

FPL Turkey Point Monitoring Plan

Audit Checklist

General Field Calibration Requirements

To use this field audit checklist effectively, the auditor must be familiar with FT 1000 to FT 2200 (Field Testing and Measurement) in "DEP Standard Operating Procedures for Field Activities", February 1, 2004 (DEP-SOP-001/01) Page 34 of 78 Revision Date: March 31, 2008 (Effective 12/3/08) **General Requirements for Calibration Activities (FT 1000)**

#	Audit Element	Acceptable (Y / N / NA)	Comments
1	All field-testing equipment and instruments brought to the field appeared to function properly.		
2	The concentration or other assay value, the vendor catalog number and the description of the standard or reagent were recorded for all preformulated solutions, neat liquids and powders.		
3	Expiration dates for all calibration standards and reagents used on the sampling project were recorded.		
4	Manufacturer-certified calibration specifications were retained for all factory-calibrated instruments used for the sampling project.		
5	Certificates of assay, grade and other vendor specifications for all standards and reagents were retained and recorded for the standards and reagents linked to the sampling project.		
6	All sample measurements were chronologically bracketed between acceptable calibration verifications.		
7	All sample measurements were quantitatively bracketed with an appropriate choice of calibration standards for calibrations or verifications.		
8	Historical, instrument-specific data justified calibration verification intervals of greater than 24-hours.		
9	Instruments failing to meet calibration verification acceptance criteria were recalibrated or removed from service.		
10	Sample measurements were qualified as estimated ("J" data qualifier code) when the instrument calibration could not be verified.		
11	An explanatory narrative was provided in the field record for all sample "J" values.		
12	The time interval between calibration verifications did not exceed one month, or, if less, the life of the sampling project (except for temperature measurements).		
13	All acceptable initial calibrations and calibration verifications were documented and linked to the field measurements for the sampling project.		
14	For each instrument unit used for the sampling project, the following information was recorded for all calibrations:		
15	• Unique identification (designation code) for the instrument calibrated		
16	• Date and time of each calibration or calibration verification		
17	• Instrument reading or result (display value) for all calibration verifications, with appropriate measurement units		
18	• Names of analysts performing each calibration for the instrument		
19	• Designation of each calibration standard used to calibrate or verify the instrument, linked to the associated records for the calibration standard		
20	• The acceptance criteria for each calibration and verification used to accept the instrument calibration or verification		

21	• The assay specifications or acceptance criteria for any QC standard or sample used to independently verify the calibration of the instrument		
22	• Positive indication in the record of acceptable (successful) initial calibration and acceptable initial and continuing calibration verifications		
23	• Positive indication of all failed calibrations or verifications		
24	• All corrective actions performed on the instrument prior to attempting re-verification or recalibration of the instrument are linked to the records required for preventive maintenance		
25	• Any instances of discontinuation of use of the instrument due to calibration or verification failures		
26	• A description or citation of the specific calibration and verification procedures used for the instrument (DEP SOP or internal SOP)		

pH (FT 1100)

27	The pH meter and electrode system met DEP SOP specifications for accuracy, reproducibility and design.		
28	All measurements were corrected for temperature (manual or automatic).		
29	The temperature sensor calibration was verified according to FT 1400.		
30	A pH 7 buffer was used as the first calibration standard for the initial calibration.		
31	All sample measurements were chronologically bracketed with acceptable calibration verifications.		
32	All sample measurements were quantitatively bracketed with an appropriate choice of at least two calibration buffers for calibrations or verifications.		
33	All calibration verifications met the acceptance criteria of + 0.2 standard pH units.		
34	The pH electrode was rinsed with deionized or distilled water between buffer solutions and between sample measurements.		
35	The instrument pH readings stabilized before pH values were recorded.		

Conductivity (FT 1200)

36	The specific conductance meter and electrode system met DEP SOP specifications for accuracy, reproducibility and design. DEP-SOP-001/01 FA 1000 Regulatory Scope and Administrative Procedures for Use of DEP SOPs		
37	All sample measurements were quantitatively bracketed with an appropriate choice of calibration standards for calibrations or verifications.		
38	All calibration verifications met the acceptance criteria of + 5% of the verification standard value.		
39	All continuing calibration verifications were performed using standards within the range of sample measurements.		
40	The instrument conductivity readings stabilized before measurement values were recorded.		
41	All measurements were corrected for temperature (manual or automatic).		
42	The conductivity electrode was rinsed with deionized or distilled water between standard solutions and between sample measurements.		

Temperature (FT 1400)

43	The temperature sensor calibration was verified according to FT 1400.		
44	The temperature measurement device met DEP SOP specifications for design and measurement resolution.		
45	All sample measurements were chronologically bracketed with acceptable calibration verifications.		
46	The temperature device readings stabilized before measurement values were recorded.		
47	All sample measurements were quantitatively bracketed with calibration verifications of the temperature measurement device at a minimum of two temperatures using the NIST-traceable thermometer.		
48	Historical, device-specific data justified calibration verification intervals of greater than one month (extended chronological calibration bracket).		

Dissolved Oxygen (FT 1500)

49	Groundwater samples were measured in situ (downhole) or by using a flow-through container.		
50	All sample measurements were chronologically bracketed with acceptable calibration verifications.		
51	All measurements were corrected for temperature (manual or automatic).		
52	All measurements were corrected for salinity, where applicable (manual or automatic).		
53	The dissolved oxygen electrode was rinsed with deionized or distilled water between sample measurements.		
54	The dissolved oxygen meter and electrode system met DEP SOP specifications for accuracy, reproducibility and design.		
55	All calibration verifications met the acceptance criteria of + 0.3 mg/L dissolved oxygen when compared to the table of theoretical values for water-saturated air.		
56	The temperature sensor calibration was verified according to FT 1400.		
57	The instrument dissolved oxygen readings stabilized before measurement values were recorded.		
58	The dissolved oxygen electrode was stored in a water-saturated air environment when not in use.		

Turbidity (FT 1600)

59	The turbidimeter met DEP SOP design specifications.		
60	All sample measurements were chronologically bracketed with acceptable calibration verifications.		
61	Initial calibration of the turbidimeter was performed using formazin or styrene divinylbenzene primary standards, whichever was required by the manufacturer of the instrument.		
62	Alternative design turbidimeters used for groundwater stabilization measurements met DEP performance criteria.		
63	All sample measurements were quantitatively bracketed with an appropriate choice of calibration standards for calibrations and verifications.		
64	All calibration verifications met the DEP SOP acceptance criteria applicable to the NTU ranges associated with the verification standard values. FT 1600 section 3.2		
65	The sample cells (optical cuvettes) were inspected for scratches and discarded or coated with a silicone oil mask, as necessary.		

66	The sample cells (optical cuvettes) were cleaned with deionized or distilled water between standard solutions and between sample measurements, as applicable.		
67	The sample cells (optical cuvettes) were rinsed with sample prior to filling with sample for measurement.		
68	The sample cells (optical cuvettes) were optically matched for calibrations and sample measurements.		
69	The exterior of the sample cell (optical cuvette) was kept free of fingerprints and dried with a lint-free wipe prior to insertion in the turbidimeter.		

Auditor

Date

Organization

**Field Documentation
Chain of Custody Documentation**

#	Notes

Auditor

Organization

Date