 3.2.10 t_f[T]—time at end point of straight-line portion of graph.

0.25min 3.2.11 t_0[T]—time at beginning of straight-line portion of graph.

1.37ft 3.2.12 y_f[L]—head difference at end point of straight-line portion of graph.

1.99ft 3.2.13 y_0[L]—head difference at beginning of straight-line portion of graph.

4. Summary of Test Method

4.1 This test method describes the analytical procedure for analyzing data collected following an instantaneous change in head (slug) test in an overdamped well. The field procedures in conducting a slug test are given in Test Method D 4044. The analytical procedure consists of analyzing the recovery of water level in the well following the change in water level induced in the well.

4.2 *Solution*—The solution given by Bouwer and Rice[2] follows:

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L} \frac{1}{(t_f - t_0)} \ln \frac{y_0}{yf} \quad (1)$$

where:

if $D > H$

$$\ln(R_e/r_w) = \left[\frac{1.1}{\ln(H/r_w)} + A + B \ln[(D - H)/r_w \right] L/r_w^{-1} \quad (2)$$

if $D = H$

$$\ln R_e/r_w = \left[\frac{1.1}{\ln(H/r_w)} + \frac{C}{L/r_w} \right]^{-1} \quad (3)$$

NOTE 2—Other analytical solutions are given by Hvorslev[4] and Cooper et al;[5,6] however, they may differ in their assumptions and applicability.

NOTE 3—Bouwer[2] provided discussion of various applications and observations of the procedure described in this test method.

NOTE 4—Test Method D 4104 describes the analytical solution following Cooper et al.[5]

NOTE 5—The use of the symbol K for the term hydraulic conductivity is the predominant usage in ground-water literature by hydrogeologists, whereas, the symbol k is commonly used for this term in soil and rock mechanics and soil science.

5. Significance and Use

5.1 *Assumptions of Solution*:

5.1.1 Drawdown (or mounding) of the water table around the well is negligible.

5.1.2 Flow above the water table can be ignored.

5.1.3 Head losses as the water enters or leaves the well are negligible.

5.1.4 The aquifer is homogeneous and isotropic.

5.2 *Implications of Assumptions*:

5.2.1 The mathematical equations applied ignore inertial effects and assume that the water level returns to the static level in an approximate exponential manner.

5.2.2 The geometric configuration of the well and aquifer are shown in Fig. 1, that is after Fig. 1 of Bouwer and Rice.[2]

5.2.3 For filter-packed wells, Eq 1 applies to cases in which the filter pack remains saturated. If some of the filter pack is dewatered during testing, r_c^2 should be replaced by the following:

$$r_c \text{ (corrected)} = [(1 - n)r_a^2 + nr_w^2]^{0.5} \quad (4)$$

where:

n = short-term specific yield of the filter pack,
r_a = uncorrected well casing radius, and
r_w = borehole radius.

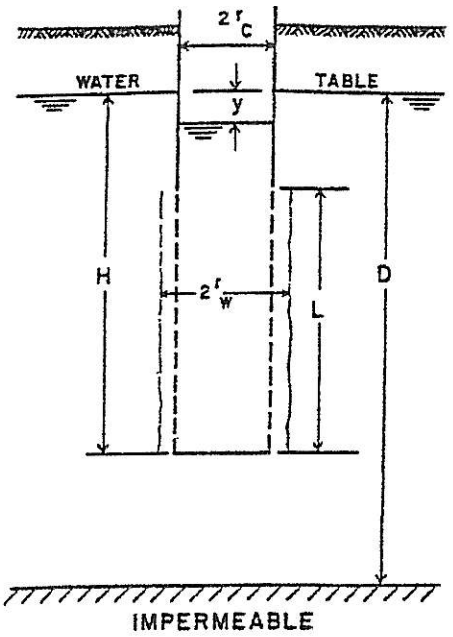
NOTE 6—Short term refers to the duration of the slug test.

6. Procedure

6.1 The overall procedure consists of conducting the slug test field procedure (see Test Method D 4044) and analysis of the field data that is addressed in this test method.

6.2 The water level data are corrected so that the difference between the original static water level and the water level during the test is known. This difference in water level at time "t" is denoted as "y_t".

6.3 The dimensionless coefficients of A, B, and C are determined graphically based on their relationship with L/r_w. An example of the curves relating A, B, and C to L/r_w is given in Fig. 2, that is after Fig. 3 of Bouwer and Rice.[2]



NOTE 1—See Fig. 1 of Footnote 2.

FIG. 1 Geometry and Symbols of a Partially Penetrating, Partially Perforated Well in Unconfined Aquifer with Gravel Pack or Developed Zone Around Perforated Section

[4] Hvorslev, M. J., "Time Lag and Soil Permeability in Ground-Water Observations," Waterways Experiment Station, Corps of Engineers, *U.S. Army, Bulletin No. 36*, 1951.

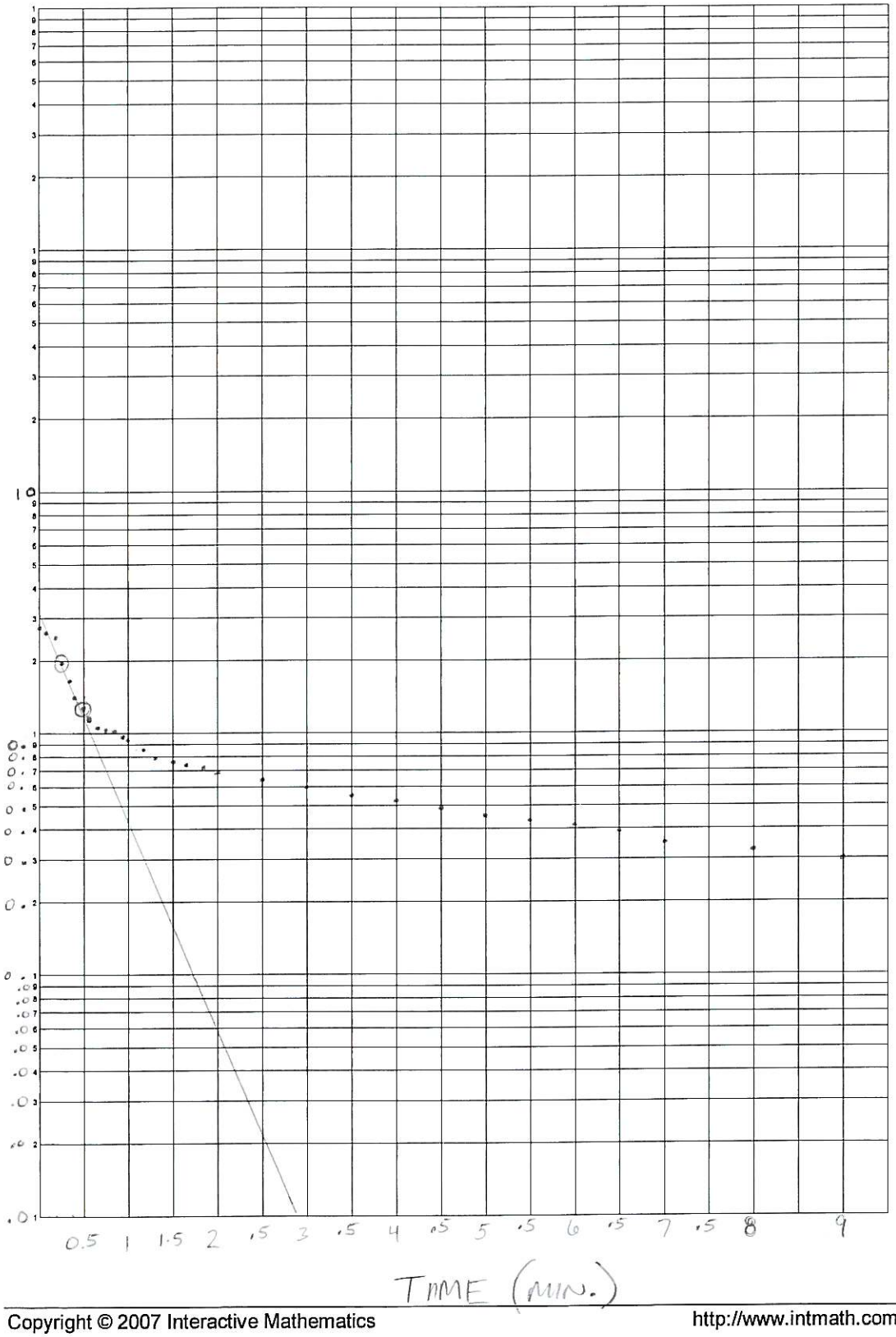
[5] Cooper, H. H., Jr., Bredehoeft, J. D., and Papadopulos, I. S., "Response of a Finite-Diameter Well to an Instantaneous Change in Water," *Water Resources Research*, Vol 3, No. 1, 1967, pp. 263–269.

[6] Bouwer, H., "The Bouwer-Rice Slug Test—An Update," *Ground Water*, Vol 27, No. 3, 1989, pp. 304–309.

MW-6A

Semi-Logarithmic Graph Paper

Horizontal axis: Linear, 10 mm
Vertical axis: Logarithmic, 5 cycles



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PROJECT _____ DATE _____
CLIENT _____ PROJECT NO. _____
BY _____ PAGE _____ OF _____

TIME	D.T.W. (T.O.P.)	D.T.W - DTW BEFORE TEST (H)	HEAD RATIO (H_t/H_0)
BEFORE TEST BEGAN	6.16		
0	8.98	2.82 (H_0)	1
5	8.86	2.7	.96
10	8.75	2.59	.92
15	8.15	1.99	.71
20	7.93	1.77	.63
25	7.74	1.58	.56
30	7.53	1.37	.49
35	7.40	1.24	.44
40	7.32	1.16	.41
45	7.24	1.08	.38
50	7.19	1.03	.37
55	7.12	0.96	.34
60	7.10	0.94	.33
70	7.00	0.84	.30
80	6.95	.79	.28
90	6.93	.77	.27
100	6.90	.74	.26
110	6.87	.71	.25
120	6.85	.69	.24
150	6.80	.64	.23
180	6.76	.60	.21
210	6.72	.56	.20
240	6.68	.52	.18
270	6.65	.49	.17
300	6.62	.46	.16
330	6.60	.44	.16
360	6.57	.41	.15
390	6.55	.39	.14
420	6.52	.36	.13
480	6.49	.33	.12
540	6.46	.30	.11
600	6.43	.27	.10
660	6.41	.25	.09
720	6.39	.23	.08

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PROJECT _____ DATE _____
CLIENT _____ PROJECT NO. _____
BY _____ PAGE _____ OF _____

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L}\left(\frac{1}{t_f - t_o}\right)\left(\ln\frac{y_o}{y_f}\right)$$

WHERE D > H

$$\ln(R_e/r_w) = \left[\frac{1.1}{\ln(H/r_w)} + A + B\ln\frac{(D-H)}{r_w}\right] L/r_w^{-1}$$

$$\left[\frac{1.1}{\ln\left(\frac{11.84\,ft}{.33ft}\right)} + 2.5 + (.375)\ln\frac{(30ft - 11.84\,ft)}{.33ft}\right]\left(\frac{10ft}{.33ft}\right)^{-1}$$

$$\left[\frac{1.1}{3.58} + 2.5 + (.375)(4.008)\right](30.303)^{-1}$$

$$\left[(0.307) + 2.5 + (1.503)\right](30.303)^{-1} = \boxed{.142} \longrightarrow \ln(R_e/r_w)$$

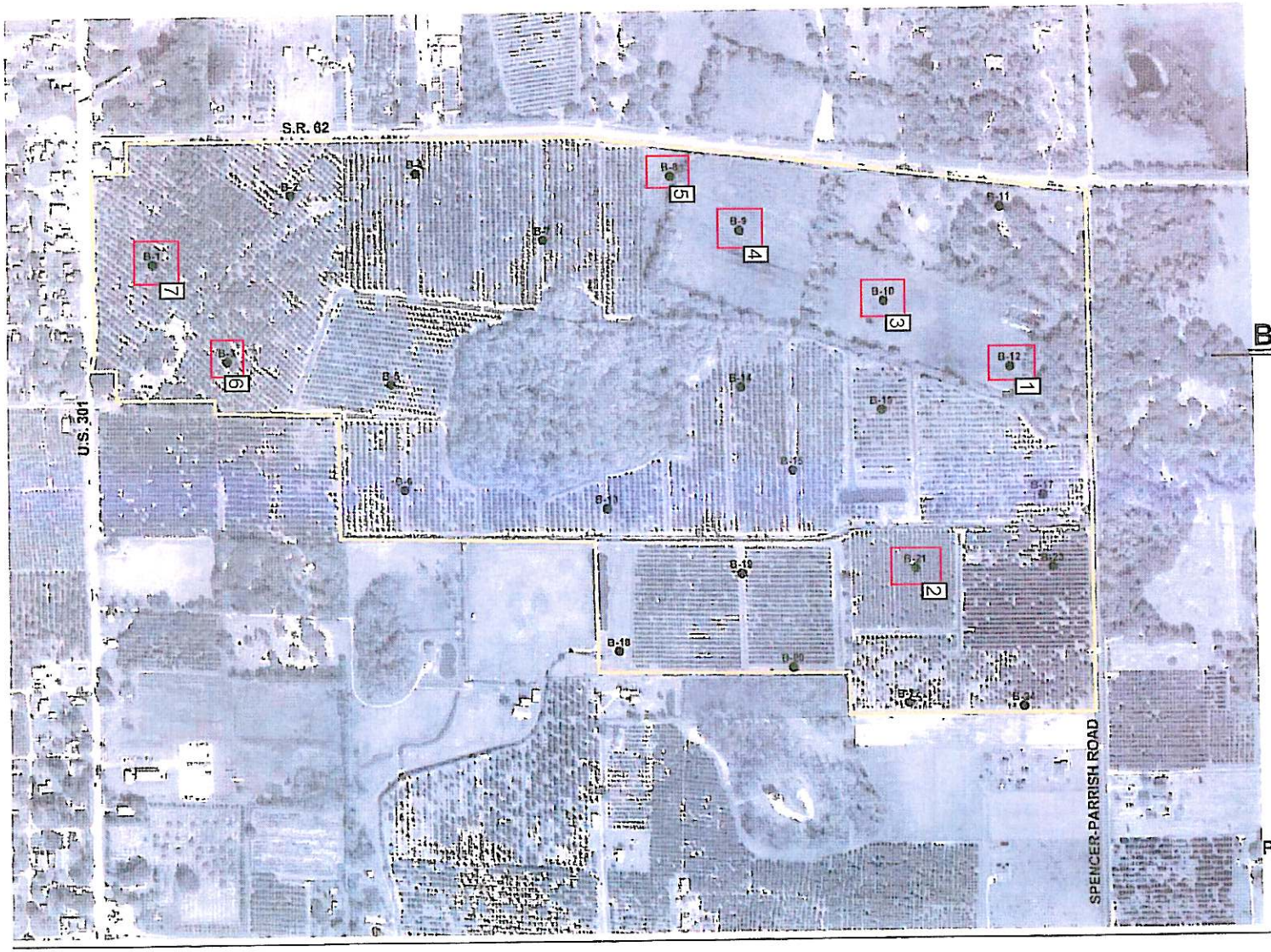
.033

$$K = \frac{(.167\,ft)^2(.142)}{2(10ft)}\left(\frac{1}{0.5\,MIN - 0.25\,MIN}\right)\left(\ln\frac{1.99ft}{1.37ft}\right) = \frac{.004\,ft^2}{20ft}\left(\frac{1\,MIN}{.25\,MIN}\right)(0.373)$$

$$\boxed{.0003\ ft/MIN} \longrightarrow \frac{60\,MIN}{1\,HR} \times \frac{24\,HR}{1\,DAY} = \boxed{.430ft/DAY}$$

APPENDIX E – PREVIOUS PRELIMINARY SOIL STUDY DATA AND SOIL PROFILES

APPENDIX E - PREVIOUS PRELIMINARY SOIL STUDY DATA AND SOIL PROFILES



N

BORING LOCATION PLAN

1"=700' (+/-)

0' 700' 1,400'

LEGEND

Approximate SPT boring location

REDUCED

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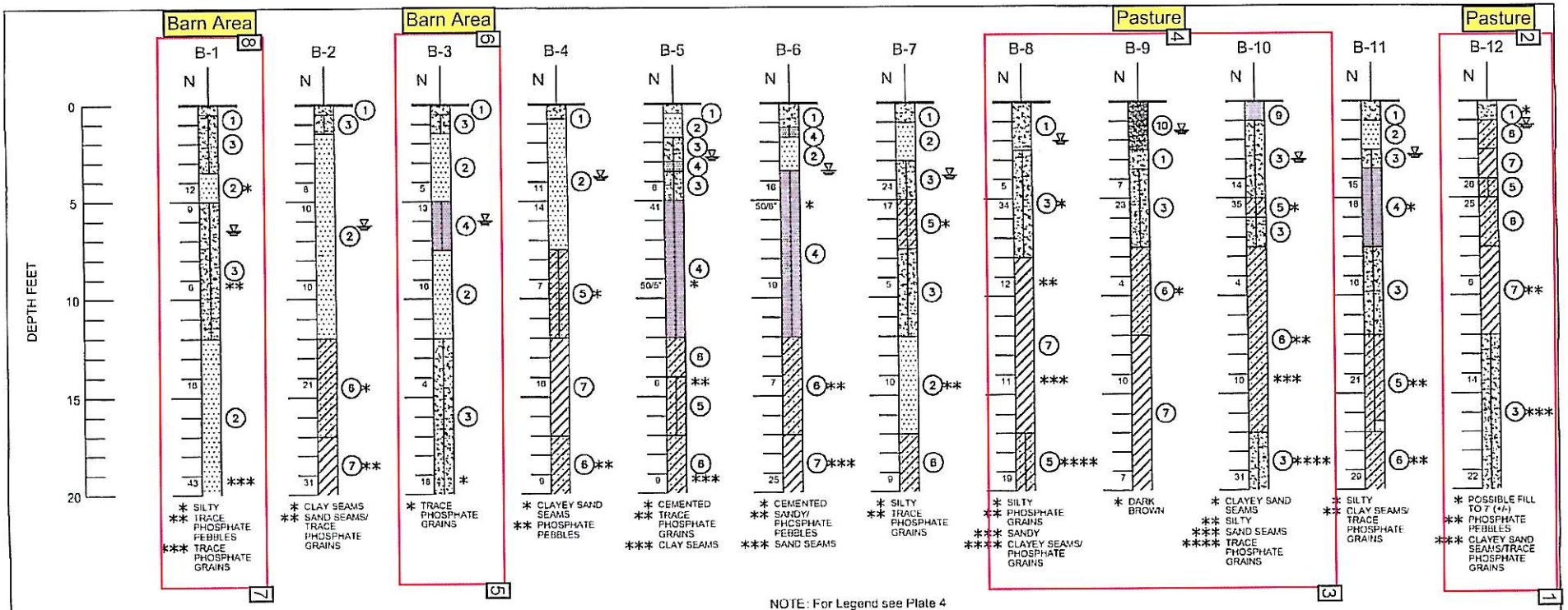
MORTEN SEN ENGINEERING, INC.

PRELIMINARY SOILS STUDY

PROPOSED RESIDENTIAL DEVELOPMENT
CONE PROPERTY (268 ACRES +/-)
MANATEE COUNTY, FLORIDA

DATE: JUL 04 PROJ. NO: 04-10-05953 PLATE 1

5953.DWG



NOTE: For Legend see Plate 4

SOIL PROFILES

VERTICAL SCALE: 1"=5'

THE TEST BORING RESULTS HEREON ARE REPRESENTATIVE OF THE SUBSURFACE CONDITIONS AT THE NOTED APPROXIMATE BORING LOCATIONS, AND FOR THEIR NOTED DEPTHS; LOCAL VARIATIONS CHARACTERISTIC OF THE SUBSURFACE MATERIALS OF THE REGION SHOULD BE ANTICIPATED AND MAY BE ENCOUNTERED PARTICULARLY IN AREAS PREVIOUSLY DISTURBED. THE SOIL PROFILES AND THE OTHER FIELD TEST DATA HEREON ARE BASED ON THE DRILLER'S LOGS AND VISUAL REVIEW OF SELECTED SOIL SAMPLES IN THE LABORATORY. THE DELINEATIONS BETWEEN DIFFERENT SOIL MATERIAL TYPES SHOWN HEREON SHOULD BE CONSIDERED APPROXIMATE. THE GENERALIZED SOIL DESCRIPTIONS HEREON REPRESENT OUR INTERPRETATION OF THE SUBSURFACE SOIL CONDITIONS AT THE NOTED BORING LOCATIONS AND ON THE DATES DRILLED

THE GROUNDWATER LEVEL DATA SHOWN HEREON ALONGSIDE THE SOIL BORING PROFILES REPRESENT SHORT TERM (NOT NECESSARILY STABILIZED) GROUNDWATER LEVELS, MEASURED IN THE BOREHOLES OR IN AN OFFSET BOREHOLE ON THE DATE DRILLED, UNLESS OTHERWISE NOTED. FLUCTUATIONS IN THE SHALLOW GROUNDWATER LEVEL FROM THE LEVELS SHOWN HEREON WILL OCCUR AND SHOULD BE ANTICIPATED THROUGHOUT THE YEAR; LOCAL VARIATIONS FROM THE LEVELS SHOWN HEREON SHOULD ALSO BE ANTICIPATED

REDUCED

MEI
MORTENSEN ENGINEERING INC.

PRELIMINARY SOILS STUDY

PROPOSED RESIDENTIAL DEVELOPMENT
CONE PROPERTY (268 ACRES +/-)
MANATEE COUNTY, FLORIDA

DATE: JUL 04 PROJ. NO: 04-10-05953 PLATE 2

5953SPT.DWG

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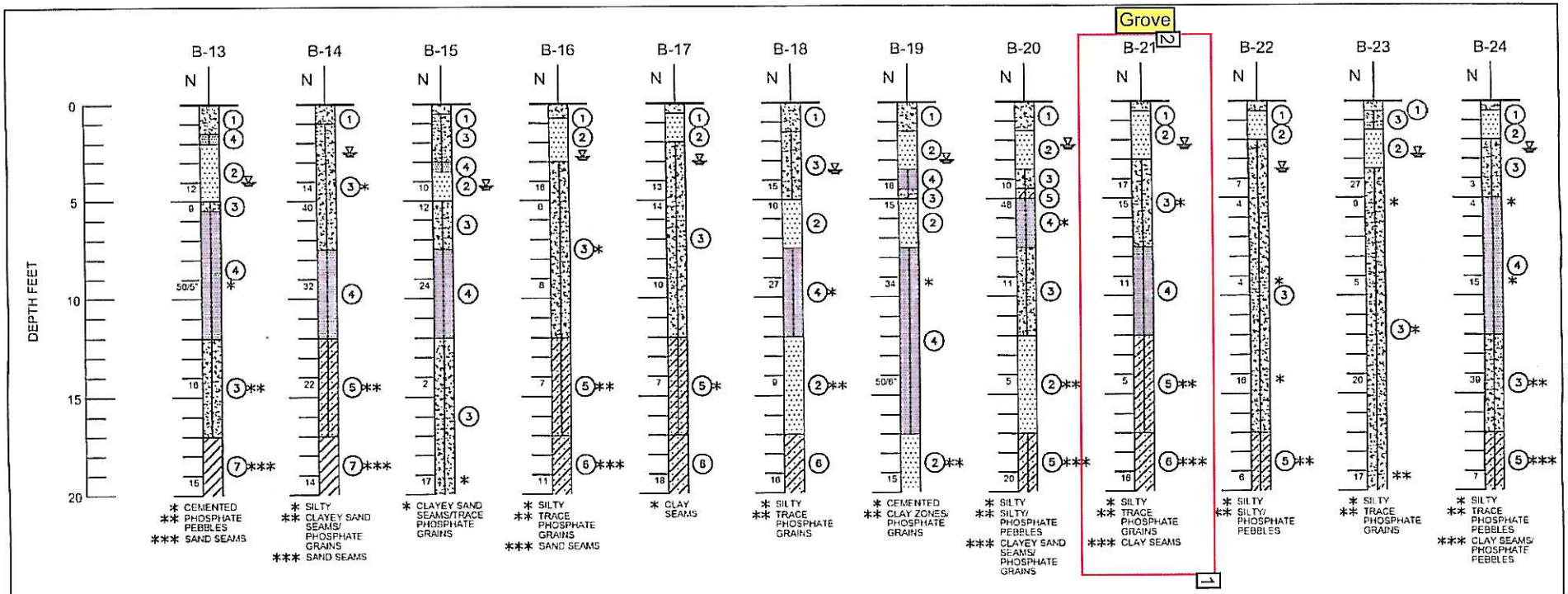

NOTE: For Legend see Plate 4

SOIL PROFILES

VERTICAL SCALE: 1"=5'

THE TEST BORING RESULTS HEREON ARE REPRESENTATIVE OF THE SUBSURFACE CONDITIONS AT THE NOTED APPROXIMATE BORING LOCATIONS, AND FOR THEIR NOTED DEPTHS; LOCAL VARIATIONS CHARACTERISTIC OF THE SUBSURFACE MATERIALS OF THE REGION SHOULD BE ANTICIPATED AND MAY BE ENCOUNTERED PARTICULARLY IN AREAS PREVIOUSLY DISTURBED. THE SOIL PROFILES AND THE OTHER FIELD TEST DATA HEREON ARE BASED ON THE DRILLER'S LOGS AND VISUAL REVIEW OF SELECTED SOIL SAMPLES IN THE LABORATORY. THE DELINEATIONS BETWEEN DIFFERENT SOIL MATERIAL TYPES SHOWN HEREON SHOULD BE CONSIDERED APPROXIMATE. THE GENERALIZED SOIL DESCRIPTIONS HEREON REPRESENT OUR INTERPRETATION OF THE SUBSURFACE SOIL CONDITIONS AT THE NOTED BORING LOCATIONS AND ON THE DATES DRILLED.

THE GROUNDWATER LEVEL DATA SHOWN HEREON ALONGSIDE THE SOIL BORING PROFILES REPRESENT SHORT TERM (NOT NECESSARILY STABILIZED) GROUNDWATER LEVELS, MEASURED IN THE BOREHOLES OR IN AN OFFSET BOREHOLE ON THE DATE DRILLED, UNLESS OTHERWISE NOTED. FLUCTUATIONS IN THE SHALLOW GROUNDWATER LEVEL FROM THE LEVELS SHOWN HEREON WILL OCCUR AND SHOULD BE ANTICIPATED THROUGHOUT THE YEAR; LOCAL VARIATIONS FROM THE LEVELS SHOWN HEREON SHOULD ALSO BE ANTICIPATED

MEI
MORTENSEN ENGINEERING INC.

REDUCED

PRELIMINARY SOILS STUDY

PROPOSED RESIDENTIAL DEVELOPMENT
CONE PROPERTY (268 ACRES +/-)
MANATEE COUNTY, FLORIDA

DATE: JUL 04 PROJ. NO: 04-10-05953 PLATE 3

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LEGEND

1. Gray to dark gray fine SAND to slightly silty fine SAND, trace organics (SP/SP-SM)
2. White to light brown fine SAND to silty fine SAND (SP/SP-SM/SM)
3. Brown or gray fine SAND to silty fine SAND (SP/SP-SM/SM)
4. Dark brown to reddish brown slightly silty fine SAND (SP-SM)
5. Gray or brown silty to slightly clayey fine SAND (SM/SM-SC)
6. Gray or brown clayey SAND (SC)
7. Gray or brown sandy CLAY (CL/CH)
8. White to light gray weathered LIMESTONE
9. Dark brown to black organic laden silty fine SAND (SM-PT)
10. Dark brown to black sandy and organic MUCK (PT)

⏚ Groundwater level, July 2004

SP Unified Soil Classification group symbol as determined by visual review

N SPT "N" value in blows/foot

50/5" Fifty blows for five inches

MEI
MORTENSEN ENGINEERING INC

PRELIMINARY SOILS STUDY

PROPOSED RESIDENTIAL DEVELOPMENT
CONE PROPERTY (268 ACRES +/-)
MANATEE COUNTY, FLORIDA

DATE: JUL 04 PROJ. NO: 04-10-05953 PLATE 4

5953L.DWG

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APPENDIX F - CALIBRATION/MAINTENANCE LOGS

MORTENSEN ENGINEERING, INC.

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DISSOLVED OXYGEN CALIBRATION / VERIFICATION LOG

Project/Site: _____ Date: _____ Meter # _____

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book* _____

DEP SOP FT 1500	Initials	Date	Time	Probe Charge	Probe Gain	~~Reg~~ mg/L	~~Reg~~ Temp C	% DO	Saturation mg/L Standard (from chart)	Pass or Fail
(CAL) (ICV) CCV	EG	4-29-09	719			8.63	23.10	100.8	8.56	(P) F
CAL ICV (CCV)	EG	4-30-09	1225			8.23	26.93	102.8	7.99	P (F)
(CAL) (ICV) CCV	EG	4-30-09	1227			8.15	25.40	100.4	8.128	(P) F
CAL ICV (CCV)	EG	5-5-09	818			7.96	22.58	92.2		P (F)
(CAL) (ICV) (CCV)	EG	5-5-09	820			8.70	22.62	100.7		(P) F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F

Perfom only in Calibrate Mode: **CAL** – Calibrate
Perform only in Run Mode: **ICV** – Initial Calibration Verification
Perform only in Run Mode: **CCV** – Continuing Calibration Verification

MORTENSEN ENGINEERING, INC.

+ Acceptance

DISSOLVED OXYGEN CALIBRATION / VERIFICATION LOG

Project/Site: _____ Date: _____ Meter # _____

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book* _____

DEP SOP FT 1500	Initials	Date	Time	Probe Charge	Probe Gain	~~Reg~~ mg/L	~~Reg~~ Temp C	% DO	Saturation mg/L Standard (from chart)	Pass or Fail
CAL ICV (CCV)	CMR	3/12/09	907			9.33	21.4	105.5	8.8	P (F)
(CAL) ICV CCV	CMR	3/12/09	912			8.88	21.7	100.9	8.8	(P) F
CAL (ICV) CCV	CMR	3/12/09	1016			8.57	22.4	98.7	8.7	(P) F
CAL ICV (CCV)	EG	3.31.09	716			9.30	17.8	98.2	9.5	(P) F
CAL ICV (CCV)	EG	4-1-09	710			8.51	22.98	99.2	8.59	(P) F
CAL ICV (CCV)	EG	4-1-09	726			8.40	22.97	97.9	8.58	(P) F
CAL ICV (CCV)	EG	4-6-09	800			8.15	23.44	95.9	8.5	P (F)
CAL (ICV) (CCV)	EG	4-6-09	803			8.48	23.55	100.0	8.48	(P) F
CAL ICV (CCV)	EG	4.7.09	733			9.08	20.20	101.3	9.05	(P) F
CAL ICV (CCV)	CMR	4-7-09	1448			8.65	21.5	98.0	8.83	(P) F
CAL ICV (CCV)	EG	4-9-09	802			8.58	21.00	99.6	8.91	(P) F
CAL ICV (CCV)	EG	4-13.09	816			8.71	21.67	99.0	8.8	(P) F
CAL ICV (CCV)	EG	4-16-09	726			9.02	20.49	100.2	9.01	(P) F
CAL ICV (CCV)	EG	4-29.09	718			9.11	23.12	106.6	8.54	P (F)

Perfom only in Calibrate Mode: **CAL** – Calibrate
Perform only in Run Mode: **ICV** – Initial Calibration Verification
Perform only in Run Mode: **CCV** – Continuing Calibration Verification

Acceptance — —

MORTENSEN ENGINEERING, INC.

DISSOLVED OXYGEN CALIBRATION / VERIFICATION LOG

Project/Site: _____ Date: _____ Meter # _____

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book* _____

DEP SOP FT 1500	Initials	Date	Time	Probe Charge	Probe Gain	~~Reg~~ mg/L	~~Reg~~ Temp C	% DO	Saturation mg/L Standard (from chart)	Pass or Fail
CAL ICV (CCV)	EG	10/14/08	1443	____	____	9.59	25.57	121.7	8.18	P (F)
CAL (ICV) (CCV)	EG	10/14/08	1445	____	____	8.05	26.90	100.7	7.98	(P) F
CAL (ICV) (CCV)	EG	10/17/08	906	____	____	8.81	21.92	100.6	8.80	(P) F
CAL ICV (CCV)	EG	10/23/08	724	____	____	8.62	23.48	101.4	8.5	(P) F
CAL ICV (CCV)	EG	10/30/08	722	____	____	9.49	20.07	104.6	9.09	P (F)
(CAL) (ICV) CCV	EG	10/30/08	724	____	____	9.20	20.06	101.3	9.09	(P) F
CAL ICV (CCV)	EG	11/7/08	721	____	____	8.77	21.86	100.0	8.77	(P) F
CAL ICV (CCV)	EG	12/29/08	7:07	____	____	7.27	22.28	83.5	____	P (F)
(CAL) (ICV) CCV	EG	12/29/08	7:10	____	____	8.26	22.31	100.8	____	(P) F
CAL ICV (CCV)	EG	1/26/09	7:19	____	____	9.66	22.92	112.4	____	P (F)
(CAL) (ICV) CCV	EG	1/26/09	7:20	____	____	8.68	22.93	101.0	____	(P) F
CAL ICV (CCV)	EG	2/23/09	714	____	____	8.97	21.05	100.7	8.9	(P) F
CAL ICV (CCV)	EG	3/11/09	710	____	____	9.16	21.72	104.2	8.7	P (F)
CAL (ICV) (CCV)	EG	3/11/09	7:12	____	____	8.86	21.7(	100.8	8.7	(P) F

Perfom only in Calibrate Mode: **CAL** – Calibrate
Perform only in Run Mode: **ICV** – Initial Calibration Verification
Perform only in Run Mode: **CCV** – Continuing Calibration Verification

MORTENSEN ENGINEERING, INC.

pH CALIBRATION / VERIFICATION LOG

Project/Site: _____ Date: _____ Meter # _____

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book* _____

DEP SOP FT 1100	Initials	Date	Time	Standard SU	Exp. Date	Lot #	Bottle #	Slope	Reading SU	Pass or Fail
CAL ICV (CCV)	CMC	4-7-09	1450	10.0	9/09	106-E			10.03	(P) F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F

Perfom only in Calibrate Mode: **CAL** – Calibrate
Perform only in Run Mode: **ICV** – Initial Calibration Verification
Perform only in Run Mode: **CCV** – Continuing Calibration Verification

MORTENSEN ENGINEERING, INC.

pH CALIBRATION / VERIFICATION LOG

Project/Site: _____ Date: _____ Meter # _____

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book* _____

DEP SOP FT 1100	Initials	Date	Time	Standard SU	Exp. Date	Lot #	Bottle #	Slope	Reading SU	Pass or Fail
CAL ICV (CCV)	CMR	3-12-09	1118	4.01	12/09	2801177			4.23	(P) F
CAL ICV (CCV)	CMR	3-12-09	1121	7.00	7/09	2708373			4.69	P (F)
CAL (ICV) CCV	CMR	3-12-09	1124	4.01	4/10	104-E			3.99	(P) F
CAL (ICV) CCV	CMR	3-12-09	1127	7.00	7/09	2708373			6.9	(P) F
CAL ICV (CCV)	EG	3-31-09	720	7.00	7/09	2708373			6.97	P F
CAL ICV (CCV)	EG	4-1-09	715	10.00	9/09	106-E			10.85	P F
(CAL) (ICV) CCV	EG	4-1-09	718	10.00	9/09	106-E			10.02	P F
CAL ICV (CCV)	EG	4-1-09	728	4.01	4/10	104-E			6.03	P (F)
(CAL) (ICV) CCV	EG	4-1-09	732	4.01	4/10	104E			4.01	(P) F
CAL ICV (CCV)	EG	4-6-09	805	7.00	7/09	2708373			7.97	P F
CAL (ICV) (CCV)	EG	4-6-09	~~807~~	7.00	7/09	2708373			7.00	(P) F
CAL ICV (CCV)	EG	4-7-09	737	4.01	4/10	104E			3.50	P (F)
(CAL) (ICV) (CCV)	EG	4-7-09	742	4.01	4/10	104-E			4.01	(P) F
(CAL) (ICV) CCV	EG	4-7-09	744	10.0	9/09	106-E			10.01	(P) F

Perfom only in Calibrate Mode:	**CAL** – Calibrate
Perform only in Run Mode:	**ICV** – Initial Calibration Verification
Perform only in Run Mode:	**CCV** – Continuing Calibration Verification

MORTENSEN ENGINEERING, INC.

Acceptable

pH CALIBRATION / VERIFICATION LOG

Project/Site: _____ Date: _____ Meter # _____

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book* _____

DEP SOP FT 1100	Initials	Date	Time	Standard SU	Exp. Date	Lot #	Bottle #	Slope	Reading SU	Pass or Fail
CAL ICV (CCV)	EG	1-26-09	7:20	4.01	12/09	2801177			3.96	P (F)
(CAL) (ICV) CCV	EG	1-26-09	7:24	4.01	12/09	2801177			4.01	(P) F
CAL ICV (CCV)	EG	2-23-09	715	10.00	10/08	2704001			9.63	P (F)
(CAL) (ICV) CCV	EG	2-23-09	719	10.00	10/09	2704001			10.01	(P) F
CAL ICV (CCV)	EG	3-11-09	716	4.01	12/09	2801177			5.15	P (F)
(CAL) (ICV) CCV	EG	3-11-09	720	4.01	12/09	2801177			4.01	P F
CAL ICV (CCV)	CMR	3-12-09	934	4.01	12/09	2801177			3.08	P (F)
(CAL) ICV CCV	CMR	3-12-09	936	4.01	↓	↓			4.01	(P) F
CAL (ICV) (CCV)	CMR	3-12-09	942	7.00	7/09	2708373			6.73	P (F)
(CAL) ICV CCV	CMR	3-12-09	943	7.00	↓	↓			7.06	(P) F
CAL (ICV) CCV	CMR	3-12-09	944	7.00	↓	↓			7.09	(P) F
CAL ICV (CCV)	CMR	3-12-09	1021	4.01	12/09	2801177			4.19	(P) F
CAL ICV (CCV)	CMR	3-12-09	1033	7.00	7/09	2708323			6.71	P (F)
(CAL) (ICV) CCV	CMR	3-12-09	1046	4.01	12/09	2801177			3.98	(P) F
(ICV)	CMR	3-12-09		7.00	7/09	2708373			6.61	(F)

Perfom only in Calibrate Mode: **CAL** – Calibrate
Perform only in Run Mode: **ICV** – Initial Calibration Verification
Perform only in Run Mode: **CCV** – Continuing Calibration Verification

MORTENSEN ENGINEERING, INC.

Acceptance ± 5%

SPECIFIC CONDUCTANCE CALIBRATION / VERIFICATION LOG

Project/Site: _____ Date: _____ Meter # _____

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book* _____

DEP SOP FT 1200	Initials	Date	Time	Standard umhos/cm	Exp. Date	Lot #	Bottle #	Cell Constant	Reading umhos/cm	Pass or Fail
CAL ICV (CCV)	CMR	4-7-09	1457	84	4/09	2804387			82	(P) F
CAL ICV (CCV)	EG	4-9-09	812	3,000	10/09	117-3000-E			3008	(P) F
CAL ICV (CCV)	EG	4-13-09	820	84	4/09	2804387			112	P (F)
(CAL) (ICV) CCV	EG	4-13-09	824	84	4/09	2804387			85	(P) F
CAL ICV (CCV)	EG	4-16-09	746	3,000	10/09	117-3000-E			2334	P (F)
(CAL) (ICV) (CCV)	EG	4-16-09	748	3,000	10/09	117-3000-E			2990	(P) F
CAL ICV (CCV)	EG	4-29-09	724	3,000	10/09	117-3000-E			2966	(P) F
CAL ICV (CCV)	EG	4-30-09	1234	84	4/09	2804387			98	P (F)
(CAL) (ICV) CCV	EG	4-30-09	1237	84	4/09	2804387			88	(P) F
CAL ICV (CCV)	EG	5-5-09	8:26	500	10/09	117-500-E			462	P (F)
(CAL) (ICV) CCV	EG	5-5-09	8:28	500	10/09	117-500-E			500	(P) F
CAL ICV CCV										P F
CAL ICV CCV										P F
CAL ICV CCV										P F

Perfom only in Calibrate Mode:	**CAL** – Calibrate
Perform only in Run Mode:	**ICV** – Initial Calibration Verification
Perform only in Run Mode:	**CCV** – Continuing Calibration Verification

MORTENSEN ENGINEERING, INC.

Acceptance ± 5%

SPECIFIC CONDUCTANCE CALIBRATION / VERIFICATION LOG

Project/Site: _____ Date: _____ Meter # _____

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book* _____

DEP SOP FT 1200	Initials	Date	Time	Standard umhos/cm	Exp. Date	Lot #	Bottle #	Cell Constant	Reading umhos/cm	Pass or Fail
CAL ICV (CCV)	EG	3-11-09	7:25	1413	6/09	2806432			620	P (F)
(CAL) (ICV) CCV	EG	3-11-09	730	1413	6/09	2806432			1412	(P) F
CAL ICV (CCV)	CMR	3-12-09	915	1413	6/09	2806432			1860	P (F)
(CAL) ICV CCV	CMR	3-12-09	929	1413	6/09	2806432			1468	(P) F
CAL ICV (CCV)	CMR	3-12-09	931	84	4/09	2804387			88	(P) F
CAL ICV (CCV)	CMR	3/12/09	1018	500	10/09	117-500-E			516	(P) F
CAL ICV (CCV)	EG	3/31/09	718	500	10/09	117-500E			503	(P) F
CAL ICV (CCV)	EG	4/1/09	712	84	4/09	2804387			101	P (F)
(CAL) (ICV) (CCV)	EG	4/1/09	714	84	4/09	2804387			85	(P) F
CAL ICV (CCV)	EG	4/1/09	735	1413	6/09	2806432			1182	P (F)
(CAL) (ICV) CCV	EG	4/1/09	738	1413	6/09	2806432			1413	(P) F
CAL ICV (CCV)	EG	4/16/09	809	3,000	10/09	117-3000-E			2708	(P) F
CAL ICV (CCV)	CMR	4-7-09	1452	3000	10/09	117-3000-E			2801	P (F)
(CAL) (ICV) CCV	CMR	4-7-09	1454	3000	10/09	117-3000-E			2999	(P) F

Perfom only in Calibrate Mode: **CAL** – Calibrate
Perform only in Run Mode: **ICV** – Initial Calibration Verification
Perform only in Run Mode: **CCV** – Continuing Calibration Verification

MORTENSEN ENGINEERING, INC.

TURBIDITY CALIBRATION / VERIFICATION LOG

Project/Site: _____ Date: _____ Meter # _____

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book* _____

DEP SOP FT 1600	Initials	Date	Time	Standard NTU	Exp. Date	Lot #	Bottle #	Reading NTU	Pass or Fail
CAL ICV (CCV)	EG	4-4-08	9:28	1.0				1.01	(P) F
CAL ICV (CCV)	EG	4-9-08	9:57	1.0				1.04	(P) F
CAL ICV (CCV)	EG	4-15-08	9:45	1.0				1.04	(P) F
CAL ICV (CCV)	EG	4-30-08	7:35	1.0				1.08	(P) F
CAL ICV (CCV)	EG	5-27-08	13:42	1.0				1.02	(P) F
CAL ICV (CCV)	EG	10-7-08	1015	1.0				.98	(P) F
CAL ICV (CCV)	EG	10-29-08	1040	1.0				1.08	(P) F
CAL ICV (CCV)	EG	11-7-08	9:50	1.0				1.06	(P) F
CAL ICV (CCV)	EG	3-11-09	1010	1.0				1.02	(P) F
CAL ICV (CCV)	EG	3-19-09	956	1.0				1.2	P (F)
CAL ICV (CCV)	EG	3-19-09	957	1.0				1.00	(P) F
(CAL) (ICV) CCV									P F
CAL ICV CCV									P F
CAL ICV CCV									P F
CAL ICV CCV									P F

Exp Date
10 NTU 08/08
1 NTU 03/09

Perfom only in Calibrate Mode: **CAL** – Calibrate
Perform only in Run Mode: **ICV** – Initial Calibration Verification
Perform only in Run Mode: **CCV** – Continuing Calibration Verification