Shaw
Shaw E & I, Inc.

WATER QUALITY METER FIELD CALIBRATION LOG

Project Name: Kirtland AFB Bulk Fuels Facility Spill **Sampling / Monitoring Activity:** Groundwater Sampling Q1 Page 1 of 5

Calibration Solutions Lot Numbers and Expiration Dates: pH 7, Geotech, lot OAK207, exp 11/12 / pH 10, Geotech lot AOJ350, 10/12 exp
Conductivity Geotech 1413 µS/cm lot OAK105, Exp 11/11, ORP Standard lot # OAJ098 exp 7/11

Date / Time	Instrument Model / Number	Parameter / Known Value	Initial Reading	Calibrated Reading	Initials	Comments
1/25/11 0845	ysi Pro 2431	pH 7.00	7.12	7.00	mc	ok
		pH 10.00	10.03	10.00	mc	ok
		Conductivity 1.413 mS/cm	1.41	1.41	mc	ok
		ORP Zobe 1 231mv @ 8°C	247	231	mc	ok
		DO 100% Sat	89.6% @ 624.5 mmHg	10.29 mg/L	mc	ok?
	HACH 2100 Turbidity	0.0, 20.0, 100, 800	0.0, 20, 100, 800	0.1, 20, 100, 800	mc	ok-cal?
1/26/11 0753	ysi Pro 2431	pH 7.00	7.12	7.00	mc	ok
		pH 10.00	10.00	10.00	mc	ok
		Conductivity 1.413 mS/cm	1.35	1.411	mc	ok
		ORP 231mv @ 54°F	223	231	mc	ok
		DO% @ 627 mmHg, 11.7c	~~58.2~~ 63.7	9.08 mg/L	mc	ok
	HACH 2100 Turbidity	0, 20.0, 100, 800	———	0.0, 20.0, 100, 800	mc	ok
1/27/11	YSI Pro 2431	pH 7.00	6.96	7.00	RSB	ok
		pH 10.00	9.94	~~10.00~~ 10.03	RSB	ok
		Conductivity	1.36	1.412	RSB	ok
		ORP	232.8	231	RSB	ok
		DO%	62	9.01 mg/L	RSB	ok
	Hach 2100 Turbid	0.0, 20.0, 100, 800	0.0, 20.0, 100, 800	.1, 20, 100, 800	GP	ok

Shaw
Shaw E & I, Inc.

WATER QUALITY METER FIELD CALIBRATION LOG

Project Name: Kirtland AFB Bulk Fuels Facility Spill **Sampling / Monitoring Activity:** GW Sampling Q1 Page 2 of 5

Calibration Solutions Lot Numbers and Expiration Dates: pH 7, Geotech 10XOAK207, exp 11/12 / pH 10 Geotech lot 4OJ350, ex 10/12 Cond. Geotech 1413 uS/cm 10TOAK105, exp 11/11, ORP Standard lot # 0AJ088 ex 7/11

Date / Time	Instrument Model / Number	Parameter / Known Value	Initial Reading	Calibrated Reading	Initials	Comments
1/28/11	YSI Pro 2431	pH 7.0	7.33	7.06	RSB	ok
		pH 10.0	9.84	9.86	RSB	ok
		Cond. 1.413 ms/cm	1.43	1.42	RSB	ok
		ORP 231 mm @ 54°	230.9 @ 11.2C	231	RSB	ok
		DO%	92.7 @ 11.5C	8.89	RSB	ok
	Hach 2100	0.1, 20.0, 100, 800	.1, 20., 100, 800	.1, 20, 100, 800	RSB	ok
1/31/11	YSI Pro 2431	pH 7.0	7.14	7.11	RSB	ok
		pH 10.0	9.86	9.99	RSB	ok
		Cond. 1.413	.79	1.41	RSB	ok
		ORP 231 @ 12.9C - 228	228.2	227.9	RSB	ok
		DO%		76.6% @ 14.1C	RSB	ok
	Hach 2100	.1, 20., 100, 800	.1, 20, 100, 800	.1, 20, 100, 800	RSB	ok
2/2/11	YSI Pro 2431	pH 7.00	7.28	7.19	RSB	ok
		ph 10.00	10.04	10.07	at	ok
		Cond 1.413 ms/cm	1.37	1.41	at	ok
		ORP 237 @ 0°	249.6	249.1	at	ok
		DO%	76.5 DO% @ 0°	76.5 DO% @ 0°	at	ok
	Hach 2100	.1, 20.00, 100, 800	.1, 20, 100, 800	.1, 20, 100, 800	RSB	ok

Shaw
Shaw E & I, Inc.

WATER QUALITY METER FIELD CALIBRATION LOG

Project Name: Kirtland AFB Bulk Fuels Facility Spill **Sampling / Monitoring Activity:** GW Sampling Q1 Page 3 of 5

Calibration Solutions Lot Numbers and Expiration Dates: PH 7, GeoTech 10x OAK 207, exp 11/12 / PH 10 GeoTech Lot AOJ 350, ex 10/12, Cond GeoTech 1.413 ms/cm lot A01 RIOS, exp 11/11, ORP Standard lot # OAJC88 ex 7/11

Date / Time	Instrument Model / Number	Parameter / Known Value	Initial Reading	Calibrated Reading	Initials	Comments
2/3/11	YSI Pro 2431	PH 7.00	7.15	7.02	Cut	ok
		PH 10.00	9.81	9.89	Cut	ok
		Cond 1.413 ms/cm	~~.004~~ 1.48	1.48	Cut	ok
		ORP 237 @ 0°	247.8	248.0	at	ok
		DO%	100.0 @ 0°	100.0 @ 0°	at	Ice Forming on probe
		Hach 2100	.1, 20.0, 100, 800	.1, 20, 100, 800	at	ok
2/4/11	YSI Pro 2431	PH 7.00	7.17	7.13	at	ok
		PH 10.00	9.85	9.90	at	ok
		Cond 1.413 ms/cm	1.39	1.40	at	ok
		ORP 224.3 @ 232	224.3	224.3	at	ok
		DO%	81.3 @ 4.6°	81.3 @ 4.6°	at	ok
		Hach 2100	.1, 20, 100, 800	.1, 20, 100, 800	at	ok
2/7/11	YSI Pro 2431	PH 7.00	7.03	7.02	at	ok
		PH 10.00	9.86	9.93	at	ok
		Cond 1.413 ms/cm	1.44	1.41	at	ok
		ORP 237 @ 2.5°	237. @ 2.5°	237 @ 2.5°	at	ok
		DO%	88.5 @ 2.5°	88.5 @ 2.5°	at	ok
		Hach 2100	.1, 20, 100, 800	.1, 20, 100, 800	at	ok

Shaw
Shaw E & I, Inc.

WATER QUALITY METER FIELD CALIBRATION LOG

Project Name: Kirtland AFB Bulk Fuels Facility Spill **Sampling / Monitoring Activity:** GW Sampling Q1 Page 4 of 5

Calibration Solutions Lot Numbers and Expiration Dates: PH4, Geo Tech 10K0ack 207, exp 11/12 / PH 10 GeoTech Lot A05 350, ex 10/12, Cond GeoTech 1.413 ms/km lot A01 R105, exp 11/11 ORP standard lot # OAJ 088 ex 7/11

Date / Time	Instrument Model / Number	Parameter / Known Value	Initial Reading	Calibrated Reading	Initials	Comments
2/8/11	pH 7.00 →		7.18	7.11	at	ok
	pH 10.00 →		8.65	8.63	at	ok
	Cond 1.413 mslcm →		1.30	1.41	at	ok
	ORP →		227 @ 17.0°C	227 @ 17.0	at	ok
	DO% →		73.9 @ 14.40	73.9 @ 14.40	at	ok
	Hach 2100	.1, 20, 100, 800	.1, 20, 100, 800	.1, 20, 100, 800	at	ok
	YSI 2431		~~222 @ 17.0°C~~	~~227.1 @ 17.0°~~	at	ok
2/9	YSI Pro 2431	pH 7	8.49	7.05	[illegible]	ok
		pH 10	9.97	9.98	[illegible]	ok
		Cond 1.413	1.41	1.41	[illegible]	ok
		ORP 231 @ 6°C	241.6	231	[illegible]	ok
		DO%		87.6 @ 7.7°C	[illegible]	ok
	Hach 2100	Turbidity	.1, 20, 100, 800	.1, 20, 100, 800	[illegible]	ok
2/10	YSI Pro	pH 7	7.14	7.11	[illegible]	ok
		pH 10	9.90	9.93	[illegible]	ok
		Cond 1.43	1.38	1.41	[illegible]	ok
		ORP 230 10°C	224.7	230.0	[illegible]	ok
		DO%	68.3 @ 10°C		[illegible]	ok
	Hach 2100	Turb.	.1, 20, 100, 800 →		RAB	ok

140705

Shaw
Shaw E & I, Inc.

WATER QUALITY METER FIELD CALIBRATION LOG

Project Name: Kirtland AFB Bulk Fuels Facility Spill **Sampling / Monitoring Activity:** _____ Page 5 of 5

Calibration Solutions Lot Numbers and Expiration Dates: _____

Date / Time	Instrument Model / Number	Parameter / Known Value	Initial Reading	Calibrated Reading	Initials	Comments
2/14/11	YSI PRO	pH 7	7.29	7.00	[illegible]	ok
		pH 10	9.82	10.03	[illegible]	ok
		Cond 1.413	1.41	1.42	[illegible]	ok
		ORP 222 @ 21°C	210.6 @ 21.9	222.1	[illegible]	ok
	~~Hach Turb. 2100~~	DO	89.6 @ 17.9°C	98.4/10.48	[illegible]	ok
	Hach Turb 2100P	.1, 20, 100, 800	.1, 20, 100, 800	.1, 20, 100, 800	[illegible]	ok
2/15/11	YSI Pro	pH 7.0	7.29	6.99	[illegible]	ok
		pH 10.0	9.82	10.00	[illegible]	ok
		Cond 1.413	1.55	1.42	[illegible]	ok
		ORP ~~223~~ 231	209.9 @ 21C	231.3 @ 21C	[illegible]	ok Test calib. out of range
		DO	52.8% @ 59.5			
	Hach Turb 2100	.1, 20, 100, 800	.1, 20, 100, 800	.1, 20, 100, 800	at	ok
2/17/11	YSI PRO	pH 7	7.19	7.01	at	ok
		pH 10	9.80	10.00	at	ok
		Cond 1.413	1.41	1.41	at	ok
		ORP 194.4	223 @ 23.0°	225 @ 23°	at	ok
		DO	76.7% @ 18.2°	81.30 18.1	at	ok
		~~Hach 2100~~ #2821	.1 20, 100, 800	.1, 20, 100, 800	at	ok
		Hach 2100 2818	.1, 20, 100, 800	.1, 20, 100, 800	at	ok

140705

PH Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2011-02-15
Time 072832
Last Cal: 2/15/2011
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -39.7405 mV
- Final Reading = 7.00 pH
- Temperature = 18.5059 C
- Slope = -57.8714 mV/pH
- Offset = 365.359 mV

ORP Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 USER SET: NOMINAL
Date 2011-02-15
Time 072832
Last Cal: 2/15/2011
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 233.828 mV
- Response = 177.64 mV
- Final Reading = 233.828 mV
- Temperature = 18.5059 C
- Offset = -56.1887 mV

Cond Calibration Report

Device Serial Number 48808
Sensor Serial Number LC06067
Sensor Type Conductivity, Low Range
Sensor Mfg Date 5/4/2010
Method Quick Cal
Action COMPLETED

Status Point 1 STABLE
Date 2011-02-15
Time 072832
Last Cal: 2/15/2011
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 44.868 ohms
- Final Reading = 7980 µS/cm
- Temperature = 18.5059 C
- Kcell = 0.311265

---

http://www.in-situ.com

PH Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2011-02-16
Time 074124
Last Cal: 2/16/2011
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -37.9624 mV
- Final Reading = 7.00 pH
- Temperature = 8.64636 C
- Slope = -55.915 mV/pH
- Offset = 353.443 mV

ORP Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2011-02-16
Time 074124
Last Cal: 2/16/2011
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 249.019 mV
- Response = 199.591 mV
- Final Reading = 249.019 mV
- Temperature = 8.64636 C
- Offset = -49.4281 mV

Cond Calibration Report

Device Serial Number 48808
Sensor Serial Number LC06067
Sensor Type Conductivity, Low Range
Sensor Mfg Date 5/4/2010
Method Quick Cal
Action COMPLETED

Status Point 1 STABLE
Date 2011-02-16
Time 074124
Last Cal: 2/16/2011
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 57.9922 ohms
- Final Reading = 7980 µS/cm
- Temperature = 8.64636 C
- Kcell = 0.317029

---

http://www.in-situ.com

PH Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2011-02-17
Time 082445
Last Cal: 2/17/2011
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -39.3622 mV
- Final Reading = 7.00 pH
- Temperature = 17.2164 C
- Slope = -57.6156 mV/pH
- Offset = 363.947 mV

ORP Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2011-02-17
Time 082445
Last Cal: 2/17/2011
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 235.815 mV
- Response = 180.565 mV
- Final Reading = 235.815 mV
- Temperature = 17.2164 C
- Offset = -55.25 mV

Cond Calibration Report

Device Serial Number 48808
Sensor Serial Number LC06067
Sensor Type Conductivity, Low Range
Sensor Mfg Date 5/4/2010
Method Quick Cal
Action COMPLETED

Status Point 1 STABLE
Date 2011-02-17
Time 082445
Last Cal: 2/17/2011
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 46.4219 ohms
- Final Reading = 7980 µS/cm
- Temperature = 17.2164 C
- Kcell = 0.312714

---

http://www.in-situ.com

PH Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2011-02-18
Time 081048
Last Cal: 2/18/2011
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -40.2534 mV
- Final Reading = 7.00 pH
- Temperature = 15.5911 C
- Slope = -57.2931 mV/pH
- Offset = 360.798 mV

ORP Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2011-02-18
Time 081048
Last Cal: 2/18/2011
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 238.319 mV
- Response = 176.504 mV
- Final Reading = 238.319 mV
- Temperature = 15.5911 C
- Offset = -61.8149 mV

Cond Calibration Report

Device Serial Number 48808
Sensor Serial Number LC06067
Sensor Type Conductivity, Low Range
Sensor Mfg Date 5/4/2010
Method Quick Cal
Action COMPLETED

Status Point 1 STABLE
Date 2011-02-18
Time 081048
Last Cal: 2/18/2011
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 48.1425 ohms
- Final Reading = 7980 µS/cm
- Temperature = 15.5911 C
- Kcell = 0.312269

---

http://www.in-situ.com

PH Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2011-02-21
Time 074016
Last Cal: 2/21/2011
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -37.7536 mV
- Final Reading = 7.00 pH
- Temperature = 16.7061 C
- Slope = -57.5143 mV/pH
- Offset = 364.846 mV

ORP Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 USER SET: NOMINAL
Date 2011-02-21
Time 074016
Last Cal: 2/21/2011
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 236.601 mV
- Response = 176.571 mV
- Final Reading = 236.601 mV
- Temperature = 16.7061 C
- Offset = -60.0306 mV

Cond Calibration Report

Device Serial Number 48808
Sensor Serial Number LC06067
Sensor Type Conductivity, Low Range
Sensor Mfg Date 5/4/2010
Method Quick Cal
Action COMPLETED

Status Point 1 STABLE
Date 2011-02-21
Time 074016
Last Cal: 2/21/2011
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 46.7151 ohms
- Final Reading = 7980 µS/cm
- Temperature = 16.7061 C
- Kcell = 0.311003

PH Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2011-03-08
Time 082931
Last Cal: 3/8/2011
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -35.3019 mV
- Final Reading = 7.00 pH
- Temperature = 15.3929 C
- Slope = -57.2537 mV/pH
- Offset = 365.474 mV

ORP Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2011-03-08
Time 082932
Last Cal: 3/8/2011
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 238.625 mV
- Response = 185.884 mV
- Final Reading = 238.625 mV
- Temperature = 15.3929 C
- Offset = -52.7405 mV

Cond Calibration Report

Device Serial Number 48808
Sensor Serial Number LC06067
Sensor Type Conductivity, Low Range
Sensor Mfg Date 5/4/2010
Method Quick Cal
Action COMPLETED

Status Point 1 STABLE
Date 2011-03-08
Time 082932
Last Cal: 3/8/2011
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 48.0272 ohms
- Final Reading = 7980 µS/cm
- Temperature = 15.3929 C
- Kcell = 0.310069

---

http://www.in-situ.com

PH Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2011-03-09
Time 073900
Last Cal: 3/9/2011
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -36.4056 mV
- Final Reading = 7.00 pH
- Temperature = 16.6551 C
- Slope = -57.5042 mV/pH
- Offset = 366.124 mV

ORP Calibration Report

Device Serial Number 48808
Sensor Serial Number PP12163
Sensor Mfg Date 5/21/2010
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2011-03-09
Time 073900
Last Cal: 3/9/2011
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 236.68 mV
- Response = 180.356 mV
- Final Reading = 236.68 mV
- Temperature = 16.6551 C
- Offset = -56.3235 mV

Cond Calibration Report

Device Serial Number 48808
Sensor Serial Number LC06067
Sensor Type Conductivity, Low Range
Sensor Mfg Date 5/4/2010
Method Quick Cal
Action COMPLETED

Status Point 1 STABLE
Date 2011-03-09
Time 073900
Last Cal: 3/9/2011
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 46.3738 ohms
- Final Reading = 7980 µS/cm
- Temperature = 16.6551 C
- Kcell = 0.308366

---

http://www.in-situ.com