Florida Department of

Memorandum **Environmental Protection**

To: Satish Kastury, Program Administrator
Hazardous Waste Regulation Section

Through: Russ Frydenborg, Environmental Administrator
Environmental Assessment Section

Through: Andrew Tintle, Environmental Specialist
Environmental Assessment Section

From: Michael Blizzard, Environmental Specialist
Environmental Assessment Section

Date: July 3, 2003

Subject: Field Sampling Performance Audit Report
FDOT Fairbanks Disposal Pit

The following is the preliminary report for the field audit conducted at FDOT Fairbanks Disposal Pit on March 4th, 2003. The DEP Hazardous Waste Regulation Section, in fulfillment of cooperative agreements with EPA Region IV requested this audit for the management of RCRA permitting activities.

The findings of the DEP auditors Michael Blizzard and Andrew Tintle are listed below and in the attachments.

REPORT FORMAT AND AUDIT CRITERIA

The audit summary in this correspondence, the attached checklists and any copies of the samplers' field logs and notes comprise the audit report. The checklist findings are coded with the following notations, as follows:

- **Y** The activity is in compliance with the audit statement and no deficiency was found.
- **N** The activity was not in compliance with the audit statement and a deficiency is noted.
- **NA** The activity was not applicable to the sampling event.
- **NR** The information was not reviewed or was not audited.
- **?** There was insufficient information to determine compliance with the audit statement.

Sampling activities have been audited using the Department of Environmental Protection "Standard Operating Procedures for Field Activities", DEP-SOP-001/01, which was published as a final version on January 1, 2002. Some procedures stipulated under the site specific Quality Assurance Project Plan (QAPP) and the 1992 edition of the DEP SOP (if cited in the QAPP) may be at variance with the 2002 DEP SOP. However, the QAPP procedures are the prevailing standard for the facility's permit, unless otherwise negotiated. The consultant should notify DEP of any audit discrepancies in this regard when responding to this report.

Part 1 - NARRATIVE AND REPORT OF FINDINGS

Introductory Meeting and Orientation

DEP personnel, Mr. Michael Blizzard and Mr. Andrew Tintle, of the Environmental Assessment Section (EAS) arrived at the field office of the consultant, WRS Infrastructure and Environment, Inc. (WRS), located at the Fairbanks site, at approximately 10 a.m. to conduct the audit and split sampling event. Ms. Cheryl Sicker, WRS Engineer at the site and Ms. Mary Varga and Mr. Dennis Malucci, WRS sampling staff for the sampling event, met with the auditors at this time to discuss site safety issues and the purpose and protocols for the audit. EAS staff briefly reviewed and signed a set of site safety instructions, which were further explained by Ms. Sicker. The auditors and sampling staff then drove vehicles to the first monitoring well to begin the audit.

Sampling Procedures for Passive Diffusion Bags (PDB)

Water levels for all of the wells had been determined prior to sampling. As discussed below, additional water level measurements for well S-5R were made at the time of purging with a submersible pump. Passive diffusion bags had been installed in the previous month at all of the audited wells and were retrieved and their contents sampled during the audit for well numbers H1-10, H1-53 and S-5R.

The PDB installation is an experimental technique proposed by the consultant as a possible alternative to conventional monitoring well sampling for a selected list of analytes. The study design includes installation of duplicate PDBs in some wells in one of two configurations and some wells are also sampled by conventional means for the purpose of data comparison between the experimental and standard techniques. PDB sampling has not been approved by DEP as an alternative sampling procedure.

Since DEP does not publish standard operating procedures for PDB sampling, the auditors served only as observers of the technique. Sample collection procedures within the jurisdiction of the DEP SOPs are associated with the retrieval and handling of the sample from the PDB device, however, where applicable.

For all wells, the sampler retrieved the PDBs by manually withdrawing the pre-measured string lanyard holding the bags within the well screens below water level. At well S-5R, the auditors determined that the PDB was probably not fully suspended within the screen interval as required, and may have straddled or been placed completely above the screened interval by a short distance of perhaps 0.5 feet.

Once retrieved, the tops of the bags were removed. This procedure produced some splashing and possible agitation of the bag sample in some instances because of the force of the closure top removal. Samples were then alternately poured by the sampler into VOC vials provided by WRS and EAS. Pour rate was easily controlled by the sampler without agitating the VOC sample collected into the vials. For well S-5R, there was insufficient sample to obtain a fourth vial for DEP analysis.

Equipment Decontamination and Collection of Equipment Blanks

After collecting PDB samples at wells H1-10 and H1-53, the auditors and samplers drove to another WRS facility on-site to pick up an electrical generator and observe decontamination procedures.

Analyte-free water was obtained from a tap to which a rubber hose was connected. The sampler rinsed the exterior of the submersible pump with analyte-free water and then isopropyl alcohol.

An equipment blank was collected by dribbling analyte-free water over the exterior of the pump into VOC vials.

The pump was wrapped in aluminum foil.

The water level electronic tape, sonde and attached weight were rinsed with analyte-free water prior to insertion in well S-5R. The submersible pump was primed and pre-rinsed with analyte free water prior to insertion in S-5R.

Monitoring Well S-5R Purging and Sampling

Well number S-5R was sampled with PDB and conventional sampling techniques.

Upon arrival at the site of the well head, the auditor noted that the wellhead structures (above ground riser and locked housing) were not obviously marked (or perhaps not marked at all) for easy identification of each well in the cluster.

The samplers placed new plastic groundcover around the well head. Samplers removed equipment and new poly tubing from protective plastic wrap in preparation for purging.

Purging and sampling was performed with a stainless steel submersible pump and new poly tubing. However, the original braided flexible PVC tubing joined with the pump electric cable was not easily removable and was inserted downhole and remained submersed with the pump assembly in formation water during the entire operation. Vinyl electric tape was used to wrap the connection between the electric cable and the pump.

The casing was marked on the north side. Initial depth to water was measured at 14.03 feet and the well depth was 33.57 feet. The samplers used a water level sonde and tape that appeared to be marked in 0.05 foot increments. Stainless steel bolts for additional weight were attached to the sonde with vinyl electric tape.

The pump was positioned within the 5-foot well screen interval by first sounding the bottom of the well and then raising the pump approximately 2.5 feet from the bottom, measuring the withdrawal with the markings on the attached electric cable. This placed the pump at about the mid-screen position at approximately 31 feet. The sounding technique may have contributed to the suspension of turbidity and the decreasing trend in turbidity values noted later during purging (see Groundwater Sampling Log). A smaller overflow measurement cell and larger purge bucket were then installed to complete the purging assembly.

Purging commenced and water level was measured frequently, although not from the same casing reference point each time. Although recorded erroneously on the Groundwater Sampling Log, the initial purge rate calculates to be about 0.19 gpm. The samplers had some difficulty at first in adjusting the flow rate to match the drawdown rate. Ultimately, pumping rate stabilization was obtained at about 0.15 gpm.

A little over one well volume was evacuated prior to starting purge stabilization parameter measurements. Meter probes were inserted in the overflow cell and turbidity measurements were taken with a rinsed and properly wiped optical sample cuvette. Consecutive measurements were made at least two minutes apart until parameter stabilization was achieved.

VOC samples were subsequently collected from the pump effluent by alternating WRS and EAS vials.

Field Testing Meter Calibrations and Measurements

Instruments used for field measurements of purging stabilization parameters for well S-5R were calibrated in the morning in the WRS office. Calibrations did not fully meet SOP requirements. See the samplers' field notebook log for a list of the equipment models used and recorded calibrations. Part 2 of this report details calibration deficiencies.

Measurement technique in the field followed DEP SOP requirements and is described above.

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Exit Interview

The auditors and samplers returned to the WRS field office after completion of sampling at S-5R.

Present at the exit interview were EAS staff, the WRS sampling team and Ms. Sicker. Acceptable aspects of the observed sampling procedures, the protocols for PDB installation and noted deficiencies were discussed.

The auditors briefly summarized their concerns with the method of equipment blank collection, splashing of the sample during PDB collection, aeration of the purge water sampled for stabilization measurement, the conductivity standard used for calibration, the insertion of the braided PVC tubing into the well and the placement of the PDB in well S-5R in relation to the well screen interval.

The audit reporting process was briefly explained by which WRS would have the opportunity to clarify audit points and deficiencies noted in the report and respond to any requests for corrective actions.

The auditors obtained copies of requested field records before departing and the meeting ended with parties exchanging additional contact information.

Note on Audited Records

The auditors presume that no other field documentation was prepared other than that exhibited to the auditors, except where noted in this report.

The auditors were not present at the time of preparation of samples for shipping or transmittal of samples and documentation to the consultant's receiving laboratory. No presumption is made about information transmitted to the laboratory or the condition of the samples upon arrival at the laboratory.

Part 2 - DEFICIENCIES REQUIRING CORRECTIVE ACTIONS

The DEP SOP sources for the audit criteria are indicated in italics for each category and deficiency.

1. Documentation of sampling, field testing and sampling preparations *(FD 1000)*

1.1. No records were exhibited for decontamination procedures for sampling equipment or field meter probes. *FD 2000, sections 1 & 3*

1.2. Field testing instrument calibrations were not recorded per SOP requirements. This includes the following information: acceptable initial and continuing calibration verifications for instruments (except temperature and the initial calibration for DO), including acceptance criteria used; name of personnel performing calibrations; calibration procedures used, such as citation of DEP SOPs. *FD 4100, sections 2 – 4 and FD 5000, section 2.8*

1.3. Each sample container was not uniquely identified in the record. *FD 5000, sections 1 & 2.5*

1.4. The following was not recorded for groundwater sampling: well casing composition; depth to water (wells sampled with passive diffusion bags only); well depth (wells sampled with passive diffusion bags only); ending purge time (this was presumed by the auditors from the last stabilization measurement time recorded for well S-5R). *FD 5100, section 2.1*

1.5. The number of well volumes purged was not recorded. *FD 5100, section 2.2*

1.6. The name of personnel performing field testing measurements of groundwater was not recorded. *FD 5000, section 2.7*

1.7. Records for transmittal of samples to the analyzing laboratory were not exhibited. *FS 5000, section 3*

1.8. Duplicate sample collection was indicated on the Groundwater Sampling Log for the passive diffusion bag sample for well S-5R, but no duplicates were collected. *This experimental sampling technique is not an approved procedure and is not discussed in the DEP SOP.*

2. Mandatory field quality control samples (FQ 1000)

2.1. The equipment blank was collected incorrectly by rinsing analyte-free water over the exterior of the cleaned submersible pump without pumping through new disposable poly tubing or rinsing of the attached braided PVC tubing proximal to the pump inlet. *FQ 1212*

2.2. The cleaning procedure for the submersible pump used at well S-5R was not the same as that used prior to collecting the equipment blank.

3. General sampling procedures and procedures specific to aqueous sampling (*FS 1000 & 2000)*

3.1. The braided PVC tubing attached with the submersible pump cable assembly is made of material prohibited for sampling VOCs. The tubing was not used for sample pumping, but was inserted downhole in contact with sample water during sampling. Also, vinyl electrical tape was used to wrap the connection between the pump and the electrical cable as well as to attach stainless steel bolts to weight the water level tape. *FS 1000, section 2.2 and Tables FS 1000-1 through FS 1000-3*

4. Groundwater sampling procedures *(FS 2200)*

4.1. Well S-5R was not marked or labelled with the well number. *FS 2211, section 2*

4.2. Water level measurements were recorded to the nearest estimated 0.01 foot increments using a tape marked in 0.05 foot increments. *FS 2211, section 3.2*

4.3. Water level measurements were not taken from the same point at the top of the well casing at each instance of measurement. *FS 2211, section 3.2*

4.4. Water levels were not exhibited for association with sampling depth for the passive diffusion bag samples for wells H1-10 and H1-53. *This experimental sampling technique is not an approved procedure and is not discussed in the DEP SOP.*

4.5. The initial purging flow rate was inaccurately recorded on the Groundwater Sampling Log for well S-5R. *FS 2212, section 1*
4.6. The sampler splashed the volatile sample when removing the closure cap from the passive diffusion bag on one or more occasions, introducing the possibility of sample agitation and volatile loss. *This experimental sampling technique is not an approved procedure and is not discussed in the DEP SOP.*
4.7. The passive diffusion bag for well S-5R was not deployed completely within the screen interval. *This experimental sampling technique is not an approved procedure and is not discussed in the DEP SOP.*

5. Field Testing Calibrations and Measurements *(FT-series)*

5.1. Field testing measurements (for purge stabilization parameters) were not bracketed by acceptable calibration results (except temperature). *FT 1000, section 2.2.1*
5.2. No records were exhibited for continuing calibration verifications (except for the traceable thermometer, where the verification is not applicable). *FT 1000, section 2.2.3*
5.3. The calibration standard for conductivity was inappropriate for the sample measurements and the expected range of sample values (approximately 100X measured sample values). *FS FT 1200, section 3.2.1*
5.4. Initial and continuing calibration verification data were not exhibited for conductivity calibrations. *FT 1200, sections 3.2.2 & 3.2.4*
5.5. Continuing calibration data was not exhibited for dissolved oxygen and turbidity calibrations. *FT 1500, sections 2.2.2 & 2.3.1; FT 1600, sections 3.2 & 3.3.2*
5.6. Sample measurement data were not qualified in the record as estimated values. *FT 1000, section 2.2.4.2 & 2.2.5.1*
5.7. The sampler occasionally splashed and potentially aerated the purge water discharged into the measurement overflow cell.

RESPONSE REQUIREMENTS

(1) The permittee or consultant must respond to each specific deficiency noted in this report (Part 2 - "Deficiencies Requiring Corrective Actions"). The response must include the specific measures to be taken in correcting each deficiency, the timetable for implementation of corrective actions and any other information pertinent to the evaluation of generated data.

(2) The response may include discussion of any items in the report for the purposes of clarification, explanation or rebuttal.

CONSEQUENCES OF NON-RESPONSE

Failure to respond with a corrective action plan may result in a recommendation by the EAS to reject or qualify as estimated all or selective portions of the data produced by the permittee through its agent or consultant audited for this report. See item #3 under "Department Actions" below.

DEPARTMENT ACTIONS

(1) When the corrective action plan and any other responses have been received, the Environmental Assessment Section will review the proposal to determine if appropriate corrective actions have been taken. If the plan is acceptable and all other response items have been resolved, the Department will issue a final report consisting of the preliminary audit report, the report of proposed corrective actions from the respondent and report providing an evaluation of corrective action responses prepared by EAS.

(2) If modifications to the proposed corrective actions are required, the respondent will be provided another opportunity to propose acceptable corrective actions before the final report is issued.

(3) Where the circumstances of data use and the severity of observed deficiencies warrant, the Department may recommend to its project managers that any or all data produced from this sampling event or other sampling events conducted by the same consultant should be qualified or rejected, based on these audit findings, and regardless of corrective actions initiated by the respondent or the respondent's agent or consultant. Any such recommendation will be formally communicated to the project manager and other users of the affected data in accordance with the DEP Quality Assurance rule, 62-160, F.A.C., and all other applicable rules in effect at the time of this audit.

Please call me at (850) 245-8073 or e-mail me at michael.blizzard@dep.state.fl.us if you have any questions concerning the audit report, response requirements or appropriate corrective actions.

Attachments (2): Copies of DEP checklists for this audit
Copies of WRS field records

Cc: Andy Tintle, DEP EAS
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