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N00164.AR.000967
NSWC CRANE
5090.3a

Resource Conservation and Recovery Act Facility Investigation (RFI) Report

for

SWMUs 4 (McComish Gorge), 5 (Old Burn Pit), 9 (Pesticide Control/R-150 Tank Area), and 10 (Rockeye)

Naval Surface Warfare Center Crane Division

Crane, Indiana

Volume III of IV - Appendices A-B

NAVFAC
Naval Facilities Engineering Command

Southern Division Naval Facilities Engineering Command

Contract Number N62467-94-D-0888

Contract Task Order 0010

July 2005

APPENDIX A.1

SWMU 4
BORING LOGS AND MONITORING WELL CONSTRUCTION DIAGRAMS

Ralphs
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App-IV

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 9 Sept. 1981
Location McComish Gorge Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 603.49 Boring No. WES-4-1-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	9 Sept	0.0		0.0	0.5	0.0	2.08	3" Shelby Tube	0	ST	Silt (ML): brown in color, slightly
1A				0.5	1.0	2.08	2.23		0	Jar	moist, little cohesion, slight
				1.0	1.5				0		gritty feal, and contains organic
				1.5	2.0				20		matter.
				2.0	2.5				120		Sample length: 2.23 ft
			5.0	0.0	5.0			7" Folding Auger			Cleanout
2	9 Sept	5.0		5.0	5.5	5.0	6.55	*3"Fixed Piston Sampler	0	ST	Silty sand (SM): reddish brown in
2A				5.5	6.0	6.55	6.75		0	Jar	color, very uniform, fine-grained,
				6.0	6.5				0		little cohesion, and dry.
				6.5	7.0				20		
				7.0	7.4				80		Sample length: 1.75 ft
				5.0	70.0			*7" Hollow-stem Auger			Cleanout

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*3" Fixed Piston Sampler = 3" F.P.S.
*7" Hollow Stem Auger = 7" H.S. Auger

Sheet 1 of 5 Sheets

BORING LOG
FIELD DATA.

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-1-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
3	9 Sept			10.0	10.5	10.0	10.3	3" F.P.S.	0	ST	Silty sand (SM): reddish brown in
3A				10.5	11.0	10.3	10.6		20	Jar	color, uniform, fine-grained (pre-
				11.0	11.5				40		dominately quartz), little cohesion,
				11.5	12.0				50		and dry.
				12.0	12.5				700		Sample length: 0.6 ft- Sample fell
											back into hole.
			14.0	70.0	15.0	—	—	7" H.S. Auger		—	Cleanout: assumed stratum change.
4	9 Sept	14.0		15.0	15.5	15.0	16.97	3" F.P.S.	0	ST	Gravelly sand (SP): reddish brown
4A				15.5	16.0	16.97	17.20		20	Jar	in color, fine to coarse-grained
				16.0	16.5				80		sand, very fine gravel, slightly
				16.5	17.0				120		moist, and no cohesion.
				17.0	17.5				140		Sample length: 2.2 ft
			19.0	15.0	20.0	—	—	7" H.S. Auger		—	Clean ut: assumed stratum change.

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Sheet 2 of 5 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-1-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
5	9 Sept	19.0		20.0	20.5	20.0	22.05	3" F.P.S	0	ST	Sand (SP); brown in color, fine
5A				20.5	21.0	22.05	22.3		10	Jar	to medium grained, slight moisture,
				21.0	21.5				30		very little cohesion, and 80-90%
				21.5	22.0				60		quartz sand.
				22.0	22.5				90		Sample length: 2.3 ft
			24.0	20.0	25.0			7" H.S. Augur			Cleanout; assumed stratum change
6	9 Sept	24.0		25.0	25.5	25.0	27.08	3" F.P.S.	0	ST	Silty sand (SM); brown in color,
				25.5	26.0	27.08	27.3		50	Jar	fine-grained, slight moisture, little
				26.0	26.5				100		cohesion, and contains 30% silt.
				26.5	27.0				160		
				27.0	27.5				180		Sample length: 2.3 ft
			30.0	25.0	30.0			7" H.S. Augur			Cleanout: assumed stratum change

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 3 of 5 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-1-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
7A	9 Sept	30.0		30.0	30.5	30.0	30.3	3" F.P.S.	0	Jar	Recovered 0.3 ft of very moist
				30.5	31.0				10		sand/silt; brown in color, very
				31.0	31.5				20		fine-grained, and slight cohesion.
				31.5	32.0				50		Will attempt again at 32.5 ft.
				32.0	32.5				80		
				30.0	32.5			7" H.S. Auger			Cleanout
8	9 Sept			32.5	33.0	32.5	33.3	3" F.P.S.	0	ST	Silt (ML): very moist, brown in
8A				33.0	33.5	33.3	33.6'		20	Jar	color, moderately cohesive, and
				33.5	34.0				30		contains 1-2% very fine gravel.
				34.0	34.5				40		Sample length: 1.1 ft
				34.5	35.0				80		Lost 1.4 ft
			37.5	32.5	37.5			7" H.S. Auger			Cleanout

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 4 of 5 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-1-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
9	9 Sept	37.5		37.5	38.0	37.5	39.55	3" F.P.S.	0		Clay silt: grey in color, moist
9A				38.0	38.5	39.55	39.8		40		and moderately cohesive.
				38.5	39.0				190		
				39.0	39.5				230		Sample length: 2.3 ft
				39.5	39.85				300		
				37.5	40.0			7" H.S. Auger			Cleanout
10	10Sept			40.3	40.8	40.3	42.48	3" F.P.S.	0	ST	Clay silt: same moist
10A				40.8	41.3	42.48	42.63		0	Jar	
				41.3	41.8				0		
				41.8	42.3				10		Sample length: 2.33 ft
			42.7	42.3	42.7				20		
	10Sept										Pulled auger and installed well
											screen.

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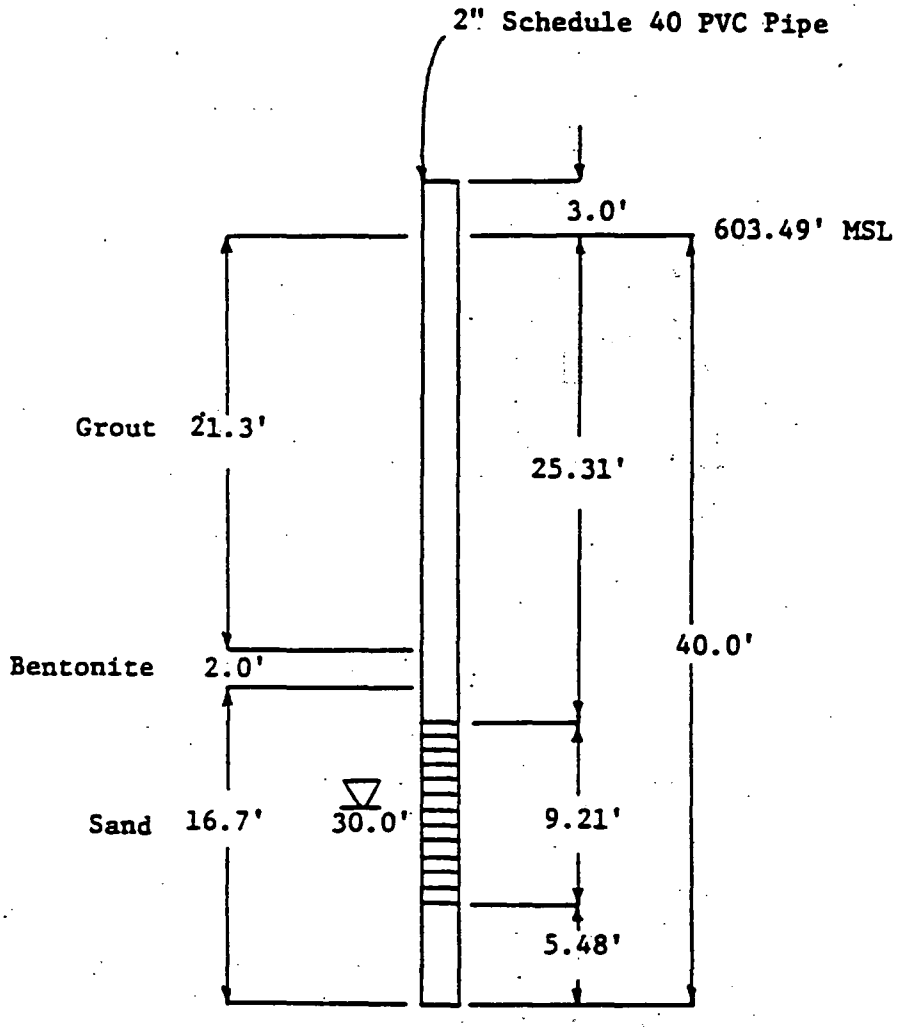
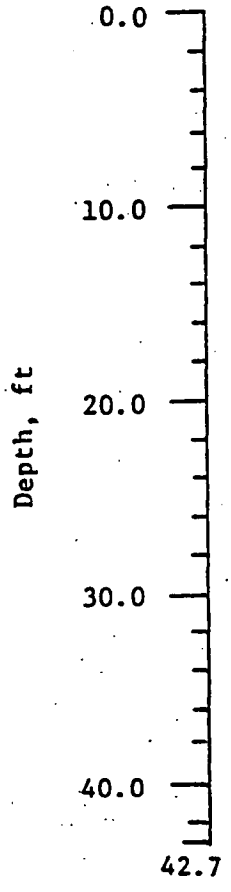
Sheet 5 of 5 Sheets



Water depth at time of drilling

Well screen

NWSC, Crane, Indiana
McComish Gorge
Well Completion
Boring Number: WES-4-1-81



603.49' MSL

Silt (ML): brown in color, slightly moist, little cohesion, slightly gritty, and contains organic matter.

Silty sand (SM): reddish brown in color, very uniform, fine-grained, little cohesion, and dry.

Gravelly sand (SP): reddish brown in color, fine to coarse-grained sand, very fine gravel, slightly moist, and no cohesion.

Sand (SP): brown in color, fine to medium quartz sand, slight moisture, and very little cohesion.

Silty sand (SM): brown in color, fine-grained quartz sand, slight moisture, little cohesion, and 30% silt.

Silt (ML): brown in color, very moist, moderately cohesive, and contains 1-2% very fine gravel.

Clay silt (ML): grey in color, moist, and moderately cohesive.

NWSC, Crane, Indiana

McComish Gorge

Lithology

Boring Number: WES-4-1-81

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 10 Sept. 1981
Location McComish Gorge Job No. 441-G150,11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 585.69 Boring No. WES-4-2-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	10Sept	0.0		0.0	0.5	0.0	1.27	3"Shelby Tube	280	ST	Gravelly sand (SP): brown in
1A				0.5	1.0	1.27	1.47		240	Jar	color, dry, fine to coarse
				1.0	1.5				300		grained with 20% fine to medium
				1.5	2.0				330		gravel, and no cohesion.
				2.0	2.5				350		Sample length: 1.47 ft
				0.0	5.0			7" Folding Auger			Cleanout
2	10Sept			*5.0	5.5	5.0	5.9	*3"Fixed Piston Sampler	0	ST	Gravelly sand (SP): brown in
2A				5.5	6.0	5.9	6.1		20	Jar	color, dry, fine to medium
				6.0	6.5				40		grained with 10% fine gravel and
				6.5	7.0				60		little cohesion.
											Sample length: 1.1 ft- suspect
											loss
			8.0	5.0	10.0			*7"Hollow Stem Auger			Cleanout

WES FORM 819 EDITION OF NOV 1971 MAY BE USED

*3" Fixed Piston Sampler = 3" F.P.S.
*7" Hollow Stem Auger = 7" H.S. Auger

Sheet 1 of 4 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-2-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
3	10Sept	8.0		10.0	10.5	10.0	11.97	3" F.P.S.	12	ST	Silty sand (SM): brown in color
3A				10.5	11.0	11.97	12.23		20	Jar	slight moisture, and slight
				11.0	11.5				30		cohesion.
				11.5	12.0				90		Last foot is fine-grained,
				12.0	12.5				150		Sample length: 2.23 ft
				70.0	15.0			7" H.S. Auger			Cleanout
4	11Sept		15.0	15.0	15.5	15.0	16.60	3" F.P.S.	0	ST	Clay silt (ML): brown in color,
4A		15.0		15.5	16.0	16.60	16.85		20	Jar	moderately cohesive, and slight
				16.0	16.5				40		moisture. Lost last 0.4 ft
				16.5	17.0				100		Sample length: 1.85 ft
				17.0	17.5				180		
				15.0	20.0			7" H.S. Auger			Cleanout

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 4 Sheets

BORING LOG
FIELD DATA

Projec _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-2-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont.	CLASSIFICATION AND REMARKS
	11Sept			20.0	20.5	See below		3" F.P.S.	20		Lost sample.
				20.5	21.0				20		
				21.0	21.5				50		
1				21.5	22.0				70		
				22.0	22.5				130		
5A	11Sept			20.0	21.5	20.0	21.5	Standard Splitspoon		Jar	Pushed splitspoon-clay silt (ML)
											brown in color, moderately
											cohesive, and moist. Water was
											visible in bottom of hole.
			22.0	20.0	25.0			7" H.S. Auger			Cleanout: stratum change assumed
6	11Sept	22.0		20.0	25.5	25.0	27.05	3" F.P.S.	0	ST	Silty sand (SM); grey in color,
6A				25.5	26.0	27.05	27.35		10	Jar	very fine-grained sand, uniform,
				26.0	26.5				50		moderately cohesive, and moist.
				26.5	27.0				100		Sample length: 2.35 ft

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 3 of 4 Sheets

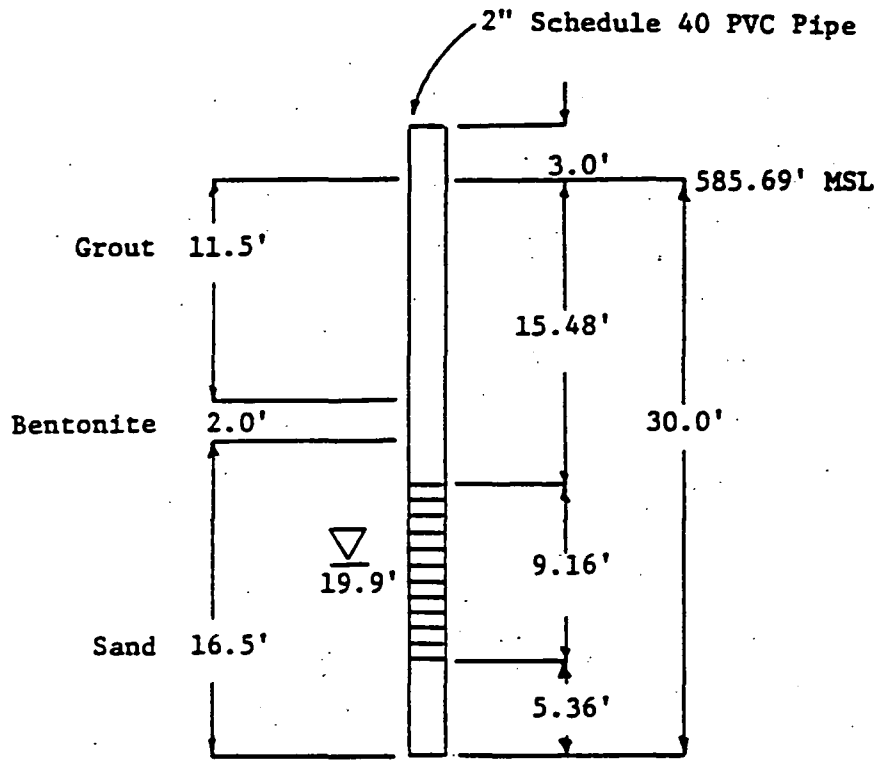
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-2-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont.	CLASSIFICATION AND REMARKS
				27.0	27.4				160		
				25.0	30.0			7" H.S. Auger			Cleanout
7	11Sept			30.0	30.5	30.0	32.05	3" F.P.S.	10	ST	Silty sand (SM); brown in color
7A				30.5	31.0	32.05	32.35		20	Jar	very fine-grained, moderate
				31.0	31.5				80		cohesion, and moist.
				31.5	32.0				120		Sample length: 2.35 ft
			32.4	32.0	32.4				170		
											Left hole open overnight to
											monitor water level. Water on
											12 Sept. 81, was at 19.9 ft.
											Installed well through auger.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 4 of 4 Sheets



Water depth at time of drilling

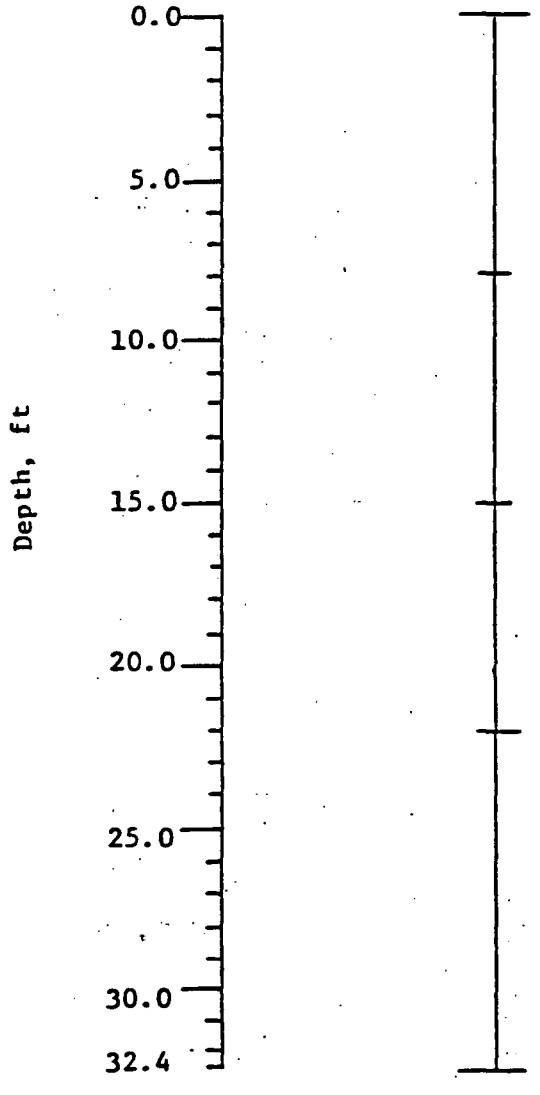
Well screen

NWSC, Crane, Indiana

McComish Gorge

Well Completion

Boring Number: WES-4-2-81



585.69' MSL

Gravelly sand (SP): brown in color, dry, no cohesion, and fine to coarse-grained sand with 10-20% fine to medium gravel.

Silty sand (SM): brown in color, slight moisture, and slight cohesion.

Clay silt (ML): brown in color, moderately cohesive, and slight moisture. Material is very moist around 20 ft.

Silty sand (SM): grey in color, very fine-grained sand, uniform, moderately cohesive, and moist.

NWSC, Crane, Indiana

McComish Gorge

Lithology

Boring Number: WES-4-2-81

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 12 Sept, 1981
Location McComish Gorge Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 566.22 Boring No. WES-4-3-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press Wt.	Cont	CLASSIFICATION AND REMARKS
1	12Sept	0.0		0.0	0.5	0.0	2.08	3" Shelby Tube	Kelly	ST	Silty sand (SM): brown in color,
1A				0.5	1.0	2.08	2.28		0	Jar	damp, fine-grained, and moderate
				1.0	1.5				20		cohesion. Sand equals 60 to 70%
				1.5	2.0				60		and silt equals 30 to 40%.
				2.0	2.5				120		Sample length: 2.28 ft
			4.5	0.0	5.0			7" Folding Auger			Cleanout
2	12Sept	4.5		5.0	5.5	5.0	7.13	*3"Fixed Piston Sampler	0	ST	Silty sand (SM): grey in color,
2A				5.5	6.0	7.13	7.38		10	Jar	damp to moist, fine-grained, and
				6.0	6.5				20		moderate cohesion. Sand equals
				6.5	7.0				20		60%-70% and silt equals 30%-40%.
				7.0	7.5				20		Believe water starts at 5.5 ft.
											Sample length: 2.38 ft
				5.0	10.0			*7" Hollow Stem Auger			Cleanout

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*3" Fixed Piston Sampler = 3" F.P.S.
*7" Hollow Stem Auger = 7" H.S. Auger

Sheet 1 of 3 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-3-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
3	12Sept			10.0	10.5	10.0	12.3	3" F.P.S	0	ST	Silty sand (SM): same as in no.2
3				10.5	11.0	11.83	12.13		10	Jar	except for more moisture.
				11.0	11.5				50		
				11.5	12.0				120		Sample length: 2.28 ft
				12.0	12.4				160		
			15.0	10.0	15.0			7" H.S. Auger			Cleanout
											When pulling weight out of hollow
											stem auger, acted as piston and
											sucked sand in behind. Cleaned
											out several times with same result.
											Used splitspoon to get sample of
											material and confirm if sample
											was wet.
4A	12Sept	15.00	17.0	15.0	17.0	15.0	17.0	*Splitspoon			Silty sand (SM): grey in color,
											saturated, and fine-grained.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

*Splitspoon = 1-7/8" I.D. x 2 1/2" O.D. Sheet 2 of 3 Sheets

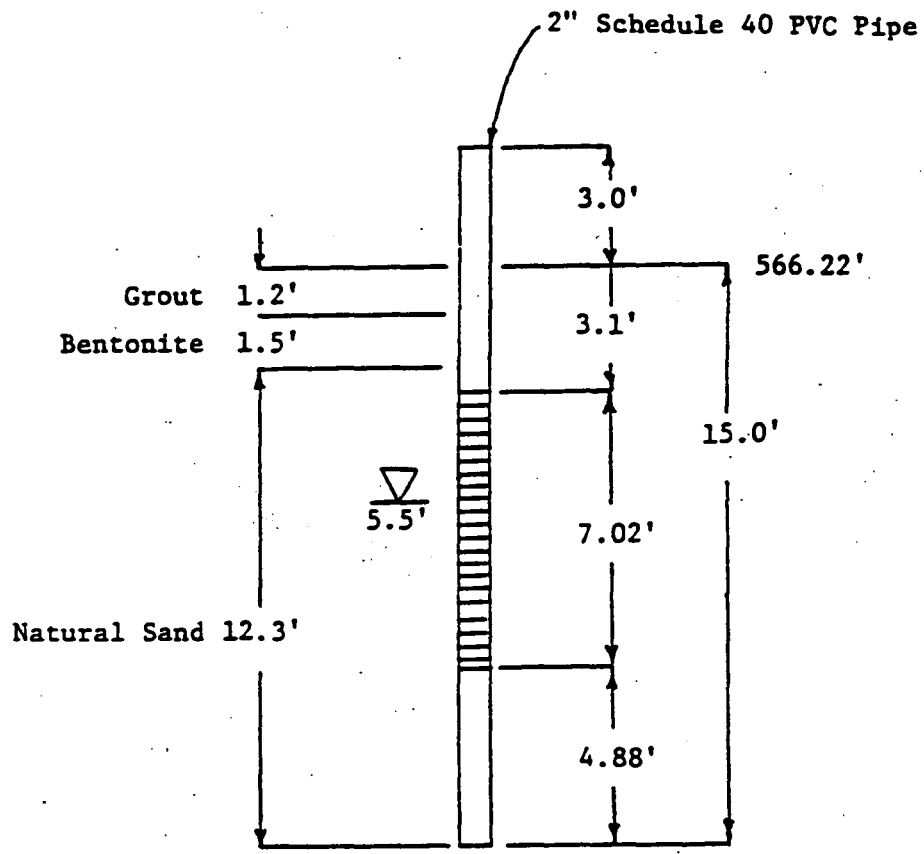
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-3-81

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
											Installed well through auger.

FORM 819 EDITION OF NOV 1971 MAY BE USED

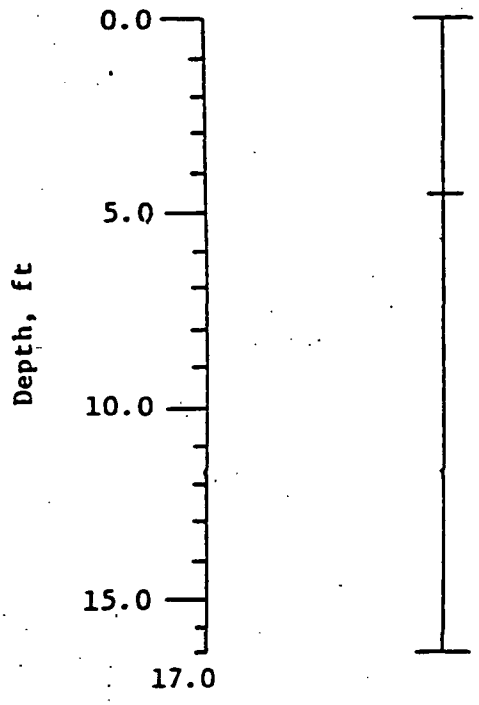
Sheet 3 of 3 Sheets



Water depth at time of drilling

Well screen

NWSC, Crane, Indiana
McComish Gorge
Well Completion
Boring Number: WES-4-3-81



566.22' MSL

Silty sand (SM): brown in color, damp, fine-grained, moderate cohesion, and contains 30 to 40% silt.

Silty sand (SM): grey in color, fine-grained, wet, moderate cohesion, and contains 30 to 40% silt.

NWSC, Crane, Indiana

McComish Gorge

Lithology

Boring Number: WES-4-3-81

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 28 Sept. 1981
Location McComish Gorge Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 593.14 Boring No. WES-4-4-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont.	CLASSIFICATION AND REMARKS
1	28Sept	0.0		0.0	0.5	0.0	2.26	3" Shelby Tube	0	ST	Clay (CL): brown in color, dry,
1A				0.5	1.0	2.26	2.45		0	Jar	uniform, slightly stiff, with
				1.0	1.5				0		slight to moderate cohesion.
				1.5	2.0				0		Sample length: 2.45 ft
				2.0	2.5				10		
				0.0	5.0			7"Folding Auger			Cleanout
2	28Sept			5.0	5.5	5.0	6.64	*3"Fixed Piston Sampler	0	ST	Clay (CL): same as above.
				5.5	6.0	6.64	6.82		20	Jar	
				6.0	6.5				90		Sample length: 1.82 ft
				6.5	7.0				130		
				7.0	7.35				200		
			10.0	5.0	10.00			*7"Hollow Stem Auger			Cleanout: stratum change assumed

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

*3" Fixed Piston Sampler = 3" F.P.S.
*7" Hollow Stem Auger = 7" H.S. Auger

Sheet 1 of 4 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-4-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont.	CLASSIFICATION AND REMARKS
3	28Sept	10.0		10.0	10.5	10.0	12.19	3" F.P.S	0	ST	Silt (ML): brown, uniform, dry,
3A				10.5	11.0	12.19	12.36		0	Jar	and slight cohesion,
				11.0	11.5				140		Sample length: 2.16 ft
				11.5	12.0				160		
				12.0	12.38				210		
			13.5	10.0	15.0			7" H.S. Auger			Cleanout
4	28Sept	13.5		15.0	15.5	15.0	16.7	3" F.P.S.	0	ST	Sand (SP): reddish brown in
				15.5	16.0	16.7	17.0		10	Jar	color, dry, fine-grained, and
				16.0	16.5				20		no cohesion,
				16.5	17.0				60		Sample length: 2.00 ft
				17.0	17.5				90		
				15.0	20.0			7" H.S. Auger			Cleanout

FORM 910 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 4 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-4-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont.	CLASSIFICATION AND REMARKS
5	28Sept			20.0	20.5	20.0	22.08	3" F.P.S.	0	ST	Sand (SP): brown in color, fine-
5A				20.5	21.0	22.08	22.4		0	Jar	grained, dry, and very uniform
				21.0	20.5				0		quartz sand.
				20.5	22.0				10		Sample length: 2.35 ft
				22.0	22.4				120		
				20.0	25.0			7" H.S. Auger			Cleanout
6				25.0	25.5	25.0	26.50	3" F.P.S.	0	ST	Sand (SP): brown in color, very
6A	28Sept			25.5	26.0	26.50	26.80		0	Jar	fine-grained, wet, and uniform.
				26.0	26.5				10		Water in hollow stem auger at
				26.5	27.0				30		26.89 ft.
				27.0	27.41				70		Sample length: 1.8 ft
				25.0	30.0			7" H.S. Auger			Cleanout: when pulling plug
											from auger, sand came in,

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 3 of 4 Sheets

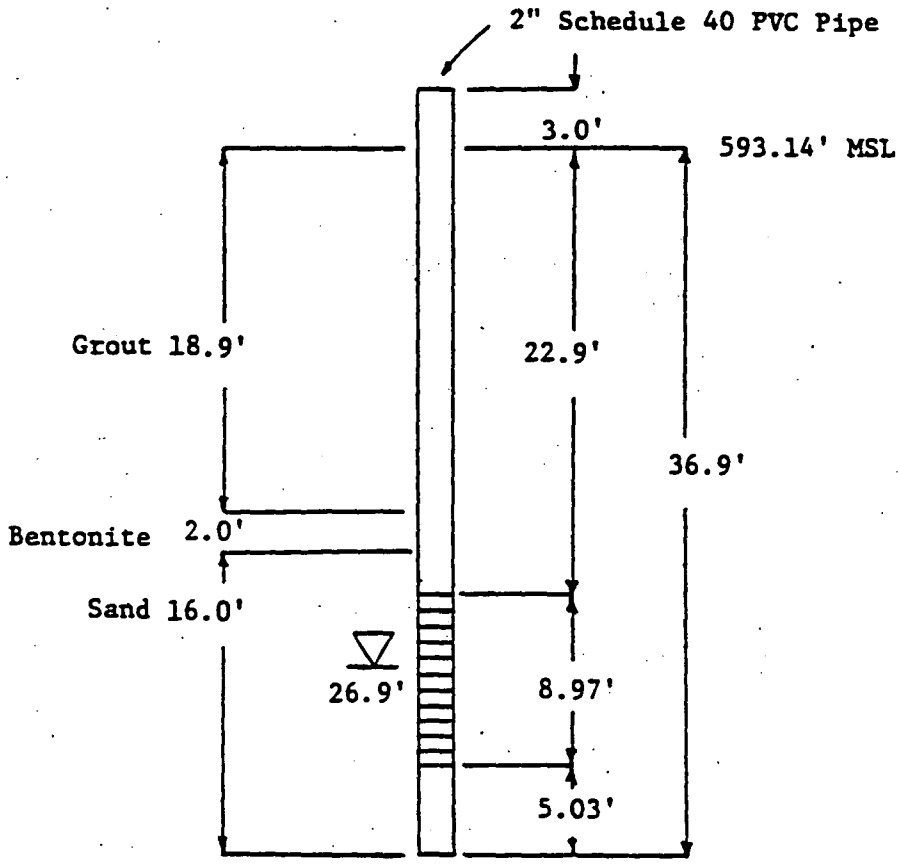
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-4-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont.	CLASSIFICATION AND REMARKS
7	28Sept			27.8	28.3	27.8	29.90	3" F.P.S.	0	ST	Sand (SP): brown, fine-grained,
				28.3	28.8	29.90	30.40		0	Jar	and wet.
				28.8	29.3				0		Sample length: 2.40 ft
				29.3	29.8				0		
				29.8	30.3				40		
				30.0	35.0			7" H.S. Auger			Cleanout
8	28Sept		36.25	35.0	35.5	35.0	37.05	3" F.P.S.	30	ST	Clay (CL): grey in color, soft,
8A		36.25		35.5	36.0	37.05	37.30		70	Jar	very uniform in texture, and
				36.0	36.5				100		uniform consistency.
				36.5	37.0				120		Sample length: 2.30 ft
			37.4	37.0	37.4				120		
											Installed well through auger.

WE[illegible] FORM [illegible] 819 EDITION OF NOV 1971 MAY BE USED

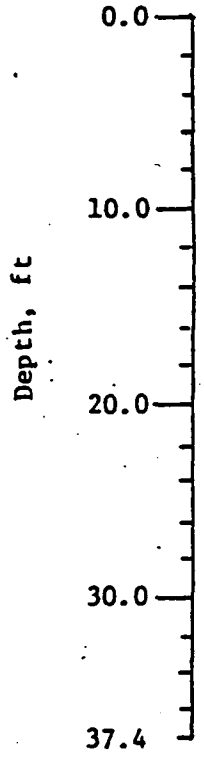
Sheet 4 of 4 Sheets



Water depth at time of drilling

Well screen

NWSC, Crane, Indiana
McComish Gorge
Well Completion
Boring Number: WES-4-4-81



593.14' MSL

Clay (CL): brown in color, dry, uniform, slightly stiff, and slight to moderate cohesion.

Silt (ML): brown in color, dry, uniform, and slight cohesion.

Sand (SP): reddish brown to brown in color, fine-grained quartz sand, uniform, and wet from 26.9 ft.

Clay (CL): grey in color, soft, very uniform texture, and uniform consistency.

NWSC, Crane, Indiana

McComish Gorge

Lithology

Boring Number: WES-4-4-81

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 30 Sept. 1981
Location McComish Gorge Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 573.39 Boring No. WES-4-5-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	30Sept	0.0		0.0	0.5	0.0	1.8	3" Shelby Tube	0	ST	Sandy clay (CL): brown in color,
1A				0.5	1.0	1.8	1.95		0	Jar	moderate cohesion, soft, and
				1.0	1.5				0		contains 20-30% fine-grained sand.
				1.5	2.0				10		Sample length: 1.95 ft
				2.0	2.55				10		
				0.0	5.0			7" Folding Auger			Cleanout
2	30Sept			5.0	5.5	5.0	6.36	*3"Fixed Piston Sampler	0	ST	Sandy clay (CL): brown in color,
				5.5	6.0	6.36	6.56		0	Jar	moderate cohesion, soft, and con-
				6.0	6.5				0		tains 40% fine to coarse-grained
				6.5	7.0				0		sand.
				7.0	7.41				10		Sample length: 1.56 ft
			7.5	5.0	70.0			*7" Hollow Stem Auger			Cleanout

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

*3" Fixed Piston Sampler = 3" F.P.S.
*7" Hollow Stem Auger = 7" H.S. Auger

Sheet 1 of 3 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-5-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1 3	30Sept	7.5		10.0	10.5	10.0	11.10	3" F.P.S.	0	ST	Silty sand (SM): dark grey to
3A				10.5	11.0	11.10	11.70		0	Jar	black in color, wet, slight cohesion,
				11.0	11.5				0		and trace of odor (organic/oily).
				11.5	12.0				10		Sample length: 2.21 ft
				12.0	12.42				10		Water at 9.5 ft after 30 min
			13.5	10.0	15.0	—	—	7" H.S. Auger		—	Cleanout: material came in when
											pulling plug from auger.
		13.5		14.3	14.8	14.3	16.0	3" F.P.S.	80	ST	Sandy gravel (GW): grey in color,
				14.8	15.3	16.0	16.35		110	Jar	wet, coarse sand (30%) and fine
				15.3	15.8				115		to medium angular to rounded,
				15.8	16.3				130		unsorted gravel.
			15.0	16.3	16.71				130		Sample length: 2.35 ft
				15.0	20.0	—	—	7" H.S. Auger		—	Clean ut: material came in when
											pulling plug from auger.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 3 Sheets

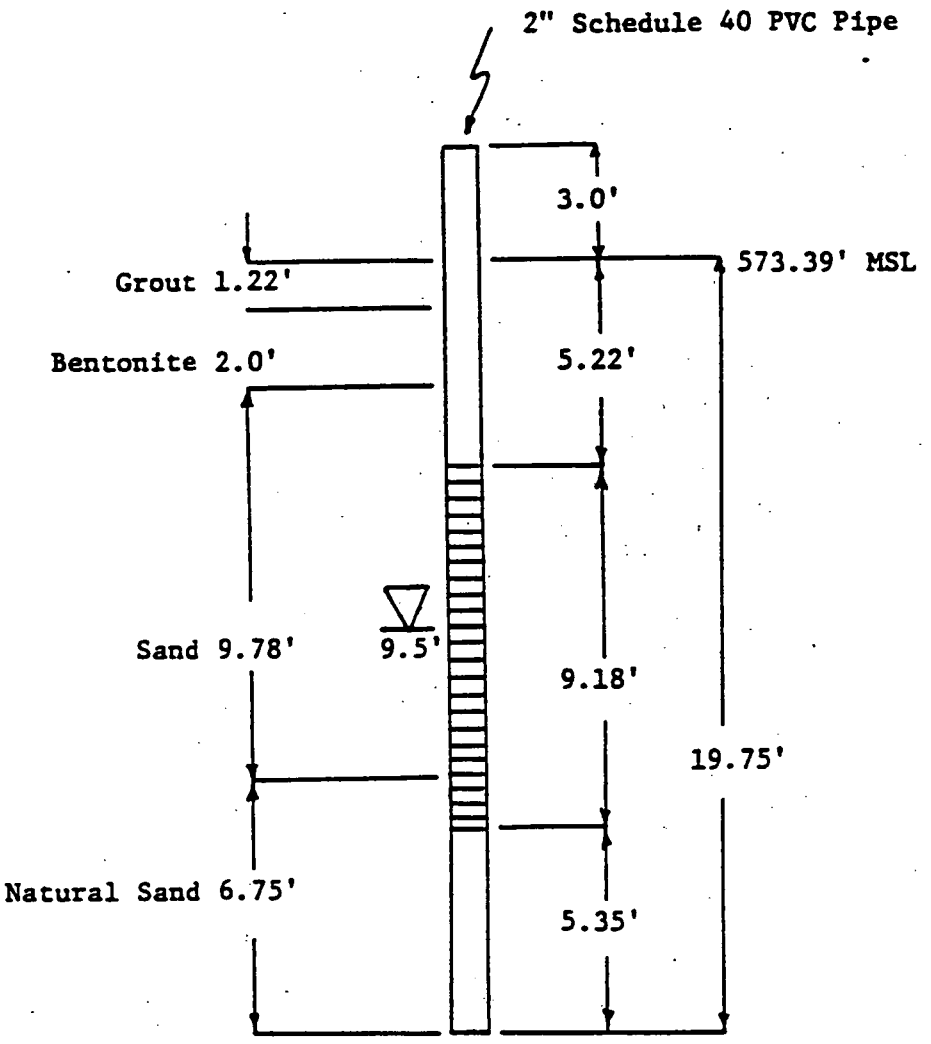
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-5-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
5	30Sept	15.0		18.6	19.1	18.6	20.05	3" F.P.S.	70	ST	Silty sand (SM): grey in color,
5A				19.1	19.6	20.05	20.35		210	Jar	wet, no cohesion, and uniform.
				19.6	20.1				220		Sample length: 1.75 ft
				20.1	20.6				380		
			20.91	20.6	20.91				450		
											Installed well through auger.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 3 of 3 Sheets



Water depth at time of drilling

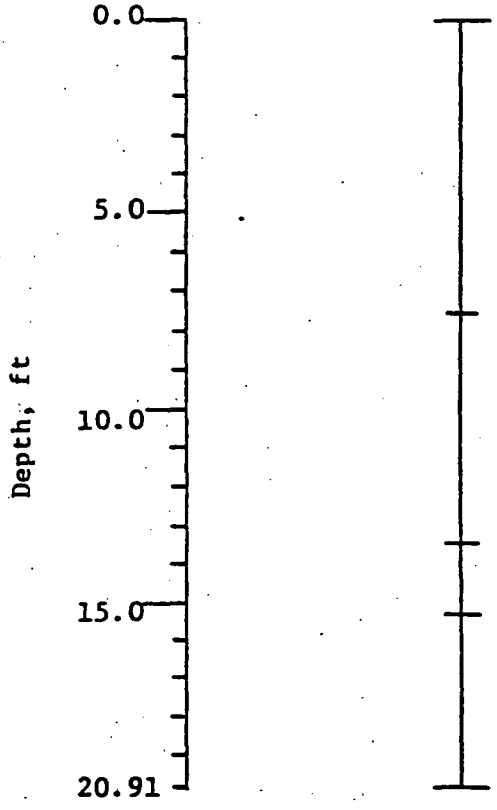
Well screen

NWSC, Crane, Indiana

McComish Gorge

Well Completion

Boring Number: WES-4-5-81



573.39' MSL

Sandy clay (CL): brown in color, moderate cohesion, soft, and contains 20-30% fine-grained sand.

Silty sand (SM): dark grey to black in color, wet, slight cohesion, and slight organic-oily odor.

Sandy gravel (GW): grey in color, wet, coarse sand (30%), and fine to medium, angular to rounded, unsorted gravel.

Silty sand (SM): grey in color, wet, no cohesion, and uniform.

NWSC, Crane, Indiana

McComish Gorge

Lithology

Boring Number: WES-4-5-81

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 8 Oct. 1981
Location McComish Gorge Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El. 579.54 Boring No. WES-4-6-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Pres	Cont	CLASSIFICATION AND REMARKS
1	8 Oct	0.0		0.0	0.5	0.0	2.14	3" Shelby Tube	0	ST	Sand (SP): reddish brown in color,
1A				0.5	1.0	2.14	2.36		0	Jar	slight cohesion, dry, uniform, and
				1.0	1.5				0		fine-grained.
				1.5	2.0				50		Sample length: 2.36 ft
				2.0	2.5				140		
				0.0	5.0	—	—	7" Folding Auger	—		Cleanout
2	8 Oct			5.0	5.5	5.0	7.08	*3"Fixed Piston Sampler	0	ST	Sand (SP): brown in color, slight
2A				5.5	6.0	7.08	7.34		0	Jar	cohesion, dry, uniform, and fine
				6.0	6.5				0		to medium (10-15%) grained.
				6.5	7.0				0		Sample length: 2.34 ft
			10.0	7.0	7.4				0		
				5.0	10.0	—	—	*7" Hollow Stem Auger	—		Cleanout

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED *3" Fixed Piston Sampler = 3" F.P.S. Sheet 1 of 3 Sheets
*7" Hollow Stem Auger = 7" H.S. Auger

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-6-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd Press	Cont	CLASSIFICATION AND REMARKS
3	8 Oct	10.0		10.0	10.5	10.0	11.71	3" F.P.S.	0	ST	Silty sand (SM): brown in color,
3A				10.5	11.0	11.71	12.31		0	Jar	very fine-grained, uniform, slightly
				11.0	11.5				0		damp, and little cohesion.
				11.5	12.0				0		Sample length: 2.31 ft
				12.0	12.4				0		
				10.0	15.0			7" H.S. Auger			Cleanout
4	8 Oct			15.0	15.5	15.0	17.17	3" F.P.S.	0	ST	Silty sand (SM): brown in color,
4A				15.5	16.0	17.17	17.38		0	Jar	very fine-grained, moist, uniform,
				16.0	16.5		Water	at 17.35	0		and slight cohesion,
				16.5	17.0				0		Sample length: 2.38 ft
				17.0	17.38				0		
				15.0	20.0			7" H.S. Auger			Cleanout: material came in when
											pulling plug from auger.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 3 Sheets

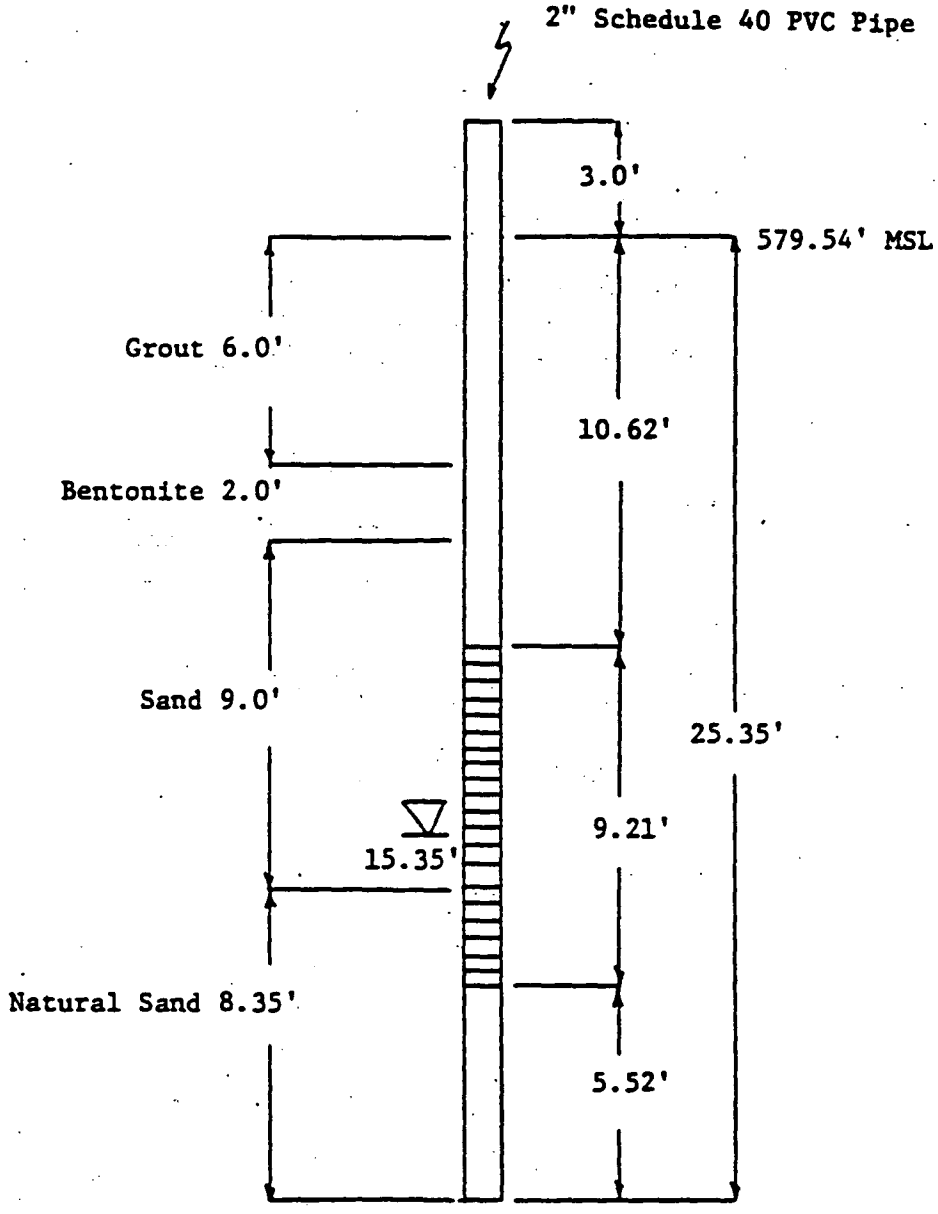
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-4-6-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd Press	Cont	CLASSIFICATION AND REMARKS
5	8 Oct			19.5	20.0	19.5	20.35	3" F.P.S.	0	ST	Silty sand (SM): same as in pre-
5A				20.0	20.5	20.35	20.6		0	Jar	vious sample-moist.
				20.5	21.0				0		Sample length: 1.1 ft
				21.0	21.5				0		
				21.5	21.9				0		
				20.0	25.0			7" H.S. Auger			Cleanout: material came in when
											pulling plug from auger.
6	8 Oct			24.2	24.7	24.2	26.36	3" F.P.S.	0	ST	Silty sand (SM): brown to grey in
6A				24.7	25.2	26.36	26.56		20	Jar	color, fine-grained, slight cohesion,
				25.2	25.7				50		uniform, and damp.
				25.7	26.2				100		Sample length: 2.36 ft
			26.59	26.2	26.59				130		
											Installed well through auger.

WES FORM 819 EDITION OF NOV 1971 MAY BE USED

Sheet 3 of 3 Sheets



Water depth at time of drilling

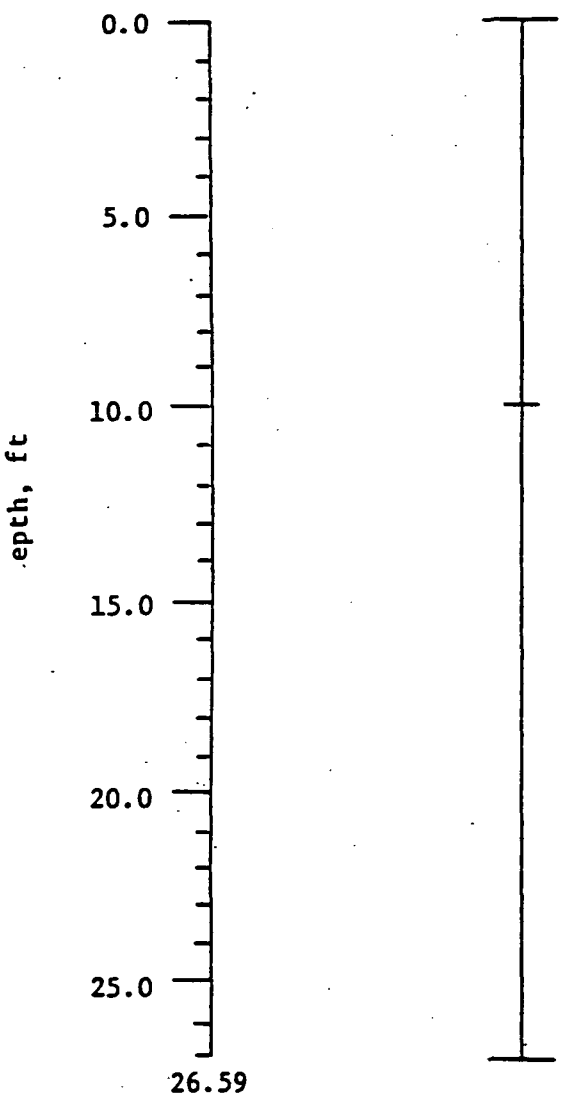
Well screen

NWSC, Crane, Indiana

McComish Gorge

Well Completion

Boring Number: WES-4-6-81



579.54' MSL

Sand (SP): reddish brown to brown in color, dry, uniform, slight cohesion, and fine to medium grained.

Silty sand (SM): brown in color, uniform, very fine-grained, slight cohesion, and wet from 17.35 ft. Material changes to grey color at 24.2 ft.

NWSC, Crane, Indiana

McComish Gorge

Lithology

Boring Number: WES-4-6-81

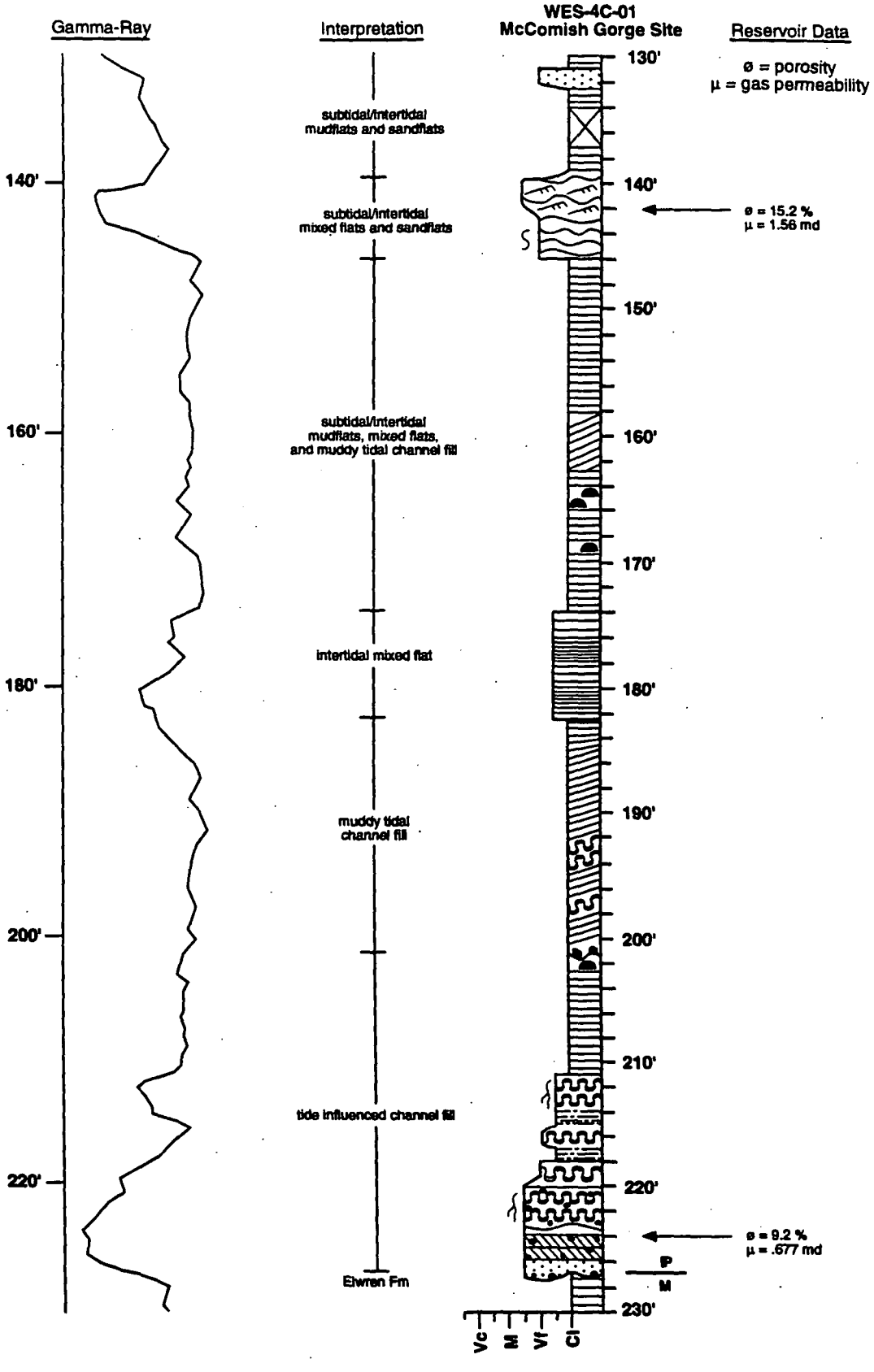


Figure 9a. Vertical columnar profile of corehole WES-4C-01

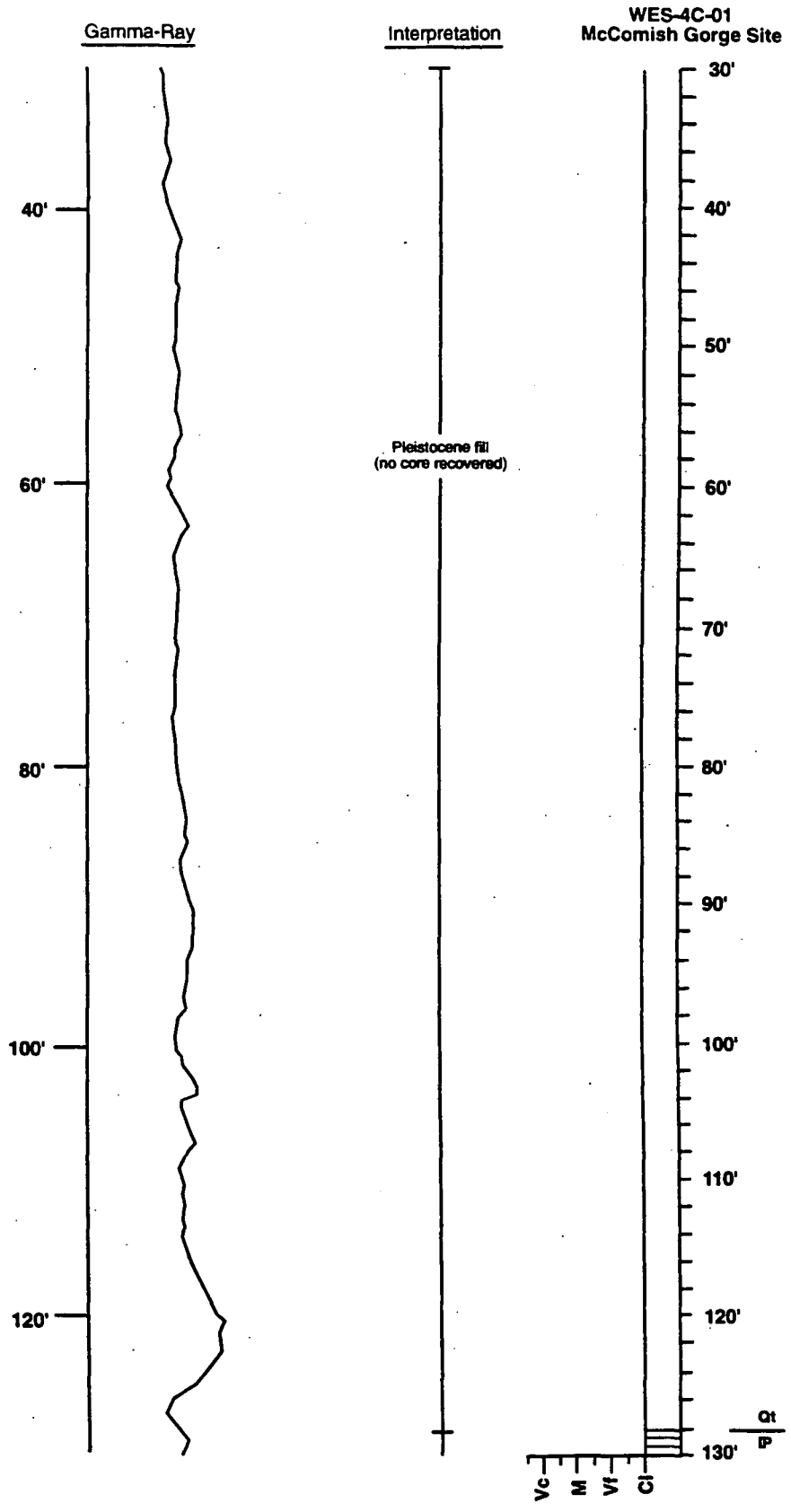


Figure 9b. Vertical columnar profile of corehole WES-4C-01

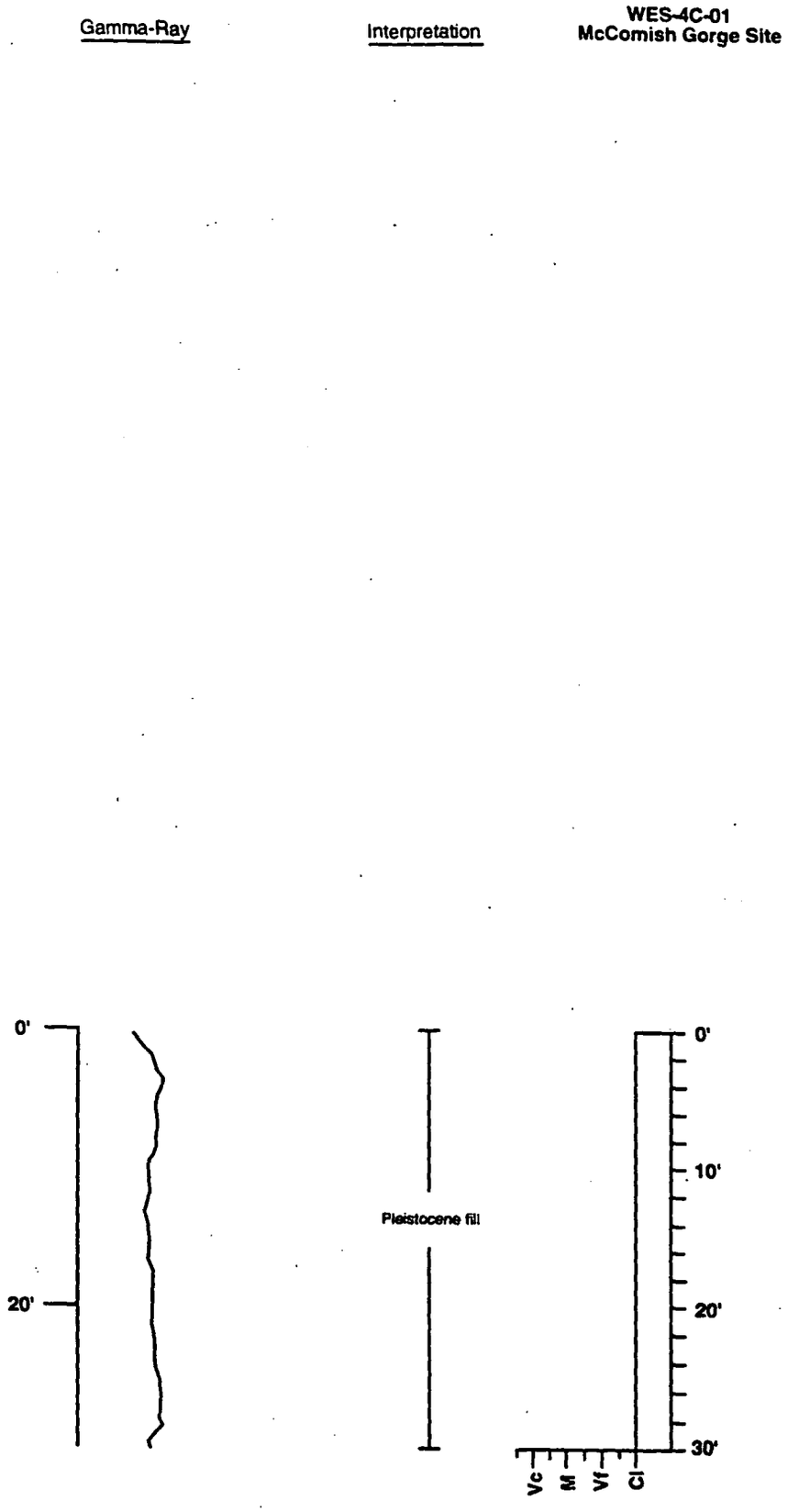


Figure 9c. Vertical columnar profile of corehole WES-4C-01

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 045B01
DATE: 1/28/00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				LOOSE +	YELL	SILTY FINE-MED SAND	SM		-	0.0	0.0	0.0
	2				MUDST	LR +	W/ PLASTIC SHEETING	↓		17	↓		↓
	3				↓	LR-BR	↓	↓		21	↓		↓
S-1 1436	4		3½" / 4"		↓	↓	↓	↓		365	↓	1.7	↓
	5				LOOSE +	YEL	TOP 20" SILTY FINE-MED	SM		27	0.0		0.0
	6				MUDST	LR	SAND.	↓		30	↓		↓
	7				LOOSE + MUDST	↓	BOTT 16" FINE SAND	SP		0.0	↓		↓
S-2 1440	8		3" / 4"		WET 8"	↓	↓	↓		0.0	↓	1.62	↓
	9						0 RECOVERY MACRO CORE						
S-3 1444	10		0 / 3"				SLEEVE CAME UP WET						
					Sampled 045B01W07 @ 1438								
							VOC'S TAKEN FROM 1'-2' INTERVAL						
					Sampled 045B01D204 @ 1455								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Remarks: 1ST 4" 2ND 4" 3RD 4" 18

Drilling Area Background (ppm): 0.0

Converted to W ll: Yes _____ No ✓ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 045B02
DATE: 11/28/00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				LOOSE*	YELLOW	TOP 16" SILTY FINE-MED	SM			0.0		0.0
	2				MOIST		SAND W/ METAL FRAGS.	↓		68	↓		↓
	3				LOOSE ±	BLK	BOTT 7" SILTY, WOOD FRAGS	SM					
S1 1343	4		18" / 4'		FLAKEY	+ TAN	+ METALS FRAGS. T-SAND	↓		54	↓	38	↓
	5				LOOSE* WET	GRAY	TOP 8" SILTY, WOOD FRAGS	↓	1ST 4'-8' 7" RECOVERY WET	145			
	6				↓	+ TAN	+ METAL FRAGS T-SAND	↓		284			
	7				SL-STIFF ±	TAN	BOTT 13" SILTY FINE-MED	SM	METAL FRAGS	680			
S2 1403	8		20" / 4'		MOIST	+ BLK	SAND WITH PLASTIC SHAVINGS	↓	EVIDENT	710		112	
	9				BRITTLE	BLK	PLASTIC SHAVINGS ±	↓	FUEL ODOR!				
S3 1413	10		6" / 7'			↓	CINDERS, METAL FRAGS	↓	7761 ppm	7761			
				10' T.D.			& UNABLE TO SAMPLE 8'-10'.						
							PRESENCE OF SOIL, METAL/PLASTIC SHAVINGS.						
							1'-10' FILL MATERIAL						
					Sampled 045B02.0003 @ 1345								
							VOC'S TAKEN FROM 1'-2'						
					Sampled 045B020608 @ 1410								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

R marks: 1ST 8' 2ND 10' 18-20

Drilling Area Background (ppm): 0.0

Converted to W ll: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 045B03
DATE: 11/28/00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	1				LOOSE +	YELL	TOP 7" FINE SAND T-SILT	SM					
	2				SL. MOIST	OR		↓	@ 7" →	135	0.0	0.0	0.0
	3				LOOSE,	BLK	BOTT 14" SILT, FELT PAPER +	SM					
S1 1032	4		21" / 4'		FLAKEY		WOOD CHUNKS			71	0.0	0.0	0.0
	5				LOOSE	BLK	SILT, WOOD FIBERS, +		1ST ATTEMPT REFUSAL @ 5'				
S-2 1037	6		1' / 2'		+ FLAKEY	+ LT.	OTHER FIBROUS MATERIAL		2ND ATTEMPT. REFUSAL @ 4'	162	0.0	0.0	0.0
	7					BR.	T- GRAVEL + T-SAND	↓	3RD ATTEMPT REFUSAL @ 6'				
S3 1112	8		16" / 4'						S3 TAKEN W/ 4th ATTEMPT 4'-8'	22	0.0	0.0	0.0
	9				WET:				SATURATED @ 8'				
S4 1115	10		4" / 3'			↓	↓	↓		0	0.0	0.0	0.0
				10'-20'			1'-10' FINE MATERIAL						
					Sampled		045B03 0002 @ 1035						
							VOC'S TAKEN 1'-3'						
					Sampled		045B03 0406 @ 1130						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 1ST 5 FT. 2ND (OFFSET) 4' 3RD 6' 4th W 10' 25'

Drilling Area Background (ppm): 0.0

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 04SB08
DATE: 10/3/00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	YEL	TOP 15" SILTY CLAY T.	CL		0.0	0.0		0.0
	2				↓	GR	GRAVEL & SAND	↓		0.0	↓		↓
	3				SL STIFF	↓	WITH 5" SILTY SAND.	SM		0.0	↓		↓
S-1 0401	4		33" / 4'		↓	↓	"	↓		0.0	↓	0.0	↓
	5				LOOSE	YEL	SILTY SAND FINE-MED	↓		0.0	0.0		0.0
	6				MOIST	GR	T. CLAY	↓		0.0	↓		↓
	7				↓	↓		↓		0.0	↓		↓
S-2 0413	8		33" / 4'		↓	↓		↓		0.0	↓	0.0	↓
	9				LOOSE &	YEL	SILTY FINE-MEDSAND	SM		0.0	0.0		0.0
S3 0416	10		2" / 2"		MOIST	GR		↓		0.0	↓	0.0	↓
				TD. 10'									
					Sampled 04SB080002 @ 0905								
							VOCS TAKEN FROM 1-2'						
					Sampled 04SB080810 @ 0918								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: 10'

Converted to Well: Yes _____ N X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: EFS
DRILLING RIG: GEOPROBE 54 LT
BORING NUMBER: 04SB09
DATE: 2.20.01
GEOLOGIST: K. Simpson, T. Rojahn
DRILLER: ADAM CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							GRASS						
	1				SOFT	BRN	SILT, TR F. SAND TR CLAY, TR GRAVEL	ML	TR ROOTS MOIST	0	0	0	0
	2						½" Ø MAX						
	3												
S.1 1100	4		3.7 / 4			LT BRN	SILTY F. SAND TR GRAVEL	SM					
	5												
	6												
	7								MORE F. GRAVEL / COARSE SAND				
S.2 1110	8		4 / 4						MOIST				
	9												
S 3	10		2 / 2										
1115													
							TD = 10						
							TOTAL FOOTAGE = 10						
					Sampled 04SB09 0002 @ 1100								
							VOCs COLLECTED 1-2'						
					Sampled 04SB090810 @ 1115								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ W II I.D. #: —

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: EFS
DRILLING RIG: GEOPROBE 54LT

BORING NUMBER: 04SB10 ~~0608~~ KS
DATE: 2.20.01
GEOLOGIST: K. Simpson, T. Rojahn
DRILLER: ADAM CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							GRASS						
	1				SOFT	BRN	SANDY SILT TR GRAVEL 1/4" Ø MAX	SM	TR ROOTS MOIST	0	0	0	0
	2					BRN/ORG	(ORANGE)		2' MAY BE FILL ?				
	3					BRN							
S.1 1010	4		3.2/4										
	5				MED STIFF	LT BRN	SILTY SAND FINE POORLY GRADED						
	6												
	7								6 TO 6.3 DARK BRN.				
S.2 1020	8		4/4										
	9												
S.3 1030	10		2/2										
							TD = 10						
							TOTAL FOOTAGE = 10						
					Sampled 04SB10 0002 @ 1010								
							VOCs COLLECTED 1-2'						
					Sampled 04SB10 0608 @ 1040								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: —

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: EFS
DRILLING RIG: GEOPROBE 54LT

BORING NUMBER: 04SB11 ~~0002~~
DATE: 2.20.01
GEOLOGIST: K. Simpson, T. Rojahn
DRILLER: ADAM CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							WOODED AREA						
	1				SOFT	LT BRN	SILTY SAND F/MED SAND	SM	TR ROOTS MOIST	0	0	0	0
	2						TR. GRAVEL ½" Ø MAX						
	3												
S-1 0920	4		4/4										
	5												
	6												
	7					BRN							
S-2 0930	8		4/4						DAMP				
	9												
S-3 0940	10		2/2										
							TD = 10						
							TOTAL FOOTAGE = 10						
					Sampled 04SB11 0002 @ 0930								
							VOCs COLLECTED 1-2'						
					Sampled 04SB11 0910 @ 0940								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: —

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: EFS
DRILLING RIG: GEOPROBE 54LT
BORING NUMBER: 04SB12
DATE: 2.20.01
GEOLOGIST: K. Simpson, T. Rojahn
DRILLER: ADAM CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							WOODED AREA						
	1				SOFT	TAN	SILT W F. SAND	SM	MOIST TR. ROOTS	0	0	0	0
	2					BRN	SAND FINE W TR MED. SAND TR SILT/CLAY	SP	MOIST				
	3					BLACK/ BRN							
S.1 1250	4		3.3/4			BRN							
	5						MED TO F. SAND TR SILT/CLAY						
	6				STIFF								
	7												
S.2 1305	8		3.1/4										
	9						TR. BLACK SAND						
S.3 1310	10		2/2			RED	F. SAND POORLY GRADED TR BLACK SAND		2" PIECE OF WEATHERED SANDSTONE TAN	0	0	0	0
							TD = 10		2X 1ST 4'				
							TOTAL FOOTAGE = 14						
					Sampled 04SB120002 @1250			→	COLLECTED DUP + MS/MSD				
							VOCs COLLECTED 1-2'						
					Sampled 04SB120810 @1310			→	ADDED TOC, CEC, PH				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CRANE
PROJECT NUMBER: 7141
DRILLING COMPANY: BOWSER - MORNER
DRILLING RIG: CME-55

BORING No.: 04T01
DATE: 12-1-00
GEOLOGIST: M. G. COCHRAN
DRILLER: D. SINK

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
S-1		0/1	1.4/		SOFT	DK BRN	SILTY CLAY	CL	LOW PLASTIC LOOKS NATURAL	0	0	0	0
	2	2/2	2.0			BRN	SILTY CLAY		DAMP				
S-2		2/3	1.8/		M. STIFF	BRN	SILTY CLAY	CL	LOW PLASTIC DAMP	0	0	0	0
	4	3/5	2.0						DK BRN MOTTLING - FE STAINED LAMINA.				
S-3		2/3	1.8/		M. STIFF	BRN	SILTY CLAY	CL	DAMP	0	0	0	0
	6	5/4	2.0			RED BRN	SILTY CLAY						
S-4		2/3	1.5/	7.0	M. STIFF	RD BRN	CLAYEY SILT	ML	TRANSITIONS INTO MORE SAND @ BTM	0	0	0	0
	8	3/3	2.0				SILT, SOME CLAY,	SM	LITTLE SAND IN BTM. (FINE)				
S-5		2/3	1.5/		LOOSE	RD BRN	SANDY SILT	SM	DAMP	0	0	0	0
	10	3/4	2.0				TRACE CLAY		DK BRN MOTTLING IN TOP				
S-6		2/3	1.8/		LOOSE	RD BRN	SANDY SILT	SM	SPL. MOIST ON OUTSIDE, DAMP INSIDE.	0	0	0	0
	12	3/4	2.0	12.0			TRACE CLAY						
S-7		2/3	1.5/		LOOSE	RD BRN	FINE SAND, TR	SP	SATURATED				
	14	3/3	2.0				M+C SAND						
S-8		2/3	1.4/		LOOSE	RD BRN	F-M SAND	SP	SATURATED TOP DAMP @ BTM	0	0	0	0
	16	2/2	2.0						BLACK ORGANIC NAT MAT, 1' THICK IN CENTER				
S-9		2/2	1.4/		V. LOOSE	BRN	F-M SAND	SP	DAMP	0	0	0	0
	18	2/2	2.0										
S-10		2/3	1.1/		LOOSE	BRN	F-M SAND	SP	DAMP	0	0	0	0
	20	3/3	2.0						1 & F. GRAVEL FRAG. IN TOP.				
S-11		2/3	1.6/		LOOSE	BRN	F-M SAND	SP	DAMP. RD-BRN IN CENTER	0	0	0	0
	22	3/4	2.0						TRACE C SAND IN CENTER. 2'				
S-12		2/3	1.3/		LOOSE	BRN	SILTY SAND + GRAVEL		GRAVEL - FINE. SUB ∡, BLACK ORG.				
	24	2/3	2.0				HIT H_2O IN BTM SPL		NAT. MAT. IN TOP 1 SPL. BLACK PEAT				
S-13		3/2	1.5/		V. LOOSE	BRN	F-M SAND	SP	SATURATED TR. SILT.	0	0	0	0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: DRILLED HOLE W 4 1/4 ID 8 1/2 OD HSA

Converted to Well: Yes ✓ No _____ Well I.D. #: 04T01

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CRANE
PROJECT NUMBER: 7141
DRILLING COMPANY: BOWSER-MORNER
DRILLING RIG: CME-55

BORING No.: 04T01
DATE: 12-1-00 / 12-2-00
GEOLOGIST: M.G. COCHRAN
DRILLER: D. SINK

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	26	2/2	2.0		V. LOOSE	BRN	F-M SAND	SP	BLACK NAT. ORG. MTL. 1' THICK IN BTM				
S-14		1/2	1.7/		V. LOOSE	BRN	F-M SAND	SP	SATURATED, FINER TOWARDS	0	0	0	0
	28	2/3	2.0		V. LOOSE	BRN	F SAND, TR. SILT	SP	BTM. TRANSITIONS INTO F. SAND				
S-15		1/1	1.1/		V. LOOSE	BRN	SILTY SAND	SM	SATURATED	0	0	0	0
	30	1/2	2.0						F-M SAND BTM. 2				
S-16		3/2	1.4/		LOOSE	BRN	F-M SAND, SOME	SM	SATURATED	0	0	0	0
	32	5/4	2.0				SILT, TR F GRAVEL						
S-17		5/4	1.0/		LOOSE	BRN	F-M SILTY SAND,	SM	SATURATED	0	0	0	0
	34	4/5	2.0				TR GRAVEL						
							TD 34.0'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: STOPPED DRILLING @ 30' FOR DAY
SWL 27.4' BGS ON 12-2-00 ON INSIDE AUGERS

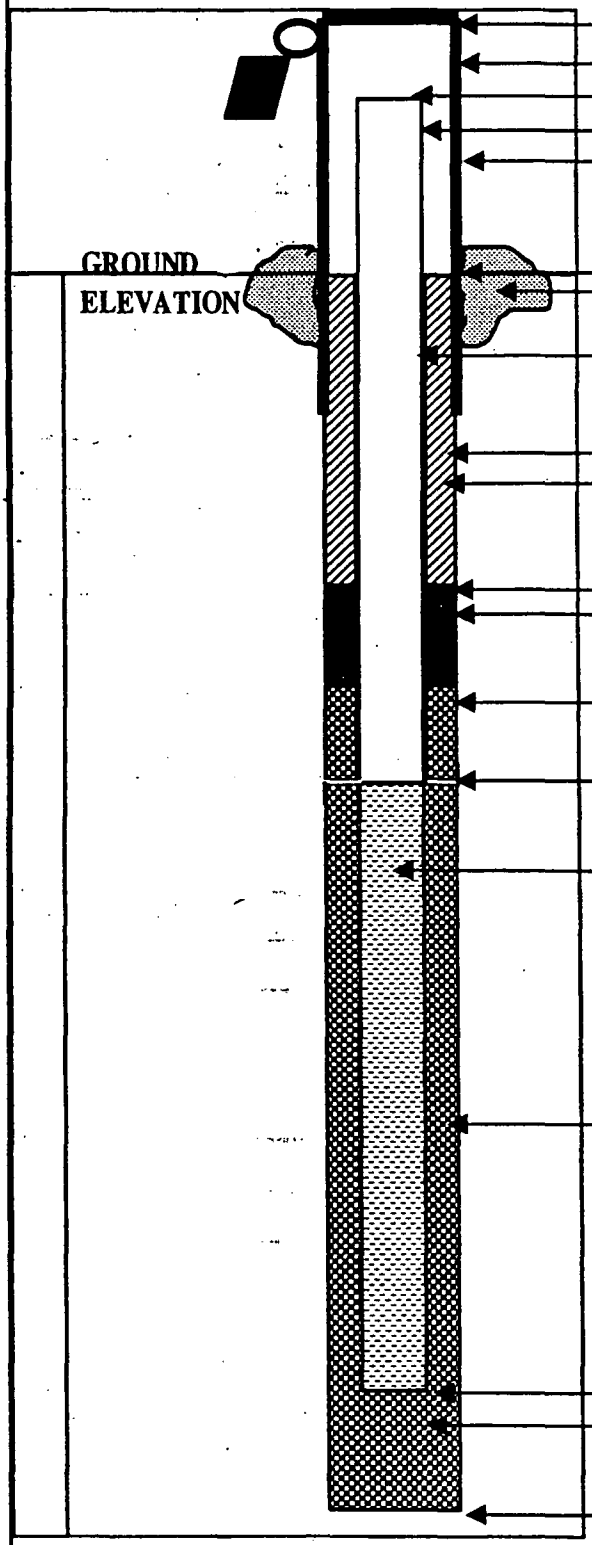
Converted to W ll: Y s ✓ No _____ Well I.D. #: _____

BORING NO.: 04T01

Tetra Tech NUS, Inc.

MONITORING WELL

PROJECT:	NSWC CRANE	DRILLING Co.:	Bowser Morner	BORING No.:	04T01
PROJECT No.:	7141 CTO 010	DRILLER:	D. SINK	DATE COMPLETED:	12-2-00
SITE:	SWMU 4	DRILLING METHOD:	HSA	NORTHING:	1326144.004
GEOLOGIST:	M.G. COCHRAN	DEV. METHOD:	SURGE & WHALE PUMP	EASTING:	3007702.313



ELEVATION OF TOP OF SURFACE CASING: 587.02'

STICK-UP TOP OF SURFACE CASING: 3.03'

ELEVATION OF TOP OF RISER PIPE: 586.34'

RISER STICK-UP ABOVE GROUND SURFACE: 2.35'

I.D. OF SURFACE CASING: 4"

TYPE OF SURFACE CASING: SQUARE STEEL CASING

GROUND ELEVATION: 583.99'

TYPE OF SURFACE SEAL: CEMENT PAD

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 8 1/2"

TYPE OF BACKFILL: CEMENT/BENTONITE SLURRY (QUIKRETE & AM COLLOID WYOMING BENTONITE)

ELEVATION / DEPTH OF SEAL: 563.99'/20'

TYPE OF SEAL: BENTONITE PELLETS COLLOID ENVIRONMENTAL

ELEVATION / DEPTH TOP OF FILTER PACK: 561.99'/22'

ELEVATION / DEPTH TOP OF SCREEN: 559.99'/24'

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: .01" X 10'

I.D. OF SCREEN: 2"

TYPE OF FILTER PACK: GLOBAL #16 → 34-23'
No. 20-40 STANDARD SIEVE SAND #7 → 23-22'

ELEVATION / DEPTH BOTTOM OF SCREEN: 549.99'/34

ELEVATION / DEPTH BOTTOM OF FILTER PACK: 549.99'/34

TYPE OF BACKFILL BELOW WELL: N/A

ELEVATION / DEPTH OF BOREHOLE: 549.99'/34

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CRANE
PROJECT NUMBER: 7141
DRILLING COMPANY: BOWSER-MORNER
DRILLING RIG: CME-55
BORING No.: 04T02
DATE: 11-30-00
GEOLOGIST: M.G. COCHRAN
DRILLER: D. SINK

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
S-1		1/2	1.8/		SOFT	DK BRN	SILTY CLAY	CL	LOW PLASTIC. NATURAL	0	0	0	0
	2	2/3	2.0			BRN			DAMP				
S-2		2/2	2.0/		SOFT	BRN	SILTY CLAY	CL	LESS CLAY @ BTM	0	0	0	0
	4	2/3	2.0						DAMP				
S-3		2/2	1.3/		SOFT	BRN	SILTY CLAY	CL	DK BRN MOTTLING IN BTM.	0	0	0	0
	6	2/3	2.0						DAMP				
S-4		1/2	1.3/		SOFT	RD BRN	CLAYEY SILT	CL	LOW PLASTIC.	0	0	0	0
	8	3/4	2.0	8.0									
S-5		2/4	1.3/		LOOSE	RD BRN	F. SAND, LITTLE SILT	SM	MOIST	0	0	0	
	10	6/6	2.0										
S-6		2/5	1.4/	10.5	M DENSE	RD BRN	SILTY SAND + GRAVEL	SM-SP	GRAVEL. SUB & DK BRN IN MID SPOON	0	0	0	0
	12	6/6	2.0						DAMP. GRAVEL COARSE				
S-7		4/5	1.5/		M. DENSE	RD BRN	SILTY SAND + GRAVEL	SM-SP	SAME AS ABOVE LITTLE GRAVEL	0	0	0	0
	14	6/5	2.0										
S-8		3/2	1.8/		LOOSE	RD BRN	SILTY SAND, TR.	SM SP	COARSE SAND IN SPOON, DAMP	0	0	0	0
	16	3/3	2.0				GRAVEL		MOIST ABOVE SAND				
S-9		4/6	1.5/	16.5	M. DENSE	RD BRN	FINE SAND, TR.	SP	DAMP	0	0	0	0
	18	5/5	2.0				SILT						
S-10		2/3	1.8/		M. DENSE	RD BRN	FINE SAND, TR SILT	SP	DAMP	0	0	0	0
	20	3/3	2.0										
S-11		2/3	1.5/		LOOSE	RD BRN	SANDY SILT	SM	MOIST	0	0	0	0
	22	2/1	2.0						DK BRN LAMINA IN BTM.				
S-12		1/1	1.7/		SOFT	BRN	SILTY CLAY	CL	LOW PLASTIC SATURATED	0	0	0	0
	24	2/2	2.0										
S-13		1/2	1.5/		SOFT	BRN	SILTY CLAY	CL	SILTY SAND TOP .2' OF SPOON	0	0	0	0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: DRILLED HOLE W 4 1/4 ID 8 1/2 OD HSA

Converted to Well: Y s ✓ No _____ Well I.D. #: 04T02

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CRANE
PROJECT NUMBER: 7141
DRILLING COMPANY: BOWSER-MORNER
DRILLING RIG: CME-55

BORING No.: 04T02
DATE: 11-30-00
GEOLOGIST: M. G. COCHRAN
DRILLER: D. SINK

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	26	2/1	2.0			BRN	SILTY CLAY	CL	LOW PLASTICITY SATURATED				
S-14		1/2	1.6/		SOFT	BRN	SILTY CLAY	CL	SATURATED	0	0	0	0
	28	1/2	2.0										
S-15		0/0	1.7/		V. SOFT	BRN	SILTY CLAY	CL	FE STAINED LAMINA IN CENTER	0	0	0	0
	30	0/2	2.0										
S-16		2/3	1.5/	31	M. STIFF	BRN	SILTY CLAY	CL	SATURATED	0	0	0	0
	32	3/4	2.0	31.5	V. LOOSE	BRN	FINE SAND.	SP					
S-17		0/0	1.4/		V. SOFT	BRN	CLAYEY SILT	ML	SATURATED	0	0	0	0
	34	0/2	2.0										
S-18		2/2	1.2/		V. LOOSE	BRN	SANDY SILT TR CLAY	SM	SATURATED	0	0	0	0
	36	2/2	2.0										
S-19		2/3	1.8/		LOOSE	BRN	SILTY SAND	SM	SATURATED,	0	0	0	0
	38	3/7	2.0				TR. CLAY		FINE SAND				
S-20		2/3	1.8/		LOOSE	BRN	SILTY SAND	SM	FINE SAND	0	0	0	0
	40	3/5	2.0				TD 40'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: QUIT FOR DAY @ 24'
H_2O ~ 5' INSIDE AUGERS ON 12-1-00 H_2O 30.4' BGS

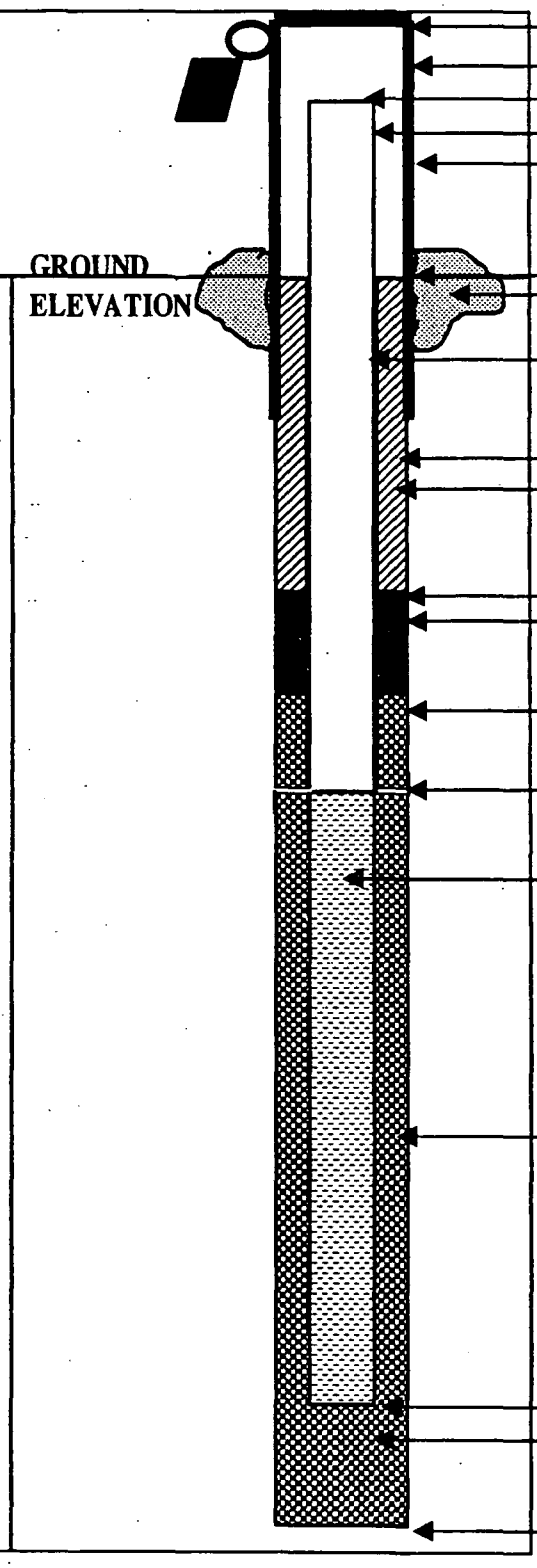
Converted to Well: Yes _____ No _____ Well I.D. #: 04T02

BORING NO.: 04T02

Tetra Tech NUS, Inc.

MONITORING WELL

PROJECT:	NSWC CRANE	DRILLING Co.:	Bowser Morner	BORING No.:	04T02
PROJECT No.:	7141 CTO 010	DRILLER:	D. SINK	DATE COMPLETED:	12-1-00
SITE:	SWMU4	DRILLING METHOD:	HSA	NORTHING:	1325713.961
GEOLOGIST:	M. G. COCHRAN	DEV. METHOD:	SURGE & WHALE PUMP	EASTING:	3008384.225



ELEVATION OF TOP OF SURFACE CASING: 597.50'

STICK-UP TOP OF SURFACE CASING: 2.74'

ELEVATION OF TOP OF RISER PIPE: 596.98'

RISER STICK-UP ABOVE GROUND SURFACE: 2.22'

I.D. OF SURFACE CASING: 4"

TYPE OF SURFACE CASING: SQUARE STEEL CASING

GROUND ELEVATION: 594.76'

TYPE OF SURFACE SEAL: CEMENT PAD

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 8 1/2"

TYPE OF BACKFILL: CEMENT / BENTONITE SLURRY (QUICKRETE + AM. COLLOID WYOMING BENTONITE)

ELEVATION / DEPTH OF SEAL: 568.76'/[illegible]

TYPE OF SEAL: BENTONITE PELLETS COLLOID ENVIRONMENTAL

ELEVATION / DEPTH TOP OF FILTER PACK: 566.76'/28'

ELEVATION / DEPTH TOP OF SCREEN: 564.76'/30'

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: .01" X 10'

I.D. OF SCREEN: 2"

TYPE OF FILTER PACK: GLOBAL #6 → 40-29'
No. 20-40 STANDARD SIEVE SAND #7 → 29-28'

ELEVATION / DEPTH BOTTOM OF SCREEN: 554.76'/[illegible]

ELEVATION / DEPTH BOTTOM OF FILTER PACK: 554.76'/[illegible]

TYPE OF BACKFILL BELOW WELL: N/A

ELEVATION / DEPTH OF BOREHOLE: 554.76'/40'

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE
BORING NUMBER: 045B04
DATE: 11/28/00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				SOFT +	YELL	TOP 17" SILTY F-SAND	SM			0.0	0.0	0.0
	2				MOIST	OR		↓		86	↓		↓
	3				LOOSE +	BLK +	BOTT 7" SILTY T-GRAVEL SAND	SM					
S-1 1245	4		2' / 4'		FLAKEY	TAN	FERROUS MATERIAL	↓		44	↓	21	↓
	5				SOFT +	GRAY	SILTY FINE-SAND			-	0.0	0.0	
	6				MOIST	↓	W/ WOOD FRAGS,			74	↓	↓	
	7						METAL SCRAPS AND			182			
S-2 1305	8		16" / 4'			↓	OTHER FERROUS MATERIAL	↓		182	↓	↓	↓
	9			TD 8'									
	10												
					Sampled 045B040002 @ 1255								
							VOCS TAKEN FROM 1-2'						
					Sampled 045B040608 @ 1315								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: 2 @ 8' 16

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 045B05
DATE: 11/23/00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				Loose	Yell	Top 7" Fine Sand	SM		0.0	0.0	0.0	0.0
	2				+ Sl. Moist	OR	W/ T. Silt	↓		0.0	↓		↓
	3					Pink	Bott 8" Layers of Felt	SM	Fill	37	↓		↓
S-1 0947	4		15" / 4'			↓	Paper + Silt T. Gravel	↓	↓	↓	0.0	67	0.0
	5									0.0	↓		0.0
	6						Glass Fragments +		Refusal @ 5.5'	0.0	↓		
	7						Wood Chunks		1st Time We Sampled 4-8' @ 0955	0.0	↓		↓
S-2 0955	8		9" / 4'				Cinder Offset Hit Refusal			15	0.0	1.5	0.0
	9			T.D. 8'			@ 8'						
	10						4th Offset Refusal @ 4'						
							1-8' Fill Material						
					Sampled		045B050002 @ 0950						
							Vis Mon @ 1'-7'						
					Sampled		045B050204 @ 1010						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Depths: 7 + 4 7.5' 4 offsets 1 @ 5' 2 @ 8' 1 @ 4'
7.5' of Not Sampled.

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 045B06
DATE: 11/3/00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KLEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1					YELL	SILTY, FINE-MED	SM		0.0	0.0		0.0
	2					GR	SAND			0.0			
	3									0.7			
S1 1542	4		3.5' / 4'							0.0		0.0	
	5					YELL	FINE SAND	SP		0.0	0.0		0.0
	6					GR				0.0			
	7									0.0			
S2 1546	8		3.5' / 4'							0.0		0.0	
	9					YELL GR	WD1' FINE-SAND	SP		0.0	0.0		0.0
S3 1549	10		2' / 2'	10.10'	WET WET		WD1' TRSILT FINE-COARSE SAND	SW		0.0		0.0	
					Sampled 045B060002 @ 1544								
							SWCS TAKEN FROM 1'-2'						
					Sampled 045B060204 @ 1555								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

R marks: 15' 10'

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 04SB07
DATE: 11/03/00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				LOOSE +	YELL	SILTY, FINE-MED SAND	SM		0.0	0.0		0.0
	2				MOIST	OR	T-GRAVEL			0.0			
	3									0.0			
S1 0911	4		2" / 4"			TAN BLK	BOTT 2" FINE-SAND			0.0		0.0	
	5				SOFT +	YELL	MED-W FINE-SAND T-SILT	SM	PRESENT @ 4.5'	0.0	0.0		0.0
	6				MOIST	OR				0.0			
	7									0.0			
S2 0917	8		4" / 4"						WATER @ 5'	0.0		0.0	
	9			TD 5'									
	10												
					Sampled 04SB070002 @ 0915								
							VOC'S TAKEN FROM 1'-2' WITH FD1120002						
					Sampled 04SB070507 @ 0935								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 1st 5' 2nd 4' 12"

Drilling Area Background (ppm): 0.0

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CRANE
PROJECT NUMBER: 7141
DRILLING COMPANY: BOWSER MORNER
DRILLING RIG: CME 55

BORING No.: 04T03
DATE: 11-30-00
GEOLOGIST: M. G. COCHRAN
DRILLER: DENNIS SINK

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole*	Driller BZ**
	0												
S1		1/1	1.4/	.5	V. LOOSE	DK BRN	SANDY SILT (TOPSOIL)	SM	DAMP, NATURAL	0	0	0	0
	2	1/1	2.0			LT BRN	SILTY SAND, TR. GRAVEL		GRAVEL-FINE & SAT @ BTM				
S2		3/1	1.4/	2.5	V. SOFT				H2O PERCHED ON SILT, LOW PLAST	0	0	0	0
	4	↓	2.0			GR BRN	CLAYEY SILT,	ML	IRON STAINED DARK LAMINA IN SPL				
S3		1/1	1.4/		V. SOFT	"	"		"	0	0	0	0
	6	1/2	2.0	6.0									
S4		0	1.0/	6.5	V. LOOSE	BRN	SILTY SAND	SM	SATURATED	0	0	0	0
	8	↓	2.0	8.0		GR BRN	CLAYEY SILT	CL	SAME AS ABOVE				
S5		1/3	1.3/		LOOSE	GREY	SAND + GRAVEL,	SP	TRACE SILT, SATURATED	0	0	0	0
	10	7/6	2.0	9.5			SUBROUNDED GRAVEL		SANDY SILT @ BTM 13'				
S6		3/3	1.3/		LOOSE	BRN	SANDY SILT	SM	SATURATED	0	0	0	0
	12	5/4	2.0										
S7		1/2	1.4/		LOOSE	GREY	SILTY SAND	SM	V. FINE GRAIN, SATURATED	0	0	0	0
	14	3/4	2.0						FE. STAINED LAMINA IN BTM.				
S8		3/4	1.3/		LOOSE	GREY	SILTY SAND	SM	SAME AS ABOVE				
	16	5/6	2.0										
							TD 16'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: DRILLED HOLE W/ 4"/10 8"/200 HSA

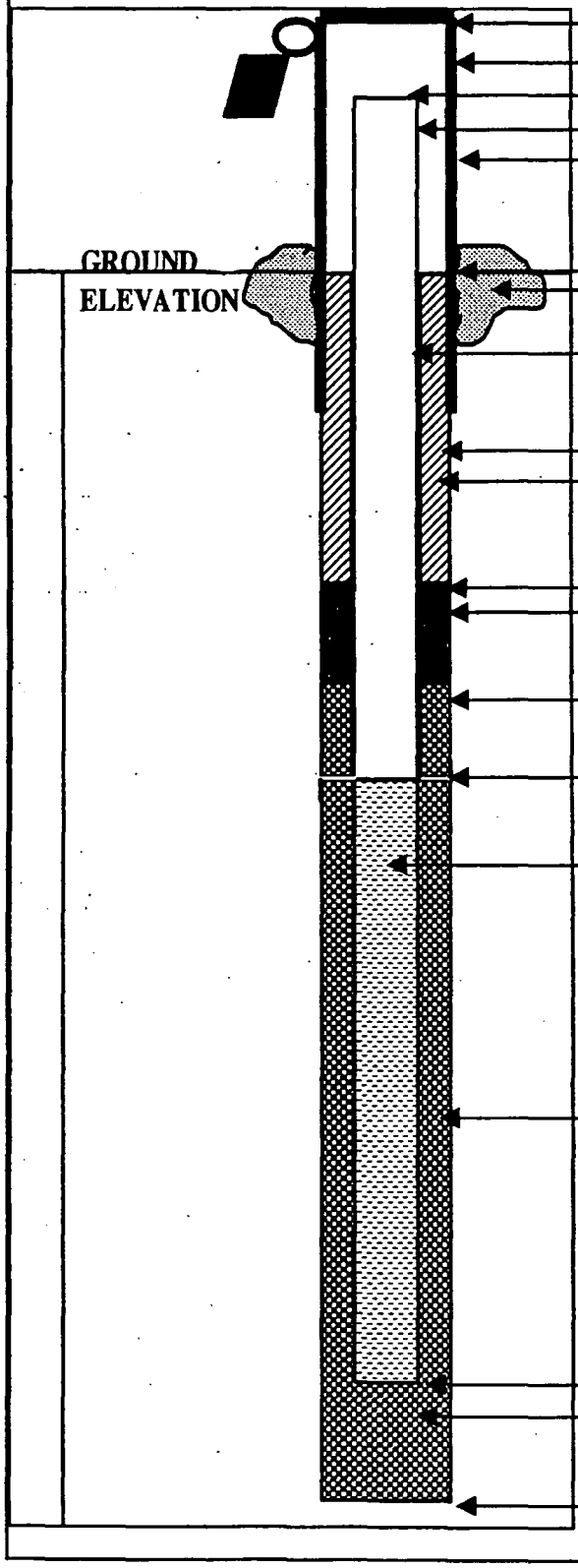
Conv rted to Well: Yes ✓ No _____ Well I.D. #: 04T03

BORING NO.: 04T03

Tetra Tech NUS, Inc.

MONITORING WELL

PROJECT:	NSWC CRANE	DRILLING Co.:	Bowser Morner	BORING No.:	04T03
PROJECT No.:	7141 CTO 010	DRILLER:	D. SINK	DATE COMPLETED:	11-30-00
SITE:	SWMU4	DRILLING METHOD:	HSA	NORTHING:	1325977.337
GEOLOGIST:	M. G. COCHRAN	DEV. METHOD:	SURGE & WHALE PUMP	EASTING:	3008926.774



ELEVATION OF TOP OF SURFACE CASING: 557.80'

STICK-UP TOP OF SURFACE CASING: 2.98'

ELEVATION OF TOP OF RISER PIPE: 557.21'

RISER STICK-UP ABOVE GROUND SURFACE: 2.39'

I.D. OF SURFACE CASING: 4"

TYPE OF SURFACE CASING: SQUARE STEEL CASING

GROUND ELEVATION: 554.82

TYPE OF SURFACE SEAL: CEMENT PAD

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 8 1/2"

TYPE OF BACKFILL: CEMENT / BENTONITE SLURRY (QUIKRETE + AM. COLLOID WYOMING BENTONITE

ELEVATION / DEPTH OF SEAL: 552.82'/2'

TYPE OF SEAL: BENTONITE PELLETS COLLOID ENVIRONMENTAL

ELEVATION / DEPTH TOP OF FILTER PACK: 550.82'/4'

ELEVATION / DEPTH TOP OF SCREEN: 548.82'/6'

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: .01" X 10'

I.D. OF SCREEN: 2"

TYPE OF FILTER PACK: GLOBAL #6 → 16'-5'
No. 20-40 STANDARD SIEVE SAND #7 → 5'-4'

ELEVATION / DEPTH BOTTOM OF SCREEN: 538.82'/16'

ELEVATION / DEPTH BOTTOM OF FILTER PACK: 538.82'/

TYPE OF BACKFILL BELOW WELL:

ELEVATION / DEPTH OF BOREHOLE: 538.82'/16'

APPENDIX A.2

SWMU 5
BORING LOGS AND MONITORING WELL CONSTRUCTON DIAGRAMS

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 14 Sept. 1981
Location Old Burning Pit Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 596.52 Boring No. WES-5-1-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	14Sept	0.0		0.0	0.5	0.0	1.55	3" Shelby Tube	0	ST	Silty sand (SM): brown in color,
1A				0.5	1.0	1.55	1.85		0	Jar	slightly damp, fine-grained, and
											slight cohesion.
				1.0	1.5				0		Sample length: 1.85 ft
				1.5	2.0				10		
				2.0	2.5				20		
				0.0	5.0			7" Folding Auger			Cleanout
2	14Sept			5.0	5.5	5.0	6.59	*3"Fixed Piston Sampler	0	ST	Silty sand (SM): brown in color,
2A				5.5	6.0	6.59	6.89		0	Jar	damp, fine-grained, slight cohesion,
				6.0	6.5				10		and contains 5% very fine gravel.
				6.5	7.0				20		Sample length: 1.89 ft
				7.0	7.4				30		
				5.0	10.0			*7" Hollow stem Auger			Cleanout

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

*3" Fixed Piston Sampler = 3" F.P.S.
*7" Hollow Stem Auger = 7" H.S. Auger

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-1-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
3	14Sept			10.0	10.5	10.0	11.81	3" F.P.S.	10	ST	Silty sand (SM): brown in color,
3A				10.5	11.0	11.81	12.01		20	Jar	moderate cohesion, and dry.
				11.0	11.5				50		
				11.5	12.0				130		Sample length: 2.01 ft
			12.0	12.0	12.35				400		
		12.0		10.0	15.0	—	—	7" H.S. Auger		—	Cleanout
4	14Sept			15.0	15.5	15.0	15.65	3" F.P.S.	0	ST	Silt (ML): brown to grey in color,
4A				15.5	15.9	15.65	15.90		800	Jar	hard, cohesive, and dry.
			16.0	15.0	17.5	—	—	7" H.S. Auger		—	Cleanout
5A	14Sept	16.0	17.80	17.5	18.0	17.5	17.80	3" F.P.S.	850	Jar	Shale: grey to black in color,
											uniform, and dry.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

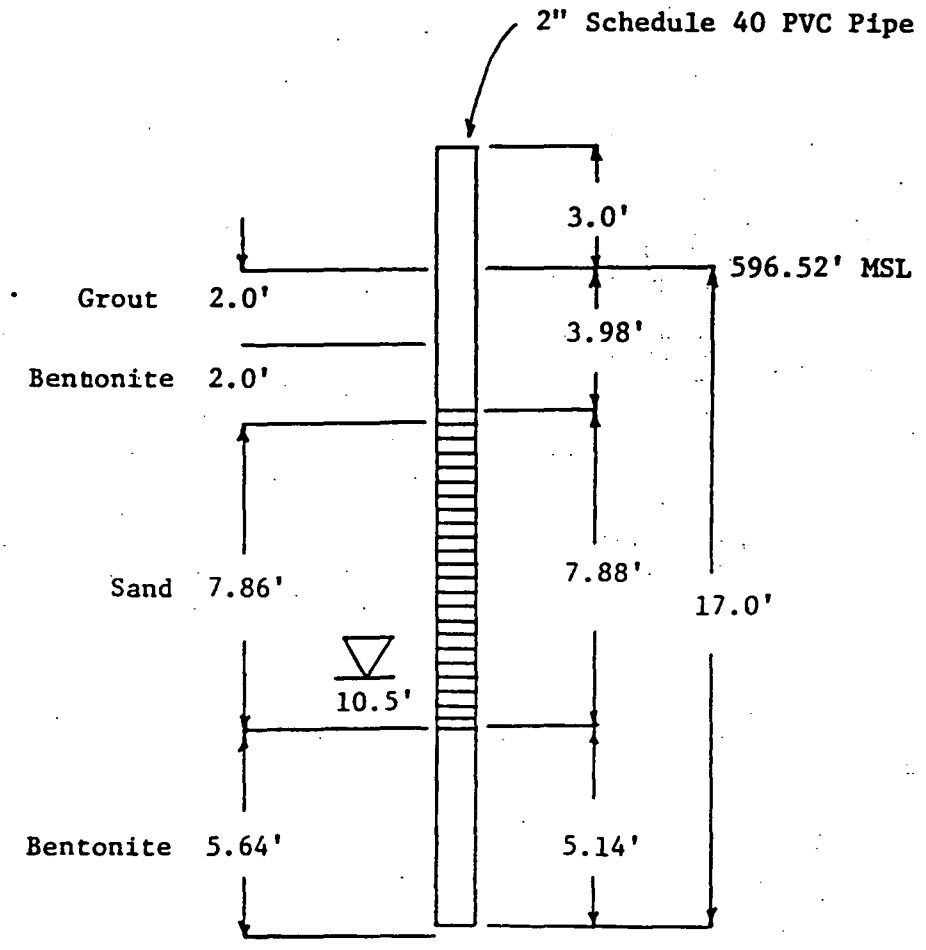
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-1-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
											Water in hole on 15 September,
											at 10.5 ft.
											Set well through auger.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 3 of 3 Sheets



Water depth at time of drilling

Well screen

NWSC, Crane, Indiana
Old Burning Pit
Well Completion
Boring Number: WES-5-1-81

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 15 Sept. 1981
Location Old Burning Pit Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 585.43 Boring No. WES-5-2-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	15Sept	0.0		0.0	0.5	0.0	1.75	3" Shelby	0	ST	Sand (SP); reddish brown in color,
1A				0.5	1.0	1.75	2.0		0	Jar	dry, slight cohesion, fine to
				1.0	1.5				50		medium grained, and contains ash
				1.5	2.0				280		and other burned materials.
				2.0	2.5				460		Sample length: 2.0 ft
			4.5	0.0	5.0	—	—	7" Folding Auger	—		Cleanout
2	15Sept	4.5		5.0	5.5	5.0	7.15	*3"Fixed Pis-	0	ST	Sandy silt (SM): brown in color,
2A				5.5	6.0	7.15	7.35	ton Sampler	20	Jar	damp, slight cohesion, and contains
				6.0	6.5				30		20% fine-grained sand.
				6.5	7.0				40		Sample length: 2.35 ft
				7.0	7.4				50		
			8.68	5.0	10.0	—	—	7" Folding Auger	—		Cleanout: assumed stratum change

WES FORM JAN 74 819 EDITION F NOV 1971 MAY BE USED *3" Fixed Piston Sampler = 3" F.P.S. Sheet 1 of 3 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-2-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
3	15Sept	8.68		10.0	10.5	10.0	11.46	3" F.P.S.	0	ST	Silt (ML): brown in color, slight
3A				10.5	11.0	11.46	12.0		0	Jar	cohesion, and wet.
				11.0	11.5				20		
				11.5	12.0				20		Sample length: 2.16 ft
				12.0	12.5				20		
				10.0	15.0	—	—	7" Hollow stem Auger	—		Cleanout: water at 7.4 ft
	15Sept			15.0	15.5	—	—	3" F.P.S.	0	—	No sample
				15.5	16.0				0		
				16.0	16.5				20		
				16.5	17.0				20		
				17.0	17.5				40		
4A	15Sept		18.2	15.0	18.2	15.0	18.2	*Splitspoon	—	Jar	Weight of rods carried splitspoon
											to 17.0 ft. Pushed to 18.2 ft.
											Silt (ML): same as above

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

*Splitspoon = 1 7/8" I.D. x 2 1/2" O.D.

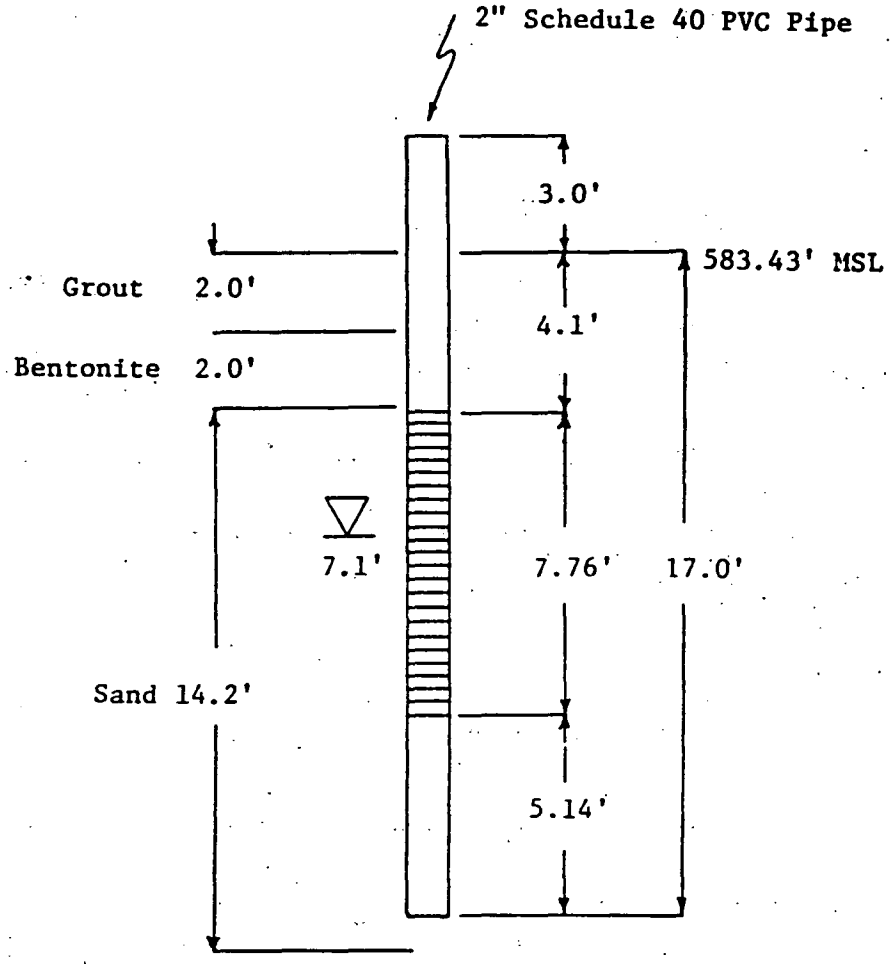
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-2-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
	16Sept										Installed well through auger.
											Water overnight to 7.1 ft.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 3 of 3 Sheets



Water depth at time of drilling

Well screen

NWSC, Crane, Indiana

Old Burning Pit

Well Completion

Boring Number: WES-5-2-81

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 16 Sept. 1981
Location Old Burning Pit Job No. 441-G150,11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 589.78 Boring No. WES-5-3-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	16Sept	0.0		0.0	0.5	0.0	1.75	3" Shelby Tube	0	ST	Sand (SW): brown in color, fine
1A				0.5	1.0	1.75	2.0		20	Jar	to very coarse grained with majority
				1.0	1.5				20		of sand being medium, dry, and
				1.5	2.0				200		no cohesion.
				2.0	2.5				360		Sample length: 2.0 ft
			3.0	0.0	5.0	—	—	7" Folding Auger	—		Cleanout
2	16Sept	3.0		5.0	5.5	5.0	6.76	*3"Fixed Piston Sampler	0	ST	Sand (SP): brown in color, uniform,
2A				5.5	6.0	6.76	7.41		10	Jar	fine-grained, slightly moist, and
				6.0	6.5				10		no cohesion.
				6.5	7.0				20		
				7.0	7.41				20		Sample length: 2.41 ft
			10.0	5.0	10.0	—	—	7" Folding Auger	—		Cleanout

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

*3" Fixed Piston Sampler = 3" F.P.S.

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-3-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
3	16Sept	10.0		10.0	10.5	10.0	11.95	3" F.P.S.	0	ST	Sand silt (ML): brown in color,
3A				10.5	11.0	11.95	12.25		0	Jar	slight cohesion, wet, and uniform.
				11.0	11.5				0		
				11.5	12.0				10		Sample length: 2.25 ft.
				12.0	12.4				10		
			13.73	10.0	15.0	—	—	7" Folding Auger	—		Cleanout: assumed stratum change
4	16Sept	13.73		15.0	15.5	15.0	17.15	3" F.P.S.	0	ST	Silt (ML): brown in color, moderate
4A				15.5	16.0	17.15	17.35		0	Jar	to highly cohesive, wet, and uniform.
				16.0	16.5				10		
				16.5	17.0				10		Sample length: 2.35 ft
				17.0	17.4				10		
				15.0	20.0	—	—	7" Folding Auger	—		Cleanout

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 3 Sheets

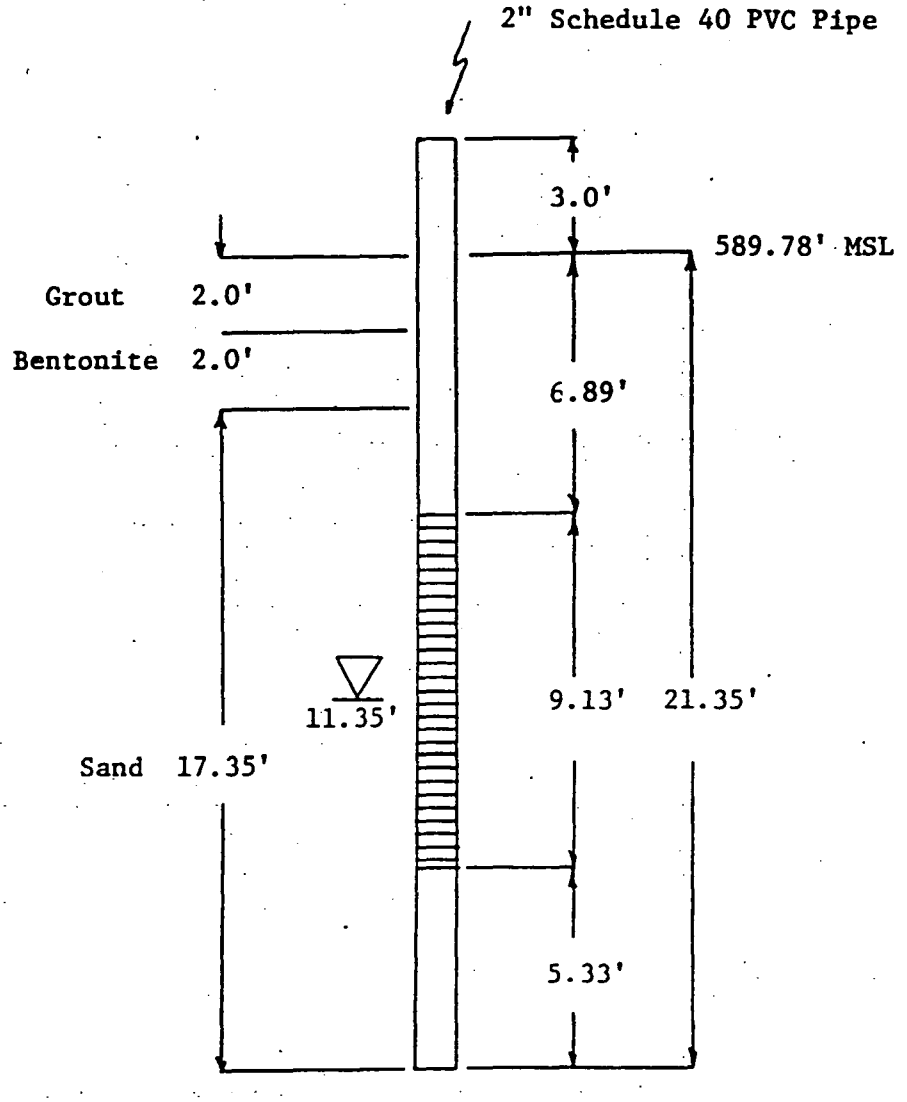
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-3-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
5	16Sept			20.0	20.5	20.0	21.38	3" F.P.S.	0	ST	Silt (ML): wet, same as previous
5A				20.5	21.0	21.38	21.68		0	Jar	sample.
				21.0	21.5				10		
				21.5	22.0				10		Sample length: 2.03 ft
			22.4	22.0	22.4				10		
											Water came in overnight to 11.35 ft.
											Set well.

WES FORM JAN 74 819 EDITION OF N V 1971 MAY BE USED

Sheet 3 of 3 Sheets



Water depth at time of drilling

Well screen

NWSC, Crane, Indiana

Old Burning Pit

Well Completion

Boring Number: WES-5-3-81

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 1 Oct. 1981
Location Old Burning Pit Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 585.33 Boring No. WES-5-4-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	1 Oct	0.0		0.0	0.5	0.0	2.04	3" Shelby	0	ST	Sand (SP): brown in color, uniform,
1A				0.5	1.0	2.04	2.34		0	Jar	very fine-grained quartz sand, and
				1.0	1.5				20		no cohesion.
				1.5	2.0				150		
				2.0	2.5				290		Sample length: 2.34 ft
				0.0	5.0	—	—	7" Folding Auger		—	Cleanout
2	1 Oct			5.0	5.5	5.0	6.78	*3"Fixed Pis-	0	ST	Sand (SP): brown in color, uniform,
2A				5.5	6.0	6.0	6.98	ton Sampler	0	Jar	very fine-grained quartz sand,
				6.0	6.5				10		slight cohesion, and slightly damp.
				6.5	7.0				15		
				7.0	7.38				20		Sample length: 1.98 ft
			6.0	5.0	10.0	—	—	*7" Hollow	—	—	Cleanout
								stem Auger			

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

*3" Fixed Piston Sampler = 3"F.P.S.
*7" Hollow Stem Auger = 7" H.S. Auger

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-4-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
		6.0		10.0	10.5			3" F.P.S.	0		No sample: used splitspoon to get
				10.5	11.0				0		sample-see below.
				11.0	11.5				0		
				11.5	12.0				10		
				12.0	12.4				20		
3A	1 Oct			10.0	12.0	10.0	12.0	*Splitspoon		Jar	Silt/sand (SP-SM): brown in color,
											very fine-grained, moist, and
											little cohesion. Monitored hole
											for 30 min and no water.
				10.0	15.0	—	—	7" H.S. Auger		—	Cleanout
	1 Oct			15.0	15.5			3" F.P.S.	0		No sample: used splitspoon to get
				15.5	16.0				0		sample-see below.
				16.0	16.5				10		
				16.5	17.0				20		Water in hole at 15.0 ft

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED *Splitspoon = 1 7/8" I.D. x 2 1/2" O.D. Sheet 2 of 4 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-4-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
				17.0	17.41				80		
4A	1 Oct			15.0	17.0	15.0	17.0	Splitspoon		Jar	Silt/sand (SP-SM): same as in
											previous sample.
				15.0	20.0	—	—	7" H.S. Auger		—	Cleanout
				20.0	20.5			3" F.P.S.	0		No sample: used splitspoon to get
				20.5	21.0				0		sample-see below.
				21.0	21.5				20		
				21.5	22.0				20		
				22.0	22.42				60		
5A	1 Oct		22.5	20.0	23.0	22.0	22.5	Splitspoon		Jar	Silt/sand (SP-SM): same as previous
5B		22.5				22.5	23.0			Jar	sample.
											Clay (CL): light grey to brown in
											color, soft, low plasticity, and

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

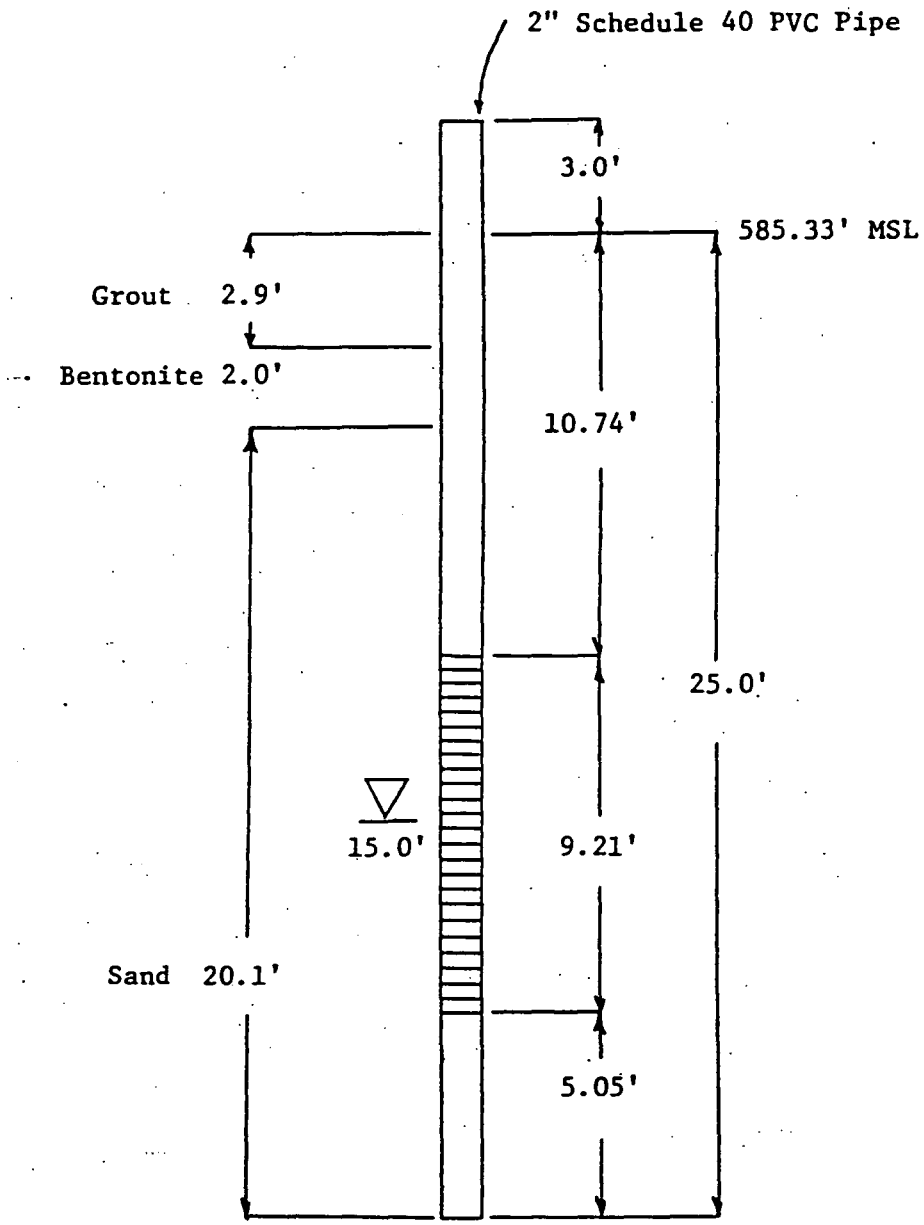
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-4-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
											slightly moist.
				20.0	25.0			7" H.S. Auger			
6	1 Oct			25.0	25.5	25.0	27.18	3" F.P.S.	0	ST	Clay (CL): grey in color, uniform,
6A				25.5	26.0	27.18	27.38		0	Jar	low plasticity, soft, and moist.
				26.0	26.5				0		
				26.5	27.0				0		Sample length: 2.38 ft
			27.42	27.0	27.42				15		
											Installed well through hollow stem
											auger.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 4 of 4 Sheets



Water depth at time of drilling

Well screen

NWSC, Crane, Indiana
Old Burning Pit
Well Completion
Boring Number: WES-5-4-81

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 10 Oct. 1981
Location Old Burning Pit Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 570.27 Boring No. WES-5-6-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	10 Oct	0.0		0.0	0.5	0.0	2.03	3" Shelby Tube	0	ST	Sandy silt (ML); reddish brown in
1A				0.5	1.0	2.03	2.23		10	Jar	color, dry, uniform, low plasticity,
				1.0	1.5				20		and organic matter.
				1.5	2.0				60		
				2.0	2.5				120		Sample length: 2.23 ft
			3.62	0.0	5.0	—	—	7" Folding Auger	—		Cleanout: assumed stratum change
2	10 Oct	3.62		5.0	5.5	5.0	7.17	3"Fixed Piston Sampler	0	ST	Silt (ML): light brown in color,
2A				5.5	6.0	7.17	7.37		0	Jar	soft, low plasticity, uniform, and
				6.0	6.5				10		dry.
				6.5	7.0				40		
				7.0	7.38				110		Sample length: 2.37 ft
				5.0	10.0	—	—	7" Hollow Stem Auger	—		Cleanout

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

*3" Fixed Piston Sampler = 3" F.P.S.
*7" Hollow Stem Auger = 7" H.S. Auger

Sheet 1 of 4 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-6-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
3	10 Oct			10.0	10.5	10.0	12.09	3" F.P.S.	10	ST	Silt (ML): brown in color, soft,
3A				10.5	11.0	12.09	12.32		10	Jar	low plasticity, dry, and contains
				11.0	11.5				10		trace of clay.
				11.5	12.0				20		
				12.0	12.4				30		Sample length: 2.32 ft
			13.5	10.0	15.0			7" H.S. Auger			Cleanout: assumed stratum change
4	10 Oct	13.5		15.0	15.5	15.0	17.15	3" F.P.S.	0	ST	Silt (ML): grey in color, soft,
4A				15.5	16.0	17.15	17.57		0	Jar	low plasticity, and slightly damp.
				16.0	16.5				0		
				16.5	17.0				0		Sample length: 2.37 ft
				17.0	17.41				10		
				15.0	20.0			7" H.S. Auger			Cleanout: water at 19.5 ft

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 4 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-6-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
5	10 Oct			20.0	20.5	20.0	21.19	3" F.P.S.	0	ST	Silt (ML): dark grey in color,
5A				20.5	21.0	21.19	21.50		0	Jar	sticky, wet, soft, and low plasti-
				21.0	21.5				0		city. Lost some sample when pulling.
				21.5	22.0				0		
				22.0	22.41				0		Sample length: 1.19 ft
				20.0	25.0	—	—	7" H.S. Auger		—	Cleanout
	10 Oct			25.0	25.5	—	—	3" F.P.S.	0	—	No sample-see below
				25.5	26.0				0	—	
				26.0	26.5				0		
				26.5	27.0				0		
				27.0	27.39				0		
6A	10 Oct			25.0	27.5			Splitspoon	—	Jar	Silt (ML): dark grey in color,
											sticky, wet, soft, and low plasti-
											city.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 3 of 4 Sheets

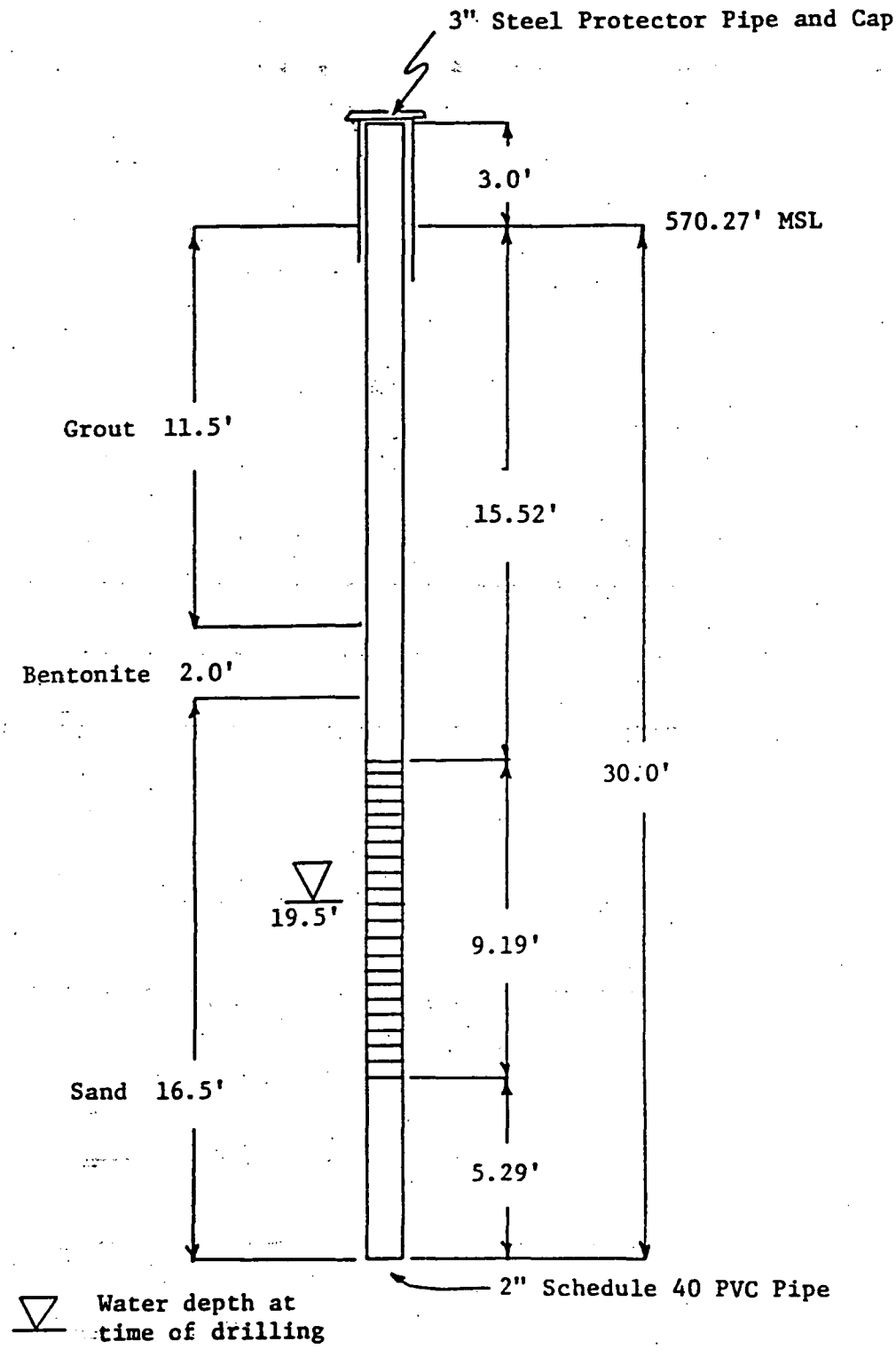
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-6-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
				25.0	30.0	—	—	7"H.S. Auger	—	—	Cleanout
	10 Oct			30.0	30.5	—	—	3" F.P.S.	0	—	No sample-see below
				30.5	31.0				0		
				31.0	31.5				0		
				31.5	32.0				0		
				32.0	32.41				0		
7A	10 Oct		33.5	30.0	33.5	30.0	33.5	Splitspoon	—	Jar	Silt (ML): dark grey in color,
											very soupy, soft, and low plasticity.
					Installed well screen through hollow stem auger. When pulling auger from						
					hole, natural material, silt, caved-in to depth of 13 ft. There is a good						
					possibility that well screen would plug without sand filter. Will redrill						
					with water to prevent cave-in, and backfill well screen with sand to						
					prevent plugging off.						

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 4 of 4 Sheets



NWSC, Crane, Indiana
Old Burning Pit
Well Completion
Boring Number: WES-5-6-81

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 20 Oct. 1981
Location Old Burning Pit Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 576.70 Boring No. WES-5-7-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	20 Oct	0.0		0.0	0.5	0.0	1.89	3" Shelby Tube	0	ST	Silt (ML): brown in color, dry,
1A				0.5	1.0	1.89	2.04		10	Jar	uniform, and low plasticity.
				1.0	1.5				10		
				1.5	2.0				250		
				2.0	2.5				350		Sample length: 2.04 ft
				0.0	5.0			7" Folding Auger			Cleanout
2	20 Oct			5.0	5.5	5.0	6.99	*3"Fixed Piston Sampler	0	ST	Silt (ML): same as above.
2A				5.5	6.0	6.99	7.37		0	Jar	
				6.0	6.5				0		
				6.5	7.0				20		
			7.3	7.0	7.38				30		Sample length: 2.37 ft
				5.0	10.0			7" Folding Auger			Cleanout

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED *3" Fixed Piston Sampler = 3"F.P.S. Sheet 1 of 5 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-7-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
3	20 Oct	7.3		10.0	10.5	10.0	11.91	3"F.P.S.	0	ST	Silt (ML): grey in color, moist,
3A				10.5	11.0	11.91	12.16		0	Jar	uniform, and low plasticity.
				11.0	11.5				20		
				11.5	12.0				100		
				12.0	12.4				140		Sample length: 2.16 ft
				10.0	15.0			7" Folding Auger			Cleanout
4	20 Oct			15.0	15.5	15.0	16.36	3" F.P.S.	0	ST	Silt (ML): same as above
				15.5	16.0	16.36	16.66		0	Jar	
				16.0	16.5				0		
				16.5	17.0				0		Sample length: 1.66 ft
				17.0	17.4				0		
				15.0	20.0			7" Folding Auger			Cleanout

WES FORM JAN 74 819 EDITION F N V 1971 MAY BE USED

Sheet 2 of 5 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-7-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
	20 Oct			20.0	20.5			3" F.P.S.	0		No sample- see below
				20.5	21.0				0		
				21.0	21.5				0		
				21.5	22.0				0		
				22.0	22.41				10		
5A	20 Oct			20.0	22.5	20.0	22.5	*Splitspoon		Jar	Silt (ML): grey in color, moist,
											uniform, and low plasticity.
				20.0	25.0			7" Folding Auger			Cleanout: water at bottom of hole
6	20 Oct			25.0	25.5	25.0	27.05	3" F.P.S.	0	ST	Silt (ML): grey in color, wet,
6A				25.5	26.0	27.05	27.35		0	Jar	uniform, and low plasticity.
				26.0	26.5				0		
				26.5	27.0				0		Sample length: 2.35 ft
				27.0	27.40				0		

WES FORM JAN 74 819 EDITION F N V 1971 MAY BE USED *Splitspoon = 1 7/8" I.D. x 2 1/2" O.D. Sheet 3 of 5 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-7-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
	21 Oct								Water came to 12.4 ft overnight. Jetted		
									water from hole and continued advance with		
									folding auger. Hole started to fall-in and		
									went to 5 1/2 in. fishtail bit and water.		
					30.0			5 1/2" Baffled Fish-			Cleanout
								tail			
7	21 Oct			30.0	30.5	30.0	32.07	3" F.P.S.	0	ST	Silt (ML): same as above
7A				30.5	31.0	32.07	32.35		0	Jar	
				31.0	31.5				0		
				31.5	32.0				20		Sample length: 2.35 ft
				32.0	32.39				40		
				30.0	35.0			5 1/2"Baffled Fish-			Cleanout
								tail			

WES FORM JAN 74 819 EDITION OF N V 1971 MAY BE USED

Sheet 4 of 5 Sheets

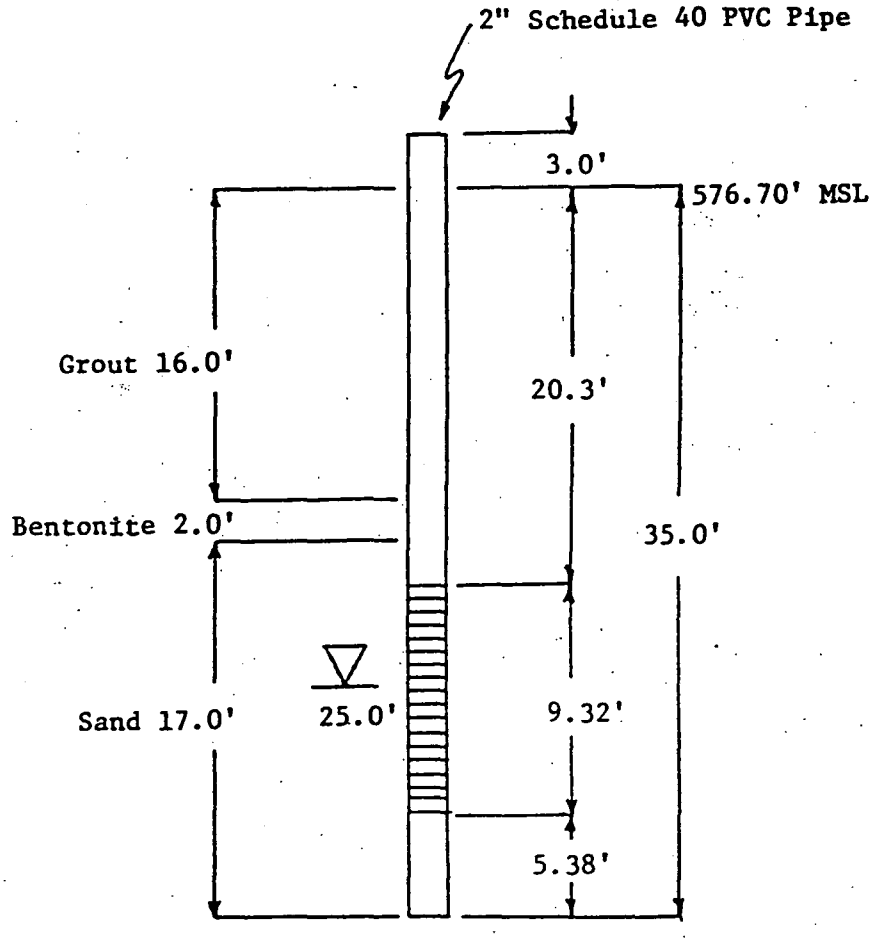
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-7-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
8	21 Oct			35.0	35.5	35.0	37.08	3" F.P.S.	0	ST	Silt (ML); same as above
8A				35.5	36.0	37.08	37.35		0	Jar	
				36.0	36.5				20		
				36.5	37.0				150		Sample length; 2.35 ft
				37.0	37.38				200		
											Pumped hole untill water return was
											fairly clear, then installed well
											screen, Blew well dry on 22 Oct,

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 5 of 5 Sheets



Water depth at time of drilling

Well screen

NWSC, Crane, Indiana
Old Burning Pit
Well Completion
Boring Number: WES-5-7-81

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 4 Nov. 1981
Location Old Burning Pit Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 563.78 Boring No. WES-5-8-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont.	CLASSIFICATION AND REMARKS
1	4 Nov	0.0		0.0	0.5	0.0	0.8	3" Shelby Tube	0	ST	Sandy clay (CL): brown in color
1A				0.5	1.0	0.8	1.1		0	Jar	slightly moist, soft, and organic
				1.0	1.5				0		matter. Material is possibly
				1.5	2.0				0		dozer fill.
				2.0	2.5				10		Sample length: 1.1 ft
			4.0	0.0	5.0			7" Folding	Auger		Cleanout
2	4 Nov	4.0		5.0	5.5	5.0	7.08	*3"Fixed Piston Sampler	0	ST	Silt (ML): brownish grey in
2A				5.5	6.0	7.08	7.33		0	Jar	color, moist, and uniform.
				6.0	6.5				0		Water at end of push. Water
				6.5	7.0				0		came up to 4.1 ft after a few
				7.0	7.4				0		minutes.
											Sample length: 2.33 ft
				5.0	10.0			7" Folding	Auger		Cleanout

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

*3" Fixed Piston Sampler = 3"F.P.S.

Sheet 1 of 2 Sheets

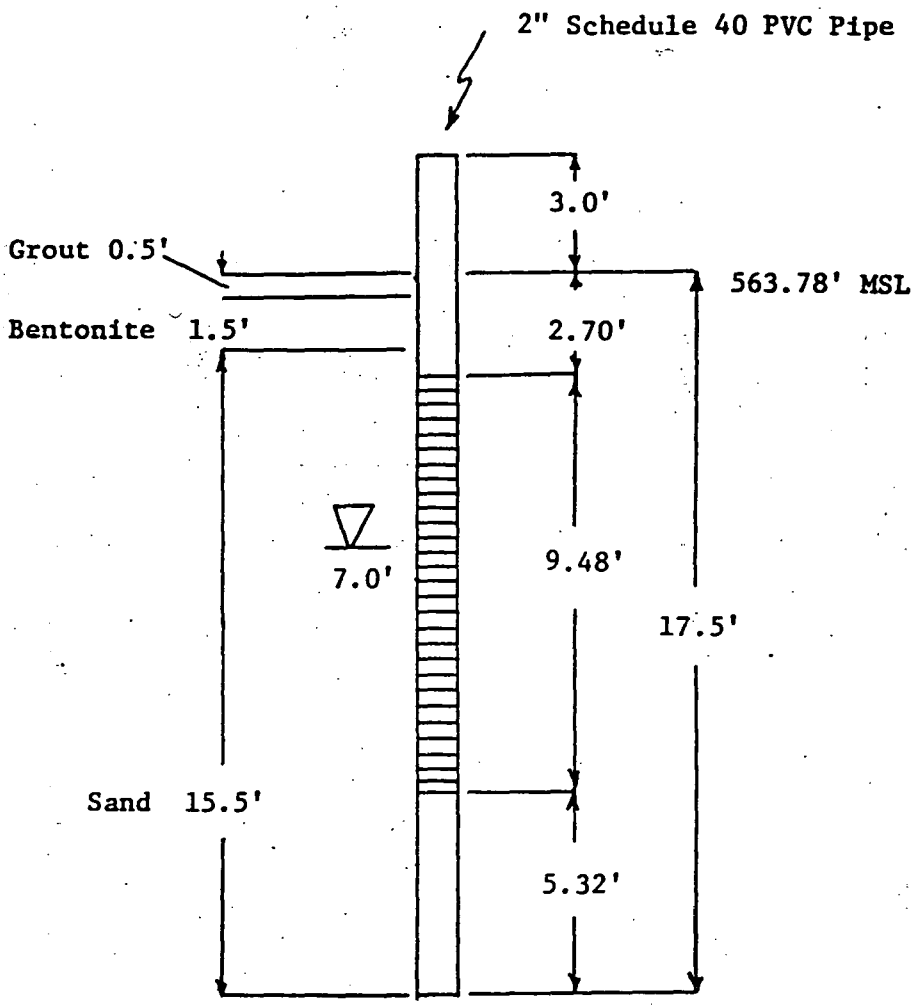
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-8-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont.	CLASSIFICATION AND REMARKS
3	4 Nov			10.0	10.5	10.0	12.15	3" F.P.S.	0	ST	Silt (ML): grey in color, wet,
3A				10.5	11.0	12.15	12.40		0	Jar	and uniform.
				11.0	11.5				0		
				11.5	12.0				0		
				12.0	12.41				0		Sample length: 2.40 ft
				10.0	15.0			7" Folding	Auger		Cleanout
4	4 Nov			15.0	15.5	15.0	17.1	3" F.P.S.	0	ST	Silt (ML): same as above
4A				15.5	16.0	17.1	17.40		0	Jar	
				16.0	16.5				0		
				16.5	17.0				0		Sample length: 2.40 ft
				17.0	17.4				10		
				15.0	17.5			7" Folding	Auger		Cleanout: bailed water out of
											hole with bailer.
											Installed well

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 2 Sheets



Water depth at time of drilling

Well screen

NWSC, Crane, Indiana
Old Burning Pit
Well Completion
Boring Number: WES-5-8-81

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 27 October 82
Location Old Burning Pit Job No. 441-G150.13GR21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 581.94 Boring No. WES-5-9-82

SAMPLE NUMBER	DATE TAKEN 1982	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	27 Oct	0.0	7.0	0.0	15.0			7"Folding Auger			Clayey sand(SC): reddish brown,
											fine-grained, slightly moist, sand
											is predominantly quartz with 10-
											20% clay
				0.0	25.0			6" Casing			Drilled casing to indicated depth-
											hole falling in at 14-15 ft because
											of water
		7.0	25.0	14.0	25.4			5-5/8"Rock Bit			Sand(SP): light brown, uniform,
											fine-grained, wet below 14-15 ft
											Installed well screen through casing
											and pulled casing while pouring sand.
											Removed casing completely after sand
											rose to 13 ft

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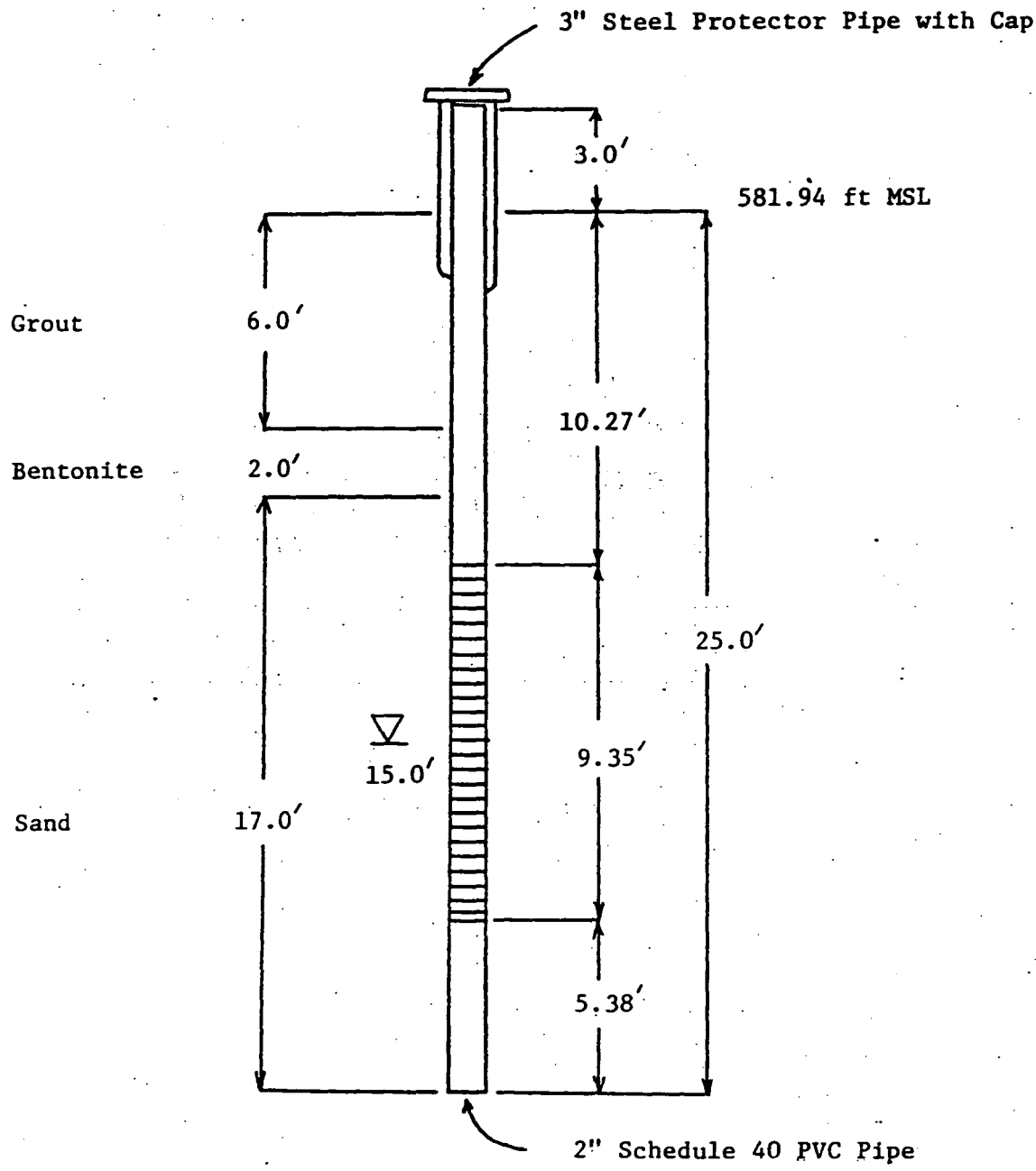
Sheet 1 of 1 Sheets



Water depth at time drilling

Well Screen

NWSC, Crane, Indiana

Old Burning Pit

Well Completion

Boring Number:WES-5-9-8

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 27 October 82
Location Old Burning Pit Job No. 441-G150.13GR21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 583.86 Boring No. WES-5-10-82

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
	28 Oct	0.0	8.0	0.0	17.0			7"Folding Auger			Clayey sand(SC): reddish brown,
											fine-grained, damp, sand is
											predominantly quartz with 10-20%
											clay content
				0.0	25.5			6" Casing			Drilled casing to indicated depth -
											hole falling in at 17 ft because
											of water. Water at 15.5 ft
	29 Oct	8.0	25.5	15.5	25.5			5 5/8"Rock Bit			Sand(SP): light brown, uniform,
											fine-grained, wet from 15.5 ft
											Installed well screen through
											casing and pulled casing while
											pouring sand. Removed casing after
											sand rose to 13 ft

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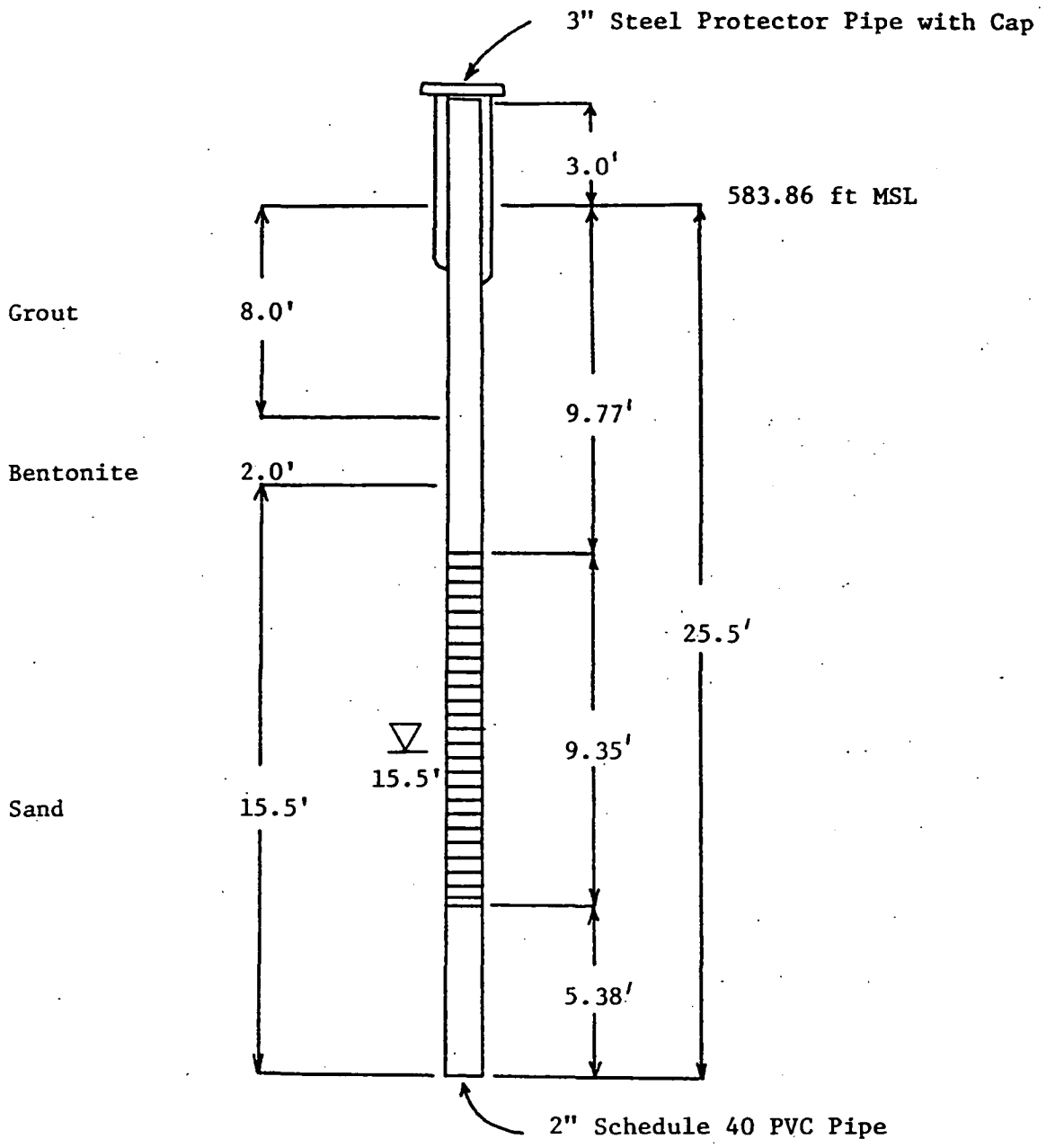
Sheet 1 of 1 Sheets



Water depth at time of drilling

Well Screen

NWSC, Crane, Indiana

Old Burning Pit

Well Completion

Boring Number: WES-5-10-

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 29 October 82
Location Old Burning Pit Job No. 441-G150.13GR21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 584.95 Boring No. WES-5-11-82

SAMPLE NUMBER	DATE TAKEN 1982	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	29 Oct	0.0	7.0	0.0	17.2			7"Folding Auger			Sandy clay(CL): reddish brown, soft, damp, low plasticity, sand content 20-30%
		7.0	11.0								Sandy clay(CL): same; sand content 30-40%
		11.0	13.0								Clayey sand(SC): orange brown, fine-grained, quartz sand, damp, clay-silt content approximately 10-20%
		13.0	26.5								Sand(SP): orange brown, fine-grained, quartz sand, very uniform, damp. Water begins at 16.2 ft

WES FORM JAN 74 819 EDITI N OF NOV 1971 MAY BE USED

Sheet 1 of 2 Sheets

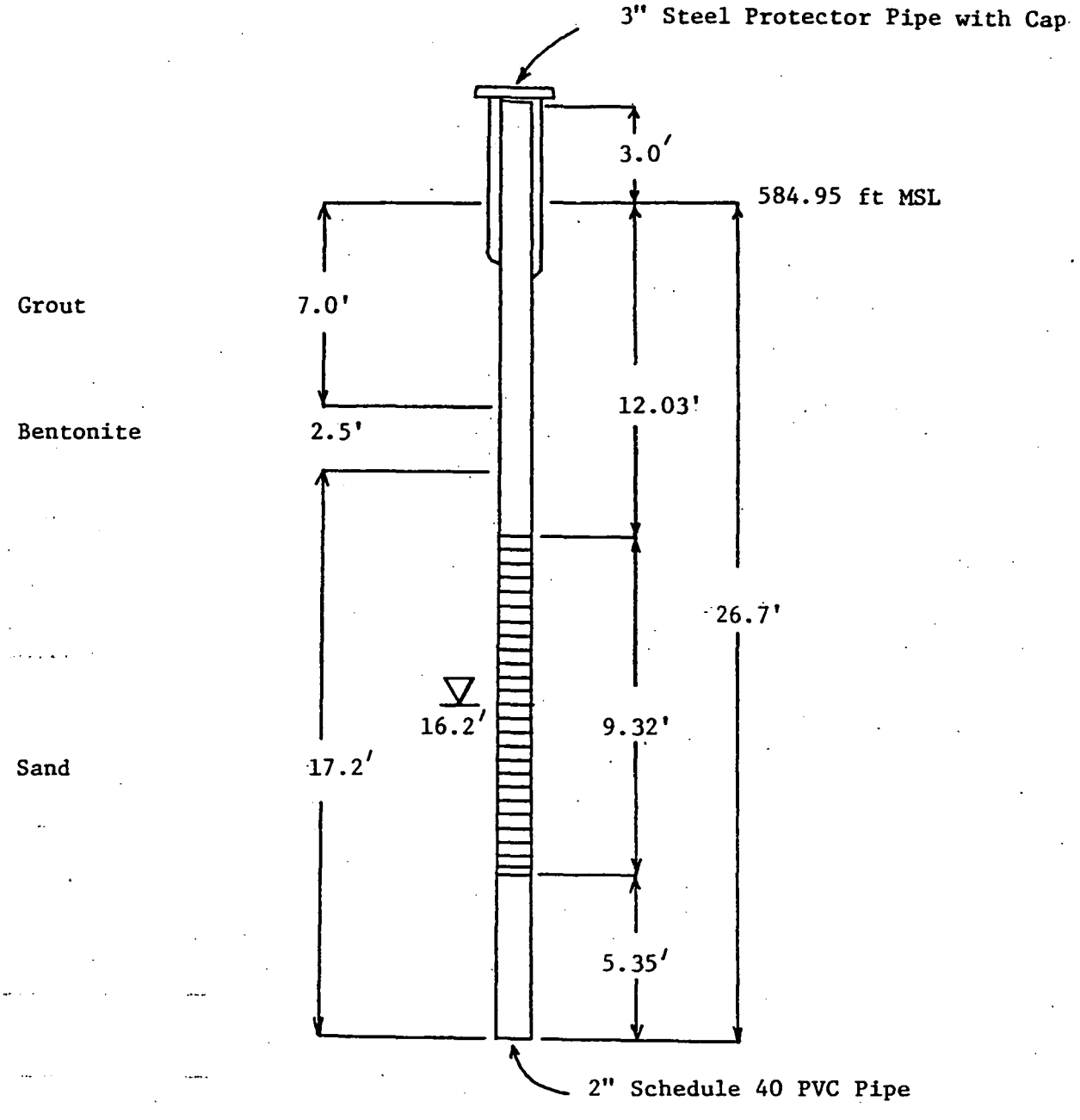
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-11-82

SAMPLE NUMBER	DATE TAKEN	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont.	CLASSIFICATION AND REMARKS
1	29 Oct			17.2	17.7	17.2	18.35	Fixed piston 3"sampler	40	St.	Sand(SP): same as above
1A				17.7	18.2	17.2	19.6		40	Jar	Jar sample from above
				18.2	18.7				40		piston head
				18.7	19.2				80		
				19.2	19.6				80		
	29 Oct			0.0	26.2			6" Casing			
	29 Oct			–	26.5			5-5/8"Rock Bit			Cleanout:
											Installed well screen through casing
											and pulled casing while pouring
											sand. Removed casing completely
											after sand rose to depth of 10 ft

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 2 Sheets



Water depth at time of drilling

Well Screen

NWSC, Crane, Indiana

Old Burning Pit

Well Completion

Boring Number: WES-5-11-82

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 30 October 82
Location Old Burning Pit Job No. 441-G150.13GR31/32
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 586.18 Boring No. WES-5-12-82

SAMPLE NUMBER	DATE TAKEN	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		0.0	1.5	0.0	18.0			7"Folding Auger			Clay(CL): brown, soft, damp, low plasticity, organic matter
		1.5	9.0								Sandy clay(CL): reddish brown, soft, damp, low plasticity, sand content 10-20%, fine-grained
		9.0	9.8								Clayey sand(SC): dark brown to black, damp, sticky, clay content 10-20%, fine-grained sand
		9.8	28.0								Sand(SP): brown, fine-grained, uniform, quartz sand, damp to 17-18 ft and wet below this depth

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

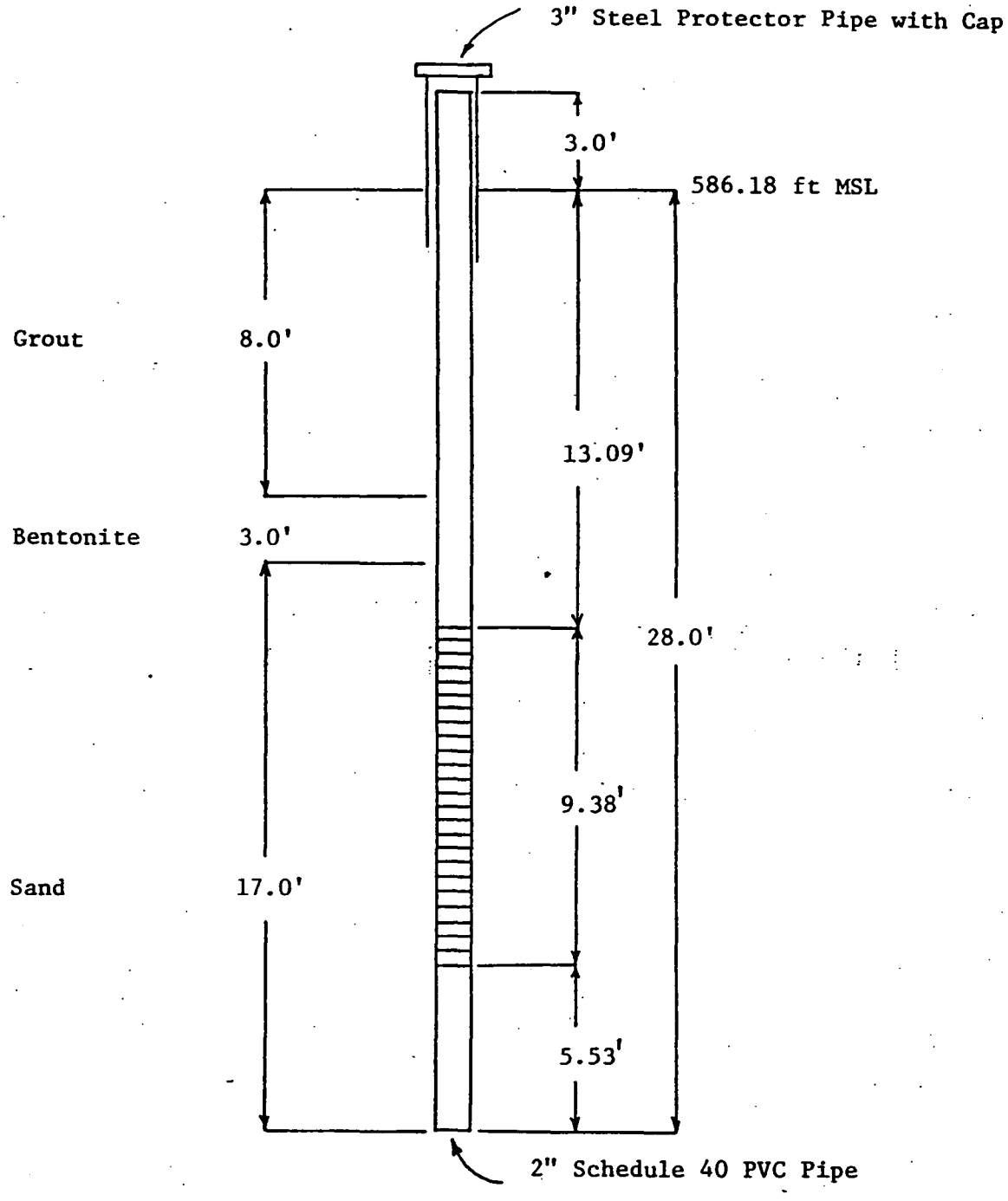
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-12-82

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
				18.0	28.0			6" Casing			Installed casing to prevent cave in
				—	28.0			5-5/8"Rock Bit			Cleanout:
											Installed well screen through casing
											and pulled casing while pouring
											sand. Removed casing completely
											after sand rose to 15 ft

WES FORM JAN 74 819 EDITION F N V 1971 MAY BE USED

Sheet 2 of 2 Sheets



Water depth at time of drilling

Well Screen

NWSC, Crane, Indiana

Old Burning Pit

Well Completion

Boring Number: WES-5-12-8

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 1 November 82
Location Old Burning Pit Job No. 441-G150.13GR21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 581.56 Boring No. WES-5-13-82

SAMPLE NUMBER	DATE TAKEN 1982	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	1 Nov	0.0	1.8	0.0	22.8			7"Folding Auger			Clay(CL): dark brown, damp, low plasticity, soft
		1.8	9.5								Silt(ML): reddish brown, damp, low plasticity, soft
		9.5	22.8								Silt(ML): light brown, damp to around 14.5 ft, wet below 14.5 ft, soft, low plasticity
		22.8	25.0								Silt(ML): grey, soft, wet, low plasticity
	1 Nov			15.0	25.0			6" Casing			Casing to prevent cave in
	1 Nov			15.0	25.0			5-5/8"Rock Bit			Cleanout

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

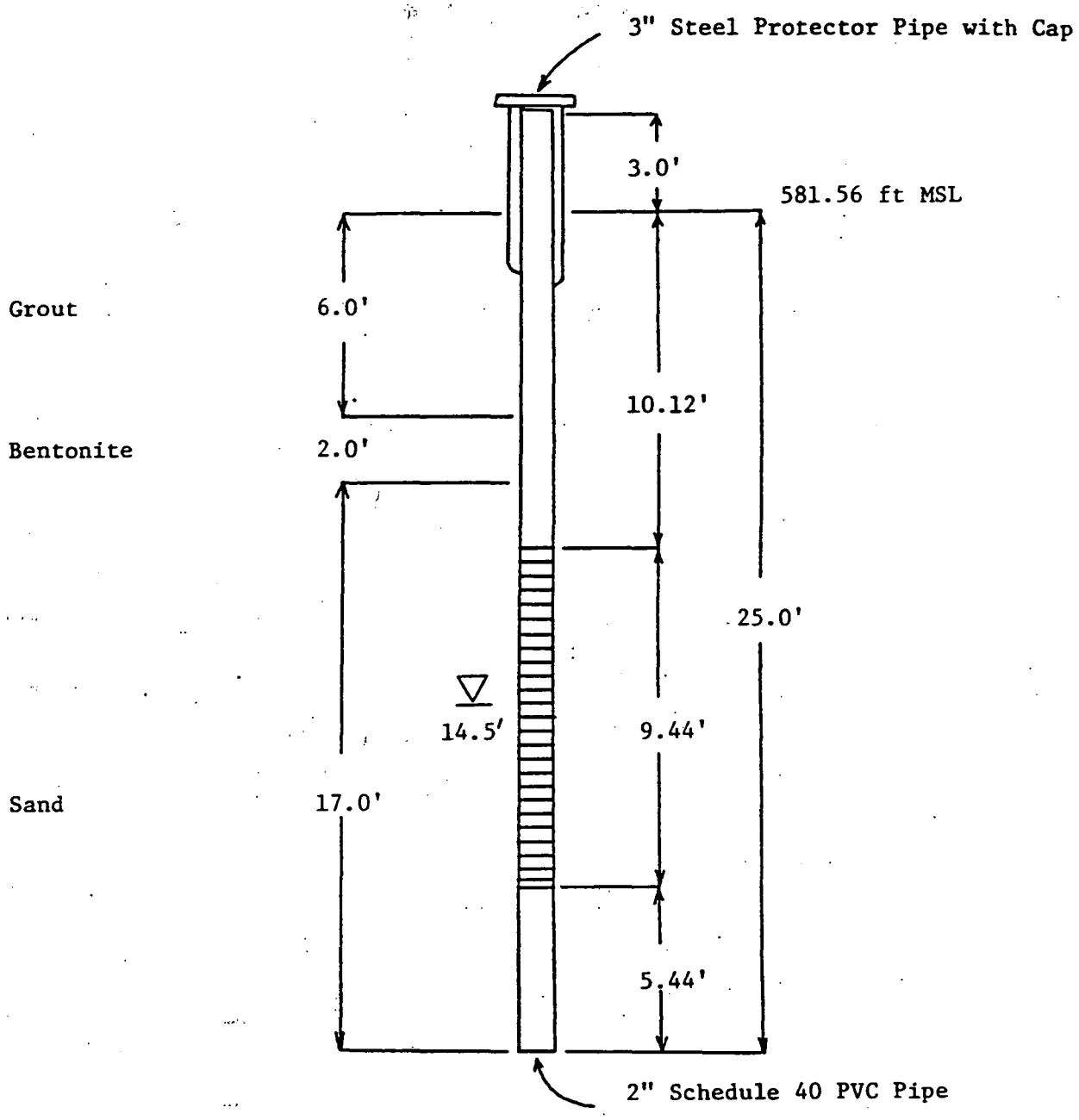
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-13-82

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
											Installed well screen through
											casing and pulled casing while
											pouring sand. Removed casing
											completely after sand rose to depth
											of 12 ft

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 2 Sheets



Water depth at time of drilling

Well Screen

NWSC, Crane, Indiana

Old Burning Pit

Well Completion

Boring Number: WES-5-13-82

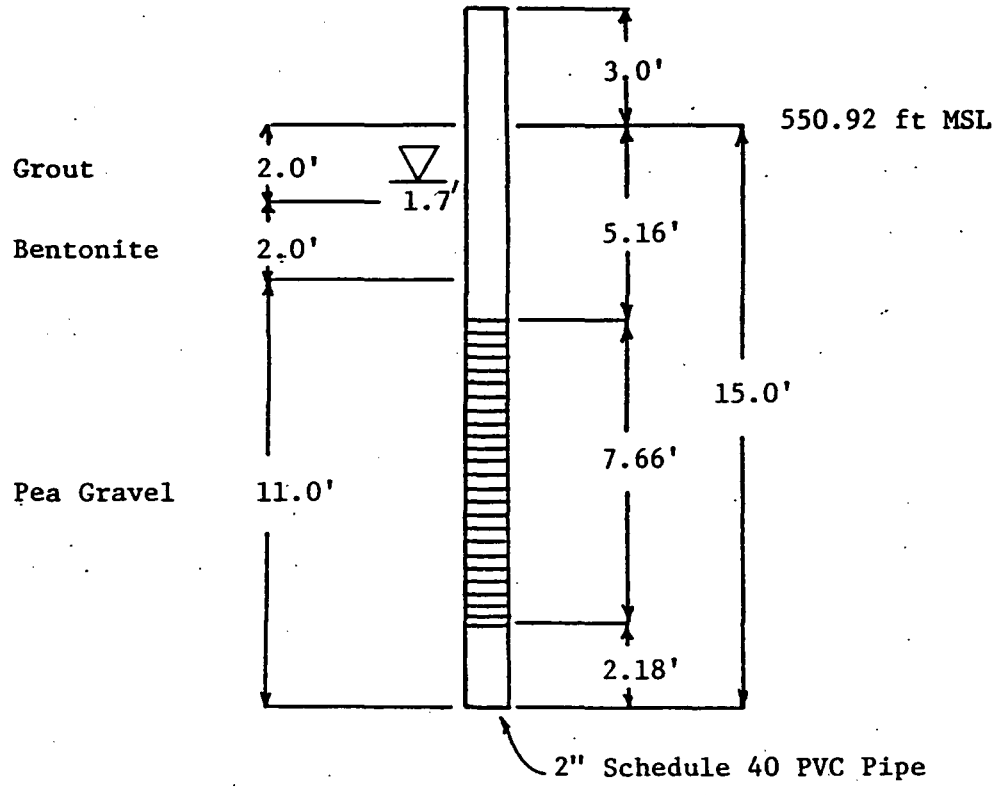
BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 10 January 83
Location Old Burning Pit Job No. 441-G150.13GR21/22
Drill Rig Hand Auger Inspector J. Dunbar Operator D. Taylor Surface El 550.92 Boring No. WES-5-14-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	10 Jan	0.0	1.7	0.0	15.0			6"Hand Auger			Sandy silt(ML): brown, soft, damp,
											organic matter(roots), wet from
											1.7 ft
		1.7	4.0								Silt(ML): grey, wet, soft
		4.0	5.0								Clay(CL): grey, wet, soft, silty
		5.0	7.0								Silt(ML): grey, wet, soft
		7.0	7.5								Clay(CL): grey, wet, soft
		7.5	15.0								Silt(ML): grey, wet, soft
											Installed well, shallow ground
											water changed normal screen and
											and trap lengths

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 1 Sheets



Water depth at time of drilling

Well Screen

NWSC, Crane, Indiana

Old Burning Pit

Well Completion

Boring Number: WES-5-14-83

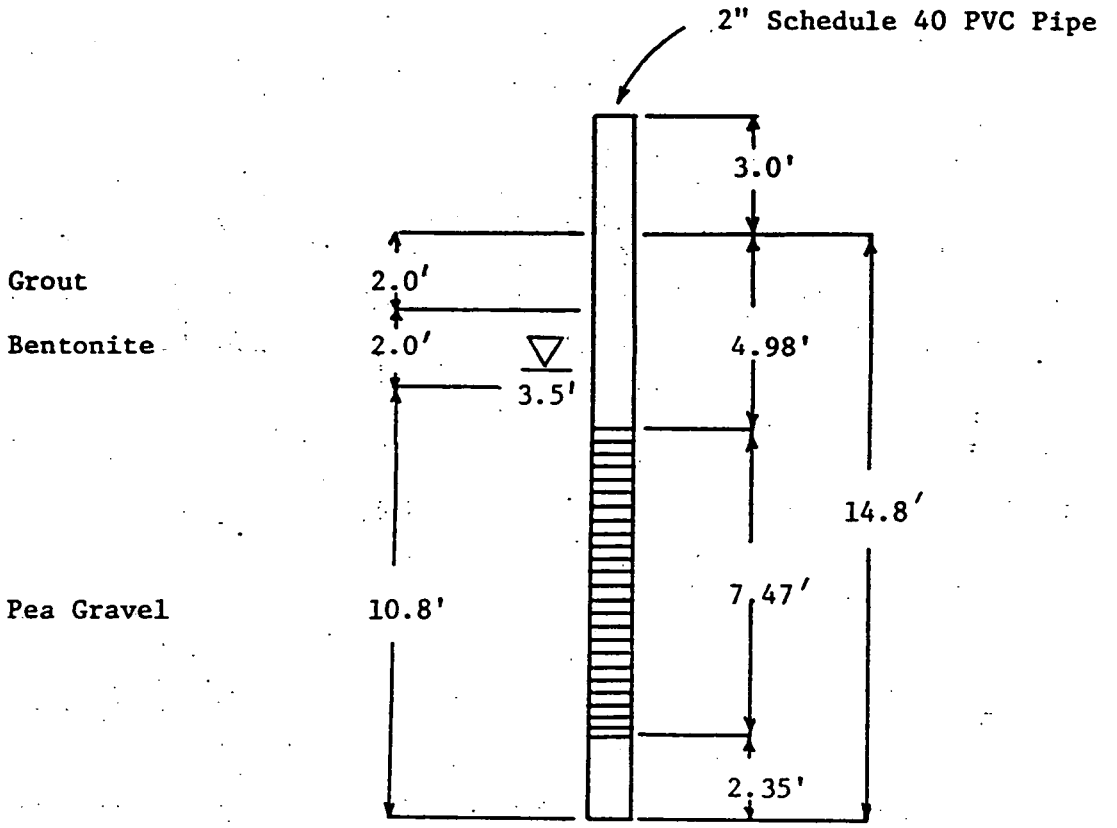
BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 11 January 83
Location Old Burning Pit Job No. 441-G150.13GR21/22
Drill Rig Hand Auger Inspector J. Dunbar Operator D. Taylor Surface El 552.19 Boring No. WES-5-15-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	11 Jan	0.0	3.5	0.0	14.8			6"Hand Auger			Sand(SP): brown, very fine-grained,
											damp, organic matter(roots)
		3.5	4.2								Silt(ML): grey, soft, wet
		4.2	5.2								Clay(CL): grey, soft, wet
		5.2	7.2								Silt(ML): grey, soft, wet, uniform
		7.2	8.0								Gravel(GP): very fine gravel and
											coarse to fine-grained sand, brown,
											wet
		8.0	14.8								Silt(ML): grey, wet, soft,
											uniform
											Installed well, shallow ground
											water changed normal trap and
											screen lengths

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 1 Sheets



Water depth at time of drilling

Well Screen

NWSC. Crane, Indiana

Old Burning Pit

Well Completion

Boring Number: WES-5-15-83

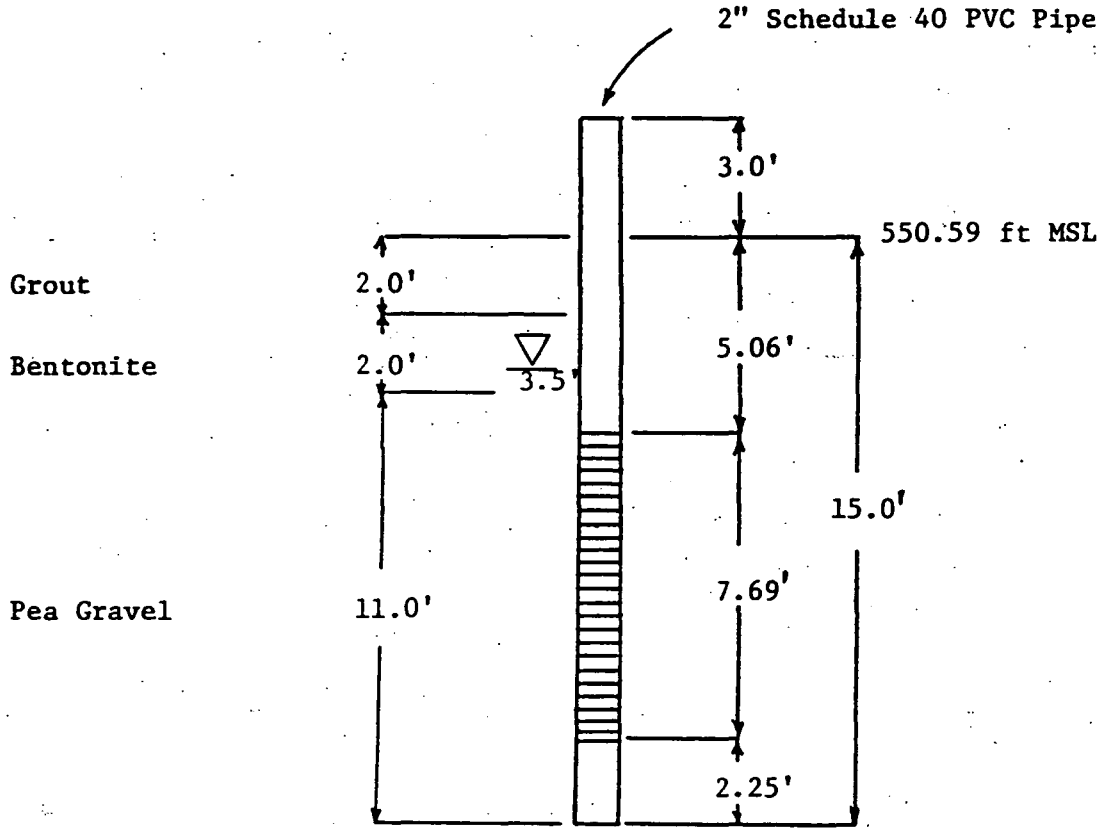
BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 11 January 83
Location Old Burning Pit Job No. 441-G150.13GR21/22
Drill Rig Hand Auger Inspector J. Dunbar Operator D. Taylor Surface El 550.59 Boring No. WES-5-16-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	11 Jan	0.0	0.8	0.0	4.0			6"Hand Auger			Clay(CL): dark grey to brown,
	12 Jan			4.0	15.0			6"Hand Auger			soft, moist, organic matter(roots
											and leaves)
		0.8	1.8								Silt(ML): brown, damp, soft,
											organic matter(roots)
		1.8	3.5								Silt(ML): mottled, grey and brown,
											soft, damp
		3.5	15.0			9.0	10.5	6"Hand Auger		Jar	Silt(ML): grey, wet, soft
											Installed well, shallow ground
											water changed normal screen and
											trap lengths

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 1 Sheets



Water depth at time of drilling

Well Screen

NWSC, Crane, Indiana

Old Burning Pit

Well Completion

Boring Number: WES-5-16-83

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 2 February 83
Location Old Burning Pit Job No. 441-G150.13GR21/22
Drill Rig Hand Auger Inspector J. Dunbar Operator D. Taylor Surface El 557.72 Boring No. WES-5-17-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
	2 Feb	0.0	5.5	0.0	3.5			6"Hand Auger			Silty sand(SM): dark brown to 1 ft
											because of organic matter, light
											brown to brown remaining interval,
											water entering hole at 1.5-2.0 ft,
											fine-grained sand with 1-2% very
											fine gravel. Hole is caving in from
											water at 3.5 ft
				0.0	5.0			7"Plastic Casing			Casing to seal off area of caving
				3.5	7.0			6"Hand Auger			Drove casing with sledge hammer
				5.0	6.0			7"Plastic Casing			Stickup - 1.0 ft
		5.5	7.0	7.0	15.0			6"Hand Auger			Sandy silt(ML): mottled grey and
											brown, soft, wet, 10-20% fine-
											grained sand
		7.0	15.0								Silt(ML): grey, uniform, wet, soft
											Installed well by pouring gravel
											through casing and raising casing at
											same time. Shallow groundwater

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Sheet 1 of 2 Sheets

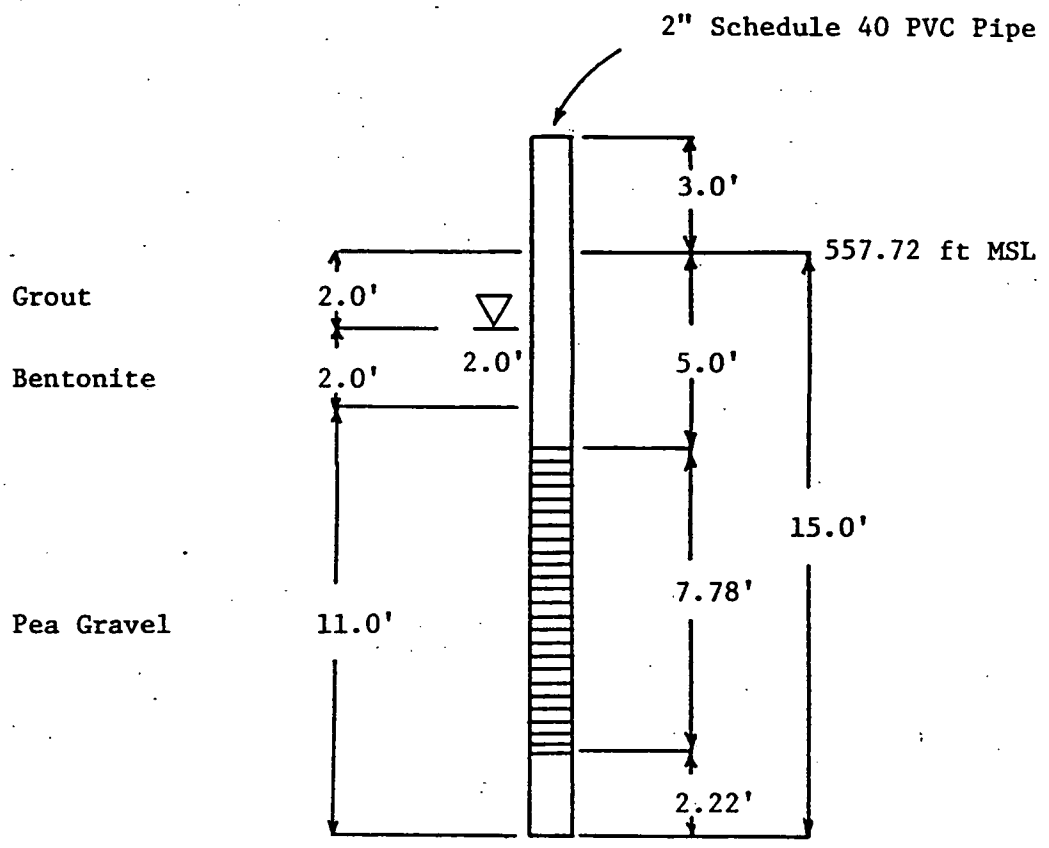
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-17-83

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
											changed normal trap and screen
											lengths.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 2 Sheets



Water depth at time of drilling

Well Screen

NWSC, Crane, Indiana

Old Burning Pit

Well Completion

Boring Number: WES-5-17-83

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 3 February 83
Location Old Burning Pit Job No. 441-G150.13GR21/22
Drill Rig Hand Auger Inspector J. Dunbar Operator D. Taylor Surface El 552.99 Boring No. WES-5-18-83

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
		0.0	0.5	0.0	4.0			6"Hand Auger			Silty sand(SM): dark brown, fine -
											grained sand, wet, organic matter
		0.5	5.5								Silty sand(SM): brown, fine -
											grained sand, wet, 15-20% very fine
											rounded gravel
				0.0	6.0			7"Casing			Installed 7" Casing to prevent cave
											in. Hammered down with sledge
											hammer and augered out material
											from below casing. Continued
											procedure to indicated depth.
											Casing is a polyethylene plastic
											pipe.
		5.5	8.0								Sandy silt(ML): mottled grey and
											brown, soft, wet, fine-grained sand
		8.0	15.0								Silt(ML): grey, soft, uniform, wet
											Installed well screen and brought
											pea gravel up to desired depth

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

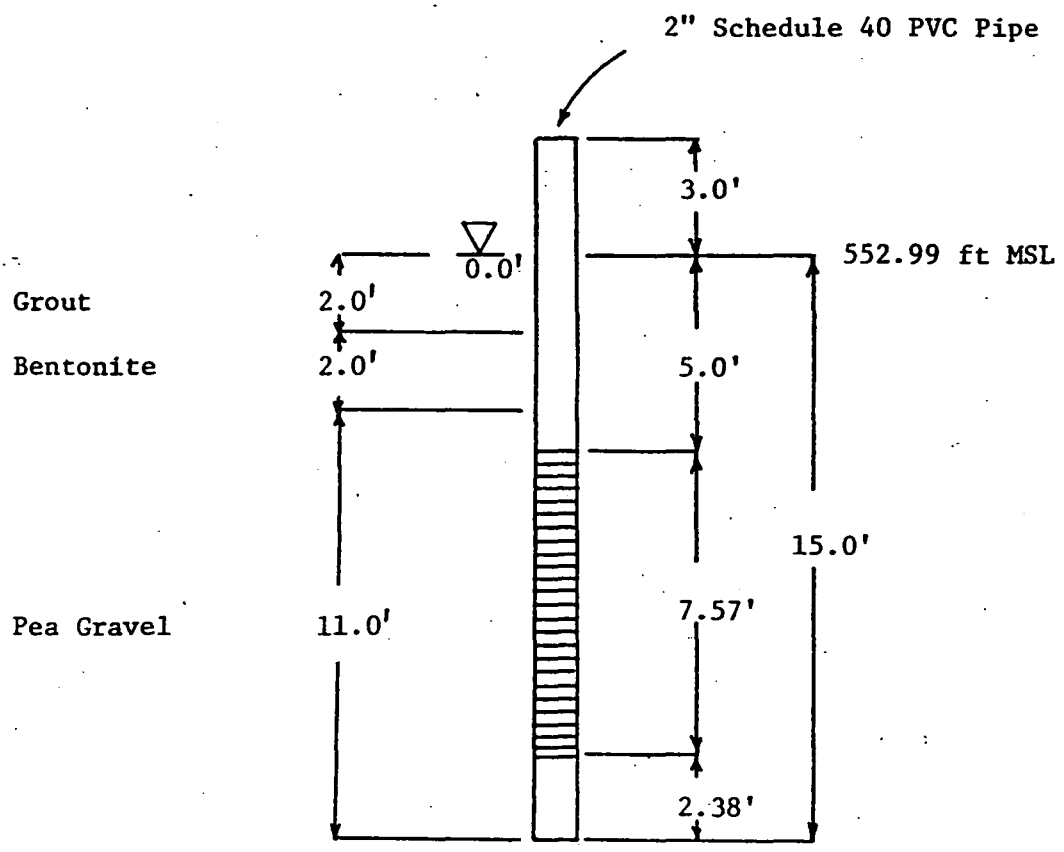
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-18-83

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
											while raising casing. Shallow
											groundwater changed normal trap
											and screen lengths.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 2 Sheets



Water depth at time of drilling

Well Screen

NWSC, Crane, Indiana

Old Burning Pit

Well Completion

Boring Number: WES-5-18-83

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 2 February 83
Location Old Burning Pit Job No. 441-G150.13GR21/22
Drill Rig Hand Auger Inspector J. Dunbar Operator D. Taylor Surface El 562.36 Boring No. WES-5-19-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	3 Feb	0.0	3.0	0.0	4.5			6"Hand Auger			Silty sand(SM): reddish brown,
											fine-grained, damp to 2 ft. Water
											after 2 ft
				0.0	6.0			7" Casing			7" Casing to seal off cave in at
											4 ft. Used bailer to remove water
											and material.
		3.0	8.5	4.5	9.0			6"Hand Auger			Silty sand(SM): brown, wet, fine -
											grained, gravelly
		8.5	15.0			11.0	12.0	6"Hand Auger		Jar	Silt(ML): grey, wet, soft, uniform;
											silt falling in behind auger.
				6.0	7.5			7" Casing			Drove casing to indicated depth
											Dug hole around casing to allow
											stickup - 1 ft. Hole still falling
											in after driving casing deeper.
											Will remove 7 ft joint and obtain
											longer piece
	4 Feb			0.0	6.0			8"Hand Auger			Removed casing and cleanout for 8"

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

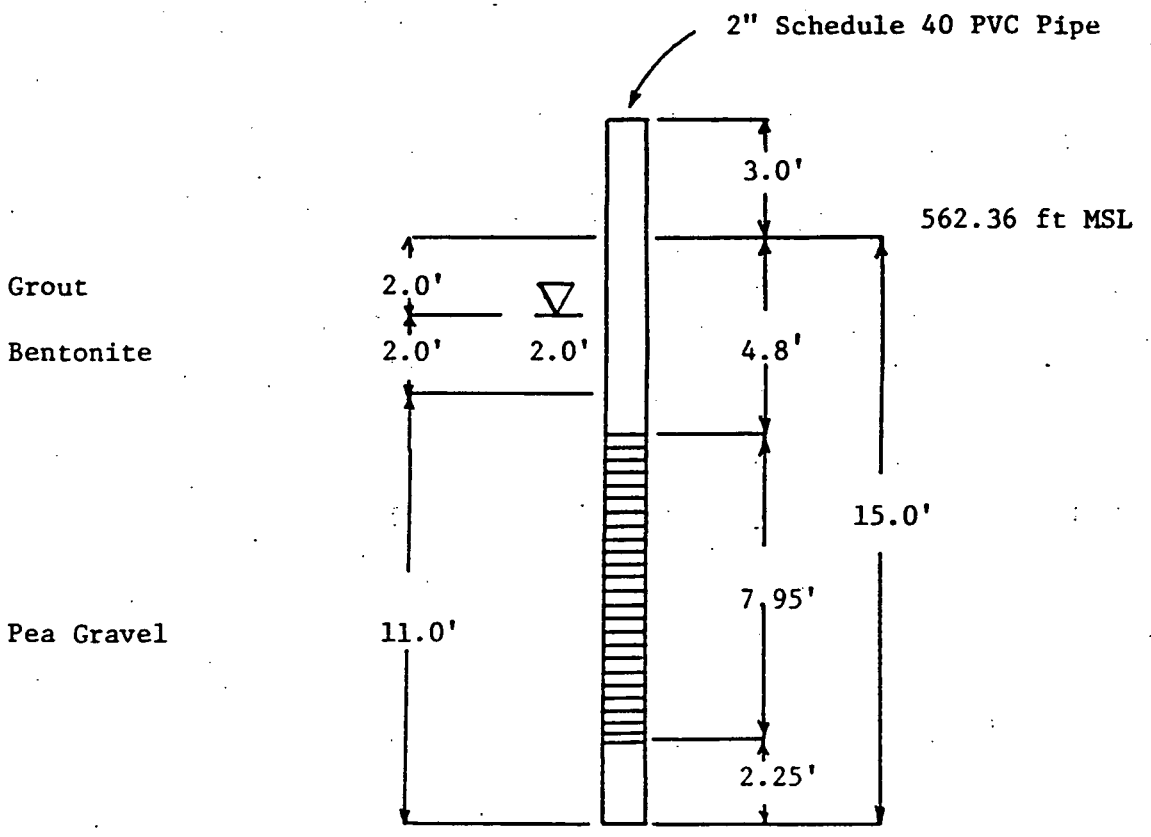
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-5-19-83

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
											casing
				0.0	10.0			8" Casing			PVC - Drove casing with sledge
											hammer and cleaned out with 6"
											hand auger
				9.0	15.0			6"Hand Auger			Installed well through casing and
											brought pea gravel up to desired
											depth while raising casing.
											Shallow groundwater changed normal
											trap and screen lengths.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 2 Sheets



Water depth at time of drilling

Well Screen

NWSC, Crane, Indiana

Old Burning Pit

Well Completion

Boring Number: WES-5-19-83

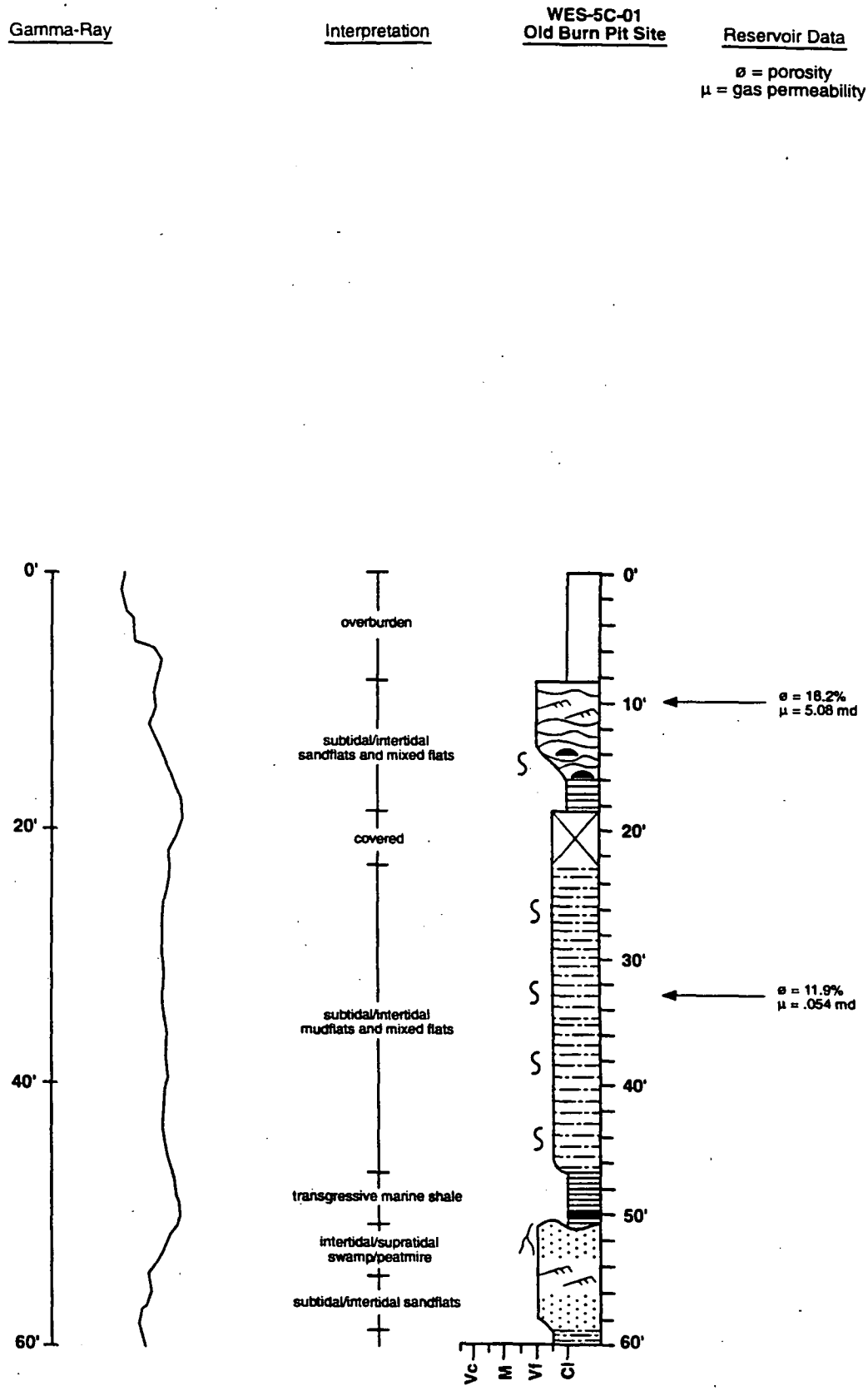


Figure 12c. Vertical columnar profile of corehole WES-5C-01

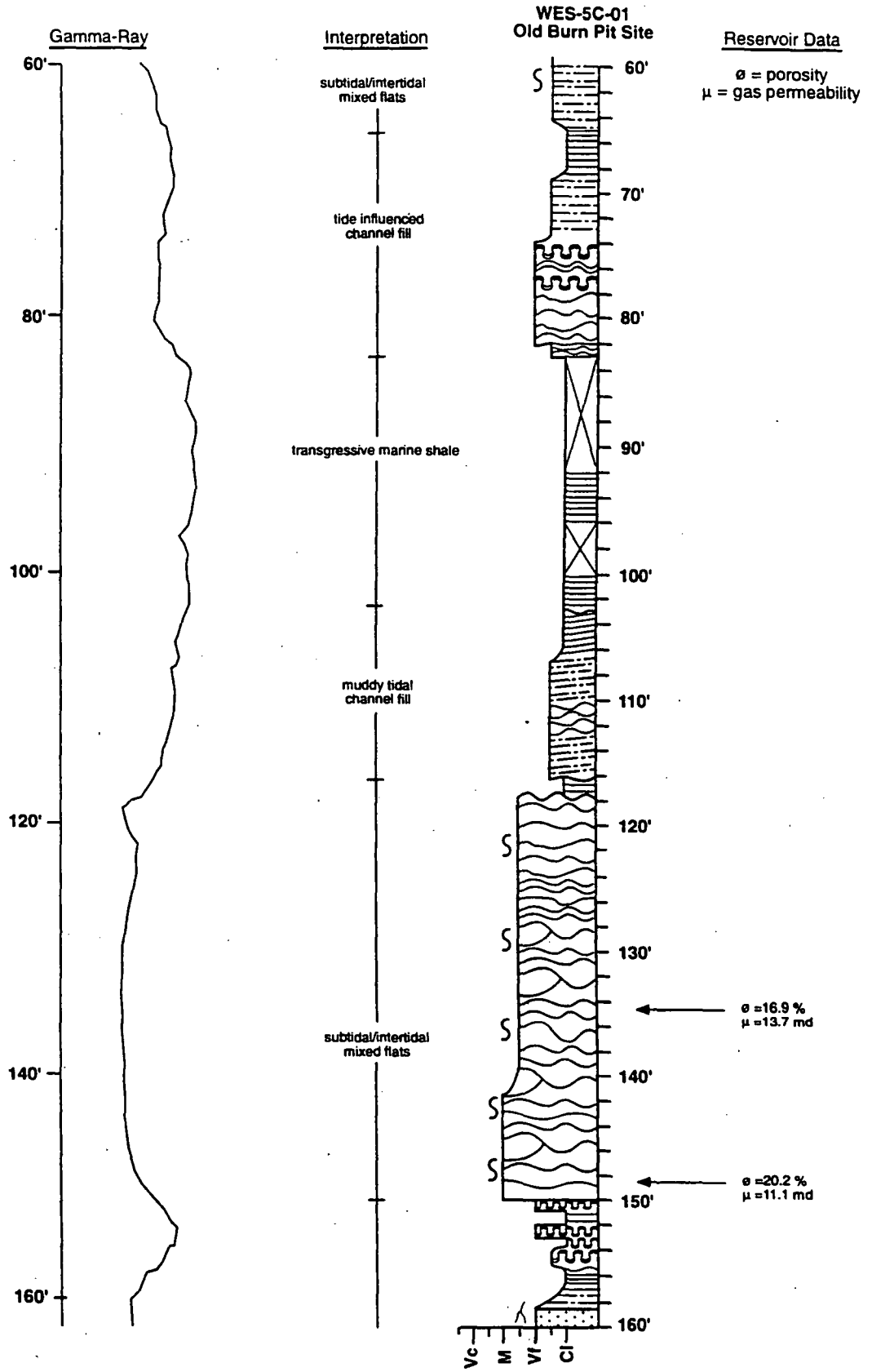


Figure 12b. Vertical columnar profile of corehole WES-5C-01

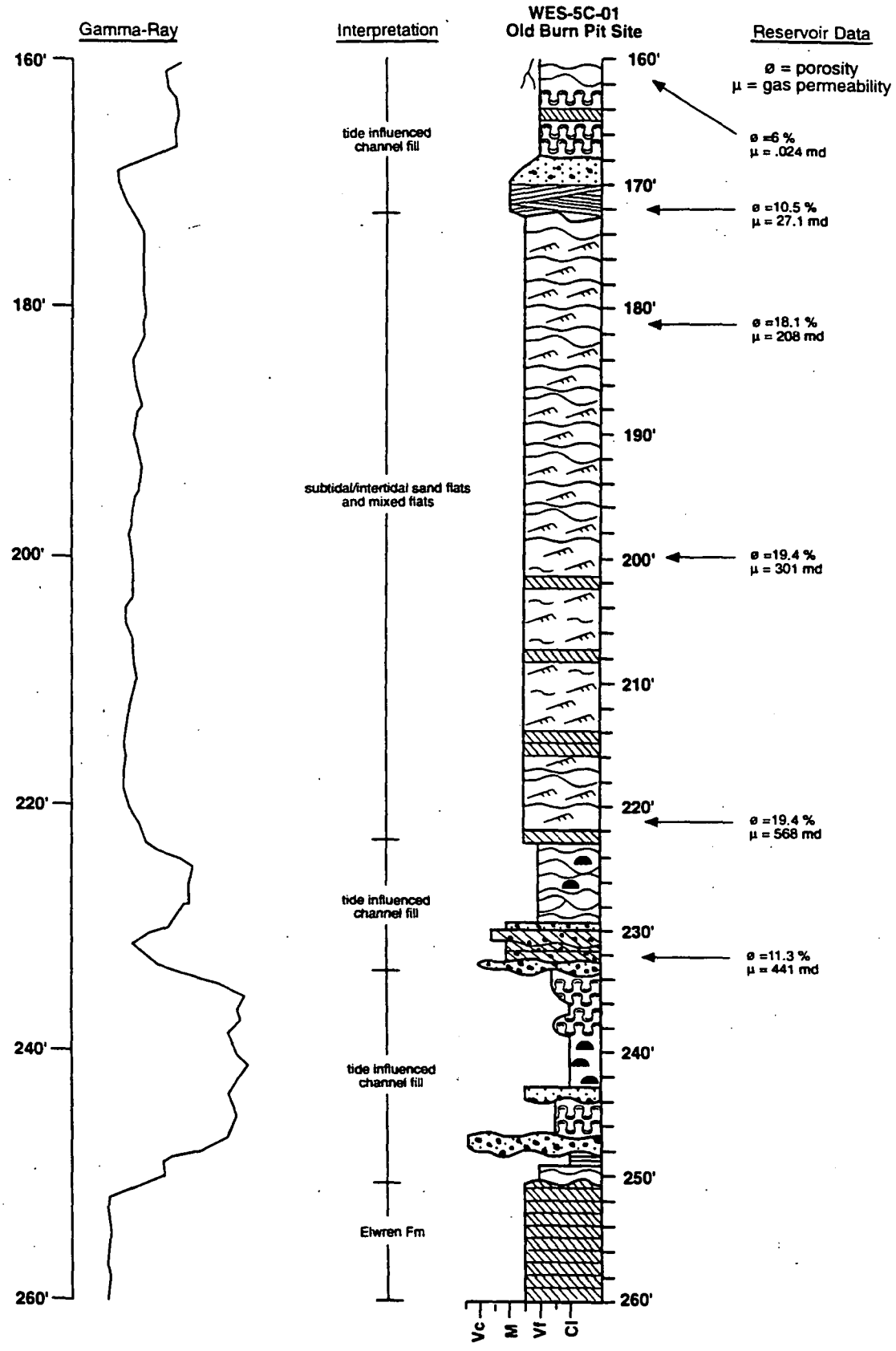


Figure 12a. Vertical columnar profile of corehole WES-5C-01

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE
BORING NUMBER: 055B01
DATE: 11/29/00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1					LT BR.	TOP 15" SILTY CLAY	CL		0.0	0.0		0.0
	2					↓	↓ T-GRAVEL + GRASS			0.0			
	3					TELL	BOTT 8" SANDY CLAY T-GRAVEL			0.0			
S-1 1230	4		23" / 4"			GR	↓			0.0		0.0	
	5					GRAY	TOP 14" CLAY T-SILT	CL		0.0	0.0		0.0
	6					↓				0.0			
	7					TELL GR	BOTT 14" SILTY CLAY			0.0			
S-2 1236	8		28" / 4"			LT TAN	↓			0.0	0.0	0.0	
	9					TELL	FINE-SAND	SP		0.0	0.0		0.0
S-3 1241	10		2" / 2"			GR.	↓			0.0	↓	0.0	↓
				TD 10'									
					Sampled 055B010002 @ 1250				WASHED TEL 1245				
							VOC'S TAKEN FROM 1'-2'		TO OPEN 0'-4'				
					Sampled 055B010810 @ 1300				WASHED TEL 1255 TO OPEN 8-10				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

R marks: 14'

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 055B02
DATE: 11-30-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				SOFT +	BR.	TOPSOIL SANDY SILT W/	ML		0.0	0.1		0.0
	2				MOIST	↓	T-CLAY ROOTS + ORGANICS	↓		0.0			
	3				SL. STIFF	GRAY	BOTT 30" SILTY CLAY ~~FINE SAND~~	CL		72			
S1 0959	4		33" / 4'		MOIST	↓	W/ T-FINE SAND	↓		99		99	
	5					GRAY	TOP 18" SILTY CLAY T-SAND	CL		44.5			
	6				↓	↓	↓	↓		47			
	7				LOOSE +	YELL	BOTT 18" FINE-MED SAND	SP		0.0			
S2 0957	8		3' / 4'		WET	OR	↓	↓		0.0		110	
	9						THERE WAS 3' OF RECOVERY						
S3 0905	10		0 / 3'				IN SLEEVE. BUT IT SLIPPED				↓	155	↓
				TD 4'			OUT AS DRILLER PULLED UP.						
					Sampled 055B07000Z @ 0905								
							VOC'S TAKEN FROM 1-2'						
					Sampled 055B07000 @ 0920								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Remarks: 10' 3' 18' WT.

Drilling Area Background (ppm): 0

Converted to W II: Yes _____ No ✓ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE
BORING NUMBER: 05SB03
DATE: 11-30-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/RD Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				Soft +	DK	TOP 10" SILTY CLAY T-ROOTS +	CL		0.0	0.0		0.0
	2				MUSSY	DK	GRASS						
	3				STIFF	BR	3" FINE GRAVELLY SANDY CLAY W/ WOOD FRAGS						
S-1 0931	4		2' / 4'			BR/ RED	DRY 1' SILTY CLAY					0.0	
	5					BR/ RED	SANDY, GRAVELLY CLAY	CL		0.0	0.0		0.0
	6					BLK	SANDY SILT, GLASS	ML	FUEL ODOR	540			
	7				STIFF		SILTY CLAY	CL		17			
S-2 0955	8		3.5' / 4'							0.0		100	
	9				SOFT					0.0	0.0		
S-3 1025	10		2' / 4'		MUSSY					0.0	0.0	0.0	
				10' TD									
					Sampled 05SB030002 @ 0915								
							FD113002 - MS/MSD TAKEN AHEAD OF DPT BY K.S.						
					Sampled 05SB030507 @ 1005								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Remarks: 10' 8'

Drilling Area Background (ppm): 0.0

Converted to W ll: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE
BORING NUMBER: 05SB04
DATE: 12-13-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Breathing Zone	Borehole**	Driller BZ**
	1					BR	SILTY, SANDY (FINE-COARSE)	CL		0.0	0.0	0.0	0.0
S1 0828	2		18" / 2'				CLAY						
	3						SANDY (V.FINE) SILT	ML					
S2 0838	4		2' / 2'				SOME CLAY						
S-3 0841	5		1' / 1'				(V. FINE) SANDY, SILT	ML	REFUSAL @ 5'				
	6			T.D. 5'					2ND ATTEMPT				
	7								REFUSAL @ 4'				
	8												
	9												
	10												
					Sampled 05SB040002 @ 0830								
							VOC'S TAKEN FROM 1'-2'						
					Sampled 05SB040204 @ 0920								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Remarks: 5' 4' = 10' DPT

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No X Well I.D. # ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 055B05
DATE: 1/29/00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				LOOSE	RUST BR.	TOP 15" FINE SANDY SILT	ML		0.0	0.0		0.0
	2				MOIST		T-GRAVEL	↓		0.0	↓		↓
	3				STIFF	LT BR	BOTT 7" SILTY CLAY	CL		0.0	↓		↓
S-1 1522	4		22" / 4'		↓	TAN	↓	↓		0.0	↓	0.0	↓
	5				↓	LTBR TAN	TOP 4" SILTY CLAY			1.5	0.0		0.0
	6				↓	LGRY	MIDDLE 18" CLAYEY SILT	ML		60	↓		↓
	7				SOFT	BLK	BOTT 10" CLAY & SILT	CL	FUEL SMELL	540	↓		↓
S-2 1526	8		26" / 4'		MOIST	DK GRY	W/ WOOD FIBERS	↓		245	↓	510	↓
	9				V. SOFT	↓	↓	↓		85	0.0		0.0
S-3 1530	10		2' / 4'		MOIST	↓	↓	↓		54	↓	160	↓
				T.D. 10'									
					Sampled 055B050002 @ 1525								
							~~SOIL~~ VOC'S TAKEN FROM 1'-2'						
					Sampled 055B050006 @ 1535								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: 10'

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 05SB06
DATE: 11/29/00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				LOOSE	DK BROWN	TOP 18" SILTY FINE-GRAVELLY	SM	FILL V. COARSE	0.0	0.0		0.0
	2				& MOIST	BROWN	SAND, METAL SHAVINGS GLASS		MATERIAL	0.0			
	3					BLK	BOTT 9" SILTY FINE-GRAVELLY			12.2			
S1 1404	4		28" 3.5'				SAND W/ WOOD, GLASS & METAL WIRE		REFUSAL @ 3.5'	56		71	
	5				S-3 HAD 27" RECOVERY	GRAY	SILTY CLAY, T. FINE	CL	3RD ATTEMPT ABLE TO DRIVE TO 4'	170	0.0		0.0
	6				STIFF		SAND, GLASS METAL		1ST ATTEMPT 2" REC. 4'-6' HARD DRILLING	320			
	7				& MOIST		PIECES.		2ND ATTEMPT @	340			
S-3 1452 22 1440	8		2" 4'						4'-8' 27" REC.	485		1344	
	9						SAT @ 9'						
S4 1430	10		0 2'										
					Sampled 05SB060007 @ 1430								
							WC'S TAKEN 1'-2'						
					Sampled 05SB060008 @ 1455								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 3.5' + 8' 10' 21'

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 05SB07
DATE: 11/29/00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				LOOSE	DK BROWN	SAND + SILT W/ METAL	CL SM	FILL		0.0		0.0
	2				↓	↓	WIRES, AND METAL	↓	↓	0.0	↓		↓
	3						SHALE ROCKS, GRAVEL + GLASS						
S1 1335	4		1" / 4"		↓	↓	W/ SOME CLAY 0-4"	↓	↓	0.0		0.0	
	5					DK BR	TOP 14" SILTY SAND W/ FILL	SM					
	6					↓	SEE ABOVE	↓		0.0			
	7					BR 1	WITH 16" CLAYEY SILT	ML					
S2 1340	8		30" / 4"			YELL BR		↓		0.0		0.0	
	9						0 RECOVERY SOIL V. SOFT						
S-3 1344	10		0 / 2"				MAY HAVE FELL OUT				↓	0.0	↓
				TD 10'									
					Sampled 05SB070003 @ 1337								
							VOC'S TAKEN FROM 1'-2' INTERVAL TAKEN FD112900003						
					Sampled 05SB070604 @ 1400								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 10" 15" TOTAL

Drilling Area Background (ppm): 0.0

Converted to W ll: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 05SB08
DATE: 12-13-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Background	Sampler BZ	Borehole**	Driller BZ**
	1				SOFT	LT	SILTY CLAY w/ T-ORGANICS	CL		0.0	0.0	0.0	0.0
S-1 1019	2		10" / 2'		↓	BR			1ST ATTEMPT REFUSAL @ 2'				
	3				SOFT	LT	SILTY CLAY T-ORGANICS						
S-2 1050	4		2" / 2'		↓	BR							
	5				SOFT	LT/OK	SILTY CLAY W/ WOOD						
S-3 1057	6		4" / 2'		↓	BR	FIBERS	↓					
S-4 1104	7		10" / 1'		MSLIGHT	LT. BR	V. FINE SAND, SILT, T-CLAY	ML	3RD ATTEMPT REFUSAL @ 7'				
	8			TD. 7'			3RD ATTEMPT REFUSAL						
	9						@ 1.5'		0-2 0-7				
	10								0-1.5'				
					Sampled 05SB08002 @ 1022								
							VOC'S TAKEN FROM 1'-2'						
					Sampled 05SB08								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Remarks: 2' + 7' + 1.5' 10.5' OPT

Drilling Area Background (ppm): 0.0

Converted to Well: Yes _____ No 1 Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 C210
DRILLING COMPANY: BOWSER MORNER
DRILLING RIG: CME-55

BORING No.: 05T01
DATE: 12-4-00
GEOLOGIST: BOB BALLOVEE
DRILLER: D. STARK

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	1	4/4			STIFF	LT	TOP 1" TOPSOIL						
S-1 0947	2	6/9	1'/2'			BR.	BOTT 11" SILTY CLAY	CL		0	0	0	0
	3	4/4			M. STIFF	LT BR.	TOP 1' FINE-MED SANDY CLAY	CL					
S-2 0923	4	4/3	2'/2'			YELL BR	BOTT 1' SILT/V. FINE SAND	ML		0	0	0	0
	5	1/2			LOOSE	LT. BR.	V. FINE SAND/SILT	ML					
S-3 0933	6	3/2	1.5'/2'			L	↓	ML	SATURATED 5'	0	0	0	0
	7	2/1			LOOSE	LT.	V. FINE SAND/SILT	ML					
S-4 0938	8	2/2	1.8'/2'			BR	↓		SATURATED SPOON	0	0	0	0
	9	1/1			LOOSE	LT BR	SILTY V. FINE SAND	ML					
S-5 0943	10	2/2	2'/2'		SOFT	GRAY BR	CLAY	CL	VERY PLASTIC	0	0	0	0
	11	2/1			SOFT	GRAY	CLAY T-SILT	CL					
S-6 0944	12	1/2	1.5'/2'			BR	↓			0	0	0	0
	13	2/1			SOFT	GRAY	SILTY CLAY GRADING INTO	CL					
S-7 0953	14	2/2	2'/2'			↓	A CLAY	CH	HIGH PLASTICITY	0	0	0	0
	15	0/1			SOFT	GRAY	SILTY CLAY	CL					
S-8 1002	16	2/2	1'/2'			↓		↓					
				TD. 16'					WET SPOONS 5'-16'				
							SPOONED TO 16'						
							DRILLED TO 15'						
							SCREENED 5'-15'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 15' HSA 8-SPOONS

Drilling Area Background (ppm):

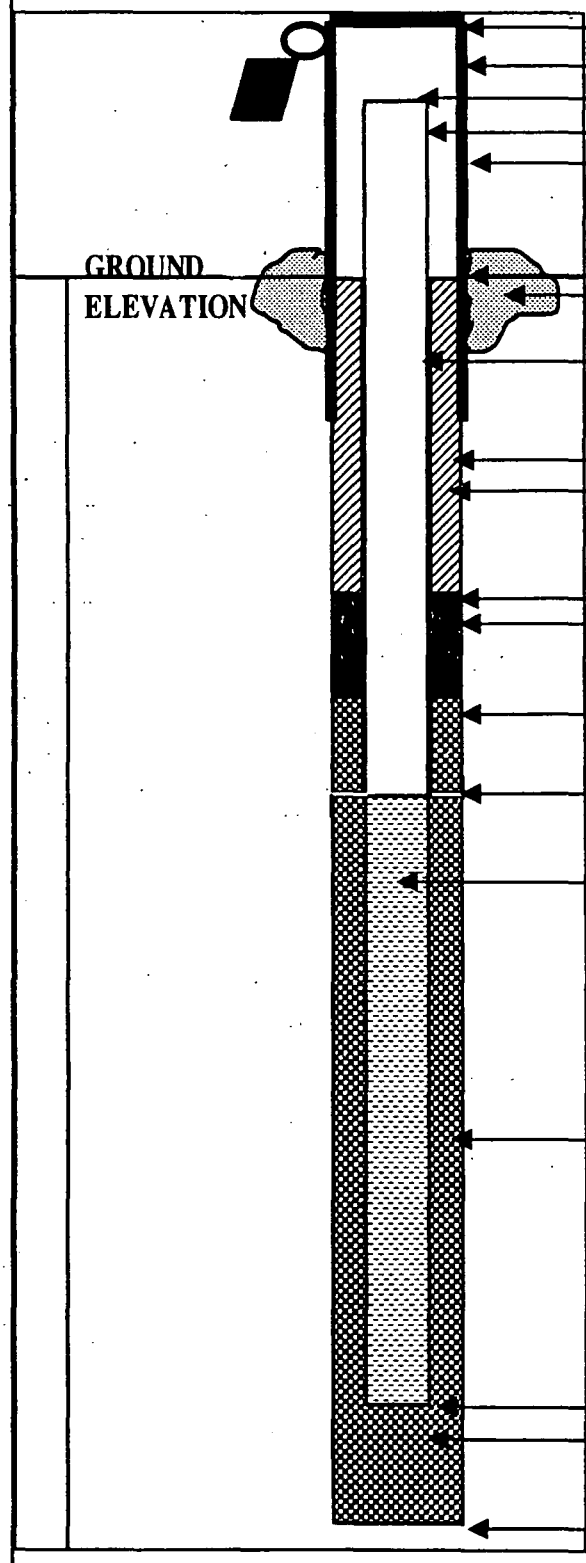
Converted to Well: Yes ✓ No ____ Well I.D. #: 05T01

BORING NO.: 05T01

Tetra Tech NUS, Inc.

MONITORING WELL

PROJECT:	NSWC CRANE	DRILLING Co.:	Bowser Morner	BORING No.:	05T01
PROJECT No.:	7141 CTO 010	DRILLER:	D. Szak	DATE COMPLETED:	12-4-00
SITE:	Swmu 5	DRILLING METHOD:	HSA	NORTHING:	1326092.796
GEOLOGIST:	Bob Balkovic	DEV. METHOD:	SURGE & WHALE PUMP	EASTING:	3011627.733



ELEVATION OF TOP OF SURFACE CASING: 589.82'

STICK-UP TOP OF SURFACE CASING: 3.15'

ELEVATION OF TOP OF RISER PIPE: 589.10'

RISER STICK-UP ABOVE GROUND SURFACE: 2.43'

I.D. OF SURFACE CASING: 4"

TYPE OF SURFACE CASING: SQUARE STEEL CASING

GROUND ELEVATION: 586.67'

TYPE OF SURFACE SEAL: CEMENT PAD

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 8½"

TYPE OF BACKFILL:

ELEVATION / DEPTH OF SEAL: 585.67'/1'

TYPE OF SEAL: BENTONITE PELLETS COLLOID ENVIRONMENTAL

ELEVATION / DEPTH TOP OF FILTER PACK: 583.67'/3'

ELEVATION / DEPTH TOP OF SCREEN: 581.67'/5'

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: .01" X 10'

I.D. OF SCREEN: 2"

TYPE OF FILTER PACK: GLOBAL #6 (15'-4')
No. 20-40 STANDARD SIEVE SAND #7 (4'-3')

ELEVATION / DEPTH BOTTOM OF SCREEN: 571.67'/15'

ELEVATION / DEPTH BOTTOM OF FILTER PACK: 571.67'/

TYPE OF BACKFILL BELOW WELL: NA

ELEVATION / DEPTH OF BOREHOLE: 571.67'/15'

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 C010
DRILLING COMPANY: BOWSER MORNER
DRILLING RIG: CME-55

BORING No.: 05T02
DATE: 12-3-00
GEOLOGIST: BUD BURKOLTZ
DRILLER: D. SINK

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	1	1 / 2			LOOSE	LT.	TOP 2" TOPSOIL	SM		0.0	0.0		0.0
S-1 0940	2	3 / 5	15" / 2'		↓	BR	BOTT 13" SILTY FINE-MED SAND			0.0		0.0	
	3	3 / 4			LOOSE	LT	SILTY FINE-MED SAND			0.0			
S-2 0947	4	3 / 3	2' / 2'		↓	BR	T-GRAVEL.			0.0			
	5	2 / 2			LOOSE		TOP 1" SILTY FINE-MED SAND TRACE	↓		0.0			
S-3 0954	6	3 / 3	2' / 2'		↓	YEL BR	SILT	ML		0.0	0.0	0.0	0.0
	7	2 / 3			LOOSE	LT.	TOP 28" SILT			0.0			
S-4 0950	8	3 / 3	2' / 2'			BR	BOTT 2" SILT T-CLAY			0.0			
	9	2 / 3			LOOSE	LT.	SILT		WET @ 9'	0.0			
S-5 0940	10	2 / 3	2' / 2'			BR				0.0			
	11	1 / 2			LOOSE	GRAY	SILT T-FINE SAND		SATURATED SPOON	0.0			
S-6 0946	12	2 / 2	2' / 2'			BROWN				0.0	0.0	0.0	0.0
	13	1 / 1			LOOSE	GRAY	SILT		SATURATED SPOON	0.0			
S-7 0950	14	3 / 2	19" / 2'			BROWN				0.0			
	15	1 / 3			LOOSE	GRAY	SILT		SATURATED SPOON	0.0			
S-8 0956	16	3 / 3	22" / 2'			BROWN		↓		0.0			
	17	3 / 2			SOFT	GRAY	SILTY CLAY	CL	LOW-MED PLASTICITY	0.0			
S-9 1004	18	1 / 1	20" / 2'	TD. 18'		↓	↓	↓		0.0	0.0	0.0	0.0
							SET WELL @ 18'						
							SCREENED 8'-18'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: SET WELL @ 18' W/ 9 SPLIT SPOONS

Drilling Area Background (ppm): 0.0

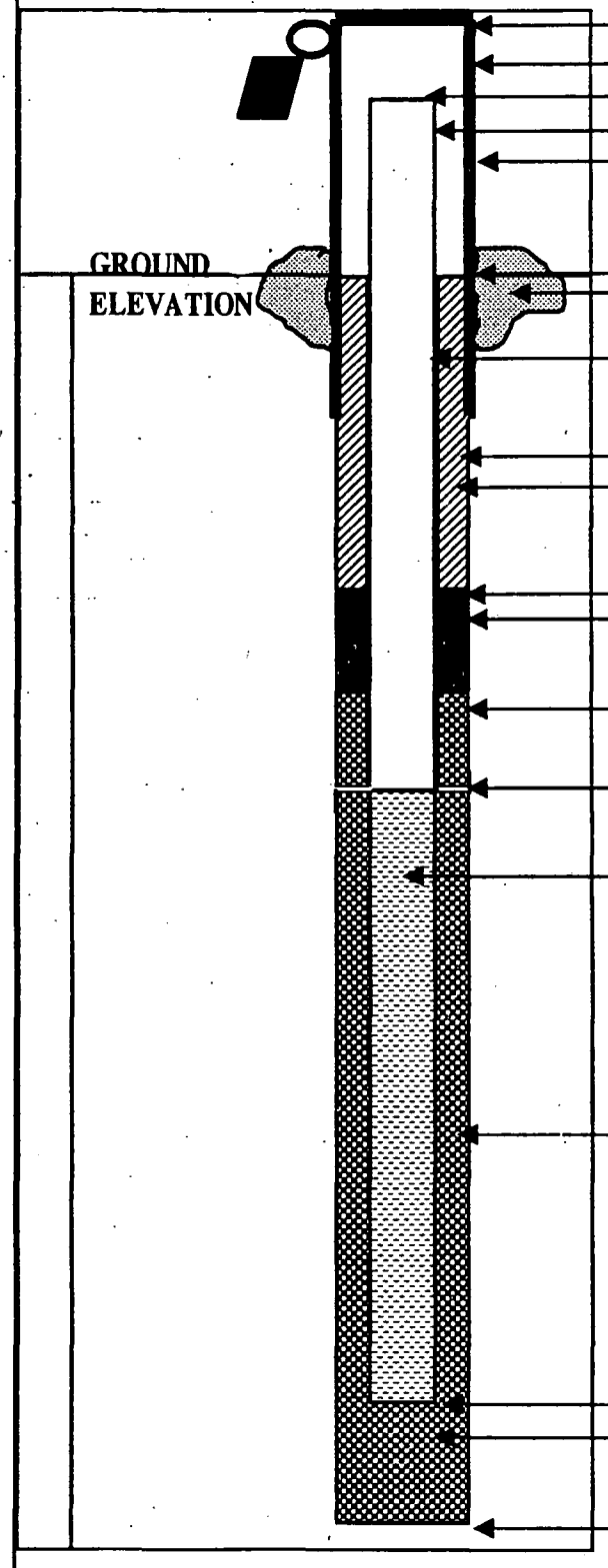
Converted to Well: Yes ✓ No _____ Well I.D. #: 05T02

Tetra Tech NUS, Inc.

MONITORING WELL

BORING NO.: 05T02

PROJECT:	NSWC CRANE	DRILLING Co.:	Bowser Morner	BORING No.:	05T02
PROJECT No.:	7141 CTO 010	DRILLER:	D. STONE	DATE COMPLETED:	12-3-00
SITE:	SWMU 5	DRILLING METHOD:	HSA	NORTHING:	1326055.939
GEOLOGIST:	B. BALKOVEC	DEV. METHOD:	SURGE & WHALE PUMP	EASTING:	3010485.030



ELEVATION OF TOP OF SURFACE CASING: 573.76'

STICK-UP TOP OF SURFACE CASING: 2.77'

ELEVATION OF TOP OF RISER PIPE: 572.86'

RISER STICK-UP ABOVE GROUND SURFACE: 1.87'

I.D. OF SURFACE CASING: 4"

TYPE OF SURFACE CASING: SQUARE STEEL CASING

GROUND ELEVATION: 570.99'

TYPE OF SURFACE SEAL: CEMENT PAD

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 8 1/2"

TYPE OF BACKFILL:

ELEVATION / DEPTH OF SEAL: 566.99'/4'

TYPE OF SEAL: BENTONITE PELLETS COLLOID ENVIRONMENTAL

ELEVATION / DEPTH TOP OF FILTER PACK: 564.99'/6'

ELEVATION / DEPTH TOP OF SCREEN: 562.99'/8'

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: .01" X 10'

I.D. OF SCREEN: 2"

TYPE OF FILTER PACK: GLOBAL #6 (18'-7') No. 20-40 STANDARD SIEVE SAND #7 (7'-6')

ELEVATION / DEPTH BOTTOM OF SCREEN: 552.99'/18'

ELEVATION / DEPTH BOTTOM OF FILTER PACK: 552.99'/

TYPE OF BACKFILL BELOW WELL: N/A

ELEVATION / DEPTH OF BOREHOLE: 552.99'/18'

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141
DRILLING COMPANY: BOWSER-MORNER
DRILLING RIG: CME-55

BORING No.: 05T03
DATE: 12-2-00
GEOLOGIST: M. G. COCHRAN
DRILLER: D. SINK

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
S-1		1/1	1.8/		V.SOFT	DK BRN	CLAYEY SILT,	ML	LOOKS NATL. MOIST, ROOTS, TOPS	0	0	0	0
	2	1/1	2.0			BRN	TR SAND		LOW PLASTIC SATURATED				
S-2		0/0	1.1/		V SOFT	GREY BRN	CLAYEY SILT	ML	FE STAINED LAMINA IN SPL.	0	0	0	0
	4	1/2	2.0				TR. SAND		DAMP-MOIST				
S-3		2/3	1.6/		SOFT	GREY BRN	CLAYEY SILT	ML	DAMP	0	0	0	0
	6	3/3	2.0				TR SAND		FE. STAINED LAMINA IN SPL.				
S-4		0/1	1.4/		SOFT	GREY BRN	CLAYEY SILT	ML	POSSIBLY SATURATED	0	0	0	0
	8	2/1	2.0				TR. SAND						
S-5		1/2	1.1/		SOFT	GREY BRN	SILT	ML	H2O SHEEN IN SPL CENTER -	0	0	0	0
	10	2/3	2.0						SATURATED FE STAINED:				
S-6		2/3	1.1/		M.STIFF	GREY	SILT, LITTLE	ML	SATURATED	0	0	0	0
	12	3/3	2.0				CLAY						
S-7		1/2	1.4/		SOFT	GREY	SILT LITTLE	ML	SATURATED	0	0	0	0
	14	2/3	2.0				CLAY						
							TD 15'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: DRILLED HOLE W 4¼ ID, 8½ OD HSA.

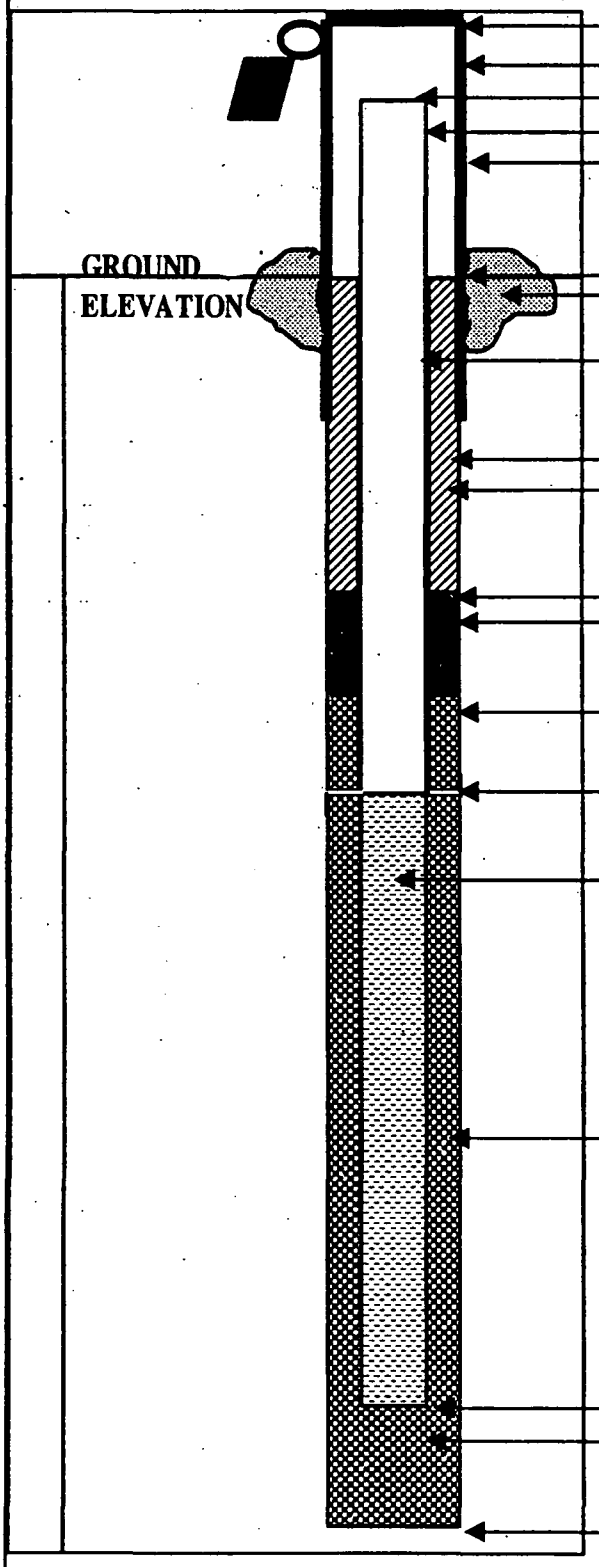
Converted to W ll: Y s ✓ No _____ Well I.D. #: 05T03

Tetra Tech NUS, Inc.

MONITORING WELL

BORING NO.: 05T03

PROJECT:	NSWC CRANE	DRILLING Co.:	Bowser Morner	BORING No.:	05T03
PROJECT No.:	7141 CTO 010	DRILLER:	D. SINK	DATE COMPLETED:	12-2-00
SITE:	SWMU 5	DRILLING METHOD:	HSA	NORTHING:	1326727.857
GEOLOGIST:	MG. COCHRAN	DEV. METHOD:	SURGE & WHALE PUMP	EASTING:	3010091.535



ELEVATION OF TOP OF SURFACE CASING: 554.72'

STICK-UP TOP OF SURFACE CASING: 3.07'

ELEVATION OF TOP OF RISER PIPE: 554.07'

RISER STICK-UP ABOVE GROUND SURFACE: 2.42

I.D. OF SURFACE CASING: 4"

TYPE OF SURFACE CASING: SQUARE STEEL CASING

GROUND ELEVATION: 551.65'

TYPE OF SURFACE SEAL:

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 8 1/2

TYPE OF BACKFILL:

ELEVATION / DEPTH OF SEAL: 549.65' / 2'

TYPE OF SEAL: BENTONITE PELLETS COLLOID ENVIRONMENTAL

ELEVATION / DEPTH TOP OF FILTER PACK: 548.65' / 3'

ELEVATION / DEPTH TOP OF SCREEN: 546.65' / 5'

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: .01" X 10'

I.D. OF SCREEN: 2"

TYPE OF FILTER PACK: GLOBAL #6 15-4'
No. 20-40 STANDARD SIEVE SAND #7 4-3'

ELEVATION / DEPTH BOTTOM OF SCREEN: 536.65' / 15'

ELEVATION / DEPTH BOTTOM OF FILTER PACK: 536.65' /

TYPE OF BACKFILL BELOW WELL: NA

ELEVATION / DEPTH OF BOREHOLE: 536.65' / 15'

APPENDIX A.3

SWMU 9
BORING LOGS AND MONITORING WELL CONSTRUCTION DIAGRAMS

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 22 Oct. 1981
Location Pest Control Area Job No. 441-G150,11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 734.32 Boring No. WES-9-1-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	22Oct	0.0		0.0	0.5	0.0	1.75	3" Shelby Tube	0	ST	Clay (CL): brown, soft, dry, and
1A				0.5	1.0	1.75	1.90		0	Jar	contains organic matter,
				1.0	1.5				5		
				1.5	2.0				150		Sample length: 1.90 ft
			4.5	2.0	2.5				480		
				0.0	5.0	—	—	7"Folding Auger	—		Cleanout
2	22Oct	4.5		5.0	5.5	5.0	7.09	*3"Fixed Piston Sampler	0	ST	Silty sand (SM): brown in color,
2A				5.5	6.0	7.09	7.26		30	Jar	fine-grained sand, dry, and slight
				6.0	6.5				210		cohesion,
				6.5	7.0				320		Sample length: 2.26 ft
				7.0	7.38				410		
			8.63	5.0	10.0	—	—	7"Folding Auger	—		Cleanout: assumed stratum change

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED 3" Fixed Piston Sampler = 3" F.P.S. Sheet 1 of 2 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-9-1-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
3	22Oct	8.63		10.0	10.5	10.0	11.33	3"F.P.S.	0		Sand (SM) and sandstone fragments:
3A				10.5	11.0	11.33	11.51		10		brown to reddish brown, fine grained,
				11.0	11.55				340		friable, and weathered.
			11.0	11.55	12.0				700		
											Sample length: 1.51 ft
		11.0	23.6	0.0	11.49	—	—	5 5/8" Rock	Bit	—	Sandstone with interbedded shale
	23Oct	23.6	24.6	11.49	33.8	—	—	5 5/8" Rock	Bit	—	Coal: black, soft, and water
		24.6	29.5								Shale: grey and medium hard
		29.5	33.8								Limestone: hard and grey
											Installed well 24 Oct. 1981.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 2 Sheets

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 23 Oct. 1981
Location Pest Control Area Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 723.80 Boring No. WES-9-2-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press		CLASSIFICATION AND REMARKS
1	23Oct	0.0		0.0	0.5	0.0	2.28	3" Shelby Tube	0	ST	Sand (SW): brown in color, dry,
1A				0.5	1.0	2.28	2.45		0	Jar	and fine to coarse grained.
				1.0	1.5				0		
				1.5	2.0				70		
			4.5	2.0	2.5				180		Sample length: 2.45 ft
				0.0	5.0			7"Folding Auger			Cleanout:
2	23Oct	4.5		5.0	5.5	5.0	6.16	*3"Fixed Piston Sampler	0	ST	Sandy clay (CL): brown in color,
2A				5.5	6.0	6.16	6.36		0	Jar	slight cohesion, and contains 20%
				6.0	6.5				0		fine to medium-grained sand.
				6.5	7.0				0		
				7.0	7.38				10		Sample length: 1.36 ft
			8.0	5.0	10.0			7"Folding Auger			Cleanout

WES FORM 819 EDITION OF NOV 1971 MAY BE USED

*3" Fixed Piston Sampler = 3" F.P.S.

Sheet 1 of 2 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-9-2-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
3	23Oct			10.0	11.5	10.0	12.08	3" F.P.S.	0	ST	Sandy clay (CL): grey to dark grey
3A				11.5	11.0	12.08	12.33		0	Jar	in color, and wet-water in hole
				11.0	11.5				0		at 10 ft.
				11.5	12.0				0		
				12.0	12.4				0		Sample length: 2.33 ft
			14.0	10.0	14.0	—	—	7"Folding Auger		—	Bedrock starts at 14 ft-sandstone.
		14.0	19.0	14.0	19.0	—	—	5 5/8" Rock Bit		—	Drilled 5 ft into bedrock to make
											room for silt trap.
											Installed well screen and filled
											hole with bentonite to depth of
											14 ft (around silt trap).
											Strong odor was noticed with water
											when drilling.

WES FORM JAN 74 819 EDITION F N V 1971 MAY BE USED

Sheet 2 of 2 Sheets

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 24 Oct. 1981
Location Pest Control Area Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 706.78 Boring No. WES-9-3-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	24Oct	0.0		0.0	0.5	0.0	2.29	3" Shelby Tube	0	ST	Sandy clay (CL): brown in color,
1A				0.5	1.0	2.29	2.44		0	Jar	dry, low plasticity, and contains
				1.0	1.5				20		fine to coarse-grained sand,
				1.5	2.0				180		
				2.0	2.5				400		Sample length: 2.44 ft
			3.72	0.0	5.0	—	—	7"Folding Auger	—	—	Cleanout: assumed stratum change
2	24Oct	3.72		5.0	5.5	6.0	6.40	3"Fixed Piston Sampler	0	ST	Sand (SP) and sandstone: brown to
2A				5.5	6.0	6.40	6.62		0	Jar	white in color, fine-grained, and
				6.0	6.5				30		weathered.
				6.5	7.0				500		
			7.19	7.0	7.19				700		Sample length: 1.62 ft
	24Oct			7.19	12.1	—	—	4 x 5 1/2"Core Barrel			See ENGR FORM 1836 (page 2)
											for log of core.

WES FORM 819 EDITION OF NOV 1971 MAY BE USED Sheet 1 of 2 Sh

Hole No. WES-9-3-81

DRILLING LOG	DIVISION U.S. Navy	INSTALLATION Crane, IN	SHEET 2 OF 2 SHEETS

1. PROJECT NWSC Groundwater Study	10. SIZE AND TYPE OF BIT 4 x 5 1/2" in Diamond
2. LOCATION (Coordinates or Station) Pest Control Area	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY CERES	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500
4. HOLE NO. (As shown on drawing title and file number) WES-9-3-81	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED zero; UNDISTURBED two
5. NAME OF DRILLER C. Drake	14. TOTAL NUMBER CORE BOXES zero
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 24 Oct. 1981; COMPLETED 25 Oct. 1981
7. THICKNESS OF OVERBURDEN 7.19 ft	17. ELEVATION TOP OF HOLE 706.78
8. DEPTH DRILLED INTO ROCK 4.91 ft	18. TOTAL CORE RECOVERY FOR BORING 100% %
9. TOTAL DEPTH OF HOLE 12.1 ft	19. SIGNATURE OF INSPECTOR Joseph B. Dunham

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
699.78	7.0					
698.78	8.0		fractured and black discoloration			
697.78	9.0		Sandstone: white to orange brown in color, very fine-grained, thinly bedded, and contains clay lenses.			MLL - Run 1 Began 10.11 Rec 4.91' End 10.41 Loss - Time 30 min Gain - Drl time 30 min Hyd press loopsi Water press - RPM 50 Drl Action Smooth Water ret Brown to black
696.78	10.0		fractured closed break Sandstone (70%) and interbedded Shale (30%): orange brown, light grey, and dark grey	100%		Cored with air-air bubbled up 25 ft around rig in all directions.
695.78	11.0		Sandstone (50%) and shale (50%) thickness ranges from 1/64-1/4 in, light grey to dark grey, and fine-grained sandstone			
694.78	12.0		Run 1 Installed well screen on 25 Oct. 1981. Did not go deeper because of the possibility of encountering deeper zone of water.			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) | PROJECT | HOLE NO.

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 6 Nov. 1981
Location Pest Control Area Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 721.93 Boring No. WES-9-4-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	6 Nov	0.0		0.0	0.5	0.0	2.15	3"Shelby	20	ST	Sandy clay (CL): brown in color,
1A				0.5	1.0	2.15	2.30		40	Jar	very stiff, dry, and low plasticity.
				1.0	1.5				250		
				1.5	2.0				380		
			3.5	2.0	2.5				500		Sample length: 2.30 ft
				0.0	5.0			7"Folding Auger			Cleanout
2	6 Nov	3.5		5.0	5.5	5.0	6.43	3"Fixed Pis-	0	ST	Clay shale and interbedded sandstone:
2A				5.5	6.0	6.43	6.63	ton Sampler	20	Jar	grey, brown, reddish brown in color,
				6.0	6.5				490		very stiff, hard, and dry.
			6.63	6.5	----				700		Sample length: 1.63 ft
	6 Nov	6.63	15.5	5.0	20.15			5 5/8" Rock	Bit		Sandstone: brown, fine-grained, weathered
		15.5	20.15								Sandstone: light grey, very fine-
											grained, and hard.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 2 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-9-4-81

SAMPLE NUMBER	DATE TAKEN	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	7 Nov			20.15	30.15	—	—	5 5/8" Rock	Bit	—	Water overnight at depth of 19.6 f
		20.15	25.0								Shale: dark grey in color.
		25.0	28.0								Limestone: light grey and hard.
		28.0	28.7								Shale: grey
		28.7	30.15								Limestone: light grey
											Installed well.

WES FORM JAN 74 819 EDITION F N V 1971 MAY BE USED

Sheet 2 of 2 Sheets

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 7 Nov. 1981
Location Pest Control Area Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 715.52 Boring No. WES-9-5-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	7 Nov	0.0		0.0	0.5	0.0	1.54	3" Shelby Tube	0	ST	Clayey sand (SC): brown in color,
1A				0.5	1.0	1.54	1.69		0	Jar	dry, fine-grained, and moderate
				1.0	1.5				40		cohesion.
				1.5	2.0				480		
				2.0	2.5				640		Sample length: 1.69 ft
				0.0	5.0	—	—	7"Folding Auger	—	—	Cleanout
2	7 Nov			5.0	5.5	5.0	6.17	3"Fixed Pis-	0	ST	Clayey sand (SC) and weathered sandstone:
2A				5.5	6.0	6.17	6.32	ton Sampler	20	Jar	brown, fine-grained, brittle, and
			6.33	6.0	6.5				730		friable.
											Sample length: 1.32 ft
	7 Nov	6.33	9.0	6.33	23.5	—	—	5 5/8" Rock Bit	—	—	Sandstone: brown, fine-grained,
											and weathered.
		9.0	12.0								Sandstone: light brown
		12.0	13.5		Water	in bo	ttom o	f h le			Sandstone, light grey to dark brown

WES FORM 74 819 EDITION F N V 1971 MAY BE USED

Sheet 1 of 2 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-9-5-81

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
		13.5	17.5								Sandstone: light brown and fine-
											grained.
		17.5	18.5								Sandstone: light grey
		18.5	23.5								Sandstone: darker in color, shale
											content increases.
											Installed well.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 2 Sheets

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 7 Nov. 1981
Location Pest Control Area Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 719.65 Boring No. WES-9-6-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	7 Nov	0.0		0.0	2.57	0.0	2.37	3" Shelby Tube		ST	Sandy silt (ML): brown, soft, and
1A						2.37	2.57			Jar	little cohesion.
											Sample length: 2.57 ft
			4.5	0.0	4.5	—	—	7" Solid Auger		—	Cleanout
	7 Nov	4.5	14.3	4.5	11.0	—	—	5 5/8" Rock Bit		—	Sandstone: brown with slight moisture
											at 10.2 ft
	7 Nov	14.3	15.4	11.0	21.0	—	—	5 5/8" Rock Bit		—	Coal: black, soft, and wet
		15.4	18.1								Limestone: light grey and moderately
											hard.
		18.1	21.0								Sandstone: brown and medium hard
											Installed well.

WES FORM JAN 74 818 EDITION F NOV 1971 MAY BE USED

Sheet 1 of 1 Sheets

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 18 Nov. 1981
Location Pest Control Area Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 735.32 Boring No. WES-9-7-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	18Nov	0.0		0.0	2.5	0.0	1.58	3"Shelby Tube		ST	Clay (CL): brown in color, dry,
1A						1.58	1.78			Jar	moderately stiff, and low plasticity.
											Sample length: 1.78 ft
			4.3	0.0	5.0			7" Solid Auger			Cleanout
2	18Nov	4.3	7.5	5.0	7.5	5.0	7.10	3"Fixed Piston Sampler		ST	Silty sand (SM): brown in color,
2A						7.10	7.35			Jar	dry, moderate cohesion, and fine-
											grained.
											Sample length: 2.35 ft
	18Nov	7.5	9.0	5.0	34.2			5 5/8" Rock Bit			Clay and sandstone gravel
		9.0	13.5								Shale: soft and brown
		13.5	19.9								Shale: soft and grey
		19.9	23.2								Sandstone: brown, fine-grained,

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 2 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-9-7-81

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
											and water beginning at 23.2 ft
		23.2	25.5								Sandstone: brown, fine-grained,
											and medium hard.
		25.5	33.2								Shale, grey and hard
		33.2	34.2								Coal, black and soft
											Blew water from hole and installed
											well.

WES FORM 819 EDITION OF N V 1971 MAY BE USED

Sheet 2 of 2 Sheets

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 18 Nov. 1981
Location Pest Control Area Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 720.19 Boring No. WES-9-8-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont.	CLASSIFICATION AND REMARKS
1	18Nov	0.0		0.0	0.5	0.0	1.39	3" Shelby Tube	0	ST	Clay (CL): brown in color, organic
1A				0.5	1.0	1.39	1.59		10	Jar	matter, very stiff, dry, and low
				1.0	1.5				30		plasticity.
				1.5	2.0				200		
				2.0	2.5				420		Sample length: 1.59 ft
				0.0	5.0	—	—	7"Folding Auger		—	Cleanout
2	18Nov		7.0	5.0	5.5	5.0	6.38	3"Fixed Piston Sampler	0	ST	Sandstone: brown to reddish brown,
2A				5.5	6.0	6.38	6.53		10	Jar	weathered, fine-grained, slightly
				6.0	6.5				220		friable, and dry.
				6.5	7.0				640		
				7.0	7.5				730		Sample length: 1.53 ft
		7.0	18.6	5.0	10.0	—	—	7"Folding Auger		—	Sandstone: brown, fine-grained,
											weathered, and contains clay lenses.
		18.6	23.5	10.0	25.0	—	—	4 x 5-1/2"Core Barrel			Shale and sandstone: shale increases

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 4 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-9-8-81

SAMPLE NUMBER	DATE TAKEN	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	18Nov			0.0	25.1	—	—	6-3/4" Rock	Bit		with depth.
		23.5	25.1								Shale: black, soft, and uniform.
											For core log see page three.

WES FORM JAN 74 819 EDITION F NOV 1971 MAY BE USED

Sheet 2 of 4 Sheets

Hole No. WES-9-8-81

DRILLING LOG	DIVISION U.S. Navy	INSTALLATION Crane, IN	SHEET 3 OF 4 SHEETS

1. PROJECT NESC Groundwater Study	10. SIZE AND TYPE OF BIT - X 5 1/2" Diamond bit
2. LOCATION (Coordinates or Station) Pest Control Area	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY CEWES	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500
4. HOLE NO. (As shown on drawing title and file number) WES-9-81	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED zero; UNDISTURBED two
5. NAME OF DRILLER C. Drake	14. TOTAL NUMBER CORE BOXES zero
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 18 Nov. 1981; COMPLETED 18 Nov. 1981
7. THICKNESS OF OVERBURDEN 7.0 ft	17. ELEVATION TOP OF HOLE 720.19
8. DEPTH DRILLED INTO ROCK 18.1 ft	18. TOTAL CORE RECOVERY FOR BORING 100%
9. TOTAL DEPTH OF HOLE 25.1 ft	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
710.19	10.0		Sandstone: brown in color with interbedded clay lenses.			
709.19	11.0					
708.19	12.0		Sandstone (70%) and clay lenses (30%): light brown to brown, fine-grained quartz sand, and very weathered. Clay is brown, soft, and in lenses which are irregular in shape. Lenses are nearly horizontal in attitude and range in shape from angular to rounded with average thickness of 1 in.			WL - Run 1 Began 10:54 Rec 50' End 11:13 Loss - Time 19 min Gain - Drl time 19 min Hyd press 100psi Water press - RPM 70-100 Drl Action Smooth Water wet Brown Remarks Reamed hole with 6-3/4 in bit.
707.19	13.0					
706.19	14.0					Water at 14.89 ft
			Sandstone: brown and clean			
705.19	15.0		Clay shale: brown	100%	-	
704.19	16.0		Run 1 fractured sandstone and clay shale lenses.			
703.19	17.0		80% light grey and orange brown sandstone and 20% brown clay shale lenses			WL - Run 2 Began 12:09 Rec 50' End 12:15 Loss - Time 6 min Gain - Drl time 6 min Hyd press 100psi Water press - RPM 50-100 Drl Action Smooth Water wet Brown-dark grey Remarks Reamed hole with 6-3/4 in bit.
			closed breaks			
702.19	18.0		dark brown shale from 8.3 to 18.6 ft			
701.19	19.0		50% Sandstone: brown-dark grey 50% Shale: grey to dark grey alternating lamina and thin beds- 1/16 to 1/4 in.			
700.19	20.0					

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Hole No. [illegible]-9-R-R1

DRILLING LOG	DIVISION	INSTALLATION	SHEET 4 OF 4 SHEETS

1. PROJECT	10. SIZE AND TYPE OF BIT
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
3. DRILLING AGENCY	12. MANUFACTURER'S DESIGNATION OF DRILL
4. HOLE NO. (As shown on drawing title and file number)	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
5. NAME OF DRILLER	14. TOTAL NUMBER CORE BOXES
	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	16. DATE HOLE — STARTED — COMPLETED
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
700.19	20.0					
699.19	21.0		fractured			
			85% Dark grey shale			
698.19	22.0		15% Grey sandstone			AL - Run 3 Began 1:06 Rec 5.1' End 1:22 Loss - Time 16 min. Gain - Drl time 16 min Hyd press 100psi Water press - RPM 100 Drl Action Smooth Water rel Black-dark grey Reamed hole with 6-3/4 in bit.
697.19	23.0		closed			
696.19	24.0		closed breaks			
			Shale: black, soft, and uniform			
695.19	25.0		Run 3	100%	-	

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PROJECT | HOLE NO.

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 25 Nov. 1981
Location Pest Control Area Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 723.21 Boring No. WES-9-9-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
1	25Nov	0.0		0.0	0.5	0.0	1.75	3"Shelby Tube	0	ST	Sandy clay (CL): brown in color,
1A				0.5	1.0	1.75	1.90		0	Jar	soft, low plasticity, dry, and
				1.0	1.5				0		contains fragments of brown sandstone.
				1.5	2.0				0		
				2.0	2.5				175		Sample length: 1.90 ft
				0.0	5.0			7"Folding Auger			Cleanout
2	25Nov		6.8	5.0	5.5	5.0	6.28	3"Fixed Piston Sampler	0	ST	Clay (CL): dark brown to black,
2A		6.8		5.5	6.0	6.28	6.48		0	Jar	moist, soft, and low plasticity.
				6.0	6.5				0		
				6.5	7.0				0		Sample length: 1.48 ft
				7.0	7.39				0		
				5.0	10.0			7"Folding Auger			Cleanout: water at 7 ft and more
											water at 9 ft.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 2 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-9-9-81

SAMPLE NUMBER	DATE TAKEN	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont	CLASSIFICATION AND REMARKS
				10.0	10.5	10.0	10.65	3"Fixed Pis-	10	ST	Sandstone: brown to light grey
			11.0	10.5	11.0	10.65	10.8	ton Sampler	700	Jar	in color, weathered, friable, and
											very fine-grained.
											Sample length: 0.8 ft
				10.0	11.0	—	—	7"Folding Auger	—		Cleanout
		11.0	13.5	11.0	13.5	—	—	5 5/8" Rock Bit	—		Sandstone: brown, fine-grained,
											soft, and weathered.
											Installed well.

WES FORM JAN 74 819 EDITION OF N V 1971 MAY BE USED

Sheet 2 of 2 Sheets

WORKING DRAFT

BORING LOG
FIELD DATA

Project NWSC Ground-Water Study Site Crane, IN Date 18 Aug 1983
Location Pest Control Area Job No. 441-G150.13GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 727.48 Boring No. WES-9-10-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	18 Aug	0.0	11.6	0.0	11.6			6"Folding Auger			Clay(CL): brown, stiff, slightly damp, thinly bedded, sandy-less than 5% fine to coarse-grained.
	18 Aug	11.6	13.8	11.6	27.0			6"Rock Bit			Sandstone: brown, very fine-grained, soft, weathered.
		13.8	16.0								Sandstone and clay: brown, soft weathered, thinly bedded, very fine-grained.
		16.0	17.3								Siltstone: brown, soft, wet at 16 ft.
		17.3	19.2								Sandstone: brown, soft, very fine-grained.
		19.2	25.8								Shale: dark grey, soft, thinly bedded with sandstone lenses.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 2 Sheets

WORKING DRAFT

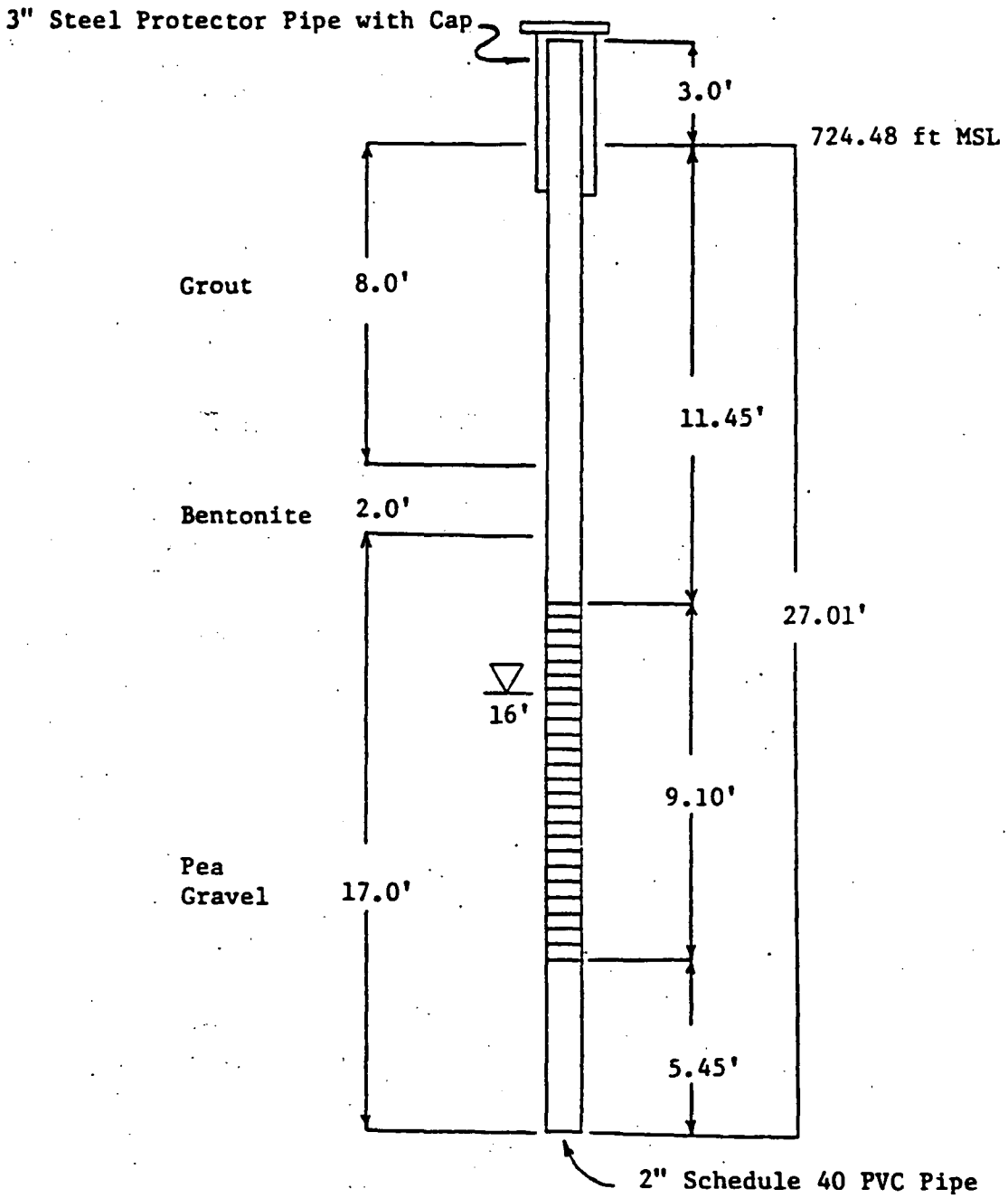
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-9-10-83

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
		25.8	27.0								Sandstone: brown, very fine-grained,
											soft.
	18 Aug										Installed monitoring well.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of ___ Sheets

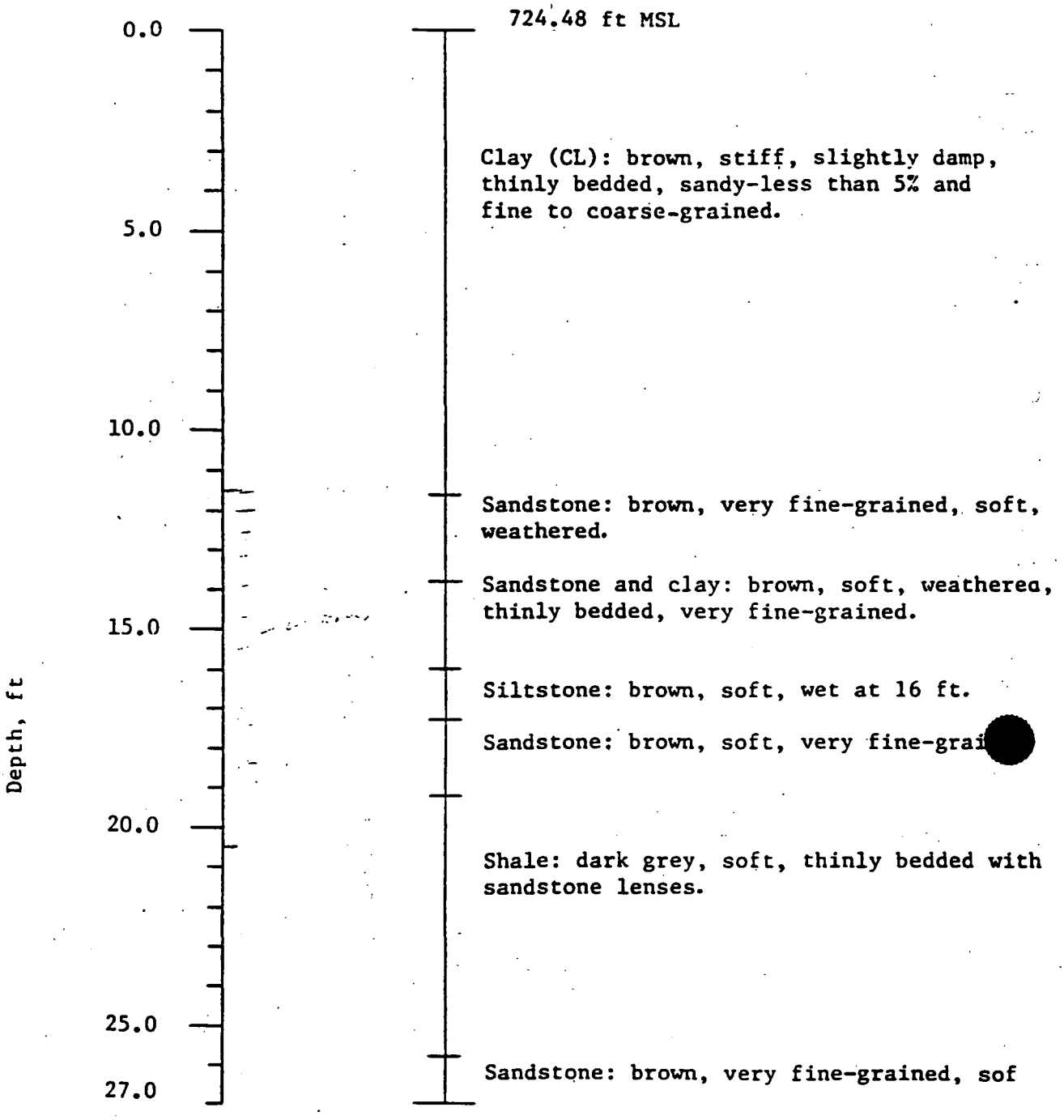


Water Depth at Time of Drilling

Well Screen

NWSC, Crane, Indiana
Pest Control Area
Well Completion
Boring Number: WES-9-10-83

WORKING DRAFT



NWSC, Crane, Indiana
Pest Control Area
Lithology
Boring Number: WES-9-10-83

WORKING DRAFT

WORKING DRAFT

BORING LOG
FIELD DATA

Project NWSC Ground-Water Study Site Crane, IN Date 18 Aug 1983
Location Pest Control Area Job No. 441-G150.13GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 715.41 Boring No. WES-9-11-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	18 Aug	0.0	8.6	0.0	8.6			5"Folding Auger			Sandy clay(CL): brown, soft to stiff, thinly bedded, sand content ranges from 20 to 30% and very fine-grained, dry.
	18 Aug			8.6	10.0			6"Rock Bit			Sandstone and Clay: brown, very fine-grained sandstone, weathered, soft,
	19 Aug	8.6	15.0	10.0	25.0			6"Rock Bit			damp-water overnight at 9.1 ft.
		15.0	18.7								Shale and limestone: light and dark grey, soft to very hard, thinly bedded.
		18.7	21.0								Sandstone: brown and grey, very fine-grained, soft.

WES FORM JAN 74 819 EDITION OF N V 1971 MAY BE USED

Sheet 1 of 2 Sheets

WORKING DRAFT

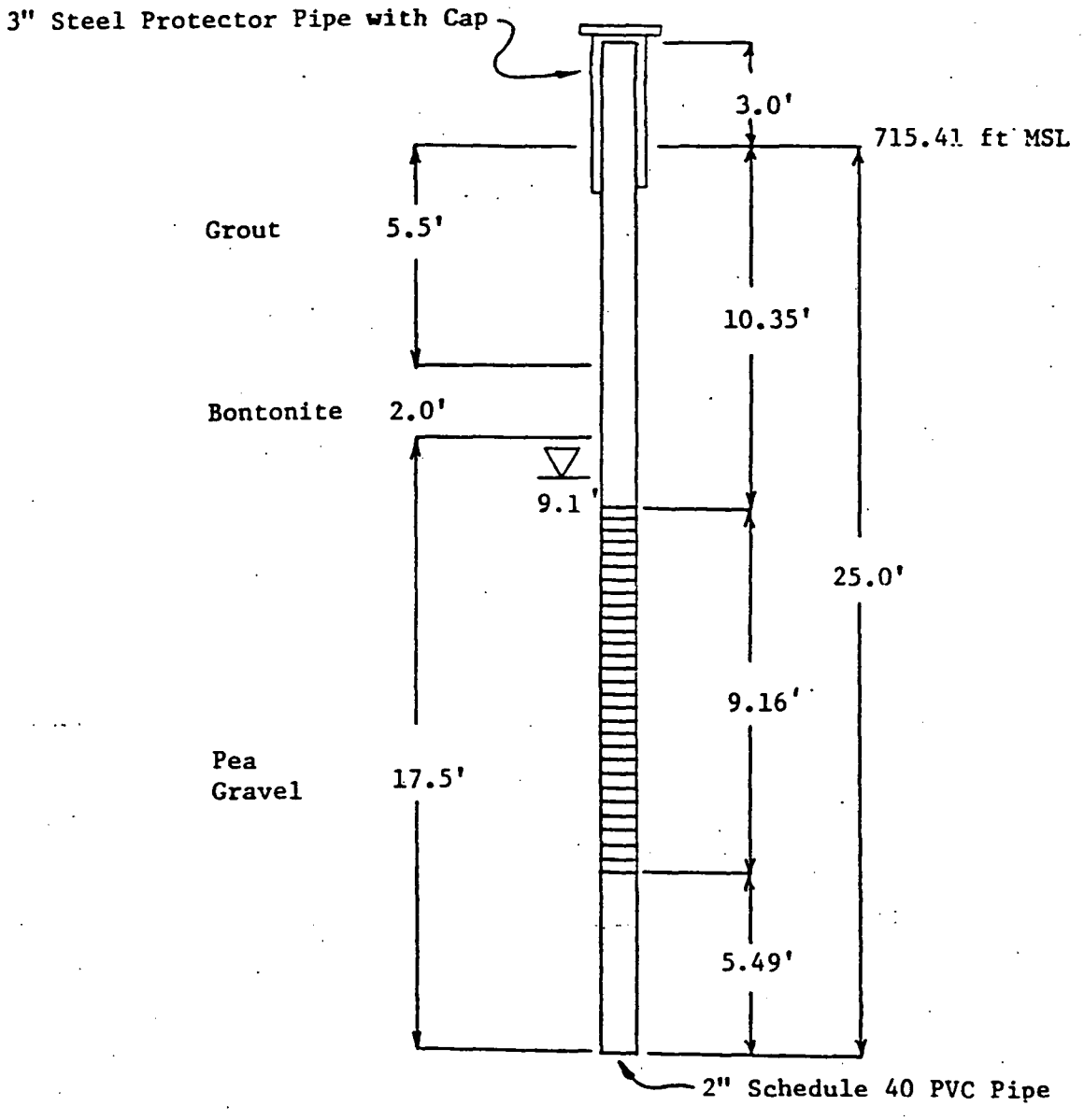
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-9-11-83

SAMPLE NUMBER	DATE TAKEN	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		21.0	25.0								Sandstone, shale, lignite: light to dark grey, black, very thinly bedded, soft.
	19 Aug										Installed monitoring well.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 2 Sheets

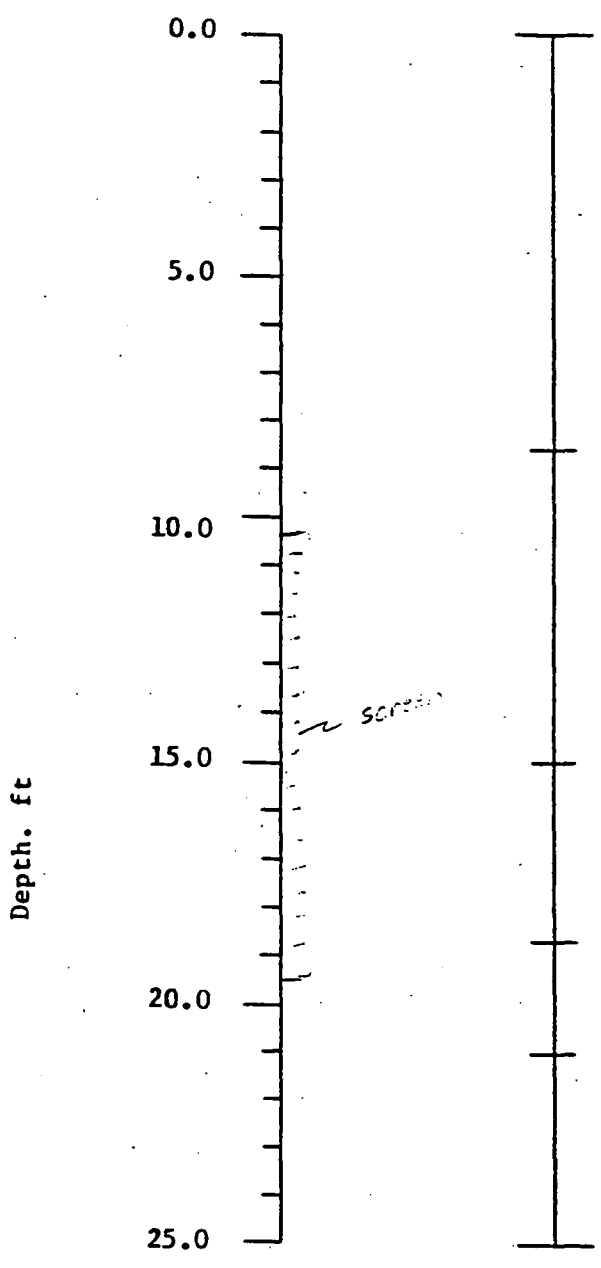


Water Depth at Time of Drilling

Well Screen

NWSC, Crane, Indiana
Pest Control Area
Well Completion
Boring Number: WES-9-11-83

WORKING DRAFT



715.41 ft MSL

Sandy clay (CL): soft to stiff, thinly, bedded, sand content ranges from 20 to 30% and very fine-grained, dry.

Sandstone and clay: brown, very fine-grained sandstone, thinly bedded with clay, weathered, soft, damp wet at 9.1 ft.

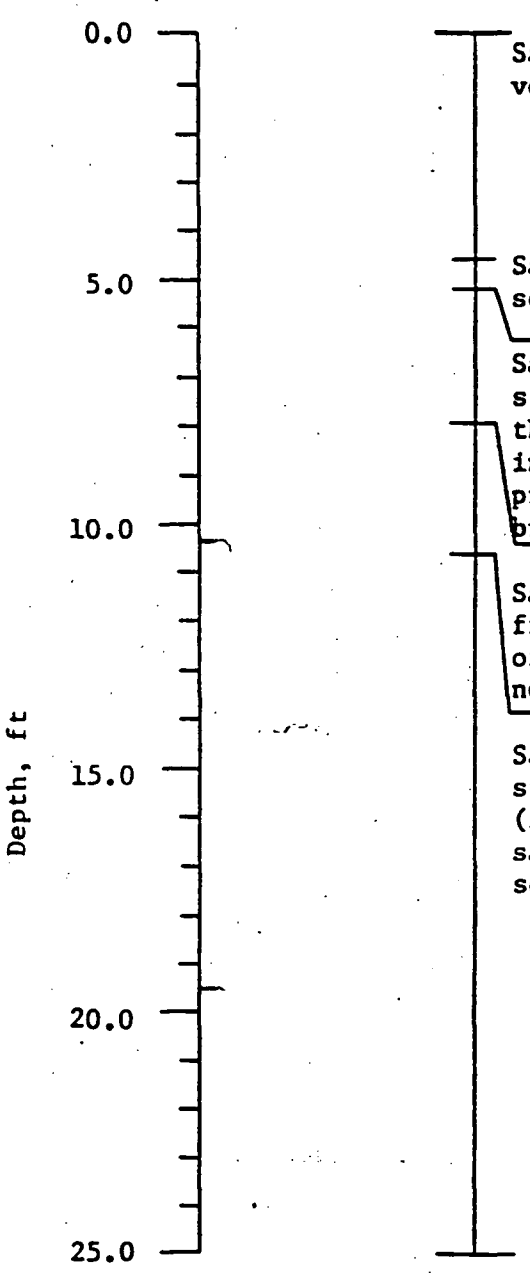
Shale and limestone: light and dark grey, thinly bedded, soft to hard.

Sandstone: brown and grey, very fine-grained, soft.

Sandstone, shale and lignite: light to dark grey, black, soft, very thinly bedded.

NWSC, Crane, Indiana
Pest Control Area
Lithology
Boring Number: WES-9-11-83

WORKING DRAFT



694.93 ft MSL

Sandy clay (CL): brown, soft to stiff, dry, very fine-grained sand.

Sandstone, brown, very fine-grained, weathered, soft.

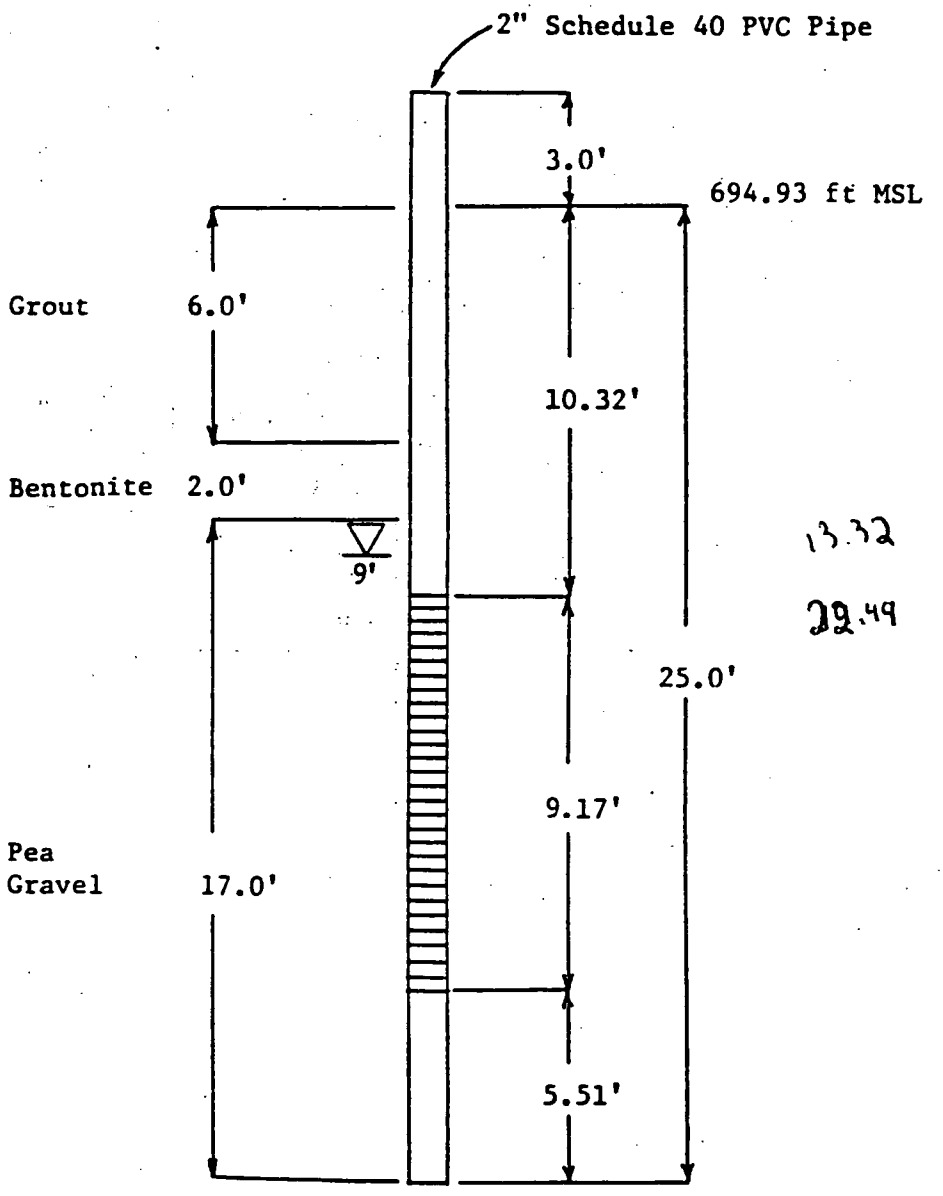
Sandstone and shale: brown to light grey sandstone (50%) and clark grey to black shale (50%) thinly bedded (1/4 to 1/2" max) and horizontal in atlitnde. Sandstone is very fine-grained predorninatly gqartz, core is weathered and breaks easily.

Sandstone: light grey, massive uniform, very fine-grained, quartz sandstone, contains trace of lignit (1/2% ranging from 1/6-1/8" thickness).

Sandstone and shale: light to dark grey sandstone (50 to 75%) and dark grey to black shale (25 - 50%), very thinly bedded, horizontal, sandstone is very fine-grained and poorly sorted.

NWSC, Crane, Indiana
Pest Control Area
Lithology
Boring Number: WES-9-12-83

WORKING DRAFT



Water Depth at Time of Drilling

Well Screen

NWSC, Crane, Indiana
Pest Control Area
Well Completion
Boring Number: WES-9-12-83

WORKING DRAFT

Hole No. [illegible]

DRILLING LOG

DIVISION	
INSTALLATION	
SHEET [illegible] OF 4 SHEETS	
1. PROJECT	
2. LOCATION (Coordinates or Station)	
3. DRILLING AGENCY	
4. HOLE NO. (As shown on drawing title and file number)	
5. NAME OF DRILLER	
6. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	
7. THICKNESS OF OVERBURDEN	
8. DEPTH DRILLED INTO ROCK	
9. TOTAL DEPTH OF HOLE	
10. SIZE AND TYPE OF BIT	
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
12. MANUFACTURER'S DESIGNATION OF DRILL	
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED / UNDISTURBED
14. TOTAL NUMBER CORE BOXES	
15. ELEVATION GROUND WATER	
16. DATE HOLE	STARTED / COMPLETED
17. ELEVATION TOP OF HOLE	
18. TOTAL CORE RECOVERY FOR BORING %	
19. SIGNATURE OF INSPECTOR	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
670.93	24		Sandstone(75%) and shale (25%): same as above			AL Run 5 Began 8:59 Rec 2.1' End 9:05 Loss -- Time 6 min Gain -- Drl time 6 min Hyd press 200 PSI Water press -- RPM 100+ Drl Action Smooth Water ret Grey Remarks Drilled with water
669.93	25		Run 5 RQD=100%	100%		

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PROJECT | HOLE NO.

WORKING DRAFT

Hole No.

DRILLING LOG	DIVISION	INSTALLATION	SHEET 3 OF 4 SHEETS

1. PROJECT	10. SIZE AND TYPE OF BIT
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
3. DRILLING AGENCY	12. MANUFACTURER'S DESIGNATION OF DRILL
4. HOLE NO. (As shown on drawing title and file number)	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
5. NAME OF DRILLER	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
7. THICKNESS OF OVERBURDEN	16. DATE HOLE — STARTED — COMPLETED
8. DEPTH DRILLED INTO ROCK	17. ELEVATION TOP OF HOLE
9. TOTAL DEPTH OF HOLE	18. TOTAL CORE RECOVERY FOR BORING %
	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
680.93	14					
679.93	15		Shale and sandstone: same as above- breaks occur in shale			NL Run 3 Began 2:13 Rec 4.3' End 2:27 Loss -- Time 14 min Gain -- Drl time 14 min Hyd press 200 PSI Water press -- RPM 100+ Drl Action Smooth Water ret Grey Remarks
678.93	16					
677.93	17					
676.93	18		Run 3 RQD=58.1%	100%	--	
675.93	19		Shale (40%) and sandstone (60%): same as above			NL Run 4 Began 3:27 Rec 4.7' End 3:58 Loss -- Time 31 min Gain -- Drl time 31 min Hyd press 200 PSI Water press -- RPM 100+ Drl Action Smooth Water ret Grey Remarks
674.93	20					
673.93	21					
672.93	22		machine fractured			
			Run 4 RQD=100%	100%	--	
671.93	23		Sandstone (75%) and shale (25%): same as above			20 August 1983 Water level overnight at 3.35 ft. - Reamed hole to 20 ft with rock bit and water
670.93	24					

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WORKING DRAFT

Hole No. [illegible]

DRILLING LOG	DIVISION US Navy	INSTALLATION Crane, IN	SHEET 2 OF 4 SHEETS

1. PROJECT IWSC Ground-Water Study	10. SIZE AND TYPE OF BIT 4 5/8-1/2" diamond
2. LOCATION (Coordinates or Station) Test Control Area	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY CEWES	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500
4. HOLE NO. (As shown on drawing title and file number) WES-9-12-83	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED Zero; UNDISTURBED Zero
5. NAME OF DRILLER C. Drake WES-9-12-83	14. TOTAL NUMBER CORE BOXES Zero
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER --
	16. DATE HOLE: STARTED 19 August 83; COMPLETED 20 August 83
7. THICKNESS OF OVERBURDEN 4.6 ft	17. ELEVATION TOP OF HOLE 694.93 ft MSL
8. DEPTH DRILLED INTO ROCK 20.4 ft	18. TOTAL CORE RECOVERY FOR BORING 100%
9. TOTAL DEPTH OF HOLE 25.0 ft	19. SIGNATURE OF INSPECTOR [illegible]

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
690.93	4		See boring log page 1 for details			
669.93	5		-fractured Sandstone: brown, very fine-grained, weathered, soft			
688.93	6		Sandstone and shale: brown to light grey sandstone(50%) and dark grey to black shale (50%), thinly bedded(1/4-1/2"max) and horizontal in attitude, sandstone is very fine-grained and predominantly quartz. Core is weathered and breaks easily			AL Run 1 Began 11:32 Rec 5.0' End 11:50 Loss -- Time 18 min Gain -- Drl time 18 min Hyd press 200 PSI Water press -- RPM 100+ Drl Action Smooth Water ret Brown Remarks
687.93	7					
686.93	8		HB - Machine Break Sandstone: light grey, massive, uniform, very fine-grained quartz sandstone, contains trace of lignite (1/2% ranging 1/16"to1/8" in thickness).			
685.93	9		-MB - Machine Break Run 1 RQD=80.0%	100%		
684.93	10		Sandstone: see above			
683.93	11					AL -- Run 2 Began 1:22 Rec 4.35' End 1:37 Loss -- Time 15 min Gain -- Drl time 15 min Hyd press 200 PSI Water press -- RPM 100+ Drl Action Smooth Water ret Grey Remarks
682.93	12		MB Sandstone and shale: light to dark grey sandstone and dark grey to black shale, very thinly bedded(1/16 to 1/4"thickness) horizontal in altitude, approximately equal proportion of shale and sandstone, breaks occur in shale seams, slight weathering and oxidation.			
681.93	13					
680.93	14		Run 2 RQD=90.8%	100%	--	

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WORKING DRAFT

WORKING DRAFT

BORING LOG
FIELD DATA

Project NWSC Ground-Water Study Site Crane, IN Date 19 Aug 83
Location Pest Control Area Job No. 441-G150.13GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 694.93 Boring No. WLS-9-12-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	19 Aug	0.0	4.6	0.0	4.6			5"Folding Auger			Sandy clay(CL): brown,soft to stiff,
											dry, very fine-grained sand.
	19 Aug			4.6	9.6	4.6	9.6	4x5-1/2"CoreBarrel			Run 1-See boring log for details.
				4.6	9.6			6-3/4"RockBit			Cleanout
	19 Aug			9.6	15.95	9.6	13.95	4x5-1/2"CoreBarrel			Run 2
				9.6	13.95			6-3/4"RockBit			Cleanout
	19 Aug			13.95	18.25	13.95	18.25	4x5-1/2"CoreBarrel			Run 3
				13.95	18.25			6-3/4"RockBit			Cleanout
	19 Aug			18.25	22.90	18.25	22.90	4x5-1/2"CoreBarrel			Run 4
	20 Aug			18.25	20.0			6-3/4"RockBit			Cleanout
	20 Aug			22.90	25.0			4x5-1/2"CoreBarrel			Run 5
	20 Aug										Installed monitoring well after
											blowing water from boring.

ES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

WORKING DRAFT

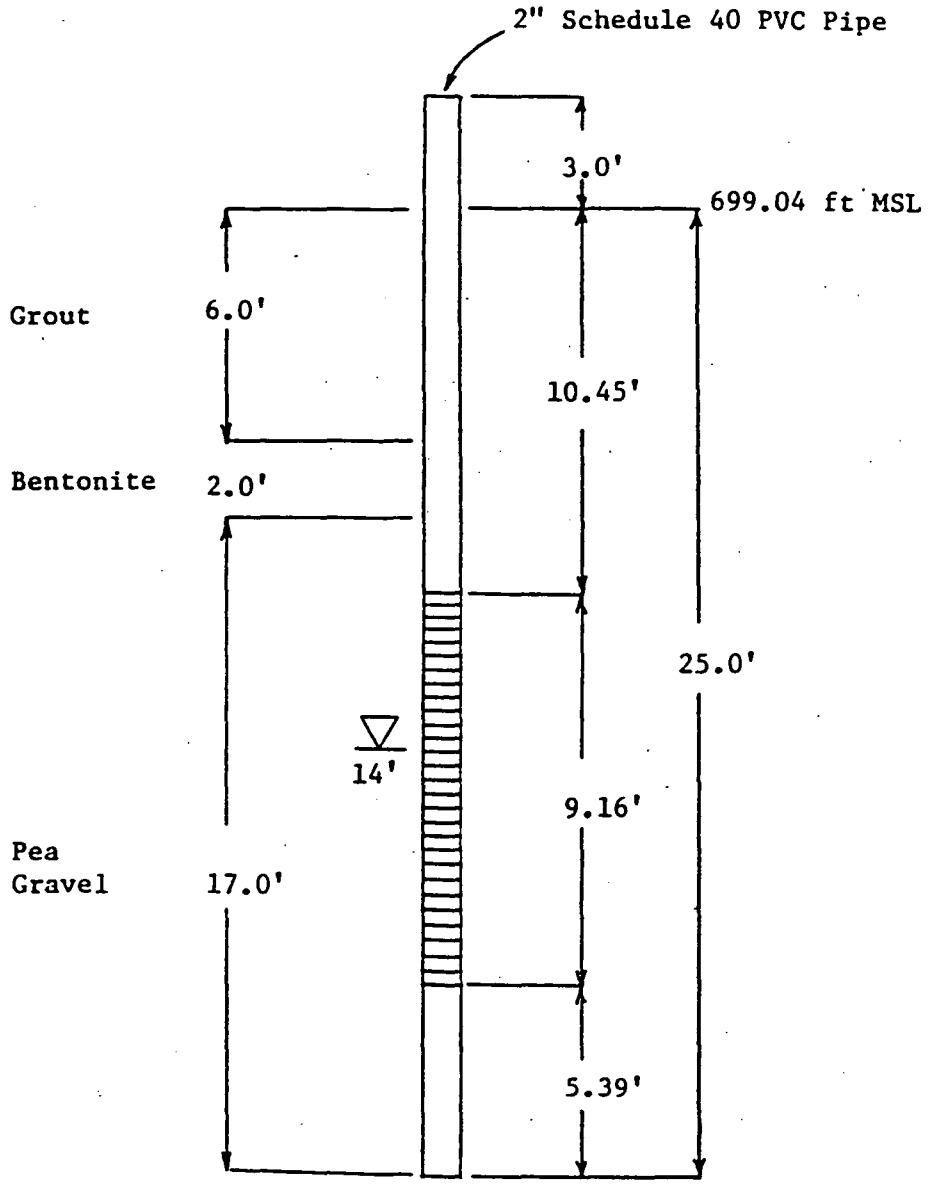
BORING LOG
FIELD DATA

Project NWSC Ground-Water Study Site Crane, IN Date 20 Aug 1983
Location Pest Control Area Job No. 441-G150.13GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 699.04 Boring No. WES-9-13-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	20 Aug	0.0	2.3	0.0	2.3			5"Folding Auger			Sandy Clay(CL): brown, soft to stiff, dry, organic matter (roots).
		2.3	3.8	2.3	25.0			6"Rock Bit			Sandstone: brown, very fine-grained, weathered.
		3.8	6.0								Siltstone: light grey, soft.
		6.0	25.0								Sandstone and shale: light to dark grey, very thinly bedded, soft, approximately equal proportions of shale and sandstone, water at 14 ft.
	20 Aug										Installed monitoring well.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 1 Sheets



Water Depth at Time of Drilling

Well Screen

NWSC, Crane, Indiana
Pest Control Area
Well Completion
Boring Number: WES-9-13-

WORKING DRAFT

WORKING DRAFT

BORING LOG
FIELD DATA

Project NWSC Ground-Water Study Site Crane, IN Date 22 Aug 1983
Location Pest Control Area Job No. 441-G150.13GR21/22
Drill Rig Failing Inspector J. Dunbar Operator C. Drake Surface El 693.21 Boring No. WES-9-14A-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	22 Aug	0.0	2.0	0.0	2.0			5"Folding Auger			Sandy clay(CL): brown, soft to stiff, dry, organic matter (roots), very fine-grained sand.
	22 Aug	2.0	3.1	2.0	45.1			6"Rock Bit			Sandstone and clay: brown, soft, thinly bedded, weathered.
		3.1	6.7								Sandstone: light grey, hard, very fine-grained.
		6.7	8.4								Shale: dark grey, soft, uniform.
		8.4	45.1								Sandstone and shale: light grey sandstone and dark grey to black shale, soft, very fine-grained sandstone, thinly bedded.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 2 Sheets

WORKING DRAFT

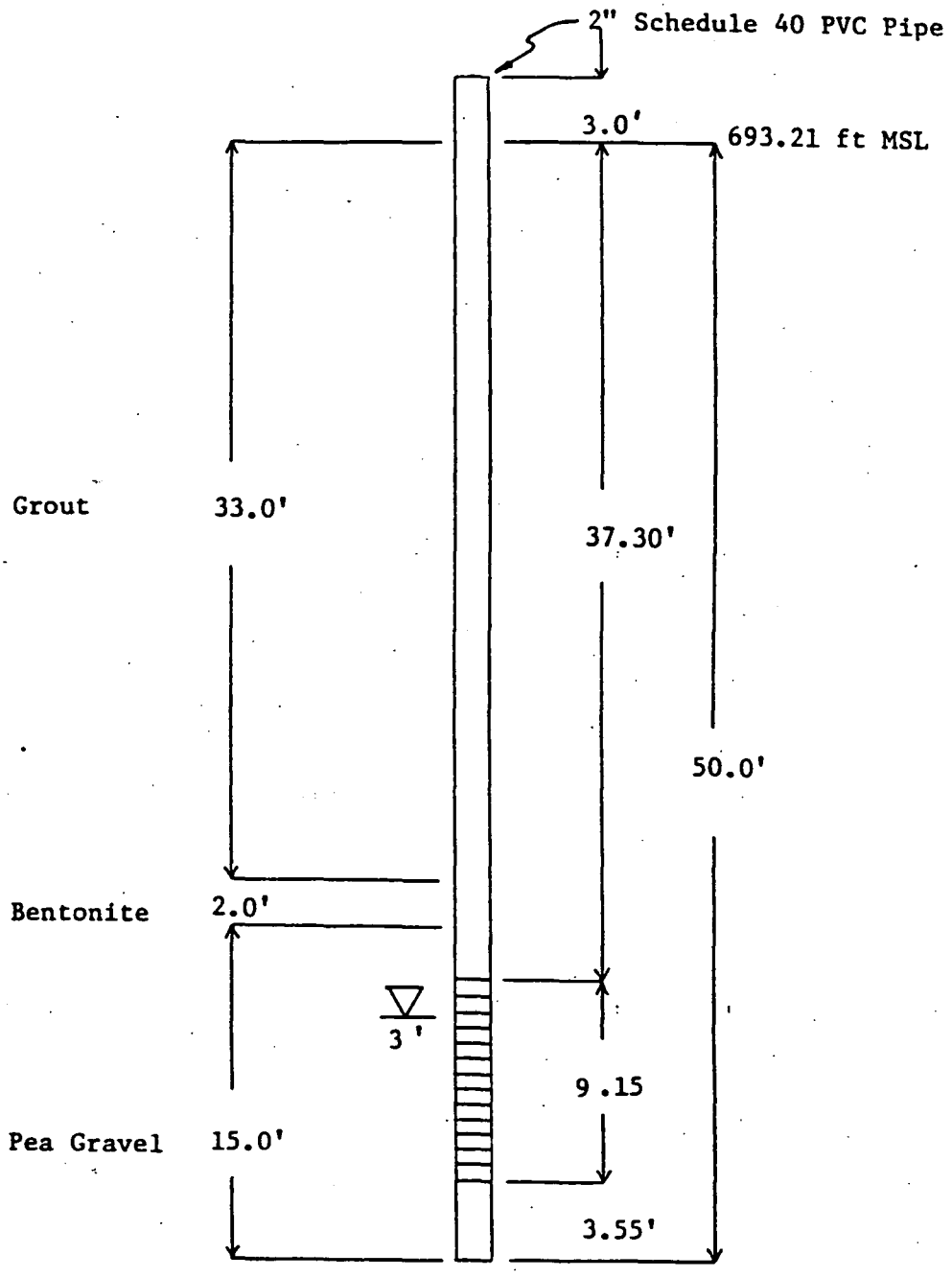
BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-9-14A-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
											Examined hole for water at 10, 15, 18, 21, 24, 26, 30, 35, 40, and 45 ft. Will leave boring open for several days to see if water appears.
	27 Sep			45.1	50.0			6"Rock Bit			Sandstone(?): no cuttings, drilled with water.
	28 Sep										Installed well.

WES FORM JAN 74 819 EDITION F NOV 1971 MAY BE USED

Sheet 2 of 2 Sheets



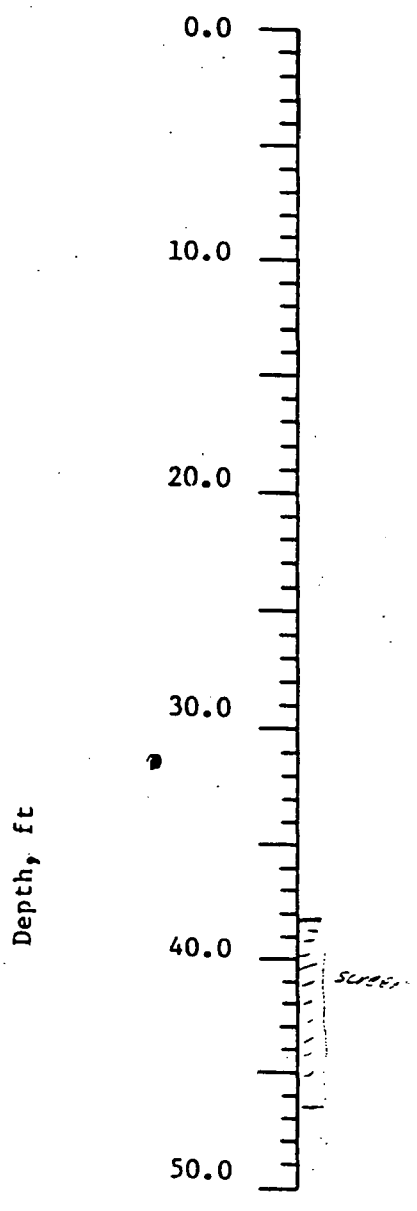
Water Depth at Time of Drilling

Well Screen

NWSC, Crane, Indiana
Pest Control Area
Well Completion
Boring Number: WES-9-14-

14 A or B?
Assume A

WORKING DRAFT



693.21 ft MSL

Sandy clay (CL): brown, soft to stiff, dry organic matter (roots), very fine-grained sand.

Sandstone and clay: brown, soft, thinly bedded, weathered.

Sandstone: light grey, hard, very fine-grained.

Shale: dark grey, soft, uniform.

Sandstone and shale: light grey sandstone and dark grey to black shale, soft, very fine-grained sandstone, thinly bedded.

Sandstone (?): no cuttings.

NWSC, Crane, Indiana
Pest Control Area
Lithology
Boring Number: WES-9-14A-83

WORKING DRAFT

1. PROJECT: NWSC Groundwater Study

2. LOCATION (Coordinates or Station): Site 9 Post Control-Waste Storage Tank

3. DRILLING AGENCY: WES

4. HOLE NO. (As shown on drawing title and file number): WES-9-WTIP-B6

5. NAME OF DRILLER: Dan Taylor

6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.

7. THICKNESS OF OVERBURDEN: 16.5

8. DEPTH DRILLED INTO ROCK:

9. TOTAL DEPTH OF HOLE: 22.2'

11. DATUM FOR ELEVATION SHOWN (TBM or MSL):

12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500

13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED | UNDISTURBED

14. TOTAL NUMBER CORE BOXES:

15. ELEVATION GROUND WATER:

16. DATE HOLE: STARTED 7/18/86 | COMPLETED 7/19/86

17. ELEVATION TOP OF HOLE:

18. TOTAL CORE RECOVERY FOR BORING:

19. SIGNATURE OF INSPECTOR: Geologist Richard W. Hunt

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		Silt (ML), l-d Tan, v firm, sl. moist, occ Ls frags (Fill)		Jar #1	(0.0 to 9.1) Advancing well and sampling with a 5" Failing Auger.
	1					The equipment used for drilling was steam cleaned prior to use.
	2					
	3		(3.0-10.6') Silty Clay, clayey silt, l Tan-Br, v firm, sl. moist, becomes sdy w/depth, rootlets, occ. wea ss frags, (Residual soil) (ML-CL)			
	4				Jar #2	
	5					
	6					
	7					
	8					
	9				Jar #3	(9.1 to 10.6') Samp w/o 2" dia. sp. spoon drive Tu.
	10					

ENG F RM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT | HOLE

1. PROJECT	10. SIZE AND TYPE OF BIT
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
3. DRILLING AGENCY	12. MANUFACTURER'S DESIGNATION OF DRILL
4. HOLE NO. (As shown on drawing title and file number) WES-9-WT IP-86	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED: — UNDISTURBED:
5. NAME OF DRILLER	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
7. THICKNESS OF OVERBURDEN	16. DATE HOLE — STARTED — COMPL.
8. DEPTH DRILLED INTO ROCK	17. ELEVATION TOP OF HOLE
9. TOTAL DEPTH OF HOLE	18. TOTAL CORE RECOVERY FOR BORING
	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10		ML-CL (cont.)		Jar #3 (cont.)	
	11		Silt (ML), lBr, mass, v firm, sli moist-dry			(10.6 to 15.4) Advancing well and sampling w/5" dia. folding finger
	12		Silt (ML), lBr, w/ vf sand pkts + thin lens, lin stn along bd, v firm, sli moist-dry			
	13					
	14					
	15		Silty clay (CL), yBr, sandy, w/occ SS frags v firm, sli moist		Jar #4	(15.4 to 16.7) - 2" dia split spoon drive tube
	16					
	17	+ +	Coal, blk, blocky, brittle (wab. zone)	17.5		(16.7-17.5') 5" fill Refusal at 17.5
	18		Sandstone, lbGr, vf grained, mass, hard, sli friable, abundant carbonized plant inclus that give an effect to the core like blk rootlets extending downward from the overlying coal bed.			Set up to drill w/water - no sur casing. Attempted to sample w/pitch tube, however r to hard for pen tion. Changed 4x5½" diamond core bbl + core from 17.5 to
	19	5		4.7 / 4.7 100%	(Run) sec	
	20					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT

(TRANSLUCENT)

DRILLING LOG	DIVISION US Navy	INSTALLATION Crane In.	SHEET 5 OF 3 SHEETS

1. PROJECT: NWSC - Ground Water Study
2. LOCATION (Coordinates or Station): Site 9 Pest Control - Waste Storag. Ta.
3. DRILLING AGENCY: WES
4. HOLE NO. (As shown on drawing title and file number): WES-WTIP-86
5. NAME OF DRILLER:
6. DIRECTION OF HOLE: ☐ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN:
8. DEPTH DRILLED INTO ROCK:
9. TOTAL DEPTH OF HOLE:
10. SIZE AND TYPE OF BIT:
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL:
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED: UNDISTURBED:
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED: COMPLETED:
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR:

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	20	S	SS (cont.)		Jar # 5	
	21		Sandstone, Shaley, lGr, vf, hd, sl. friable, occ irreg vugs ½" to 1" size that are open or filled w/hd B- Chert nodules			
	22		Shale, m-dGr, sdy, thbd, hard			Set well screen between 16.2 & 21.2 (See well drawing)
			Bottom Depth:- 22.2'			

1. PROJECT

2. LOCATION (Coordinates or Station)

3. DRILLING AGENCY

4. HOLE NO. (As shown on drawing title and file number)

5. NAME OF DRILLER

6. DIRECTION OF HOLE
☐ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.

7. THICKNESS OF OVERBURDEN

8. DEPTH DRILLED INTO ROCK

9. TOTAL DEPTH OF HOLE

11. DATUM FOR ELEVATION SHOWN (TBM or MSL)

12. MANUFACTURER'S DESIGNATION OF DRILL

13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN | DISTURBED | UNDISTURBED

14. TOTAL NUMBER CORE BOXES

15. ELEVATION GROUND WATER

16. DATE HOLE | STARTED | COMPLETED

17. ELEVATION TOP OF HOLE

18. TOTAL CORE RECOVERY FOR BORING %

19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			WES-WTIP-86			Piezometer plan
			2.5' - (Approx El - 729.5') Riser Pipe			
			0.0' - Ground surface			
						Note:
						PVC Pipe to a depth of 6.2'. Teflon Pipe belo 6.2'
			Grout mixture			
						Set well screen on 7/18/86.
			water level - 11.6' 8/14/86 (From Top Riser)			water level 7/29/8 16.29' (F Top Riser)
						Developed w
			12.2'			
			Bentonite pellets			The procedure fo developing the we included blowing out the origina drilling water w filtered air follo by surging w/a stainless steel surge block. The procedure was repeated severa times until the water blown fro the well was Cl
			14.2'			
			Filter Gravel (Pea size)			
			16.2'			
			Well Screen			
			21.2'			The development t took approx 2 h
			Trap			
			22.2'			The equipment u was steam clear prior to use.

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PROJECT

As Built

1. PROJECT: NWSC Groundwater study	10. SIZE AND TYPE OF BIT: 5 1/2" rc's
2. LOCATION (Coordinates or Station): Site 9 - Pesticide-Waste Storage Tank	11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
3. DRILLING AGENCY: WES	12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
4. HOLE NO. (As shown on drawing title and file number): WES-WT2P-86	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
5. NAME OF DRILLER: Dan Taylor	14. TOTAL NUMBER CORE BOXES:
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER:
	16. DATE HOLE: STARTED 7/23/86 COMPLETED 7/23/86
7. THICKNESS OF OVERBURDEN: 7.5	17. ELEVATION TOP OF HOLE:
8. DEPTH DRILLED INTO ROCK:	18. TOTAL CORE RECOVERY FOR BORING:
9. TOTAL DEPTH OF HOLE: 12.4	19. SIGNATURE OF INSPECTOR: Geologist Richard W. Hunt

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		Parking lot surface rt. (crushed Ls)			Drilled to 3.0' w/ 5" Folding Auger
	1		(CL) silty-sdy clay, w/small ch frags. Br-yBr sli moist-dry, v firm th bd? w/ other of sd pts.		Jar #1	The equipment was steam cleaned prior to drilling operations
	2		(CL), silty clay with num. angular Ls frags, olive Gr, v moist, soft, definite strong chem odor. (Fill material)			
	3		Base of fill (~3.0')		Jar #2	
	4		(CL-SC) silty-sdy clay, moss, yBr w/ minor mGr mottling, occ dk Red rounded iron mineral concretions. sli moist-moist, firm-v firm, slight chem odor? (Residual Soil)			3.0 to 5.4 3" dia Shelby Push Tube. Cleaned hole to 5.4' w/ 5" Auger
	5				Jar #3	
	6					5.4 - 7.8 3" Shelby Tube. cleaned hole w/ 5" Auger
	7		Softer zone w/dk Gr mottling - strong chemical odor. occ small wea SS frags lowest bot.			Reamed Hole w/ Auger and set 6 steel Casing to C Sealed Casing Orig + Sealed hole at To
	8		Top highly wea SS 7.5 Sandstone, yBr-rBr, vf-f, highly wea + oxid, mod hd, friable, num. largely flattened soft to firm clay inclus + occ sub-angular clay + thin bd clayshale inclus (Rip-up clast?). The Clay inclus range from <1" to >4" in size, (Cont on next sh)	Run 1		3" Shelby Tube. 2h Started Coring at 8.0' w/ 4x5 dia core bbl, using clean water as drilling fluid.
	9			4.8/5.2' (.04)	(Ra) (Ra)	
	10				Jar #3	

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PROJECT | HOLE NO.

1. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
2. DRILLING AGENCY	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
3. HOLE NO. (As shown on drawing title and file number) WES-4-WT 27-66	14. TOTAL NUMBER CORE BOXES
4. NAME OF DRILLER	15. ELEVATION GROUND WATER
5. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	16. DATE HOLE — STARTED — COMPLETED
6. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
7. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
8. TOTAL DEPTH OF HOLE	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10		are lim incrusted and are isolated within the SS matrix at random (produces a conglomeratic appearance). The clay inclus represent from 30 to 50% of the rk mass vol.	Run 1 (cont.)		
	11					
	12		Base of zone			
	13		Coal Blk, hard, blocky, brittle. (water zone)	13.2 Run 2		
	14					
	15		Sandstone, lbr Gr, vf, mass, hard, sli friable, abundant carbonized plant inclus that give an effect to the core like Blk rootlets extending downward from the overlying Coal bed. 80° Jt is ⅛" open at top, lim stained; becomes tight + fades out w/depth	4.4 / 5.2 (0.8')		
	16					
	17		SS, shaley, Gr, vf, hd sli friable, occ vugs ½ to 1" size that are either open or filled w/Br hd clst nodules.			Set well screen between 12.4 + 17.4 (see well drawing for details)
	18		Shale, sdy, m-d Gr, thbd, hd			
			Bot Depth - 18.4 ft.			

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PROJECT

1. PROJECT

2. LOCATION (Coordinates or Station)

3. DRILLING AGENCY

4. HOLE NO. (As shown on drawing title and file number)

5. NAME OF DRILLER

6. DIRECTION OF HOLE
☐ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.

7. THICKNESS OF OVERBURDEN

8. DEPTH DRILLED INTO ROCK

9. TOTAL DEPTH OF HOLE

11. DATUM FOR ELEVATION SHOWN (TBM or MSL)

12. MANUFACTURER'S DESIGNATION OF DRILL

13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN | DISTURBED | UNDISTURBED

14. TOTAL NUMBER CORE BOXES

15. ELEVATION GROUND WATER

16. DATE HOLE | STARTED | COMPLETED

17. ELEVATION TOP OF HOLE

18. TOTAL CORE RECOVERY FOR BORING

19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			WES-WTZP-86			Piezometer Plan
			2.6' (Approx. El. - 727.1')			
			0.0' Ground Surface			
						PVC Pipe to a depth of 7.4'
						Teflon Pipe below 2.4'
			Grout mixture			Set well screen on 7/23/86
						water level on 7/29/86 - 9.54 (From Top Riser)
			water level - 9.3' 8/14/86 (From top Riser)			Developed well on 7/30/86
						The procedure for developing the well is shown on the plan for WES-WTZP-86.
			8.4'			
			Bentonite Pellets			
			10.4'			
			Filter Gravel (Pea Size)			The equipment was steam cleaned prior to use.
			12.4'			
			well screen			
			17.4'			
			Trap			
			18.4'			

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PROJECT

HOLE

1. PROJECT: NWSC Groundwater Study

2. LOCATION (Coordinates or Station): Site 9 - Fire Control + Water Storage Tank

3. DRILLING AGENCY: WES

4. HOLE NO. (As shown on drawing title and file number): WES-WT37-86

5. NAME OF DRILLER: Dan Taylor

6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.

7. THICKNESS OF OVERBURDEN: 9.9

8. DEPTH DRILLED INTO ROCK:

9. TOTAL DEPTH OF HOLE: 18.7'

11. DATUM FOR ELEVATION SHOWN (TBM or MSL):

12. MANUFACTURER'S DESIGNATION OF DRILL:

13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED: UNDISTURBED:

14. TOTAL NUMBER CORE BOXES:

15. ELEVATION GROUND WATER:

16. DATE HOLE: STARTED 7/25/86 COMPLETED 7/25/86

17. ELEVATION TOP OF HOLE:

18. TOTAL CORE RECOVERY FOR BORING: %

19. SIGNATURE OF INSPECTOR: Geologist Richard W. Hunt

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		LS Rk (Parking lot)			0.0 - 7.7' Drilled w/a 5" folding auger. Took some spl's w/a 3" post tube.
	1		Silt (mL) Gr, w/LS frags, sli. petro odor. (F.11)		Jar spl #1	
	2					Steam cleaned equipment prior to drilling well
	3		Silt (mL), dGr, clayey, moss, soft, sli moist-moist, sli petro odor			
	4					
	5		clayey Silt (mL), olive Gr, soft-v soft, v moist, occ small Fe incrusted nodules.		Jar spl #2	
	6		silty clay - clayey silt (CL-mL) y Br w/Gr mottling, firm-v firm, sli moist occ highly wea + oxidized SS frags			Reamed hole w/8" folding auger - set 7.7' of 6" o.d. steel casing (Temporary)
	7					
	8			Run 1		Started coring w/ 4 x 5½" core bbl at 7.7'. Drilling w/ clear water.
	9			4.2 / 5.1 = 0.9	(Box) (Run) (Core Loss or gain)	
	10		Sandstone (Next sheet)		Jar Spl 1 & 3	

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT

(TRANSLUCENT)

1. PROJECT	10. SIZE AND TYPE OF BIT
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
3. DRILLING AGENCY	12. MANUFACTURER'S DESIGNATION OF DRILL
4. HOLE NO. (As shown on drawing title and file number) WES-WT3P-86	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
5. NAME OF DRILLER	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
7. THICKNESS OF OVERBURDEN	16. DATE HOLE: STARTED / COMPLETED
8. DEPTH DRILLED INTO ROCK	17. ELEVATION TOP OF HOLE
9. TOTAL DEPTH OF HOLE	18. TOTAL CORE RECOVERY FOR BORING %
	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10–13		Sandstone, yBr-rBr, vf-f, highly wea + oxd, mod hd, friable, num largely flattened soft to firm clay inclus + occ sub-angular clay and thin bd claystone inclus (Rip-up clst?). The clay inclus range from <1" to >4" in size, are limonite incrusted and are isolated within the SS matrix at random. (produces a conglomeratic appearance) The clay inclus represent from 30 to 50% of the rk mass vol.	12.7 / Run 2		
	14		Coal, Blk, hd, blocky, brittle	4.6 / 5.0; 0.4	Jar Sel #4	
	15–17		Sandstone, lBr Gr, vf grained, mass, hd, sli friable, abundant carbonized plant inclus that give an effect to the core like Blk rootlets extending downward from the overlying Coal bed. vert, lim stained, discont jts. — discontinuous jt	16.7 / Run 3		
	18		SS, shaley, Gr, vf, hd, sli friable, occ irreg vugs ½ to 1" size that are either open or filled w/Br claystone nodules.	2.3 / 2.3		Set well screen between 12.6 + 17.6. (See well drawing for deta
	19–20		Bot. Depth - 18.7'			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT | HOLE

1. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
2. DRILLING AGENCY	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
3. HOLE NO. (As shown on drawing title and file number)	14. TOTAL NUMBER CORE BOXES
4. NAME OF DRILLER	15. ELEVATION GROUND WATER
5. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	16. DATE HOLE — STARTED — COMPLETED
6. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
7. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
8. TOTAL DEPTH OF HOLE	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			WES-WT3P-86			Piezometer Por
			2.5' (Approx. El - 727.5') Riser Pipe			PVC Pipe to a depth of 2.6' Teflon Pipe below 2.6'
			0.0' Ground surface			Set well screen on 7/25/86
			Grout mixture			water level on 7/25/86 - 9.40 (From Top Riser) Developed well on 7/30/86
			water level - 9.3' 8/14/86 (from Top Riser)			The procedure fo developing the we is shown [illegible] th plan for [illegible] 1 WES-WT1P-86
			8.6' Bentonite Pellets 10.6'			The equipment was steam clean prior to use
			Filter Gravel (Pea size) 12.6'			
			well screen			
			17.6' Trap 18.6'			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) PROJECT HOLE NO.

NWSC Groundwater Study

1. LOCATION (Coordinates or Station): Site 9, Pest Control-Waste Storage Tank
2. DRILLING AGENCY: WES
3. HOLE NO. (As shown on drawing title and file number): WES-WT4P-86
4. NAME OF DRILLER: Dan Taylor
5. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
6. THICKNESS OF OVERBURDEN: 6.4'
7. DEPTH DRILLED INTO ROCK:
8. TOTAL DEPTH OF HOLE: 20.1'
9. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
10. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
11. TOTAL NUMBER CORE BOXES:
12. ELEVATION GROUND WATER:
13. DATE HOLE: STARTED 7/24/86 COMPLETED 7/24/86
14. ELEVATION TOP OF HOLE:
15. TOTAL CORE RECOVERY FOR BORING:
16. SIGNATURE OF INSPECTOR: Geologist Richard W. Hunt

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		Ls Rk (Parking Lot			Drilled from 0.0 to 6.4' w/ 5" dia Failing Auger
	1		Clayey Silt (ML), Gr, w/occ Ls frags, firm, sl. moist-dry (F.11)		Jar Spl #1	
	2					Steam cleaned equip. Prior to drilling well
	3					
	4					
	5		Silty Clay, (CL) yBr w/Gr mottling, firm sl. moist, w/ highly wea to oxid friable ss frags, mun rounded Fe nodules 1/8 to 1/4" dia		Jar Spl #2	
	6					set 6" dia steel casing to 7.0 (Temporary)
	7		Sandstone, yBr - rBr, yt. F, highly wea + oxid, mod hd, friable mun longely flattened soft to firm clay inclus + occ sub-angular clay + th bd claystone inclus (R.p.up clast?). The clay inclus range from <1" to >4" in size, are lim incrusted + are isolated within the ss matrix at random (produces a conglomeratic appearance) The clay inclus represent from 30 to 50% of the rk mass vol.	Run 1		CL 7.0 - RRB.t Started drilling w/ 4 X 5 1/2" Core bbl w/ clean water
	8			4.6 / 5.0	(Red) (Run)	
	9			-0.4	(Core lost or ground)	
	10				Jar Spl #3	

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT

HOLE NO.

1. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
2. DRILLING AGENCY	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED / UNDISTURBED
3. HOLE NO. (As shown on drawing title and file number)	14. TOTAL NUMBER CORE BOXES
4. NAME OF DRILLER	15. ELEVATION GROUND WATER
5. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	16. DATE HOLE — STARTED / COMPLETED
6. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
7. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
8. TOTAL DEPTH OF HOLE	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10		SS (cont)			
	11					
	12			12.0 / Rec 2		
	13			3.7 / 4.0		
	14			-0.3		
	15				Jar sp #4	
	16			16.0		
	17		Coal, Blk, hard, blocky, brittle			
	18		Sandstone, lbr Gr v f, mass, hd, sl. friable, abundant carbonized plant inclus that give an effect to the core like Blk rootlets extending downward from the overlying coal bed	4.1 / 4.1		Set well screen between 14.1 + 19.1 ft. (see well drawing for details)
	19					
	20		(Core bot at top of shaley SS w/ vugs) Bot of Hole 20.1'		Jar sp #5	

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT

HOLE NO.

1. LOCATION (Coordinates or Station)	11. MANUFACTURER'S DESIGNATION OF DRILL
2. DRILLING AGENCY	12. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
3. HOLE NO. (As shown on drawing title and file number)	13. TOTAL NUMBER CORE BOXES
4. NAME OF DRILLER	14. ELEVATION GROUND WATER
5. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. DATE HOLE: STARTED / COMPLETED
6. THICKNESS OF OVERBURDEN	16. ELEVATION TOP OF HOLE
7. DEPTH DRILLED INTO ROCK	17. TOTAL CORE RECOVERY FOR BORING
8. TOTAL DEPTH OF HOLE	18. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			WES-WT4P-86			Piezometer Plan
			2.5 Riser Pipe			PVC Pipe to a depth of 4.1'
			0.0 Ground Surface			Teflon pipe below 4.1'
			Grout mixture			set well screen on 7/24/86
			water level - 9.0' 8/14/86 (From Top Riser)			water level on 7/29/86 - 8.94' (From Top Riser) Developed well on 7/31/86
			10.1' Bentonite pellets			The procedure for developing wells is shown on the plan for WES-WT1P
			12.1' Filter Gravel (Pea Size)			The equipment was steam cleaned prior to use.
			14.1' Well screen			
			19.1' Trap			
			20.1'			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT | HOLE

1. LOCATION (Coordinates or Station) Site 9: Post Control-Waste Storage Tank	12. MANUFACTURER'S DESIGNATION OF DRILL
2. DRILLING AGENCY WES	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
3. HOLE NO. (As shown on drawing title and file number) WES-WTSP-B6	14. TOTAL NUMBER CORE BOXES
4. NAME OF DRILLER Dan Taylor	15. ELEVATION GROUND WATER
5. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	16. DATE HOLE: STARTED July 21 1986; COMPLETED July 21 -86
6. THICKNESS OF OVERBURDEN 13.3'	17. ELEVATION TOP OF HOLE
7. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
8. TOTAL DEPTH OF HOLE 13.3'	19. SIGNATURE OF INSPECTOR Geologist Richard W. Hunt

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		Silt (ML) Tan + Gr, w/occ rk frags, moist (surface ponding) (Fill)		Jar spl #1	Drilling w/ 5" d.o folding auger
	1					
	2		Clayey Silt - Silty Clay, yBr + lGr, sdy, num lim crusted ss frags firm, moist (Fill) (ML-CL)			
	3					
	4		Silty clay - clayey silt, (CL-ML), sdy, olive Gr, num small rk frags, rootlets, occ wood branch frags, v soft, v moist - wet, musty odor (Back fill in Tank excavation)			water seeping in hole at 4.5'
	5				Jar spl #2	
	6					
	7					
	8					
	9					
	10				Jar spl	

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT | HOLE

1. PROJECT

2. LOCATION (Coordinates or Station)

3. DRILLING AGENCY

4. HOLE NO. (As shown on drawing title and file number)

5. NAME OF DRILLER

6. DIRECTION OF HOLE
☐ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.

7. THICKNESS OF OVERBURDEN

8. DEPTH DRILLED INTO ROCK

9. TOTAL DEPTH OF HOLE

10. SIZE AND TYPE OF BIT

11. MANUFACTURER'S DESIGNATION OF DRILL

12. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN | DISTURBED | UNDISTURBED

13. TOTAL NUMBER CORE BOXES

14. ELEVATION GROUND WATER

15. DATE HOLE | STARTED | COMPLETED

16. ELEVATION TOP OF HOLE

17. TOTAL CORE RECOVERY FOR BORING

18. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10		Silty Clay - Clayey Silt (cont.)			
	11					
	12					Base of fill 12.3
			Silty Clay (CL) yBr-rBr, sdy, w/ wea SS frags. (Highly wea SS)			Set well screen From 8.0 to 13.0' (See well drawing for Details)
	13					
			Bot. of Hole 13.3'			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT

2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED / UNDISTURBED
4. HOLE NO. (As shown on drawing title and file number)	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	16. DATE HOLE — STARTED / COMPLETED
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			WES-WTSP-86			Piezometer Plan
			2.5' (Approx EL- 729.4') Riser pipe			PVC Pipe to a depth of 3.0'.
			0.0' Ground surface			Teflon pipe below 3.0'
						Set well screen on 7/21/86
			Grout mixture			water level on 7/29/86- 5.36 (From Top Riser)
			water level - 5.9' 8/14/86 (From Top Riser)			Developed well on 7/30/86.
						The procedure for developing well is described on plan for WES WTSP-86.
			4.0' Bentonite Pellets			
			6.0' Filter Gravel (Fox 5.20)			The equip. was steam cleaned prior to use.
			8.0' well Screen			
			13.0' Trap (No Trap)			
			13.3'			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT

NWSS Groundwater Study

1. LOCATION (Coordinates or Station): Site 9' Post Control-Waste Storage Tank

2. DRILLING AGENCY: WES

3. HOLE NO. (As shown on drawing title and file number): WES-WTCP-06

4. NAME OF DRILLER: Dan Taylor

5. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.

6. THICKNESS OF OVERBURDEN

7. DEPTH DRILLED INTO ROCK

8. TOTAL DEPTH OF HOLE: 26.7'

9. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500

10. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ___ UNDISTURBED ___

11. TOTAL NUMBER CORE BOXES

12. ELEVATION GROUND WATER

13. DATE HOLE: STARTED 7/26/86 COMPLETED 7/26/

14. ELEVATION TOP OF HOLE

15. TOTAL CORE RECOVERY FOR BORING

16. SIGNATURE OF INSPECTOR: Geologist Richard W. Hunt

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		Ls Rk. (Parking Lot Surface)			Started drilling w/an 8" dia folding auger. Took spl. where possible w a 3" push tube & cleaned hole w/ 8" auger.
	1		Silty clay (CL) yBr w/ Gr mottling, v firm, sl. moist, num Fe incrusted nodules (1/4" dia) in upper zone OCC was ss frags, sdy w/depth		Jar spl #1	
	2					
	3					
	4					
	5				Jar spl #2	
	6					
	7					
	8					
	9		Top of highly was SS			Set 9.8' of Temporary 6" steel casing. & Cle. in hole to 10.3' unit
	10		(See Next sheet)			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT

NO.

2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED / UNDISTURBED
4. HOLE NO. (As shown on drawing title and file number)	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	16. DATE HOLE — STARTED / COMPLETED
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10		Sandstone, yBr rBr, vf-f, highly wea, oxid, mod hd friable, num largely flattened soft to firm clay inclus + occ sub-angular clay + tt bd claystone inclus (Rip-up clast?). The clay inclus range from <1" to >4" in size, are lim incrusted + are isolated within the SS matrix at random (produces a conglomeratic appearance). The clay inclus represent from 30 to 50% of the rk mass vol	10.2		Started coring w/a 4x5½" core bbl at 10.2'
				Run 1	J01 SP1 ø3	
	11			1.5/2.3	Rad Run	
				.02		
	12			12.5		
				Run 2		
	13					
	14			4.3/4.3		
	15				J01 SP-4	
	16			16.8		
	17					
	18			5.0/5.0		
	19					
	20					

NG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT
AR 71

(TRANSLUCENT)

1. PROJECT	11. DATUM FOR ELEVATION
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
4. HOLE NO. (As shown on drawing title and file number)	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	16. DATE HOLE: STARTED / COMPLETED
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	20		SS, highly wea (Cont.)		Jar Spl 5	
	21			21.8 Run 3		
	22					
	23		Coal, Blk, hd, blocky, brittle.	4.9/4.9		
	24		Sandstone, lbr Gr vf mass, hd, sli friable, abundant carbonized plant inclus that give an effect to the core like rootlets extending downward from the overlying coal bed. 80° Jt is ¼" open at top lim stn; becomes tight and fades out w/depth. Bot of hole is at top of sh ss w/vugs.			
	25				Jar Spl 6	Set well screen between 20.7 & 25.7 ft. (See well drawing for details)
	26			26.7		
	27		Bot. Depth 26.7'			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) PROJECT

1. LOCATION (Coordinates or Station)

2. DRILLING AGENCY

3. HOLE NO. (As shown on drawing title and file number)

4. NAME OF DRILLER

5. DIRECTION OF HOLE
☐ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.

6. THICKNESS OF OVERBURDEN

7. DEPTH DRILLED INTO ROCK

8. TOTAL DEPTH OF HOLE

12. MANUFACTURER'S DESIGNATION OF DRILL

13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN | DISTURBED | UNDISTURBED

14. TOTAL NUMBER CORE BOXES

15. ELEVATION GROUND WATER

16. DATE HOLE | STARTED | COMPLETED

17. ELEVATION TOP OF HOLE

18. TOTAL CORE RECOVERY FOR BORING

19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			WES-WTGP-86			Piezometer Plan (Background well)
			2.5' (Approx El-726.0)			PVC Pipe to a Depth of 6.7' Teflon Pipe bel. 8.7'
			0.0' Ground surface			Set well screen on 7/28/86
			Grout Mixture			water level on 7/29/86 - 13.9' (from Top Riser)
			water level - 14.0' 8/14/86 (From Top Riser)			Developed well on 7/31/86
						The procedure & developing & is described c plan for WES WTP-86.
			16.7'			
			Bentonite Pellets			
			18.7'			
			Filter Gravel (Pea size)			The equipma was steam cle prior to use.
			20.7'			
			Well Screen			
			25.7'			
			Trap			
			26.7'			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT

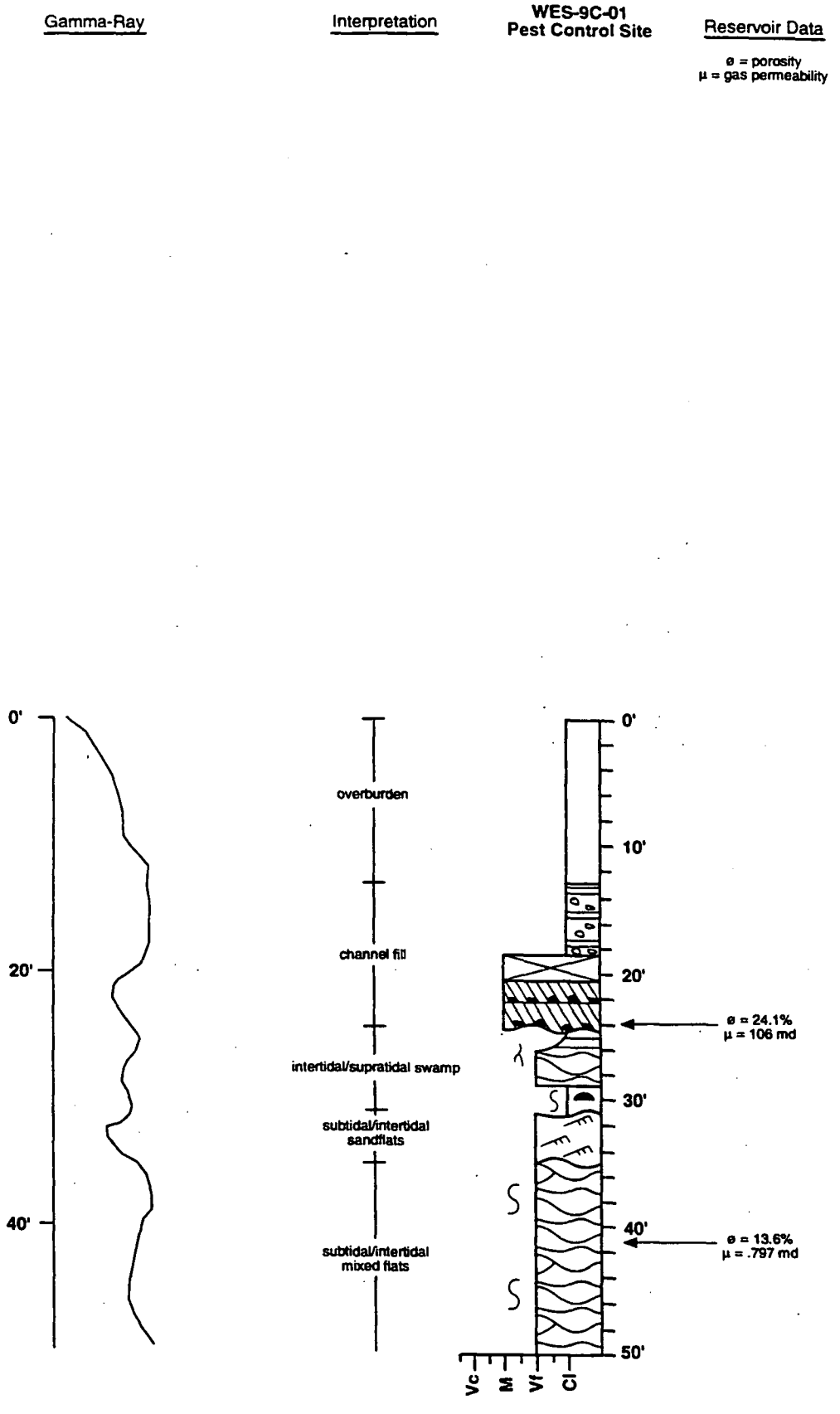


Figure 15b. Vertical columnar profile of corehole WES-9C-01

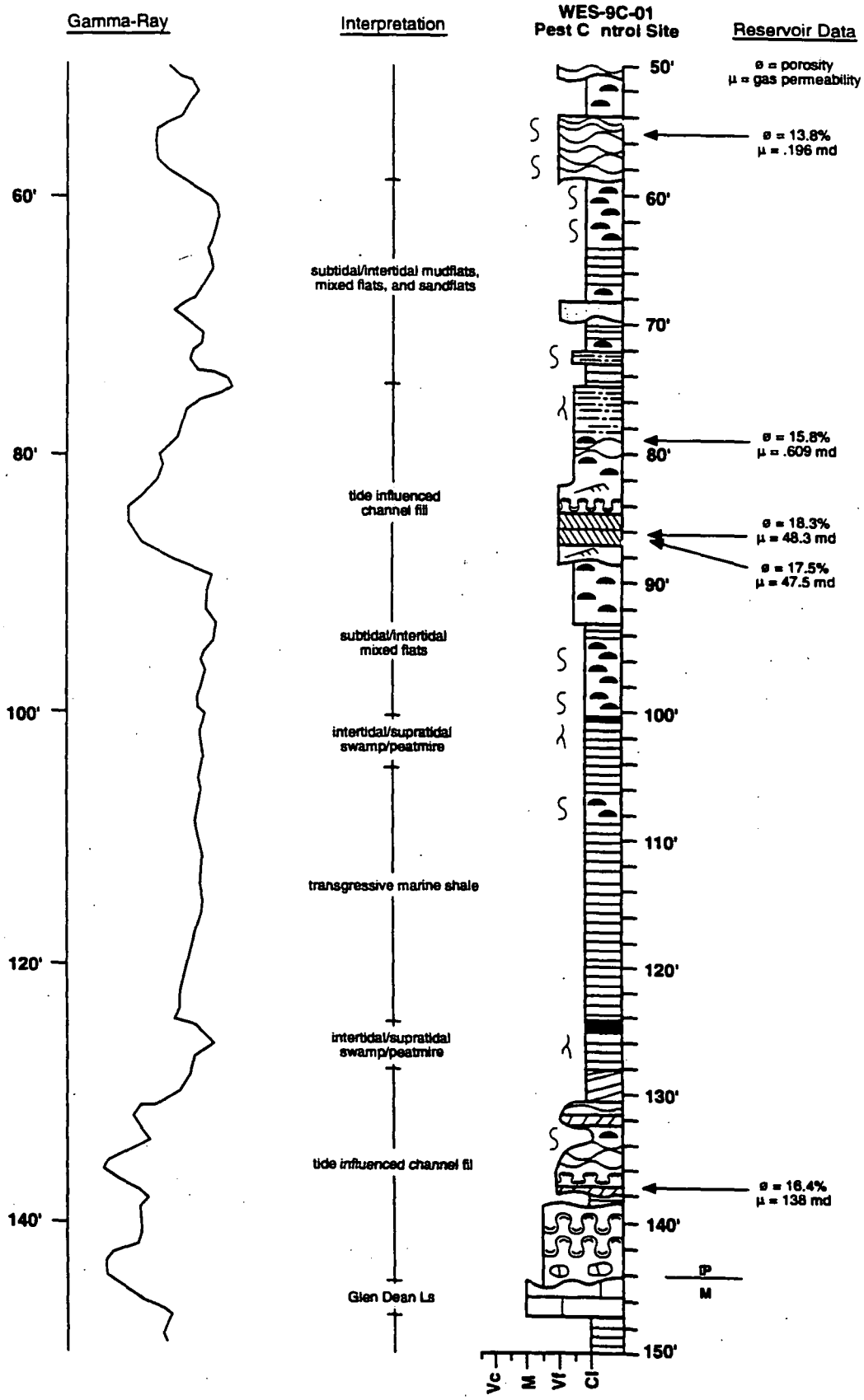


Figure 15a. Vertical columnar profile of corehole WES-9C-01

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 09SB01
DATE: 11-30-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			9/9/6	LOOSE	DRK GRY	TOP 5" GRAVEL W/SAND	GM			0.0		0.0
	2				↓	↓	SAND TOPSOIL	↓		0.0			
	3				SL STIFF	LT BR	DRY 14" CLAYEY BROWN	SC		0.0			
S-1 1057	4		2" / 4"		↓	↓	↓	↓		0.0		0.0	
	5				STIFF	GRY	CLAY T-STAIN	CL		0.0			
	6					GRY				0.0			
	7									0.0			
S2 1104	8		4" / 4"							0.0		0.0	
	9				V. STIFF					0.0			
S3 1111	10		2" / 2"							0.0		0.0	
				TD 10'									
					Sampled 09SB01 0002 @ 1115								
							VOCs TAKEN FROM 1'-2'						
					Sampled 09SB01 0910 @ 1120								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Remarks: 10' 14' TOT

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 045B02
DATE: 11-30-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KLEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				LOOSE	BRN GRAY	TOP 4" GRAVEL W/ SAND	GM		0.0	0.0		0.0
	2				↓	↓	TOP SOIL	↓					
	3				STIFF	LT BR.	BOTT 16" SILTY CLAY	CL					
S-1 1246	4		30" / 4"		↓	↓	↓			↓		0.0	
	5				SL. SOFT	YELL BR	TOP 15" SILTY CLAY			0.0			
	6				↓		BROWN			0.0			
	7				STIFF		28" FINE SAND + CLAY			0.0			
S-2 1252	8		4" / 4"		↓	↓	BOTT 2" WEATHERED S.S.			0.0	0.0	0.0	0.0
	9						REFUSAL @ 9'						
S-3 1257	10		0 / 2"										
					Sampled 045B020007 @ 1249								
							VOC'S TAKEN FROM 1'-7'						
					Sampled 045B020603 @ 1300				TOM FDU060003				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Remarks: 4' 4' 17' 20'

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No ✓ W ll I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 095B03
DATE: 11-30-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	1				SL SOFT	DK BR	TOP 4" SILTY CLAY W/	CL		0.0	0.0		0.0
	2				↓		ORGANICS T-FINE-GRAINED SAND						
	3				STIFF	YELL BR	BOTT 27" SILTY CLAY						
S1 1344	4		31" / 4'				↓			↓		0.0	
	5						TOP 1' SILTY CLAY			0.0			
	6						↓						
	7				↓	↓	BOTT 1.5' FINE SANDY CLAY	↓		↓	↓	0.0	↓
S2 1350	8		2.5' / 2.5'	TD 6.5'			W/ WEATHERED S.S.						
	9						REFUSAL @ 6.5'						
	10												
					Sampled 095B030007 @ 1315								
							VOC'S COLLECTED FROM 1'-2' COLLECTED W/ MED & FOLLOWED AHEAD OF DPT BY HS						
					Sampled 095B030406 @ 1355								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 6.5'

Drilling Area Background (ppm): 0.0

Converted to W II: Yes _____ No X W II I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 095B04
DATE: 12.4.00
GEOLOGIST: KEITH SIMPSON
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							WOODED						
	1				LOOSE	BRN	SILT, TR F. SAND GLASS (FILL)	SM	TR ROOTS MOIST	0	0	0	0
	2				↓	↓	↓	↓	↓	↓	↓	↓	↓
	3				STIFF	LT. BRN	CLAY / SILT	CL	↓	↓	↓	↓	↓
S.1 0830	4		2/4		↓	↓	GRAY MOTTLING	↓	↓	↓	↓	↓	↓
	5				↓	↓	SILTY F. SAND w/GRAY MOTTLING	↓	↓	↓	↓	↓	↓
S.2 0840	6		2/2		↓	↓	↓	↓	↓	↓	↓	↓	↓
	7			TD = 6'									
	8												
	9												
	10												
							TD = 6						
							TOTAL FOOTAGE = 10 1-OFF SET						
					Sampled		095B04.0002 @ 0830		FD120400 01				
							VOC - 1-2'						
					Sampled		095B04 0406 @ 0840						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X W ll I.D. #: —

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 09SB 05
DATE: 12.4.00
GEOLOGIST: KEITH SIMPSON
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness*	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
							GRASS						
	1				SOFT	BRN	SILT	SM	TR ROOTS MOIST	0	0	0	0
	2				↓	↓	↓ ↓	↓		↓	↓	↓	↓
	3				STIFF	TAN	SILT & CLAY GRAY MOTTLING	CL					
S.1 1410	4		2 4		↓	↓	↓ ↓	↓		↓		↓	
	5									1.2		2	
	6									0			
	7						↓ ↓			.3			
S.2 1500	8		4 4		↓	↓	SILTY F. SAND	↓		↓			
S.3 1515	9		1 2		V. STIFF	GRAY/ TAN	↓ ↓	SM	↓	↓	↓	↓	↓
	10			TD 9'									
							TD=9'						
							TOTAL FOOTAGE = 25' 3 OFFSETS						
					Sampled		09SB 0002 @ 1410						
							VOC - 1-2'						
					Sampled		09SB 0406 @ 1500						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: —

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE
BORING NUMBER: 095B06
DATE: 12.4.00
GEOLOGIST: KEITH SIMPSON
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							GRASS						
	1				SOFT	BRN	SILT & CLAY	CL	TR ROOTS MOIST	0	0	0	0
	2				↓	↓	↓			↓	↓	↓	↓
	3				STIFF	↓	↓						
S.1 1330	4		1.3/4		↓	TAN	F. SAND W/SILT	SM					
	5				SOFT	GRAY	SILTY CLAY W/ORGANIC MATERIAL, SOME	OH					
	6				↓	↓	GRAVEL 1" MAX Ø TR ROCK FRAGS.			↓			
	7						↓			43		60	
S.2	8		1.3/4							↓		↓	
	9				↓	↓	↓			160		200	
S.3 1340	10		1/4		STIFF	TAN/GRAY	F. SAND TR. GRAVEL 1" MAX Ø TR. SILT	SM		↓	↓	↓	↓
				TD 10'									
							TD = 10'						
							TOTAL FOOTAGE = 14'						
					Sampled		095B06 0002 @ 1330						
							VOC - 1-2'						
					Sampled		095B 06 0810 @1340						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: ≈ 10' EAST OF MW WT5P

Converted to Well: Yes ____ No X Well I.D. #: —

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 09SB07
DATE: 12.4.00
GEOLOGIST: KEITH SIMPSON
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 5" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							GRAVEL PARKING AREA						
	1				V. STIFF	GRAY	LIMESTONE GRAVEL W/FINES (FILL)	GC	MOIST	0	0	0	0
	2				STIFF	GRAY/ BRN	SILTY CLAY	CL		1.3		1	
	3											1	
5.1 1250	4		2.5/4							1.8		2	
	5												
	6												
	7				V. STIFF								
	8		3.5/4				V.F. SAND W/SILT RUST COLOR LENS	SM					
5.2 1305	9		1/1		HARD		@ 8'						
	10			TD 9'									
							TD = 9' REFUSAL @ 9'						
							TOTAL FOOTAGE = 9'						
					Sampled		09SB070002 @1250						
							VOC - 1-2'						
					Sampled		09SB 07 0709 @ 1305						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 095B00
DATE: 12-5-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	LT.	CLAYEY SILT	ML		0.0	0.0	0.0	0.0
	2					BR							
	3												
S1 0931	4		3.3' / 4'										
	5					LT	CLAYEY SILT W/ FINE						
S-2 0933	6		0' / 2'			BR	SAND						
S-3 0943	7		1' / 1'		V. DENSE LOOSE	LT. BR	WEATHERED SANDSTONE FINE SILT SAND		REFUSAL @ 7'				
	8			T.D. 7'									
	9												
	10												
					Sampled 095B03 0003 @ 0933								
							VOC's TAKEN FROM 1'-2'						
					Sampled 095B030406 @ 0845								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks: 7' DOT

Converted to W ll: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 09SB09
DATE: 12.4.00
GEOLOGIST: KEITH SIMPSON
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							GRASS						
	1				SOFT	BRN	SILT	SM	TR ROOTS MOIST	0	0	0	0
	2				↓	↓	↓	↓					
	3				STIFF	TAN	SILTY CLAY w/GRAY MOTTLING & RUST COLOR NODULES	CL					
S.1 0920	4		2/4										
	5												
	6												
	7				VERY STIFF								
S.2 0940	8		4/4				V.F SAND POORLY GRADED TR SILT	SP					
	9					GRAY/ RUST							
S.3 0950	10		1.5/2	TD 9.5									
							TD=9.5						
							TOTAL FOOTAGE = 19.5 3 OFF SETS						
					Sampled		09SB09 0002 @0920						
							VOC - 1-2'						
					Sampled		09SB0810 @0950 + MS/MSD						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: —

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 045B10
DATE: 11-30-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KLEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				SOFT	DK BR	TOP 6" GRAVEL W/SAND +	GW		0.0	0.0		0.0
	2				↓	↓ GRAY	TOP SOIL	↓		↓	↓		↓
	3				SL. STIFF	LT BR	BOTT 16" CLAY W/T SILT	CL		↓	↓		↓
S-1 1431	4		22" / 4'		↓	YELL BR	↓	↓		↓	↓	0.0	↓
	5				STIFF	↓	TOP 31" CLAY W/T SILT	↓		0.0	0.0	0.0	0.0
	6				↓	↓	↓	↓		↓	↓	↓	↓
	7				STIFF	YELL BR	BOTT 11" FINE SANDY CLAY	↓		↓	↓	↓	↓
S-2 1444	8		42" / 4'		↓	GRAY	↓	↓		↓	↓	↓	↓
	9				V. STIFF	↓	SANDY CLAY W/ WEATHERED SANDSTONE CHUNKS	CL		0.0	0.0	0.0	0.0
S-3 1509	10		1' / 1'	TD 9'					SLEEVE GOT STUCK IN DOWN RUN.				
							REFUSAL @ 9'						
					Sampled 045B100002 @ 1433								
							VOC'S TAKEN FROM 1'-2'						
					Sampled 045B100204 @ 1515								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

R marks: 9' 14' 13'

Conv rted to W ll: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 09SB11
DATE: 12.4.00
GEOLOGIST: KEITH SIMPSON
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							GRASS						
	1				STIFF	GRAY	LIMESTONE GRAVEL MAX 1.5" Ø SOME SAND FILL	GC	TR ROOTS MOIST	0	0	0	0
	2				↓	BRN	SILTY CLAY	SM		0.2		0.3	
	3				SOFT					↓		↓	
S.1 1026	4		2/4							0		0	
	5				↓	GRAY/ BRN				0.8		0.8	
	6				STIFF	BRN	↓	↓		↓			
S.2 1040	7		3/3		V. STIFF	↓	V. F. SAND POORLY GRADED TR SILT	SP		0.4	↓	↓	↓
	8			TD: 7			GRAY/BRN @ BTM						
	9												
	10												
							TD = 7						
							TOTAL FOOTAGE = 7'						
					Sampled		09SB11 0002 @ 1026						
							VOC - 1-2'						
					Sampled		09SB11 0406 @ 1040						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: —

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 10
DRILLING COMPANY: Bowser Morner
DRILLING RIG: B-59

BORING NUMBER: 09T01A
DATE: 12-3-00
GEOLOGIST: MATT COCHRAN
DRILLER: A WOLF

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							SEE BORING						
							LOGS 9SB01,02+						
							03 FOR LITHOLOGY						
						BRN	SANDSTONE		WEATHERED				
						↓	↓		EASY DRILLING				
				* SWL ▼ 12.8 12-4-00					DRILL RATE				
									15 SEC / FOOT				
									* SWL ON 12-4, AT BEGINNING OF DAY				
	19	50 / 0"	.1 /		SOFT	BRN	SANDSTONE		ATTEMPTED	NA	NA	NA	NA
S1			2.0						SPOON,				
	21								REFUSAL, NO, ACCEPTABLE				
	24				SOFT	GREY	SILTSTONE		MODERATE WEATHERING				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): NA

Remarks: DRILLED W HSA TO 24' WILL ATTEMPT TO CORE W/ AIR. MAY GET POOR RECOVERY SINCE ROCK IS SOFT.

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 10
DRILLING COMPANY: Bowser Morner
DRILLING RIG: B-59
BORING NUMBER: 09 T01A
DATE: 12-3-00
GEOLOGIST: MATT COCHRAN
DRILLER: A. WOLF

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ**
									FE. STAINED ALONG BEDDING				
									VERY THIN SHALY BEDDING TOP 1'				
									SANDY BEDDING PLANES TOP 1' CORE				
			9.8/						27-33', LIKE CONGLOMERATE				
C-1			10.0						W/CLAYSTONE CONCRETIONS				
9.0/		90%							BROKEN THRU CORE				
10.0									RUN LOOKS				
				33					DAMP				
	34					BLACK	COAL		LOW & FRACTS (SEVERAL THRU CORE)				
							TD 34'						
									H_2O @ 20.7 BGS AFTER 1 HOUR.				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): NA

Remarks: H_2O LEVEL AFTER CORE RUN = 21.2' BGS. DECIDED TO BLOW HOLE. MADE 2-3 GPM. COULD HEAR TRICKLE OF WATER DOWN ANNULUS AFTER HOLE PURGED

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

OFFSET RIG + DRILLED 2ND BORING TO EVALUATE PRESENCE OF H_2O AT DEPTH ABOVE CHALE. HOLE BACKFILLED W/CEMENT/BENT GROUT

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 10
DRILLING COMPANY: Bowser Morner
DRILLING RIG: B-59
BORING NUMBER: 09T01B
DATE: 12-3-00
GEOLOGIST: MATT COCHRAN
DRILLER: A. WOLF

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	** PID/FID Reading (ppm): Remarks	Sample	Sampler BZ	Borehole*	Driller BZ**
							SEE BORING LOGS						
							9SB01, 02 + 03						
							FOR LITHOLOGY						
				*SWL					*SWL ON 12-4-00				
				8.20			ROCK @ 8'		OF 8.20 BGS				
	9			12-4-00					WHEN DRILLED TO				
									END OF 1ST RUN				
					SOFT	LT BRN	SANDSTONE		DRILL RATE				
									1 FOOT / MIN.				
							(SILTY)		BROKEN				
									NO REACTION TO				
									HCL, DAMP-				
									MOIST.				
									V. THIN BEDDING				
									@ 12, 13.5, 15, +				
									17.5; FRACTS				
C-1			9.1/						ALONG BEDDING W.				
8.5		85%	2.0						FE. STAINING.				
10									BEDDING IS HORIZ				
									MODERATE				
									WEATHERING ON				
									FRACTS, OTHERWISE				
									SLIGHT WEATHERING.				
	19								MORE SANDY				
									@ @ 18'-20'				
									BROKEN,				
					SOFT	LT BRN	SANDSTONE		NO REACTION TO				
									HCL. V. THIN				
C-2							(SILTY)		BEDDING @ 20,				
7.0		100%	7.0/						21.5; FRACTS				
7.0			7.0						ALONG BEDDING.				
									FE STAINING @				
									20, DAMP-MOIST				
						GREY BROWN							

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: SPUN 6" CASING TO 9', PLACED BENTONITE SEAL PRIOR TO SETTING CASING CORED W NX WIRELINE

Conv rted to Well: Yes _____ No _____ Well I.D. #: 09T01

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 10
DRILLING COMPANY: Bowser Morner
DRILLING RIG: B-59
BORING NUMBER: 09TO1B
DATE: 12-3-00
GEOLOGIST: MATT COCHRAN
DRILLER: A. WOLF

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
▲	26						TD 26'						
							SEE BORING LOG		REAMED HOLE				
							09TO1A FOR		TO TD + PUMPED				
							LITHOLOGY BELOW		26 GALLONS H_2O				
							26' .		OUT AFTER 20				
									MIN STANDBY				
									SANDSTONE UNIT				
									TO BE SCREENED				
									OVER ENTIRE				
									SATURATED				
									THICKNESS.				
									SANDSTONE				
									IS SEPERATE				
									H_2O ZONE FROM				
									UNDERLYING UNIT				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: STOPPED @ 26' ON 12-3-00, SWL ON 12-4 = 8.20 BGS.
** FID NOT WORKING ON 12-3. WORKING PROPERLY ON 12-4
(MALFUNCTIONING POSSIBLY DUE TO CONDENSATION)

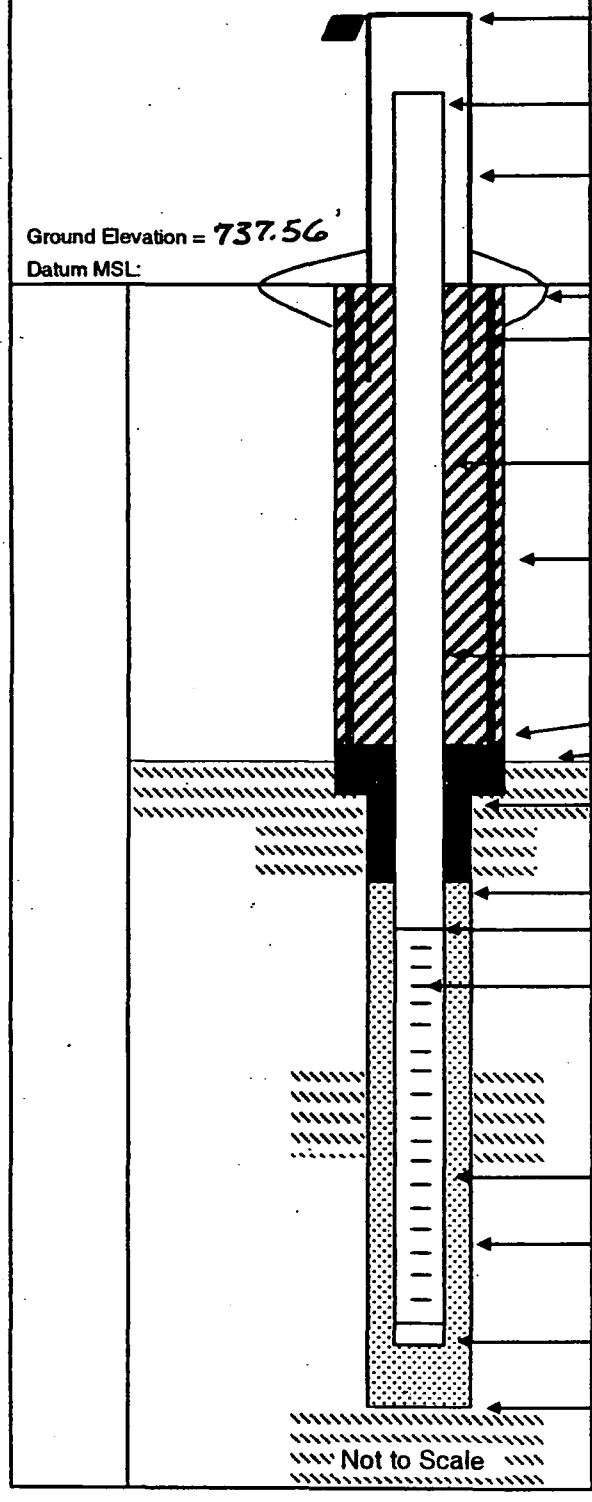
Converted to Well: Yes ✓ No _____ Well I.D. #: 09TO1

Tetra Tech NUS, Inc.

BEDROCK MONITORING WELL SHEET

WELL No.: 09T01

PROJECT:	NSWC CRANE	DRILLING Co.:	BOWSER MORNER	BORING No.:	09T01B
PROJECT No.:	7141 CTO 010	DRILLER:	A. WOLF	DATE COMPLETED:	12-4-00
SITE:	SWMU 9	DRILLING METHOD:	AIR ROTARY	NORTHING:	1312804.336
GEOLOGIST:	M.G. COCHRAN	DEV. METHOD:	SURGE & WHALE PUMP	EASTING:	3025759.952



Elevation of Top of Casing: 740.63'

Stick Up of Casing Above Ground Surface: 3.07'

Elevation of Top of Riser: 740.02'

I.D. of Surface Casing: 4"

Type of Surface Casing: 4" STEEL SQUARE

Type of Surface Seal: CEMENT GROUT & ASPHALT

I.D. of Casing: 6"

Type of Casing: TEMPORARY STEEL FLUSH J INT (REMOVED)

Casing Length: 9'

I.D. of Riser: 2"

Type of Riser: PVC SCH. 40

Borehole Diameter: 8 1/2"

Type of Backfill: CEMENT/BENTONITE GROUT QUIKCRETE + AM COLLOID WYOMING BENTONITE

Elevation / Depth Top of Seal: 730.56' / 7'

Elevation / Depth Top Bedrock: 729.56' / 8'

Type of Seal: BENTONITE PELLETS COLLOID ENVIRONMENTAL

Elevation / Depth of Top of Filter Pack: 728.56' / 9'

Elevation / Depth of Top of Screen: 726.56' / 11'

Type of Screen: PVC

Slot Size x Length: .01" X 15'

I.D. of Screen: 2"

Type of Filter Pack: GLOBAL #6 - 26-10' #7 - 10-9'

Diameter of Hole in Bedrock: 5 5/8"

Elevation / Depth of Bottom of Screen: 711.56' / 26'

Elevation / Total Depth of Borehole: 711.56' / 26'

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 10
DRILLING COMPANY: BOWSER MORNER
DRILLING RIG: CME-55

BORING No.: 09T02A
DATE: 12-4-00
GEOLOGIST: BOB BALKOVEC
DRILLER: D. SZAK

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1	0 / i			V. SOFT	GRAY	SILTY CLAY W/ SAND	CL	DAMP SOIL				
S-1 1436	2	1 / 1	1.9' / 2'		↓	BR	ORGANICS		NATURAL MATERIAL	0	0	0	0
	3	0 / 1			SOFT	YELL	SILTY CLAY W/	CL	VERY PLASTIC				
S-2 1442	4	1 / 3	1.5' / 2'		↓	OR	7- SANDSTONE CHUNKS			0	0	0	0
	5	3 / 47			V. HARD	YELL	WEATHERED SANDSTONE		REFUSAL @ 5.5'				
S-3 1455	6	50 / .1	7" / 1.6'			OR	FINE-COARSE SAND		FE STAINING	0	0	0	0
	7						- GRAYISH BROWN EQ.		* WELL ALIGNED				
	8						MATERIAL. WATER @ 6'		10' AND LOW CUTTINGS				
	9												
	10					GRAY	REMOLDED A CHUNK OF SHALE?		RX. CHUNKS				
				XXX			SANDSTONE		VERY HARD DRILLING @ 10'				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: HOLE REDRILLED (09T02B) WITH ROTARY RIG ON 12-5-00. HOLE GROUTED TO G.S. ON 12-5-00
H_2O @ 2.2' BGS ON 12-5-00

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 10
DRILLING COMPANY: Bowser Morner
DRILLING RIG: MOBILE B-59

BORING NUMBER: 09T02B
DATE: 12-5-00
GEOLOGIST: MATT COCHRAN
DRILLER: A. WOLFE

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
							SEE LOG OF 09T02A			NA	NA	0	0
							FOR LITHOLOGY TO						
							10'						
										NA	NA	0	0
									HARD DRILLING @ 7.5-8.5', CHIPS				
9									LOOKS LIKE GREY SHALY SANDSTONE				
						GREY	SHALE + SANDSTONE, INTERBEDDED & LAMINATED		SLIGHT MOISTURE IN CUTTINGS WHEN	NA	NA	0	
						GREY	SANDSTONE		CASING SET DRILL RATE 1'/MIN	0	0	0	0
				11.7		DK GREY	SHALE		MODERATE WEATH. @ 9-10, REST SLIGHT				
				12.7		LT GREY	SANDSTONE		FE STAINED @ 9-9.5 SS SLIGHTLY SHALY				
C-1 9.0			9.5/ 10.0						MASSIVE ↓ HOLE DRY AFTER RUN.				
10.0									CORE LOOKS DAMP THRU-OUT EXCEPT AT TOP				
									1 VERTICAL FRACT @ 17.7-18.3				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: HSA W 4 1/4 ID 8 1/2 OD TD 9', PULLED AUGERS, SET 6" FLUSH JOINT CASING TD 9' CORED 10 RUN, THEN REAMED, DRILL PIPE MOIST, BR, SHOULD MAKE H2O. STANDBY 1.5 HR, 2" H2O IN BT

Converted to Well: Yes ✓ No ____ Well I.D. #: ____

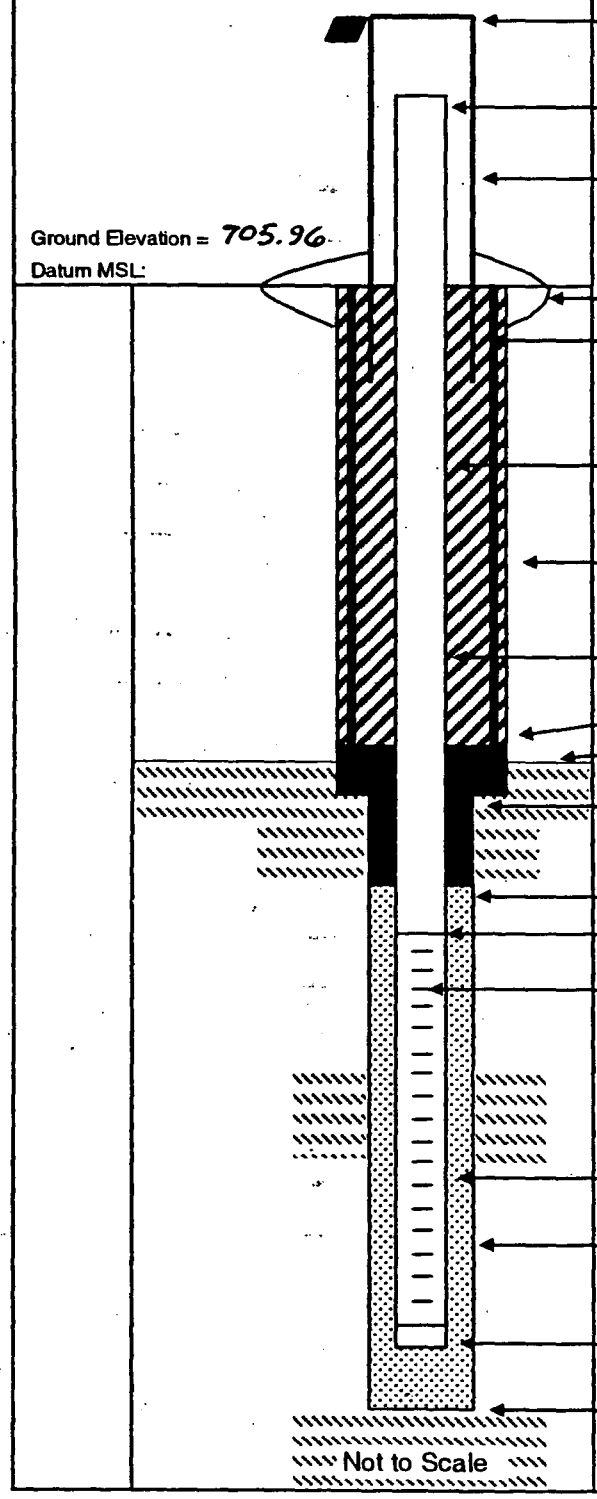
CHEC

Tetra Tech NUS, Inc.

BEDROCK MONITORING WELL SHEET

WELL No.: 09T02

PROJECT:	NSWC CRANE	DRILLING Co.:	BOWSER MORNER	BORING No.:	09T02B
PROJECT No.:	7141 CTO 010	DRILLER:	A. WOLFE	DATE COMPLETED:	12-5-00
SITE:	SWMU 9	DRILLING METHOD:	AIR ROTARY	NORTHING:	1312576.157
GEOLOGIST:	M.G. COCHAN	DEV. METHOD:	SURGE & WHALE PUMP	EASTING:	3025069.715



Elevation of Top of Casing: 709.01'

Stick Up of Casing Above Ground Surface: 3.05'

Elevation of Top of Riser: 708.45'

I.D. of Surface Casing: 4"

Type of Surface Casing: SQUARE STEEL

Type of Surface Seal: CONCRETE PAD

I.D. of Casing:

Type of Casing: TEMPORARY STEEL FLUSH JOINT (REMOVED)

Casing Length: 9'

I.D. of Riser: 2"

Type of Riser: PVC SCHEDULE 40

Borehole Diameter: 8 1/2"

Type of Backfill: CEMENT-BENTONITE GROUT QUIKRETE + AM. COLLOID WYOMING BENTONITE

Elevation / Depth Top of Seal: 702.96' / 3'

Elevation / Depth Top Bedrock: 698.46' / 7.5'

Type of Seal: BENTONITE PELLETS COLLOID ENVIRONMENTAL

Elevation / Depth of Top of Filter Pack: 700.96' / 5'

Elevation / Depth of Top of Screen: 698.96' / 7'

Type of Screen: PVC

Slot Size x Length: .01" X 5'

I.D. of Screen: 2"

Type of Filter Pack: GLOBAL #6 → 13-6'
#7 → 6-5'

Diameter of Hole in Bedrock: 5 5/8"

Elevation / Depth of Bottom of Screen: 693.96' / 12'

Elevation / Total Depth of Borehole: 686.96' / 19'

BENTONITE PELLETS FROM 19-13'

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 10
DRILLING COMPANY: Bowser Morner
DRILLING RIG: B-59
BORING NUMBER: 09T03
DATE: 12-12-00
GEOLOGIST: MATT COCHRAN
DRILLER: A. WOLFE

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							SEE LOG OF						
							09SB10 FOR						
							LITHOLOGY TO 9'						
	9						BEDROCK @ 9.5'		H_2O @ ~5' BGS WHEN AUGERS PULLED				
S-1		20 50/3"	.3/	9.5		BLACK	SHALE		DAMP	NA	NA	NA	NA
	11		2.0						DRILL RATE 1 FOOT /2 MINUTES	0	0	0	0
				11.5					LOST SOME CORE IN TOP OF RUN PER DRILLER				
						BRN GREY	SANDSTONE		V. BROKEN TOP .8', REST BLOCKY GRADUAL TRANSITION @ 11.5' MOD. WEATHERING THRU.				
C-1			7.7/										
5.9/		59%	10.0						HAIL FRACS @ 12.7, 16+17'				
10				17					H_2O @ 15.4' BGS AFTER HOLE REAMED, AFTER 1 HOUR FE STAINING ON FRACS.				
						GREY	SHALY SANDSTONE						
	19												
							TD 19'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.

Remarks: DRILLED TO 9' W 4¼ ID, 8½ OD HSA, SET 6" TEMP CASING TO 9' AFTER PULLING AUGER, CORED W N/X THRU CASING. REAMED HOLE W 5 3/8 BIT AFTER RUN

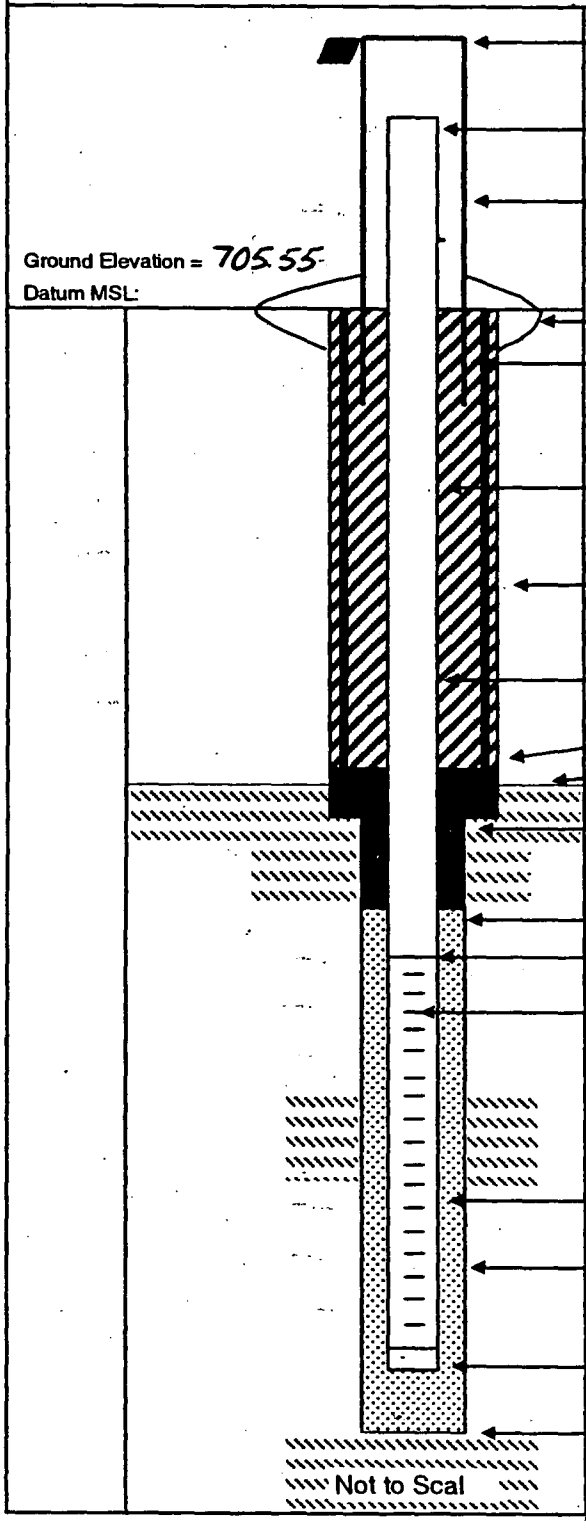
Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BEDROCK
MONITORING WELL SHEET

WELL No.: 09T03

PROJECT:	NSWC CRANE	DRILLING Co.:	BOWSER MORNER	BORING No.:	09T03
PROJECT No.:	7141 CTO 010	DRILLER:	A. WOLFE	DATE COMPLETED:	12-12-00
SITE:	SWMU 9	DRILLING METHOD:	AIR ROTARY	NORTHING:	1311791.416
GEOLOGIST:	M. G. COCHRAN	DEV. METHOD:	SURGE & WHALE PUMP	EASTING:	3025295.689



Elevation of Top of Casing: 708.56

Stick Up of Casing Above Ground Surface: 3.01'

Elevation of Top of Riser: 708.08

I.D. of Surface Casing: 4"

Type of Surface Casing: 4" STEEL SQUARE

Type of Surface Seal: CEMENT PAD

I.D. of Casing: 6"

Type of Casing: TEMPORARY STEEL FLUSH JOINT (REMOVED)

Casing Length: 9'

I.D. of Riser: 2"

Type of Riser: PVC SCH. 40

Borehole Diameter: 8 1/2

Type of Backfill: CEMENT-BENTONITE GROUT QUIKRETE + AMCOLLOID WYOMING BENTONITE

Elevation / Depth Top of Seal: 702.55' / 3'

Elevation / Depth Top Bedrock: 696.05' / 9.5'

Type of Seal: BENTONITE PELLETS COLLOID ENVIRONMENTAL

Elevation / Depth of Top of Filter Pack: 700.55' / 5

Elevation / Depth of Top of Screen: 698.55' / 7

Type of Screen: PVC

Slot Size x Length: .01" X 10'

I.D. of Screen: 2"

Type of Filter Pack: GLOBAL #6 19-6', #7 6-5'

Diameter of Hole in Bedrock: 5 5/8"

Elevation / Depth of Bottom of Screen: 688.55' / 17'

Elevation / Total Depth of Borehole: 686.55' / 19'

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 10
DRILLING COMPANY: Bowser Morner
DRILLING RIG: MOBILE B-59
BORING NUMBER: 09T04
DATE: 12-13-00
GEOLOGIST: MATT COCHRAN
DRILLER: A. WOLFE

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							SEE LOG OF						
							09SB10 FOR						
							LITHOLOGY TO						
							9'						
				10.0									
						BLACK	SHALE,		M. SOFT, V. BROKEN SLIGHT WEATHERING LAMINATED BEDDING	NA	NA	NA	NA
C-1				12.7					SANDSTONE IS M. SOFT, SLIGHT WEATH HOR. FRACS @ 13.5, 14, 14.4 & 15.7				
2.6		26%	5.0/			GREY	SANDSTONE						
5.6			5.0						BROKEN, LAMINATED SHALE BEDDING WITHIN SANDSTONE				
							T.D. 16'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): NA

Remarks: DRILLED WITH 4 1/4 ID / 8 1/2 OD HSA TO 10'
PULLED AUGERS, SET 10" FLUSH JOINT CASING

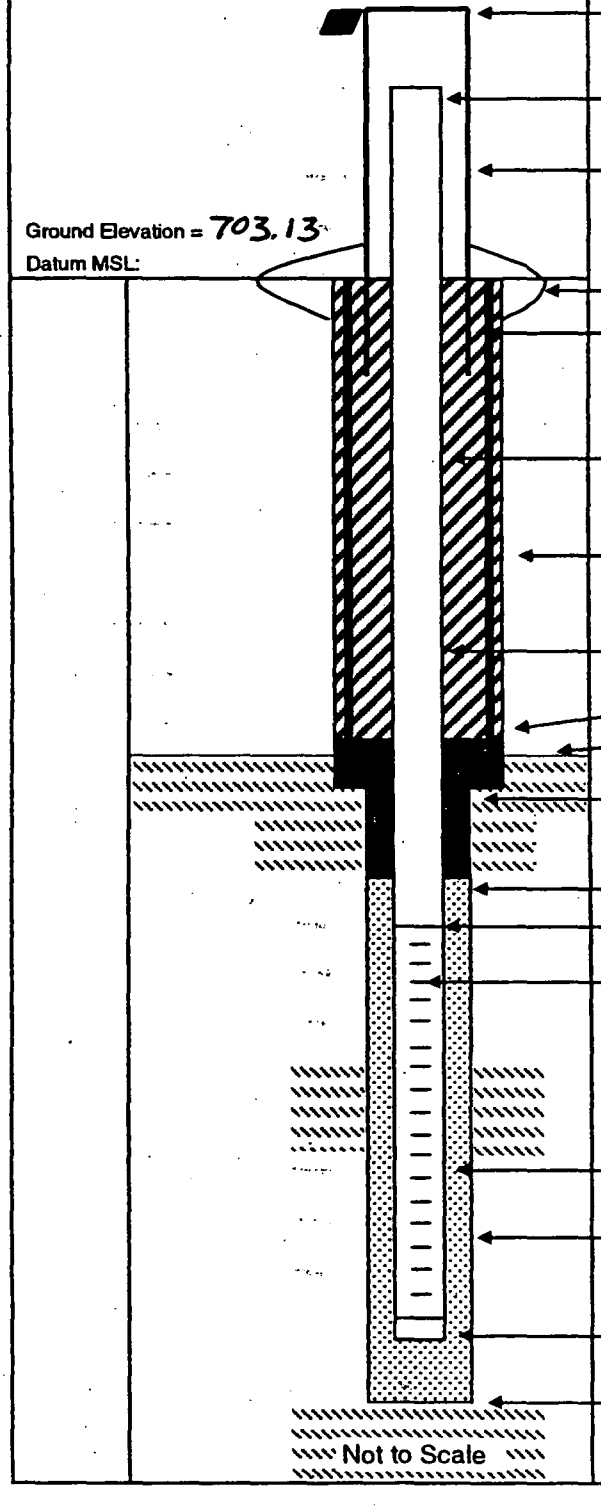
Converted to Well: Yes ✓ No _____ Well I.D. #: 09T04

Tetra Tech NUS, Inc.

BEDROCK MONITORING WELL SHEET

WELL No.: 09T04

PROJECT:	NSWC CRANE	DRILLING Co.:	BOWSER MORNER	BORING No.:	09T04
PROJECT No.:	7141 CTO 010	DRILLER:	A. WOLFE	DATE COMPLETED:	12-13-00
SITE:	SWMU 9	DRILLING METHOD:	AIR ROTARY	NORTHING:	1311679.977
GEOLOGIST:	M.G. COCHRAN	DEV. METHOD:	SURGE & WHALE PUMP	EASTING:	3025257.301



Elevation of Top of Casing: 706.53'

Stick Up of Casing Above Ground Surface: 3.40'

Elevation of Top of Riser: 705.70'

I.D. of Surface Casing: 4"

Type of Surface Casing: 4" STEEL SQUARE

Type of Surface Seal: CEMENT PAD

I.D. of Casing: 6"

Type of Casing: TEMPORARY STEEL FLUSH JOINT (REMOVED)

Casing Length: 10'

I.D. of Riser: 2"

Type of Riser: PVC SCH 40

Borehole Diameter: 8 1/2"

Type of Backfill: CEMENT-BENTONITE GROUT QUIKRETE + AMCOLLOID WYOMING BENTONITE

Elevation / Depth Top of Seal: 700.13' / 3'

Elevation / Depth Top Bedrock: 693.13' / 10'

Type of Seal: BENTONITE PELLETS COLLOID ENVIRONMENTAL

Elevation / Depth of Top of Filter Pack: 699.13' / 4

Elevation / Depth of Top of Screen: 697.13' / 6

Type of Screen: PVC

Slot Size x Length: .01" X 10'

I.D. of Screen: 2"

Type of Filter Pack: GLOBAL #6 16-5', #7 5-4'

Diameter of Hole in Bedrock: 5 5/8"

Elevation / Depth of Bottom of Screen: 687.13' / 16'

Elevation / Total Depth of Borehole: 687.13' / 16'

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 10
DRILLING COMPANY: Bowser Morner
DRILLING RIG: B-59 MOBILE

BORING NUMBER: 09T05
DATE: 12-4-00
GEOLOGIST: MATT COCHRAN
DRILLER: A. WOLF

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
							SEE BORING						
							LOGS 09SB09 AND						
							11 FOR LITHOLOGY						
							TO 9'						
	9			9.0									
S-1		30 10/6"	.7		V.DENSE	GR BRN	SHALY SILTSTONE		BEDROCK @ 9'	0	0	0	
	11		2.0			GR BRN	SHALY SANDSTONE LAMINATED. HOR. INTERBEDDING		H2O IN HOLE AT BR SURF H2O @ 7.9' IN OPEN HOLE LOST ~1 FOOT REC AT TOP PER DRILLER				
C-1			5.8			BRN GREY	SHALY SILTSTONE FE STAINS @ 15.2-15.8		DRILL RATE 1 FOOT/MINUTE HOR FRACT ZONE @ 10', SATURATED				
5.6		43%	7.8										
7.8				15.9 / 16.0		BLACK	COAL		ROCK BROKEN, V. BROKEN +	.8			
	16.8					GREY	SILTSTONE NO BEDDING EVIDENT		SEVERE WEATHER @ 10', 13.2-13.8 OTHERWISE MOD. WEATHER.				
							TD 17'		CORE DAMP EXCEPT WHERE V. BROKEN				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: SET 6" TEMP CASING TO 9', POURED GRANULATED BENTONITE ALONG ANNULUS + HYDRATED. RESUMED CORING THRU ROCK, REAMED BORING W 5 3/8 ROLLER BIT.

Converted to Well: Yes ✓ No _____ Well I.D. #: _____

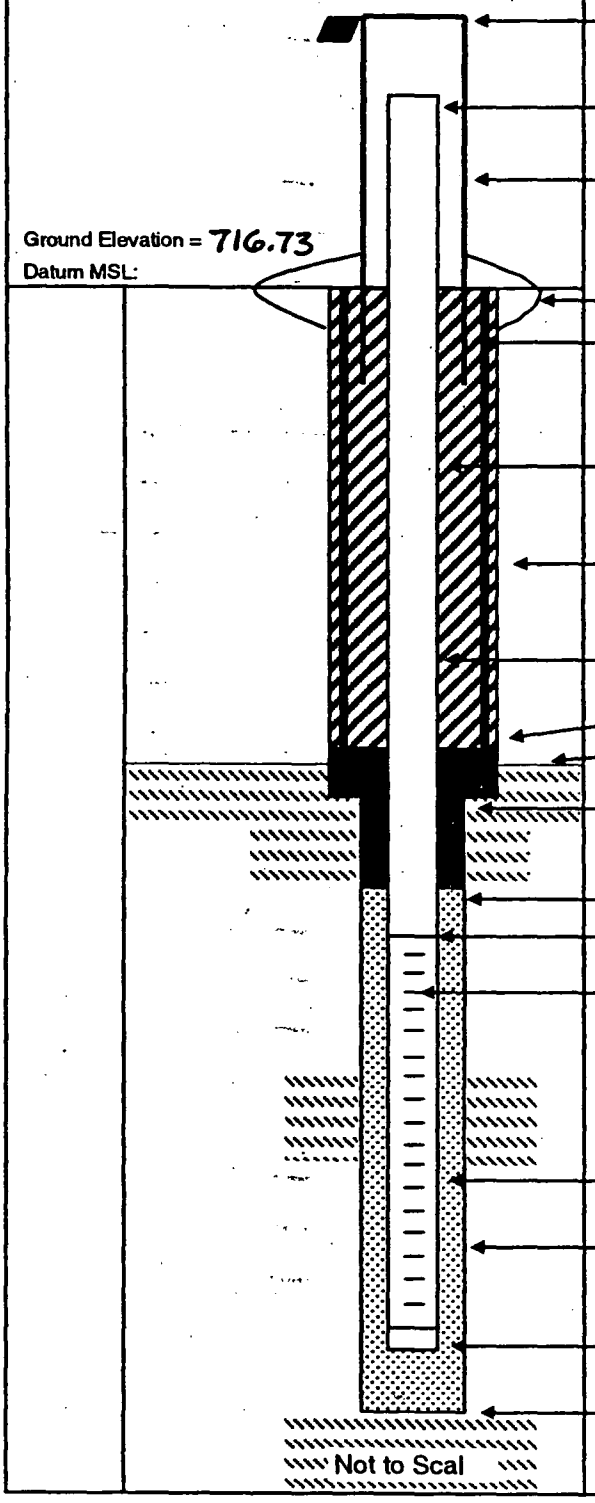
Tetra Tech NUS, Inc.

BEDROCK

MONITORING WELL SHEET

WELL No.: 09T05

PROJECT:	NSWC CRANE	DRILLING Co.:	BOWSER MORNER	BORING No.:	09T05
PROJECT No.:	7141 CTO 010	DRILLER:	A. WOLF	DATE COMPLETED:	12-4-00
SITE:	SWMU 9	DRILLING METHOD:	AIR ROTARY	NORTHING:	1311681.497
GEOLOGIST:	M.G. COCHRAN	DEV. METHOD:	SURGE & WHALE PUMP	EASTING:	3025540.482



Elevation of Top of Casing: 719.71

Stick Up of Casing Above Ground Surface: 2.98

Elevation of Top of Riser: 719.19

I.D. of Surface Casing: 4"

Type of Surface Casing: SQUARE STEEL

Type of Surface Seal: CEMENT PAD

I.D. of Casing:

Type of Casing: TEMPORARY STEEL FLUSH JOINT

Casing Length: 9' (REMOVED)

I.D. of Riser: 2"

Type of Riser: PVC SCHEDULE 40

Borehole Diameter: 8 1/2"

Type of Backfill: CEMENT-BENTONITE GROUT QUIKRETE + AM. COLLOID WYOMING BENTONITE

Elevation / Depth Top of Seal: 713.73' / 3'

Elevation / Depth Top Bedrock: 707.73' / 9'

Type of Seal: BENTONITE PELLETS COLLOID ENVIRONMENTAL

Elevation / Depth of Top of Filter Pack: 711.73' / 5'

Elevation / Depth of Top of Screen: 709.73' / 7'

Type of Screen: PVC

Slot Size x Length: .01" X 10'

I.D. of Screen: 2"

Type of Filter Pack: GLOBAL #6 - 17'-6" #7 6-5'

Diameter of Hole in Bedrock: 5 5/8"

Elevation / Depth of Bottom of Screen: 699.73' / 17'

Elevation / Total Depth of Borehole: 699.73' / 17'

APPENDIX A.4.1

SWMU 10
BORING LOGS AND MONITORING WELL CONSTRUCTION DIAGRAMS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 105B01
DATE: 12-5-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	1				LOOSE	WHITE & GRAY	TOP 2' GRAVELY SAND T-SILT	GM		0.0	0.0	0.0	0.0
	2				STIFF	YELL OR	BOTT 1.9' CLAYEY SILT	ML					
	3				↓	LT BR	MOTTLED	↓					
S1 0434	4		2.1' / 4'		↓	↓	↓	↓					
	5				M. STIFF	YELL	SILTY CLAY (MOTTLED)	CL					
	6				↓	OR	↓	↓					
	7					GRAY							
S2 0445	8		4' / 4'							↓			
	9									1.0			
S3 0456	10		2' / 2'		↓		↓	↓		0.0	↓	↓	↓
				10' TD.									
					Sampled 105B010002 @ 0940								
					Sampled 105B010810 @ 0950								

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

COLLECTED F012050001

Drilling Area Background (ppm): 0.0

Remarks: 10' DPT

Converted to W ll: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 10 SB 02
DATE: 12.5.00
GEOLOGIST: BOB BALKOVEC/K. SIMPSON
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							GRAVEL						
	1				SOFT	GRAY	LIMESTONE GRAVEL W/ FINES	GC	TR ROOTS MOIST	0	0	0	0
	2					BRN	CLAY TR SILT	CL					
	3												
S.1 1407	4		1.2 / 4										
	5												
	6												
	7				MED STIFF								
S.2 1415	8		2.2 / 4			GRAY	SILTY CLAY W/ORGANIC (ROOTS, PLANT MAT.)	OL		17		21	
	9						W/RUST NODULES			6			
S.3 1420	10		2 / 2		STIFF	RUST / GRAY	SILTY F. SAND MOTTLING	SM	WET	.8			
				TD 10'									
							TD = 10'						
							TOTAL FOOTAGE 10						
					Sampled		10SB02 0002 @ 1407						
					Sampled		10SB02 0709 @ 1415						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted t Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE
BORING NUMBER: 10SB03
DATE: 12-12-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KLEIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Drilling BZ**
	1				SOFT	YELL	SILTY CLAY	GC		0.0	0.0	0.0	0.0
S-1 1336	2		8" / 2'		↓	OR	W/ GRAVEL						
	3				SOFT								
S-2 1340	4		8" / 2'		↓		↓						
	5				SOFT		SILTY CLAY W/		WET				
S-3 1347	6		4" / 2'		↓		GRAVEL		SAMPLE				
	7				SOFT		TOP 5" SILTY CLAY W/ GRAVEL						
S-4 1353	8		9" / 2'		LOOSE	DARK GRAY	BOTTOM FINE-MED SAND, CLAY	SC					
	9				SOFT		SANDY CLAY	CL					
S-5 1300	10		8" / 2'		↓	↓	↓	↓					
				T.D. 10'									
					Sampled 10SB030002 @ 0825								
							SAMPLED AHEAD OF DPT. COLLECTED FOI2120001 + MS/MSD						
					Sampled 10SB030910 @ 1302								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ N X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 105B04
DATE: 12-5-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			0/0.5		GRAY	.5' GRAVEL + SAND T. CLAY	GC		0.0	0.0	0.0	0.0
	2					YELL BR	CLAYEY SILT MOTTLED	ML					
	3					GRAY							
S-1 1041	4		3.5' / 4'			YELL BR							
S-2 1037	5		1' / 1'			GRAY	TOP .5 CLAYSILT BOTT .5 V. FINE SAND + SILT		REFUSAL @ 5'				
	6			TD.5'									
	7												
	8												
	9												
	10												
					Sampled	105B040002 @ 1015							
					Sampled	105B040305 @ 1030							

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Ar a

Remarks: 10' DPT

Background (ppm): 0.0

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 10SB05
DATE: 12-5-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				LOOSE	WHITE + GRAY	TOP .8' GRAVEL + FINE SAND	GM		0.0	0.0	0.0	0.0
	2				STIFF	↓	T-SILT	↓		0.4			
	3					LT	BOTT 1.1' SILTY CLAY W/	CL		1.0			
S-1 1046	4		1.9' / 4'			BR	FINE SAND			0.0			
	5				↓	BR/ GRAY	TOP .9' SILTY CLAY			9.0			
	6				V. STIFF	WHITE	BOTT 1' CLAY		UNABLE TO REC. TOO HARD	0.0			
S-2 1051	7		1.4' / 3'		↓	↓	↓	↓		↓	↓	↓	↓
S-3 1057	8		.5' / .5'	TD 7.5'	HARD	LT GRAY	CLAYEY SILT, V. FINE SAND	ML	REFUSAL @ 7.5'				
	9												
	10												
					Sampled 10SB050002 @ 1047								
					Sampled 10SB050406 @ 1100								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 105B06
DATE: 12-5-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				LOOSE	GRAY	TOP 1.2' GRAVEL + SAND	GM		0.0	0.0	0.0	0.0
	2				↓	+ WHITE	T-SILT	↓					
	3				V.SOFT	GRAY	BOTT 3' SILTY CLAY	CL					
S-1 1114	4		1.5 / 4'			BR.	↓	↓					
	5				V.SOFT	GRAY	V.F-MED SAND + SILT	SM	WET @ 5'				
S-2 1120	6		1' / 2'			BROWN	T-CLAY		REFUSAL @ 6'	0.5			
S-3	7				STIFF		CLAYEY SILT		S-3 SECOND ATTEMPT @ 4'-6'				
4'-8' 1133	8		3.6' / 4'		V.STIFF		SILTY CLAY	CL					
	9					LT.				0.0			
S-4 1147	10		.8' / 2'		HARD	BR							
				TD.10'									
					Sampled 105B060002 @ 1115								
					Sampled 105B060507 @ 1150								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 16'

Drilling Area Background (ppm): 0

Converted to Well: Yes _____ N X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 10 SB 07
DATE: 12.5.00
GEOLOGIST: BOB BALKOVEC/K. SIMPSON
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
							GRAVEL						
	1				MED. STIFF	GRY	LIME STONE, GRAVEL	SC	MOIST	0	0	0	0
	2					BRN	CLAYEY SILT TR F. SAND	CL					
	3												
S.1 1315	4		2 / 2										
	5				SOFT								
	6												
	7												
S.2 1320	8		3.5 / 4		STIFF		CLAYEY SILT RUST/GRAY MOTTLING						
S.3 1330	9		.5 / 1		V. STIFF	TAN	SILT, TR CLAY	ML	DRY				
	10			TD 9'									
							TD = 9' REFUSAL						
							TOTAL FOOTAGE 9'						
					Sampled		10SB070002 @ 1315						
					Sampled		10SB070406 @ 1320						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted t Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 10SB08
DATE: 12-12-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole**	Drillers BZ**
	1				LOOSE	WHITE +	TOP 2' SILTY GRAVEL, W	GM		0.0	0.0	0.0	0.0
	2				↓	LT. BR	SOME SAND	↓		0.0	↓	↓	↓
	3				STIFF	YELL	BOTT 1' SILTY CLAY	CL		0.0			
S-1 0910	4		3' / 4"		↓	UP / GRAY	"MOTTLED"	↓		0.0			
	5				↓	↓	TOP 1.5' SILTY CLAY	↓		0.0			
	6				↓	↓	"MOTTLED"	↓		0.0			
	7				HARD/STIFF	LT. BR / GRAY	BOTT 1.5' CLAYEY SILT	ML		0.0			
S-2 0922	8		3' / 4"		↓		↓ "MOTTLED"	↓		0.0	↓	↓	↓
	9			TOP 8'			REFUSAL @ 8'						
	10												
					Sampled 10SB0800J2 @ 0915								
					Sampled 10SB080406 @ 0938								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Remarks: 8' DPT

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 10 SB09
DATE: 12.5.00
GEOLOGIST: BOB BALKOVEC/K. SIMPSON
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
							GRASS						
	1				SOFT	BRN	SILT SOME F. SAND	SM	TR ROOTS MOIST	0	0	0	0
	2				MED STIFF		F. SAND SOME SILT W/SANDSTONE FRAGS						
	3						1" Ø MAX SOME RUST NODULES						
5.1 444	4		1.7 / 4			TAN				0.8		1	
5.2 1500	5		1 / 4		STIFF	ORANGE/ GRAY	SAND F. TO MED POORLY GRADED	SP		0			
	6			TD 5									
	7												
	8												
	9												
	10												
							TD = 5' REFUSAL						
							TOTAL FOOTAGE 10' 1 OFF SET						
					Sampled		10SB090002 @ 444						
					Sampled		10SB09 0204 @ 1500						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: 7141 CTO 010
DRILLING COMPANY: Bowser Morner
DRILLING RIG: GEOPROBE

BORING NUMBER: 10SB10
DATE: 12-12-00
GEOLOGIST: BOB BALKOVEC
DRILLER: TED KEEN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Background	Breathing Zone	Borehole	Drill Rig **
	1				SOFT	YELL OR	SANDY CLAY W/ T-	CL	1446	0.0	0.0	0.0	0.0
S-1 1424	2		16" / 2'		↓	LT BR	SILT + ORGANICS	↓					
	3				M. STIFF	↓	SILTY CLAY	CL					
S-2 1436	4		18" / 2'		↓	↓	↓	↓					
	5				M. STIFF	YELLOW BR	TOP 10" SILTY CLAY	CL					
S-3 1455	6		14" / 2'		SOFT	YEL BR GRAY	BOTT 4" SILTY CLAY T-ORGANICS	↓	MOTTLED				
	7				V. SOFT	↓	CLAY T-SILT	CL					
S-4 1504	8		2' / 2'		↓	↓	MOTTLED	↓					
	9				V. SOFT	↓	CLAY W/ V. FINE SAND	↓					
S-5 1511	10		15" / 1.5'	T.D. 9.5'	↓	↓	+ SILT.	↓	REFUSAL @ 9.5'	↓	↓	↓	↓
					Sampled 10SB10 0002 @ 1425								
					Sampled 10SB10 0003 @ 1515								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals borehole. Increase reading frequency if elevated reponse read.

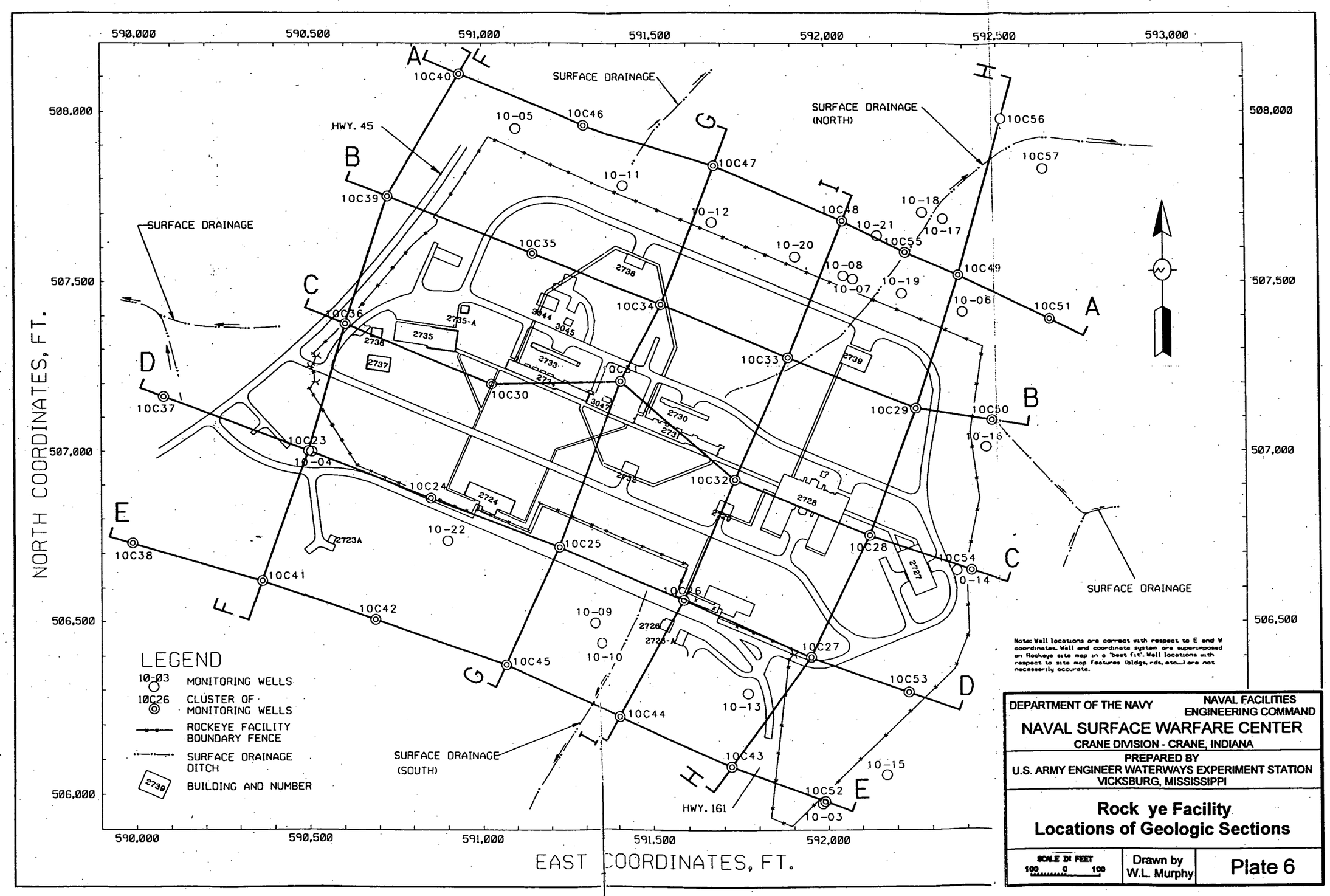
R marks:

Drilling Area Background (ppm):

Converted to Well: Yes ____ No X Well I.D. #: ____

APPENDIX A.4.2

SWMU 10
CROSS SECTIONS


590,000
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591,000
591,500
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592,500
593,000
508,000
507,500
507,000
506,500
506,000
NORTH COORDINATES, FT.
EAST COORDINATES, FT.
A
B
C
D
E
F
G
H
10C40
10C46
10C47
10C56
10C57
10C39
10C35
10C48
10C55
10C49
10C51
10C34
10C36
10C33
10C37
10C30
10C29
10C50
10C23
10C24
10C32
10C28
10C54
10C38
10C41
10C25
10C26
10C42
10C27
10C53
10C45
10C44
10C43
10C52
10-05
10-11
10-12
10-18
10-17
10-21
10-20
10-08
10-07
10-19
10-06
10-16
10-04
10-22
10-09
10-10
10-13
10-15
10-03
10-14
HWY. 45
SURFACE DRAINAGE
SURFACE DRAINAGE (NORTH)
SURFACE DRAINAGE (SOUTH)
HWY. 161
2738
2735
2735-A
2736
2737
2733
2734
3044
3045
3043
2730
2731
2732
2728
2729
2727
2724
2723A
2726
2726-A
LEGEND
10-03 MONITORING WELLS
10C26 CLUSTER OF MONITORING WELLS
ROCKEYE FACILITY BOUNDARY FENCE
SURFACE DRAINAGE DITCH
2738 BUILDING AND NUMBER
Note: Well locations are correct with respect to E and N coordinates. Well and coordinate system are superimposed on Rockeye site map in a "best fit". Well locations with respect to site map features (bldgs, rds, etc...) are not necessarily accurate.
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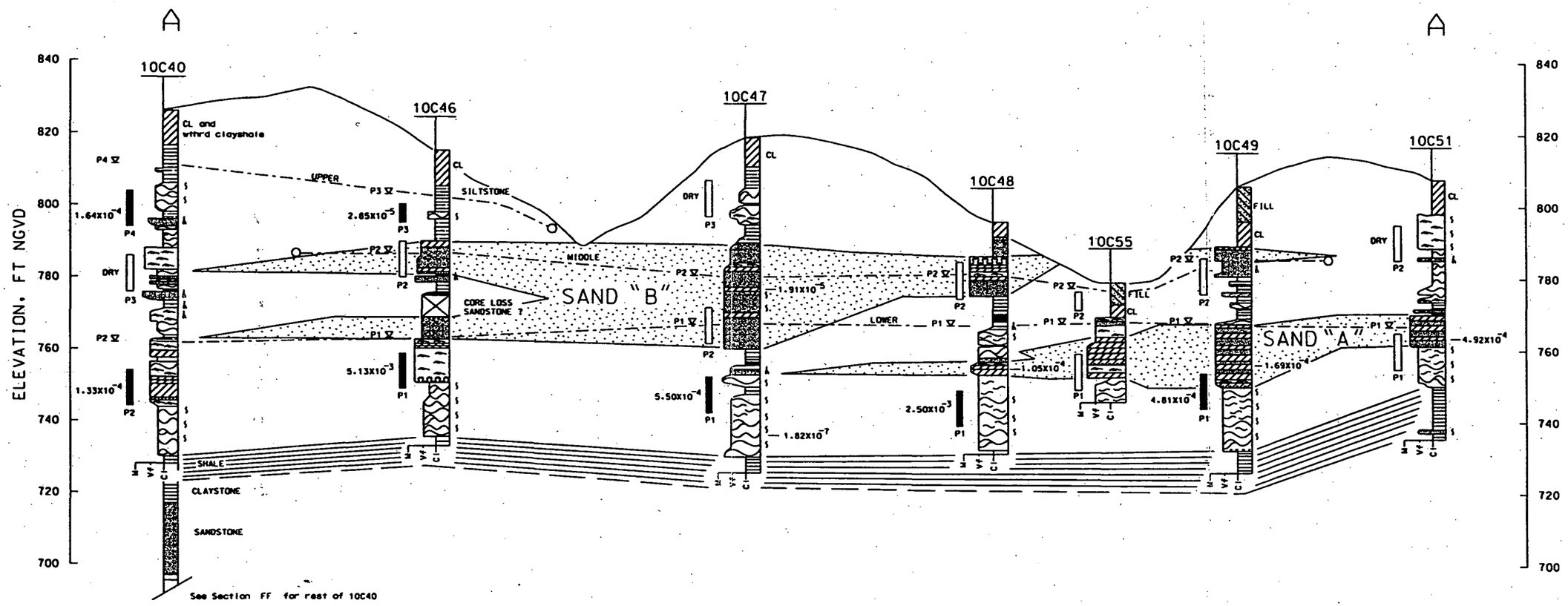
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SURFACE WARFARE CENTER
CRANE DIVISION - CRANE, INDIANA
PREPARED BY
U.S. ARMY ENGINEER WATERWAYS EXPERIMENT STATION
VICKSBURG, MISSISSIPPI
Rock ye Facility
Locations of Geologic Sections
SCALE IN FEET
100 0 100
Drawn by
W.L. Murphy
Plate 6



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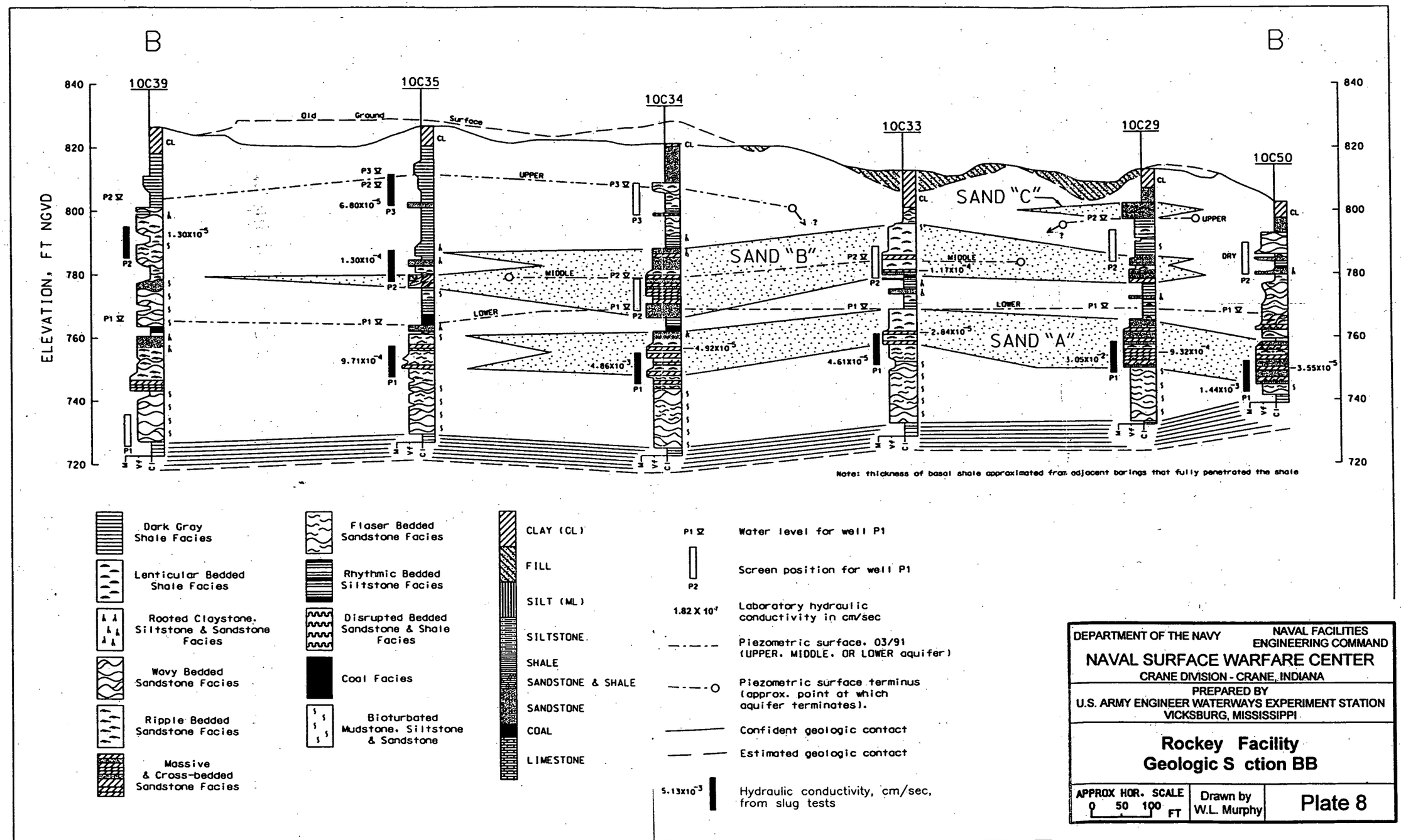
Rock y Facility

Geologic Section AA

APPROX HOR. SCALE 0 50 100 FT	Drawn by W.L. Murphy	Plate 7



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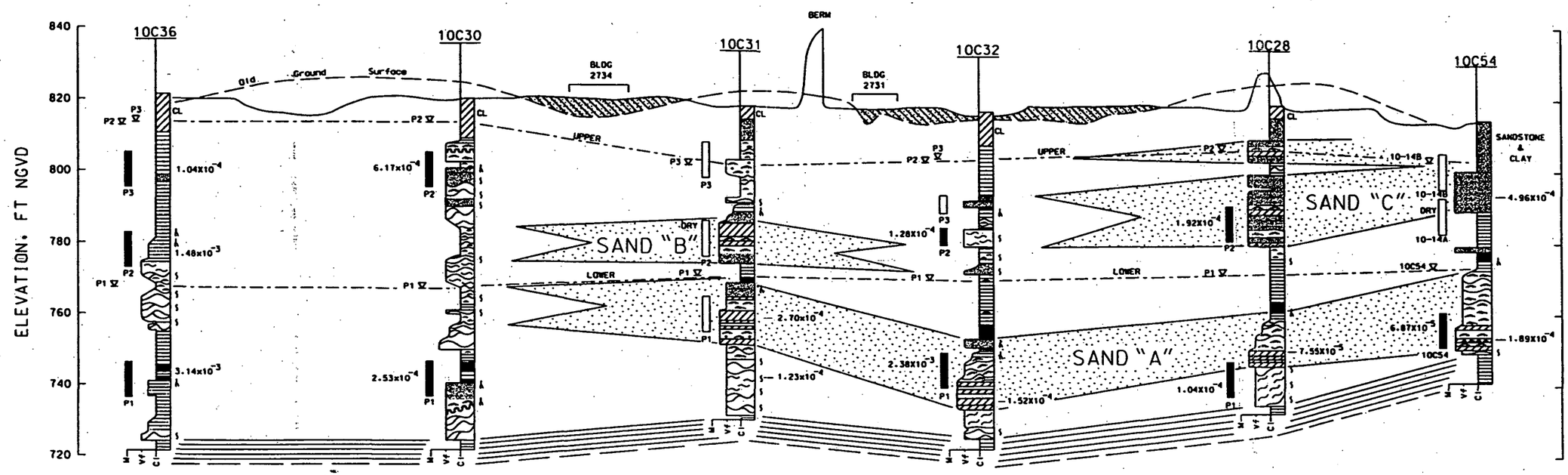
Geologic S ction BB

APPROX HOR. SCALE 0 50 100 FT	Drawn by W.L. Murphy	Plate 8



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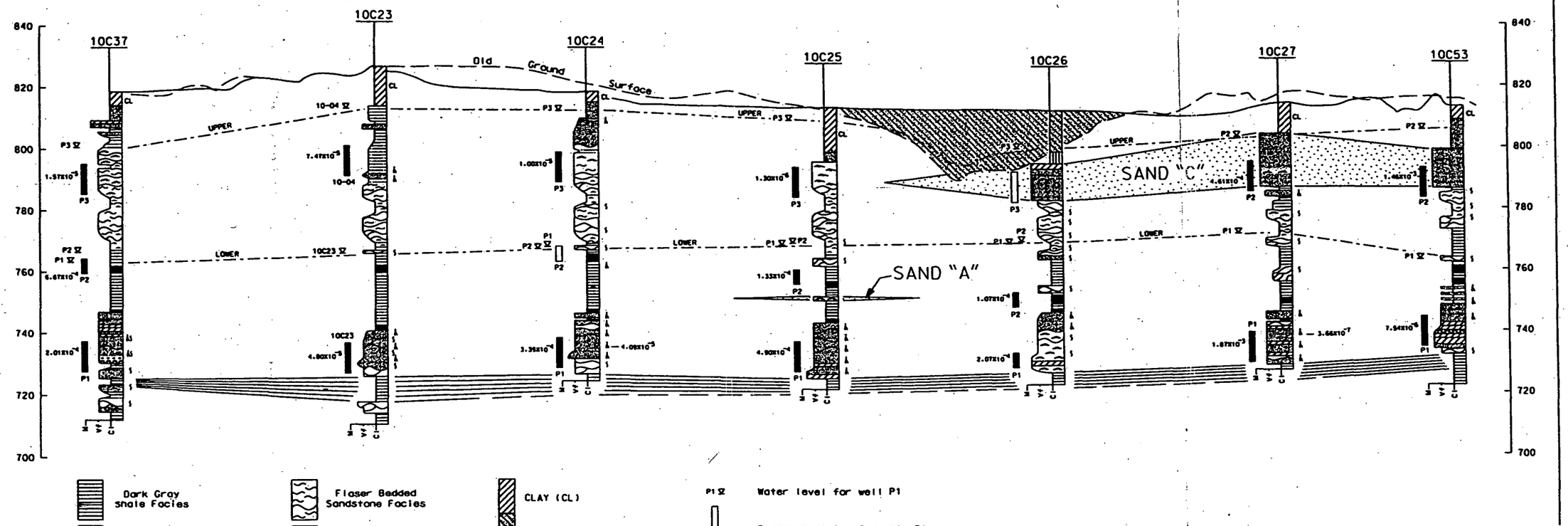
R ckeye Facility

Geologic Section CC

APPROX HOR. SCALE 0 50 100 FT

Drawn by W.L. Murphy

Plate 9



Dark Gray shale Facies

Lenticular Bedded Shale Facies

Rooted Claystone, Siltstone & Sandstone Facies

Wavy Bedded Sandstone Facies

Ripple Bedded Sandstone Facies

Massive & Cross-bedded Sandstone Facies

Flaser Bedded Sandstone Facies

Rhythmic Bedded Siltstone Facies

Disrupted Bedded Sandstone & Shale Facies

Coal Facies

Bioturbated Mudstone, Siltstone & Sandstone

CLAY (CL)

FILL

SILT (ML)

SILTSTONE

SHALE

SANDSTONE & SHALE

SANDSTONE

COAL

LIMESTONE

P1 ▽ Water level for well P1

P2 Screen position for well P1

1.82 X 10⁻⁷ Laboratory hydraulic conductivity in cm/sec

Piezometric surface, 03/91 (UPPER, MIDDLE, OR LOWER aquifer)

Piezometric surface terminus (approx. point at which aquifer terminates).

Confident geologic contact

Estimated geologic contact

5.13x10⁻³ Hydraulic conductivity, cm/sec, from slug tests

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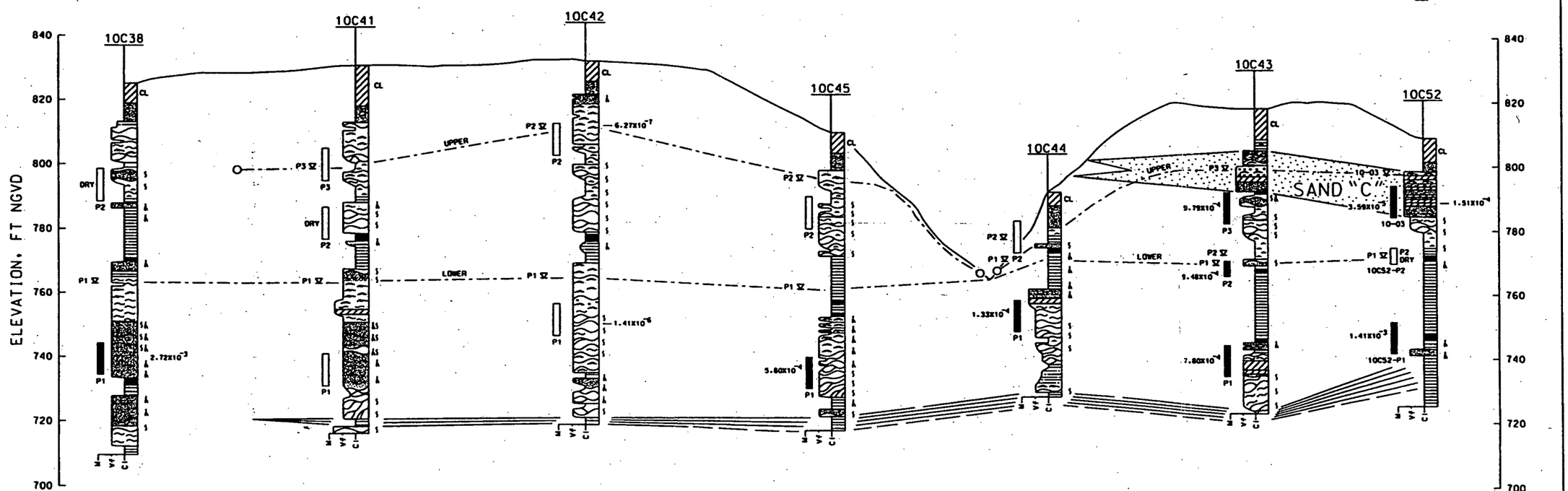
G ologic Section DD

APPROX HOR. SCALE 0 50 100 FT	Drawn by W.L. Murphy	Plate 10



Dark Gray Shale Facies

Lenticular Bedded Shale Facies

Rooted Claystone, Siltstone & Sandstone Facies

Wavy Bedded Sandstone Facies

Ripple Bedded Sandstone Facies

Massive & Cross-bedded Sandstone Facies

Flaser Bedded Sandstone Facies

Rhythmic Bedded Siltstone Facies

Disrupted Bedded Sandstone & Shale Facies

Coal Facies

Bioturbated Mudstone, Siltstone & Sandstone

CLAY (CL)

FILL

SILT (ML)

SILTSTONE

SHALE

SANDSTONE & SHALE

SANDSTONE

COAL

LIMESTONE

P1 ▽ Water level for well P1

P2 Screen position for well P1

1.82 X 10^-7 Laboratory hydraulic conductivity in cm/sec

Piezometric surface, 03/91 (UPPER, MIDDLE, OR LOWER aquifer)

Piezometric surface terminus (approx. point at which aquifer terminates).

Confident geologic contact

Estimated geologic contact

5.13X10^-3 Hydraulic conductivity, cm/sec, from slug tests

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CRANE DIVISION - CRANE, INDIANA

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VICKSBURG, MISSISSIPPI

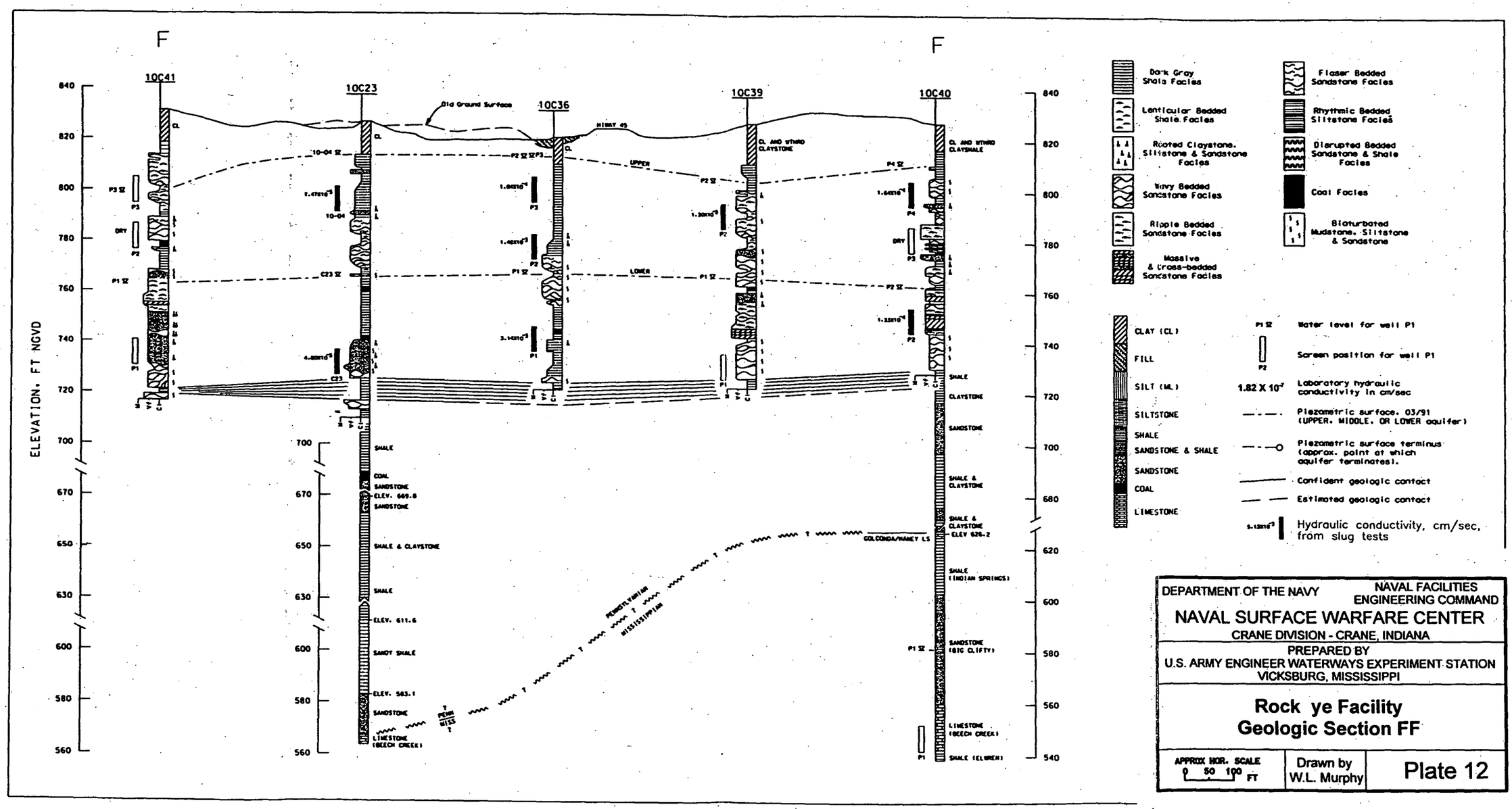
Rock ye Facility

Geologic Section EE

APPROX HOR. SCALE 0 50 100 FT

Drawn by W.L. Murphy

Plate 11



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VICKSBURG, MISSISSIPPI

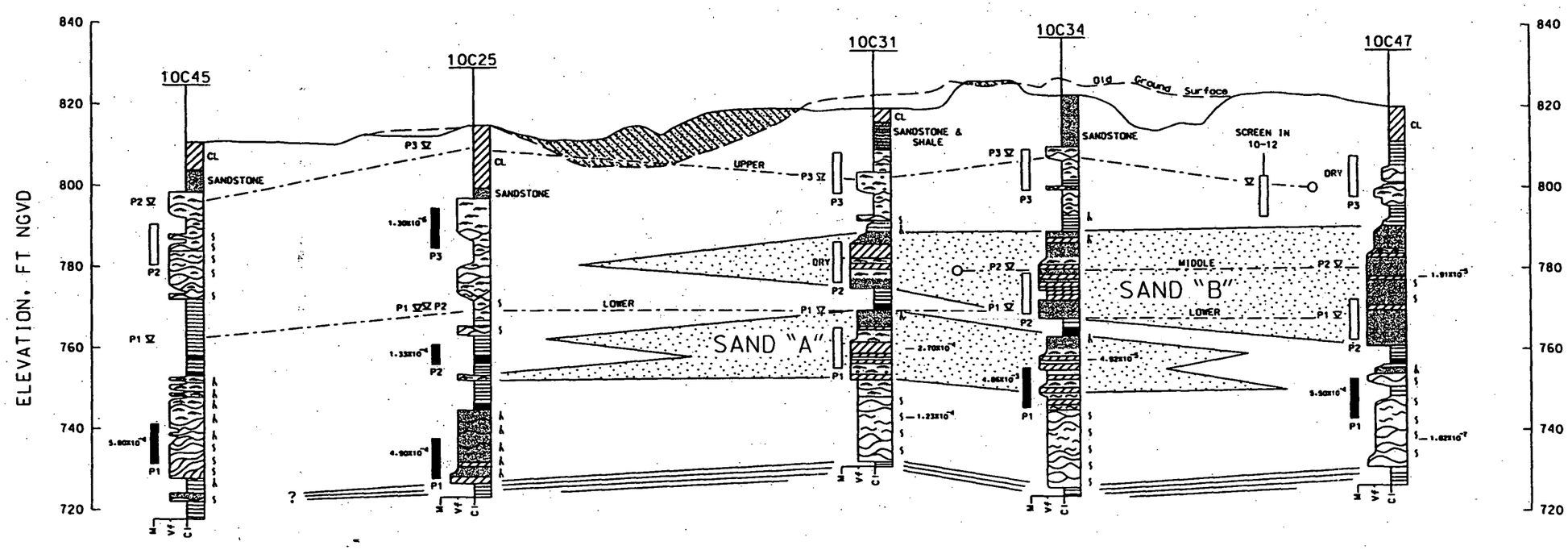
Rock ye Facility

Geologic Section FF

APPROX HOR. SCALE 0 50 100 FT

Drawn by W.L. Murphy

Plate 12



Dark Gray Shale Facies

Lenticular Bedded Shale Facies

Rooted Claystone, Siltstone & Sandstone Facies

Wavy Bedded Sandstone Facies

Ripple B dded Sandstone Facies

Massive & Cross-bedded Sandstone Facies

Flaser Bedded Sandstone Facies

Rhythmic Bedded Siltstone Facies

Disrupted Bedded Sandstone & Shale Facies

Coal Facies

Bioturbat d Mudstone, Siltstone & Sandstone

CLAY (CL)

FILL

SILT (ML)

SILTSTONE

SHALE

SANDSTONE & SHALE

SANDSTONE

COAL

LIMESTONE

P1 ▽ Water level for well P1

P2 Screen position for well P1

1.82 X 10^{-7} Laboratory hydraulic conductivity in cm/sec

Piezometric surface, 03/91 (UPPER, MIDDLE, OR LOWER aquifer)

Piezometric surface terminus (approx. point at which aquifer terminates).

Confident geologic contact

Estimat d geologic contact

5.13x10^{-3} Hydraulic conductivity, cm/sec, from slug tests

DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING COMMAND

NAVAL SURFACE WARFARE CENTER

CRANE DIVISION - CRANE, INDIANA

PREPARED BY

U.S. ARMY ENGINEER WATERWAYS EXPERIMENT STATION

VICKSBURG, MISSISSIPPI

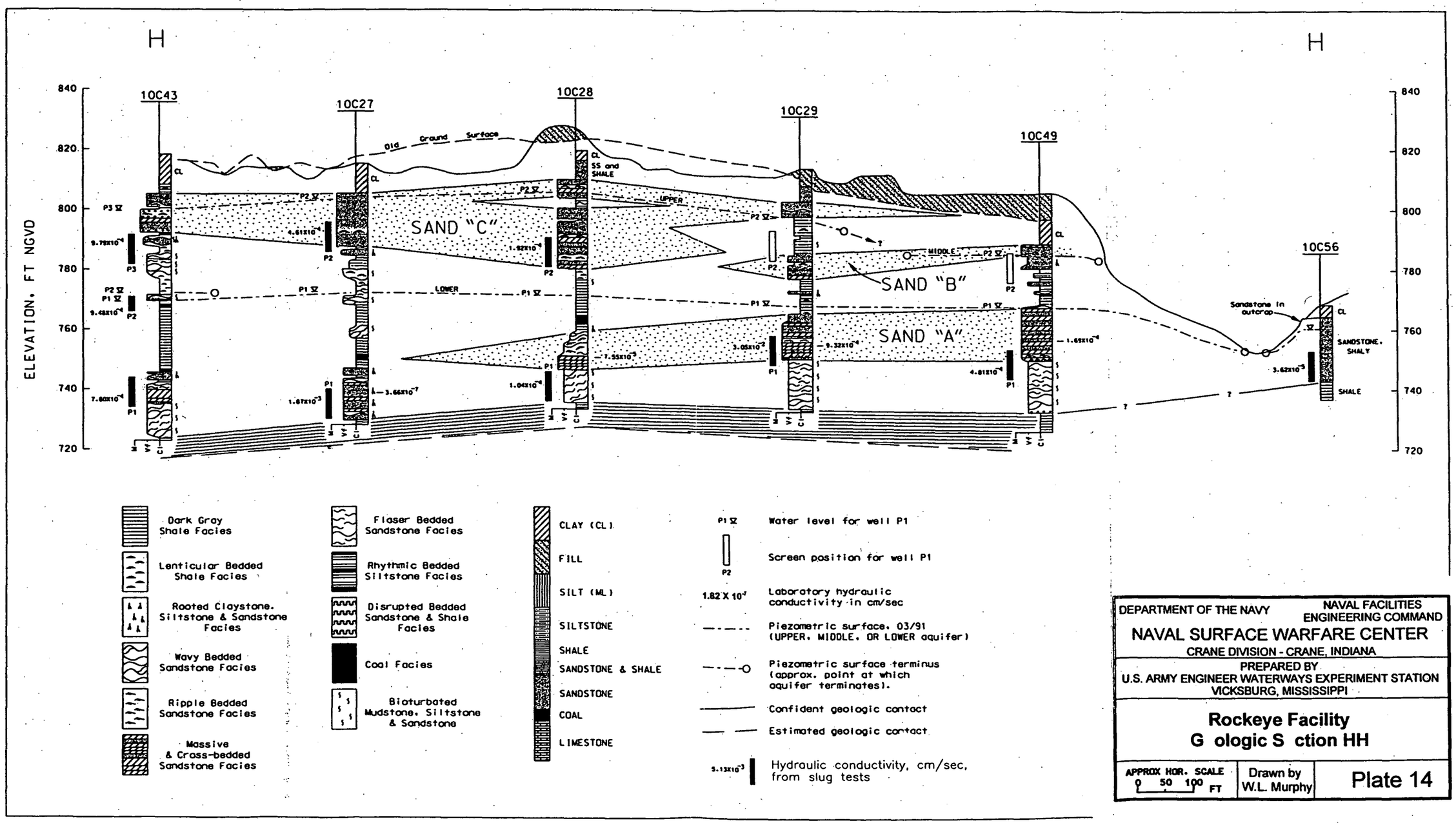
Rockeye Facility

Geologic Section GG

APPROX HOR. SCALE 0 50 100 FT

Drawn by W.L. Murphy

Plate 13



DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

NAVAL SURFACE WARFARE CENTER

CRANE DIVISION - CRANE, INDIANA

PREPARED BY

U.S. ARMY ENGINEER WATERWAYS EXPERIMENT STATION

VICKSBURG, MISSISSIPPI

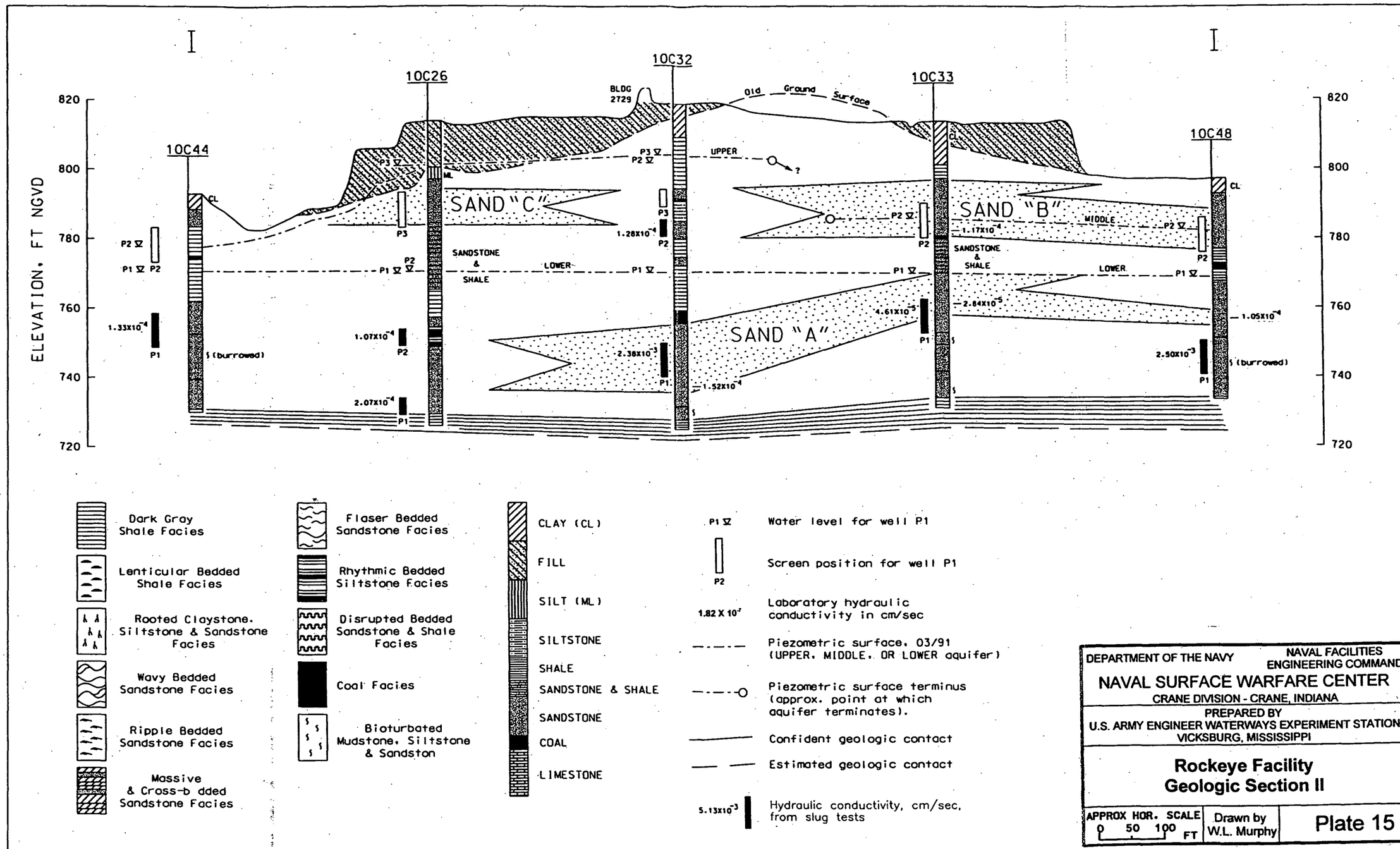
Rockeye Facility

G ologic S ction HH

APPROX HOR. SCALE 0 50 100 FT

Drawn by W.L. Murphy

Plate 14



DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING COMMAND

NAVAL SURFACE WARFARE CENTER

CRANE DIVISION - CRANE, INDIANA

PREPARED BY

U.S. ARMY ENGINEER WATERWAYS EXPERIMENT STATION

VICKSBURG, MISSISSIPPI

Rockeye Facility

Geologic Section II

APPROX HOR. SCALE 0 50 100 FT

Drawn by W.L. Murphy

Plate 15

APPENDIX B.1

SAMPLE LOG SHEETS AND OTHER FIELD FORMS

APPENDIX B.1.1

SWMU 4
SOIL SAMPLE LOG SHEETS

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 04SS01 0002
Sample Location: 04SS01
Sampled By: TIRODAW/B.BALKOVEC
C.O.C. No.: 00332

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/00 Time: 0950 Method: PLASTIC TROWEL Monitor Reading (ppm): 0.0	0-2'	BROWN	SILTY FINE-GRAINED SAND, T-CLAY W/ SOME ROOTS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

- BURIED DEBRIS 3 OZ FLOWERS FOUND

MAP:

SEE FIG 5-8

QA/QC (if applicable):

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 04SS02 0002
Sample Location: SWMU 4
Sampled By: K. SIMPSON
C.O.C. No.: 00332

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11.29.00 Time: 0830 Method: TROWEL/PLASTIC Monitor Reading (ppm):	0-2'	BRN. NO ODOR	CLAY/SILT TR F. SAND MOIST TR. ROOTS MORE SAND 1-2'

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 24	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 4	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 3	
COLLECTED X VOL FOR DUP + MS/MSD + SAMPLE			

OBSERVATIONS / NOTES:

VOC (ENCORES) 01-02'
OTHERS 00-02'

MIXED IN-SITU PRIOR TO FILLING JARS

FID = 0 PPM

MAP:

SEE FIG 5-8

APPROX. BETWEEN 04SB08 & 04SB01

Circle / Applicable:

MS/MSD: YES

Duplicate ID No.: FD 112900 01

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B010002
Sample Location: 045B01
Sampled By: B. Balkovec / T. Rujano
C.O.C. No.: ~~[illegible]~~ 003298003298

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/25/00 Time: 1428 Method: DPT Monitor Reading (ppm): 71	0-2'	Yellowish Brown	Silty, Fine Med Sand. (Sand)

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

MAP:

SEE PAG 5-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec / [signature]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B010204
Sample Location: 045B01
Sampled By: B. Bankovic / T. Rojahn
C.O.C. No.: ~~92347~~ 003298/003299

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 4/28/00 Time: ~~1400~~ 1455 Method: DPT Monitor Reading (ppm): 2-3 365	2'-4'	Yellow Orange / Lt Brown	Silty, Fine Med Sand

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
↳ Cec, pH, Tol			

OBSERVATIONS / NOTES:

Classify Soil as A Sand.

MAP:

See Fig. 5-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Bulkovic / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B020002
Sample Location: 045B02
Sampled By: B. Balkovec / T. Rutland
C.O.C. No.: 00327 / 00328 / 00329

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/28/00 Time: 1345 Method: DPT Monitor Reading (ppm): 68	0-2'	Yellow Orange	Silty Fine Med Sand.

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

MAP:

SEE FIG 5-8

Circle if applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B020608
Sample Location: 045B0808
Sampled By: B. Bulkove / T. Rozman
C.O.C. No.: 02247
00329/00329

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 4/28/00 Time: 1420 Method: DPT Monitor Reading (ppm): 700	6-8'	Black + Gray	Silty Fine Med Sand w/ Plastics Metal Shavings

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

Classified Soil as A Sand

MAP:

SEE Pg 5-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Bulkove / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B030002
Sample Location: 045B03
Sampled By: B. Balkovec / T. Rujano
C.O.C. No.: ~~[illegible]~~ 003298/003299

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/28/00 Time: 1039 Method: DPT Monitor Reading (ppm): 135	0-2'	Yellow ~~Orange~~ Black	Fine Sand T-Silt w/ Black Felt Paper & Wood.

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

* VOC'S TAKEN FROM 1'-2'
CLASSIFY SOIL AS FILL.

MAP:

SEE FIG 5-8

Circle If Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B030406
Sample Location: 045B03
Sampled By: B. Bulkowski / T. Rojahn
C.O.C. No.: ~~02747~~ 00329/00329

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/28/00 Time: 1130 Method: DPT Monitor Reading (ppm): 162	4'-6'	Blk + Lt. Brown	Sand, Wood Fragments + Other Porous Material w/ Trace Gravel + Trace Sand

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

MAP:

See F26 5-8

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Robert Bulkowski / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B04000J
Sample Location: 045B04
Sampled By: B. Balkovec / T. Rozanski
C.O.C. No.: ~~00237~~ 00328/00329

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/28/00 Time: 1255 Method: DPT Monitor Reading (ppm): 86	0-2'	YELLOW ORANGE	SILTY, FINE SAND (SM)

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

& VOC'S TAKEN FROM 1'-2' INTERVAL

MAP:

SEE F26 5-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 04SB040608
Sample Location: 04SB04
Sampled By: B. Balkovec / T. Rojano
C.O.C. No.: 87317
003328/003329

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/28/08 Time: 1315 Method: DPT Monitor Reading (ppm): 1.8	6-8'	GRAY	SILTY F SAND W/ FIBROUS MATERIAL

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 8	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

* CLASSIFY SOIL AS A SAND

MAP:

SEE FIG 5-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B05D003
Sample Location: 045B05
Sampled By: B. Balkovec / T. Rojano
C.O.C. No.: ~~[illegible]~~ 003328/00329

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/28/00 Time: 0930 Method: DPT Monitor Reading (ppm): 37	0-2'	Black + Yellow orange	Silt w/ layers of felt paper + fine sand & silt

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

* VOC'S TAKEN @ 1'-2' INTERVAL

* SOIL REPRESENTS FILL. IT APPEARS THAT A LAYER OF SAND WAS PLACED OVER FILL TO ALLOW FOR VEGETATION GROWTH. (SAND)

MAP:

SEE FIG 5-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B050204
Sample Location: 045B05
Sampled By: B. Bulkowe / J. Rozann
C.O.C. No.: ~~02297~~ 00328/00329

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/28/00 Time: 1010 Method: DPT Monitor Reading (ppm): 15	2-4'	Yellow Orange + Black	Silty, Fine Sand with Felt Paper T-Gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

* Fill material. Less debris @ 2ft' interval classify sample as a SAND.

MAP:

SEE FIG 5-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Bulkowe / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B060032
Sample Location: 045B06
Sampled By: B. Balkovec / T. Rujano
C.O.C. No.: ~~07217~~ 063297 00321

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/28/00 Time: 1344 Method: DPT Monitor Reading (ppm): 0.0	0-2'	Yellow Orange	Silty, Fine-Med Sand

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

MAP:

SEE FIG 5-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B060709
Sample Location: 045B06
Sampled By: B. Bulkove / T. Rojahn
C.O.C. No.: 02247 00328/00329

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/30/00 Time: 1535 Method: DPT Monitor Reading (ppm): 0.0	7'-9'	Yellow Orange	Silty Fine Med Sand

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
↳ Cos, pH, TOC			

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A SAND

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Bulkove / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 045B070002
Sample Location: 045B
Sampled By: B. Balkovec / T. Rujano
C.O.C. No.: 00332

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/00 Time: 0814 Method: DPT Monitor Reading (ppm): 0.0	0-2'	Yellow Orange	Silty Fine-Med Sand, T-Gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 16	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 2	
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 2	
↳ CEC, pH, TOC			

OBSERVATIONS / NOTES:

VOC's taken from 1'-2' interval

MAP:

See Fig 5-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD11290002

Signature(s):

Robert Balkovec / [signature]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B070507
Sample Location: 045B07
Sampled By: B. Bankore / T. Rojahn
C.O.C. No.: 00332

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 1/24/09 Time: 0935 Method: DPT Monitor Reading (ppm): 0.0	6'-7'	Yellow orange	Fine-med sand T-SSC7

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	ther
Volatiles App. IX	encore	✓ 3	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

MAP:

See F26. 5-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkore / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B102002
Sample Location: 045B02
Sampled By: B. Balkovec / T. Rutland
C.O.C. No.: 00332

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/00 Time: 0905 Method: DPT Monitor Reading (ppm): 0.0	0-2'	YELL ORANGE	SILTY CLAY W/ T- ~~BRN~~ SAND

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
↳ Eff, pH + TOC			

OBSERVATIONS / NOTES:

VOC'S TAKEN AT 1'-2' INTERVAL.

CLASSIFY SOIL AS A CLAY

MAP:

SEE FIG. 5-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 045B08080
Sample Location: 045B08
Sampled By: B. Balkovec / T. Rojano
C.O.C. No.: 00332

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/00 Time: 0918 Method: DPT Monitor Reading (ppm): 0.0	08'-10'	Yellow Orange	Silty, Fine Mod Sand

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
↳ Clr, pH + TOC			

OBSERVATIONS / NOTES:

Classify Soil as a Sand

MAP:

See Fig. 3-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 04SB09 0002
Sample Location: SWMU 4
Sampled By: K. Simpson, T. Rojahn
C.O.C. No.:

- [x] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 2-20-01 Time: 1110 Method: DPT Monitor Reading (ppm): 0	0002	BRN	SILT, TR F. SAND, TR CLAY TR. GRAVEL ½" Ø MAX TR ROOTS, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements		Collected	Other
Volatiles App. IX	encore	8	✓	0102
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	✓	0002
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	✓	0002

OBSERVATIONS / NOTES:

MAP:

NORTH SIDE OF GRAVEL ROAD
WEST (≈10') OF MW 04C01

SEE FIGURE 5-8A

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): TR/SK

SOIL & SEDIMENT SAMPLE LOG SHEET

Pag 1 of 1

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 04SB090810
Sample Location: SWMU 4
Sampled By: K. Simpson, T. Rojahn
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 2-20-01 Time: 1115 Method: DPT Monitor Reading (ppm): 0	8-10'	LT. BRN	SILTY F. TO COARSE SAND W/ F. GRAVEL, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements		Collected	Other
Volatiles App. IX	encore	8	✓	8-10
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	✓	↓
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	✓	

OBSERVATIONS / NOTES:

MAP:

SEE FIGURE 5-8A

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 04SB10 0002
Sample Location: SWMU 4
Sampled By: K. Simpson, T. Rojahn
C.O.C. No.:

- [x] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 2-20-01 Time: 1010 Method: DPT Monitor Reading (ppm): 0	0002	BRN SOME ORANGE	MOIST TR ROOTS SAND SILT TR GRAVEL 1/4" Ø MAX

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements		Collected	Other
Volatiles App. IX	encore	8	✓	0102"
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	✓	0002
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	✓	0002

OBSERVATIONS / NOTES:

MAP:

SEE FIGURE 5-8A

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 04SB100608
Sample Location: SWMU 4
Sampled By: K. Simpson, T. Rojahn
C.O.C. No.:

- [x] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 2-20-01 Time: 1040 Method: DPT Monitor Reading (ppm): 0	6 - 8'	BRN	SILTY SAND, FINE MOIST, POORLY GRADED

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore 8	✓	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass 1	✓	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass 1	✓	

OBSERVATIONS / NOTES:

MAP:

SOUTH OF GRAVEL RD.

SEE FIGURE 5-8A

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 04SB11 0002
Sample Location: SWMU 4
Sampled By: K. Simpson, T. Rojahn
C.O.C. No.:

[X] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 7.20.01 Time: 0930 Method: DPT Monitor Reading (ppm): 0	0002	LT BRN	SILTY SAND, MOIST TR ROOTS F/MED. SAND TR. GRAVEL ½" Ø MAX

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements		Collected	Other
Volatiles App. IX	encore	8	✓	0102
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	✓	0002
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	✓	0002

OBSERVATIONS / NOTES:

MAP:

SOUTH OF GRAVEL RD.

SEE FIGURE 5-8A

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 04SB110810
Sample Location: SWMU 4
Sampled By: K. Simpson, T. Rojahn
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 2-20-01 Time: 0940 Method: DPT Monitor Reading (ppm): 0	8-10'	BRN	SILTY SAND F/MED SAND DAMP, TR GRAVEL ½" Ø MAX

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements		Collected	Other
Volatiles App. IX	encore	8	✓	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	✓	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	✓	

OBSERVATIONS / NOTES:

MAP:

SEE FIGURE 5-8A

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 04SB120002
Sample Location: SWMU 4
Sampled By: K. Simpson, T. Rojahn
C.O.C. No.:

[X] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 2-20-01 Time: 1250 Method: DPT Monitor Reading (ppm): 0	00-02'	BRN	FINE SAND W TR MED SAND, TR SILT/CLAY TR ROOTS, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	ther
Volatiles App. IX	encore 2 4	✓	01 02
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass ~~3~~ 4	✓	00 02
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass 3	✓	00 02
	X VOL FOIL DUP + MS/MSD		

OBSERVATIONS / NOTES:

MAP:

SEE FIGURE 5-8A

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	FD 022001 01

Signature(s): [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 04SB120810
Sample Location: SWMU 4
Sampled By: K. Simpson, T. Rojahn
C.O.C. No.:

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 2·20·01 Time: 1310 Method: DPT Monitor Reading (ppm): 0	8-10	BRN TO RED	MOIST, M.TO F. SAND TR SILT & CLAY TR WEATHERED SANDSTONE

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓	8-10'
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓	↓
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓	↓
+ TOC, CEC, pH			

OBSERVATIONS / NOTES:

MAP:

SEE FIGURE 5-8A

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

APPENDIX B.1.2

SWMU 5
SOIL SAMPLE LOG SHEETS

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 055B010002
Sample Location: 055B01
Sampled By: B. BALKOVEC / T. ROSMAN
C.O.C. No.: 0334/0333

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/03/00 Time: 1350 Method: DPT Monitor Reading (ppm): 0.0	0-2'	LT. BROWN	SILTY CLAY, GRASS & T. GRAVEL

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
DIOXINS / FURANS	8 OZ W/M GLASS	✓ 1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

SOIL CLASSIFIED AS A CLAY

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 055B01SS10
Sample Location: 055B01
Sampled By: B. Balkovec / T. Rossman
C.O.C. No.: 00334 / 00333

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/00	Yellow Orange 8-10'	Yellow Orange	Fine Sand
Time: 1300			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 2	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
↳ CEC, pH, TOC			
Dioxins / Furans	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 2

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 055B02002
Sample Location: 055B02
Sampled By: B. Balkovec / T. Rossman
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/30/00 Time: 0905 Method: DPT Monitor Reading (ppm): 0.0	0-2'	Brown	Sandy Silt w/ Roots + organics Trace

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	3	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	
Dioxins / Furans	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

VOC's taken from 1'-2' interval

Classify soil as a silt.

MAP:

Fig. 6-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 05SB02J406
Sample Location: 05SB02
Sampled By: B. Balkovec / T. Rossman
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11-30-00 Time: 0930 Method: DPT Monitor Reading (ppm): 445	4-6'	Gray	Silty Clay T-Sand ~~[illegible]~~ ~~[illegible]~~

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	3	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	
Dioxins / Furans	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

Classify Soil as a Clay

MAP:

See F26 6-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 055B03 0002
Sample Location: 055B03
Sampled By: B. PALKOVICS / T. ROSMAN / L. SZMAS
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11.30.00 Time: 0915 Method: ~~SPT~~ PLASTIC TROWEL Monitor Reading (ppm): 0.0	0-2'	DARK BRN	SILT W/ FILL GLASS, STEEL ETC. MOIST, TR ROOTS MORE CLAY LESS FILL 2ND FOOT.

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 24	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 4	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 3	
DIOXINS / FURANS	8 OZ W/M GLASS	✓ 3	

OBSERVATIONS / NOTES:

FID = 0 NO ODOR

VOC COLLECTED 01-02'

ALL OTHERS COLLECTED 0-02'

MIXED IN-SITU

MAP:

SEE FIG 6-8

Circle If Applicable:

MS/MSD	Duplicate ID No.: FD113000 01
YES	YES

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 05SB03050?
Sample Location: 05SB03
Sampled By: P. Balkovec / T. Rosman
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11-30-00 Time: 1037 Method: DPT Monitor Reading (ppm): 540	5'-7'	Reddish Brown + Blk	Sandy Silt + Silty Clay.

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 3	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
→ Cec, pH, TOC			
Dioxins / Furans	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

Classify Soil as a Clay

MAP:

See Fig 6-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 055B040002
Sample Location: 055B014
Sampled By: B. PALKOVE / T. ROSAMA
C.O.C. No.:

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-13-00 Time: 0830 Method: DPT-Electric Monitor Reading (ppm): 0-2	0-2'	BROWN	SILTY, SANDY (Fine-Coarse) CLAY

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
↳ CEC, pH, TOC			
Dioxins / Furans	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

CLASSIFY SOIL AS A CLAY

MAP:

SEE FIG. 6-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Palkove

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: OSSB04U2204
Sample Location: OSSB04
Sampled By: R. BALKOVEC / T. ROSMAN
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-13-00 Time: 0420 Method: DPT-ELECTRIC Monitor Reading (ppm): 0.0	2'-4'	BROWN	SANDY (V.F.GR) SILT, SOME CLAY

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
DIOXINS / FURANS	8 oz w/m GLASS	✓ 1	

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A SILT

MAP:

SEE FIG. 6-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[ ] Surface Soil
[x] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 055B05002
Sample Location: 055B05
Sampled By: B. Balkovec / T. Rosman
C.O.C. No.: 0333 / 0334

Type of Sample:
[x] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/00 Time: 1525 Method: DPT Monitor Reading (ppm):	0-2'	Rusty Brown	Fine sandy silt, trace

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
Dioxins / Furans	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

VOC's taken from 1'-2'

Soil classified as a silt.

MAP:

See Fig. 6-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 05SB05 [illegible]
Sample Location: 05SB05
Sampled By: B. Balkovec / T. Rosman
C.O.C. No.: 0337 / 0334

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/00 Time: 1535 Method: DPT Monitor Reading (ppm): 340	6-8'	BLACK, DARK GRAY	~~[illegible]~~ CLAY, TRACE AND WOOD FRAGS.

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	
↳ CEC, pH, TOC			
DIOXINS / FURANS	8 oz w/m GLASS	1	

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A CLAY

MAP:

SEE FIG. 6-4

Circle if Applicable:

MS/MSD — Duplicate ID No.:

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 055B06000 2
Sample Location: 055B06
Sampled By: B. BALKOVEC / T. ROSMAN
C.O.C. No.: 0332/0334

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/00 Time: 1430 Method: DPT Monitor Reading (ppm): 0.0	0-2'	DK BROWN, RUSTY	SILTY, FINE GRAVELLY SAND W/ FINE MATERIAL - GLASS + METAL SHAVINGS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 3	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
DIOXINS / FURANS	8 OZ W/M GLASS	✓ 1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

CLASSIFY SOIL AS A SAND

MAP:

SEE FIG. 6-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 055B060609
Sample Location: 055B06
Sampled By: R. Balkovec / T. Rossman
C.O.C. No.: 0333/0334

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/24/00 Time: 1455 Method: DPT Monitor Reading (ppm): 425	6'-8'	GRAY	SILTY CLAY, T-FINE SAND + FILL MATERIAL

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
DIOXINS / FURANS	8 oz w/m GLASS	✓ 1	

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A CLAY.

MAP:

SEE FIG. 6-8

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B07000 3
Sample Location: 035B07
Sampled By: B. BALLOUE / T. ROSMAN
C.O.C. No.: 0332/0334

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/22/00 Time: 1337 Method: DPT Monitor Reading (ppm): 0.0	0-2'	DK. BROWN	SAND, SILTY W/ SOME CLAY AND FILL

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 16	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 2	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 2	
DIOXINS / FURANS	8 OZ W/M GLASS	✓ 2	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

CLASSIFY SOIL AS SAND OR FILL

MAP:

SEE FIGURE 6-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD112900003

Signature(s): Robert Bulkeye

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 05SB07060
Sample Location: 05SB07
Sampled By: D. Balkovec / T. Rosman
C.O.C. No.: 0333/0334

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/00 Time: 1400 Method: DPT Monitor Reading (ppm): 0.0	6-8'	BROWN/YELLOW ORANGE	CLAYEY SILT

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	3	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	
DIOXINS / FURANS	8 oz w/m GLASS	1	

OBSERVATIONS / NOTES:

SOIL CLASSIFIED AS A SILT

MAP:

SEE FIG. 6-8

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 05SB08002
Sample Location: 05SB08
Sampled By: B. PALLOVICE / T. ROSAMAN
C.O.C. No.:

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-13-00 Time: 1022 Method: DPT-ELECTRIC Monitor Reading (ppm): 0.0	0-2'	LIGHT BROWN	SILTY CLAY, TR ORGANICS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
DIOXINS / FURANS	8 OZ W/M GLASS	✓ 1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

CLASSIFY SOIL AS A CLAY

MAP:

SEE FIG. 6-8

Circle If Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Bulkovice

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 05SB 08
Sample Location: 05SB 09
Sampled By: R. Balkovec / T. Rosman
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.13.00			
Time: 1400			
Method: DPT			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore		
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass		
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass		
↳ Cl, pH, TOC			
Dioxins / Furans	8 oz w/m glass		

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A NO SAMPLE

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Belkover

APPENDIX B.1.3

SWMU 9
SOIL SAMPLE LOG SHEETS

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B01D002
Sample Location: 045B01
Sampled By: B. Balkover / T. Rutana
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 11-30-00	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1115	0-2'	LT BROWN/BROWN + GRAY	CLAYEY FINE-SAND, T-GRAVEL AND ORGANICS
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	5	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

SOIL CLASSIFIED AS A SAND

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkover / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B010810
Sample Location: 045B01
Sampled By: B. BALKOVICH / T. ROZAHN
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 11-30-00	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1120	8'-10'	Brown/Gray	Clay w/ T-Size
Method: DPT			
Monitor Reading (ppm): N/A			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	4	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	
↳ CEC, pH, TOC			

OBSERVATIONS / NOTES:

Soil classified as a clay

MAP:

See Fig 7-8

Circle If Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovich / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B020002
Sample Location: 045B02
Sampled By: B. Balkovec / T. Rutana
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11-30-00 Time: 1249 Method: DPT Monitor Reading (ppm): 0.0	0-2'	LT. BROWN	SILTY CLAY, T-GRAVEL + SAND SOME ORGANICS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

SOIL CLASSIFIED AS A CLAY

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 049B020803
Sample Location: 049B03
Sampled By: B. BALKOVEC / T. ROSAHN
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11-30-00 Time: 1300 Method: DPT Monitor Reading (ppm): 0.0	6-8'	YELLOW	FINE-SANDY CLAY

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 16	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 2	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 2	

OBSERVATIONS / NOTES:

SOIL CLASSIFIED AS A CLAY

MAP:

SEE FIG 7-8

Circle If Applicable:

MS/MSD —

Duplicate ID No.: YES: FD11300003

Signature(s): Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 095B030002
Sample Location: 095B03
Sampled By: B. Balkovec / T. Rujana
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11-30-00 Time: 1315 Method: ~~[illegible]~~ PLASTIC TROWEL Monitor Reading (ppm): 0	0-2'	BRN. TO TAN TR ROOTS	GRASS COVER, 4" TOP SOIL THEN SILTY SAND W/ FILL BRICK, LIMESTONE MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 24	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 4	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 3	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

SOIL CLASSIFIED AS A CLAY BASED ON DPT OBSERVATIONS

NO ODOR

FID = 0 PPM

MIXED IN-SITU

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD	Duplicate ID No.: YES
YES	FD113000 0002

Signature(s): Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: DASB030406
Sample Location: DASB03
Sampled By: B. BALKOVIC / T. ROSAHN
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11-30-00 Time: 1355 Method: DPT Monitor Reading (ppm): 0.0	4-6'	YELLOW ORANGE	SILTY CLAY - T-WEATHERED SANDSTONE

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
↳ CEC, pH, TOC			

OBSERVATIONS / NOTES:

SOIL CLASSIFIED AS A CLAY

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovic / [signature]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B040002
Sample Location: 045B04
Sampled By: B. Balkovec / T. Rusanu
C.O.C. No.: R. SIMPSON

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.4.00 Time: 0830 Method: DPT Monitor Reading (ppm): 0	0-2'	LT BRN	SILT, TR ROOTS, FILL (GLASS) MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	8X2	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1X2	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide + CEC, pH, TOC	8 oz w/m glass	1X2	
	2X VOL FOR DUP		

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

SOIL CLASSIFIED AS A SILT

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD —

Duplicate ID No.: FD 12040001

Signature(s): Robert Balkovec / T. Rusanu

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: DPSB 04 0406
Sample Location: DPSB 04
Sampled By: B. BALKOVIC / T. ROAHN
C.O.C. No.: R. SIMPSON

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.4.00 Time: 0840 Method: DPT Monitor Reading (ppm): 0	0406	LT BRN	SILTY F. SAND w/GRAY MOTTLING MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

SOIL CLASSIFIED AS A SAND

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Robert Balkovic / T. Roahn

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 095B05 0002
Sample Location: 095B05
Sampled By: B. Balkovec / T. Rujanen
C.O.C. No.: K. SIMPSON

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.4.00 Time: 1410 Method: DPT Monitor Reading (ppm): 0	0-2'	BRN	SILT/CLAY MOIST GRAY MOTTLING @ BTM

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide + CEC, PH, TOC	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

SOIL CLASSIFIED AS A CLAY

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Robert Balkovec / T. Rujanen

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 2 of 2

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B05 0406
Sample Location: 045B05
Sampled By: B. BALKOVICH / T. ROSAHN
C.O.C. No.: R. SIMPSON

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.4.00 Time: 1500 Method: DPT Monitor Reading (ppm): 1.2	4-6'	TAN	SILT / CLAY W/ GRAY MOTTLING

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	ther
Volatiles App. IX	encore	8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

SOIL CLASSIFIED AS A CLAY

MAP:

SEE FIG 7-8

Circle If Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovic

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[ ] Surface Soil
[x] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 095B060002
Sample Location: 095B06
Sampled By: B. BALKOVEC / T. RUJANA
C.O.C. No.: R. SIMPSON

Type of Sample:
[x] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.4.00 Time: 1330 Method: DPT Monitor Reading (ppm): 0	0-2'	TAN	F. SAND w/SILT MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

SOIL CLASSIFIED AS A SAND

MAP:

SEE FIG 7-8

Circle If Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: DQSB060810
Sample Location: DQSB06
Sampled By: B. BALKOVICH / T. ROSAHN
C.O.C. No.: K. SIMPSON

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.4.00 Time: 1340 Method: DPT Monitor Reading (ppm): 160	08-10	GRAY	SILTY CLAY ORGANIC MAT. TR GRAVEL MOIST ROCK FRAGS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

SOIL CLASSIFIED AS A CLAY

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovich / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 095B07 0002
Sample Location: 095B07
Sampled By: B. Balkovec / T. Rujano
C.O.C. No.: K. SIMPSON

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 12.4.00
Time: 1250
Method: DPT
Monitor Reading (ppm): 1.8

Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
0-2'	GRAY/BRN	SILTY CLAY, STIFF

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide + CEC, pH, TOC	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

SOIL CLASSIFIED AS A CLAY

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD —

Duplicate ID No.:

Signature(s):

Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: DASB07 0709
Sample Location: DASB07
Sampled By: B. BALKOVICH / T. ROTAHN
C.O.C. No.: R. SIMPSON

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.4.00 Time: 1305 Method: DPT Monitor Reading (ppm): 1.8	7-9'	TAN SOME GRAY	V.F. TO F SAND W/SILT MOIST RUST LENS 8'

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

SOIL CLASSIFIED AS A SAND

MAP:

SEE FIG. 7-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Robert Balkovic

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B03 0002
Sample Location: 045B03
Sampled By: B. Balkover / T. Rutzman
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-00 Time: 0933 Method: DPT Monitor Reading (ppm): 0.0	0-2'	LT. BROWN	CLAYEY SILT

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

SOIL CLASSIFIED AS A SILT

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkover / T. Rutzman

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: DASB020406
Sample Location: DASB08
Sampled By: B. BALKOVICH / T. LOWAN
C.O.C. No.:

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-00 Time: 0945 Method: DPT Monitor Reading (ppm): 0.0	4-6'	LT. BROWN	CLAYEY SILT W/ FINE SAND

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
↳ CEC, pH, TOC			

OBSERVATIONS / NOTES:

SOIL CLASSIFIED AS A SILT

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovich / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 045B090002
Sample Location: 045B09
Sampled By: B. BALKOVER / T. RUZAHAN
C.O.C. No.: R. SIMPSON

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.4.00 Time: 0920 Method: DPT Monitor Reading (ppm): 0	0-2'	BRN	SILT, TR ROOTS, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

SOIL CLASSIFIED AS A SILT

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Robert Balkover / T. Ruzahan

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: DASB09 0810
Sample Location: DASB 09
Sampled By: B. BALKOVIC / T. ROTAHN
C.O.C. No.: K. SIMPSON

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.4.00 Time: 0950 Method: DPT Monitor Reading (ppm): 0	08-10'	RUST/GRAY	V. F. SAND, POORLY GRADED VERY STIFF MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	16	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	3	
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	2	
+ CEC, pH, TOC			
X VOL	FOR MS/MSD		

OBSERVATIONS / NOTES:

SOIL CLASSIFIED AS A SAND

MAP:

SEE FIG. 7-8

Circle if Applicable:

MS/MSD: YES

Duplicate ID No.:

Signature(s): Robert Balkovic / T. Rotahn

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 045B10002
Sample Location: 045B10
Sampled By: B. Balkovec / T. Rozanski
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11-30-00 Time: 1439 Method: DPT Monitor Reading (ppm): 0.0	0-2'	DARK BROWN/BLACK & YELLOW.	CLAY W/ T-SAND + GRAVEL, SOME SILT + ORGANICS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

SOIL CLASSIFIED AS A CLAY

MAP:

SEE FIG 7-8

Circle If Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: DASB10[illegible]
Sample Location: DASB10
Sampled By: B. BALKOVICE / T. ROTHER
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11-30-00 Time: 1515 Method: DPT Monitor Reading (ppm): 0.0	2'-4'	LIGHT BROWN / YELLOW ORANGE	CLAY W/ T-SZLT

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	ther
Volatiles App. IX	encore	8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	
↳ CEC, pH, TOC			

OBSERVATIONS / NOTES:

SOIL CLASSIFIED AS A CLAY

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovic / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 095B11 0002
Sample Location: 095B11
Sampled By: B. Dankover / T. Rutana
C.O.C. No.: R. SIMPSON

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.4.00 Time: 1026 Method: DPT Monitor Reading (ppm): 0.2	0-2'	BRN	SILTY/CLAY, MOIST SOFT

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 1'-2' INTERVAL

SOIL CLASSIFIED AS A CLAY

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkover / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: DGSB11 04 06
Sample Location: DGSB11
Sampled By: B. BALKOVICH / T. ROJAHN
C.O.C. No.: K. SIMPSON

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.4.00 Time: 1040 Method: DPT Monitor Reading (ppm): 0.8	4-6'	GRAY/ BRN	SILT/ CLAY SOFT MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	ther
Volatiles App. IX	encore	8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

SOIL CLASSIFIED AS A CLAY

MAP:

SEE FIG 7-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovich / [illegible]

APPENDIX B.1.4

SWMU 10
SOIL SAMPLE LOG SHEETS

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 105B01D002
Sample Location: 105B01
Sampled By: B. BALKOVEC / T. ROJAHN
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-00 Time: 0940 Method: DPT Monitor Reading (ppm): 0.0	0-2'	GRAY, YELLOW, LT. BROWN	CLAYEY SILT, GRAVEL + SAND

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
EXPLOSIVES	8 oz w/m GLASS	✓ 1	

OBSERVATIONS / NOTES:

[redacted]

CLASSIFY SOIL AS A SILT

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Robert Balkovec / Tony Rojahn

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 105B01 0810
Sample Location: 105B01
Sampled By: BBaukness/T.Rodahl
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-00 Time: 0950 Method: DPT Monitor Reading (ppm): 1.0	8'-10'	YELLOW ORANGE & GRAY	SILTY CLAY MOTTLED

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	ther
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide (Cl, SO4, TK)	8 oz w/m glass	✓ 2	
EXPLOSIVES	8 oz w/m GLASS	✓ 2	

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A CLAY

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD —

Duplicate ID No.: FD12050001

Signature(s):

Robert Balkness / Tony Rodahl

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SB 02 0002
Sample Location: 10SB 02
Sampled By: B. BALKOVEC / T. ROJAHN
C.O.C. No.: K. SIMPSON

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.5.00 Time: 1407 Method: DPT Monitor Reading (ppm): 0	0-2'	BRN	CLAY MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted] + CEC, pH, TOC	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	
EXPLOSIVES	8 oz w/m glass	1	

OBSERVATIONS / NOTES:

[redacted]

CLASSIFY SOIL AS A CLAY

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Robert Balkovec / Tony Rojahn

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: LOSB 020709
Sample Location: LOSB 02
Sampled By: B. Balkovic / T. Bratton
C.O.C. No.: R. SIMPSON

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.5.00 Time: 1415 Method: DPT Monitor Reading (ppm): 17	07-09	GRAY	SILTY CLAY MOIST w/ORGANIC MAT (OL)

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	
EXPLOSIVES	8 oz w/m GLASS	1	

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A CLAY

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovic / Tony Bratton

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 105B03000 2
Sample Location: 105B03
Sampled By: B. BALKOVEC / T. ROSATI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-12-00 Time: 0825 Method: ~~BPT~~ SHOVEL + SS TROWEL Monitor Reading (ppm): 0.0	0-2'	LT. BROWN / YELLOW ORANGE	FILL. SILTY CLAY W/ SOME GRAVEL

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 3	
EXPLOSIVES, APP IX SVOCS	8 oz w/m GLASS	✓ 4	

OBSERVATIONS / NOTES:

[redacted]

CLASSIFY SOIL AS A CLAY BUT IS NOT NATURAL

* BACKFILL FOR BLASTWALL. TOOL TEST EXCAVATION AREA.

MAP:

SEE FIG. 8-10

Circle if Applicable:

MS/MSD

Duplicate ID No.: FD12120001

Signature(s): Robert Balkovec / Tony Rosati

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 105B03SB10
Sample Location: 105B03
Sampled By: B. Baukness / T. Boatman
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-2-00 Time: 1302 Method: DPT-Electric Hammer Monitor Reading (ppm): 0.0	8'-10'	OLIVE GRAY	SANDY CLAY

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓	
EXPLOSIVES, APP IX SVOC'S	8 oz w/m GLASS	✓	

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A CLAY. THIS IS NOT NATURAL MATERIAL.

* BACKFILL FOR BLAST WALL.

MAP:

SEE FIG. 8-10

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Bolkowski / Tony Boatman

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 10SB040002
Sample Location: 10SB04
Sampled By: B. Balkovec / T. Rodahl
C.O.C. No.:

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-00 Time: 1015 Method: DPT Monitor Reading (ppm): 0.0	0-2'	GRAY / YELLOW ORANGE	CLAYEY SILT (MOTTLED) GRAVEL + SAND

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	
EXPLOSIVES	8 oz w/m GLASS	✓ 1	

OBSERVATIONS / NOTES:

[redacted]

CLASSIFY SOIL AS A SILT

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec / Tony Rodahl

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 105B040305
Sample Location: 105B04
Sampled By: B Bauknec/T. Rozman
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 12-5-00	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1030	3'-5'	YELLOW ORANGE + GRAY	CLAY & SILT > VF-FINE SAND
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide ~~Cl, pH, Tox~~	8 oz w/m glass	✓ 1	
EXPLOSIVES	8 oz w/m GLASS	✓ 1	

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A SILT

MAP:

SEE FIG. 8-10

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	

Signature(s):

Robert Bellknap / Tony Rozman

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

Sample ID No.: 105B05 0002
Sample Location: 105B05
Sampled By: B. Balkovec / T. Rosato
C.O.C. No.:

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-00 Time: 1047 Method: DPT Monitor Reading (ppm): 0.4	0-2'	Gray + Lt. Brown	Silty Clay w/ Gravel + Sand

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ /	
Explosives	8 oz glass	✓ /	

OBSERVATIONS / NOTES:

[redacted]

Classify soil as a Clay

MAP:

See Fig. 8-6

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec / Tony Rosato

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: LOSB050406
Sample Location: LOSB05
Sampled By: BARNES/T. BROTHAN
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-00 Time: 1400 Method: DPT Monitor Reading (ppm): 0.0	4'-6'	GRAYISH BROWN	SILTY CLAY

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	ther
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓	
EXPLOSIVES	8 oz w/m GLASS	✓	

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A CLAY

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec / Tony Brothan

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 105B06000 3
Sample Location: 105B 06
Sampled By: B. BALKOVEC / T. ROSAKU
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-00 Time: 1115 Method: DPT Monitor Reading (ppm): 0.0	0-2'	GRAY BROWN	GRAVEL + SAND TO SILT

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓	
EXPLOSIVES	8 oz w/m GLASS	✓	

OBSERVATIONS / NOTES:

[redacted]

CLASSIFY SOIL AS A SAND

MAP:

SEE FIG. 8-10

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Robert Balkovec / Tony Rosaku

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 105B0103
Sample Location: 105B06
Sampled By: B. Balkovec / T. Rogatan
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-00 Time: 1150 Method: DPT Monitor Reading (ppm): 0.5	5'-7'	Grayish Brown	V. Fine Sand & Silt T. Clay

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide (Cr, pH, Tot)	8 oz w/m glass	✓ 1	
EXPLOSIVES	8 oz w/m GLASS	✓ 1	

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A SILT

MAP:

SEE FIG. 8-10

Circle if Applicable:

MS/MSD Duplicate ID No.:

Signature(s):

Robert Balkovec / Tony Rogatan

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SB07 0002
Sample Location: 10SB 07
Sampled By: B. BALKOVICZ / T. ROSAMILIA
C.O.C. No.: K. SIMPSON

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-00 Time: 1315 Method: DPT Monitor Reading (ppm): 0	0-2'	BRN	CLAYEY SILT, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	
EXPLOSIVES	8 oz w/m GLASS	1	

OBSERVATIONS / NOTES:

[redacted] from 1-2 [redacted]

CLASSIFY SOIL AS A SILT

MAP:

SEE FIG. 8-10

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Robert Balkovicz / Tony Rosamilia

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 105B07 0006
Sample Location: 105B07
Sampled By: B. Bauknecht / T. Boatman
C.O.C. No.: K. SIMPSON

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-00 Time: 1320 Method: DPT Monitor Reading (ppm): 0	4-6	BRN	CLAYEY SILT, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	
EXPLOSIVES	8 oz w/m GLASS	1	

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A SILT

MAP:

SEE FIG 8-10

Circle If Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Robert Balkovec / Tony Boatman

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SB080002
Sample Location: 10SB08
Sampled By: B. Balkovec/T. Rosati
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 12-12-00	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0915 Method: DPT Monitor Reading (ppm): 0-0	0-2'	WHITE & LT. BROWN	SILTY GRAVEL, W/ SOME SAND

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide, Cl, pH, Tox	8 oz w/m glass	✓ 1	
EXPLOSIVES	8 oz w/m GLASS	✓ 1	

OBSERVATIONS / NOTES:

[redacted]

CLASSIFY SOIL AS A SAND. (GRAVEL)

MAP:

SEE FIG. 8-10

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec / Tony Rosati

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 105B080406
Sample Location: 105B08
Sampled By: B. Balkovec / T. Rogatin
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-12-00 Time: 0438 Method: DPT Monitor Reading (ppm): 0.0	4'-6'	Yellow Orange / Gray	Silty Clay - Mottled -

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓	
Explosives	8 oz w/m glass	✓	

OBSERVATIONS / NOTES:

Classify soil as a Clay

MAP:

See Fig 8-10

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec / Tony Rogatin

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 105B090002
Sample Location: 105B09
Sampled By: B. BALKOVICZ / T. ROJAHN
C.O.C. No.: R. SIMPSON

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-5-00 Time: 1444 Method: DPT Monitor Reading (ppm): 0	0-2'	BRN	SILT W/SOME F. SAND TR. ROOTS MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	
EXPLOSIVES	8 oz w/m GLASS	1	

OBSERVATIONS / NOTES:

[redacted]

CLASSIFY SOIL AS A SILT

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovicz / Tony Rojahn

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 105B090204
Sample Location: 105B09
Sampled By: B. Bauknecht / T. Rotatori
C.O.C. No.: R. SIMPSON

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.5.00 Time: 1500 Method: DPT Monitor Reading (ppm): 0.8	2-4'	BRN	F. SAND SOME SILT MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	ther
[redacted]	[redacted]		
[redacted] CEC, PH, TOC	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	1	
EXPLOSIVES	8 oz w/m GLASS	1	

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A SAND

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Bellkowski / Tony Rotatori

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 105B10 0002
Sample Location: 105B 10
Sampled By: B. BALKOVICZ / T. ROZAKIS
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-12-00 Time: 1435 Method: DPT-ELECTRIC Monitor Reading (ppm): 0.0	0-2'	YELLOW ORANGE / LIGHT BROWN	SANDY CLAY W/ T. SILT + ORGANICS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓	
EXPLOSIVES	8 oz w/m GLASS	✓	

OBSERVATIONS / NOTES:

[redacted]

CLASSIFY SOIL AS A CLAY

MAP:

SEE FIG. 8-10

Circle If Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovicz / Tony Rozakis

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 105B100608
Sample Location: 105B10
Sampled By: BAUKNECT/T. ROTATOR
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-12-00 Time: 1515 Method: DPT-ELECTRIC Monitor Reading (ppm): 0.0	6'-8'	LIGHT BROWN/ GRAY	SILTY CLAY T-ORGANICS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	ther
[redacted]	[redacted]		
[redacted]	[redacted]		
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide, CEC, pH, Fe	8 oz w/m glass	✓	
EXPLOSIVES	8 oz w/m GLASS	✓	

OBSERVATIONS / NOTES:

CLASSIFY SOIL AS A CLAY

MAP:

SEE FIG. 8-10

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkenet / Tony Rotator

APPENDIX B.2

GROUND WATER SAMPLE LOG SHEETS

APPENDIX B.2.1

SWMU 4
GROUND WATER SAMPLE LOG SHEETS

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 04GW0101
Sample Location: SWMU - 4
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-05-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1745 End: 1940	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	6.79	0.232	11.10	10	7.73	-30	NONE

PURGE DATA:

Date: 01-05-01	Total Well Depth (TD): 43.00	End Purge (hrs): 1740
Method: Bladder	Static Water Level (WL): 31.11	Total Purge Time (min): 170
Well Casing: 2" PVC	Start Purge (hrs): 1450	Total Vol. Purged (~~gal~~): 14.1 L
One Casing Volume(~~gal~~): 7.4 L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INT. 25.3 - 34.5 BGS WL = ~28.9 BGS
PUMP INTAKE @ ~ 32.5'

QA Samples Collected:

MS/MSD
Duplicate ID No.:

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 0401
DATE: 01-05-01

Tim	Water Level (ft below TOC)	Pump Rate (ml/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP mV	Comments
1450	31.11								Start Purge
1500	31.39	100	7.01	0.337	310	4.71	10.94	-34	1000 Tannish
1510	31.40	82	7.16	0.331	340	3.73	11.04	-39	1820 "
1520	31.40	82	7.17	0.323	400	3.91	11.11	-40	2640 "
1530	31.42	82	7.14	0.302	390	5.18	11.14	-41	3460 "
1540	31.43	82	7.02	0.276	270	6.30	11.21	-39	4280 "
1550	31.45	87	6.95	0.262	160	7.07	11.21	-37	5150 cloudy
1600	31.45	80	6.91	0.258	60	7.47	11.10	-36	5950 CLEAR
1610	31.45	80	6.90	0.256	39	7.58	10.17	-36	6750 CLEAR
1620	31.43	80	6.88	0.253	32	7.41	10.94	-36	7550 CLEAR
1630	31.45	80	6.85	0.246	28/*20	7.60	11.10	-36	8350 CLEAR
1640	31.47	82	6.80	0.236	22/-	7.81	11.14	-34	9170 CLEAR
1650	31.47	80	6.79	0.234	19/-	7.76	11.17	-33	9970 CLEAR
1700	31.48	83	6.78	0.234	17/*15	7.61	11.15	-32	10800 CLEAR
1710	31.50	83	6.78	0.235	16/-	7.76	11.12	-31	11630 CLEAR
1720	31.50	83	6.79	0.234	12/*11	7.73	11.07	-31	12460 CLEAR
1730	31.49	83	6.78	0.233	12/-	7.62	11.09	-30	13290 CLEAR
1740	31.50	83	6.79	0.232	11/*10	7.73	11.10	-30	14120 CLEAR
1745									Start Sampling

SIGNATURE(S): Tony Rogers

MIN. VOL. = 7.4 L
* By Pass Flow Cell

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NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Page___ of ___

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 04GW0201
Sample Location: SWMU -
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-03-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1200 End: 1420	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: Bladder Pump	CLEAR	7.08	0.528	8.10	8.3	5.55	-69.0	NONE

PURGE DATA:

Date: 01-03-01	Total Well Depth (TD): 31.30	End Purge (hrs): 1155
Method: BLADDER	Static Water Level (WL): 20.28	Total Purge Time (min): 110
Well Casing: 2" PVC	Start Purge (hrs): 1005	Total Vol. Purged (~~gal~~): 10.1 L
One Casing Volume(~~gal~~): 7 L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	YES
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	"
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	"
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	"
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	"
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	YES

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INTERVAL = 15.4 - 24.6 BGS
PUMP INTAKE @ ~23' BGS

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Tony Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 job # N7141

WELL ID.: 0402
DATE: 01-03-01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
[redacted]	[redacted]	[redacted]	[redacted]	(mS/cm)	(NTU)	(mg/l)	(Celsius)	(mV)	
1005	20.28	100							Start Purge
1015	21.05	100	6.94	0.530	110	6.17	8.18	-51.9	1000 ml Sl. Cloudy
1025	21.17	100	7.01	0.532	100	6.25	8.50	-57.2	2000 ml " "
1035	21.17	90	7.04	0.532	85	5.75	8.03	-59.6	2900 ml " "
1045	21.20	90	7.06	0.532	70	6.55	8.02	-62.2	3800 ml " "
1055	21.25	90	7.06	0.530	55	5.65	7.95	-63.5	4700 ml Clear
1105	21.29	90	7.07	0.530	45	5.75	8.05	-65.0	5600 ml "
1115	21.32	90	7.07	0.528	31	5.80	8.05	-65.3	6500 ml "
1125	21.32	90	7.07	0.527	22	5.53	8.01	-66.7	7400 ml "
1135	21.31	90	7.07	0.528	16	5.57	8.06	-67.3	8300 ml "
1145	21.31	90	7.07	0.528	13	5.48	8.06	-67.7	9200 ml "
1155	21.31	90	7.08	0.528	8.3	5.55	8.10	-69.0	10,100 ml "
1200									Start Sampling

SIGNATURE(S): Tony Rizzo

PAGE ___ **OF** ___

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 04GW0301
Sample Location: SWMU - 4
Sampled By: IRES
C.O.C. No.:

SAMPLING DATA:

Date: 1-5-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 0945 End: 1100	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	6.51	0.318	4.4	0.8	2.18	87.0	NONE

PURGE DATA:

Date: 1-5-01	Total Well Depth (TD): 18.22	End Purge (hrs): 0945
Method: PERISTALTIC	Static Water Level (WL): 4.47	Total Purge Time (min): 95
Well Casing: 2" PVC	Start Purge (hrs): 0810	Total Vol. Purged (gal): 2.4
One Casing Volume(gal): 2.2		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	—
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0 (ppm)
PID reading in Breathing Zone = 0 (ppm)

PUMP INLET SET @ 8' B TOC

1 VOL = 83 MIN @ 100 ML/MIN ≈ 0935

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 04-03
DATE: ~~KS 1-4-01~~ 1-5-01

Tim	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
	(Below TOC)	(mL/Min)	(SU)	(mS/cm)	(NTU)	(mg/L)	(Celsius)	mV	
0810	4.47	150	—	—	—	—	—	—	START, SOME RUST COLOR FLOCK, NO ODOR
0820	5.10	130	6.49	0.312	27	5.31	4.9	108.1	
0835	4.93	80	KS ~~4.8~~ 6.49	0.312	18	5.14	3.9	108.2	CLEARING
0845	4.78	100	6.49	0.312	6.9	5.30	3.4	104.1	
0855	4.97	↓	6.50	0.311	4.1	3.89	4.3	93.9	
0905	4.93	↓	6.49	0.316	3.1	4.25	4.2	90.9	
0915	4.86	↓	6.49	0.316	2.8	2.05	3.8	93.0	
0925	4.80	↓	6.50	0.312	2.5	2.28	3.9	91.1	
0935	↓	↓	6.51	0.314	2.0	2.21	4.1	82.8	
0940	↓	↓	6.51	0.318	1.2	2.24	4.3	85.5	
0945	↓	↓	6.51	0.318	0.8	2.18	4.4	87.0	END PURGE

SIGNATURE(S): [illegible]

NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 04GW0401
Sample Location: SWMU - 4
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-07-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1035 End: 1210	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	6.34	0.342	12.26	8.1	0.89	-215	NONE

PURGE DATA:

Date: 01-07-01	Total Well Depth (TD): 39.90	End Purge (hrs): 1030
Method: Bladder	Static Water Level (WL): 27.29	Total Purge Time (min): 100 MIN
Well Casing: 2" PVC	Start Purge (hrs): 0850	Total Vol. Purged (gal): 9.7 L
One Casing Volume(gal): 8 L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

~3' stick up
Screen Int. 22.9 → 31.9 BGS
Intake ~ 29' BGS OR 32' TOC

QA Samples Collected:

MS/MSD	Duplicate ID No.:

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 0404
DATE: 01-07-01

Tim	Water Level (TOC)	Pump Rate (mL/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP mV	Comments
0850	27.29								Start PURGE
0900	27.29	100	6.17	0.207	65	2.72	10.75	-114	1000 V. Sl. Cloudy
0910	27.30	94	6.23	0.239	60	1.57	10.70	-157	1940 " " "
0920	27.29	95	6.25	0.257	50	1.33	11.37	-173	2890 CLEAR
0930	27.30	100	6.29	0.288	40	1.36	11.48	-188	3890 CLEAR
0940	27.29	100	6.29	0.314	34	1.03	11.66	-196	4890 CLEAR
0950	27.29	95	6.33	0.324	24	0.75	11.79	-204	5840 CLEAR
1000	27.30	100	6.33	0.338	18	0.87	11.97	-208	6840 CLEAR
1010	27.29	92	6.33	0.338	13	0.90	11.97	-211	7760 CLEAR
1020	27.30	100	6.33	0.341	11	0.90	12.24	-213	8760 CLEAR
1030	27.30	94	6.34	0.342	8.1	0.89	12.26	-215	9700 CLEAR
1035									Start SAMPLING

SIGNATURE(S): Terry Rojek

NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 04GW0501
Sample Location: SWMU - 4
Sampled By: RES
C.O.C. No.:

SAMPLING DATA:

Date: 1.4.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1100 End: 1230	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR							NONE

PURGE DATA:

Date: 1.4.01	Total Well Depth (TD): 27.50	End Purge (hrs): 1055
Method: PERISTALTIC	Static Water Level (WL): 11.20	Total Purge Time (min): 135
Well Casing: 2" PVC	Start Purge (hrs): 0840	Total Vol. Purged (gal): 2.7 MEASURED
One Casing Volume(gal): 2.7		BY VOL. IN CONTAINER

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0 (ppm)
PID reading in Breathing Zone = 0 (ppm)

PUMP INLET (TUBING) SET @ ≈12.5'

1 VOL @ 60 ML/MIN = 170 MIN (2 HR 50 MIN)

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 04-05
DATE: 1.4.01

Tim	Water Level	Pump Rate (ml/Min)	pH	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0840	11.20	120	—	—	—	—	—	—	START, CLEAR, NO ODOUR
0850	11.66	125	6.46	0.525	18	7.65	10.8	—	
0900	11.68	50	6.46	0.529	11	5.18	10.4	208.5	
0910	↓	60	6.45	0.525	8.4	4.71	9.8	208.1	
0920		↓	6.45	0.522	5.1	5.02	9.2	204.3	
0930			6.46	0.519	4.2	3.53	9.5	200.3	
0940			6.45	0.516	3.4	3.68	9.5	196.1	
0950			6.45	0.512	2.8	2.94	9.8	191.2	
1000			6.44	0.507	2.1	2.87	9.3	185.9	
1020		↓	6.43	0.497	1.7	3.16	9.7	180.8	
1030		100	6.43	0.494	1.3	3.16	9.6	179.6	
1040		↓	6.43	0.488	1.0	2.11	9.8	178.1	
1050			6.43	0.489	0.8	2.13	9.8	176.8	
1055	↓	↓	6.43	0.490	0.8	2.08	9.8	177.1	

SIGNATURE(S): [illegible]

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1 vol = 2.7 GAL

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 04GW06 01
Sample Location: SWMU - 4
Sampled By: KES
C.O.C. No.:

SAMPLING DATA:

Date: 1.3.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1150 End: 1310	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	6.72	0.412	10.0	0.8	3.68	210.9	NONE

PURGE DATA:

Date: 1.3.01	Total Well Depth (TD): 28.00	End Purge (hrs): 1150
Method: PERISTALTIC	Static Water Level (WL): 16.72	Total Purge Time (min): 65
Well Casing: 2" PVC	Start Purge (hrs): 1045	Total Vol. Purged (gal): 2.0
One Casing Volume(gal): 1.8		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	KS ✓ <10 NTU
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0 (ppm)
PID reading in Breathing Zone = 0 (ppm)

SAMPLE TIME 1200

PUMP INLET (TUBING) SET @ 15'

SAMPLED 1150 → 1310

52 MIN @ 130 ML/MIN = 1 VOL ±

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 job # N7141

WELL ID.: 04 MW06
DATE: 1.3.01

Tim	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
	(TOC)	(ml/Min)	(SU)	(mS/cm)	(NTU)	(mg/L)	(Celsius)	(mV)	
1045	16.72	200	—	—	—	—	—	—	START CLEAR, NO ODOR
1050	17.31	130	6.55	0.372	5.2	4.52	9.6	207.2	
1100	17.27	↓	6.59	0.387	4.4	6.60	9.4	207.9	
1110	17.25	↓	6.62	0.400	4.2	6.57	9.4	209.7	
1120	↓	↓	6.69	0.414	3.1	4.44	9.5	210.6	
1130	↓	↓	6.71	0.416	2.0	4.78	9.8	210.4	
1140	↓	↓	6.72	0.415	1.3	3.51	9.8	210.7	
1145	↓	↓	6.73	0.413	1.0	3.64	10.0	210.8	
1150	↓	↓	6.72	0.412	0.8	3.68	10.0	210.9	END PURGE

SIGNATURE(S): [illegible]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 04GWT0101
Sample Location: SWMU - 4
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-05-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1015 End: 1215	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	5.18	0.063	9.95	1.0	6.51	+ 73	NONE

PURGE DATA:

Date: 01-05-01	Total Well Depth (TD): 37.35	End Purge (hrs): 1010
Method: Bladder Pump	Static Water Level (WL): 26.14	Total Purge Time (min): 90
Well Casing: 2" PVC	Start Purge (hrs): 0840	Total Vol. Purged (~~gal~~): 7.3 L
One Casing Volume(~~gal~~): 7 L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SET pump intake @ MID SCREEN

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 job # N7141

WELL ID.: 04T01
DATE: 01-05-01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
0840	26.14								Start Purge
0850	26.27	100	5.36	0.064	160	7.59	8.92	+ 28	1000 Sl. Cloudy
0900	26.18	75	5.25	0.063	80	7.60	9.11	40	1750 " "
0910	26.18	80	5.20	0.064	38	7.03	9.28	51	2550 CLEAR
0920	26.18	80	5.19	0.064	15	6.61	9.50	57	3350 CLEAR
0930	26.18	80	5.19	0.063	5.8	6.52	9.76	61	4150 CLEAR
0940	26.18	80	5.18	0.063	2.5	6.56	9.87	66	4950 CLEAR
0950	26.18	80	5.18	0.063	2.3	6.61	10.00	68	5750 CLEAR
1000	26.18	80	5.18	0.062	1.6	6.59	9.92	71	6550 CLEAR
1010	26.18	80	5.18	0.063	1.0	6.51	9.95	73	7350 CLEAR
1015									Start Sampling

SIGNATURE(S): Terry Rojahn

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GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 04GWT0201
Sample Location: SWMU - 4
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Date: 01-04-01	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Time-Start: 1220 End: 1440								
Method: SAME	Sl. Cloudy	6.73	0.221	10.07	130	5.73	-51	NONE

PURGE DATA: to Clear prior to metals sample 38 NTUS

Date: 01-04-01	Total Well Depth (TD): 42.7	End Purge (hrs): 1215
Method: Bladder	Static Water Level (WL): 33.16	Total Purge Time (min): 160
Well Casing: 2" PVC	Start Purge (hrs): 0935	Total Vol. Purged (~~gal~~): 12.9 L
One Casing Volume(~~gal~~): 6.2L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN 30-40'
TURBIDITY couldnot be Achieved OF <10 NTUS; therefore SAMPLES WERE collected AFTER 2 vol. were REMOVED. All other parameters stabilized.

QA Samples Collected:

MS/MSD: —
Duplicate ID No.: —

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 04T02
DATE: 01-04-01

Time	Water Level (ft below TOC)	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0935	33.16	—						→	Start PURGE
0945	33.95	100	6.83	0.159	>999	5.81	10.02	-70	1000 ml Lt BRN
0955	34.03	80	6.75	0.160	>999	4.77	9.97	-66	1800 " "
1005	34.13	70	6.70	0.162	>999	5.15	9.82	-61	2500 " "
1015	34.10	82	6.66	0.166	950	4.94	9.88	-58	3320 " "
1025	34.14	80	6.65	0.172	800	5.03	9.92	-56	4120 " "
1035	34.15	80	6.66	0.178	650	5.29	9.97	-53	4920 V. Lt BRN
1045	34.17	80	6.66	0.183	550	5.20	9.97	-53	5720 TANNISH
1055	34.21	80	6.67	0.189	500	5.38	9.98	-52	6520 "
1105	34.23	80	6.68	0.193	390	5.53	9.97	-51	7320 CLOUDY
1115	34.25	80	6.68	0.197	300	5.50	9.98	-51	8120 "
1125	34.26	80	6.69	0.202	290	5.52	9.99	-50	8920 "
1135	34.27	80	6.71	0.207	230	5.54	10.04	-50	9720 "
1145	34.28	80	6.71	0.211	180	5.51	10.02	-50	10520 "
1155	34.29	80	6.73	0.215	170	5.68	10.06	-50	11320 "
1205	34.30	80	6.73	0.217	140	5.63	10.07	-50	12120 "
1215	34.31	80	6.73	0.221	130	5.73	10.07	-51	12920 Sl. Cloudy
1220	—							→	Start SAMPLING

SIGNATURE(S): Terry Rogalski

MIN VOL. = 6.2 L

NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 04GWT03C
Sample Location: SWMU - 4
Sampled By: RES
C.O.C. No.:

SAMPLING DATA:

Date: 1-3-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1550 End: 1830	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	NONE
Method: PERISTALTIC	CLEAR	6.50	0.352	8.4	0.8	1.24	-61.0	CLEAR

PURGE DATA:

Date: 1-3-01	Total Well Depth (TD): 18.50	End Purge (hrs): 1550
Method: PERISTALTIC	Static Water Level (WL): 5.61	Total Purge Time (min): 80
Well Casing: 2" PVC	Start Purge (hrs): 1430	Total Vol. Purged (gal): 3.0
One Casing Volume(gal): 2.1		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
		X VOC COLLECTED	
		FULL DUP+MS/MSD	
		SEE COC	

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0 (ppm)
PID reading in Breathing Zone = 0 (ppm)

SAMPLE TIME 1600

PUMP INLET (TUBING) SET @ 11' BELOW TOC

57 MIN = 1 VOC @ 140 ML/MIN

QA Samples Collected:

MS/MSD	Duplicate ID No.:
YES	FD010301 01

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 04TO3
DATE: 1.3.01

Tim	Water Level (Ft Below TOC)	Pump Rate (mL/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments
1430	5.61	100	—	—	—	—	—	—	START CLEAR
1440	5.71	140	6.45	0.357	45	7.57	7.8	-37.1	LT. SULFUR ODOR
1450	5.77		6.46	0.353	34	4.66	7.9	-46.7	
1500	5.77		6.47	0.353	17	1.61	8.0	-51.9	NO ODOR, CLEAR
1510			6.48	0.353	18	1.66	8.2	-55.1	
1520			6.48	0.353	22	0.58	8.2	-57.4	
1530			6.49	0.353	2.6	0.92	8.3	-59.5	
1540			6.49	0.352	1.4	1.28	8.4	-60.4	
1545			6.50	0.352	0.7	1.25	8.4	-60.9	
1550			6.50	0.352	0.8	1.24	8.4	-61.0	END PURGE

SIGNATURE(S): [illegible]

PAGE 2 OF 2

APPENDIX B.2.2

SWMU 5
GROUND WATER SAMPLE LOG SHEETS

GROUND WATER SAMPLE LOG FORM

Project Site Name: **NSWC CRANE, IN**
Project No.: **CTO 0010 N7141**

Sample ID No.: 05GW0161
Sample Location: SWMU5 -Old Burn Pit
Sampled By: RES
C.O.C. No.:

SAMPLING DATA:

Date: 1.5.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1440 End: 1620	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	6.05	0.187	7.4	0.9	3.38	173.6	NONE

PURGE DATA:

Date: 1.5.01	Total Well Depth (TD): 19.80	End Purge (hrs): 1435
Method: PERISTALTIC	Static Water Level (WL): 6.84	Total Purge Time (min): 105
Well Casing: 2" PVC	Start Purge (hrs): 1250	Total Vol. Purged (gal): 2.8
One Casing Volume(gal): 2.1		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	—
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	—
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	—
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	—
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0 (ppm)
PID reading in Breathing Zone = 0 (ppm)

PUMP INLET (TUBING) SET @ 9'

1 VOL @ 100 ML/MIN = 80 MIN

QA Samples Collected:

MS/MSD
Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 05-01
DATE: 1.5.01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
	[redacted]	[redacted]	[redacted]	(mS/cm)	[redacted]	(mg/L)	[redacted]	mV	
1250	6.84	150	—	—	—	—	—	—	START, CLEAR, NO ODOR
1300	7.26	110	6.00	0.174	1.7	9.18	7.8	243.7	
1310	7.20	100	5.98	0.173	2.6	7.30	7.6	222.4	
1320	7.23	↓	5.99	0.175	2.0	6.59	7.4	205.9	
1330	7.23	↓	6.01	0.177	1.7	4.99	7.4	195.8	
1340	↓	↓	6.02	0.179	1.5	4.27	7.4	190.6	
1350	↓	↓	6.03	0.182	1.4	4.55	7.3	185.2	
1400	↓	↓	6.04	0.184	1.3	4.00	7.4	179.0	
1410	↓	↓	6.04	0.185	1.2	3.46	7.4	177.6	
1420	↓	↓	6.05	0.186	1.0	3.38	7.4	174.6	
1430	↓	↓	6.05	0.187	1.0	3.37	7.4	173.8	
1435	↓	↓	6.05	0.187	0.9	3.38	7.4	173.6	END PURGE

SIGNATURE(S): [signature]

GROUND WATER SAMPLE LOG FORM

Proj ct Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sampl ID No.: 05GW0701
Sample Location: 05-02 SWMU5 -Old Burn Pit
Sampled By: B Balkovec
C.O.C. No.:

SAMPLING DATA:

Date: 1/14/01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1242 End: 1427	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	6.69	0.587	7.57	3.54	8.16	+164.2	NONE

PURGE DATA:

Date: 1/14/01	Total Well Depth (TD): 14.30	End Purge (hrs): 1240
Method: PERISTALTIC	Static Water Level (WL): 4.21	Total Purge Time (min): 80
Well Casing: 2" PVC	Start Purge (hrs): 1120	Total Vol. Purged (gal): 1.8
One Casing Volume(gal): 1.64		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NA
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = NA (ppm)

END WATER LEVEL 10.23' @ 1427

PUMP INLET SET @ 13' TO PVC

* DURING PURGE THE WATER LEVEL FAILED TO STABILIZE. THE WATER LEVEL DROPPED .8' EQUALING .13 gal OF WATER. THE TOTAL AMOUNT OF WATER PURGED WAS 1.8 gal OR 6.81 L. WE REMOVED ENOUGH WATER TO EQUAL 1 WELL VOLUME AND THE AMOUNT CALCULATED FOR THE DRAWDOWN. THUS SAMPLING COMMENCED.

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	

Signature(s): Robert Balkovec

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 05-02
DATE: 1/19/01

Time (Hrs)	Water Level (ft below TOC)	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Vol.	Comments
1120	9.21									
1130	9.68	85	6.73	0.586	12.6	9.27	6.87	+163.2		
1140	9.83		6.70	0.589	7.9	8.96	7.32	+162.0	1.7 L	
1150	9.87		6.69	0.589	6.24	8.86	7.44	+168.0		
1200	9.91		6.69	0.587	4.36	8.70	7.65	+167.5	3.4 L	
1210	9.95		6.69	0.589	3.68	8.60	7.54	+166.2		
1220	9.97		6.69	0.588	3.67	8.46	7.61	+165.1	5.1 L	
1230	9.99		6.69	0.588	2.66	8.31	7.60	+164.4		
1240	10.01		6.69	0.587	2.59	8.16	7.57	+164.2	6.8 L	
→ End Pump Vol.										
	Sampled @ 1242									

SIGNATURE(S): Robert Belkree

6.2 L = 1 vol

PAGE 2 OF 2

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 05GW0301
Sample Location: SWMU5 -Old Burn Pit
Sampled By: R. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 1-18-01 + 1-19-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1535 End:	Visual	Standard	mS/cm	Degrees C	NTU*	mg/l	mV	
Method: PERISTALTIC	LT. TAN	5.44	0.073	12.7	195	4.47	215.0	NONE

PURGE DATA:

Date: 1-18-01	Total Well Depth (TD): 23.32	End Purge (hrs): 1437
Method: PERISTALTIC	Static Water Level (WL): 15.49	Total Purge Time (min): 64
Well Casing: 2" PVC	Start Purge (hrs): 1333	Total Vol. Purged (gal): 1.5
One Casing Volume(gal): 1.3		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	1.18.01 @ 1535
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	↓ ↓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	↓ ↓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	↓ ↓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	1.19.01 0700
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	↓ ↓
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	↓ ↓
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	↓ ↓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

PUMP INLET (TUBING) SET @ 17' FOR START LOWERED TO 23' DUE TO DRAWDOWN, @ 1425
@ 1437 WL @ 19.90' DRY TO LIMIT OF PUMP, SOME SOLIDS AT THE END OF PURGE.
RECOVERED TO 18.00' @ 1530 START SAMPLING, DRY TO 23' @ 1600
@ 1705 RECHARGED TO 21.70' RESTART SAMPLING, DRY TO 23' @ 1715
WILL ALOW TO RECHARGE OVER NIGHT
1.19.01 WL 15.53 @ 0700 START SAMPLING (RESTART)
* TURBIDITY 1.19.01 = 35 NTU

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): R. S. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 job # N7141

WELL ID.: 05-03
DATE: 1.18.01

Tim (Hrs)	Water Level (ft. below TOC)	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
1333	15.49	80	—	—	—	—	—	—	START PURGE
1345	16.33	↓	5.65	0.083	17	6.30	12.4	166.5	CLEAR, NO ODOR
1400	17.27	90	5.51	0.076	280	5.79	12.7	195.2	STOPPED, PUMP TO LOWER
1410	17.97		5.46	0.077	180	3.72	12.7	201.5	TUBING
1420	18.76		5.44	0.076	210	3.77	12.5	208.4	
1430	18.97		5.44	0.075	195	4.47	12.7	215.0	
1437	19.90	↓	—	—	—	—	—	—	DRY, TO LIMIT OF PUMP
1455	19.25	—	—	—	—	—	—	—	RECHARGE, PUMP OFF
1514	18.78	—	—	—	—	—	—	—	"

SIGNATURE(S): [illegible]

BTM 23.3'

PAGE 2 OF 2

NSWC Crane
Field Form
Revision: 1
October 2000

NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 056W0301
Sample Location: SWMU5 -Old Burn Pit
Sampled By: R. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 2.2.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1625 End: 1645	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	5.41	0.075	9.8	21	3.70	257.3	NONE

PURGE DATA:

Date: 2.2.01	Total Well Depth (TD): 23.32	End Purge (hrs): 1038
Method: PERISTALTIC	Static Water Level (WL): 15.76	Total Purge Time (min): 48
Well Casing: 2" PVC	Start Purge (hrs): 0950	Total Vol. Purged (gal): 1.6
One Casing Volume(gal): 1.3		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	NO
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	NO
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	NO
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	NO
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	NO
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

RESAMPLE FOR DIOXINS/FURANS ONLY

1ST SAMPLE BROKEN IN SHIPMENT
1ST SAMPLE COLLECTED 1.18.01

2.2.01 @ 1620 WL = 16.58' START SAMPLING
TURB @ 1632 = 20 NTUs CLEAR, NO ODOR

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): R. Simpson

RESAMPLE FOR DIOXINS

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 05GW0301
DATE: 2.2.01

Time (Hrs.)	Water Level (ft. below TOC)	Pump Rate (mL/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments
0950	15.76	125	—	—	—	—	—	—	START PURGE
0955	17.35	125	5.43	0.078	13	5.06	9.5	220.2	CLEAR NO ODOR
1000	18.01	↓	5.41	0.076	13	4.48	9.2	226.3	
1010	18.49		5.41	0.076	13	5.04	8.8	244.8	
1020	20.11		5.41	0.075	17	3.69	9.6	245.6	
1030	21.34		5.42	0.075	29	3.71	9.8	252.1	
1038	22.65	↓	5.41	0.075	21	3.70	9.8	257.3	DRY TO LIMIT OF PUMP

SIGNATURE(S): [illegible]

NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 056W0401
Sample Location: SWMU5 -Old Burn Pit
Sampled By: B. Balkover
C.O.C. No.:

SAMPLING DATA:

Date: 1/9/01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1532 End: 1715	Visual	Standard	mS/cm	Degrees C	NTU *	mg/l	mV	
Method: PERISTALTIC	CLEAR	7.14	0.479	10.64	4.3	7.15	+247.8	NONE

PURGE DATA:

Date: 1/9/01	Total Well Depth (TD): 18.55	End Purge (hrs): 1530
Method: PERISTALTIC	Static Water Level (WL): 11.57	Total Purge Time (min): 90
Well Casing: 2" PVC	Start Purge (hrs): 1400	Total Vol. Purged (gal): 2.5
One Casing Volume(gal): 1.1		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NA
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = NA (ppm)

NOTE: PVC RISER UNTHREADED @ GROUND SURFACE. ALL MEASUREMENTS WERE TAKEN FROM GROUND SURF.

* TURBIDITY CHECKED @ 1550 READING WAS 69 NTU

@ 110 ml/min hrs = 38 min

PUMP INLET SET @ 15' BGS.

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	

Signature(s): Robert Balkover

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 job # N7141

WELL ID.: [redacted] 05-04
DATE: 1/4/07

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
1400	11.60	110	7.30	0.470	45	8.14	10.76	+251.7	
1410	11.62	110	7.22	0.475	30	6.68	10.80	+247.1	1.1L
1415	11.65	110	7.21	0.473	24	6.41	10.80	+245.8	1.65
1420	11.69	115	7.20	0.471	22	6.66	10.81	+245.0	~~2.21~~ 2.23 L
1425	11.70	~~110~~ 115	7.19	0.471	20	6.26	10.82	+244.8	~~2.31~~ 2.81 L
1430	11.73	110	7.18	0.470	17	6.27	10.69	+245.1	
1435	11.74	110	7.17	0.469	18	7.01	10.67	+245.1	3.91L
1440	11.76	110	7.17	0.470	16	7.11	10.82	+245.2	4.46L : 1 vol
1445	11.79	110	7.16	0.472	15	6.51	10.80	+245.4	5.0L
1450	11.80	100	7.16	0.475	17	6.32	10.74	+245.8	
1455	11.82	100	7.16	0.474	16	7.40	10.65	+246.2	6.0L
① 1500	11.83	100	7.15	0.475	13	7.33	10.63	+246.5	
1505	11.84	100	7.15	0.476	15	7.20	10.61	+246.5	7.0L
1510	11.85	100	7.15	0.477	13	7.18	10.61	+246.9	
1515	11.87	100	7.15	0.476	12	7.26	10.67	+247.0	8.0L ≈2 vol
1520	11.88	100	7.15	0.477	11	7.10	10.69	+247.3	
1525	11.89	100	7.14	0.478	9.9	7.00	10.66	+247.6	9.0L
1530	11.90	100	7.14	0.479	9.3	7.15	10.64	+247.8	9.5L
→ END PURGE									
		SAMPLED @ 1532							
		NOTE: @ 1550 CHECKED TURBIDITY: 6.9 NTU							

SIGNATURE(S): Robert Bulkeres 11:57

1.1 gal = 1 vol = [redacted]

NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 05GW0601
Sample Location: SWMU5 -Old Burn Pit
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-07-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1820 End: 1920	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	7.24	0.445	12.32	6.0	1.35	-206	NONE

PURGE DATA:

Date: 01-07-01	Total Well Depth (TD):	33.00	End Purge (hrs): 1820
Method: Bladder Pump	Static Water Level (WL):	11.05	Total Purge Time (min): 240
Well Casing: 2" PVC	Start Purge (hrs):	1420	Total Vol. Purged (~~gal~~): 25.2 L
One Casing Volume(~~gal~~): 13.5 L			

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INT 15.52 - 24.7 BGS
Stick up ~2.5'
Intake @ ~20' BGS OR 22.5' TOC
Static @ start up after Pump was installed = 10.75

PURGED WELL FOR 4HRS AS PER FSP/WP AND SAMPLED - SEE LOW FLOW DATA SHEET FOR DETAILS (NOTE).

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141
WELL ID.: 05-06
DATE: 01-07-01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
	[redacted]	[redacted]	[redacted]	(mS/cm)	[redacted]	(mg/L)	[redacted]	mV	
1420	10.75								Start PURGE
1430	11.45	100	7.14	0.425	50	3.60	11.42	-176	1000 ml CLEAR
1440	11.68	60	7.19	0.447	40	2.32	10.96	-153	1600 ml "
1450	11.83	60	7.21	0.451	32	2.30	10.95	-143	2200 ml "
1500	11.91	40	7.22	0.453	25	1.77	10.46	-139	2600 ml "
1510	11.81	50	7.23	0.453	21	1.88	10.72	-136	3100 ml "
1520	11.84	50	7.22	0.450	17	1.44	10.90	-134	3600 ml "
1530	11.86	50	7.23	0.448	15	1.61	10.89	-133	4100 ml "
1540	11.87	50	7.23	0.448	14	1.53	10.87	-131	4600 ml "
1550	11.89	50	7.23	0.448	12	1.16	10.73	-131	5100 ml "
1600	11.91	50	7.23	0.448	10	1.26	10.41	-131	5600 ml "
1610	11.92	50	7.24	0.449	9	1.01	10.19	-132	6100 ml "
1620	11.88	50	7.24	0.448	7.4	1.16	9.88	-135	6600 ml "
1630	11.88	50	7.24	0.446	6.8	1.24	9.51	-140	7100 ml "
1640	11.89	50	7.24	0.444	6.6	0.95	9.62	-141	7600 ml "
1650	12.03	70	7.24	0.441	5.5	1.08	10.24	-146	8300 ml "
1700	12.46	90	7.24	0.444	14	0.86	11.29	-150	9200 ml "
1710	12.61	100	7.23	0.449	10	0.79	11.32	-157	10200 ml "
1720	12.70	100	7.23	0.451	6.5	1.10	11.32	-165	11200 ml "
1730	12.84	100	7.23	0.451	8.5	0.74	11.36	-175	12200 ml "
1740	12.88	100	7.24	0.453	7.4	1.03	11.36	-185	13200 ml "
1750	13.91	300	7.23	0.459	8.5	0.98	12.31	-185	16200 ml "
1800	14.85	300	7.24	0.437	9.1	1.34	12.40	-192	19200 ml "
1810	15.45	300	7.24	0.441	8.8	1.49	12.32	-198	22200 ml "
1820	15.88	300	7.24	0.445	60	1.35	12.32	-206	25200 ml "
1830									SAMPLE TIME
	NOTE:	Reduced Pumping Rate to Sample - so that RECHARGE occurs & sample is drawn from the formation.							

SIGNATURE(S): [signature]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 05GW0701
Sample Location: SWMU5 -Old Burn Pit
Sampled By: K. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 1.20.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1215 End: 1340	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	7.14	0.716	11.7	1.0	2.96	-101.2	NONE

PURGE DATA:

Date: 1.20.01	Total Well Depth (TD): 38.0	End Purge (hrs): 1210
Method: PERISTALTIC	Static Water Level (WL): 11.39	Total Purge Time (min): 175
Well Casing: 2" PVC	Start Purge (hrs): 0915	Total Vol. Purged (gal): 4.5
One Casing Volume(gal): 4.3		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = NA (ppm)

PUMP INLET (TUBING) SET @ 25' BGS

END WL 17.63 @ 1338

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 job # N7141
WELL ID.: 05-07
DATE: 1.20.01

Time (Hrs)	Water Level (Ft. below TOC)	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comm nts
0915	11.39	150	—	—	—	—	—	—	START PURGE
0925	13.00	100	7.20	0.701	7.3	10.69	10.5	139.3	CLEAR, NO ODOR
0935	13.82	↓	7.18	0.696	7.5	8.70	10.2	138.1	
0945	14.36		7.16	0.698	7.8	7.34	10.4	63.4	
0955	14.68		7.16	0.700	7.3	6.05	10.4	20.0	
1005	15.00		7.14	0.699	7.1	5.44	10.7	-27.8	
1015	15.19		7.14	0.701	6.8	4.27	10.7	-40.2	
1025	15.41		7.13	0.703	6.6	4.13	10.8	-54.2	
1035	15.58		7.13	0.702	5.9	3.35	10.8	-62.9	
1045	15.74	↓	7.13	0.705	5.4	3.21	10.9	-68.8	
1050	INCREASE	PUMP	RATE TO	PUMP	DRY	& SAMPLE	LATER	TODAY	
1055	17.46	265	7.12	0.705	4.7	2.69	12.2	-85.5	
1105	17.63	170	7.14	0.707	4.2	3.83	11.7	-85.4	
1112	17.63	170	7.15	0.708	3.8	5.19	11.7	-89.6	
1122	17.63	140	7.13	0.710	2.6	4.37	11.7	-95.8	
1135	↓	130	7.16	0.712	1.2	3.96	11.7	-99.7	
1145		115	7.13	0.713	1.0	3.65	11.7	-101.6	LOWERED PUMP RATE TO
1155		↓	7.13	0.713	1.0	2.80	11.7	-102.8	TRY TO STABILIZE WL
1205		125	7.14	0.714	1.0	3.00	11.7	-100.9	1 VOL. @ 1155±
1210	↓	125	7.14	0.716	1.0	2.96	11.7	-101.2	END PURGE
									START SAMPLING
									@ 1215

SIGNATURE(S): [illegible]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sampl ID No.: 05GW0801
Sample Location: SWMU5 -Old Burn Pit
Sampled By: K. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 1.20.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1540 End: 1725	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	6.74	0.673	7.6	4.3	1.03	-31.9	NONE

PURGE DATA:

Date: 1.20.01	Total Well Depth (TD): 19.40	End Purge (hrs): 1535
Method: PERISTALTIC	Static Water Level (WL): 4.92	Total Purge Time (min): 80
Well Casing: 2" PVC	Start Purge (hrs): 14:15	Total Vol. Purged (gal): 2.4
One Casing Volume(gal): 2.4		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

SET PUMP INLET (TUBING) @ 7' BGS
END WL = ~~BGS~~ 5.05' @ 1725

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

6.9 MIN = 1 VOL @ 130 ML/MIN

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 05-08
DATE: 1.20.01

Tim (HH:MM)	Water Level (ft below TOC)	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Deg C)	ORP (mV)	Comments
1415	4.92	150	—	—	—	—	—	—	START PURGE, CLEAR
1425	4.98	135	6.77	0.687	35	2.93	9.1	20.8	NO ODOR
1435	4.99	130	6.75	0.687	17	1.76	8.7	19.7	SOME TSS IN PURGE WATER
1445	4.99	↓	6.74	0.684	10	1.32	8.3	12.1	
1455	5.00	105	6.74	0.683	6.2	1.16	8.0	-5.5	
1505	↓	↓	6.74	0.680	5.9	0.85	7.7	-10.7	
1515			6.74	0.672	5.4	0.98	7.6	-27.3	
1525			6.74	0.674	4.9	1.03	7.6	-26.0	
1530			6.74	0.672	4.5	0.99	7.6	-30.7	
1535	↓	↓	6.74	0.673	4.3	1.03	7.6	-31.9	END PURGE

SIGNATURE(S): [illegible]

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GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 056W0901
Sample Location: SWMU5 -Old Burn Pit
Sampled By: B. BALKOVEC
C.O.C. No.:

SAMPLING DATA:

Date: 1/9/01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 0432 End: 1232	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	7.37	0.313	10.81	0.80	11.71	+239.0	None

PURGE DATA:

Date: 1/9/01	Total Well Depth (TD): 28.00	End Purge (hrs): 0430
Method: PERISTALTIC	Static Water Level (WL): 14.41	Total Purge Time (min): 70
Well Casing: 2" PVC	Start Purge (hrs): 0830	Total Vol. Purged (gal): 2.2
One Casing Volume(gal): 2.13		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	12
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	6
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	4
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	4
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	2
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NA
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	2
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	4

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

Pump INLET SET @ 18' FROM TOC

@ 1200 ml/min Iv2: 68 min

SCREENED FROM (10.37-19.67) BGS or 13.37 - 22.67 TOC

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	FD01090101

Signature(s): Robert Balkovec

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 05-09
DATE: 1/9/01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comm nts
	[illegible]	[illegible]	[illegible]	mS/cm	[illegible]	(mg/L)	[illegible]	mV	
0820	15.12	120	7.67	0.321	1.2	13.53	10.56	+226.6	—
0830	15.14	120	7.46	0.324	1.5	11.87	10.47	+231.5	1.2L
0835	15.15	120	7.43	0.323	1.4	12.03	11.06	+232.6	
0840	15.16	120	7.42	0.322	2.0	12.36	11.15	+234.0	2.4L
0845	15.16	120	7.41	0.321	1.9	12.07	11.14	+234.9	
0850	15.16	120	7.40	0.320	1.3	10.72	11.09	+235.8	3.6L
0855	15.16	120	7.40	0.319	1.4	12.21	10.46	+236.4	
0900	15.16	120	7.39	0.317	1.3	12.26	10.42	+236.9	4.8L
0905	15.16	120	7.38	0.317	1.4	12.03	10.44	+237.6	
0910	15.16	120	7.38	0.316	1.3	11.32	10.83	+238.3	6.0L
0915	15.16	120	7.37	0.314	1.3	11.10	10.85	+238.7	
0920	15.16	120	7.37	0.313	0.90	11.86	10.89	+238.9	7.2L
0925	15.16	120	7.37	0.313	0.87	11.78	10.79	+239.4	
0930	15.16	120	7.37	0.313	0.80	11.71	10.81	+239.0	8.4L >1vol
→ END PURGE									
	SAMPLED @ 0932								

SIGNATURE(S): Robert Balkcom 1.4.01

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8.4L = 1vol

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GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 056W1301
Sample Location: 05-13 SWMU5 -Old Burn Pit
Sampled By: R. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 1.20.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 0800 End: 1905	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	6.82	0.579	11.3	21	1.77	115.3	NONE

PURGE DATA:

Date: 1/14/01	Total Well Depth (TD): 28.00	End Purge (hrs): 0955
Method: PERISTALTIC	Static Water Level (WL): 15.16	Total Purge Time (min): 100
Well Casing: 2" PVC	Start Purge (hrs): 0815	Total Vol. Purged (gal): 27
One Casing Volume(gal):		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	1.20.01 0800
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	↓ ↓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	↓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	↓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	1735
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	↓
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	↓
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	↓ ↓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = NA (ppm)

PUMP INLET SET @ 18' TO PVC

@ 0855 LOWERED INLET TO 20' TO COMPENSATE FOR DRAWDOWN

@ 0910 SET INLET @ 21' TRYING TO PUMP WELL DRY.

@ 0955 W/L @ 22.50' - UNABLE TO PUMP WATER. WILL ALLOW WELL TO RECHARGE OVERNIGHT

1.20.01 WL 15.25 @ 0800 START SAMPLING TURB = 34.2

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible] 1.20.01

1.20.01 DRY @ 0840 WILL ALLOW TO RECHARGE AND COMPLETE THIS PM.

1.20.01 @ 1735 WL = 15.22' START SAMPLING
END @ 1905

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 05-13
DATE: 1/19/01

Time (24Hr Clock)	Water Level (ft below TOC)	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Vol (L)	Comments
0815	15.16	START								
0825	15.54	40	6.73	0.447	17	5.19	8.20	+160.7	.9L	
0835	16.22	125	6.73	0.494	17	3.20	9.49	+156.5	1.63L	15.85' @ 0830
0840	16.49	70							2 L	* Turn up Pump
0845	17.09	140	6.72	0.491	21	2.33	10.55	+140.1	2.7L	Try to drawdown well
0855	18.00	140	6.72	0.492	21	2.02	11.00	+107.3	3.4L	
0905	18.65	135	6.76	0.510	22	1.68	11.12	+57.2		
0910	* Added 5' of tubing		Inlet set @	27'	Trying to	draw out	well			
0915	19.43	150	6.78	0.535	25	3.08	11.08	+70.6	4.9L	
0925	20.70	150	6.81	0.564	32	2.05	10.99	+81.6		
0935	21.30	150	6.82	0.544	22	1.71	11.15	+95.6	7.9L	
0945	22.01	150	6.85	0.620	24	1.64	11.08	+106.2		
0955	22.80	180	6.82	0.579	21	1.77	11.28	+115.3	10.2L	
→	Unable to pump water @ 22.80'			Stop pumping + allow well to recharge						
				before sampling.						
1005	22.12									
1015	21.45									
1025	21.20									
→	Sample well on 1/20/01			Allow well to recharge overnight						

SIGNATURE(S): Robert Bultrere

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GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 05GW1501
Sample Location: SWMU5 -Old Burn Pit
Sampled By: BOB B./KEITH S
C.O.C. No.:

SAMPLING DATA:

Date: 1-7-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1430 End: 1655	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	7.09	0.461	9.0	2.5	1.33	-14.2	NONE

PURGE DATA:

Date: 1-7-01	Total Well Depth (TD): 17.20	End Purge (hrs): 1430
Method: PERISTALTIC	Static Water Level (WL): 5.83	Total Purge Time (min): 60
Well Casing: 2" PVC	Start Purge (hrs): 1330	Total Vol. Purged (gal): 2.0
One Casing Volume(gal): 1.9		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

1 vol @ 130 mL/MIN = 55 MIN

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 05-15
DATE: 1.7.01

Tim	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
	(ft)	(mL/Min)	(SU)	(mS/cm)	(NTU)	(mg/L)	(Deg C)	mV	
1330	5.83	130	—	—	—	—	—	—	START, CLEAR, NO ODOR
1335	5.94	↓	7.39	0.382	70	5.30	8.6	236.8	
1345	5.93	↓	7.29	0.406	24	3.75	8.4	38.0	
1355	↓	↓	7.18	0.435	13	3.00	8.2	-0.9	
1405	↓	↓	7.13	0.451	8.3	1.63	8.1	-9.6	
1415	↓	↓	7.10	0.458	4.1	1.31	8.1	-12.3	
1425	↓	↓	7.08	0.460	3.2	1.40	8.0	-13.9	
1430	↓	↓	7.09	0.461	2.5	1.33	8.0	-14.2	END PURGE

SIGNATURE(S): [illegible]

GROUND WATER SAMPLE LOG FORM

05GW1601

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 05-1601
Sample Location: SWMU5 -Old Burn Pit
Sampled By: KS - BB
C.O.C. No.:

SAMPLING DATA:

Date: 1.17.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1515 End: 1720	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	7.17	0.395	7.4	9.9	0.94	18.3	NONE

PURGE DATA:

Date: 1.17.01	Total Well Depth (TD): 16.75	End Purge (hrs): 1515
Method: PERISTALTIC	Static Water Level (WL): 4.02	Total Purge Time (min): 155
Well Casing: 2" PVC	Start Purge (hrs): 1240	Total Vol. Purged (gal): 3.7
One Casing Volume(gal): 2.1		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	—
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	—
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	—
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	—
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	—
~~App. IX Diss. Metals~~ , Ca, Fe, Mg, Mn, K, Na	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	NC
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	—
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	—

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

PUMP INLET (TUBING) SET @ 10' BTOC

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 05-16
DATE: 1-17-01

Time (Hrs)	Water Level (ft. below TOC)	Pump Rate (ml/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
1240	4.02	100	—	—	—	—	—	—	START PURGE
1247	4.32	↓	7.38	0.353	60	5.34	7.6	117.1	NO ODOR, SLIGHT CLOUDY
1255	4.33	↓	7.42	0.352	75	3.28	7.3	88.0	
1305	4.33	90	7.43	0.356	60	2.12	7.3	84.2	
1315	↓	↓	7.41	0.361	50	1.89	7.1	78.6	
1325	↓	↓	7.38	0.367	41	1.67	7.1	70.3	
1335	↓	↓	7.34	0.370	32	1.62	7.3	62.3	
1345	↓	↓	7.32	0.373	27	1.31	7.3	53.1	
1355	4.32	↓	7.28	0.377	24	1.51	7.3	43.0	
1405	4.33	↓	7.26	0.380	23	0.82	7.3	39.0	
1415	↓	↓	7.24	0.382	22	0.95	7.3	33.5	
1425	↓	↓	7.23	0.385	17	0.92	7.4	29.9	
1435	↓	↓	7.22	0.386	17	0.92	7.4	24.8	
1445	4.33	90	7.20	0.389	16	0.48	7.3	24.0	
1455	4.33	90	7.20	0.388	15	0.76	7.4	20.1	
1505	4.33	90	7.18	0.391	12	0.99	7.4	19.3	
1510	↓	↓	7.18	0.393	11	0.96	7.4	18.7	
1515	↓	↓	7.17	0.395	9.9 ✓	0.94	7.4	18.5	END PURGE

SIGNATURE(S): [signature]

GROUND WATER SAMPLE LOG FORM

Proj ct Sit Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sampl ID No.: 05GW1901
Sample Location: SWMU5 -Old Burn Pit
Sampled By: RS - BB
C.O.C. No.:

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Date: 1-18-01	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Time-Start: 0942 End: 1200								
Method: PERISTALTIC	CLEAR	7.37	0.427	7.2	9.7	2.90	41.7	NONE

PURGE DATA:

Date: 1-18-01	Total Well Depth (TD): 15.65	End Purge (hrs): 0942
Method: PERISTALTIC	Static Water Level (WL): 4.22	Total Purge Time (min): 87
Well Casing: 2" PVC	Start Purge (hrs): 0815	Total Vol. Purged (gal): 2.2
One Casing Volume(gal): 1.8		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

PUMP INLET (TUBING) SET @ 9' TO PVC

* NOTE @ 1010 CHECKED TURBIDITY NTU'S = 6.3

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 05-19
DATE: 1.18.01

Time (Hrs)	Water Level (ft below TOCP)	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comm nts
0815	4.22	–	—	—	—	—	—	—	START PURGE
0820	4.37	120	7.60	0.441	95	6.55	8.54	+35.8	600mL
0825	4.42	100	7.40	0.439	40	3.13	8.12	+42.5	1100mL
0835	4.47	100	7.36	0.435	23	2.97	7.46	+56.4	2.1L
0845	4.49	100	7.36	0.434	12	2.44	7.44	+57.1	3.1L
0855	4.55	90	7.36	0.432	11	2.85	7.31	+50.1	4.05L 90mL/min POS 50
0905	4.55	90	7.36	0.429	16	2.87	7.29	+46.5	4.95L
0915	4.55	90	7.36	0.428	15	2.89	7.18	+46.0	5.85L
0925	4.55	90	7.36	0.425	14	2.95	7.18	+43.7	6.75L
0935	4.55	90	7.37	0.423	11	2.90	7.13	+42.6	7.65L
0940	4.55	90	7.37	0.427	9.7	2.90	7.18	+41.7	8.10L

SIGNATURE(S): [signature] 7.05L/vol

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GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 05GW20101
Sample Location: SWMU5 -Old Burn Pit
Sampled By: B. BALKOVEC
C.O.C. No.:

SAMPLING DATA:

Date: 1/8/01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 0807 End: 1110	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PHOSTALTZE	CLEAR	6.81	0.304	7.75	9.4	9.49	+277.7	NONE

PURGE DATA:

Date: 1/8/01	Total Well Depth (TD): 17.58'	End Purge (hrs): 0905
Method: PHOSTALTZE	Static Water Level (WL): 6.54'	Total Purge Time (min): 55
Well Casing: 2" PVC	Start Purge (hrs): 0810	Total Vol. Purged (gal): 1.8
One Casing Volume(gal): 1.8		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NA
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

@ 140ml/min 1 vol ~ 49min

Pump inlet 10' (BGS)

Screened 5'-15' (BGS)

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141
WELL ID.: 05T01
DATE: 1/8/01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
[redacted]	[redacted]	[redacted]	[redacted]	(mS/cm)	[redacted]	(mg/L)	[redacted]	mV	
0810	6.54	170	7.08	0.304	4.0	9.77	7.74	+272.1	
0815	6.84	160	7.05	0.303	1.5	8.44	7.78	+273.2	[redacted]
0825	6.83	140	6.86	0.303	2.3	8.54	7.57	+224.4	2.2L
0830	6.68	110	6.95	0.305	2.6	8.63	7.14	+225.1	2.75L
0835	6.73	110	6.94	0.306	3.6	8.80	7.04	+226.5	[redacted] 3.3L
0840	6.80	120	6.93	0.306	3.8	8.45	7.14	+225.8	3.9L
0845	6.80	120	6.93	0.306	3.8	8.80	7.31	+226.0	[redacted] 4.5L
0850	6.80	120	6.82	0.300	3.8	9.35	7.33	+226.2	5.1L
0855	6.80	120	6.82	0.303	4.0	9.40	7.30	+227.0	[redacted] 5.7L
0900	6.80	120	6.81	0.303	3.8	9.46	7.20	+227.5	[redacted] [redacted] 6.3L
0905	6.80	120	6.81	0.304	3.9	9.48	7.25	+227.7	6.9L : 1 vol
→ END PURGE									
BEGIN SAMPLING @ 0907									

SIGNATURE(S): Robert Balbaure

6.54 1 vol : 6.9L

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GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 056W70701
Sample Location: 05702 SWMU5 -Old Burn Pit
Sampled By: BMKenne
C.O.C. No.:

SAMPLING DATA:

Date: 1/6/01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1415 End: 1755	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	7.08	0.277	17.64	6.2	4.80	+235.1	NONE

PURGE DATA:

Date: 1/6/01	Total Well Depth (TD): 14.70'	End Purge (hrs): 1410
Method: PERISTALTIC	Static Water Level (WL): 12.63'	Total Purge Time (min): 50
Well Casing: 2" PVC	Start Purge (hrs): 1320	Total Vol. Purged (gal): 2 gal ±
One Casing Volume (gal): 1.1		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	70 ✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	10 ✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	6 ✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	6 ✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	3 ✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NA
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	3 ✓
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	3 ✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = NA (ppm)

END WATER LEVEL 12.70'

vol = 4.16 L

@ 150 ml/min 1 vol ≈ 28 mins.

SCREENED FROM 8'-18' (BGS)

QA Samples Collected:

MS/MSD

Duplicate ID No.: FD01060102

Signature(s): Robert Bellaire

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 05T02
DATE: 1/6/01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
	[redacted]	[redacted]	[redacted]	(mS/cm)	(NTU)	(mg/L)	(Celsius)	mV	
1320	12.75	150	7.13	0.282	22	12.01	13.71	+ 248.3	
1330	12.72	150	7.10	0.279	19	10.26	12.65	+ 241.2	
1340	12.72	150	7.09	0.277	12	9.46	12.33	+ 237.1	
1350	12.72	150	7.09	0.277	8.7	9.67	12.66	+ 235.1	1 vol PURGED.
1400	12.73	150	7.07	0.276	6.5	9.85	12.63	+ 235.2	
1410	12.72	150	7.08	0.277	6.2	9.80	12.64	+ 235.1	
→	END PURGE								
	SAMPLED @ 1415								
	REMOVED ≈	2 gal							

SIGNATURE(S): [signature]

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GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 05GWT0301
Sample Location: SWMU5 -Old Burn Pit
Sampled By: BOB B. & KEITH S.
C.O.C. No.:

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Date: 1/7/01	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Time-Start: 1000 End: 1205								
Method: PERISTALTIC	CLEAR	6.55	0.194	6.8	3.0	5.28	228.3	NONE

PURGE DATA:

Date: 1/7/01	Total Well Depth (TD): 17.60	End Purge (hrs): 1000
Method: PERISTALTIC	Static Water Level (WL): 4.38	Total Purge Time (min): 102
Well Casing: 2" PVC	Start Purge (hrs): 0818	Total Vol. Purged (gal): 2.2
One Casing Volume(gal): 2.2		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Dioxins/Furans	4°C	(2) 1000 mL Amber Glass	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = NA (ppm)

~80 ml/min 1 vol = 105 min

SCREENED 5'-15' BGS

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 05T03
DATE: 1/7/01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
[redacted]	[redacted]	[redacted]	[redacted]	(mS/cm)	[redacted]	[redacted]	[redacted]	[redacted]	
0818	4.38	125	—	—	—	—	—	—	START, CLEAR, NO ODOR
0825	5.03	80	6.67	0.211	22	10.20	8.2	239.0	
0835	5.03	↓	6.60	0.209	20	7.11	7.0	234.9	
0845	5.07		6.60	0.209	17	6.43	6.5	232.4	
0855	5.07		6.59	0.208	12	6.10	6.4	230.0	
0905	5.10		6.59	0.204	9.3	6.18	6.6	229.1	
0915	5.13		6.58	0.202	6.1	5.94	6.7	227.7	
0925	5.15		6.58	0.201	5.8	5.59	6.8	227.5	
0935	5.15		6.57	0.198	5.3	6.01	6.7	226.7	
0945	5.14		6.56	0.196	4.2	5.24	6.8	226.7	
0955	5.15		6.55	0.194	3.7	5.30	6.7	227.1	
1000	5.14	↓	6.55	0.194	3.0	5.28	6.8	228.3	END PURGE

SIGNATURE(S): [signature]

1 vol = 2.2 gal

APPENDIX B.2.3

SWMU 9
GROUND WATER SAMPLE LOG SHEETS

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 096W0201
Sample Location: SWMU - 9
Sampled By: K. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 1-30-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1640 End: 1805	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	6.65	0.395	9.9	3.8	1.01	-135.8	NONE

PURGE DATA:

Date: 1-30-01	Total Well Depth (TD): 22.30	End Purge (hrs): 1635
Method: PERISTALTIC	Static Water Level (WL): 8.84	Total Purge Time (min): 94
Well Casing: 2" PVC	Start Purge (hrs): 1451	Total Vol. Purged (gal): 2.4
One Casing Volume(gal): 2.2		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = NA (ppm)

PUMP INLET (TUBING) SET @ 15.5' TOC

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): K. E. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 09-02
DATE: 1-30-01

Tim (Hrs.)	Water Level (Ft. below TOC)	Pump Rate (mL/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments
1451	8.84	100	—	—	—	—	—	—	START PURGE
1500	9.10	95	6.54	0.405	7.6	1.73	10.0	-97.1	CLEAR, NO ODOR
1510	9.08	↓	6.57	0.401	6.3	1.45	9.7	-111.2	
1520	9.10	↓	6.59	0.400	5.7	1.47	9.9	-118.9	
1530	9.11	↓	6.60	0.398	5.1	1.14	10.0	-125.1	
1540	9.12	↓	6.62	0.397	4.0	0.77	10.1	-129.2	
1550	9.10	95	6.63	0.396	4.0	1.06	9.9	-131.7	
1600	9.09	↓	6.63	0.396	4.1	0.96	9.8	-132.3	
1610	9.08	↓	6.63	0.397	4.1	1.01	9.8	-133.5	
1620	↓	↓	6.63	0.397	4.1	0.98	9.9	-133.9	
1630	↓	↓	6.64	0.395	3.9	0.97	9.9	-135.6	
1635	↓	↓	6.65	0.395	3.8	1.01	9.9	-135.8	END PURGE

SIGNATURE(S): [illegible]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 09GW0301
Sample Location: SWMU - 9
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 02-01-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1655 End: 1830	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	6.07	0.393	7.32	3.5	0.46	+ 119	NONE

PURGE DATA:

Date: 02-01-01	Total Well Depth (TD): 12.63	End Purge (hrs): 1650
Method: PERISTALTIC	Static Water Level (WL): 3.24	Total Purge Time (min): 120
Well Casing: 2" PVC	Start Purge (hrs): 1450	Total Vol. Purged (~~gal~~): 18.7 L
One Casing Volume(~~gal~~): 6 L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)

PID reading in Breathing Zone = (ppm)

QA Samples Collected:

MS/MSD — Duplicate ID No.: —

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 09-03
DATE: 02-01-01

Tim (Hrs)	Water Level (Ft. below TOC)	Pump Rate (mL/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments
1450	3.24								Start PURGE
1500	3.98	135	5.95	0.364	20	0.70	7.95	+ 98	1350ml CLEAR
1510	4.15	130	5.93	0.366	19	0.54	7.91	110	2650ml "
1520	4.25	100	5.95	0.371	15	0.56	7.78	111	3650ml "
1530	4.31	100	5.98	0.374	13	0.65	7.71	112	4650ml "
1540	4.39	100	6.00	0.377	8.9	0.58	7.45	113	5650ml "
1550	4.44	100	6.01	0.379	6.1	0.60	7.59	112	6650ml "
1600	5.05	200	6.01	0.376	6.5	0.47	7.63	119	8650ml "
1610	5.37	200	6.02	0.377	5.8	0.48	7.71	121	10650ml "
1620	5.55	200	6.03	0.383	5.3	0.45	7.52	122	12650ml "
1630	5.72	200	6.03	0.387	3.0	0.49	7.44	122	14650ml "
1640	5.85	200	6.05	0.390	4.3	0.47	7.37	121	16650ml "
1650	5.92	200	6.07	0.393	3.5	0.46	7.32	119	18650ml "
1655*									Start SAMPLING

SIGNATURE(S): Tony Agah

MIN. VOL = 6.0 L

* Reduced Flow to sample

PAGE 2 OF 2

NSWC Crane
Field Form
Re 1
Octo 0

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 09GW0401
Sample Location: SWMU - 9
Sampled By:
C.O.C. No.:

SAMPLING DATA:

Date: 01-30-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1220 End: 1605	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	5.35	0.439	10.63	10	0.79	+169	NONE

PURGE DATA:

Date: 01-30-01	Total Well Depth (TD): 32.98	End Purge (hrs): 1215
Method: BLADDER PUMP	Static Water Level (WL): 14.96	Total Purge Time (min): 240
Well Casing: 2" PVC	Start Purge (hrs): 0815	Total Vol. Purged (~~gal~~): 19L
One Casing Volume(~~gal~~): 11.2L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INT. = NA

Stick up = 2.64'

QA Samples Collected:

MS/MSD: —
Duplicate ID No.: —

Signature(s): Terry Rogers

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 09-04
DATE: 01-30-01

Time (Hrs.)	Water Level (ft. below TOC)	Pump Rate (ml/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
0815	14.96	→							Start PURGE
0825	16.30	130	6.40	0.838	40	2.44	12.29	+ 5	1300ml CLEAR
0835	17.54	100	6.30	0.808	27	2.62	12.20	+ 30	2300 "
0845	18.59	100	5.88	0.594	30	2.02	12.16	+ 77	3300 "
0855	19.19	100	5.52	0.475	33	1.51	12.02	+ 135	4300 "
0905	19.31	94	5.49	0.462	33	1.32	11.74	+ 143	5240 "
0915	19.42	60	5.46	0.454	25	1.10	11.22	+ 150	5840 "
0925	19.51	72	5.44	0.451	19	1.17	11.33	+ 154	6560 "
0935	19.59	68	5.42	0.446	16	0.92	11.42	+ 158	7240 "
0945	19.70	75	5.41	0.443	12	1.02	11.41	+ 162	7990 "
0955	19.80	75	5.40	0.443	9.8	0.97	11.19	+ 165	8740 "
1005	19.89	75	5.39	0.441	9.8	1.01	10.75	+ 165	9490 "
1015	19.98	75	5.37	0.440	9.7	0.93	10.67	+ 166	10240 "
1025	20.13	75	5.38	0.440	9.8	0.76	10.55	+ 167	10990 "
1035	20.27	75	5.37	0.440	10	0.84	10.62	+ 169	11740 "
1045	20.36	75	5.36	0.440	10	0.81	10.58	+ 171	12490 "
1055	20.45	75	5.37	0.439	10	0.81	10.70	+ 172	13240 "
1105	20.54	75	5.36	0.440	10	0.83	10.84	+ 173	13990 "
1115	20.63	75	5.37	0.441	10	0.66	10.84	+ 172	14740 "
1125	20.72	75	5.37	0.441	10	0.78	10.77	+ 173	15490 "
1135	20.81	75	5.38	0.441	11	0.70	10.70	+ 173	16240 "
1145	20.90	70	5.36	0.440	10	0.66	10.72	+ 175	16940 "
1155	20.99	70	5.35	0.438	10	0.76	10.51	+ 174	17640 "
1205	21.07	70	5.35	0.438	10	0.72	10.43	+ 172	18340 "
1215	21.15	70	5.35	0.439	10	0.79	10.63	+ 169	19040 "
1220	→								Start SAMPLING

SIGNATURE(S): Terry Logan

11.2 L = MIN. VOL.

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NSWC Crane
Field Form
Rev[illegible] 1
Octo[illegible]0

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 096W0701
Sample Location: SWMU - 9
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-31-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1430 End: 1545	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	6.17	1.620	11.54	15 *	0.47	45	NONE

PURGE DATA:

Date: 01-31-01	Total Well Depth (TD): 36.70	End Purge (hrs): 1425
Method: Bladder Pump	Static Water Level (WL): 18.20	Total Purge Time (min): 1430
Well Casing: 2" PVC	Start Purge (hrs): 1025	Total Vol. Purged (~~gal~~): 22.4 L
One Casing Volume(~~gal~~): 11.5 L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

* TURBIDITY PRIOR to collecting Total METALS = 9.1 NTUs

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 09-07
DATE: 01-31-01

Time (Hrs)	Water Level (ft. below TOC)	Pump Rate (ml/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
1025	18.20								Start PURGE
1035	19.02	150	6.30	1.623	55	1.27	12.18	+ 67	1500ml Sl. Cloudy
1045	18.73	56	6.33	1.635	65	0.86	10.43	61	2060 " "
1055	18.78	63	6.33	1.623	70	0.73	11.19	53	2690 " "
1105	18.97	110	6.36	1.619	70	0.38	11.48	49	3790 " "
1115	18.92	80	6.28	1.616	70	0.57	11.39	54	4590 " "
1125	19.04	95	6.39	1.606	75	0.38	11.18	46	5540 " "
1135 *	18.72	60	6.29	1.371	110	1.15	10.53	47	6140 " "
1145	18.87	95	6.29	1.470	160	0.82	10.87	48	7090 " "
1155	18.96	76	6.26	1.500	170	0.70	10.81	52	7850 " "
1205	19.01	92	6.14	1.505	175	0.58	10.94	66	8670 " "
1215	19.06	92	6.19	1.506	180	0.56	11.10	62	9590 " "
1225	19.07	92	6.09	1.508	180	0.64	11.20	74	10510 " "
1235	19.09	92	6.15	1.514	160	0.50	11.18	67	11430 " "
1245	19.12	100	6.13	1.518	140	0.70	11.34	71	12430 " "
1255	19.14	100	6.15	1.520	105	0.48	11.33	66	13430 " "
1305	19.15	100	6.15	1.552	70	0.69	11.31	63	14430 " "
1315	19.16	100	6.16	1.575	50	0.62	11.30	58	15430 CLEAR
1325	19.17	100	6.16	1.588	35	0.47	11.38	55	16430 "
1335	19.19	100	6.16	1.599	30	0.52	11.43	52	17430 "
1345	19.20	100	6.17	1.606	26	0.40	11.33	51	18430 "
1355	19.21	100	6.16	1.609	23	0.50	11.50	49	19430 "
1405	19.24	100	6.17	1.614	20	0.49	11.53	48	20430 "
1415	19.27	100	6.16	1.616	20	0.39	11.44	46	21430 "
1425	19.31	100	6.17	1.620	15	0.47	11.54	45	22430 "
1430									Start SAMPLING

SIGNATURE(S): Terry Rogahn

11.5 L = MIN. VOL.

PAGE 2 OF 2

* REMOVED PUMP TO CHECK & FIX EXCESS AIR IN H_2O TUBE.

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 09GW1001
Sample Location: SWMU - 9
Sampled By: R. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 1.31.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 0930 End: 1130	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	5.99	0.517	9.7	7.2	1.31	149.9	NONE

PURGE DATA:

Date: 1.31.01	Total Well Depth (TD): 29.05	End Purge (hrs): 0925
Method: PERISTALTIC	Static Water Level (WL): 3.65	Total Purge Time (min): 103
Well Casing: 2" PVC	Start Purge (hrs): 0742	Total Vol. Purged (gal): 4.4
One Casing Volume(gal): 4.1		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements		~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	12	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	6	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	4	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	4	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	2	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	~~2~~	
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	2	✓
	2X VOC	FOR DUP		

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = NA (ppm)

SET PUMP INLET (TUBING) @ 18' TOC
END WL = 3.74 @ 1130

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	KS ~~FD003~~ FD013101 01

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 09-10
DATE: 1.31.01

Time (Hrs.)	Water Level (Ft. below TOC)	Pump Rate (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments
0742	3.65	180	—	—	—	—	—	—	START PURGE
0750	3.72	↓	6.55	0.699	28	2.46	9.8	126.7	CLEAR, NO ODOR
0800		160	6.18	0.570	78	2.53	9.7	130.6	
0810			6.11	0.557	34	1.86	9.5	133.6	
0820			6.09	0.547	27	1.84	9.5	136.5	
0830			6.03	0.532	20	1.29	9.6	139.6	
0840			6.07	0.538	15	1.33	9.6	140.6	
0850			6.00	0.520	12	1.30	9.7	143.9	
0900			6.02	0.525	9.9	1.34	9.7	145.4	
0910			6.01	0.520	8.1	1.31	9.7	146.6	
0920			5.99	0.516	7.7	1.35	9.7	148.3	
0925	↓	↓	5.99	0.517	7.2	1.31	9.7	148.9	END PURGE

SIGNATURE(S): [illegible]

PAGE 2 OF 2

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 09GW12C1
Sample Location: SWMU - 9
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 02-01-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1125 End: 1320	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	6.49	0.773	9.20	2.9	0.98	-115	NONE

PURGE DATA:

Date: 02-01-01	Total Well Depth (TD): 28.00	End Purge (hrs): 1120
Method: PERISTALTIC	Static Water Level (WL): 4.63	Total Purge Time (min): 200
Well Casing: 2" PVC	Start Purge (hrs): 0800	Total Vol. Purged (~~gal~~): 37.3 L
One Casing Volume(~~gal~~): 14.8L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INT. = 10.32 → 19.49 BGS OR 12.95' → 22.12 FROM TOC

stick up = 2.63'

INTAKE OF Tubing @ ~18'

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Tony Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 09-12
DATE: 02-01-01

Tim (Hrs.)	Water Level (Ft. below TOC)	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments
0800	4.63							→	Start PURGE
0810	5.75	130	6.77	0.886	65	4.79	8.37	-64	1300 Sl. Cloudy
0820	5.83	100	6.73	0.884	57	3.03	8.11	-102	2300 " "
0830	5.95	100	6.71	0.879	50	2.43	8.08	-116	3300 CLEAR
0840	6.07	100	6.72	0.877	40	2.28	8.17	-117	4300 "
0850	6.62	200*	6.72	0.877	65	2.19	9.07	-119	6300 Sl. Cloudy
0900	7.19	200	6.69	0.860	37	1.77	9.24	-124	8300 CLEAR
0910	7.47	200	6.62	0.820	19	1.46	9.28	-121	10300 "
0920	7.74	200	6.55	0.795	15	1.24	9.26	-116	12300 "
0930	8.00	200	6.50	0.760	11	0.97	9.20	-112	14300 "
0940	8.19	200	6.48	0.749	11	1.00	9.24	-111	16300 "
0950	8.38	200	6.45	0.740	10	0.90	9.28	-107	18300 "
1000	9.26	300*	6.43	0.740	14.1	1.05	9.56	-102	21300 "
1010	10.19	300	6.46	0.753	10.3	1.18	9.63	-104	24300 "
1020	10.83	300	6.46	0.746	8.5	1.16	9.67	-105	27300 "
1030	11.40	300	6.46	0.738	7.1	1.14	9.72	-106	30300 "
1040	11.69	300	6.40	0.732	7.7	1.12	9.80	-101	33300 "
1050	10.03	100	6.46	0.758	6.5	1.01	9.33	-107	34300 "
1100	9.61	100	6.51	0.776	6.0	0.92	9.11	-112	35300 "
1110	8.95	100	6.52	0.781	4.4	0.95	9.15	-113	36300 "
1120	8.80	100	6.49	0.773	2.9	0.98	9.20	-113	37300 "
1125								→	START SAMPLING

SIGNATURE(S): Terry Rojahn

14.8L = MIN VOL
* INCREASE FLOW RATE

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NSWC Crane
Field Form
Rev[illegible]
Octob[illegible]0

GROUND WATER SAMPLE LOG FORM

Project Sit Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 09GWTP05 01
Sample Location: SWMU - 9
Sampled By: R. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 1-23-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1430 End: 1603	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	6.89	0.628	8.6	3.7	0.76	-167.6	NONE

PURGE DATA:

Date: 1.23.01	Total Well Depth (TD): 15.06	End Purge (hrs): 1425
Method: PERISTALTIC	Static Water Level (WL): 3.00	Total Purge Time (min): 150
Well Casing: 2" PVC	Start Purge (hrs): 1155	Total Vol. Purged (gal): 6.2
One Casing Volume(gal): 2.0		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = NA (ppm)

PUMP INLET SET @ 13' TOC
END WL = 4.27 @ 1603

J PLUG & LOCK WERE OFF RISER, MAY HAVE BEEN LEFT OFF DURING WLS 1.102

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 09GWTP0501
DATE: 1.23.01

Tim	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
(Hrs)	(Ft below TOC)	(ml/Min)	(SU)	(mS/cm)	(NTU)	(mg/L)	(Celcius)	(mV)	
1155	3.00	90	—	—	—	—	—	—	START PURGE
1200	3.29		6.92	0.633	358	1.55	8.1	-13.9	LT. BRN TO LT. RUST COLOR
1210	~~4.00~~ 3.40		6.90	0.634	83	1.53	8.2	-45.9	NO ODOR-CLEARING
1220	3.51		6.88	0.629	70	1.92	8.1	-98.6	CLEANED OUT CELL
1230	3.58		6.89	0.635	57	1.65	8.3	-112.8	
1240	3.65		6.88	0.638	38	1.33	8.5	-126.8	
1250	3.73		6.88	0.638	29	1.26	8.6	-133.1	
1300	3.82	↓	6.88	0.638	21	0.76	8.8	-141.7	
1310	4.15	235	6.88	0.639	16	0.88	9.2	-150.0	TURN-UP PUMP TO 1.7GL
1320	4.42		6.88	0.641	12	0.78	9.2	-157.1	DRAW DOWN @ 1305
1330	4.60		6.88	0.639	7.7	0.75	9.2	-162.0	
1340	4.70		6.88	0.638	5.9	0.83	9.2	-166.8	
1350	4.80		6.88	0.636	5.1	0.81	9.1	-169.4	
1400	4.88		6.88	0.634	4.3	0.61	9.0	-170.5	
1410	4.97		6.88	0.631	3.7	0.50	9.0	-172.8	
1415	5.00	↓	6.89	0.630	3.7	0.54	9.0	-172.5	LOWERED PUMP RATE 3 VOL.
1420	4.65	90	6.89	0.629	3.8	0.59	8.6	-168.8	TO 90 ML/MIN
1425	4.46	90	6.89	0.628	3.7	0.76	8.6	-167.6	END PURGE

SIGNATURE(S): [illegible]

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NSWC Crane
Field Form
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GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 09GWTP601
Sample Location: SWMU-9
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-23-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1410 End: 1600	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	6.65	0.727	12.27	1.6	3.63	+ 70	NONE

PURGE DATA:

Date: 01-23-01	Total Well Depth (TD): 29.00	End Purge (hrs): 1405
Method: Peristaltic	Static Water Level (WL): 13.03	Total Purge Time (min): 130
Well Casing: 2" PVC	Start Purge (hrs): 1155	Total Vol. Purged (~~gal~~): 10.9 L
One Casing Volume(~~gal~~): 10L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INT. 20.7 - 25.7' BGS or 22.67 - 27.67
Stick up 1.97 Intake @ 25.17 (MID. SCREEN)

QA Samples Collected:

MS/MSD —
Duplicate ID No.: —

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 09WTP6
DATE: 01-23-01

Time (Hr:Min)	Water Level (ft. below TOC)	Pump Rate (ml/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1155	13.03								Start PURGE
1205	13.77	100	6.65	0.787	12	460	11.94	-7	1000ml CLEAR
1215	13.77	80	6.75	0.793	8.0	470	11.82	+ 20	1800ml "
1225	13.84	80	6.78	0.795	5.1	4.43	12.04	+ 33	2600ml "
1235	13.86	80	6.81	0.795	4.9	438	12.37	+ 40	3400ml "
1245	13.92	85	6.81	0.791	3.5	4.68	12.50	+ 45	4250ml "
1255	13.93	85	6.79	0.784	3.4	4.10	12.39	+ 50	5100ml "
1305	13.89	75	6.77	0.778	3.2	4.03	12.13	+ 54	5850ml "
1315	13.94	83	6.75	0.764	3.3	407	12.27	+ 57	6680ml "
1325	13.96	85	6.71	0.751	2.4	3.98	12.33	+ 61	7530ml "
1335	13.97	85	6.69	0.743	2.1	3.70	12.27	+ 64	8380ml "
1345	13.98	85	6.65	0.735	1.7	3.73	12.40	+ 67	9230ml "
1355	13.99	85	6.65	0.730	1.8	3.66	12.33	+ 69	10080ml "
1405	14.00	85	6.65	0.727	1.6	3.63	12.27	+ 70	10930ml "
1410									Start SAMPLING

MIN. VOL. = 10 L

SIGNATURE(S): Terry Rogers

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NSWC Crane
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NSWC Crane
Field Form
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GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 09GWT0101
Sample Location: SWMU - 9
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-31-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 0755 End: 0928	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	6.04	1.138	13.01	4.9	5.28	+92	NONE

PURGE DATA:

Date: 01-30-01	Total Well Depth (TD): 28.80	End Purge (hrs): 1905
Method: BLADDER PUMP	Static Water Level (WL): 12.46	Total Purge Time (min): 125
Well Casing: 2" PVC	Start Purge (hrs): 1700	Total Vol. Purged (~~gal~~): 30.5 L
One Casing Volume(~~gal~~): 10L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

DEVELOPMENT RECORD SHOWS that this WELL draws down RAPIDLY (to dry). Will place PUMP on Bottom w/ INTAKE 1' OFF Bottom. Will PUMP hard to REMOVE EITHER 3 vol. or to dryness, AND LET WELL RECHARGE OVER NIGHT, THEN SAMPLE tomorrow (01-31-01)

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 09T01
DATE: 01-30-01

Time (Hrs.)	Water Level (ft. below TOC)	Pump Rate (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (+/- mV)	Comments
1700	12.46								Start PURGE
1710	14.20	200	5.90	1.217	39	2.72	15.21	+ 139	2000ml CLEAR
1720	15.20	200	5.90	1.215	24	2.91	15.10	139	4000 "
1730	16.29	200	5.83	1.215	22	3.91	15.02	142	6000 "
1740	17.32	200	5.91	1.197	16	3.88	14.93	138	8000 "
1750	18.13	200	6.01	1.154	16	3.96	14.85	133	10000 "
1800	19.07	200	6.07	1.116	13	4.22	15.01	129	12000 "
1810	19.99	200	6.10	1.091	11	4.50	15.00	128	14000 "
1820	20.97	300	6.20	1.008	10	5.21	15.41	124	17000 "
1830	22.10	300	6.26	0.924	9.6	5.11	15.47	123	20000 "
1840	23.17	300	6.24	0.945	11	5.00	15.55	125	23000 "
1850	24.39	300	6.16	1.128	11	4.89	15.56	130	26000 "
1900	25.51	300	6.14	1.209	12	4.97	15.64	131	29000 "
1905	26.11	300	6.13	1.217	11	4.45	15.67	132	30500 "
0740	13.59								01/31/01
0750	—	100	6.04	1.138	4.9	5.28	13.01	92	CLEAR
0755									Start SAMPLING

10L MIN VOL

SIGNATURE(S): Terry Rajahn

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NSWC Crane
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NSWC Crane
Field Form
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October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 09GWT0201
Sample Location: SWMU - 9
Sampled By: K. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 2.2.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 0800 End: 0905	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	5.62	1.453	8.5	3.4	1.46	193.3	NONE

PURGE DATA:

Date: 2.1.01	Total Well Depth (TD): 14.20	End Purge (hrs): 0942
Method: PERISTALTIC	Static Water Level (WL): 6.75	Total Purge Time (min): 102
Well Casing: 2" PVC	Start Purge (hrs): 0800	Total Vol. Purged (gal): 2.1
One Casing Volume(gal): 1.2		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = NA (ppm)

PUMP INLET (TUBING) SET 3' OFF BTM
DRY TO 14' @ 0942 WILL ALLOW TO RECHARGE & SAMPLE
2.1.01 PM IF IT RECHARGES
1320 WL = 11.62' WILL ALLOW TO RECHARGE OVERNIGHT
2.2.01 WL = 7.67 @ 0800, START SAMPLING
TURB = 3.4

5' SCREEN

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 09T02
DATE: 3.1.01

Time (Hrs)	Water Level (ft. below TOC)	Pump Rate (mL/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (+/- mV)	Comments
0900	6.75	125	—	—	—	—	—	—	START PURGE
0910	8.50	100	5.39	1.418	14.5	3.84	7.7	210.5	HIGHER PUMP RATE
0920	9.45	↓	5.40	1.423	9.7	3.41	7.4	207.7	1ST 3 MIN
0830	10.29	↓	5.43	1.425	6.8	2.25	7.4	205.7	CLEAR, NO ODOR
0840	10.65	↓	5.46	1.433	3.9	1.84	7.5	200.5	
0850	11.08	↓	5.55	1.449	2.2	1.62	7.5	173.1	
0900	11.46	↓	5.65	1.464	1.3	1.96	7.6	159.1	
0910	12.08	130	5.75	1.515	0.9	1.63	8.0	155.3	TURNED UP PUMP RATE
0920	12.55	↓	5.66	1.484	4.6	1.73	8.3	167.5	TO DRY OUT MW
0930	13.54	↓	5.62	1.456	5.2	2.01	8.4	186.1	LOWERED TUBING TO
0940	13.91	↓	5.63	1.454	5.4	1.49	8.5	190.7	14'
0942	14.00	↓	5.62	1.453	16.7	1.46	8.5	193.3	DRY

0901

SIGNATURE(S): [illegible]

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GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 096WT03 01
Sample Location: SWMU - 9
Sampled By: R. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 2-1-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1720 End: 1842	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	4.67	0.291	8.1	9.5	0.96	287.5	NONE

PURGE DATA:

Date: 2-1-01	Total Well Depth (TD): 19.70	End Purge (hrs): 1715
Method: PERISTALTIC	Static Water Level (WL): 3.51	Total Purge Time (min): 145
Well Casing: 2" PVC	Start Purge (hrs): 1350	Total Vol. Purged (gal): 3.8
One Casing Volume(gal): 2.6		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	~~Time~~ Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = NA (ppm)

PUMP INLET (TUBING) SET @ 16' TOC

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 09T03
DATE: 2.1.01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
(24 Hr)	(ft below TOC)	(ml/Min)	(S.U.)	(mS/cm)	(NTU)	(mg/L)	(Deg C)	(mV)	
1350	3.51	100	—	—	—	—	—	—	START PURGE
1400	3.97		4.72	0.295	144	2.59	10.6	273.6	CLOUDY - NO ODOR
1410	4.06		4.68	0.291	104	2.26	10.3	284.2	
1420	4.17		4.68	0.291	90	1.60	10.2	290.2	
1430	4.13		4.68	0.291	88	1.38	9.9	287.3	
1440	4.10		4.68	0.292	58	1.26	9.8	287.0	
1450	4.14		4.68	0.293	49	1.13	9.8	286.4	
1500	4.11		4.68	0.293	52	1.25	9.5	285.1	
1510	4.12		4.68	0.293	57	1.04	9.1	283.3	
1520	4.12		4.67	0.291	40	1.06	8.8	285.2	
1530	4.13		4.67	0.292	42	1.33	8.7	283.4	
1540	4.13		4.68	0.292	45	0.95	8.7	282.0	
1550	4.12		4.67	0.292	38	1.13	8.6	283.0	
1600	4.11		4.67	0.292	33	0.94	8.4	284.4	CLEANED FLOW CELL
1610	4.11		4.66	0.292	26	1.22	8.5	287.4	
1620	4.11		4.67	0.292	19	0.96	8.4	287.2	
1630	4.10		4.66	0.293	15	0.93	8.2	287.7	
1640	4.09		4.66	0.293	13	0.93	8.1	288.0	
1650	4.09		4.67	0.292	12	1.00	8.1	288.3	
1700	4.09		4.67	0.293	12	0.94	8.0	287.4	
1710	4.09		4.67	0.291	10 ✓	0.92	8.1	287.6	
1715	4.09	↓	4.67	0.291	9.5	0.96	8.1	287.5	END PURGE

SIGNATURE(S): [illegible]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 09GWT0401
Sample Location: SWMU - 9
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 02-02-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 0940 End: 1122	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	5.89	0.439	5.06	2.8	0.56	-43	NONE

PURGE DATA:

Date: 02-02-01	Total Well Depth (TD): 19.20	End Purge (hrs): 0935
Method: Peristaltic	Static Water Level (WL): 6.76	Total Purge Time (min): 80
Well Casing: 2" PVC	Start Purge (hrs): 0815	Total Vol. Purged (~~gal~~): 8.4 L
One Casing Volume(~~gal~~): 8.1 L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

QA Samples Collected:

MS/MSD —
Duplicate ID No.: —

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 09T04
DATE: 02-02-01

Time (Hrs.)	Water Level (Ft. below TOC)	Pump Rate (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments
0815	6.76								Start Purge
0825	7.00	130	5.87	0.432	4.3	1.10	5.66	- 44	1300ML CLEAR
0835	6.95	110	5.87	0.432	4.8	0.94	5.06	- 44	2400 CLEAR
0845	6.96	100	5.85	0.431	5.3	0.82	5.09	- 41	3400 CLEAR
0855	6.98	100	5.85	0.430	6.6	0.74	5.40	- 41	4400 CLEAR
0905	6.98	100	5.86	0.429	6.0	0.61	5.06	- 41	5400 CLEAR
0915	6.98	100	5.85	0.433	4.9	0.59	5.00	- 41	6400 CLEAR
0925	7.00	100	5.88	0.438	3.3	0.58	5.08	- 42	7400 CLEAR
0935	7.00	100	5.89	0.439	2.8	0.56	5.06	- 43	8400 CLEAR
0940									Start Sampling

SIGNATURE(S): Tony Rizzo

8.1L = MIN. VOL

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GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 096WT0501
Sample Location: SWMU - 9
Sampled By: R. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 1.30.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start 0950 End: 1445	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	5.53	0.895	9.3	2.5	1.98	219.9	NONE

PURGE DATA:

Date: 1.30.01	Total Well Depth (TD): 19.30	End Purge (hrs): 0945
Method: PERISTALTIC	Static Water Level (WL): 4.58	Total Purge Time (min): 105
Well Casing: 2" PVC	Start Purge (hrs): 0800	Total Vol. Purged (gal): 2.5
One Casing Volume(gal): 2.4		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements		Time Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	20	14+6
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	10	7+3
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	6	4+2
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	6	4+2
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	3	2+1
~~App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~		
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	3	2+1
				MS/MSD + DUP
		X VOL COLLECTED		
		FOR QA		

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

PUMP INLET (TUBING) SET @ 15'±
END WL = 5.95' @ 1445

QA Samples Collected:

MS/MSD	Duplicate ID No.:	Signature(s):
YES	FD 01300101	[illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 job # N7141

WELL ID.: 09T05
DATE: 1.30.01

Time (Hr:Min)	Water Level (ft below TOC)	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
0800	4.58	110	—	~~0.902~~	—	~~3.72~~	~~10.1~~	~~208.6~~	START PURGE
0810	4.95	90	5.48	0.902	9.9	3.72	10.1	208.6	CLEAR, NO ODOR
0820	5.38	↓	5.50	0.900	10	2.97	9.7	212.0	
0830	5.55	↓	5.50	0.898	8.6	3.10	9.7	212.8	
0840	5.70	↓	5.51	0.896	7.3	2.74	9.7	214.2	
0850	5.82	↓	5.52	0.895	5.2	2.51	9.7	216.7	
0900	5.90	↓	5.52	0.895	4.5	2.36	9.7	217.7	
0910	5.98	↓	5.53	0.894	3.9	2.44	9.8	218.5	
0920	6.02	80	5.53	0.896	3.1	1.89	9.6	219.1	
0930	5.91	↓	5.53	0.894	3.0	1.97	9.4	218.8	
0940	5.80	↓	5.53	0.896	2.8	2.01	9.3	219.2	
0945	5.79	↓	5.53	0.895	2.5	1.98	9.3	219.9	END PURGE

SIGNATURE(S): [illegible]

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NSWC Crane
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APPENDIX B.2.4

SWMU 10
GROUND WATER SAMPLE LOG SHEETS

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GW0201
Sample Location: SWMU 10 -Rockeye
Sampled By: RES
C.O.C. No.:

SAMPLING DATA:

Date: 1-6-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1030 End: 1145	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	7.78	0.279	9.5	2.6	4.87	221.8	NONE

PURGE DATA:

Date: 1-6-01	Total Well Depth (TD): 26.10	End Purge (hrs): 1030
Method: PERISTALTIC	Static Water Level (WL): 19.19	Total Purge Time (min): 95
Well Casing: 2" PVC	Start Purge (hrs): 0855	Total Vol. Purged (gal): 2.5
One Casing Volume(gal): 1.1		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
~~Volatiles App. IX~~	~~HCl/4°C~~	~~(6) 40 mL Glass Vials~~	—
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	✓ RS
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓
		2X VOC COLECTED FOR DUP	

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = NA (ppm)

END WL = 20.28'

PUMP INLET SET @ 21' B TOC

1 VOL @ 100 ML/MIN = 42 MIN

SCREEN ≈ 10-20' BGS ≈ 12.5-22.5 TOC

QA Samples Collected:

MS/MSD	Duplicate ID No.:	Signature(s):
—	FD 010601 01	RES

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 job # N7141

WELL ID.: 10-02
DATE: 1.6.01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
		(mL/min)		(mS/cm)	(NTU)	(mg/L)	(°C)	(mV)	
0855	19.19	80	—	—	—	—	—	—	START PURGE, NO ODOR
0910	19.55	↓	7.61	0.313	12	11.23	9.3	247.1	
0916	19.48		7.62	0.317	9.4	8.65	8.3	245.7	
0925	19.54		7.66	0.311	6.6	7.92	7.6	240.0	
0935	19.54		7.68	0.308	4.8	6.45	8.0	238.1	
0955	19.68	115	7.70	0.302	2.7	5.80	8.7	231.6	
1005	19.73	↓	7.76	0.289	2.6	4.55	9.4	227.0	
1015	19.83		7.77	0.288	2.6	4.81	9.5	223.9	
1025	19.92		7.78	0.282	2.6	4.89	9.5	222.2	
1030	19.95		7.78	0.279	2.6	4.87	9.5	221.8	END PURGE

SIGNATURE(S): [illegible]

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>19' PUMP WILL NOT HOLD A RATE LOWER THAN 100± ML/MIN.

NSWC Crane
Field Form
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GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GW0301
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01/18/01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1645 End: 1750	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	6.68	1.109	10.93	6.8	0.43	-99	NONE

PURGE DATA:

Date: 01-18-01	Total Well Depth (TD): 32.30	End Purge (hrs): 1640
Method: Bladder Pump	Static Water Level (WL): 15.50	Total Purge Time (min): 180
Well Casing: 2" PVC	Start Purge (hrs): 1340	Total Vol. Purged (~~gal~~): 16.2 L
One Casing Volume(~~gal~~): 10.5 L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INTERVAL = 14.83 → 24.15 BGS
Top of Steel Casing - 2.85'
Pump Intake = 17.68 + 5.00' = 22.68' From Top of Steel Casing

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10-03
DATE: 01-18-01

Time (Hr:Min)	Water Level (ft. below TOC)	Pump Rate (ml/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
1340	15.50	→							Start PURGE
1350	16.27	90	6.67	1.095	537	2.25	10.94	-64	900ml Rusty
1400	16.52	90	6.69	1.100	432	1.08	10.97	-73	1800ml "
1410	16.65	90	6.71	1.100	237	1.18	11.23	-77	2700ml CLOUDY
1420	16.67	97	6.71	1.099	94	1.05	11.23	-74	3670 "
1430	16.75	97	6.71	1.097	58	1.04	11.12	-77	4640 V.Sl.Cloudy
1440	16.81	90	6.71	1.096	43	0.66	11.23	-83	5540 CLEAR
1450	16.79	90	6.71	1.097	32	0.67	11.23	-85	6440 "
1500	16.82	83	6.71	1.095	29	0.71	11.30	-88	7270 "
1510	16.85	94	6.70	1.096	20	0.71	11.40	-91	8210 "
1520	16.86	89	6.70	1.096	17	0.47	11.42	-92	9100 "
1530	16.87	89	6.70	1.097	14	0.55	11.20	-93	9990 "
1540	16.88	89	6.69	1.097	13	0.50	11.13	-95	10880 "
1550	16.89	89	6.69	1.098	11	0.46	11.10	-96	11770 "
1600	16.89	89	6.69	1.100	10	0.47	11.09	-97	12660 "
1610	16.90	89	6.69	1.101	8.7	0.47	11.10	-98	13550 "
1620	16.91	89	6.69	1.104	9.0	0.48	11.10	-99	14440 "
1630	16.92	89	6.69	1.108	8.8	0.48	10.97	-99	15330 "
1640	16.91	89	6.68	1.109	6.8	0.43	10.93	-99	16220 "
1645	→								SAMPLE TIME

SIGNATURE(S): Terry Rogalski

MIN. VOL. = 18.5

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NSWC Crane
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GROUND WATER SAMPLE LOG FORM

Project Sit Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GW1601
Sample Location: SWMU 10 -Rockeye
Sampled By: R. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 1.21.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1025 End: 1116	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	3.92	1.770	8.8	0.3	2.17	239.2	NONE

PURGE DATA:

Date: 1.21.01	Total Well Depth (TD): 36.00	End Purge (hrs): 1020
Method: PERISTALTIC	Static Water Level (WL): 15.52	Total Purge Time (min): 118
Well Casing: 2" PVC	Start Purge (hrs): 0822	Total Vol. Purged (gal): 3.3
One Casing Volume(gal): 3.3		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	~~(6) 40 mL~~ Glass Vials	NO
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	~~(1) 1000 mL~~ Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

PUMP INLET (TUBING) SET @ 18'±
END WL = 16.42' @ 1116

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): R. S. Simpson

2 HRS 5 MIN, 1 VOL @ 100 ML/MIN

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10-16
DATE: 1.21

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
(Hr:Min)	(Ft. Below TOC)	(ml/Min)	(SU)	(mS/cm)	(NTU)	(mg/L)	(Celcius)	(mV)	
0822	15.52	150	—	—	—	—	—	—	START PURGE
0830	16.45	125	3.99	1.812	1.0	6.87	10.3	234.7	CLEAR, NO ODOR
0840	16.40	100	3.92	1.803	0.3	1.63	9.4	235.5	
0850	16.38	100	3.92	1.789		1.38	9.1	237.3	
0900	16.37		3.91	1.789		1.44	8.9	238.8	
0910	16.37		3.92	1.773		1.99	8.6	239.3	
0920	16.36		3.92	1.774		1.76	8.7	240.4	
0930	16.38		3.92	1.774		1.71	8.7	240.1	
0940	16.40		3.93	1.784		2.17	8.8	239.8	
0950	16.42		3.91	1.776		2.08	8.8	238.0	
1000	16.41		3.92	1.775		2.10	8.7	237.6	
1010	16.42		3.93	1.771		2.18	8.8	240.0	
1015	16.41		3.92	1.769		2.12	8.8	240.1	
1020	16.41	↓	3.92	1.770	↓	2.17	8.8	239.2	END PURGE

SIGNATURE(S): [illegible]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 1DGW1701
Sample Location: SWMU 10 -Rockeye
Sampled By: R. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 1.23.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 0945 End: 1030	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	6.84	0.60	9.8	0.2	1.25	141.9	NONE

PURGE DATA:

Date: 1.23.01	Total Well Depth (TD): 27.60	End Purge (hrs): 0940
Method: PERISTALTIC	Static Water Level (WL): 13.22	Total Purge Time (min): 95
Well Casing: 2" PVC	Start Purge (hrs): 0805	Total Vol. Purged (gal): 2.5
One Casing Volume(gal): 2.3		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
~~Volatiles App. IX~~	~~HCl/4°C~~	~~(6) 40 mL Glass Vials~~	NO
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = NA (ppm)

SET PUMP INLET (TUBING) @ 17.5' TOC
END WL = 13.61 @ 1030

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

1 VOL = 90 MIN @ 100 ML/MIN

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10-17
DATE: 1-23-01

Tim (Hrs)	Water Level (ft below TOC)	Pump Rate (mL/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP mV	Comments
0805	13.22	140	—	—	—	—	—	—	START PURGE
0810	13.51	140	6.83	0.635	0.2	6.03	10.3	180.7	CLEAR, NO ODOR
0820	13.55	100	6.82	0.634	0.2	2.69	10.0	161.9	
0830	13.59	↓	6.82	0.631	0.2	1.22	9.9	156.3	
0840	13.59	↓	6.82	0.629	0.3	1.61	9.7	151.4	
0850	13.59	↓	6.84	0.627	0.3	1.67	9.7	149.5	
0900	13.60	↓	6.83	0.625	0.3	0.92	9.7	146.6	
0910	↓	↓	6.83	0.623	0.3	1.04	9.6	144.8	
0920	↓	↓	6.84	0.623	0.3	1.25	9.7	144.1	
0930	↓	↓	6.83	0.621	0.2	1.31	9.8	143.0	
0935	↓	↓	6.84	0.621	0.2	1.27	9.8	142.8	
0940	↓	↓	6.84	0.620	0.2	1.25	9.8	141.9	END PURGE

SIGNATURE(S): [illegible]

NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC2601
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 1-17-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1835 End: 1845	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	6.02	0.377	11.76	11	0.76	-40	NONE

PURGE DATA:

Date: 1-17-01	Total Well Depth (TD): 88.00	End Purge (hrs): 1830
Method: BLADDER PUMP	Static Water Level (WL): 46.02'	Total Purge Time (min): 310
Well Casing: 2" PVC	Start Purge (hrs): 1320	Total Vol. Purged (~~gal~~): 26.7 L
One Casing Volume(~~gal~~): 26.6 L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
Explosives	4°C	(2) 1000 mL Amber Glass	—
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	—
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	—
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	—
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	—

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

VOC ONLY

SCREEN @ 79.5'-84.5'
Stick up : 2.48'
Intake @ : 82' FROM TOC
W.L. @ start 45.45' AFTER PUMP INSTALLATION
MID SCREEN intake location

QA Samples Collected:

MS/MSD
Duplicate ID No.:

Signature(s): Troy Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10C26
DATE: 1-17-01

Tim	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
1320	45.45'								Start Purge
1330	46.81	100	6.13	0.407	50	7.26	12.32	+ 90	1000 ml CLEAR
1340	47.47	100	6.10	0.406	50	4.00	12.64	+ 91	2000 "
1350	47.92	100	6.09	0.405	45	3.01	12.48	+ 41	3000 "
1400	48.20	87	6.05	0.401	40	2.81	12.64	- 8	3870 "
1410	48.43	90	6.04	0.397	35	2.23	12.72	- 20	4770 "
1420	48.47	90	6.02	0.395	30	1.95	12.46	- 23	5670 "
1430	48.48	90	6.02	0.394	27	1.77	12.55	- 26	6570 "
1440	48.48	90	6.02	0.392	24	1.49	12.23	- 28	7470 "
1450	48.48	90	6.01	0.392	23	1.68	12.37	- 29	8370 "
1500	48.50	90	6.02	0.392	23	1.29	12.40	-32	9270 "
1510	48.57	90	6.02	0.390	22	1.74	12.23	-34	10170 "
1520	48.59	80	6.02	0.390	21	1.10	12.28	-36	10970 "
1530	48.62	85	6.02	0.391	20	1.24	12.43	-38	11820 "
1540	48.65	80	6.02	0.389	19	1.19	12.48	-39	12620 "
1550	48.70	80	6.03	0.389	18	1.25	12.43	-40	13420 "
1600	48.68	80	6.03	0.388	18	0.90	12.23	-39	14220 "
1610	48.69	80	6.03	0.387	18	1.10	12.24	-40	15020 "
1620	48.70	80	6.02	0.385	17	0.87	12.20	-40	15820 "
1630	48.72	85	6.03	0.386	17	1.18	12.29	-41	16670 "
1640	48.73	80	6.03	0.384	17	0.82	12.28	-41	17470 "
1650	48.74	87	6.02	0.385	15	1.05	12.04	-40	18340 "
1700	48.75	85	6.02	0.382	15	1.00	11.91	-40	19190 "
1710	48.75	85	6.02	0.382	15	0.86	11.90	-40	20040 "
1720	48.75	85	6.02	0.382	15	0.97	11.91	-40	20890 "
1730	48.75	85	6.02	0.382	15	0.94	11.82	-40	21740 "
1740	48.76	85	6.02	0.379	14	0.89	11.80	-40	22590 "
1750	48.76	80	6.02	0.378	14	0.89	11.86	-40	23390 "
1800	48.79	80	6.02	0.378	13	0.80	11.83	-40	24190 "
1810	48.80	80	6.02	0.377	12	0.86	11.81	-40	24990 "

SIGNATURE(S): Terry Rogers

MIN. VOL = 26.6

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10C26
DATE: 1-17-01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
	[illegible]	[illegible]	[illegible]	(mS/cm)	(NTU)	(mg/L)	(Deg C)	(mV)	
1820	48.81	85	6.02	0.377	11	0.79	11.80	-40	25840 CLEAR
1830	48.81	85	6.02	0.377	11	0.76	11.76	-40	26690 "
1835									START SAMPLING

SIGNATURE(S): Terry Rogers

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GROUND WATER SAMPLE LOG FORM

Proj ct Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC26P301
Sample Location: SWMU 10 -Rockeye
Sampled By: T. RUJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-22-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1740 End: 1750	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	5.04	0.617	14.64	2.8	0.58	+ 107	NONE

PURGE DATA:

Date: 01/22/01	Total Well Depth (TD): 32.00	End Purge (hrs): 1735	
Method: Peristaltic	Static Water Level (WL): 16.15	Total Purge Time (min): 200	
Well Casing: 2" PVC	Start Purge (hrs): 1415	Total Vol. Purged (~~gal~~): 30.2 L	
One Casing Volume(~~gal~~): 10 L			

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	YES
Explosives	4°C	(2) 1000 mL Amber Glass	—
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	—
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	—
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	—
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	—

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)

PID reading in Breathing Zone = (ppm)

26' is pump intake (BGS)
SCREEN Int. 21'-31' BGS
Stick up : 2.4
23.4' Top of Screen From TOC

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Tony Rujahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 job # N7141

WELL ID.: 10C26P3
DATE: 01-22-01

Tim (Hrs)	Water Level (ft. below TOC)	Pump Rate (mL/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
1415	16.15								Start PURGE
1425	16.79	110	5.01	0.663	6.3	1.59	13.75	+105	1100ml CLEAR
1435	17.03	82	5.04	0.657	7.1	1.24	13.50	102	1920 CLEAR
1445	17.13	76	5.05	0.652	8.4	1.43	13.27	102	2680 CLEAR
1455	17.25	80	5.09	0.643	7.7	1.40	13.26	101	3480 CLEAR
1505	17.35	80	5.09	0.641	7.6	1.43	13.19	101	4280 CLEAR
1515	17.38	70	5.11	0.642	7.2	1.59	13.07	100	4980 CLEAR
1525	17.63	110	5.18	0.635	5.8	1.75	14.17	96	6080 CLEAR
1535	17.69	70	5.15	0.640	5.0	1.34	13.50	102	6780 CLEAR
1545	18.21	*200	5.15	0.631	4.7	1.59	14.66	98	8780 CLEAR
1555	18.52	200	5.10	0.633	4.0	1.20	14.64	102	10780 CLEAR
1605	18.77	170	5.07	0.633	3.3	0.99	14.65	104	12480 CLEAR
1615	19.02	190	5.05	0.629	2.2	0.85	14.72	105	14380 CLEAR
1625	19.21	180	5.04	0.625	2.4	0.79	14.61	107	16180 CLEAR
1635	19.43	200	5.04	0.620	2.3	0.72	14.73	107	18180 CLEAR
1645	19.60	200	5.04	0.624	2.8	0.62	14.70	107	20180 CLEAR
1655	19.73	200	5.04	0.623	2.6	0.63	14.65	106	22180 CLEAR
1705	19.85	200	5.04	0.615	2.2	0.62	14.67	107	24180 CLEAR
1715	19.98	200	5.03	0.622	2.4	0.64	14.68	107	26180 CLEAR
1725	20.09	200	5.04	0.613	2.6	0.62	14.68	107	28180 CLEAR
1735	20.19	200	5.04	0.617	2.8	0.58	14.64	107	30180 CLEAR
1740									Start SAMPLING

SIGNATURE(S): Terry Hart

10L = MIN. VOL.

* TURN UP FLOW - Attempt to [redacted]
REMOVE 3[redacted]L. PRIOR to SAMPLING
CALL. TOP OF SCREEN IS 23.4' FROM TOC

NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC3101
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROHAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-08-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1045 End: 1150	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	5.96	0.620	10.59	3.2	0.54	-174	NONE

PURGE DATA:

Date: 1-08-01	Total Well Depth (TD): 69.90	End Purge (hrs): 1040
Method: Bladder Pump	Static Water Level (WL): 52.58	Total Purge Time (min): 120
Well Casing: 2" PVC	Start Purge (hrs): 0840	Total Vol. Purged (gal): 11.7
One Casing Volume(gal): 1.1L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INT = 53'-63' BGS
PUMP INT = 53' BGS OR 60' TOC

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Terry Rohan

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10C31
DATE: 01-08-01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
[redacted]	[redacted] Below TOC	(mL/Min)	[redacted] (SU)	(mS/cm)	(NTU)	(mg/L)	(Celsius)	mV	
0840	52.58							→	Start Purge
0850	52.59	100	6.13	0.616	75	2.13	10.55	-170	1000ml V.Sl.Cloudy
0900	52.59	100	6.04	0.616	40	2.27	10.61	-170	2000 CLEAR
0910	52.59	100	6.02	0.616	22	1.35	10.45	-170	3000 CLEAR
0920	52.59	90	5.99	0.619	11	0.89	10.55	-171	3900 CLEAR
0930	52.59	90	5.99	0.618	8.8	1.08	10.70	-171	4800 CLEAR
0940	52.60	90	5.98	0.621	6.2	0.90	10.85	-173	5700 CLEAR
0950	52.60	100	5.98	0.622	4.6	0.69	10.84	-173	6700 CLEAR
1000	52.60	100	5.97	0.619	3.8	0.64	10.80	-173	7700 CLEAR
1010	52.61	100	5.97	0.618	3.4	0.58	10.65	-173	8700 CLEAR
1020	52.61	100	5.97	0.620	3.3	0.58	10.72	-174	9700 CLEAR
1030	52.61	100	5.96	0.620	3.2	0.55	10.64	-174	10700 CLEAR
1040	52.61	100	5.96	0.620	3.2	0.54	10.59	-174	11700 CLEAR
1045								→	Sample Time

SIGNATURE(S): Tony Rosch

MIN VOL = 11L

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 106W1C31P301
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-22-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1020 End: 1330	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	5.30	4.098	11.85	0.40	3.79	+207	NONE

PURGE DATA:

Date: 01-22-01	Total Well Depth (TD): 23.50	End Purge (hrs): 1015	
Method: Peristaltic	Static Water Level (WL): 19.33	Total Purge Time (min): 95	
Well Casing: 2" PVC	Start Purge (hrs): 0840	Total Vol. Purged (~~gal~~): 6.8 L	
One Casing Volume(~~gal~~): 2.8 L			

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

10'-20' BGS : SCREEN INTERVAL
2.3' stick up
12.3'-22.3' : SCREEN INTERVAL FROM TOC
Intake @ 20.82' TOC
*@ 0910 Hrs lower tubing to just off bottom of WELL

22.53
-19.3
3.03' H_2O @ screen

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10C31P3
DATE: 01-22-01

Time (Hr:Min)	Water Level (ft. below TOC)	Pump Rate (ml/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0840	19.33								Start Purge
0850	20.11	100	5.34	4.067	2.0	5.18	12.10	+154	1000ml CLEAR
0900	20.43	76	5.34	4.111	1.3	4.94	10.43	+177	1760ml CLEAR
0910	20.65	* 50	5.29	4.051	1.2	4.51	9.87	+187	2260ml CLEAR
0920	20.98	** 80	5.22	4.070	1.0	4.20	11.29	+191	3060ml CLEAR
0930	21.19	65	5.31	4.090	0.65	4.22	11.84	+196	3710ml CLEAR
0940	21.53	78	5.21	4.200	0.50	4.18	11.85	+199	4490ml CLEAR
0950	21.75	60	5.32	4.169	0.40	3.73	10.85	+202	5090ml CLEAR
1005	22.05	*** 60	5.30	4.096	0.30	3.83	11.83	+204	5990ml CLEAR
1015	22.38	80	5.30	4.098	0.40	3.79	11.85	+207	6790ml CLEAR
1020									Start Sampling
1035									Dry
	Recharge Rate								
1042	22.58								
1052	22.48								
1102	22.31								

SIGNATURE(S): Terry Rogers

MIN VOL = 2.8L
* Lower Pump tubing
** Pump Couldn't sustain 50ml purge rate
*** Talked to K.S. (15 min. Int.)

PAGE 2 OF 2

NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC3301
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-20-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1210 End: 1330	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	6.95	1.064	10.63	6.1	1.03	-87	NONE

PURGE DATA:

Date: 01-20-01	Total Well Depth (TD): 64.0	End Purge (hrs): 1205
Method: Bladder Pump	Static Water Level (WL): 47.03*	Total Purge Time (min): 140
Well Casing: 2" PVC	Start Purge (hrs): 0945	Total Vol. Purged (~~gal~~): 11.2 L
One Casing Volume(~~gal~~): 10.5L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	~~(6)~~ 40 mL Glass Vials	NO
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	~~(1)~~ 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INT. = 50.5 - 60.5 BGS
STICK UP = 2.6
+5.0
INTAKE OF PUMP → 58.1 FROM TOC

* AFTER PUMP INSTALLATION

QA Samples Collected:

MS/MSD: —
Duplicate ID No.: —

Signature(s): Tony Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10C33
DATE: 01-20-01

Time (Hrs)	Water Level (ft below TOC)	Pump Rate (ml/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
0945	47.03	→							Start Purge
0955	48.13	100	6.91	1.070	37	2.73	10.88	+35	1000ml CLEAR
1005	48.63	90	6.93	1.072	34	1.93	11.27	+21	1900ml "
1015	48.93	100	6.94	1.073	26	1.45	11.37	-7	2900ml "
1025	49.12	92	6.94	1.071	23	1.34	11.28	-24	3820ml "
1035	49.21	92	6.95	1.071	17	1.49	10.94	-37	4740ml "
1045	49.05	67	6.95	1.072	14	1.42	10.47	-50	5410ml "
1055	49.02	72	6.94	1.066	11	1.45	10.53	-62	6130ml "
1105	49.03	67	6.95	1.069	9.9	1.42	10.57	-68	6800ml "
1115	49.04	77	6.95	1.064	8.6	1.48	10.56	-74	7570ml "
1125	49.03	72	6.95	1.067	7.7	1.39	10.54	-77	8290ml "
1135	49.03	72	6.95	1.064	7.5	1.01	10.59	-79	9010ml "
1145	49.03	72	6.95	1.065	7.2	1.09	10.56	-83	9730ml "
1155	49.03	72	6.95	1066	7.2	1.16	10.59	-86	10450ml "
1205	49.04	72	6.95	1.064	6.1	1.03	10.63	-87	11170ml "
1210	→								Start Sampling

SIGNATURE(S): Terry Rojahn

10.5L = MIN. VOL.

PAGE 2 OF 2

NSWC Crane
Field Form
Revision: 1
er 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC33P201
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-20-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start 1450 End: 1545	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	5.73	0.287	11.21	3.6	0.43	-40	NONE

PURGE DATA:

Date: 01-20-01	Total Well Depth (TD):	36.25	End Purge (hrs): 1445
Method: Bladder Pump	Static Water Level (WL):	31.02	Total Purge Time (min): 50
Well Casing: 2" PVC	Start Purge (hrs):	1355	Total Vol. Purged (~~gal~~): 4.6 L
One Casing Volume(~~gal~~): 3.3L			

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	~~(6)~~ 40 mL Glass Vials	NO
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	~~(1)~~ 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INTERVAL = 23-33 BGS
25.32 - 35.32' FROM TOP OF PVC

PUMP INTAKE @ ~33.3' APPROXIMATELY mid WATER col. in the SCREEN

W.L. BEFORE PUMP INSTALLATION = 31.02
* W.L. AFTER PUMP INSTALLATION = 31.02

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10C33PZ
DATE: 01-20-01

Time (Hr)	Water Level (ft. Below TOC)	Pump Rate (mL/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
1355	31.02								Start PURGE
1405	31.07	100	5.82	0.294	11	1.19	11.28	-47	1000 CLEAR
1415	31.08	90	5.76	0.290	7.6	1.11	11.02	-43	1900 "
1425	31.09	90	5.74	0.288	5.8	0.44	11.12	-41	2800 "
1435	31.09	90	5.74	0.288	4.5	0.45	11.24	-41	3700 "
1445	31.10	90	5.73	0.287	3.6	0.43	11.21	-40	4600 "
1450									Start SAMPLING

SIGNATURE(S): Terry [illegible]

MIN. VOL = 3.3L

PAGE 2 OF 2

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC3501
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-21-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1135 End: 1217	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	5.33	1.768	10.72	7.0	0.44	+5	NONE

PURGE DATA:

Date: 01-21-01	Total Well Depth (TD):	85.0'	End Purge (hrs): 1130
Method: Bladder Pump	Static Water Level (WL):	66.05	Total Purge Time (min): 130
Well Casing: 2" PVC	Start Purge (hrs):	0920	Total Vol. Purged (~~gal~~): 13.0 L
One Casing Volume(~~gal~~): 11.7L			

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	NO
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INTERVAL = 69.79' BGS
Stick up 2.3
5
Pump Intake 76.3

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 job # N7141

WELL ID.: 10C35
DATE: 01-21-01

Time (Hrs)	Water Level (ft. below TOC)	Pump Rate (ml/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mv)	Comments
0920	66.05								Start PURGE
0930	66.08	100	5.86	1.011	19	1.33	9.45	-33	1000 CLEAR
0940	66.11	100	5.73	1.098	14	0.63	9.86	-23	2000 CLEAR
0950	66.10	100	5.66	1.242	12	0.52	9.76	-20	3000 CLEAR
1000	66.10	100	5.62	1.369	10	0.50	9.71	-19	4000 CLEAR
1010	66.10	100	5.58	1.466	9.1	0.50	9.99	-18	5000 CLEAR
1020	66.10	100	5.53	1.558	7.7	0.64	9.99	-13	6000 CLEAR
1030	66.10	100	5.49	1.610	7.5	0.51	10.29	-10	7000 CLEAR
1040	66.10	100	5.45	1.655	7.5	0.49	10.27	-7	8000 CLEAR
1050	66.10	100	5.42	1.683	7.6	0.44	10.28	-5	9000 CLEAR
1100	66.10	100	5.41	1.689	7.7	0.48	10.16	-3	10000 CLEAR
1110	66.10	100	5.38	1.724	7.5	0.45	10.67	+1	11000 CLEAR
1120	66.10	100	5.34	1.766	7.3	0.46	10.80	+4	12000 CLEAR
1130	66.10	100	5.33	1.768	7.0	0.44	10.72	+5	13000 CLEAR
1135									Start SAMPLING

SIGNATURE(S): Terry Rogers

11.7 MIN. VOL.

PAGE 2 OF 2

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC35P201
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-21-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1620 End: 1715	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	4.19	1.866	11.03	3.5	0.24	+175	NONE

PURGE DATA:

Date: 01-21-01	Total Well Depth (TD):	52.50	End Purge (hrs): 1615
Method: Bladder Pump	Static Water Level (WL):	20.40	Total Purge Time (min): 210
Well Casing: 2" PVC	Start Purge (hrs):	12.45	Total Vol. Purged (~~gal~~): 21.1 L
One Casing Volume(~~gal~~): 20 L*			

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	NO
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INTERVAL = 39'- 49' BGS
Stick up = 2.47
+5
Pump Intake = 46.47' TOC

*Prior to pump Installation

QA Samples Collected:

MS/MSD: —
Duplicate ID No.: —

Signature(s): Troy Rogal

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10C35P2
DATE: 01-21-01

Time (Hr:Min)	Water Level (ft below TOC)	Pump Rate (mL/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
1245	20.40								Start PURGE
1255	20.88	100	4.31	1.870	34	0.95	12.03	+ 177	1000 CLEAR
1305	21.04	105	4.24	1.873	20	0.93	11.99	+ 195	2050 CLEAR
1315	21.15	105	4.25	1.871	11	1.01	11.92	+ 194	3100 CLEAR
1325	21.18	95	4.24	1.872	8.7	0.82	11.99	+ 190	4050 CLEAR
1335	21.18	95	4.22	1.873	6.6	0.66	12.05	+ 188	5000 CLEAR
1345	21.21	100	4.23	1.874	5.8	0.65	12.03	+ 186	6000 CLEAR
1355	21.23	105	4.21	1.870	5.3	0.40	12.04	+ 185	7050 CLEAR
1405	21.25	105	4.21	1.872	5.2	0.55	12.10	+ 184	8100 CLEAR
1415	21.23	100	4.21	1.872	3.8	0.52	12.10	+ 185	9100 CLEAR
1425	21.23	100	4.20	1.873	4.2	0.51	12.04	+ 185	10100 CLEAR
1435	21.23	100	4.20	1.872	3.8	0.43	12.08	+ 185	11100 CLEAR
1445	21.23	100	4.21	1.871	3.8	0.48	12.01	+ 185	12100 CLEAR
1455	21.23	100	4.21	1.867	3.6	0.46	11.75	+ 184	13100 CLEAR
1505	21.24	100	4.19	1.865	3.8	0.44	11.77	+ 183	14100 CLEAR
1515	21.24	100	4.19	1.865	3.8	0.43	11.85	+ 181	15100 CLEAR
1525	21.24	100	4.19	1.866	3.9	0.41	11.41	+ 179	16100 CLEAR
1535	21.24	100	4.19	1.865	3.9	0.19	11.45	+ 178	17100 CLEAR
1545	21.24	100	4.19	1.866	3.9	0.21	11.14	+ 178	18100 CLEAR
1555	21.24	100	4.19	1.866	3.9	0.22	10.99	+ 176	19100 CLEAR
1605	21.24	100	4.19	1.866	3.7	0.23	11.14	+ 176	20100 CLEAR
1615	21.24	100	4.19	1.866	3.5	0.24	11.03	+ 175	21100 CLEAR
1620									Start SAMPLING

MIN VOL = 20 L

SIGNATURE(S): [signature]

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NSWC Crane
Field Form
Revision: 1
Oct 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC3701
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-19-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1315 End: 1405	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	5.75	0.413	11.39	9.3	0.40	-51	NONE

PURGE DATA:

Date: 01-19-01	Total Well Depth (TD): 94.6	End Purge (hrs): 1310
Method: Bladder Pump	Static Water Level (WL): 56.75 *	Total Purge Time (min): 260
Well Casing: 2" PVC	Start Purge (hrs): 0850	Total Vol. Purged (~~gal~~): 24.0 L
One Casing Volume(~~gal~~): 23.5L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	NO
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INT. = 81-91' BGS
Stick up = 2.15
83.15 + 5 = 88.15' FROM TOC

* AFTER PUMP INSTALLATION

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 job # N7141

WELL ID.: 10C37
DATE: 01-19-01

Tim (Hrs)	Water Level (ft. below TOC)	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
0850	56.75								Start PURGE
0900	58.00	100	5.86	0.414	110	1.50	11.54	-47	1000 ml TANNISH
0910	58.40	110	5.78	0.414	120	0.90	11.58	-48	2100 "
0920	58.54	95	5.76	0.412	120	0.96	11.54	-46	3050 "
0930	58.60	110	5.76	0.413	85	0.72	11.52	-46	4150 Sl. TANNISH
0940	58.51	95	5.76	0.412	65	0.44	11.12	-46	5100 "
0950	58.49	90	5.74	0.414	70	0.46	11.03	-46	6000 "
1000	58.49	90	5.75	0.413	60	0.41	11.05	-46	6900 "
1010	58.48	90	5.74	0.413	50	0.60	11.20	-47	7800 V.Sl.Cloudy
1020	58.49	90	5.74	0.414	40	0.40	11.21	-47	8700 CLEAR
1030	58.50	90	5.74	0.414	36	0.45	11.37	-48	9600 "
1040	58.50	90	5.74	0.412	32	0.34	11.34	-48	10500 "
1050	58.50	90	5.74	0.414	28	0.52	11.44	-48	11400 "
1100	58.50	90	5.74	0.412	26	0.42	11.44	-49	12300 "
1110	58.51	90	5.75	0.413	24	0.47	11.40	-49	13200 "
1120	58.51	90	5.75	0.413	22	0.45	11.38	-50	14100 "
1130	58.52	90	5.75	0.413	20	0.42	11.45	-50	15000 "
1140	58.53	90	5.75	0.414	19	0.43	11.53	-50	15900 "
1150	58.53	90	5.75	0.414	18	0.44	11.42	-50	16800 "
1200	58.54	90	5.75	0.413	18	0.37	11.38	-50	17700 "
1210	58.55	90	5.75	0.413	16	0.41	11.41	-50	18600 "
1220	58.56	90	5.75	0.413	15	0.37	11.44	-51	19500 "
1230	58.57	90	5.75	0.414	14	0.39	11.38	-51	20400 "
1240	58.57	90	5.75	0.413	12	0.38	11.41	-51	21300 "
1250	58.57	90	5.75	0.413	11	0.39	11.38	-51	22200 "
1300	58.57	90	5.75	0.413	10	0.38	11.41	-51	23100 "
1310	58.57	90	5.75	0.413	9.3	0.40	11.39	-51	24000 "
1315									Start SAMPLING

SIGNATURE(S): Terry Rojek

23.5L = MIN VOL

PAGE 2 OF 2

NSWC Crane
Field Form
sion: 1
r 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC37P30i
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Date: 01-06-01	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Time-Start: 1430 End: 1700								
Method: SAME	CLEAR	4.67	1.389	9.95	4.3	0.68	+33	NONE

PURGE DATA:

Date: 01-06-01	Total Well Depth (TD): 36.50	End Purge (hrs): 1426
Method: Bladder Pump	Static Water Level (WL): 21.65	Total Purge Time (min): 321
Well Casing: 2" PVC (GA)	Start Purge (hrs): 0905	Total Vol. Purged (gal): 9.3 L (LA)
One Casing Volume(gal): 9.3L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	NO
Explosives	4°C	(2) 1000 mL Amber Glass	YES
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	YES
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	YES
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	YES

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

QA Samples Collected:

MS/MSD: —
Duplicate ID No.: —

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10637P3
DATE: 01-06-01

Time	Water Level	Pump Rate (ml/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Deg C)	ORP (mV)	Comments
0905	21.65	100							Start PUMPING
0915	22.87	100	4.61	1.403	60	1.96	10.41	-15	1000ml CLEAR
0925	23.38	100	4.61	1.416	60	1.80	9.39	-10	2000 CLEAR
0935	23.75	62	4.59	1.406	50	1.58	9.57	-5	2620 "
0945	23.74	22	4.59	1.432	40	1.65	6.92	-3	2840 "
0955	23.91	36	4.59	1.386	38	1.49	7.96	-2	3200 "
1005	23.87	24	4.60	1.406	33	1.76	6.56	0	3440 "
1015	23.83	20	4.60	1.400	32	1.77	5.74	+3	3640 "
1025	23.76	20	4.59	1.400	26	1.49	4.99	+5	3840 "
1035	23.80	22	4.59	1.390	23	1.59	5.79	+4	4060 "
1045	23.83	24	4.61	1.392	18	1.48	6.35	+5	4300 "
1055	23.86	24	4.62	1.390	16	1.52	6.82	+5	4540 "
1105	23.89	24	4.63	1.388	15	1.47	7.29	+6	4780 "
1115	23.93	24	4.63	1.390	12	1.02	7.41	+7	5020 "
1125	23.94	24	4.62	1.386	11	1.13	7.64	+8	5260 "
1135	23.90	20	4.64	1.393	11	1.02	7.55	+13	5460 "
1145	23.87	20	4.63	1.397	11	1.24	7.48	+15	5660 "
1155	23.84	20	4.63	1.400	11	1.20	7.46	+18	5860 "
1205	23.90	24	4.64	1.395	8.3	1.23	8.60	+18	6100 "
1215	23.93	23	4.64	1.386	7.8	0.85	9.39	+18	6330 "
1225	23.98	24	4.65	1.389	8.2	0.77	9.86	+20	6570 "
1235	24.02	24	4.65	1.390	6.9	1.11	10.12	+22	6810 "
1245	23.99	20	4.66	1.394	7.4	0.75	9.76	+24	7010 "
1255	24.01	23	4.65	1.395	6.2	0.91	9.96	+24	7240 "
1305	24.02	23	4.66	1.396	5.9	0.68	10.13	+27	7470 "
1315	24.05	24	4.66	1.398	6.3	0.67	10.24	+28	7710 "
1325	24.05	24	4.66	1.396	6.3	0.84	10.20	+30	7950 "
1335	24.03	21	4.66	1.399	6.3	0.65	10.26	+32	8160 "
1345	24.05	23	4.65	1.393	5.7	0.85	10.49	+33	8390 "
1355	24.07	23	4.66	1.401	5.7	0.78	10.32	+33	8620 "

SIGNATURE(S): [illegible]

MIN VOL = 9.3 L

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10C37P3
DATE: 01-06-01

Time	Water Level (TOC)	Pump Rate (L/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Deg C)	ORP mV	Comments
1405	24.06	22	4.66	1.404	5.7	0.58	9.90	+35	8840ml CLEAR
1415	24.04	21	4.67	1.394	4.5	0.66	9.93	+34	9050ml "
1425	24.05	24	4.67	1.389	4.3	0.68	9.95	+33	9290ml "
1426	→								9314ml "
1430	→								Start Sampling

SIGNATURE(S): Terry Rogers

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NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC4101
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-09-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1220 End: 1305	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	5.28	1.858	11.30	9.7	0.60	-52	NONE

PURGE DATA:

Date: 01-09-01	Total Well Depth (TD): 105	End Purge (hrs): 1210
Method: Bladder Pump	Static Water Level (WL): 70.76	Total Purge Time (min): 160
Well Casing: 2" PVC	Start Purge (hrs): 0930	Total Vol. Purged (~~gal~~): 22.1 L
One Casing Volume(~~gal~~): 21.6L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NA
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

2' STICK UP
SCREEN INTERVAL = 90-100 BGS
INTAKE OF PUMP @ 95' BGS OR 97' FROM TOC

QA Samples Collected:

MS/MSD
Duplicate ID No.:

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10C41
DATE: 1-09-01

Tim	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
	[illegible]	[illegible]	[illegible]	(µS/cm)	(NTU)	(mg/L)	(Celsius)	mV	
0930	70.76								Start PURGE
0940	71.95	150	5.29	1.968	65	3.44	10.04	-75	1500 V. Sl. Cloudy
0950	72.50	120	5.29	1.870	30	1.56	10.55	-72	2700 CLEAR
1000	73.19	160	5.29	1.863	24	1.41	11.34	-72	4300 CLEAR
1010	73.75	160	5.29	1.862	22	0.72	11.54	-71	5900 CLEAR
1020	74.07	160	5.30	1.861	20	0.98	11.46	-71	7500 CLEAR
1030	74.28	160	5.30	1.862	20	1.05	11.44	-69	9100 CLEAR
1040	74.50	160	5.30	1.861	18	0.63	11.65	-69	10700 CLEAR
1050	74.68	160	5.30	1.862	17	0.61	11.69	-68	12300 CLEAR
1100	74.80	160	5.30	1.861	15	0.50	11.70	-66	13900 CLEAR
1110	74.82	160	5.30	1.860	14	0.43	11.64	-65	15500 CLEAR
1120	74.89	160	5.29	1.862	14	0.67	11.60	-62	17100 CLEAR
1130	74.73	100	5.29	1.862	14	0.84	11.41	-61	18700 CLEAR
1140	74.60	100	5.29	1.862	12	1.10	11.20	-58	19100 CLEAR
1150	74.52	100	5.29	1.864	11	0.64	11.19	-56	20100 CLEAR
1200	74.46	100	5.29	1.861	10	0.38	11.20	-54	21100 CLEAR
1210	74.42	100	5.28	1.858	9.7	0.60	11.30	-52	22100 CLEAR
1220									Start SAMPLING

MIN. VOL. 321.6

SIGNATURE(S): Terry Ryan

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NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC41P301
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-09-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1610 End: 1750	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	5.23	2.253	8.45	12 *7.1	6.28	+ 129	NONE

PURGE DATA:

Date: 01-09-01	Total Well Depth (TD): 39.15	End Purge (hrs): 1523 (Dry)
Method: Bladder Pump	Static Water Level (WL): 35.27	Total Purge Time (min): 63
Well Casing: 2" PVC	Start Purge (hrs): 1420	Total Vol. Purged (~~gal~~): 2.9 L
One Casing Volume(~~gal~~): 2.5L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	* NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

Intake of Pump @ ~ 36.5'

*Turbidity of Total Metals = 7.1 @ 1730 Hrs

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Terry Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10C41P3
DATE: 01-09-01

Time	Water Level	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP mV	Comments
1420	35.27								Start PURGE
1430	35.78	95	5.26	2.314	71	7.75	10.50	+99	950 V.Sl. Cloudy
1440	36.00	43	5.24	2.297	47	7.43	9.46	114	1380 CLEAR
1450	36.13	40	5.24	2.272	30	6.79	9.24	119	1780 CLEAR
1500	36.33	42	5.23	2.261	20	6.78	8.85	126	2200 CLEAR
1510	*	40	5.24	2.253	15	6.21	8.85	128	2600 CLEAR
1520	*	30	5.23	2.253	12	6.28	8.45	129	2900 CLEAR
1523									W.L. BELOW Pump Intake
1610									Start Sampling

SIGNATURE(S): Terry Rogalski

MIN VOL = 2.5 L

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* WATER LEVEL BELOW TOP OF PUMP

NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC5201
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 1-18-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1150 End: 1245	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	6.01	0.381	11.47	8.4	0.48	-85	NONE

PURGE DATA:

Date: 01-19-01	Total Well Depth (TD): 70.50	End Purge (hrs): 1145
Method: Bladder Pump	Static Water Level (WL): 40.60*	Total Purge Time (min): 190
Well Casing: 2" PVC	Start Purge (hrs): 0835	Total Vol. Purged (gal): 19.1 L
One Casing Volume(gal): 19.5L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = (ppm)

SCREEN INTERVAL = 55-68' BGS
Stick-up = 2.4'
Pump INTAKE = 60.4 + 5 = 65.4' FROM TOC

*AFTER PUMP Installation @ well purge start

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Tony Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 job # N7141

WELL ID.: 10C52
DATE: 1-18-01

Time (Hrs)	Water Level (ft. below TOC)	Pump Rate (ml/Min)	pH (SU)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mv)	Comments
0835	40.60	→							Start Purge
0845	40.80	130	6.03	0.389	84	2.96	10.81	-61	1300ml Tannish
0855	40.80	95	6.01	0.385	105	2.13	10.88	-65	2250 "
0905	40.82	100	6.01	0.385	95	1.28	11.03	-68	3250 "
0915	40.82	100	6.01	0.384	63	1.26	11.01	-72	4250 "
0925	40.81	100	6.00	0.381	31	0.70	11.00	-76	5250 CLEAR
0935	40.81	100	6.00	0.381	22	0.83	10.96	-79	6250 "
0945	40.81	100	6.00	0.380	19	0.74	11.00	-80	7250 "
0955	40.81	100	6.00	0.380	16	0.81	10.97	-81	8250 "
1005	40.82	100	6.00	0.381	14	0.80	11.02	-82	9250 "
1015	40.82	100	6.01	0.382	14	0.51	11.03	-81	10250 "
1025	40.82	100	6.01	0.382	14	0.55	11.07	-81	11250 "
1035	40.82	100	6.01	0.382	14	0.42	11.43	-82	12250 "
1045	40.82	100	6.01	0.382	13	0.49	11.39	-83	13250 "
1055	40.82	100	6.00	0.381	13	0.51	11.19	-83	14250 "
1105	40.82	100	6.01	0.383	12	0.54	11.41	-83	15250 "
1115	40.82	100	6.01	0.383	12	0.51	11.45	-84	16250 "
1125	40.82	100	6.01	0.382	11	0.53	11.32	-84	17250 "
1135	40.82	90	6.01	0.381	9.3	0.48	11.44	-85	18150 "
1145	40.81	90	6.01	0.381	8.4	0.48	11.47	-85	19050 "
1150	→								Start Sampling

MIN VOL = 18.5L

SIGNATURE(S): Terry Rogers

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NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC5501
Sample Location: SWMU 10 -Rockeye
Sampled By: K. SIMPSON
C.O.C. No.:

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Date: 1.21.01	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Time-Start: 1430 End: 1720								
Method: PERISTALTIC	CLEAR	4.81	0.110	9.7	0.5	3.91	261.1	NONE

PURGE DATA:

Date: 1.21.01	Total Well Depth (TD): 33.40	End Purge (hrs): 1425
Method: PERISTALTIC	Static Water Level (WL): 15.03	Total Purge Time (min): 124
Well Casing: 2" PVC	Start Purge (hrs): 1221	Total Vol. Purged (gal): 3.2
One Casing Volume(gal): 3.0		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C 14+6	(6) 40 mL Glass Vials 20	✓
Explosives	4°C 4+2	(2) 1000 mL Amber Glass 6	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C 2+1	(1) 1000 mL Polyethylene 3	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	NO
Cyanide	NaOH/4°C 2+1	(1) 500 mL Polyethylene 3	✓
Nitrite/Nitrate	4°C/H_2SO_4 2+1	(1) 250 mL Polyethylene 3	✓
	X VOL COLLECTED FOR DUP & MS/MSD		

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)
PID reading in Breathing Zone = NA (ppm)

PUMP INLET (TUBING) SET @ 25' BGS

WL @ END OF SAMPLING = 15.67' @ 1720

QA Samples Collected:

MS/MSD	Duplicate ID No.:
YES	FD01210101

Signature(s): [illegible]

114 MIN = 1 VOL @ 100 ML/MIN

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10 C55
DATE: 1-21-01

Tim	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
(Hrs)	(ft. below TOC)	(ml/Min)	(S.U.)	(mS/cm)	(NTU)	(mg/L)	(Celcius)	(mv)	
1221	15.03	150	—	—	—	—	—	—	START PURGE
1230	15.66	135	4.85	0.142	1.0	5.76	9.9	255.2	CLEAR, NO ODOR
1240	15.68	110	4.83	0.118	↓	5.68	9.9	289.1	
1250	15.68	100	4.82	0.113	↓	4.24	9.6	295.9	
1300	↓	↓	4.83	0.113	↓	4.07	9.5	299.1	
1310	↓	↓	4.82	0.113	↓	3.99	9.5	300.5	
1320	15.70	95	4.81	0.112	0.7	4.54	9.6	292.0	
1330	↓	↓	4.80	0.112	↓	4.33	9.6	279.7	
1340	↓	↓	4.81	0.109	↓	4.44	9.7	277.1	
1350	↓	↓	4.82	0.107	0.6	4.13	9.7	276.9	
1400	↓	↓	4.82	0.107	↓	3.76	9.7	275.3	
1410	↓	↓	4.81	0.107	0.5	4.01	9.7	270.7	
1415	↓	↓	4.79	0.109	↓	3.84	9.7	265.0	
1420	↓	↓	4.79	0.110	↓	3.86	9.7	262.4	
1425	↓	↓	4.81	0.110	↓	3.91	9.7	261.1	

SIGNATURE(S): [illegible]

PAGE 2 OF 2

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC55P201
Sample Location: SWMU 10 -Rockeye
Sampled By: K. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 1-22-01	Color	pH -	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 0915 End: 0950	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	6.27	0.251	3.6	1.0	4.78	219.2	NONE

PURGE DATA:

Date: 1-22-01	Total Well Depth (TD): 10.52	End Purge (hrs): 0910
Method: PERISTALTIC	Static Water Level (WL): 6.55	Total Purge Time (min): 75
Well Casing: 2" PVC	Start Purge (hrs): 0755	Total Vol. Purged (gal): 2.1
One Casing Volume(gal): 0.7		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	NO
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = NA (ppm)
PID reading in Breathing Zone = (ppm)

PUMP INLET (TUBING) SET @ 8'±
END WL = 6.59 @ 0950

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 Job # N7141

WELL ID.: 10C55P2
DATE: 1-22-01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
(Hrs)	(ft below TOC)	(ml/Min)	(SU)	(mS/cm)	(NTU)	(mg/l)	(Deg C)	(mV)	
0755	6.55	100	—	—	—	—	—	—	START PURGE
0802	6.58	↓	6.28	0.258	6.0	6.78	4.0	211.3	CLEAR, NO ODOR
0810	6.59	↓	6.25	0.258	4.1	6.24	3.3	212.9	
0820	6.59	↓	6.25	0.255	2.6	6.43	2.8	215.1	
0830	6.58	90	6.25	0.253	2.2	5.78	2.2	218.3	
0840	6.58	110	6.25	0.252	1.7	5.48	3.3	220.1	
0850	6.58	110	6.27	0.250	1.5	5.71	3.3	217.4	
0900	6.59	↓	6.27	0.249	1.3	4.87	3.7	218.1	
0905	6.58	↓	6.27	0.250	1.2	4.84	3.6	219.2	
0910	6.58	↓	6.27	0.251	1.0	4.78	3.6	219.2	END PURGE

SIGNATURE(S): [illegible]

PAGE 2 OF 2

NSWC Crane
Field Form
Revision: 1
October 2000

GROUND WATER SAMPLE LOG FORM

Page___ of ___

Proj ct Site Name: NSWC CRANE, IN
Project No.: CTO 0010 N7141

Sample ID No.: 10GWC5701
Sample Location: SWMU 10 -Rockeye
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 01-24-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 0755 End: 0740	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	6.20	0571	9.32	36	5.55	+ 8	NONE

PURGE DATA:

Date: 01-23-01	Total Well Depth (TD):	21.55	End Purge (hrs): 0943
Method: Peristaltic	Static Water Level (WL):	10.20	Total Purge Time (min): 83
Well Casing: 2" PVC	Start Purge (hrs):	0820	Total Vol. Purged (gal): 12.9L
One Casing Volume(gal): 7.4L			

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	NO
Explosives	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)

PID reading in Breathing Zone = (ppm)

SCREEN: 9-19' (BGS) SR. 11.45 → 21.45 From TOC
STICK UP: 2.45
Tubing @ = 16.45 From TOC

QA Samples Collected:

MS/MSD

Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: CTO 10 job # N7141

WELL ID.: 10C57
DATE: 01-23-01

Tim	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
(Hrs)	(ft. below TOC)	(ml/Min)	(SU)	(mS/cm)	(NTU)	(mg/L)	(Deg Cels)	(mV)	
0820	10.20	—						→	Start Purge
0830	12.45	120	5.00	0.581	45	3.69	8.86	215	1200ml CLEAR
0840	13.35	105	5.00	0.577	45	1.94	8.82	228	2250ml "
0850	14.15	93	5.00	0.577	45	1.78	8.75	213	3180ml "
0900	15.37	*150	5.04	0.588	38	1.36	9.74	179	4680ml "
0910	16.89	200	5.09	0.591	55	1.64	10.03	142	6680ml "
0920	18.31	200	5.05	0.592	50	1.19	10.24	139	8680ml "
0930	19.79	190	5.06	0.596	45	0.95	10.33	126	10580ml "
0940	21.19	180	5.22	0.604	28	0.78	10.62	82	12380ml "
0950	**21.35	—	—	—	—	—	—	—	Dry @ 0943 & 12.9L
1000	**21.25	—	—	—	—	—	—	—	—
1020	**21.04	—	—	—	—	—	—	—	Will sample tomorrow
0755	1419	—						→	1/24/01 prior to sampling

SIGNATURE(S): [signature]

7.4L MIN. VOL.

** RECHARGE

* Attempt to dry out or remove 3 vol. - water level will not stabilize. Min. lowered tubing intake

PAGE 2 OF 2

APPENDIX B.3

SURFACE WATER AND SEDIMENT SAMPLE LOG FORMS

APPENDIX B.3.1

SWMU 4
SURFACE WATER AND SEDIMENT
SAMPLE LOG FORMS

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10 job N7141

[X] Stream
[] Spring

Sampl ID No.: 04SW01C01
Sample Location: 04SW/SD01
Sampled By: B.BALKOWEE/T.BOSAHN
C.O.C. No.:

SAMPLING DATA:

Date: 12-17-00	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Sample Time: 1000	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Depth: 3"	CLEAR	7.67	0.243	0.25	6.5	13.32	-73.6	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓ 6
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓ 3
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 1
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
[redacted]			

OBSERVATIONS / NOTES:

Estimated Flow Rate: ≥ 1000 gpm

WIDTH ≈ 20-25'
DEPTH 2" – 1'

Comments:

SEE FIG. 5-8

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkowe

APPENDIX B

SAMPLE LOG SHEETS AND OTHER FIELD FORMS

B.3 Surface Water and Sediment Sample Log Sheets

B.3.1 SWMU 4

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 04 SD 01 0006
Sample Location: 04 SW/SD 01
Sampled By: B. Balkovec / T. Rutman
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-18-00 Time: 1010 Method: DIS. PLASTIC TROWEL Monitor Reading (ppm): 0.0	0-6"	BROWN/GRAY	F-VFINE SAND, SOME SILT & T-ORGANICS (ROOT) -WET-

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

McCormish Gorge 01

MAP:

SEE FIG 5-8

Circle if Applicable:

MS/MSD —

Duplicate ID No.:

Signature(s):

Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10 job N7141

[X] Stream
[ ] Spring

Sample ID No.: 045W0201
Sample Location: 045W/SD02
Sampled By: B. BALKOVE / T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 12-18-00	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Od r
Sample Time: 0920	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Depth: 2"								
Method: Direct Fill	CLEAR	7.76	0.209	0.43	5.4	14.21	-44.3	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatil s App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓ 6
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓ 3
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 1
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
[redacted]			

OBSERVATIONS / NOTES:

Estimated Flow Rate: 7 1000gpm

4'-6' WIDE
4"-7" DEEP

Comments:

SEE FIG 5-8

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkove

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: OH SD 02 0006
Sample Location: OH SW/SD 02
Sampled By: B.BALKOVEC/T.RODAHN
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-18-00 Time: 0930 Method: DIS. PLASTIC TROWEL Monitor Reading (ppm): 0.0	0-6"	BROWN/GRAY	FINE-COARSE SAND, SOME SILT -WET-

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

McCOMASH GORGE 02

MAP:

SEE FIG. 5-8

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10 job N7141

Sampl ID No.: 04SW0301
Sample Location: 04SW/SD03
Sampled By: B. BALKOVEC / T. ROZANN
C.O.C. No.:

[X] Stream
[ ] Spring

SAMPLING DATA:

Date: 12-18-00 / Sample Time: 0835 / Depth: 3" / Method: Direct Fill	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	dor
	CLEAR	8.40	0.241	0.31	5.8	12.69	-36.0	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	20
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	10
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	6
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	6
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	3
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	3
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	3
TSS	4°C	(1) 250 mL Polyethylene	1
[redacted]			

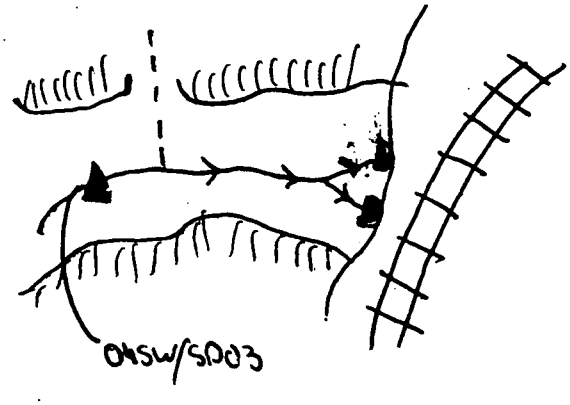
OBSERVATIONS / NOTES:

Estimated Flow Rate: > 1000 gpm

10'-12' WIDE
2'-8" DEEP

Comments:

SEE FIG. 5-8



QA Samples Collected:

MS/MSD

Duplicate ID No.: FD12180001

Signature(s): Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 04 SD 03 0006
Sample Location: 04 SW/SD03
Sampled By: B. Bauscher / T. Brown
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-18-00 Time: 0900 Method: DIS. PLASTIC TRUWEL Monitor Reading (ppm): 0.0	0-6"	BROWN/GRAY	FINE-COARSE SAND, T-SAT

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
M thod:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

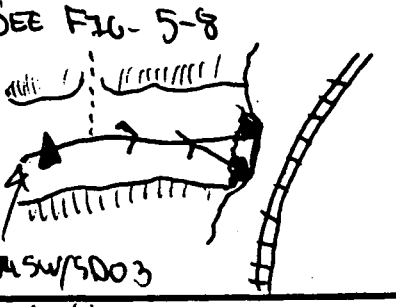
Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 24	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 4	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 3	

OBSERVATIONS / NOTES:

McComish Gorge 03

MAP:

SEE FIG. 5-8



Circle if Applicable:

MS/MSD

Duplicate ID No.: FD12180002

Signature(s): Robert Bellcore

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10 Job N7141

Sampl ID No.: 04SW040
Sample Location: 04SW/SD04
Sampled By: B.BALKOVIC / T.RUTHUN
C.O.C. No.:

☒ Stream → PONDED AREA / SWAMP
☐ Spring

SAMPLING DATA:

Date: 12-15-00	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	dor
Sample Time: 1020	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Depth: 3"	YELLOW TINT	7.87	0.181	1.10	18	6.43	159.3	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	6
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	3
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	2
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	2
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	1
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	1
TSS	4°C	(1) 250 mL Polyethylene	1
[redacted]			

OBSERVATIONS / NOTES:

Estimated Flow Rate: NO EVIDENT FLOW

Comments:

SEE FIG. 5-8

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovic

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 04SD04 0006
Sample Location: 04SW/SD04
Sampled By: B. BALKOVEC/T. RUTMAN
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-15-00 Time: 1045 Method: DISPOSABLE BOWL Monitor Reading (ppm): 0.0	0-6"	BROWN	SILT, T-SAND, ABUNDANT ORGANICS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	ther
Volatiles App. IX	encore	✓ 2	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

McCormish Gorge 04

MAP:

SEE FIG 5-8

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10 Job N7141

☒ Stream
☐ Spring

Sample ID No.: 04SW0501
Sample Location: 04SW/SD05
Sampled By: B. Balkhouse / T. Rutahan
C.O.C. No.:

SAMPLING DATA:

Date: 12-15-00 / Sample Time: 1250 / Depth: 27 / Method: Direct Fill	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
	CLEAR	7.60	0.072	5.6	7.0	7.31	174.4	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements		Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓	6
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓	3
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓	2
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓	2
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓	1
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓	1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓	1
TSS	4°C	(1) 250 mL Polyethylene	✓	1
~~Dioxin/Furans~~	~~4°C~~	~~(2) 1000 mL Amber Glass~~		

OBSERVATIONS / NOTES:

Estimated Flow Rate: NO VISIBLE FLOW

SAMPLE COLLECTED AT AN OPENING TO A DRAINAGE PIPE.

Comments:

SEE FIG. 5-8

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkhouse

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 04SD050006
Sample Location: 04SW/SD05
Sampled By: B. Balkovec/T. Rahn
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12.15.00 Time: 1340 Method: Disposable Trowel Monitor Reading (ppm): 0.0	0-6"	Yellow Orange/ Brown	Clayey Silt, T-Fine Sand, T-Organics

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

McCombsh Gorge 05

MAP:

See Fig. 5-8

Circle if Applicable:

MS/MSD

Duplicate ID N .:

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 0430060006
Sample Location: 045W/SD
Sampled By: R.BALKOVICE / T.ROJAHN
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-15-00 Time: 1230 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0.0	0-6"	BROWN	SILT, T-CLAY + ORGANICS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

LOCATION WAS ABSENT OF WATER.

NO SW SAMPLE COLLECTED

* MC CONNISH GORGE 06

MAP:

SEE FIG. 5-8

Circle If Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovice

APPENDIX B.3.2

SWMU 5
SURFACE WATER AND SEDIMENT
SAMPLE LOG SHEETS

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10 job N7141

[X] Stream
[] Spring

Sample ID No.: 05SW0101
Sample Location: 05SW/S001
Sampled By: B.Palmore/T.Rowan/K.Sampson
C.O.C. No.:

SAMPLING DATA:

Date: 12-14-00	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Sample Time: 1025	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Depth: 3"	CLEAR	7.89	0.144	0.04	4.4	15.79	96.0	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓ 6
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓ 3
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 2
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 1
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
Dioxin/Furans	4°C	(2) 1000 mL Amber Glass	✓ 2

OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈ 5 gpm

≈ 1' WIDE

3" DEEP

Comments:

SEE FIG. 6-8

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkema

SOIL & SEDIMENT SAMPLE LOG SHEET

Pag 1 of 1

Project Site Nam : NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sampl ID No.: U5 SD 01 0006
Sample Location: U5 SW/SD 01
Sampled By: R. Balkwill / T. Brown / K. Simpson
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-14-00 Time: 1030 Method: DIS. PLASTIC TROWEL Monitor Reading (ppm): 0.0	0-6"	BROWN	CLAY W/ SOME SILT, F-FINE SAND & TR ROOTS. - LIMESTONE GRAVEL FOUND - -WET-

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 3	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide & TOC	8 oz w/m glass	✓ 1	
DIOXINS/FURANS	8oz w/m GLASS	✓ 1	

OBSERVATIONS / NOTES:

BURN PIT 01

MAP:

SEE FIG. 6-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkwill

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10 job N7141

Sample ID No.: 05SW0201
Sample Location: 05SW/S002
Sampled By: B Bankaree/R Simpson/T Rutmann
C.O.C. No.:

☒ Stream
☐ Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	dor
Date: 12-19-00								
Sample Time: 0935								
Depth: 2"								
Method: Direct Fill	CLEAR	7.99	0.255	0.09	3.8	14.07	+24.1	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	C llected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓ 20
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓ 10
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓ 6
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓ 6
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 3
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 3
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 3
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
Dioxin/Furans	4°C	(2) 1000 mL Amber Glass	✓ 6

OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈30 gpm
STREAM
≈2' WIDE
2"-6" DEEP

Comments:

SEE FIG. 6-8

QA Samples Collected:

MS/MSD

Duplicate ID No.: FD1219000 1

Signature(s):

Robert Balkenee

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 05 SD 02 0006
Sample Location: 05 SW/SD 02
Sampled By: B. Palkowski/KS Simpson/TRJ Hin
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-19-00 Time: 0940 Method: DIS. PLASTIC TROWEL Monitor Reading (ppm):	0-6"	BROWN	SILT W/ SOME F-SAND. SOME ROOTS + DECAYED LEAVES WET -

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 16	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 2	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide + TOC	8 oz w/m glass	✓ 2	
DIOXINS/FURANS	8 oz w/m glass	✓ 2	

OBSERVATIONS / NOTES:

BURN PIT 02

MAP:

SEE FIG 6-8

Circle if Applicable:

MS/MSD: ____

Duplicate ID No.: F012190002

Signature(s): Robert Palkowski

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10 job N7141

[X] Stream
[ ] Spring

Sample ID No.: 05SW0301
Sample Location: 05SW/SD03
Sampled By: B.Balkovec/T.Bojahn/K.Sampe
C.O.C. No.:

SAMPLING DATA:

Date: 12-14-00 / Sample Time: 0845 / Depth: 3" / Method: Direct Fill	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
	CLEAR	8.20	0.354	1.47	1.8	12.20	-29.7	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓ 6
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓ 3
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 2
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 1
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
Dioxin/Furans	4°C	(2) 1000 mL Amber Glass	✓ 2

OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈ 50 gpm

STREAM: 2'-3' WIDE
2"-8" DEEP

Comments:

SEE FIG. 6-8

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Pag 1 f 1

Project Sit Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sampl ID No.: 05 SD 03 0006
Sample Location: 05 SW/SD 03
Sampled By: B. BALKOVICZ / T. BOARMAN / K. S[illegible]
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, M isture, etc.)
Date: 12-14-00 Time: 0950 Method: DIS. PLASTIC TROWEL Monitor Reading (ppm): 0-0	0-6"	BROWN	SILT, T-FINE SAND, T-ORGANICS (LEAVES) -WET-

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide-TOC	8 oz w/m glass	✓ 1	
DIOXINS / FURANS	8 oz w/m GLASS	✓ 1	

OBSERVATIONS / NOTES:

BURN PIT 03

MAP:

SEE FIG 6-8

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovic

SURFACE WATER SAMPLE LOG FORM

Project Site Nam : NSWC CRANE, IN
Project No.: CTO 10 job N7141

Sampl ID No.: 05SW0401
Sample Location: 05SW/SD04
Sampled By: B. Balkover / T. Boahw / K. Simpson
C.O.C. No.:

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 12-19-00								
Sample Time: 0400								
Depth: 2"								
Method: Direct Fill	CLEAR	8.10	0.224	0.04	6.8	10.66	-14.8	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓ 6
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓ 3
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 1
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
Dioxin/Furans	4°C	(2) 1000 mL Amber Glass	✓ 2

OBSERVATIONS / NOTES:

Estimated Flow Rate: <1 gpm

* SAMPLE WAS COLLECTED FROM A HOLE DUG INTO THE STREAM. WE ALLOWED TIME FOR SW TO SETTLE.

1.5'-2' = WIDE
6" = DEEP

Comments:

SEE FZ6 6-8

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkover

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 05 SD04 0006
Sample Location: 05 SW/SD 04
Sampled By: B Balkovec / T. Brown / K Stanpson
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 12-14-00	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0900	0-6"	BROWN	SILT, T-FINE SAND, T-ORGANICS (ROOTS) -WET-
Method: DIS. PLASTIC TROWEL			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	9	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide + TOC	8 oz w/m glass	1	
DIOXINS/FURANS	8 oz w/m GLASS	1	

OBSERVATIONS / NOTES:

BURN PIT 04

MAP:

SEE FIG. 0-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10 Job N7141

Sample ID No.: 05SW0501
Sample Location: 05SW/SD05
Sampled By: T. ROSAHN / K. SIMPSON
C.O.C. No.:

[X] Stream
[ ] Spring

SAMPLING DATA:

Date: 12-18-00 / Sample Time: 1610 / Depth: 2" / Method: Direct Fill	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	dor
	CLEAR	7.93	0.519	0.2	5.5	13.40	-102.4	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓ 6
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓ 3
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 1
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
Dioxin/Furans	4°C	(2) 1000 mL Amber Glass	✓ 2

OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈ 1 gpm

ICE ≈ 1" THICK, REMOVED ICE THEN SAMPLED

Comments:

SEE FIG. 6-8

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 05 SD 05 0006
Sample Location: 05 SW/SD05
Sampled By: T. RUJAN/ K. SAMPSON
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12/18/00 Time: 1020 Method: DIS. PLASTIC TROWEL Monitor Reading (ppm): 0.0	0-6"	Brown	SILT, TRACE CLAY, ORGANICS (ROOTS) -WET-

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 16	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 3	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide & TOC	8 oz w/m glass	✓ 2	
DIOXINS/ FURANS	8 oz w/m GLASS	✓ 2	
	X VOC FOR MS/MSD		

OBSERVATIONS / NOTES:

BURN PIT 05

MAP:

SEE FIG. 6-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

APPENDIX B.3.3

SWMU 9
SURFACE WATER AND SEDIMENT
SAMPLE LOG SHEETS

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10 Job N7141

[X] Stream
[ ] Spring

Sample ID No.: 04SW01-01
Sample Location: 04SW/SD01
Sampled By: B. DAUKOVEC / T. ROJANO
C.O.C. No.:

SAMPLING DATA:

Date: 12-15-00 / Sample Time: 0935 / Depth: 2" / Method: Direct Fill	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
	CLEAR	7.50	0.641	4.05	4.3	5.84	164.4	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓ 6
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓ 3
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 1
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
[redacted]			

OBSERVATIONS / NOTES:

Estimated Flow Rate: NO VISIBLE FLOW RATE < 1gpm

Comments:

SEE FIG 7-8 FOR SAMPLE LOCATION

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 09SD010006
Sample Location: 09SW/SD01
Sampled By: BRAUCOUR/ZIBRAN
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-15-00 Time: 0955 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0.0	0-6"	BROWN	CLAYEY SILT W/ ORGANICS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 3	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide , TOC	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

PESTICIDE CONTROL 01

MAP:

SEE FIG 7-8 FOR LOCATION

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Bulkour

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10 Job N7141

☒ Stream
☐ Spring

Sampl ID No.: 09SW0201
Sample Location: 09SW/SD02
Sampled By: B. BALKOVICH / R. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 12-14-00	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Od r
Sample Time: 1345								
Depth: 2'								
Method: Direct Fill 0.0	CLEAR	7.90	0.551	2.0	2.8	10.39	122.6	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓ 6
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓ 3
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓ 2
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 1
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
[redacted]			

OBSERVATIONS / NOTES:

Estimated Flow Rate: 3 GPM

Comments:

SEE FIG. 7-8 FOR LOCATION

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	

Signature(s): Robert Balkovich

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 09SD02 0006
Sample Location: 09SW/SD02
Sampled By: B. BALKOVEC / R. SIMPSON
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-14-00 Time: 1355 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0.0	0-6"	YELLOW ORANGE, LT. BROWN + BLACK	CLAY, SOME SILT T. SAND + ORGANICS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide, TOC	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

PESTICIDE CONTROL 02

MAP:

SEE FIG 7-8 FOR LOCATION

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10 job N7141

Sampl ID No.: 09SW0301
Sample Location: 09SW/SD03
Sampled By: B. Balkovec/K. Simpson
C.O.C. No.:

[X] Stream
[ ] Spring

SAMPLING DATA:

Date: 12-13-00 / Sample Time: 1610 / Depth: 3" / Method: Direct Fill	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
	CLEAR	8.06	0.380	0-28°	14.0	8.80	161.6	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓
TSS	4°C	(1) 250 mL Polyethylene	✓
[redacted]			

OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈ 3gpm

Comments:

SEE FIG. 7-8

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 09SD030006
Sample Location: 09SW/SD03
Sampled By: B Balkovec / K Simpson
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-13-00 Time: 1615 Method: Disposable Trowel Monitor Reading (ppm): 0.0	0-6"	Yellow Orange/ Lt. Brown	Silty Clay w/ Organics.

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 8	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 1	
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide, TOC	8 oz w/m glass	✓ 1	

OBSERVATIONS / NOTES:

Pesticide Control 03

MAP:

See Fig. 7-8

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Sit Name: NSWC CRANE, IN
Project No.: CTO 10 job N7141

[X] Stream
[ ] Spring

Sample ID No.: 09SW0401
Sample Location: 09SW/SD04
Sampled By: B. Balkovec / K. Sampson
C.O.C. No.:

SAMPLING DATA:

Date: 12-13-00	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	dor
Sample Time: 1520	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Depth: 4"	CLEAR	8.40	0.222	0.07	3.7	13.51	116.2	NONE
M thod: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓ 12
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓ 6
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓ 4
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓ 4
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 2
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 2
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 2
TSS	4°C	(1) 250 mL Polyethylene	✓ 2
[redacted]	[redacted]	[redacted]	

OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈ 30 gpm

Comments:

SEE Pg. 7-8

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	FD121300 01

Signature(s): Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 09SD040006
Sample Location: 09SW/SD04
Sampled By: B. Balkovec/K. Simpson
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-13-00 Time: 1530 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0.0	0-6"	LT. BROWN	SANDY SILT, T-ORGANICS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 16	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 2	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide , TOC	8 oz w/m glass	✓ 2	

OBSERVATIONS / NOTES:

PESTICIDE CONTROL 04

MAP:

SEE FIG. 7-8

Circle if Applicable:

MS/MSD: —

Duplicate ID No.: FD12130002

Signature(s): Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10 job N7141

Sample ID No.: 09SW0501
Sample Location: 09SW/SD05
Sampled By: B. BALKOVEC / K. SAMPSON
C.O.C. No.:

[X] Stream
[ ] Spring

SAMPLING DATA:

Date: 12-14-00	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Od r
Sample Time: 0845	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Depth: 2"								
Method: Direct Fill	CLEAR	8.42	1.198	7.3	6.8	12.65	0.2	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX	HCl/4°C	(6) 40 mL Glass Vials	✓ 14
SVOCs App. IX	4°C	(3) 1000 mL Amber Glass	✓ 7
App. IX Pest/PCB	4°C	(2) 1000 mL Amber Glass	✓ 4
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓ 4
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na+hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 2
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 2
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 2
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
~~[illegible]~~	~~4°C~~	~~(2) 1000 mL Amber Glass~~	
			36

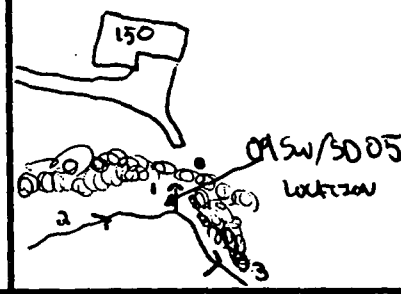
OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈ 5 gpm

1. ≈ 5 gpm Flowing From Culvert
2. ≈ 5 gpm Flowing To Confluence.
3. ≈ 10 gpm Flow of Combined Streams.

Comments:

Sample Collected From Drainage Culvert Coming Off of Bldg. 150



QA Samples Collected:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 09SD050006
Sample Location: 09SW/SD05
Sampled By: B.BALKOVIC/K.SIMPSON
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-14-00 Time: 0915 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0.0	0-6"	YELLOW ORANGE/ LT. BROWN BLACK	CLAY W/ SOME SAND W/ ORGANIC STAINING.

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX	encore	✓ 16	
App. IX SVOC, Pest/PCB, Herb.	8 oz w/m glass	✓ 3	
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide , TOC	8 oz w/m glass	✓ 2	

OBSERVATIONS / NOTES:

* TRACE AMOUNT OF WEATHERED S. STONE

PESTICIDE CONTROL 05

MAP:

SEE - FIG. 7-8

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovic

APPENDIX B.3.4

SWMU 10
SURFACE WATER AND SEDIMENT
SAMPLE LOG SHEETS

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10

☒ Stream
[] Spring

Sample ID No.: 10SW01 01
Sample Location: 10 SW / SD01
Sampled By: B. BALKOVEC / T. ROTAHN / R. STAHL
C.O.C. No.:

SAMPLING DATA:

Date: 12-16-00	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Sample Time 1330	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Depth: 2"	CLEAR	8.52	0.020	4.5	8.1	13.38	167.4	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na, hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	1 ✓
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	1 ✓
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	1 ✓
TSS	4°C	(1) 250 mL Polyethylene	1 ✓
Explosives	4°C	(2) 1000 mL Amber Glass	2 ✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	1 ✓

OBSERVATIONS / NOTES:

Estimated Flow Rate: 2200 gpm

STREAM DEPTH 3 TO 8"

Comments:

SEE FIG 8-10

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SD01 0006
Sample Location: 10SW/SD
Sampled By: B. Bauchner/T. Rosano/K. Simpson
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-16-00 Time: 1335 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0.0	0-6"	BROWN	SILT W/SAND (MED-COARSE) T-ROOTS, T-GRAVEL (3/4" Ø)

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide TOC	8 oz w/m glass	✓ 1	
EXPLOSIVES	8 oz w/m GLASS	✓ 1	

OBSERVATIONS / NOTES:

ROCKEYE 01

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10

[X] Stream
[ ] Spring

Sample ID No.: 10SW0201
Sample Location: 10SW/SD02
Sampled By: B. BALKOVEC / T. ROTAHN / RST-MDx
C.O.C. No.:

SAMPLING DATA:

Date: 12-16-00 / Sample Time 1100 / Depth: 1" / Method: Direct Fill	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
	CLEAR	8.00	0.195	0.72	4.0	13.67	153.1	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na, hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	1 ✓
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	1 ✓
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	1 ✓
TSS	4°C	(1) 250 mL Polyethylene	1 ✓
Explosives	4°C	(2) 1000 mL Amber Glass	2 ✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	1 ✓

OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈ 50 gpm

STREAM DEPTH 2-4"

Comments:

SEE FIG 8-10

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SD020056
Sample Location: 10SW/SD 02
Sampled By: B. Pruchnic/T. Rizzano/R. Stanton
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-16-00 Time: 1604 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0.0	0-6"	BROWN	SILTY SAND (FINE-GRAVELLY) T-CLAY W/ SOME ORGANICS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide TOC	8 oz w/m glass	1	
EXPLOSIVES	8 oz w/m GLASS	1	

OBSERVATIONS / NOTES:

ROCKEYE 02

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10

Sample ID No.: 10SW0301
Sample Location: 10SW/SD03
Sampled By: B. Balkovec / T. Rosman
C.O.C. No.:

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 12-16-00 Sample Time 1039								
Depth: 2" Method: Direct Fill	CLEAR	8.14	0.107	3.32	12	13.47	144.3	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na, hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	1
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	1
TSS	4°C	(1) 250 mL Polyethylene	1
Explosives	4°C	(2) 1000 mL Amber Glass	2
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	1

OBSERVATIONS / NOTES:

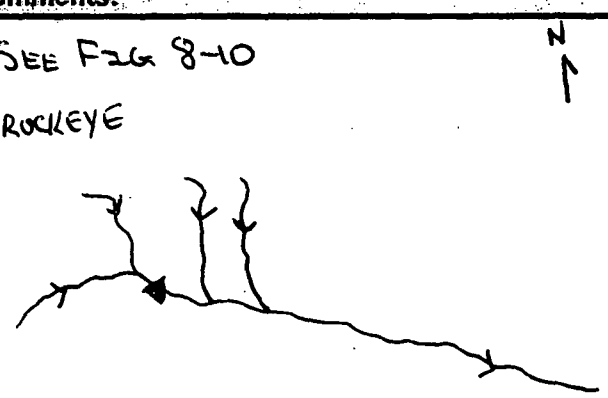
Estimated Flow Rate: 7100 gpm

STREAM DEPTH 3-12"

Comments:

SEE FIG 8-10

ROCKEYE



QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SD030006
Sample Location: 10SW/SD03
Sampled By: B. Bauchner/T. Rozann
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-6-00 Time: 1040 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0.0	0-6"	BROWN	SILT, SOME CLAY & ORGANICS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide TOC	8 oz w/m glass	1	
EXPLOSIVES	8 oz w/m GLASS	1	

OBSERVATIONS / NOTES:

ROCKEYE 03

MAP:

SEE FIG 8-10

Circle If Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10

[X] Stream
[] Spring

Sample ID No.: 10SW04 01
Sample Location: 10 SW / SD04
Sampled By: B. Balkovec / T. Roman / K. Szap.
C.O.C. No.:

SAMPLING DATA:

Date: 12-16-00	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Sample Time 1405	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Depth: 2"	CLEAR	7.82	0.137	26	12	12.77	147.0	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
App. IX Total Metals , Ca, Fe, Mg, Mn, K, Na, hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
App. IX Diss. Metals , Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 1
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
Explosives	4°C	(2) 1000 mL Amber Glass	✓ 2
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓ 1

OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈ 400 gpm

STREAM DEPTH - 3 - 10"

Comments:

SEE FIG 8-10

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SD040006
Sample Location: 10SW/SD04
Sampled By: B. Balkovec/T. Brown/K. Swanson
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-16-00 Time: 1415 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0-0	0-6"	BROWN	FINE-COARSE SAND, SOME SILT T- ORGANICS (ROOTS)

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide TOC	8 oz w/m glass	✓	
EXPLOSIVES	8 oz w/m GLASS	✓	

OBSERVATIONS / NOTES:

ROCKEYE 04

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10

[X] Stream
[ ] Spring

Sample ID No.: 10SW05 01
Sample Location: 10 SW / SD05
Sampled By: B. Balkovec / T. Roman
C.O.C. No.:

SAMPLING DATA:

Date: 12-16-00	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Sample Time 1022	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Depth: 3"	CLEAR	8.38	0.121	3.00	8.0	13.73	134.6	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na, hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 1
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
Explosives	4°C	(2) 1000 mL Amber Glass	✓ 2
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓ 1

OBSERVATIONS / NOTES:

Estimated Flow Rate: >100 gpm

STREAM DEPTH - 3-10"

Comments:

SEE FIG 8-10

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SD05 0006
Sample Location: 10SW/SD05
Sampled By: B. Brugger/T. Rojahn
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-16-00 Time: 1075 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0.0	0-6"	BROWN	SILTY SAND & GRAVEL

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide TOC	8 oz w/m glass	1	
EXPLOSIVES	8 oz w/m GLASS	1	

OBSERVATIONS / NOTES:

ROCKEYE 05

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10

[X] Stream
[ ] Spring

Sample ID No.: 10SW0601
Sample Location: 10SW/SD06
Sampled By: B. Palkovec / T. Rogahn
C.O.C. No.:

SAMPLING DATA:

Date: 12-16-00	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Sample Time 0835	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Depth: 2"	CLEAR	8.81	0.096	3.52	11.0	13.68	102.8	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na, hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 3
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 3
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 3
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
Explosives	4°C	(2) 1000 mL Amber Glass	✓ 6
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓ 3
			19 TOTAL
	X VOC FOR QA		

OBSERVATIONS / NOTES:

Estimated Flow Rate: > 100 gpm
MAY BE AS HIGH AS 1000 GPM OR MORE.

Comments:

SEE FIG 8-10

QA Samples Collected:

MS/MSD

Duplicate ID No.: FD12160001

Signature(s):

Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SD060006
Sample Location: 10SW/SD06
Sampled By: B. Dawkins/T. Brown
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 12-16-00	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0855	0-6"	BROWN	SANDY (FINE-COARSE) SILT W/ CLAY + ORGANICS
Method: DISPOSABLE TROWEL			
Monitor Reading (ppm): 0-0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide TOC	8 oz w/m glass	✓ 3	
EXPLOSIVES	8 oz w/m GLASS	✓ 4	

OBSERVATIONS / NOTES:

ROCKEYE 06

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD

Duplicate ID No.: FD12160002

Signature(s): Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10

Sample ID No.: 10SW07 01
Sample Location: 10 SW/SD07
Sampled By: B. Palkovics/T. Rogan/R. Spaid
C.O.C. No.:

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 12-16-00								
Sample Time 1420								
Depth: 3"								
Method: Direct Fill	CLEAR	7.77	0.153	1.9	11.0	13.84	144.5	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na, hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓1
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓1
TSS	4°C	(1) 250 mL Polyethylene	✓1
Explosives	4°C	(2) 1000 mL Amber Glass	✓2
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓1

OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈ 150 gpm

ROCKEYE 07

STREAM DEPTH - 3-7"

Comments:

SEE FIG 8-10

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balfour

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SD010006
Sample Location: 10SW/SD07
Sampled By: B Burrows/T. Rosano/K. Simpson
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-16-00 Time: 1425 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0.0	0-6"	BROWN	SILTY CLAY, TR-ROOTS, T-F-SAND. WET.

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide TOC	8 oz w/m glass	/	
EXPLOSIVES	8 oz w/m GLASS	/	

OBSERVATIONS / NOTES:

ROCKEYE 07

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10

Sampl ID No.: 10SW0801
Sample Location: 10SW/SD08
Sampled By: B. Palmquist / T. Roahn / K. Stamps
C.O.C. No.:

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 12-16-00								
Sample Time 1435								
Depth: 2"								
M thod: Direct Fill	Cloudy	7.70	0.128	3.7	21	11.85	151.2	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na, hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 1
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
Explosives	4°C	(2) 1000 mL Amber Glass	✓ 2
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓ 1

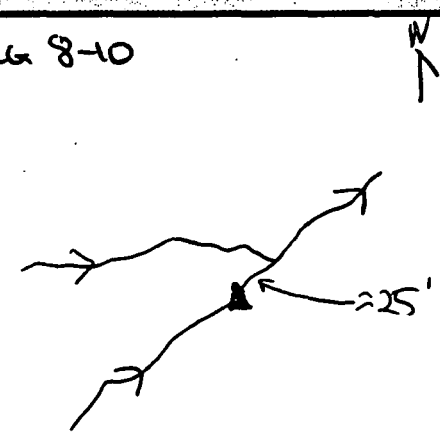
OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈200 gpm

STREAM DEPTH 2-6"

Comments:

SEE FIG 8-10



10SW/SD08
ROCKEYE

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Palmquist / [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SD080006
Sample Location: 10SW/SD08
Sampled By: B. Balkover / T. Brown / K. Simpson
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-16-00 Time: 1440 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0-0	0-6"	BROWN	FINE-TO COARSE SAND, SOME SILT TRACE ROOTS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide TOC	8 oz w/m glass	✓	
EXPLOSIVES	8 oz w/m GLASS	✓	

OBSERVATIONS / NOTES:

ROCKEYE 08

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Robert Balkover

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10

Sampl ID No.: 10SW04 01
Sample Location: 10 SW / SD04
Sampled By: B. PALMQUIST / T. ROTHAN
C.O.C. No.:

☒ Stream – MAN MADE HOLE. SEE BELOW
☐ Spring

SAMPLING DATA:

Date: 12-17-00	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Sample Time 1248	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Depth: 1"	CLEAR	7.81	1.038	4.10	14.0	11.20	120.8	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na, hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 1
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
Explosives	4°C	(2) 1000 mL Amber Glass	✓ 2
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓ 1

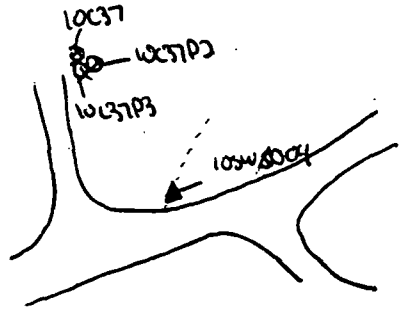
OBSERVATIONS / NOTES:

Estimated Flow Rate: < 1 gpm

* NEEDED TO DIG A POOL TO ALLOW FOR SW ACCUMULATION. WAITING FOR SW TO CLEAR UP. @ 0430
@ 1245 HOLE SETTLES OUT. SOME SUSPENDED SOLIDS.

Comments:

SEE FIG 8-10



QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Palmquist

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SD090006
Sample Location: 10SW/SD 04
Sampled By: B. Dawkins/T. Brown
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-17-00 Time: 1255 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0-0	0-6"	BROWN	SILTY CLAY, T-FINE SAND SOME ORGANICS (ROOTS) -WET-

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

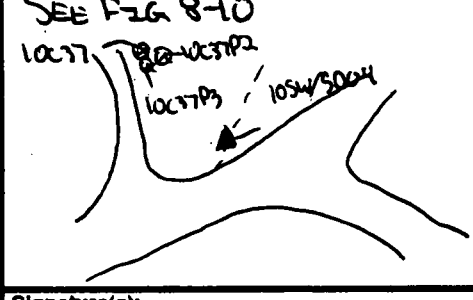
Analysis	Container Requirements	Collected	Other
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide TOC	8 oz w/m glass	✓ /	
EXPLOSIVES	8 oz w/m GLASS	✓ /	

OBSERVATIONS / NOTES:

ROCKEYE 04

MAP:

SEE FIG 8-10



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10

[X] Stream
[ ] Spring

Sample ID No.: 10SW10 01
Sample Location: 10SW/SD10
Sampled By: B. Balkovec / T. Rosahn
C.O.C. No.:

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 12-17-00								
Sample Time 0840								
Depth: 2"								
M thod: Direct Fill	CLEAR	8.14	0.468	1.45	11.2	12.77	120.7	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na, hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 1
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 1
TSS	4°C	(1) 250 mL Polyethylene	✓ 1
Explosives	4°C	(2) 1000 mL Amber Glass	✓ 2
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓ 1

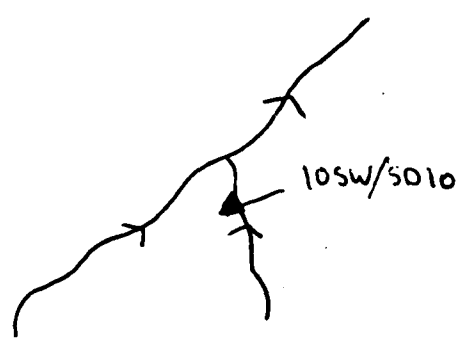
OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈20 gpm

DEPTH ≈ 2-4"

Comments:

SEE FIG 8-10



QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SD100006
Sample Location: 10SW/SD 10
Sampled By: B. Balkovec/T. Rosano
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-17-00 Time: 0845 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0.0	0-6"	BROWN	SILTY CLAY W/SOME F-C SAND. T-ORGANICS - WET -

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

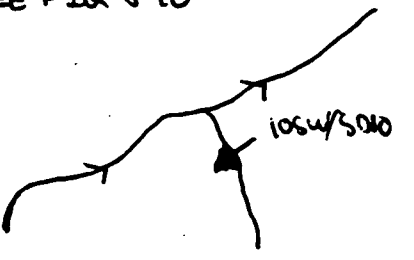
Analysis	Container Requirements	Collected	Other
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide TOC	8 oz w/m glass	✓	
EXPLOSIVES	8 oz w/m GLASS	✓	

OBSERVATIONS / NOTES:

ROCKEYE 10

MAP:

SEE FIG 8-10



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10

Sampl ID No.: 10SW1101
Sample Location: 10SW/SD11
Sampled By: B. Balcomes / T. Rosman
C.O.C. No.:

[X] Stream
[ ] Spring

SAMPLING DATA:

Date: 12-17-00	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Sample Time 1015	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Depth: 2"	CLEAR	7.45	0.229	1.32	8.3	14.86	18.1	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na, hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	1 ✓
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	1 ✓
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	1 ✓
TSS	4°C	(1) 250 mL Polyethylene	1 ✓
Explosives	4°C	(2) 1000 mL Amber Glass	2 ✓
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	1 ✓

OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈ 30 gpm

STREAM DEPTH 1"-3"

Comments:

SEE FIG 8-10

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balcomes

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SD11 0006
Sample Location: 10SW/SD11
Sampled By: B. Dawkins/T. Rosan
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12-17-00 Time: 1030 Method: DISPOSABLE TROWEL Monitor Reading (ppm): 0.0	0-6"	BROWN	SILTY CLAY W/ FINE SAND (TRACE) TRACE ORGANICS (ROOTS) - WET -

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
App. IX Metals, Ca, Fe, Mg, Mn, K, Na, Cyanide TOC	8 oz w/m glass	✓	
EXPLOSIVES	8 oz w/m GLASS	✓	

OBSERVATIONS / NOTES:

ROCKEYE 11

MAP:

SEE FIG 8-10

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Robert Balkovec 12-15-00

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 10

[X] Stream
[ ] Spring

Sample ID No.: 10SW1201
Sample Location: 10SW/SD12
Sampled By: B. Palkovec / T. Rogahn
C.O.C. No.:

SAMPLING DATA:

Date: 12-17-00	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Sample Time 0455								
Depth: 3"								
Method: Direct Fill	CLEAR	8.33	0.162	0.80	4.88	126.0	14.67	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Time Collected
App. IX Total Metals, Ca, Fe, Mg, Mn, K, Na, hardness	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 2
App. IX Diss. Metals, Ca, Fe, Mg, Mn, K, Na	HNO_3/4°C	(1) 1000 mL Polyethylene	✓ 2
Cyanide	NaOH/4°C	(1) 500 mL Polyethylene	✓ 2
TSS	4°C	(1) 250 mL Polyethylene	✓ ~~2~~ 1
Explosives	4°C	(2) 1000 mL Amber Glass	✓ 4
Nitrite/Nitrate	4°C/H_2SO_4	(1) 250 mL Polyethylene	✓ 2

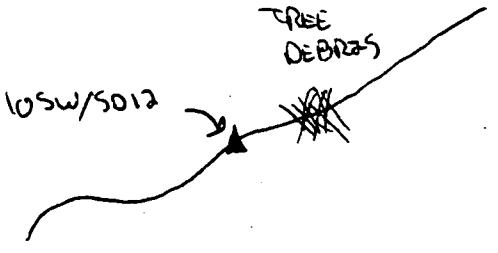
OBSERVATIONS / NOTES:

Estimated Flow Rate: ≈ 200gpm

STREAM 4" DEEP

Comments:

SEE FIG 8-10



QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	FD121700001

Signature(s): Robert Palkovec

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane
Project No.: CTO 10 job # N7141

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 10SD120006
Sample Location: 10SW/SD12
Sampled By: B. Balkovic/T. Brown
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 12-17-00	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1005	0-6"	BROWN	SANDY (FINE-COARSE) SILT, SOME ORGANICS (ROOTS) -WET-
Method: DISPOSABLE TROWEL			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

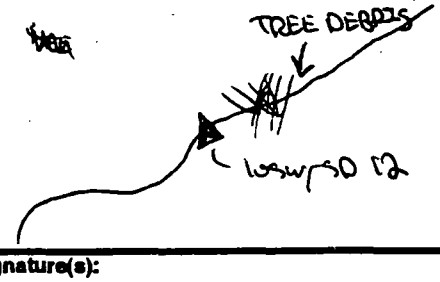
Analysis	Container Requirements	Collected	ther
App. IX Metals ,Ca, Fe, Mg, Mn, K, Na, Cyanide TOC	8 oz w/m glass	✓ 2	
EXPLOSIVES	8 oz w/m GLASS	✓ 2	

OBSERVATIONS / NOTES:

ROCKEYE 12

MAP:

SEE FIG 8-10



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD12170002

Signature(s): Robert Balkovic

APPENDIX B.4

CHAIN OF CUSTODY RECORDS

APPENDIX B.4.1

SWMU 4
CHAIN OF CUSTODY RECORDS

CHAIN OF CUSTODY RECORD

02320

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APPIX VOC LOW RANGE	APP. IX VOC HIGH RANGE	APP. IX SVOC	APP. IX PEST/PCBS	APPIX HERB	APP. IX TOTAL METALS + Ca, Fe, Mg, Mn, K, Na	CYANIDE	REMARKS
RB	11/28	1520		✓	RB11280001	16	3	3	3	3	2	1	1	PLASTIC TRAVEL
TB	↓	0700		✓	TB11290001	3	X	X						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[illegible]	11.29.00 1830	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: FEDEX AB# 8243 9971 9710	

Order No. 70440 (0693)

00328

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible] Robert Poulkerx [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	App. IX VOC Encores Low Conc	App. IX VOC Encores High Conc	App. IX SVOC, Herb, Pesticides	App. IX Metals, Hg, Fe, Mn, K, Na, Ca, Mg	CEC	PH, TOC	REMARKS
04	11/20	1455		✓	04 SB 01 0204	10	4	4	1	1	*		* ADD TO METALS JAR
↓	↓	1544		✓	04 SB 06 0102	8	4	4					
↓	↓	1544		✓	04 SB 06 0002	2			1	1			
↓	↓	1555		✓	04 SB 06 0709	10	4	4	1	1	*		* ADD TO METALS JAR

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	11-20-01 1830	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 9243 9971 9710	

Order No. 70[illegible]

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible] Robert Paul Pierce, Terry [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP. IX VOC ENCORES LOW CONC.	APP. IX VOC ENCORES HIGH CONC.	APP. IX SVOC, HERB, PESTICIDES	APX IX METALS, CN, Hg, MN, K, Na, CA, SO2	CEC, pH, TOC		REMARKS
04	11/29	0850		✓	04SB050102	8	4	4					
		0850		✓	04SB050002	2			1	1			
		1010		✓	04SB050204	10	4	4	1	1			
		1035		✓	04SB030102	8	4	4					
		1035		✓	04SB030002	2			1	1			
		1120		✓	04SB030406	10	4	4	1	1			
		1255		✓	04SB040102	8	4	4					
		1255		✓	04SB040002	2			1	1			
		1315		✓	04SB040608	10	4	4	1	1			
		1345		✓	04SB020102	8	4	4					
		1345		✓	04SB020002	2			1	1			
		1420		✓	04SB020608	10	4	4	1	1			
		1438		✓	04SB010102	8	4	4					
↓	↓	1438		✓	04SB010002	2			1	1			

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[illegible]	11-29-01 1035	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9971 9710	

Order No. 70440 (0693)

00331

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP. IX VOC	APP. IX VOC 40 ML VIAL	APP. IX VOC LOW RANGE	APP. IX VOC HIGH RANGE	APP. IX SVOC	APP. IX PEST/PCBS	APP. IX HERB.	APP. IX TOTAL METALS + Ca, Fe, Mg, Mn, K, Na	CYANIDE	REMARKS
TB	11/29	0715		✓	TB 112900 01	3	3									
RB	↓	1510		✓	RB 112900 01	KS ~~16~~ 15		3	3	3	3	2	1	1		2 QT FOR PEST/PCBs DPT PLASTIC UNPR

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	11-29-00 1800	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 9243 9971 9721	

Order No. 704[illegible]3)

00332

CHAIN OF CUSTODY RECORD SUMM 4

PROJECT NO.: CTO 10 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): Robert Bellknap

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP-IX VOC EXTORLS	LUMP CONTAIN. APP-IX VOC EXTORLS	HIGH CONC APP-IX SVOC HERB PEST/PCB's	APP-IX METALS, CA Fe, Mn, Na, Cu, Zn	CEC, OH, TOC		REMARKS
04	11/29/00	0830		✓	045S020102	16	8	8					MS/MSD
		0830		✓	045S020002	5			3	2			MS/MSD
		0815		✓	045B070102	8	4	4					
		0815		✓	045B070002	2			1	1	*		COLLECT FROM METALS JAR
		0835		✓	045B070507	10	4	4	1	1			
		0405		✓	045B080102	8	4	4					
		0405		✓	045B080002	2			1	1	*		COLLECT FROM METALS JAR
		0418		✓	045B080810	10	4	4	1	1	*		COLLECT FROM METALS JAR
		0950		✓	045S010102	8	4	4					
		0950		✓	045S010002	2			1	1			
		0000		✓	FD11290001	10	4	4	1	1			DUPLICATE OF 045S0102/0002
		0000		✓	FD11290002	10	4	4	1	1			DUPLICATE OF 045B0702/0002

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
Robert Bellknap	11/29/00 1950	FED EX			
RELINQUISHED BY (SIGNATURE):	**DATE / TIME:**	**RECEIVED BY (SIGNATURE):**	**RELINQUISHED BY (SIGNATURE):**	**DATE / TIME:**	**RECEIVED BY (SIGNATURE):**
RELINQUISHED BY (SIGNATURE):	**DATE / TIME:**	**RECEIVED FOR LABORATORY BY (SIGNATURE):**	**DATE / TIME:**	**REMARKS:** AB # 8243 9971 9721	

Order No. 70440 (0693)

00359

CHAIN OF CUSTODY RECORD

PROJECT NO.:	SITE NAME:
CTO 10 # 7141	NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	~~APPIX DOC~~						REMARKS
TB	12/15	0755		✓	TB 121500 01	3	3	—	—	—	—	—	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[illegible]	12.15.00 1850	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9971 9802 15 KS	

Order No. 704[illegible])

00358

CHAIN OF CUSTODY RECORD SW

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature] Robert Baltrowic

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP.IX VOC 8260	APP.IX VOC 8015	APP.IX SVOC	APP.IX HERB.	APP.IX PEST PCB	APP.IX METALS Ca, Fe, Mg, Mn, K, Na, HARD	APP.IX DIS. METALS Ca, Mg, Mn, K, Na, Fe	CYANIDE	TSS	REMARKS
04	12/15	1020		✓	04 SW 04 01	17	3	3	3	2	2	1	1	1	1	
↓	↓	1250		✓	04 SW 05 01	17	3	3	3	2	2	1	1	1	1	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	12.15.00 1850	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243997198~~07~~ 13 RS	
				DISSOLVED METALS IDENTIFIED WITH "F"	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD SD

00360

PROJECT NO.:	SITE NAME:
CTO 10 # 7141	NSWC CRANE

SAMPLERS (SIGNATURE): Robert Bellhouse

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP.IX VOC 8260	APP.IX VOC 8015	APP.IX SOLV STM HERB. PEST/PCB's	APPIX METALS, CN, TOC FE, Mn, MN, K, Na, CN			REMARKS
04	12/15	1145		✓	04SD040006	10	4	4	1	1			
↓	↓	1230		✓	04SD060006	10	4	4	1	1			
↓	↓	1310		✓	04SD050006	10	4	4	1	1			

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
	12.15.00 1080	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORAT RY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 824399719813	

Order No. 704 3)

CHAIN OF CUSTODY RECORD SW

00366

PROJECT NO.:	SITE NAME:
CTO 10 H 7141	NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP.IX VOC 8260	APP.IX VOC 8015	APP.IX SVOC SIM	APP.IX HERB	APP.IX PEST PCB	APP.IX METALS, Cr, Fe, Mg, Mn, K, Na, V, Ni, Cu	APP.IX DIS. METALS Fe, Mg, Mn, K, Na	CYANIDE	TSS	APP.IX VOC	REMARKS
04	12/18	0710		✓	TB121800 01	3	—								—	3	
↓	↓	0835		✓	04SW 03 01	36	7	7	7	4	4	2	2	2	1		RUN ALSO MS/MSD
		0920		✓	04SW 02 01	17	3	3	3	2	2	1	1	1	1		
		1000		✓	04SW 01 01	17	3	3	3	2	2	1	1	1	1		
↓	↓	1000		✓	FD 121800 01	KG ~~17~~ 16	3	3	3	2	2	1	1	1	~~1~~ 0		DUP OF 04SW03 01
	11)																

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
	12-18-00 1000	FEDEX			
RELINQUISHED BY (SIGNATURE):	**DATE / TIME:**	**RECEIVED BY (SIGNATURE):**	**RELINQUISHED BY (SIGNATURE):**	**DATE / TIME:**	**RECEIVED BY(SIGNATURE):**
RELINQUISHED BY (SIGNATURE):	**DATE / TIME:**	**RECEIVED FOR LABORATORY BY (SIGNATURE):**	**DATE / TIME:**	**REMARKS:** AB# 8243 9971 9802 DISSOLVED METALS ID ENDS WITH "F"	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD SD

00367

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP.IX VOC 8260	APP.IX VOC 8015	APP.IX SVOC/SM HEXB REST/KCB	APP.IX METALS Fe, Mg, Mn, K	TOC		REMARKS
04	12/19	0900		✓	04SD03 0006	21	8	8	3	2			RUN ALSO MS/MSD
↓	↓	0930		✓	04 SD 02 0006	10	4	4	1	1			
		~~1100~~ KS	1010	✓	04 SD 01 0006	10	4	4	1	1			
↓	↓	0000		✓	FD121800 02	10	4	4	1	1			DUP OF - 04SD03 0006

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	12.18.00 1600	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243997 1 9802	

Order No. 70[illegible]3)

CHAIN OF CUSTODY RECORD GW

00372

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP. IX VOC	APP. IX VOC EDB	APP. IX VOC EDB	APP. IX SVOC SIM	APP. IX METALS	APP. IX PEST PCB	APP. IX INSTRUMENT MOD. ANALYSIS	CYANIDE	REMARKS
04	1/3	0740		✓	TB 010301 01	3	3								
		0000		✓	FD 010301 01	15		3	3	3	2	2	1	1	DUP OF 04GWT0301
		1200		✓	04GW0601	15		3	3	3	2	2	1	1	
		1200		✓	04GW0201	15		3	3	3	2	2	1	1	
		1600		✓	04GWT0301	33	X[illegible]	7	7	7	4	4	2	2	RUN ALSO MS/MSD
		1640		✓	RB 010301 01	15		3	3	3	2	2	1	1	BLADDER PUMP
	1/4	1100		✓	04GW0501	15		3	3	3	2	2	1	1	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	1.4.9 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9971 9857	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD GW

00373

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	App IX VOC	App IX VOC 8015	App IX VOC 8260	App IX SVOC	App IX METALS	App IX PEST PCB	App IX METALS Na2 MoO4	CYANIDE	App IX DISSOLVED Ca Fe Mg Na K	App IX DISSOLVED Mn Zn Cu Ni	EXTRA STICK	NITRATE/NITRITE	REMARKS
04	1/4	1600		✓	TB010401 01	3	3												
04	↓	1220		✓	04GWT02 01	16	1	3	3	3	2	2	1	1	1				
RB	1/5	1330		✓	RB01050101	~~1~~ 20	1	3	3	3	2	2	1	1	1	1	2	1	*
04	↓	0945		✓	04GW03 01	~~16~~ 15	1	3	3	3	2	2	1	1	4 KS				
04	↓	1015		✓	04GWT0101	~~16~~ 15	1	3	3	3	2	2	1	1	4				

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	1.5.01 1850	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9971 9860	

*RB ON PERISTALTIC TUBING, TEFLON & SILICONE

Order No. 70[illegible]3)

CHAIN OF CUSTODY RECORD SWMU 4

00376

PROJECT NO.:	SITE NAME:
CTO 10 # 7141	NSWC CRANE
SAMPLERS (SIGNATURE):	

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP IX VOC	APP IX VOC 8015	APP. IX VOC 8260	APP. IX SVOC SIM	APP. IX HERB	APP. IX PEST/PCB	APP. IX METALS, Se, Tl, Ni, Mn, K, Na	CYANIDE	REMARKS
04	1/5	1745		✓	04GW0101	15	1	3	3	3	2	2	1	1	
TB	1/6	0730		✓	TB 010601 01	3	3								
04	1/7	1035		✓	04GW0401	15	1	3	3	3	2	2	1	1	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[illegible]	1.8.01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9972 0130	

Order No. 70440 (0693)

02333

CHAIN OF CUSTODY RECORD

SWMU 4 QA

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible] S. Simpson

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	App. IX VOC 8260	App. IX VOC 8015	App. IX SVOC	App. IX PEST/PCB	App. IX HERB.	App. IX METALS, Ca, Fe, Mg, Mn, K, Na	CYANIDE	REMARKS
TB	2/19	1600		✓	TB 021901 01	3	X	X						TRIP BLANK
RB	↓	1730		✓	RB 021901 01		3	3	3	3	2	1	1	DPT CUTTING SHOE

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	2-20-01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8244 4672 4351	

Order No. 70[illegible]3)

02336

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APPIX VOC 8260	APPIX VOC 8015 ENCORE	APPIX SVOC PESTICIDES	APPIX METALS Cr, Ni, Mg, Mn, K, Na, CN	CEC, PH, TOC		REMARKS
04	2/20	1100		✓	04SB09 0102	8	4	4					
		1100		✓	04SB09 0002	2			1	1			
		1115		✓	04SB09 0810	10	4	4	1	1			
		1010		✓	04SB10 0102	8	4	4					
		1010		✓	04SB10 0002	2			1	1			
		1040		✓	04SB10 0608	10	4	4	1	1			
		0930		✓	04SB11 0102	8	4	4					
		0930		✓	04SB11 0002	2			1	1			
		0940		✓	04SB11 0810	10	4	4	1	1			
		1250		✓	04SB12 0102	16 ~~8~~	8 ~~4~~	8 ~~4~~					RUN ALSO MS/MSD ↓
		1250		✓	04SB12 0002	25			3	2			
↓		1310		✓	04SB12 0810	10	4	4	1	1	*		* COLLECTED FROM METALS JAR
FD	↓	0000		✓	FD 02200101	10	4	4	1	1			DUP OF 04SB120002 VOC 0102

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	2.20.01 1630	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8244 4672 4351	

Order No. 70440 (0693)

APPENDIX B.4.2

SWMU 5
CHAIN OF CUSTODY RECORDS

00334

CHAIN OF CUSTODY RECORD SWMU 5

PROJECT NO.: CTO ID # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP IX VOC LOW RANGE	APP IX VOC HIGH RANGE	APP IX SVOC, PCB/PCB	APP IX METALS, Cr, Hg, Ni, Cu, Zn	CEC, pH, TOC		REMARKS
05	11/04/00	1050		✓	05SB010102	8	4	4					
		1050		✓	05SB010002	2			1	1			
		1300		✓	05SB010810	10	4	4	1	1	*		* COLLECT FROM METALS JAR
		1337		✓	05SB070102	8	4	4					
		1337		✓	05SB070002	2			1	1			
		1400		✓	05SB070608	10	4	4	1	1			
		1430		✓	05SB060102	8	4	4					
		1430		✓	05SB060002	2			1	1			
		1455		✓	05SB060608	10	4	4	1	1			
		1525		✓	05SB050102	8	4	4					
		1525		✓	05SB050002	2			1	1			
		1535		✓	05SB050608	10	4	4	1	1	*		* COLLECT FROM METALS JAR
		0000		✓	FD11290003	10	4	4	1	1			DUP OF 05SB070002/0102

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	11.29.00 1950	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9721	

Order No. 70440 (0693)

00333

CHAIN OF CUSTODY RECORD SWMU 5

PROJECT NO.:	SITE NAME:
CTO 10 # 7141	NSWC CRANE

SAMPLERS (SIGNATURE): [signature] Robert Pollard

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	DIOXINS/FURANS SOIL	DIOXINS/FURANS WATER					REMARKS
05	11/29	1510		✓	RB112900 01	2		2					DPT PLASTIC LINER
↓	↓	1250		✓	05SB010002	1	1						
		1300		✓	05SB010810	1	1						
		1337		✓	05SB070002	1	1						
		1400		✓	05SB070608	1	1						
		1430		✓	05SB060002	1	1						
		1455		✓	05SB060608	1	1						
		1525		✓	05SB050002	1	1						
		1555		✓	05SB050608	1	1						
↓	↓	0000		✓	FD112900003	1	1						DUPLICATE ON 05SB070002
05	11/30	0705		✓	05SB020002	1	1						
↓	↓	0920		✓	05SB020406	1	1						
		0915		✓	05SB030002	2	2						RUN ALSO MS/MSD
↓	↓	1008		✓	05SB030507	1	1						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	11.30.00 1850	FEDEX 11.30.00			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: TRIANGLE LAB AB# 8243 9971 9743	

Order No. 704

00336

CHAIN OF CUSTODY RECORD SWMU 5

PROJECT NO.:	SITE NAME:
CTO 10 # 7141	NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	DIOXINS/FURANS SOILS						REMARKS
05	11/30	0000		✓	FD 113000 01	1	1						DUP OF 05SB03 0002

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	11-30 00 1050	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9743	

Order No. 70440 (0693)

00335

CHAIN OF CUSTODY RECORD QA

PROJECT NO.:	SITE NAME:
CTO 10# 7141	NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	App. IX VOC 40 ml vial	App. IX VOC 8260 Low Range	App. IX VOC 8015 High Range	App. IX SVOC SIM	App. IX PCBs	App. IX Pesticides	App. IX T. Metals + Cu, Fe, Mn, Zn, Al	CYANIDE	REMARKS
TB	11/30	0715		✓	TB 113000 01	3	3								
RB	↓	1515		✓	RB 113000 01	15		3	3	3	2	2	1	1	DPT STEEL CUTTIN' SHOE

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	11.30.00 1850	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 0243 9971 9732	

Order No. 70[illegible])

02318

CHAIN OF CUSTODY RECORD SWMU 5

PROJECT NO.:	SITE NAME:
CTO 10th 7141	NSWC CRANE

SAMPLERS (SIGNATURE): Robert F Goldthwait

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APPX VOC ENCORES LOW CONC.	APPX VOC ENCORES HIGH CONC.	APPX SVOC'S (+LIPIDS) PESTICIDES	APPX METALS, CN, TP	CLP PH TOC		REMARKS
05	11/30	0905		✓	055B020102	8	4	4					
↓	↓	0905		✓	055B020002	2			1	1			
		0915		✓	055B030102	16	8	8					MS/MSD
		0915		✓	055B030002	5			3	2			
		0920		✓	055B020406	10	4	4	1	1			
		1008		✓	055B020507 ▲	10	4	4	1	1	*		COLLECT FROM METALS JAR
↓	↓	1000		✓	FD11300001	10	4	4	1	1			DUP OF 055B020002 & 0102 ▲ → 055B020002 & 0102
					CORRECTED 12.7.00 RES ▲								

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
Robert F Goldthwait	11-30-00 1850	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9732	

Order No. 70440 (0693)

02324

CHAIN OF CUSTODY RECORD QA

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP IX VOCS	APP IX SVOC LOW LEVEL	APP IX SVOC SIM	EXPLOSIVES	APP IX T. METALS CR, FE, MN, MU, K, NA	CYANIDE	APP. IX VOC 8260	APP. IX VOC 8015	APP IX PESTICIDES/PCBs	APP IX HERB	REMARKS
RB	12/12	1615		✓	RB 121200 01	7		3	2	1	1						DPT CUTTING SHOE
TB	12/13	0715		✓	TB 121300 01	3	3										
RB	12/13	1130		✓	RB 121300 01	15		3		1	1	3	3	2	2		DPT CUTTING SHOE

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
	12-13-00 1840	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 4972 0221	

Order No. 704

CHAIN OF CUSTODY RECORD SWMU 05

02323

PROJECT NO.: CTO 10 #7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	App IX VOC's 8260	App IX VOC's 8015	App IX SVOC's, SSCA, HERB, Pest/PCB's 8081	App IX METALS, Cr+6, Hg, Cyanide, Cl, Br	CEC, pH, TOC		REMARKS
05	12/13	0880		✓	05SB040102	8	4	4					
		0830		✓	05SB040002	2			1	1	*		ADD TO METALS JAR
		0920		✓	05SB040204	10	4	4	1	1			
		1022		✓	05SB080102	8	4	4					
		1022		✓	05SB080002	2			1	1			
				✓	~~05SB~~ KS								

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[illegible]	12.13.00 1840	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9972 0221	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD SW

00368

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP. IX VOC	APP. IX VOC 8260	APP. IX VOC 8015	APP. IX SVOC SIM	APP. IX TICRBS	APP. IX PEST/PCBS	APP. IX METALS Fe, Ca, Mg, MN, K, Na, Al, Sb	APP. IX DISS. METALS Fe, Ca, Mg, MN, K, Na	CYANIDE	TSS	REMARKS
TB	12/18	1550		✓	TB121800 02	3	3	—	—	—	—	—	—	—	—	—	
05	↓	1610		✓	05SW0501	17	1	3	3	3	2	2	1	1	1	1	
		12/19 0845		✓	05SW0301	17	1	3	3	3	2	2	1	1	1	1	
		0900		✓	05SW0401	17	1	3	3	3	2	2	1	1	1	1	
		0935		✓	05SW0201	36	1	7	7	7	4	4	2	2	2	1	RUN ALSO MS/MSD
		1025		✓	05SW0101	17	1	3	3	3	2	2	1	1	1	1	
↓	↓	0000		✓	FD121900 01	16	1	3	3	3	2	2	1	1	1	—	DUP OF 05SW0201

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	12-19-00 1810	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9824 DISSOLVED METALS ID ENDS WITH "F"	

Order No. 704[illegible]

CHAIN OF CUSTODY RECORD SD

00370

PROJECT NO.:	SITE NAME:
CTO 10 # 7141	NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APPIX VOC 8260	APPIX VOC 8015	APPIX SVOC/STD. HERB/PESTICIDE	APPIX METALS CD TOC Fe Mn Mg K Na, CN			REMARKS
05	12/18	1620		✓	05SD05 0006	21 ~~20~~	8	8	3	2			RUN ALSO MS/MSD
	12/19	0850		✓	05SD03 0006	10	4	4	1	1			
		0910		✓	05SD04 0006	10	4	4	1	1			
		0940		✓	05SD02 0006	10	4	4	1	1			
		1030		✓	05SD01 0006	10	4	4	1	1			
↓	↓	0000		✓	FD12190002	10	4	4	1	1			DUP OF 05SD02 0006

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	12/19/00 1910	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 6243997199824	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD SWMU 5

00348

PROJECT NO.:	SITE NAME:
CTO 10 # 7141	NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	DIOXINS/FURANS SOIL	DIOXINS/FURANS WATER						REMARKS
05	12/13	1130		✓	RB 121300 01	2		2						DPT CUTTING SHOE
↓	↓	0830		✓	05SB04 0002	1	1							
↓	↓	0920		✓	05SB04 0204	1	1							
↓	↓	1022		✓	05SB08 0002	1	1							
~~04~~ 05	12/18	0700		✓	RB 121800 01	2		2						DISPOSABLE PLASTIC TRUCKLE
05	↓	1620		✓	05SD05 0006	2	2							RUN ALSO MS/MSD
↓	↓	1610		✓	05SW05 01	2		2						
↓	12/19	0845		✓	05SW 03 01	2		2						
↓	↓	0900		✓	05SW04 01	2		2						
↓	↓	0850		✓	05SD 03 0006	1	1							
↓	↓	0910		✓	05SD 04 0006	1	1							
↓	↓	1935		✓	05SW 02 01	4 ~~6~~	1 ~~2~~	4 ~~6~~						RUN ALSO MS/MSD
↓	↓	1025		✓	05SW01 01	2		2						
↓	↓	0000		✓	FD 121900 01	2		2						DUP OF 05SW02 01

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	12-19-00 1910	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243997198 46 TRIANGLE LAB	

Order No. 7044

CHAIN OF CUSTODY RECORD

00371

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	DIOXINS/FURANS SOIL	DIOXINS/FURANS WATER						REMARKS
05	12/19	0000		✓	FD 12190002	1	1							DUP OF 05SD020006
↓	↓	0945		✓	05SD020006	1	1							
↓	↓	1030		✓	05SD010006	1	1							

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[illegible]	12.19.00 1810	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9846 TRIANGLE LAB	

Order No. 70440 (0693)

00374

CHAIN OF CUSTODY RECORD GW

PROJECT NO.: CTO 10 #7141

SITE NAME: NCWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APPIX VOC 8015	APPIX VOC 8260	APPIX SVOC	APPIX TICS	APP IX PEST PCB	APP IX METALS NO CYANIDE	CYANIDE	REMARKS
05	1/5	1440		✓	05GW01 01		3	3	3	2	2	1	1	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
	1-5-01 1450	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB #8243 9971 9880	

Order No. 704

CHAIN OF CUSTODY RECORD SWMU 5

00377

PROJECT NO.: CTO 10 # 7141	SITE NAME: NSWC CRANE
SAMPLERS (SIGNATURE): [signature]	

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP IX VOC 8015	APP IX VOC 8260	APP IX SVOC SIM	APP IX HERB	APP IX PEST PCB	APP IX METALS, Cr, Fe, Mg, Mn, K, Na	CYANIDE	REMARKS
05	1/6	1415		✓	05GWT0201	33	7	7	7	4	4	2	2	RUN ALSO MS/MSD
FD	↓	0000		✓	FD 010601 02	15	3	3	3	2	2	1	1	DUP OF 05GWT0201
05	1/7	1000		✓	05GWT0301	15	3	3	3	2	2	1	1	
05	↓	1430		✓	05GW1501	15	3	3	3	2	2	1	1	
05	↓	1830		✓	05GW0601	15	3	3	3	2	2	1	1	
05	1/8	0907		✓	05GWT0101	15	3	3	3	2	2	1	1	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	1-8-01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	**DATE / TIME:**	**RECEIVED BY (SIGNATURE):**	**RELINQUISHED BY (SIGNATURE):**	**DATE / TIME:**	**RECEIVED BY(SIGNATURE):**
RELINQUISHED BY (SIGNATURE):	**DATE / TIME:**	**RECEIVED FOR LABORATORY BY (SIGNATURE):**	**DATE / TIME:**	**REMARKS:** AB # 8243 9972 0130	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD SWMU 5

00375

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	DIOXINS/FURANS						REMARKS
RB	1/5	1330		✓	RB010501 01	2	2						TEFLON/SILICONE TUBING
05	1/5	1440		✓	05GW0101	2	2						
05	1/6	1415		✓	05GWT0201	4	4						RUN ALSO MS/MSD
FD	1/6	0000		✓	KS ~~05~~ FD010601 02	2	2						DUP OF 05GWT0201
05	1/7	1000		✓	05GWT0301	2	2						
05	1/7	1430		✓	05GW1501	2	2						
05	1/7	1830		✓	05GW0601	2	2						
05	1/8	0967		✓	05GWT0101	2	2						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[illegible]	1.8.4 1630	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB-# 8243 9972 0118	

Order No. 704

CHAIN OF CUSTODY RECORD

00380

PROJECT NO.: CTO 10# 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP IX VOC 8015	APP IX VOC 8260	APP IX SVOC SIM	APP IX METALS	APP IX PCST/PCB	APP IX METALS Ca Mg Na K	CYANIDE	EXPLOSIVES	NITRATE/NITRITE	APP IX VOC	REMARKS
RB	1/8	1520		✓	RB01080101	18	3	3	3	2	2	1	1	2	1		BLADDER PUMP TUBING
TB	↓	1710		✓	TB01080101	3	—	—	—	—	—	—	—	—	—	3	
05	1/9	0932		✓	05GW0901	15	3	3	3	2	2	1	1				
1	1	0000		✓	FD010901 01	15	3	3	3	2	2	1	1				DUP OF 05GW0901
05	1/9	1532		✓	05GW0401	15	3	3	3	2	2	1	1				

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	1-9-00 1800	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORAT RY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9972 0092	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD

00381

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	DIOXINS/FURANS						REMARKS
RB	1/8	1520		✓	RB01080101	2	2						BLADDER PUMP + TUBING
05	1/9	0932		✓	05GW0901	2	2						
FD	1	0000		✓	FD01090101	2	2						DUP OF 05GW0901
05	1/9	1532		✓	05GW0401	2	2						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[illegible]	1-9-01 1302	FED. EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9972 0107	

Order No. 704[illegible]

00384

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 10 #7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	Appix VOC 8015	Appix VOC 8260	Appix SVOC/SIM	Appix HERB	Appix PEST/PCB	Appix METALS, Cyn, Hg, Mn, K, Na	CYANIDE	Appii VOC	REMARKS
TB	1/17	0710		✓	TB01170101	3	—	—	—	—	—	—	—	3	
05	↓	1515		✓	05GW1601	15	3	3	3	2	2	1	1	—	
↓	1/18	0942		✓	05GW1901	15	3	3	3	2	2	1	1	—	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	1-18-01 1600	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9972 0060	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD

00391

PROJECT NO.: CTO 10 #7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APPIX VOC 8015	APPIX VOC 8260	APPIX SVOC	APPIX HERB	APPIX PEST/PCB	APPIX METALS (Hg, Mn, K, Na)	CYANIDE	APPIX VOC	APPIX DISSOLVED METALS (Ca, Fe, Mn)	REMARKS
5	1/19	1230		✓	TB01180101	3	—	—	—	—	—	—	—	3		
5	1/19	1535		✓	05GW0301	13	3	3	3	2	2					
5	1/19	0700		✓	05GW0301	3					~~2~~	1	1		1	
5	1/19	1242		✓	05GW0201	15	3	3	3	2	2	1	1			

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	1-19-01 1800	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9972 0048 DISSOLVED METALS ID ENDS WITH "F"	

Order No. 704

CHAIN OF CUSTODY RECORD SWMU 5

00392

PROJECT NO.: GTO 10 #7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APPIX VOC 8015	APPIX VOC 8260	APPIX SVOC SIM	APPIX HERBS	APPIX PEST/PCB	APPIX METALS Mg, Mn, K, Na	APPIX DIS. METALS Mg, Mn, K, Na	CYANIDE	APPIX VOC	REMARKS
TB	1/20	0700		✓	TB0120010 1	3	—	—	—	—	—	—	—	—	3	
05	↓	0800		✓	05GW1301	13	3	3	3	2	2					
05	↓	1735		✓	05GW1301	3						1	1	1		
05	↓	1215		✓	05GW0701	KB ~~16~~ 15	3	3	3	2	2	1	KB ~~1~~	1		
05	↓	1540		✓	05GW0801	KB ~~16~~ 15	3	3	3	2	2	1		1		

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	1.22.01 1610	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9890 DISSOLVED METALS TO END WITH "E"	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD

00385

PROJECT NO.: CTO 10 #7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	DIOXINS FURANS						REMARKS
05	1/17	1515		✓	05GW1601	2	2						
05	1/18	0942		✓	05GW1401	2	2						
05	1/19	0700		✓	05GW0301	2	2						
05	1/19	1242		✓	05GW0201	2	2						
05	1/20	~~0660~~ KS	1215	✓	05GW0701	2	2						
05	↓	1735		✓	05GW1301	2	2						
05	↓	1540		✓	05GW0801	2	2						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	1-22-01 1620	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LAB RAT RY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9971 9905	

Order No. 70440

CHAIN OF CUSTODY RECORD

02332

PROJECT NO.:	SITE NAME:
CTO 10 # 7141	NSWC CRANE
SAMPLERS (SIGNATURE):	

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	DIOXINS/FURANS						REMARKS
05	2/2	1625		✓	05GW03 01	2	2						
													RESAMPLE FOR
													DIOXINS/FURANS ONLY
													BROKEN IN SHIPMENT
													1ST SAMPLE DATE 1.18.01

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	2.5.01 1100	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9950	

Order No. 70440 (0693)

APPENDIX B.4.3

SWMU 9
CHAIN OF CUSTODY RECORDS

02319

CHAIN OF CUSTODY RECORD SWMU 9

PROJECT NO.: CTO 10 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	App IX VOC 8260 Extracts	App IX VOC 8015 Extracts	App IX SVOC, 8270 Pesticides/PCB 8081	App IX metals, Cn, Hg, Sn, Fe, Mn, Zn, Mg, Na, K	CEC, pH, TOC		REMARKS
09	11/30/00	1115		✓	09SB010102	8	4	4					
		1115		✓	09SB010002	2			1	1			
		1120		✓	09SB010810	10	4	4	1	1	*		* COLLECT FROM METALS JAR
		1249		✓	09SB020102	8	4	4					
		1249		✓	09SB020002	2			1	1			
		1300		✓	09SB020606 ▲	10	4	4	1	1			
		1315		✓	09SB030102	16	8	8					MS/MSD ▲
		1315		✓	09SB030002	5			3	2			MS/MSD 15SB02
		1355		✓	09SB030406 ▲	10	4	4	1	1	*		* COLLECT FROM METALS JAR
		1433		✓	09SB100102	8	4	4					
		1433		✓	09SB100002	2			1	1			
		1515		✓	09SB100204	10	4	4	1	1	*		* COLLECT FROM METALS JAR
		0000		✓	FD11300002	10	4	4	1	1			DUP ON 09SB030002/0102
		0000		✓	FD11300003	10	4	4	1	1			DUP ON 09SB020606

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
Robert Pfaltzgraff	11-30-00 1850	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: FEDEX AB# 8243 9971 9732	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD SW MU 09

00342

PROJECT NO.:	SITE NAME:
CTO 10 # 7141	NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP.IX VOC	APP.IX VOC 40 ML VIAL	APP.IX VOC E.260	APP.IX VOC EOIS	APP.IX SVOC SIM	APP.IX PEST/PCB	APP.IX HERB	APP.IX T. METALS Ca, Fe, Mn, Na, K	CYANIDE	REMARKS
TB	12/4	0715		✓	TB 120400 01	3	3									
RB	↓	1300		✓	RB 120400 01	15		3	3	3	2	2	1	1		DPT CUTTINGS SHOE

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	12.4.00 1550	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9765	

Order No. 70[illegible]3)

CHAIN OF CUSTODY RECORD SWMU 8 9

00340

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APPIX VOC 8260 ENCORE	APPIX VOC 8015 ENCORE	APPIX SVOC PESTICIDES SIM METALS	APPIX METALS CN NO3 NH3 NO2 CN	CEC, pH, TOC		REMARKS
09	12/4	0830		✓	09SB04 0102	8	4	4					
↓	↓	0830		✓	09SB04 0002	2			1	1	*		ADDED TO METALS
		0000		✓	FD12040001	8	4	4					DUP OF 09SB04-0002
		0000		✓	FD 12040001	2			1	1			↓
		0840		✓	09SB04 0406	10	4	4	1	1			
		0920		✓	09SB09 0102	8	4	4					
		0920		✓	09SB09 0002	2			1	1			
		0950		✓	09SB09 0810	21	8	8	3	2	*		ADDED TO METALS. RUN ALSO MS/MSD
		1026		✓	09SB11 0102	8	4	4					
		1026		✓	09SB11 0002	2			1	1			
		1040		✓	09SB11 0406	10	4	4	1	1			
		1250		✓	09SB07 0102	8	4	4					
		1250		✓	09SB07 0002	2			1	1	*		ADDED TO METALS
↓	↓	1305		✓	09SB07 0709 12.7.00 KS	10	4	4	1	1			

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	12.9.00 1050	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9971 9765	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD SWMU 9

00341

PROJECT NO.:	SITE NAME:
CTO 10 #7141	NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP IX VOC	8260 EIN CODE	APP. IX VOC	8015 EIN CODE	MA. IX SVOC/PIN, HERB.	REGTRB	APP. IX METALS, CYS,	Na MN K Na CN	CEC, PH, TOC	REMARKS
09	12/4	1330		✓	09SB06 0102	8	4	4								
↓	↓	1330		✓	09SB06 0002	2			1	1						
↓	↓	1340		✓	09SB06 0810	10	4	4	1	1						
↓	↓	1410		✓	09SB05 0102	8	4	4								
↓	↓	1410		✓	09SB05 0002	2			1	1		*				ADDED TO METALS
↓	↓	1500		✓	09SB05 0406	10	4	4	1	1						
					12-7-00											

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[illegible]	12.4.00 1850	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9971 9765	

Order No. 70[illegible]3)

CHAIN OF CUSTODY RECORD

00343

PROJECT NO.: CTO 10# 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP IX VOC 40ml VIAL	EXPLOSIVES	APP IX T. METALS + Cr, Fe, Mn, Ni, K, Al	CYANIDE			REMARKS
TB	12/5/00	0710		✓	TB12050001	3	3						
RB	↓	1530		✓	RB12050001	4		2	1	1			OPT CUTTING SHOE

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	12.5.00 1850	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED F R LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9776	

Order No. 70440 (0693)

00344

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 10 47141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): Robert Balkrow

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP IX VOC 8260	APP IX VOC 8015	APP IX SVOC, SIM	APP IX METALS, Fe	CEC, OH, TOC		REMARKS
09	12/5/00	0833			095B080102	8	4	4					
↓	↓	0833			095B080002	2			1	1			
↓	↓	0845			095B080406		4	4	1	1	*		Collect From METALS

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[illegible]	12-5-00 1850	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9971 9776	

Order No. 70[illegible])

CHAIN OF CUSTODY RECORD

SW

00350

PROJECT NO.: CTO 10 # 714

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APPIX VOC 8260	APPIX VOC 8015	APPIX SVOC SIM	APPIX HERB	APPIX PEST PCB	APPIX METALS, CN, Hg, Na, K, Mg, Mn, Fe	APPIX DIS. METALS CA, Fe, Mg, Mn, K, Na	CYANIDE	TSS	REMARKS
09	12/13	1520		✓	09 SW 04 01	17	3	3	3	2	2	1	1	1	1	
		1610		✓	09 SW 03 01	16	3	3	2	2	2	1	1	1	1	SHORT ONE SVOC BT.
↓	↓	0000		✓	FD 121300 01	17	3	3	3	2	2	1	1	1	1	DUP OF 09SW04 01

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	12-13-00 1640	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB II 8243 9972 0221	

DISSOLVED METALS END WITH "F"
HARDNESS ON TOTAL ONLY

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD SD 02325

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APPIX VOC 8260	APPIX VOC 8015	APPIX SVOC/SIM HCLB, PESTICIDES	APPIX METALS: Ca, TOC Fe, Mg, Mn, K, Na, CN			REMARKS
09	12/13	1530		✓	09 SD04 0006	10	4	4	1	1			
↓	↓	1615		✓	09 SD03 0006	10	4	4	1	1			
↓	↓	0000		✓	KS ~~09~~ FD 12130002	10	4	4	1	1			DUP of 09SD04 0006

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
	12-13-00 1940	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 9243 9972 0221	

Order No. 704

HARDNESS ON TOTAL ONLY

CHAIN OF CUSTODY RECORD QA

00354

PROJECT NO.: CTO 10 #7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APPIX VOC	APPIX VOC 8260	APPIX VOC 8015	APPIX SVOC SIM	APPIX METALS, Ca, Na, K, Fe, Mg, Mn	APPIX DISS. METALS Ca, Na, K, Fe, Mg, Mn	CYANIDE	APPIX HERB	APPIX PESTICIDES	REMARKS
TB	12/14	0720		✓	TB 121400 01	3	3									
RB	↓	1600		✓	RB 121400 01	16		3	3	3	1	1	1	2	2	STAINLESS STEEL TROWEL

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	12.14.00 1850	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 6243 9972 0200 USE FILTERED RB AS BATCH BLANK FOR FILTERS & TUBING	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD SW

00352

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP IX VOC 8260	APP IX VOC 8015	APP IX SVOC/SIM	APP IX HERB.	APP IX PEST/PCBS	APP IX METALS, Ca, Fe, Mg, Mn, K, Na, HNO3 DISSOLVED	APP IX METALS Ca, Mg, Mn, K, Na	CYANIDE	TSS	REMARKS
09	12/14	0845		✓	09SW0501	36	7	7	7	4	4	2	2	2	1	RUN ALSO MS/MSD
↓	↓	1345		✓	09SW0201	17	3	3	3	2	2	1	1	1	1	
					~~09SW~~ KS											

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	12.14.00 1800	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LAB RAT RY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 82439972 0200 DISSOLVED METALS ID ENDS WITH "F"	

Order No. 7044

CHAIN OF CUSTODY RECORD SD

00353

PROJECT NO.:	SITE NAME:
CTO 10 # 7141	NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP.IX VOC 8260	APP.IX VOC 8015	APPIX SVOC/SIM HERB PEST/PCBS	APP.IX METALS (+) TOC Fe, Mn, Na, K, Mg CN			REMARKS
09	12/14	0915		✓	09SD05 0006	21	8	8	3	2			RUN ALSO MS/MSD
↓	↓	1355		✓	09SD02 0006	10	4	4	1	1			

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	12.14.00 1850	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9972 0200	

Order No. 70440 (0693)

00356

CHAIN OF CUSTODY RECORD

SW

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APPIX VOC 8260	APPIX VOC 8015	APPIX SVOC SIMX	APPIX HERB.	APPIX PEST/PCB	APPIX METALS, Cu, Fe, Mg, Mn, K, Na, HARD.	APPIX DISS. METALS Ca, Na, Mn, K, Na, Fe	CYANIDE	TSS	REMARKS
09	12/15	0855		✓	09SW0101	17	3	3	3	2	2	1	1	1	1	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	12.15.00 1850	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9971 9802 KS 13 DISSOLVED ID END WITH "F"	

Order No. 70440

CHAIN OF CUSTODY RECORD SD

00357

PROJECT NO.: CTO 10 # 7141	SITE NAME: NSWC CRANE												
SAMPLERS (SIGNATURE): [signature]													
STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP. IX VOC 8260	APP. IX VOC 8015	APP IX SVOC/SITE, 1,4,6,8 PEST/PCBs	APP IX METALS, CN, TOC, Fe, Mn, Ni, K, Na, CN			REMARKS
09	12/15	0855		✓	09SD010006	10	4	4	1	1			

RELINQUISHED BY (SIGNATURE): [signature]	DATE / TIME: 12-15-00 1850	RECEIVED BY(SIGNATURE): FEDEX	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243997198213 KS	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD SWMU 9

02329

PROJECT NO.:	SITE NAME:
CTO 10 # 7141	NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP.IX VOC 8260	APP.IX VOC 8015	APP.IX SVOC SIM	APP.IX HERB.	APP.IX PEST/PCB	APP.IX METALS Ca, Fe, Mg, Mn, K, Na	CYANIDE	REMARKS
09	1/23	1410		✓	09 GWTP0601	15	3	3	3	2	2	1	1	
09	1/23	1430		✓	09 GWTP0501	15	3	3	3	2	2	1	1	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	1.24.01 1115	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9938	

Order No. 704

CHAIN OF CUSTODY RECORD SWMU 9

02330

PROJECT NO.: CTO 10 # 7141	SITE NAME: NSWC CRANE
SAMPLERS (SIGNATURE): [signature]	

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP. IX VOC 8260	APP. IX VOC 8015	APP. IX SVOC SIM	APP. IX HERB.	APP. IX PEST/PCBs	APP. IX METALS Mg, Mn, K, Na, Co, Fe	APP. IX DIS. METALS Mg, Mn, K, Na, Co, Fe	CYANIDE	APP. IX VOC	REMARKS
TB	1/29	1630		✓	TB 012901 01	3	—	—	—	—	—	—	—	—	3	
RB	↓	1645		✓	RB 012901 01	15	3	3	3	2	2	1		1		
09	1/30	0950		✓	09GWT0501	33	7	7	7	4	4	2		2		RUN ALSO MS/MSD
FD		0000		✓	FD 013001 01	15	3	3	3	2	2	1		1		DUP OF: 09GWT0501
09		1220		✓	09GW0401	15	3	3	3	2	2	1		1		
09	↓	1640		✓	09 GW02 01	15	3	3	3	2	2	1		1		
FD	1/31	0000		✓	FD 013101 01	15	3	3	3	2	2	1		1		DUP OF: 09GW1001
09	↓	0755		✓	09GWT0101	15	3	3	3	2	2	1		1		
09	↓	0930		✓	09GW1001	15	3	3	3	2	2	1		1		

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	1-31-01 1645	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9972 0026	

Order No. 70440 (0693)

SWMU 4

CHAIN OF CUSTODY RECORD

02331

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP IX VOC 8260	APP IX VOC 8015	APP IX SVOC SIM	APP IX HERBS.	APP IX PEST/PCB	APP IX METALS Ca, Fe, Mg, Mn, K, Na	APP IX DIS. METALS Ca, Fe, Mg, Mn, K, Na	CYANIDE	APP IX VOC	REMARKS
TB	1/31	1420		✓	TB 013101 01	3	—	—	—	—	—	—	—	—	3	
09	↓	1430		✓	09GW07 01	15	3	3	3	2	2	1		1		
09	2/1	1125		✓	09GW12 01	15	3	3	3	2	2	1		1		
09	↓	1655		✓	09GW03 01	15	3	3	3	2	2	1		1		
09	↓	1720		✓	09GWT03 01	15	3	3	3	2	2	1		1		
09	2/2	0900		✓	09GWT02 01	15	3	3	3	2	2	1		1		
09	↓	0940		✓	09GWT04 01	15	3	3	3	2	2	1		1		

CTO 10 FILE

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	2.2.01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9772 0004	

Order No. 7044

APPENDIX B.4.4

SWMU 10
CHAIN OF CUSTODY RECORDS

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 10 #7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): Robert Bolhous, [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	App IX metals, Ca, Fe, Mg, Mn, K, Na, Hg, Se		Explosives 8330	CEC, pH, TOC			REMARKS
10	12/5/00	0940		✓	10SB010002	2	1	1					
		0950		✓	10SB010810	2	1	1	*				* ADDED TO METALS
		1015		✓	10SB040002	2	1	1					
		1020		✓	10SB040305	2	1	1	*				* ADDED TO METALS
		1047		✓	10SB050002	2	1	1					
		1100		✓	10SB050406	2	1	1					
		1115		✓	10SB060002	2	1	1					
		1150		✓	10SB060507	2	1	1	*				* ADDED TO METALS
		1315		✓	10SB070002	2	1	1					
		1320		✓	10SB070406	2	1	1					
		1407		✓	10SB020002	2	1	1	*				* ADDED TO METALS
		1415		✓	10SB020709	2	1	1					
		1444		✓	10SB090002	2	1	1					
		1500		✓	10SB090204	2	1	1	*				* ADDED TO METALS
		0000		✓	FD120500001	2	1	1					DUP 10SB010810

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	12-5-00 1850	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9971 9776	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD SWMU 10

00347

PROJECT NO.:	SITE NAME:
CTO 10 #7141	NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	Explosives SOC	Arsenic Metals Vapor	Explosives, Arsenic Metals SOC	CEC (pH) TOC			REMARKS
10	12/14/00	0535		✓	10SB030002	5		2	3				RUN MS/MSD
		0915		✓	10SB080002	2	1	1		*			COLLECT FROM METALS JAR
		0938		✓	10SB080406	2	1	1					
		1302		✓	10SB030810	2		1	1				
		1435		✓	10SB100002	2	1	1					
		1515		✓	10SB100608	2	1	1		*			COLLECT FROM METALS JAR
↓	↓	0000		✓	FD12120001	2		1	1				DUP ON 10SB030002

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
Robert Ballrose	12-13-00 1040	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9972 0221	

Order No. 70440

CHAIN OF CUSTODY RECORD SW

00364

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	EXPLOSIVES	APP. IX METALS, Ca, Fe, Mn, Mg, K, Na	APP. IX DIS. METALS, Ca, Fe, Mn, Mg, K, Na	CYANIDE	TSS	NO3/NO2 H2SO4	REMARKS
10	12/16	0835		✓	10SW0601	13	4	2	2	2	1	2	RUN ALSO MS/MSD
		1530		✓	RB121600 01 *	2	2						DISPOSABLE PLASTIC TROWEL
		0000		✓	FD121600 01	6	2	1	1	1	—	1	DUP OF - 10SW0601
		1022		✓	10SW05 01	7	2	1	1	1	1	1	
		1039		✓	10SW03 01	7	2	1	1	1	1	1	
		1100		✓	10SW02 01	7	2	1	1	1	1	1	
		1330		✓	10SW01 01	7	2	1	1	1	1	1	
		1405		✓	10SW04 01	7	2	1	1	1	1	1	
		1420		✓	10SW07 01	7	2	1	1	1	1	1	
		1435		✓	10SW08 01	7	2	1	1	1	1	1	
	12/17	0840		✓	10SW10 01	7	2	1	1	1	1	1	
		0955		✓	10SW12 01	7	2	1	1	1	1	1	
		1015		✓	10SW11 01	7	2	1	1	1	1	1	
		0000		✓	FD121700 01	7	2	1	1	1	1	1	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	12-18-00 1600	FEDEX			
RELINQUISHED BY (SIGNATURE):	**DATE / TIME:**	**RECEIVED BY (SIGNATURE):**	**RELINQUISHED BY (SIGNATURE):**	**DATE / TIME:**	**RECEIVED BY(SIGNATURE):**
RELINQUISHED BY (SIGNATURE):	**DATE / TIME:**	**RECEIVED FOR LABORATORY BY (SIGNATURE):**	**DATE / TIME:**	**REMARKS:** AB# 8243 9971 9802	
				ALL DIS. METALS IDs END WITH "F"	

Order No. 70440 (0693)

* ALL OTHER PARAMETERS COVERED WITH RB11280001
SEE COC # 02320

00365

CHAIN OF CUSTODY RECORD SW

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	EXPLOSIVES	App. IX METALS (Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, Sn, V, Zn)	App. IX METALS - DISSOLVED (Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, Sn, V, Zn)	CYANIDE	TSS	NO_3/NO_2 H_2SO_4	REMARKS
10	12/19	1248		✓	10SW0901	7	2	1	1	1	1	1	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	12.18.00 1600	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9802 ALL DIS. METALS ID ENDS WITH 'F'	

Order No. 70440

00362

CHAIN OF CUSTODY RECORD SD

PROJECT NO.:	SITE NAME:
CTO 10 # 7141	NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APP. IX METALS, Cd, Fe, Mn, Mg, K, Na, CN, TOC	EXPLOSIVES						REMARKS
10	12/16	0855		✓	10SD06 0006	5	2	3						RUN ALSO MS/MSD
↓	↓	1025		✓	10 SD 05 0006	2	1	1						
		1040		✓	10 SD 03 0006	2	1	1						
		0000		✓	FD121600 02	2	1	1						DUP OF - 10SD06 0006
		1104		✓	10SD 02 0006	2	1	1						
		1335		✓	10SD 01 0006	2	1	1						
		1415		✓	10SD 04 0006	2	1	1						
		1425		✓	10 SD 07 0006	2	1	1						
	↓	1440		✓	10 SD 08 0006	2	1	1						
	12/17	0845		✓	10 SD 10 0006	2	1	1						
		1005		✓	10 SD 12 0006	2	1	1						
		1020		✓	10 SD 11 0006	2	1	1						
		1255		✓	10 SD 09 0006	2	1	1						
↓	↓	0000		✓	FD 12170002	2	1	1						DUP OF - 10SD12 0006

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	12-18-00 1600	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9802	

Order No. 70440 (0693)

00378

CHAIN OF CUSTODY RECORD

SWMU 10

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	EXPLOSIVES	APPIX METALS Mg, Mn, K, Na	CYANIDE	NITRITE/ NITRATE	APPIX VOC & DIS	APPIX VOC 8260	REMARKS
10	1/6	1030		✓	10GW0201	5	2	1	1	1			
↓	↓	1430		✓	10GWC37P301	5	2	1	1	1			
↓	↓	0000		✓	FD010601 01	5	2	1	1	1			DUP OF 10GW0201
10	1/8	1045		✓	10GWC2101	11	2	1	1	1	3	3	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	1.8.01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9972 0130	

Order No. 7044

CHAIN OF CUSTODY RECORD UMBC - EXPLOSIVES

00379

PROJECT NO.: CTO 10# 7141	SITE NAME: NSWC CRANE														
SAMPLERS (SIGNATURE): [signature]						NO. OF CON-TAINERS	EXPLOSIVES 4 mL VIAL						REMARKS
STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION								
10	1/6	1030		✓	10GW0201	2	2						
	↓	1430		✓	10GWC37P301	2	2						
	↓	2000		✓	FD01060101	2	2						DUP OF 10GW0201
	1/8	1045		✓	10GWC3101	2	2						
	1/9	1020		✓	10GWC4101	2	2						
	↓	1600		✓	10GWC41P301	2	2						

RELINQUISHED BY (SIGNATURE): [signature]	DATE / TIME: 1/9/00 1900	RECEIVED BY(SIGNATURE): FEDEX	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9972 0129	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD

00332

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	EXPLOSIVES	APP IX METALS & Mn & Na	CYANIDE	NITRATE/NITRITE	APPIX VOC 8015	APPIX VOC 8260	REMARKS
10	1/9	1220		✓	10GWC4101	11	2	1	1	1	3	3	
	↓	1600		✓	10GWC4IP301	11	2	1	1	1	3	3	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[illegible]	1.9.01 1800	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9972 0092	

Order No. 704[illegible]

00386

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 10 #7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	EXPLOSIVES	App IX METALS, Ca, Fe, Mg, Mn, K, Na	CYANIDE	NITRITE/NITRATE	App IX VOC 8015	App IX VOC 8260	REMARKS
10	1/17	1835		✓	10GWC2601	6					3	3	
↓	1/18	1150		✓	10GWC5201	11	2	1	1	1	3	3	
RB	↓	1300		✓	RB01180101	11	2	1	1	1	3	3	TEFLON BLADDER

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
Robert Paul Renne	1-18-01 1600	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9972 0060	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD

00389

PROJECT NO.: CTO #10 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	EXPLOSIVES	APPIX VOCS (EPA 8260)	CYANIDE	NITRATE/NITRITE	APPIX VOC 8015	APPIX VOC 8260	REMARKS
10	1/19	1315		✓	10GWC3701	5	2	1	1	1	—	—	
RB	1/19	1530		✓	RB011901 01	5	2	1	1	1	—	—	PUMP, PE BLADDER & TUBING
10	1/19	1645		✓	10GW0301	11	2	1	1	1	3	3	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	1-19-01 1900	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9972 0048	

Order No. 7044

SWMU 10

02327

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 10 # 7141

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	EXPLOSIVES	APPIX METALS, Co, Fe, Mn, Mn, K, Na	CYANIDE	NITRITE/NITRATE	APPIX VOC 8015	APPIX VOC 8260	REMARKS
10	1/20	1210		✓	10GWC3301	5	2	1	1	1			
10	1/20	1450		✓	10GWC33P201	5	2	1	1	1			
10	1/21	1025		✓	10GW1601	5	2	1	1	1			
10	↓	1430		✓	10GWC5501	24	4	2	2	2	7	7	RUN ALSO MS/MSD
10	↓	1135		✓	10GWC3501	5	2	1	1	1			
10	↓	1620		✓	10GWC35P201	5	2	1	1	1			
FD	↓	0000		✓	FD0121010 1	11	2	1	1	1	3	3	DUP. OF 10GWC5501
10	1/22	0915		✓	10GWC55P201	11	2	1	1	1	3	3	
10	↓	1020		✓	10GWC31P301	11	2	1	1	1	3	3	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	1.22.01 1620	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9890	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD SWMU 10

02328

PROJECT NO.: CTO 10 11 7141	SITE NAME: NSWC CRANE
SAMPLERS (SIGNATURE): [signature]	

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	EXPLOSIVES	APPIX METALS Fe, Mn, Mn, Cu, Na	CYANIDE	NITRITE/NITRATE	APPIX VOC 8015	APPIX VOC 8260	APPIX VOC 8260	APPIX DIS. METALS Cu, Fe, Mn, Mn, Na	REMARKS
TB	1/22	1450		✓	TB012201 01	3	—	—	—	—	—	—	3		
10	1/22	1740		✓	10GWC26P301	6					3	3			
10	1/23	0945		✓	10GW1701	5	2	1	1	1					
10	1/24	0755		✓	10GWC5701	6	2	1	1	1				1	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	1/24·01 1115	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 9971 9938	

Order No. 704400 (3)

UMBC - EXPLOSIVES

CHAIN OF CUSTODY RECORD

00388

PROJECT NO.:	SITE NAME:
CTO 10 # 7141	NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	EXPLOSIVES 4000 VOA						REMARKS
10	1/18	1115		✓	10GW C5201	2	2						
10	1/19	1315		✓	10 GW C37 01	2	2						
10	1/18	1645		✓	10 GW 03 01	2	2						
10	1/20	1210		✓	10 GW C33 01	2	2						
10	1/20	1450		✓	10GW C33P2 01	2	2						
10	1/21	1025		✓	10 GW 16 01	2	2						
10	↓	1430		✓	10 GW C55 01	2	2						
10	↓	1135		✓	10GW C35 01	2	2						
10	↓	1620		✓	10GW C35P2 01	2	2						
10	1/22	0915		✓	10GW C55P2 01	2	2						
10	↓	1020		✓	10GW C31P3 01	2	2						
10	1/23	0945		✓	10 GW 17 01	2	2						
10	1/24	0755		✓	10 GW C57 01	2	2						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[illegible]	1.24.01 1115	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8243 9971 9916	

Order No. 70440 (0693)

APPENDIX B.5

SWMUs 4, 5, 9, AND 10
MONITORING WELL INSPECTION SHEETS

MONITORING WELL INSPECTION SHEET
NSWC Crane, CTO 10, | b # N7141

W ll ID: 04-01

Time: 1000 **Date:** 11/11/00 **Inspector's Name:** Bob Balkwill

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NO TAG ID PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		SLIGHTLY OVERGROWN
Well seal	Condition of…	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—		NA
PVC Riser	Condition of riser & survey reference point	✓		

C mments:

Signature(s) Robert Balkwill

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, Job # N7141

Well ID: 04-02

Time: 1530 **Date:** 11/16/00 **Inspector's Name:** BOB BALLOVES

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NO TAG I.D PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of…	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—	—	NA
PVC Riser	Condition of riser & survey reference point		✓	NO REFERENCE POINT

Comments:

Signature(s) Robert Ballovs

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, job # N7141

Well ID: OU-03

Time: 0857 **Date:** 11/17/00 **Inspector's Name:** BOB BAKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NO TAG. ID. PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition		✓	NO PAD
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	N/A
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) Robert Bakovec

Note: S= Satisfactory, U= Unsatisfactory
Check on , if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, J b # N7141

Well ID: 04-04

Time: 0856 **Date:** 12/01/00 **Inspector's Name:** BOB BALKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition		✓	NO PAD. MARKE OVERGROWN
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—		N.A
PVC Riser	Condition of riser & survey reference point	✓		

Comm nts:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, j b # N7141

Well ID: D4-05

Time: 0830 **Date:** 11/17/00 **Inspector's Name:** Bob Balkovec

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	No written on Riser
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition		✓	No Pad
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point		✓	No Reference Point

Comm nts:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, If unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, Job # N7141

W ll ID: 04-06

Time: 1425 **Date:** 11/16/00 **Inspector's Name:** Bob Balkovec

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NO TAG 2-D. PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		SLIGHTLY OVERGROWN
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—		NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, J b # N7141

W ll ID: 65-01

Time: 1428 **Date:** 11/15/00 **Inspector's Name:** BOB BALKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NO TAG. ID PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition		✓	NO PAD
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		BLACK MARK ON TOP OF RISER

C mm nts:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane, CTO 10, Job # N7141

Well ID: 05-07

Time: 1355 **Date:** 12/01/04 **Inspector's Name:** BOB BALKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NO TAG. TO. PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		SLIGHTLY OVERGROWN
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, j b # N7141

Well ID: 05-03

Time: 1343 **Date:** 11/15/00 **Inspector's Name:** Bob Balkovec

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	I.D. PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition		✓	NO PAD
Well seal	Condition of…	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		BLACK MARK ON RISER POSSIBLE SURVEY POINT

Comments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Cran , CTO 10, j b # N7141

Well ID: 05-04

Time: 1235 **Date:** 11/15/00 **Inspector's Name:** Bob Balkovec

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NO TAG. I.D. PAINTED ON RISER
Well security	Condition protective case, cap, lock		✓	BROKEN RISER
Well pad	Concrete or gravel & condition		✓	NO PAD
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point		✓	BROKEN PVC RISER

Comments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check [illegible] unsatisfactory explain

MONITORING WELL INSPECTION SHEET
NSWC Crane, CTO 10, j b # N7141

W ll ID: 05-06

Tim : 0910 Date: 11/16/00 Inspector's Name: Bob Balkovec

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	WELL NOT MARKED
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition		✓	NO PAD
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

C mments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane, CTO 10, job # N7141

Well ID: 05-07

Tim : 1039 **Date:** 11/16/00 **Inspector's Name:** Bob Balkovec

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	WELL I.D. WRITTEN ON RISER
Well security	Condition protective case, cap, lock	✓		LOCK RUSTED SHUT - REPLACED
Well pad	Concrete or gravel & condition		✓	NO PAD
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point		✓	NO REFERENCE POINT

Comments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane, CTO 10, J b # N7141

W ll ID: 05-08

Time: 1305 Date: 11/16/00 Inspector's Name: BOB BALKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NO TAG I.D. PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition		✓	NO PAD
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—		NA
PVC Riser	Condition of riser & survey reference point		✓	NO REFERENCE POINT

C mments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, If unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, Job # N7141

Well ID: 05-09

Time: 0757 **Date:** 11/16/00 **Inspector's Name:** Bob Balkover

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	I.D. written on riser. *
Well security	Condition protective case, cap, lock		✓	Casing threads cracked
Well pad	Concrete or gravel & condition		✓	No pad
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point		✓	No marking for reference

Comments: * I.D. on riser does not matchup w/ well construction info. or map location.

Signature(s) Robert Balkover

Note: S[illegible]isfactory, U= Unsatisfactory
Check [illegible] unsatisfactory explain

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, J b # N7141

W ll ID: 05-13

Time: 1543 **Date:** 11/15/00 **Inspector's Name:** BOB BALKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NO. TAG ID PATRIOS ON BALLARD.
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition		✓	NO PAD
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point		✓	NO SURVEY REFERENCE POINT

C mments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, J b # N7141

W ll ID: D5-15

Time: 1610 **Date:** 12/01/00 **Inspector's Name:** BOB BALKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NO TAG. I.D PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition		✓	NO PAD
Well seal	Condition of…	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—		NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Cran , CTO 10, Job # N7141

Well ID: 05-16

Time: 1510 Date: _____ Inspector's Name: BOB BALKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NO TAG I.D. PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane, CTO 10, Job # N7141

Well ID: 05-19

Time: 1515 **Date:** 12/01/00 **Inspector's Name:** Bob Balkovec

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	I.D. PAINTED ON RISER. FADED
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		OVERGROWN W/ DEBRIS
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...		—	NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) Robert B. Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Cran , CTO 10,] b # N7141

Well ID: 04-02

Time: 0801 **Date:** 11/15/00 **Inspector's Name:** BOB BALKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	ID WRITTEN ON RISER
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition		✓	NO PAD
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point		✓	NO SURVEY POINT

C mments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, Job # N7141

W ll ID: 09-03

Time: 1048 **Date:** 11/15/00 **Inspector's Name:** BOB BALKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	I.D. PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition		✓	NO PAD
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—		NA
PVC Riser	Condition of riser & survey reference point		✓	NO SURVEY POINT

Comments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, J b # N7141

Well ID: 09-04

Time: 1535 **Date:** 11/14/00 **Inspector's Name:** Bob Balkovec

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition		✓	No Pad.
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—		NA
PVC Riser	Condition of riser & survey reference point		✓	No Survey Point

Comments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, Job # N7141

W ll ID: 09-07

Time: 0857 **Date:** 11/15/00 **Inspector's Name:** BOB BALKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	I.D WRITTEN ON RISER
Well security	Condition protective case, cap, lock		✓	LOCK WAS RUSTED SHUT - REPLACED
Well pad	Concrete or gravel & condition		✓	NO PAD
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point		✓	NO SURVEY POINT

C mments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory xplain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, job # N7141

Well ID: WES-9-10-83

Time: 0832 **Date:** 11/14/00 **Inspector's Name:** B.B. BALLOUTE

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NOT VISIBLY LABELED
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of…	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—	—	NA
PVC Riser	Condition of riser & survey reference point		✓	NONE VISIBLE

Comments:

Signature(s) Robert Ballouite

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

MONITORING WELL INSPECTION SHEET
NSWC Crane, CTO 10, job # N7141

Well ID: 09-12

Time: 1234 **Date:** 12/01/00 **Inspector's Name:** BOB BALKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	I.D. PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		REPLACED LOCK & J-PLUG
Well pad	Concrete or gravel & condition	✓	NA	NO PAD OVERGROWN.
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—		NA
PVC Riser	Condition of riser & survey reference point	✓		

C mments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory xplain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, J b # N7141

Well ID: 4-WTP05

Time: 1437 **Date:** 11/14/00 **Inspector's Name:** BOB BALKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	ID PAINTED ON STEEL-UP
Well security	Condition protective case, cap, lock		✓	MISSING LOCK
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—		NA
PVC Riser	Condition of riser & survey reference point		✓	NO SURVEY ~~POINT~~ POINT

C mments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, If unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, job # N7141

Well ID: 4W7P06

Time: 1240 **Date:** 11/14/00 **Inspector's Name:** BOB BAUKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	I.D. PAINTED ON RISER
Well security	Condition protective case, cap, lock		✓	MISSING -J-PLUG. REPLACED
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of…	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—	—	NA
PVC Riser	Condition of riser & survey reference point		✓	NO SURVEY POINT

Comments:

Signature(s) Robert Baukovec

Note: S[illegible]tisfactory, U= Unsatisfactory
Check[illegible] unsatisfactory explain

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, Job # N7141

Well ID: 10 02

Time: 1015 **Date:** 12.2.00 **Inspector's Name:** R. SIMPSON / B. BALKOVEC

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		PAINTED ON
Well security	Condition protective case, cap, lock	✓		LOCKED J PLUG
Well pad	Concrete or gravel & condition			NONE
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		NO PROTECTIVE CASE, PVC RISER ONLY

Comments:

Signature(s) [illegible]

Note: S= Satisfactory, U= Unsatisfactory
Check on , if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane, CTO 10, Job # N7141

Well ID: 10/3

Time: 1:13 **Date:** 12/3/00 **Inspector's Name:** T. ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		METAL
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	–	–	MUSHROOM / SOME HEAVING
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		GRASSY W/ 3 BUMPER POSTS
Dedicated sampling equipment	Condition of...	–	–	NONE
PVC Riser	Condition of riser & survey reference point	✓		

C mments:

Signature(s) Tony Rojahn

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, Job # N7141

Well ID: 16-16

Time: 1520 **Date:** 1/4/01 **Inspector's Name:** Bob Balkure

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) Robert Balkure

Not : S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfact ry xplain

NSWC Cran
Field Form
Revision: 2
Novemb r, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, Job # N7141

W ll ID: 10-17

Time: 1032 Date: 1/5/01 Inspector's Name: BOB BALKOVICE

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NO TAG I.D. PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

C mments:

Signature(s) Robert Balkovice

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfact ry explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

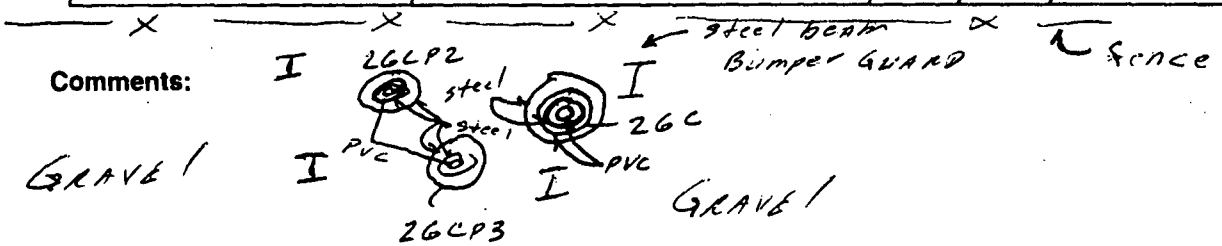
NSWC Crane, CTO 10, J b # N7141

W ll ID: 10C26

Time: 1050 **Date:** 12/2/00 **Inspector's Name:** T. Rojahn

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	–	–	NA SERIES OF 3 stick ups (2) metal (1) PVC & Riser, steel beam bumper guards
Well seal	Condition of…	✓		~~PVC CAP & STEEL PIPE lock down in place~~ TR
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	NA		
PVC Riser	Condition of riser & survey reference point	✓		MARK made 12/2/00

Comments:



Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

PAVED Road

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane, CTO 10, J b # N7141

Well ID: 10C26P3

Time: 0830 **Date:** 12.2.00 **Inspector's Name:** K. SIMPSON

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		CUT V NOTCH

Comments:

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Cran , CTO 10, Job # N7141

Well ID: 10C31

Time: 1440 **Date:** 12.3.00 **Inspector's Name:** SIMPSON/ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

10C31

Signature(s) [illegible]

Note: S= Satisfactory, U= Unsatisfactory
Check on , if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, J b # N7141

Well ID: 10C3123

Time: 1452 **Date:** 12/03/00 **Inspector's Name:** T. ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	NA		GRAVEL / GRASSY
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	–	–	NO
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) [illegible]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, J b # N7141

Well ID: 10 C33

Time: 1235 **Date:** 1/4/01 **Inspector's Name:** Bob Balkovec

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—		NA
PVC Riser	Condition of riser & survey reference point	✓		

C mments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check on , if unsatisfactory explain

NSWC Crane
Fi ld Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, Job # N7141

Well ID: 10C33P3

Time: 1050 **Date:** 7/4/01 **Inspector's Name:** Bob Barnett

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—		NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) Robert Balkwe

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
R vision: 2
N vember, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, j b # N7141

W ll ID: 10C35

Time: 1300 **Date:** 12.3.00 **Inspector's Name:** K. SIMPSON

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) [illegible]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane, CTO 10, Job # N7141

Well ID: 10C35P2

Time: 1515 **Date:** 12-2-00 **Inspector's Name:** R. SIMPSON

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of…	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

C mments:

Signature(s) [illegible]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, j b # N7141

Well ID: 10C37

Time: 1523 **Date:** 12/02/00 **Inspector's Name:** T. Roman

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		Multiple stick ups
Well pad	Concrete or gravel & condition			NO - Grassy Area
Well seal	Condition of...	✓		~~PVC cap w/ stat. lock closure & chain w/ lock~~ TR
Area immediately around well pad	Record any evidence of/or standing water in area of well	✓		Grassy
Dedicated sampling equipment	Condition of...	NA	NA	NO
PVC Riser	Condition of riser & survey reference point	✓		

C mments:

I I

I 10C37 10C37CDL 10C37CPS I

10C37 I I

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, J b # N7141

Well ID: 10C37 P3

Time: 1345 **Date:** 12-2-08 **Inspector's Name:** K. SIMPSON

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) [illegible]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, Job # N7141

Well ID: 10C41

Time: 0810 **Date:** 1/4/01 **Inspector's Name:** Bob Bulkowe

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...		—	NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) Robert Bulkowe

Note: S= Satisfactory, U= Unsatisfactory
Check n , if unsatisfact ry explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, Job # N7141

Well ID: 10C41P3

Time: 1300 **Date:** 12-2-00 **Inspector's Name:** K. SIMPSON

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

C mments:

Signature(s) [illegible]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, J b # N7141

Well ID: 10C52

Tim : 0840 **Date:** 12.3.00 **Inspector's Name:** R. SIMPSON

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

C mments:

Signature(s) R. Simpson

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Cran , CTO 10, Job # N7141

Well ID: 10C55

Time: 0935 Date: 1/5/01 Inspector's Name: Bob Balkovec

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—		NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) Robert Balkovec

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane, CTO 10, Job # N7141

W ll ID: 10C55P2

Time: 0805 Date: 1/5/01 Inspector's Name: Bob Bauance

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	TAG ABSENT. I.D. PAINTED ON RISER
Well security	Condition protective case, cap, lock	✓		
W ll pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) Robert Balkine

Note: S= Satisfactory, U= Unsatisfact ry
Check one, if unsatisfact ry explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET

NSWC Crane, CTO 10, Job # N7141

Well ID: 1057

Time: 1002 **Date:** 1/5/01 **Inspector's Name:** Bob Balkovec

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible	✓		
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—		NA
PVC Riser	Condition of riser & survey reference point	✓		

C mments:

Signature(s) Robert Balkovec

Note: S= Satisfact ry, U= Unsatisfact ry
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

APPENDIX B.6

SWMUs 4, 5, 9 AND 10
MONITORING WELL DEVELOPMENT RECORDS

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: C4-01
Site: SWMU 4
Date Installed: 9/10/81
Date Developed: 11/17/00
Dev. Method: Surged & Pumped
Pump Type: WATER PUMP

Depth to Bottom (ft.): 43
Static Water Level Before (ft.): 31.83
Static Water Level After (ft.): NA
Screen Length (ft.): 9.2'
One Well Volume (gal/L): 3 (1" Annulus)
Casing ID (in.): 2 Inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole — ppm
PID Readings: Breathing Zone — ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1019	START	3L/min						SURGED 1003 - 1012 V. SANDY
1020	6L	3L/min		10.4	6.73	0.311	>444	
1021			DRY -	BACKFLUSH WELL				
1022	6.5L	.5L/	DRY -	ALLOW FOR RECHARGE				
1032		—	35.40					
1042		—	32.81					
1043	START	2.5L/min						
1044		2.5L/min	35.10	10.2	6.42	0.252	>444	HEAVY SEDIMENT IN WATER
1046	11.5 L	2.5L/min	DRY					
1056		—	35.83					
1057	START	3L/min						
1058	14.5 L		DRY	10.3	6.41	0.250	875	
		→ REMOVED 3.8 gal		RUN WELL DRY 3 TIMES				

Vol 30.75L

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 04-02
Site: Slump 4
Date Installed: 9/11/91
Date Developed: 11/16/00
Dev. Method: Surged & Pumped
Pump Type: Whale Pump

Depth to Bottom (ft.): 31.30 Soft Bottom
Static Water Level Before (ft.): 20.71
Static Water Level After (ft.): NA
Screen Length (ft.): 9.16
One Well Volume (gal/L): 7.5 7.5
Casing ID (in.): 2 inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1540	Start	3L/min	—	—	—	—	—	Surged 1530 - 1535
1543	9L	3L/min	Dry	Back Flush Well				
1544	12L	3L/min	Dry	Allow For Recharge				
1554		—	24.01'	—	—	—	—	
1556	Start	4L/min	—					
1557	16L	4L/min	Dry	12.2	6.62	0.499	>999	Allow For Recharge
1607		—	25.25	—	—	—	—	
1603	Start	3.5L/min	—	12.0	6.61	0.497	>999	
1604	19.5L	—	Dry	—	—	—	—	
→		Removed ≈ 5.15 gal			Poor	Producer!		

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is be[illegible]redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: OW-03
Site: SWMU 4
Date Installed: 9/12/91
Date Developed: 11/17/00
Dev. Method: Surged & Pumped
Pump Type: WHALE PUMP

Depth to Bottom (ft.): 18.72
Static Water Level Before (ft.): 4.50
Static Water Level After (ft.): NA
Screen Length (ft.): 9'
One Well Volume (gal/L): 10 (7" ANNULUS)
Casing ID (in.): 2 Inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole — ppm
PID Readings: Breathing Zone — ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0414	START		—	—	—	—	—	SURGED 0405 – 0410 V. SANDY
0415	6L	6L/min	DRY	9.7	5.90	0.340	7444	
0425	—	—	9.42	—	—	—	—	
0435	—	—	6.80	—	—	—	—	
0436	START	6L/min						
0437	12L	—	DRY	10.0	6.05	0.340	800	CLEAR
0447	—	—	6.31					
0448	START	6L/min						
0449	18L	—	DRY	10.2	6.09	0.340	450	
	→ REMOVED 4.75 gal POOR PRODUCER							

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 04-04
Site: SWMU-4
Date Installed: 9-28-81
Date Developed: 12-01-00
Dev. Method: Surged & Pumped
Pump Type: BAILED

Depth to Bottom (ft.): 39.9'
Static Water Level Before (ft.): 27.55
Static Water Level After (ft.): 27.62
Screen Length (ft.): 8.97'
One Well Volume (gal/L):
Casing ID (in.): 2 inch PVC

Responsible Personnel: T. ROJAHN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole ____ ppm
PID Readings: Breathing Zone ____ ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.) MEAS.?	
0930	0.0	NA	27.55	12.4	5.63	0.183	728	TD 28.8	BRN
0940	2	↓	—	13.0	5.83	0.333	999+	—	BRN
0946	4	↓	—	13.0	5.88	0.333	999+	—	BRN
0953	6	↓	—	13.2	5.93	0.334	950	—	BRN
0959	8	↓	—	13.2	5.95	0.327	600	—	TANNISH
1010	10	↓	27.63	13.2	5.96	0.339	900	TD 32.6	BRN
1032	14	↓	—	12.8	5.98	0.365	999+	TD 33.6	BRN
1050	18	↓	27.65	12.8	5.98	0.364	999+	TD 34.0	BRN
1105	22	↓	27.62	12.7	5.98	0.370	999+	TD 34.05	TAN BRN
								NO ODOR	

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES X NO ____

NOTE: Well was installed as part of a pr vious RFI and is being redeveloped at this time.

- Ht of H_2O @ start of PURGE = 1.25'
- Ht of H_2O @ END OF PURGE [illegible].43'
- SEDIMENT REMOVED = 5.25'

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 04-05
Site: Swmu 5
Date Installed: 4/30/81
Date Developed: 11/17/00
Dev. Method: Surged & Pumped
Pump Type: Waterra Pump

Depth to Bottom (ft.): 25' Sediment
Static Water Level Before (ft.): 10.42'
Static Water Level After (ft.): NA
Screen Length (ft.): 9'?
One Well Volume (gal/l): 12 (2" Annulus?)
Casing ID (in.): 2 inch PVC

Responsible Personnel: Bob Backolec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole ~~0~~ ppm
PID Readings: Breathing Zone ~~0~~ ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0312	START	4.35L/min						SURGED 0307-0303 BK BROWN
0319	≈ 8.5 L	"	DRY				HIGH SED. CONTENT	WELL WENT DRY BEFORE REMOVING COULD BE
0324	—	—	20.41'	—	—	—	—	OBSERVED.
0334	—	—	15.72'					
0335	START	4.5L/min						
0336	13 L	—	DRY	11.0	6.15	0.558	>999	HIGH AMOUNT OF SEDIMENT.
0346			19.1'					
0347	START	4.5L/min						
0348	≈ 15.5 L		DRY	10.8	6.20	0.541	560	
		→ Removed 4 gal	per Procedure	3 times				
		per Procedure.						
								MEASURED 25' BLS AFTER SURGING

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ___ NO ✓

* WELL DETAILS DO NOT MATCH UP. T.D. FROM GW AND IS 25'

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

8' 14 2'
163 / 42 = 3.9 gal
1840 / 1402 = 438
3242
3.745 / 1.15 / 1440 / 1660
1.1055

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 04-06
Site: Swmu 6
Date Installed: 10/8/91
Date Developed: 11/16/00
Dev. Method: Surged & Pumped
Pump Type: Waterra Pump

Depth to Bottom (ft.): 28'00
Static Water Level Before (ft.): 16.84'
Static Water Level After (ft.): N/A
Screen Length (ft.): 9.2'
One Well Volume (gal/L): 8 7"
Casing ID (in.): 2 inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units S/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1435	START	3L/min	—	—	—	—	—	SURGED 1426–1432
1438	6L	1.2L/min	~~DRY~~	12.4	6.35	0.402	1994	DK. BROWN SED.
1439	7L	~~1L/min~~	DRY ALLOW WELL TO BACKFLUSH THEN RE-START					
1440	START	4L/min	—	—	—	—	—	
1442	13L	1L/min	DRY	—	—	—	—	
1452		—	17.50'	—	—	—	—	
1453	START	3L/min						
1455	17L	1L/min	DRY	13.1	6.47	0.384	450	HAZY.
1505		—	17.30'	—	—	—	—	
1506	START	3L/min	—					
1507	20L	3L/min		12.7	6.24	0.359	358	
1511	28L	1.2L/min	BELOW PUMP	12.6	6.24	0.350	210	
1516	33L	1L/min	—	13.0	6.18	0.337	43	CLEAR, VISUALLY
1517	34L	1L/min	DRY	—	—	—	—	
→ REMOVED 9 gal								

30.3 L

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is be[illegible]developed at this time.

Tetra Tech NUS, Inc.

NEW

MONITORING WELL DEVELOPMENT RECORD

Well: 04T01
Site: SWMU 4
Date Installed: 12-02-00
Date Developed: 12-13-00
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 37.35'
Static Water Level Before (ft.): 26.84'
Static Water Level After (ft.): DRY
Screen Length (ft.): 10'
One Well Volume (gal/L): 10
Casing ID (in.): 2 inch PVC

Responsible Personnel: T. ROJANN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole — ppm
PID Readings: Breathing Zone — ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1506	0	NA	26.84	→				Start DEVELOPEMENT
1510	4	↓	DRY	9.4	5.47	0.124	>999	DRY (BRN)
1530	4		29.00	6.1	5.54	0.111	>999	Restart Pump
1536	9		@ PUMP	10.4	5.43	0.140	>999	(ORANGE BRN)
1542	11.5		→					DRY
1605	11.5		29.90	10.1	5.65	0.147	978	RESTART PUMP (ORANGE BRN)
1610	16.5		@ PUMP	10.4	5.72	0.152	>999	(" ")
1615	18.5		"	10.6	5.75	0.151	800	(" ")
1621	20.5		"	10.3	5.81	0.156	954	(" ")
1624	22.0		DRY	→				DRY (" ")

Tetra Tech NUS, Inc.

NEW

MONITORING WELL DEVELOPMENT RECORD

Well: 04T02
Site: SWMU 4
Date Installed: 12-01-00
Date Developed: 12-14-00
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 42.70
Static Water Level Before (ft.): 34.00
Static Water Level After (ft.): DRY
Screen Length (ft.): 10'
One Well Volume (gal/L): 9
Casing ID (in.): 2 Inch PVC

Responsible Personnel: T. ROJAHN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole – ppm
PID Readings: Breathing Zone – ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1337	0	NA	34.00	→				START DEV.
1342	–	↓	–	10.1	6.43	0.381	> 999	BRN
1345	3		DRY	→				(DRY)
1355	3		–	10.5	6.62	0.380	> 999	BRN
1405	–		–	10.2	6.62	0.387	> 999	BRN
1408	6		DRY	→				(DRY)
1430	6		36.79	10.7	6.67	0.388	547	TANNISH
1435	8		DRY	→				(DRY)

Tetra Tech NUS, Inc.

NEW

MONITORING WELL DEVELOPMENT RECORD

Well: 04T03
Site: SWMU 4
Date Installed: 11-30-00
Date Developed: 12-14-00
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 18.50
Static Water Level Before (ft.): 5.11
Static Water Level After (ft.): 12.66
Screen Length (ft.): 10'
One Well Volume (gal/L): 10.6 gal
Casing ID (in.): 2 Inch PVC

Responsible Personnel: T. ROJAHN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole – ppm
PID Readings: Breathing Zone – ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (~~mL~~ gal/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.) SURGE FOR 10 MINS
0943	0	~1.4	5.11	→				DARK BRN Start Pumping
0948	7	~1.4	10.87	11.5	5.95	0.361	>999	BRN
0953	15	~1.6	–	–	–	–	–	Stop Pumping to Empty Containers
1000	15	–	–	11.5	5.94	0.378	>999	Restart Pump
1005	23	~1.6	10.90	11.9	5.89	0.362	>999	BRN
1010	31	~1.6	11.47	12.0	5.90	0.367	750	TANNISH
1015	39	~1.6	12.15	12.0	5.92	0.360	342	TANNISH
1020	47	~1.6	11.84	12.0	5.91	0.353	68	Sl. TANNISH
1025	55	~1.6	12.66	12.0	5.92	0.353	70	Sl. TANNISH
1028	60	~1.6	→					Pump out stabilized H2O ABOVE pump intake

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 05-01
Site: SWMU 5
Date Installed: 9/14/81
Date Developed: 11/15/00
Dev. Method: Surged & Pumped
Pump Type: Whale Pump

Depth to Bottom (ft.): 14.8'
Static Water Level Before (ft.): 7.22
Static Water Level After (ft.): NA
Screen Length (ft.): 8'
One Well Volume (gal/L): 4 (7" ANNULUS)
Casing ID (in.): 2 inch PVC

Responsible Personnel: BOB BALKOVEZ
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1438	START	5L/min	—	—	—	—	—	SURGED 1430-1435 V. SANDY
1442	20L	5L/min	DRY	14.1	6.28	0.385	512	DARK WATER
1452	—	—	8.70	—	—	—	—	
1453	START	5L/min	—	13.7	5.96	0.240	>999	BROWN WATER - SED. CLEARING UP
1455	30L	—	DRY ALLOW RECHARGE.					
1505	—	—	9.60	—	—	—	—	
1506	START	5L/min	—					
1507	35L	5L/min	DRY	14.1	6.02	0.314	650	
1520	—	—	8.80	—	—	—	—	
1521	START	5L/min	—	—	—	—	—	
1522	40L	—	DRY	14.2	6.04	0.318	320	
	→ REMOVED 10.5 gal QUICK RECOVERY.							

1 vol = 3 gal

MW location and ID were confirm d using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 05-02
Site: SWMU-5
Date Installed: 9-16-81
Date Developed: 12-01-00
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 20.0'
Static Water Level Before (ft.): 10.93'
Static Water Level After (ft.): DRY
Screen Length (ft.): 7.76'
One Well Volume (gal/L): 5 W/ Annulus
Casing ID (in.): 2 Inch PVC

Responsible Personnel: T. Rojahn
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole ____ ppm
PID Readings: Breathing Zone ____ ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1356	0.0	—	10.93'	→	→	→	→	START SURGE
1406	0.0	—	10.93'	→	→	→	→	START PUMP BRN
1407	1	—	DRY	→	→	→	→	DRY
1420	1	—	11.18	→	→	→	→	RESTART PUMP ORANGE BRN
1421	2	—	—	12.1	6.22	0.637	999+	DRY
1433	2	—	13.84	→	→	→	→	RESTART PUMP ORANGE BRN
1434	3	—	—	12.1	6.30	0.627	999+	DRY
1443	3	—	14.35	→	→	→	→	RESTART PUMP ORANGE BRN
1444	3.5	—	—	11.7	6.46	0.622	999+	DRY
								NO ODOR

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES X NO ____

NOTE: Well was installed as part of a previous RFI and is being redevelop d at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 05-03
Site: Swmu 5
Date Installed: 4/13/81
Date Developed: 11/15/00
Dev. Method: Surged & Pumped
Pump Type: Whale Pump

Depth to Bottom (ft.): 23.32'
Static Water Level Before (ft.): 16.18'
Static Water Level After (ft.): NA
Screen Length (ft.): 9'
One Well Volume (gal/L): 5.1 (2" annulus)
Casing ID (in.): 2 inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1352	START	4L/min						SURGED 1342-1348 V. SANDY
1353	≈4L	—	DRY	ALLOW FOR RECHARGE		10 MINS.		
1403			20.4					
1413			20.2					
→ SLOW RECHARGER: POOR RECOVERY								

Lw = 19.3 L

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is be[illegible] developed at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 05-04
Site: Swmu 5
Date Installed: 10/1/91
Date Developed: 11/15/00
Dev. Method: Surged & Pumped
Pump Type: Whale Pump

Depth to Bottom (ft.): 18.45
Static Water Level Before (ft.): 11.50
Static Water Level After (ft.): NA
Screen Length (ft.): 9'
One Well Volume (gal/L): 5.3! (7" annulus?)
Casing ID (in.): 2 Inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1246		6L/min	Start Flow					Surge 1237 - 1241 Bailer/water
1248	12L		DRY					Sandy Discharge
1249	13.5L	Start up to Back Flush Turbidity						
	Allow 10 minutes to Recharge							
1254			12.87					
1300	Start –	6L/min						
1301	19.5L		DRY	14.8	6.62	0.482	>999	
1311			13.00					
1312	Start	6L/min						
1313	25.5L		DRY	15.1	6.59	0.473	>999	
1323			12.80					
1324		6L/min						
1325	31.5L		DRY	14.4	6.60	0.470	>999	
→ Removed 28.5 gallons Pumped well dry 4 times Good Recovery!								

Total 70L

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES___ NO ✓

* Boring Log Depths do not match up.

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 05-06
Site: SWMU 5
Date Installed: 10/10/81
Date Developed: 11/16/00
Dev. Method: Surged & Pumped
Pump Type: WHALE Pump

Depth to Bottom (ft.): 33'
Static Water Level Before (ft.): 10.47
Static Water Level After (ft.): NA
Screen Length (ft.): 9.5' (2" ANNULUS)
One Well Volume (gal/L): 15.7
Casing ID (in.): 2 inch PVC

Responsible Personnel: BB BALKOVEC
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0430	START -	5L/min	—				DRY	SURGED 0413-0426
0432	10L		—	12.2	6.75	0.327	>999	
0435	25L	5L/min	21.80	13.0	6.80	0.367	>999	
0440	45L	3L/min	BELOW PUMP	12.6	6.44	0.381	>999	
0445	57.5L	1.4L/min	—	12.7	6.93	0.379	60	HAZY
0450	65.5L	1.2L/min	—	12.5	6.82	0.376	105	PREVENTING UP FINE SANDS
0455	71 L	1L/min	—	12.7	6.86	0.370	46	
1000	76L	1L/min	—	13.0	6.93	0.370	79	
1003	79L	1L/min	DRY	WELL BACKFLUSH AND START PUMPING				
1004	80L	1L/min	DRY	ALLOW RECHARGE				
1015		—	21.00	—	—	—	—	
1016	START	5L/min	—					
1018	88L	—	DRY	12.8	6.87	0.373	468	
	→ REMOVED 323.5 gal							

Vol = 54.4 L

MW location and ID were confirm d using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is be[illegible]edeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 05-07
Site: SWMU 5
Date Installed: 10/2/91
Date Developed: 11/16/00
Dev. Method: Surged & Pumped
Pump Type: WHALE PUMP

Depth to Bottom (ft.): 38'
Static Water Level Before (ft.): 11.61
Static Water Level After (ft.): NA
Screen Length (ft.): 9.5'
One Well Volume (gal/L): 14.6 (6" ANNULUS)
Casing ID (in.): 2 Inch PVC

Responsible Personnel: BOB BALKOVEC
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1053	START	6L/min	—				BROWN	SURGED 1041-1047
1055	11 L	5L/min	37.10'	12.5	6.59	0.679	>999	HEAVY SED.
1056	16 L		DRY - BACKFLUSH & START PUMP					
1057	START	5L/min	—					
1058	21 L	—	DRY - ALLOW FOR RECHARGE					
1108	—	—	25.60	—				
1118	—	—	24.30	—				
1119	21 L	1.1L/min	START	—	6			
1121	23.2 L	1.1L/min	28.12	12.3	6.64	0.665	>999	
1126	28.2 L	1L/min	30.40	12.8	6.67	0.685	364	
1131	33.2 L	1L/min	32.40	12.8	6.62	0.699	254	
1136	37.2 L	200 ml/min	34.79	13.1	6.62	0.702	334	TURBINE WAS PINCHED
1140	37.2 L	5L/min	DRY	—				
→		REMOVED	215 gal	SLOW RECHARGER.				

MW location and ID wer confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 05-08
Site: Swmu 5
Date Installed: 10/27/82
Date Developed: 11/16/00
Dev. Method: Surged & Pumped
Pump Type: Whale Pump

Depth to Bottom (ft.): 19.4' SOFT BOTTOM
Static Water Level Before (ft.): 4.91
Static Water Level After (ft.): NA
Screen Length (ft.): 9.5'
One Well Volume (gal/l): 10.3 (2")
Casing ID (in.): 2 Inch PVC

Responsible Personnel: BOB BALKOVEC
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 358 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units µS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1315	START	6L/min	—					SURGED 1307 - 1312 GRAY WATER
1320	30L	6L/min	DRY	13.3	6.42	0.524	1999	
1321	START AFTER ALLOWING WELL TO BACKFLUSH							
1322	36 L	6L/min	DRY	—	—	—	—	
1332		—	6.30'	—	—	—	—	
1333	START	6L/min	—	13.4	6.36	0.554	526	
1337	60 L	6L/min	DRY	—	—	—	—	
1347		—	6.60'	—	—	—	—	
1348	START	6L/min	—	13.7	6.40	0.571	297	WATER FREE OF SEDIMENT.
1350	72L	6L/min	DRY	—	—	—	—	
1400		—	6.70'	—	—	—	—	
1401	START	6L/min	—	13.8	6.47	0.568	308	
1402	78L	6L/min	—	13.7	6.23	0.546	191	HAZY GRAY TINT
1403	81L	3L/min	DRY	—	—	—	—	
		→ REMOVED ≈ 21.5 gal	RAN DRY 4 TIMES	GOOD	RECOVERY			

39 L = 1 vol.

205 12.5

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: W ll was installed as part of a previous RFI and is b redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 05-09
Site: Swmu 5
Date Installed: 10/27/92
Date Developed: 11/16/00
Dev. Method: Surged & Pumped
Pump Type: Whale Pump

Depth to Bottom (ft.): 28'
Static Water Level Before (ft.): 14.75
Static Water Level After (ft.): NA
Screen Length (ft.): 4.5'
One Well Volume (gal/L): 7.3 6" annulus
Casing ID (in.): 2 inch PVC

Responsible Personnel: Bob Pinkovitz
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units µm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0808	START	4L/min	—	—		—	—	SURGED 0754–0804
0810	—	3L/min	20.21	14.8	6.61	0.333	7999	
0812	12 L	2L/min	25.10	14.7	6.80	0.361	7999	
0815	19.5	1.5L/min	BELOW WHALE PUMP	14.7	6.82	0.323	645	
0820	27 L	1.5L/min	—	14.8	6.85	0.321	200	
0825	32.5 L	1.1L/min	—	14.9	6.81	0.314	75	
0828	34.5 L	2L/min	DRY – BREAK PURGED TUBING					
0830	38.5 L	1.5L/min	– START –	14.9	6.81	0.314	23	
0835	44.5 L	1.2L/min	BELOW WHALE PUMP	14.8	6.82	0.320	41	SED IN TUBING.
0840	50.5 L	1.2L/min	—	14.9	6.82	0.316	-10	VERY CLEAR NTU <10
0845	56.5 L	1.2L/min	—	14.9	6.79	0.317	-10	"
0850	62.5 L	1.2L/min	—	14.8	6.80	0.318	-10	"
	→ END DEVELOPMENT: PARAMETERS STABILIZED							
	REMOVED. 16.5 gal							

1 vol 37.6 L
55.2 L

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 05-13
Site: SWMU 5
Date Installed: 11/1/92
Date Developed: 11/15/00
Dev. Method: Surged & Pumped
Pump Type: WHALE PUMP

Depth to Bottom (ft.): 28'
Static Water Level Before (ft.): 14.45'
Static Water Level After (ft.): NA
Screen Length (ft.): 9.5'
One Well Volume (gal/L): 9.6 (2" ANNULUS)
Casing ID (in.): 2 inch PVC

Responsible Personnel: BOB BALKOVEC
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1556	START	3L/min						SURGED 1548-1553
1600	2.8L	2L/min	DRY	13.1	6.49	0.475	7999	DK BROWN WATER
1610			20.30					
1620			19.40	SLOW RECOVERY				
1621	START	3L/min	19.40					
1623	12.5L	2L/min	DRY	13.0	6.47	0.440	7999	
→ REMOVED 30 gal. POOR PRODUCER.								

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is b[illegible]redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 05-15
Site: SWMU-5
Date Installed: 1-11-83
Date Developed: 12-01-00
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): (17.2) MEAS. 17.8
Static Water Level Before (ft.): 5.80
Static Water Level After (ft.): DRY
Screen Length (ft.): 7.47
One Well Volume (gal/L): 6.65 W/ANNULUS
Casing ID (in.): 2 Inch PVC

Responsible Personnel: T. ROJAHN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole ____ ppm
PID Readings: Breathing Zone ____ ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1611	0.0	—	5.80	—			→	START SURGE
1619	0.0		5.80	11.8	6.47	0.435	999+	START PUMP BRN
1623	8	—	—	—	—	—	→	DRY
1633	8	—	6.23	11.4	6.45	0.480	999+	RESTART PUMP BRN
1637	16	—	—	12.2	6.50	0.455	999+	DRY
1648	16	—	6.40	11.5	6.30	0.485	216	RESTART PUMP LT BRN
1653	21	—	—	—	—	—	→	DRY
								NO ODOR

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES X NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this tim .

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: MW 05-16
Site: Swmu 5
Date Installed: 1/12/93
Date Developed: 1/5/01
Dev. Method: Surged & Pumped
Pump Type: WALE

Depth to Bottom (ft.): 16.7 TOC
Static Water Level Before (ft.): 4.05 TOC
Static Water Level After (ft.): NA
Screen Length (ft.): 8'
One Well Volume (gal/L): 7.5
Casing ID (in.): 2 inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole – ppm
PID Readings: Breathing Zone – ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mV/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1513	—	START	—	—	—	—	—	
1516	5 gal	—	—	9.4	6.63	0.347	7999	
1517	6.5 gal	—	DRY	—	—	—	—	
1529	—	START	9.30	—	—	—	—	
1530	—	6 L/min	—	7.7	6.29	0.378	7999	
1531	2 10 gal	6 L/min	DRY	—	—	—	—	
1542	—	—	9.75	—	—	—	—	
1543	—	START	—	—	—	—	—	
1544	—	—		7.4	6.30	0.334	7999	
1545	13.5 gal	6 L/min	DRY	—	—	—	—	
	→	END DEVELOPMENT						
			REMOVED 13.5 gal					

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a pr vious RFI and is b[illegible]ed v loped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 05-19
Site: SWMU-5
Date Installed: 2-4-83
Date Developed: 12-1-00
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 18.0 (MEAS. 15.65')
Static Water Level Before (ft.): 4.96
Static Water Level After (ft.): DRY
Screen Length (ft.): 7.95
One Well Volume (gal/L): 7.2 w/ Annulus
Casing ID (in.): 2 Inch PVC

Responsible Personnel: T. ROJAHN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole ____ ppm
PID Readings: Breathing Zone ____ ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1515	0.0	→						START SURGE
1525	0.0	—	4.96	10.8	6.75	0.391	999+	START PURGE GREY
1530	8	—	DRY	12.0	6.65	0.386	999+	DRY GREY
1541	8	—	12.73	→				RESTART PUMP
1543	10	—	DRY	12.2	6.78	0.335	999+	DRY BROWNISH GREY
1554	10	—	13.08	→				RESTART PUMP
1555	11	—	DRY	12.0	6.74	0.343	999+	DRY BROWNISH GREY
								NO ODOR

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES X NO ____

NOTE: Well was installed as part of a previous RFI and is b ing redeveloped at this time.

Tetra Tech NUS, Inc.

NEW

MONITORING WELL DEVELOPMENT RECORD

Well: 05701
Site: SWMU 5
Date Installed: 12/4/00
Date Developed: 1/3/01
Dev. Method: Surged & Pumped
Pump Type: WHALE Pump

Depth to Bottom (ft.): 17.58' TOC
Static Water Level Before (ft.): 6.26' TOC
Static Water Level After (ft.): NA
Screen Length (ft.): 10'
One Well Volume (gal/L): 9.0 (FOR 8 1/2" ANNULUS)
Casing ID (in.): 2 inch PVC

Responsible Personnel: BOB BALKOVEC
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0423	–	START						SURGED 0410-0415
0425	12L	6L/min	DRY					
0430	–	START	6.59	8.6	6.27	0.310	>999	
0431	18L	6L/min	DRY					
0436	–	—	6.80					
0437	–	START	—	9.0	6.20	0.291	>999	
0438	24L	6L/min	DRY					
0444	–	START	6.60					
0445	–	6L/min	11.32	9.0	6.15	0.329	>999	
0446	36L	6L/min	DRY					
1001	–	—	6.37					
1002	–	START	—	8.7	6.14	0.317	>999	
1003	42L	6L/min	DRY					
		END DEVELOPMENT:						
			REMOVED	11 gal		& GOOD RECOVERY		
			PUMPED WELL DRY 5 TIMES:					

Tetra Tech NUS, Inc.

NEW

MONITORING WELL DEVELOPMENT RECORD

Well: 05T02
Site: SWMU 5
Date Installed: 12-03-00
Date Developed: 12-14-00
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 19.70
Static Water Level Before (ft.): 12.87
Static Water Level After (ft.): 18.38
Screen Length (ft.): 10
One Well Volume (gal/L): 27
Casing ID (in.): 2 Inch PVC

Responsible Personnel: T. ROJAHN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole — ppm
PID Readings: Breathing Zone — ppm

Time	Cumulative Water Volume ~~(Gal.)~~ L	Flow Rate (~~mL~~/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1533	0	-	12.87	→				START DEV.
1535	7.6	3.8	16.42	11.8	6.51	0.411	>999	ORANGE BRN
1540	20	2.5	16.64	13.0	6.41	0.389	>999	ORANGISH BRN
1545	30	2.0	18.37	12.8	6.41	0.385	273	TANNISH
1555	50	2.0	18.38	12.9	6.39	0.387	120	SL. TANNISH
1605	70	2.0	18.42	13.1	6.34	0.385	43	CLEAR
1615	90	2.0	18.35	13.0	6.31	0.384	21	CLEAR
1625	100	2.0	18.38	13.1	6.32	0.382	14	CLEAR
1635	130	2.0	18.38	13.0	6.30	0.383	12	CLEAR
1640	140	2.0	18.38	13.1	6.29	0.381	10	CLEAR

Tetra Tech NUS, Inc.

NEW

MONITORING WELL DEVELOPMENT RECORD

Well: 05703
Site: SWMU 5
Date Installed: 12/2/00
Date Developed: 1/3/01
Dev. Method: Surged & Pumped
Pump Type: Waterra Pump

Depth to Bottom (ft.): 17.60' TOC
Static Water Level Before (ft.): 4.49' TOC
Static Water Level After (ft.): NA
Screen Length (ft.): 10'
One Well Volume (gal/L): 11.5
Casing ID (in.): 2 inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal)	Flow Rate (~~mL~~/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1032	—	START	—					SURGED 1025-1030
1034	12L	6L/min	DRY					
1044	—	—	6.22					
1045	—	START	—	8.3	6.16	0.287	7999	
1047	24L	6L/min	DRY					
1057	—	—	8.00					
1058	—	START	—	8.0	6.10	0.365	7999	CLOUDY
1059	30L	6L/min	DRY					
		END DEVELOPMENT						
			REMOVED	8 gal				
			PUMPED WELL	DRY 3 TIMES		MODERATE RECOVERY!		

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 0402
Site: SWMU 9
Date Installed: 10/23/91
Date Developed: 11/15/00
Dev. Method: Surged & Pumped
Pump Type: Whale Pump

Depth to Bottom (ft.): 22.30'
Static Water Level Before (ft.): 9.32
Static Water Level After (ft.): NA
Screen Length (ft.): NA
One Well Volume (gal/L): 7.2
Casing ID (in.): 2 inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole ___ ppm 2,540
PID Readings: Breathing Zone 2.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0816		START	—	—	—	—	—	SULFUR ODOR WHEN CAP WAS OPENED
0818	12L	6L/min	—	13.7	6.16	0.381	182	[illegible] 0805 - 0811 DARK WATER
0820	24L	6L/min	DRY	[illegible]				
0830	—	6L/min	9.70	12.7	6.19	0.365	56	CLEAR WATER
0832	36L	6L/min	DRY	—	—	—	—	
0842	—	6L/min	9.70	12.4	6.15	0.361	21	V CLEAR WATER
0844	48L	6L/min	DRY	—	—	—	—	
	REMOVED ≈ 12.5 gal		RUN DRY 3 TIMES					
			QUICK RECOVERY					

total: 77.25

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ___

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 04-03
Site: SWMU 3
Date Installed: 10/25/81
Date Developed: 11/15/00
Dev. Method: Surged & Pumped
Pump Type: WHALE PUMP

Depth to Bottom (ft.): 12.63
Static Water Level Before (ft.): 3.42
Static Water Level After (ft.): NA
Screen Length (ft.): 5'
One Well Volume (gal/L): 5.1
Casing ID (in.): 2 inch PVC

Responsible Personnel: RUB PALIKOWEC
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1053	START PUMP							SURGED 1047-1050 BROWN WATER
1054	≈4L		DRY					WELL RAN DRY BEFORE READINGS COULD BE
1104			6.30					OBTAINED.
1114			5.70					
1115		START	5.70					
1116	≈7.5L		DRY	10.5	6.05	0.544	7999	
	→ REMOVED ≈2 gallons. SLOW RECOVERY							
			POOR PRODUCER. USE PIEZOMETER.					

1 vol 14.3 L
2 vol 38.6
3 vol [illegible]4

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is be[illegible]redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 09-04
Site: SWMU 9
Date Installed: 11/7/81
Date Developed: 11/12/00
Dev. Method: Surged & Pumped
Pump Type: Whale Pump

Depth to Bottom (ft.): 32.48'
Static Water Level Before (ft.): 17.10'
Static Water Level After (ft.): NA
Screen Length (ft.): NA
One Well Volume (gal/L): 8.8 Jackhammer Analysis
Casing ID (in.): 2 inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone — ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1544	—	Start Pump						Surged From 1538-1545 3L/min
1554	15 L	3L/min	Dry					Well Dry Before Readings Could Be Taken
1605	—	—	26.50					
1615			25.83					
1616	—	Surged Well						1616-1624 Surged Well.
1630		Start -	25.80	11.4	6.41	0.764	7449	Heavy Sediment in Well
1633	24L		Dry	~~11.4~~	~~6.41~~	~~0.764~~	~~7449~~	Will Baze Well to Remove Sed.
1644	28L		Bazed 1 gal					Bazed 1634 - 1644
			Removed 27 gals.					
			Poor Recovery					

1 vol = 33.3L
2 vol = 66.6L
3 vol = 99.9L
4 vol = 133.2
5 vol = 166.5L

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 04-07
Site: Swmu-9
Date Installed: 11/18/91
Date Developed: 11/15/00
Dev. Method: Surged & Pumped
Pump Type: W Hale Pump

Depth to Bottom (ft.): 36.70 Soft Bottom
Static Water Level Before (ft.): 18.72
Static Water Level After (ft.): NA
Screen Length (ft.): NA
One Well Volume (gal/L): 40 (7" Annulus)
Casing ID (in.): 2 Inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0917	Start	5L/min	—					Surged 0903-0904
0922	20L	2L	—	11.7	5.73	1.46	7999	
0927	≈30L	1.5L	32.40	12.0	5.77	1.57	7999	
0930	42L	3.4L	DRY	Allow for recharge				
0940	-Start-	4L	23.70	11.5	5.80	1.70	7999	
0945	59.5L	3L	31.40	11.9	5.84	1.63	435	Gray water
0950	64.5L	1.5L	31.50	12.0	5.92	1.68	157	
0955	77L	1.5L	31.50	11.8	5.92	1.66	215	Sl. haze
1000	82	1L	31.51	12.4	5.93	1.67	77	
1005	87	1L	34.50	12.3	5.92	1.68	40	
1010	92	1L	36.40	11.8	5.97	1.66	21	Clear
1011	92.5L	500mL	DRY					
1021	92.5L	—	23.70					
→ Removed 224.5 gal				- Turbidity low. Should clean up good when sampled - Good Producer				

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a pr vious RFI and is be[illegible]red veloped at this tim .

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: WES 4-10-83 9-10
Site: SWMU-9
Date Installed: 4/10/83
Date Developed: 11/14/00
Dev. Method: Surged & Pumped
Pump Type: GRUNDFOS

Depth to Bottom (ft.): 29.05
Static Water Level Before (ft.): 4.22
Static Water Level After (ft.): NA
Screen Length (ft.): 9.10'
One Well Volume (gal/L): 13.8 INCLUDES ANNULUS
Casing ID (in.): 2 inch PVC

Responsible Personnel: B.B BALKOVEC
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

	Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
	0918	—	BELOW DAMPENING						SURGED WELL FROM 0845 - 0900
1 vol	0945	73 L	3L/min	5.21	13.2	5.61	0.444	7999	1L EVERY 25 min
	0950	88 L	3L/min	5.23	13.5	5.78	0.493	7999	0948-0951 1L/3min 31 L
2 vol	0959	103 L	3L/min	5.21	13.9	5.71	0.440	7999	0951-0959 3L/min 42 L
	1000	118 L	3L/min	5.22	14.5	5.70	0.413	873	HAZY SL. CLOUDY WATER
	1005	133 L	3L/min	5.22	14.4	5.65	0.402	358	
3 vol	1010	148 L	3L/min	5.21	14.7	5.68	0.402	428	
	1015	163 L	3L/min	5.22	14.9	5.68	0.400	351	
	1020	180.5 L	3.5L/min	5.60	14.8	5.69	0.402	365	INCREASED FLOW
4 vol	1025	198 L	3.5L/min	5.61	14.7	5.71	0.400	356	
	1030	215.5 L	3.5L/min	5.62	14.8	5.68	0.398	345	WATER LEVEL STABLE.
	1035	233 L	3.5L/min	5.60	14.8	5.68	0.397	251	HAZY WATER TRACE AMT. OF FINES
	1040	250.5 L	3.5L/min	5.62	14.5	5.70	0.396	270	
5 vol.	1045	268 L	3.5L/min	5.61	14.5	5.66	0.394	145	
	→ END DEVELOPMENT		REMOVED	268 L OR		71 gal			

52.25 L/vol

1 vol = 204 L
5 vol = 261 L

104.5 2 vol 156.75 3 vol

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 9-12
Site: SWMU-9
Date Installed: 8-19-83
Date Developed: 12-01-00
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 28.0'
Static Water Level Before (ft.): 4.61'
Static Water Level After (ft.): DRY
Screen Length (ft.): 9.17'
One Well Volume (gal/L): 13 gal W/ANNULUS
Casing ID (in.): 2 Inch PVC

Responsible Personnel: T. ROJAHN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole ____ ppm
PID Readings: Breathing Zone ____ ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1250	0	NA	4.61	12.5	6.27	0.830	999+	ORANGE BRN
1255	6	—	—	13.2	6.33	0.827	999+	" "
1258	10	—	DRY	→				DRY " "
1309	10	—	21.05	→				RESTART PUMP " "
1310	12	—	DRY	13.3	6.45	0.758	212	DRY TANNISH
1320	12	—	21.57	→				RESTART PUMP "
1321	14	—	DRY	13.2	6.38	0.751	306	DRY "
								NO ODOR

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES X NO ____

NOTE: W ll was installed as part of a previous RFI and is be redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 4-WTP05
Site: Summary 9
Date Installed: NA
Date Developed: 1/14/00
Dev. Method: Surged & Pumped
Pump Type: Whale Pump

Depth to Bottom (ft.): 15.06'
Static Water Level Before (ft.): 2.2'
Static Water Level After (ft.): NA
Screen Length (ft.): 5'
One Well Volume (gal/L): 7.1
Casing ID (in.): 2 inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1442	—	START Pumping						SURGED 1430 - 1435 · (GRAY WATER)
1444	8L	24L/min	DRY	—	—	—	—	RED RUSTY WATER LEFT ON SURGE BLOCK
1505	—	START	5.15	13.1	6.67	0.648	725	GRAY
1507	16L	24L/min	DRY	—	—	—	—	
1537	—	4L/min	5.20	14.3	6.58	0.600	145	HAZY
1539	24L	"	DRY	—	—	—	—	
			REMOVED 24L					
			SLOW	RECOVERY	USE	PERISTALTIC	TO SAMPLE	

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 9-WTP06
Site: SWMU 9
Date Installed: NA
Date Developed: 11/14/00
Dev. Method: Surged & Pumped
Pump Type: ~~GEOPROBE~~ WHALE

Depth to Bottom (ft.): 29.0
Static Water Level Before (ft.): 14.0'
Static Water Level After (ft.): NA
Screen Length (ft.): 5'
One Well Volume (gal/L): 8.3 INCLUDE ANNULUS
Casing ID (in.): 2 inch PVC

Responsible Personnel: BOB BALKOVEC
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole — ppm MISSING 3-PAK
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1305	—	START PUMPING		—	—	—	—	SURGING FROM 1250 - 1300
1315	32 L	4L/min	DRY ALLOW FOR RECHARGE			—	—	
1325	—	—	19.18	—	—	—	—	
1330	—	—	17.95	—	—	—	—	
1340	—	—	16.57	—	—	—	—	
1345			16.16					
1346	START PUMP	4L/min	16.16	11.4	6.02	0.647	7999	
1350	≈40 L	—	DRY	—	—	—	—	
1411	START PUMP	4L/min	17.70	12.4	6.22	0.563	238	FINE SEDIMENTS
1415	≈48 L	—	DRY	13.0	6.42	0.651	701	
→ REMOVED 48 L								
			USE PERISTALTIC PUMP TO SAMPLE					

1 vol : 31.4 L
2 vol : 62.8 L
3 vol : 94.2 L
4 vol : 12[illegible]
5 vol : 15[illegible] L

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: W ll was installed as part of a previous RFI and is be[illegible] developed at this tim .

Tetra Tech NUS, Inc.

NEW

MONITORING WELL DEVELOPMENT RECORD

Well: 09T01
Site: SWMU 9
Date Installed: 12-4-00
Date Developed: 12-13-00
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 28.80 TOC
Static Water Level Before (ft.): 13.89 TOC
Static Water Level After (ft.): 28.80 TOC
Screen Length (ft.): 15'
One Well Volume (gal/L): 2.4
Casing ID (in.): 2 inch PVC

Responsible Personnel: M.G. COCHRAN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole NA ppm
PID Readings: Breathing Zone NA ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1615	0	~2GPM	28	12.1	6.04	1.22	999	BROWN, NO ODOR
								PURGED DRY ~~AFTER~~ AT 1
								CASING VOLUME @ 1625.
								WAITED 10 MIN, W.L.
								AT BTM NO SIGNIFICANT
								RECHARGE
								WELL INITIALLY SURGED
								FOR 10 MIN

Tetra Tech NUS, Inc.

NEW

MONITORING WELL DEVELOPMENT RECORD

Well: 09TO2
Site: SWMU 9
Date Installed: 12-5-00
Date Developed: 12-14-00
Dev. Method: Surged & Pumped
Pump Type: WHALE PUMP

Depth to Bottom (ft.): 14.20 TOC
Static Water Level Before (ft.): 7.70 TOC
Static Water Level After (ft.): NA TOC
Screen Length (ft.): 5'
One Well Volume (gal/L): 1.1
Casing ID (in.): 2 inch PVC

Responsible Personnel: M.G. COCHRAN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole NA ppm
PID Readings: Breathing Zone NA ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
8:45	0	~2GPM	~~14.28~~	12.1	5.62	.702	0 ?	CLOUDY, LT BROWN
8:52	1	~2GPM	14.20	8.6	5.92	2.04 ?	1	PURGED DRY AFTER
								1 CASING VOLUME.
								WAITED 10 MIN FOR
								WELL RECOVERY
								H2O LEVEL = 11.20'
								AFTER 10 MINUTES,
								PURGED REMAINING
								AMOUNT FROM WELL
								WELL INITIALLY SURGED
								W/ SURGE BLOCK

Tetra Tech NUS, Inc.

NEW

MONITORING WELL DEVELOPMENT RECORD

Well: 04703
Site: Swmu 9
Date Installed: 12/12/00
Date Developed: 1/3/01
Dev. Method: Surged & Pumped
Pump Type: Whale Pump

Depth to Bottom (ft.): 14.65' TOC
Static Water Level Before (ft.): 3.87' TOC
Static Water Level After (ft.): N/A
Screen Length (ft.): 10'
One Well Volume (gal/L): 14
Casing ID (in.): 2 inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1313	—	START						SURGED 1305-1311
1315	12L	6L/min	14.01	10.5	4.31	0.285	7999	DK. BROWN
1316	18L	6L/min	DRY					
1326	—		5.26					
1327	—	START	5.00	10.0	4.48	0.299	7999	BLACK WATER
1329	30L	6L/min	DRY					
1334	—	START	5.40	10.1	4.53	0.294	7999	BLACK WATER
1340	36L	6L/min	DRY					
	→	END DEVELOPMENT						
			REMOVED	9.5 gal				
			PUMPED WELL	DRY 3 TIMES		MODERATE	PRODUCER	

Tetra Tech NUS, Inc.

NEW

MONITORING WELL DEVELOPMENT RECORD

Well: 04T04
Site: SWMU 9
Date Installed: 12/13/00
Date Developed: 1/3/01
Dev. Method: Surged & Pumped
Pump Type: WHALE PUMP

Depth to Bottom (ft.): 19.20' TOC
Static Water Level Before (ft.): 4.47' TOC
Static Water Level After (ft.): NA
Screen Length (ft.): 10'
One Well Volume (gal/L): 13
Casing ID (in.): 2 Inch PVC

Responsible Personnel: BOB BALKOVEC
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1356	—	START						SURGED 1352-1355
1400	—	6L/min	—	8.4	5.32	0.384	7999	BLACK WATER
1401	30L	6L/min	DRY					
1411	—	START	5.25	7.7	5.62	0.522	7999	
1415	54L	6L/min	DRY					METAL SMELL COMING FROM WELL
1425	—	START	5.33	8.3	5.60	0.479	7999	0.0 ppm on PID
1431	90L	6L/min	DRY					
		END DEVELOPMENT						
			REMOVED 2.24 gal					
			PUMPED WELL DRY 3 TIMES			GOOD PRODUCER!!		

Tetra Tech NUS, Inc.

NEW

MONITORING WELL DEVELOPMENT RECORD

Well: 09T05
Site: SWMU9
Date Installed: 12-4-00
Date Developed: 12-14-00
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 19.30 TOC
Static Water Level Before (ft.): 6.78 TOC
Static Water Level After (ft.): NA TOC
Screen Length (ft.): 10'
One Well Volume (gal/L): 2.2
Casing ID (in.): 2 inch PVC

Responsible Personnel: M. G. COCHRAN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole NA ppm
PID Readings: Breathing Zone NA ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
942	0	~2GPM	6.78	11.00	5.20	1.12	999	
950	1	~2GPM	~18'	13.41	5.15	1.14	999	
954	2	~1.5GPM	~18	10.5	5.13	1.18	90	
957	3	1GPM	~18	7.26	5.05	1.21	79	
1000	4	1GPM	~19	10.00	4.73	1.11	21	PURGED DRY, WAITED
1005	5	1GPM	~19	13.20	4.94	1.19	999	2 MINUTES RESTARTED
								WELL INITIALLY
								SURGED FOR 10 MIN

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 1002
Site: SWMU 10
Date Installed: ≈ 1981
Date Developed: 12.2.00
Dev. Method: Surged & Pumped
Pump Type: 12V SUB, WHITE

Depth to Bottom (ft.): 26.10
Static Water Level Before (ft.): 18.83
Static Water Level After (ft.): 23.60
Screen Length (ft.): 10'
One Well Volume (gal/l): 1.2
Casing ID (in.): 2 Inch PVC

Responsible Personnel: K. SIMPSON
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0 ppm FID
PID Readings: Breathing Zone 0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ms/cm)	Turbidity (NTU)	Remarks (odor, color, etc.) SURGED 1ST FOR 7 MIN
1033	0	1200	18.83	13.4	6.98	0.315	>999	START LT BRN. NO ODOR
1038	1.5	—	23.55	—	—	—	—	DRY TO PUMP INLET
1050	2.2	1200	20.17	13.4	7.56	0.278	65	RESTART PUMP CLEARING
1103	2.2	1200	—	—	—	—	—	DRY @ 1052 - START
1105	3.1	DRY	23.60	12.6	7.7	0.263	75	DRY AFTER 1 MIN
								LOCK NEEDS REPLACED

MW location and ID were confirm d using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is b[illegible] redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10-3
Site: ROCKEYE
Date Installed: 7/5/83
Date Developed: 12-3-00
Dev. Method: Surged & Pumped
Pump Type: 12V SUB - WHALE

Depth to Bottom (ft.): 32.3'
Static Water Level Before (ft.): 15.97'
Static Water Level After (ft.): DRY
Screen Length (ft.): 10'
One Well Volume (gal/L): 9 w/Annulus
Casing ID (in.): 2 inch PVC

Responsible Personnel: T. ROJAHN / K. SIMPSON
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0 ppm
PID Readings: Breathing Zone 0 ppm FID

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.) 5MIN Surge Prior to Pumping
1000	0	—	15.97	10.6	6.25	1.14	> 999+	REDDISH BRN
1003	4	—	19.55	→				W.L.
1005	7	—	22.65	13.4	6.24	1.11	> 999+	ORANGISH BRN
1010	9	—	25.80	13.4	6.26	1.10	> 999+	" "
1015	-	—	30.41	13.4	6.26	1.08	> 999+	" "
1019	12.5	—	DRY	→				DRY
1040	12.5	—	24.60	13.3	6.16	1.01	371	TANNISH
1045	15.5	—	DRY	→				DRY
1105	15.5	—	24.65	11.7	6.41	1.03	> 999+	ORANGISH BRN
1107	17.5	—	DRY	12.8	6.18	1.11	706	" " DRY

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being red veloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10-16
Site: Sumulo
Date Installed: 4/8/83
Date Developed: 1/4/01
Dev. Method: Surged & Pumped
Pump Type: WHALE PUMP

Depth to Bottom (ft.): 36.00' TOC
Static Water Level Before (ft.): 15.55 TOC
Static Water Level After (ft.): NA
Screen Length (ft.): 9'
One Well Volume (gal/L): 9
Casing ID (in.): 2 inch PVC

Responsible Personnel: Bob Balkowitz
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1530	—	START	—	—	—	—	—	SURGING 1530 – 1525
1534	12L	3L/min	DRY	10.5	4.74	1.87	530	5L/min
1544	—	START	31.00	—	—	—	—	
1546	20L	4L/min	—	11.7	4.35	1.85	4.00	VERY CLEAR
1547	24L	—	DRY	—	—	—	—	
1557	—	START	31.93	—	—	—	—	
1559	37L	4L/min	DRY	10.6	4.38	1.86	3.00	VERY CLEAR
		→ END DEVELOPMENT						
			REMOVED	8.5 gal				
			PUMPED WELL DRY 3 TIMES					

MW location and ID were confirmed using figures, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10-17
Site: SWMU 10
Date Installed: 9/10/83
Date Developed: 1/5/01
Dev. Method: Surged & Pumped
Pump Type: Whale Pump

Depth to Bottom (ft.): 27.60' TOC
Static Water Level Before (ft.): 12.87' TOC
Static Water Level After (ft.): NA
Screen Length (ft.): 9
One Well Volume (gal.): 7
Casing ID (in.): 2 inch PVC

Responsible Personnel: Bob Balkovec
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole – ppm
PID Readings: Breathing Zone – ppm

Time	Cumulative Water Volume (gal)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1038	—	START	—					1030-1035 SURGED WELL
1040	12L	6L/min	19.50	7.9	6.77	0.631	7999	CLOUDY TAN
1045	44L	6.5L/min	DRY	—				
1050		START	18.30	—			2	CLEAR PUMP UP
1051	50L	6L/min	—	10.2	6.37	0.473	750	
1055	70L	2L/min	BELOW PUMP	10.8	6.14	0.390	7	
1100	80L	2L/min	—	10.9	6.02	0.377	2	CLEAR
1105	90L	2L/min	—	10.8	6.02	0.378	<1	
1110	100L	2L/min	—	10.9	6.01	0.377	<1	
		→ END	DEVELOPMENT					
			REMOVED 26.5 gal					
			PARAMETERS STABLE	TURB. <10		V. CLEAR		

26.5L/gal

132

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: W ll was installed as part of a previous RFI and is b ing redev loped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C26
Site: Rockeye
Date Installed: 9/14/88
Date Developed: 12-02-00
Dev. Method: Surged & Pumped
Pump Type: REDI-FLOW

Depth to Bottom (ft.): 88.0'
Static Water Level Before (ft.): 46.32'
Static Water Level After (ft.): DRY
Screen Length (ft.): 5'
One Well Volume (gal/L): 41
Casing ID (in.): 2 inch PVC

Responsible Personnel: T. ROJAHN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole ____ ppm
PID Readings: Breathing Zone ____ ppm

Time	Cumulative Water Volume (TR) ~~(Gal.)~~ L	Flow Rate (TR) ~~(mL~~/min.) L	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS~~/cm)	Turbidity (NTU)	Remarks (odor, color, etc.) 10 MIN SURGE, MOVE to NW MONITORING
0910	0	—	46.32	→			→	Start Pump
0920	30	3 L	76.55	12.0	5.35	0.444	>999	REDDISH BRN
0925	45	3	76.67	12.3	5.54	0.379	>999	" "
0930	60	3	84.0	13.2	5.66	0.386	>999	" "
0935	75	→					→	DRY (84.0')
1006	75	—	57.75	12.9	5.58	0.352	225	RESTART PUMP
1011	90	3	—	13.4	5.63	0.355	497	Lt. ORANGISH
1016	97.5	1.5	83.0	13.7	5.63	0.346	238	" "
1021	105	1.5	—	13.6	5.67	0.350	325	" "
1026	112.5	—	84.0	→			→	DRY
1100	112.5	—	57.10	13.2	5.75	0.345	10	RESTART PUMP CLEAR
1105	132.5	4	—	13.3	5.66	0.349	65	TANNISH
1107	—	—	82.15	→			→	W.L. TANNISH
1110	142.5	2	—	13.9	5.63	0.348	25	"
1118	158.5	2	→				→	DRY (84.0') Sl. TANNISH
								to CLEAR

Sand Pack = 21L
2" PVC = 20
41 L one vol.

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a pr vious RFI and is being r d v loped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C26P3
Site: SWMU 10
Date Installed: 1988
Date Developed: 12.2.00
Dev. Method: Surged & Pumped
Pump Type: 12V SUB. WHALE

Depth to Bottom (ft.): 29.28 SOFT BTM
Static Water Level Before (ft.): 15.93
Static Water Level After (ft.): 28.00
Screen Length (ft.): ~~5~~ 10
One Well Volume (gal/L): 2.2
Casing ID (in.): 2 inch PVC

Responsible Personnel: K. SIMPSON / B. BANKOVEC
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0 ppm
PID Readings: Breathing Zone 0 ppm FID

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0955	0	2000	15.9	14.5	7.71	0.651	>999	SURGED 1ST FOR 7 MIN
0904	3.5	1200	21.10	14.4	5.75	0.652	>999	LT BRN, NO ODOR
0910	5	2500	—	15.3	5.66	0.634	>999	
0915	9	1800	28.00	—	—	—	—	DRY TO PUMP INLET
0928	9	—	22.44	—	—	—	—	
0937	9	—	21.32	—	—	—	—	
0940	9	2100	21.00	14.1	5.53	0.617	500	CLEAR TO CLOUDY
0945	11.5	1400	28.00	14.7	5.36	0.593	500	DRY @ 0947
								END DEVELOPMENT

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C31
Site: SWMU 10
Date Installed: ≈1988
Date Developed: 12-3-00
Dev. Method: Surged & Pumped
Pump Type: GRUNDFOS

Depth to Bottom (ft.): 66.90
Static Water Level Before (ft.): 53.11
Static Water Level After (ft.): 54.91
Screen Length (ft.): 10
One Well Volume (gal/L): 24
Casing ID (in.): 2 inch PVC

Responsible Personnel: SIMPSON / RUJAHN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0 ppm
PID Readings: Breathing Zone 0 ppm FID

Time 1452	Cumulative Water Volume ~~(Gal.)~~ L	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.) SURGED 1ST FOR 5 MIN
1452	0 L	7000	53.11	13.1	5.58	0.579	>999	RUST COLOR, NO ODOR
1455	21	7000	57.40	13.9	5.57	0.577	144	CLEARING
1510	110	4000	54.97	14.4	5.55	0.587	31	
1517	138	4000	54.95	14.5	5.57	0.594	7.8	5.8 VOL
1523	158	4000	54.91	14.1	5.54	0.595	4.4	END PURGE

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

Sand Pack : 21L
2" PVC : 3L
24

NOTE: Well was installed as part of a previous RFI and is b[illegible]redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C31P3
Site: ROCKEYE
Date Installed: 10/7/88
Date Developed: 12/2/00
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 23.5'
Static Water Level Before (ft.): 18.82'
Static Water Level After (ft.): DRY
Screen Length (ft.): 10'
One Well Volume (gal/L): 10W/ANNULUS
Casing ID (in.): 2 inch PVC

Responsible Personnel: T. ROJAHN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole ____ ppm
PID Readings: Breathing Zone ____ ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1601	0	–	18.82	13.4	5.02	3.99	640	Start Pump
1603	1.5	–	DRY	→				DRY REDDISH BRN
1615	1.5	–	21.0	12.4	5.17	4.06	77	SI Cloudy
1616	2	–	DRY	→				DRY
1646	–	–	21.73	12.5	5.22	4.04	-10	DRY · Pumped ~500 ml (Clear)
								Very Poor Producer

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES X NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this tim

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C33
Site: SWMU 10
Date Installed: 11/9/88
Date Developed: 1/4/01
Dev. Method: Surged & Pumped
Pump Type: GRUNDFOS

Depth to Bottom (ft.): 63.25' TOC
Static Water Level Before (ft.): 47.33' TOC
Static Water Level After (ft.): NA
Screen Length (ft.): 10'
One Well Volume (gal/L): 8
Casing ID (in.): 2 inch PVC

Responsible Personnel: BOB BALKOVICZ
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (~~mL~~/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1248	—	START	—					SURGED 1235-1240
1252	16L	4L/min	—	10.4	6.54	1.01	>999	STOP PUMPING - HOSE CRIMPED -
1303	—	START	—					
1307	20L	1L/min	DRY —	WELL SHORTEN DISCHARGE TO DISCHARGE				SLOW PUMPING RATE ?
1309	—	START	—					
1311	≈ 23L	~~0~~ —	DRY	—				
1315	—	—	56.00	—				
1318		START	55.80	8.7	6.57	1.04	>999	
1319	25L	—	DRY	—				
1321	—	START	56.00	—				
1322	≈ 27L	—	DRY	—				
→		END DEVELOPMENT						
			REMOVED ? Sol					

MW location and ID were confirm d using figure, boring logs and 1999 MW Inventory YES___ NO _____

NOTE: Well was installed as part of a previous RFI and is be[illegible]ed velop d at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C33P2
Site: SWMU 10
Date Installed: 11/10/88
Date Developed: 1/4/01
Dev. Method: Surged & Pumped
Pump Type: WHALE PUMP

Depth to Bottom (ft.): 36.35 TOC
Static Water Level Before (ft.): 31.0 TOC
Static Water Level After (ft.): NA
Screen Length (ft.): 10
One Well Volume (gal/L): 4
Casing ID (in.): 2 Inch PVC

Responsible Personnel: DOD BALKOVICE
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1100	—	START	—					SURGED 1050 - 1055
1102	6L	3L/min	31.40	11.5	5.53	0.357	795	GRANULAR WATER
1107	21L	3L/min	32.25	13.1	5.46	0.312	210	
1112	36L	3L	32.50	13.0	5.46	0.278	67	
1117	51L	3L	32.60	12.6	5.50	0.272	14	
1122	66L	3L	32.72	12.9	5.51	0.269	8	CLEAR
1127	81L	3L	32.80	12.9	5.51	0.269	7	CLEAR
	→ END DEVELOPMENT							
		REMOVED	21.5 gal	GREAT PRODUCER!				

75L since

MW location and ID w r confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is b ing r d veloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C35
Site: SWMU 10
Date Installed: ≈1988
Date Developed: 12-3-00
Dev. Method: Surged & Pumped
Pump Type: GRUNDFOS

Depth to Bottom (ft.): 85.0
Static Water Level Before (ft.): 65.70
Static Water Level After (ft.): 82.06
Screen Length (ft.): 10
One Well Volume (gal/L): 28
Casing ID (in.): 2 Inch PVC

Responsible Personnel: K. SIMPSON
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0 ppm
PID Readings: Breathing Zone 0 ppm FID

Time	Cumulative Water Volume (~~Gal.~~) L	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.) SURGED 1ST FOR ≈ 5 MIN
1332	0 L	3000	65.70	12.6	4.54	1.95	>999	RUST COLOR, NO ODOR
1337	15	2500	72.20	12.4	4.64	2.09	451	
1344	32	1500	78.82	14.4	4.70	2.08	589	
1349	40	1000	81.03	14.8	4.79	2.06	130	
1352	40	DRY	83.00					DRY - RECHARGING
1410	40	2000	69.00	14.2	5.15	1.68	157	RESTART PUMP
1415	41	1000	74.67	14.3	4.92	1.94	70	
1420	43	1000	82.06	14.3	4.91	1.97	55	
1423	44	DRY						DRY END DEV. PUMPED DRY 2X

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

SAND PACK @ FILTER = 21 L
2" PVC = 7 L
28

NOTE: Well was installed as part of a previous RFI and is b[illegible]r developed at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C35P2
Site: SWMU 10
Date Installed: ≈ 1988
Date Developed: 12-2-00
Dev. Method: Surged & Pumped
Pump Type: 12V SUB-WHALE

Depth to Bottom (ft.): 52.50
Static Water Level Before (ft.): 20.17
Static Water Level After (ft.): 48.00
Screen Length (ft.): 10
One Well Volume (gal/L): 5.3
Casing ID (in.): 2 inch PVC

Responsible Personnel: K. SIMPSON B. BARKOVEC
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0 ppm
PID Readings: Breathing Zone 0 ppm FID

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.) SURGED 1ST FOR 7 MIN
1530	0	2400	20.17	13.2	4.82	1.921	>999	GRAY, NO ODOR
1535	3.6	3000	30.60	13.6	5.10	1.807	330	
1538	7.3	2500	42.00	13.7	5.23	1.725	120	CLEAR
1544	8.2	2000	42.67	12.8	5.18	1.802	>999	GRAY
1550	10.2	1300	45.15	13.9	4.94	1.818	350	CLEAR TO CLOUDY
1556	12.0	1300	47.98	14.0	4.91	1.812	>999	GRAY
1601	13.5	1200	50.13	13.7	4.92	1.802	>999	DRY @ 1603 51.6'
1624	13.5	—	31.50	—	—	—	—	RECHARGING
1626	13.5	1500	31.03	13.2	4.83	1.794	120	CLEAR
1631	17.0	2000	45.07	13.5	4.77	1.760	37	DRY @ 1632
								25 ~~17~~ GAL TOTAL REMOVED
								KS END DEVELOPMENT

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C37
Site: ROCKEYE
Date Installed: 12/5/88
Date Developed: 12/02/00
Dev. Method: Surged & Pumped
Pump Type: REDI-FLO

Depth to Bottom (ft.): 94.6'
Static Water Level Before (ft.): 57.83'
Static Water Level After (ft.): NA
Screen Length (ft.): 10'
One Well Volume (gal/L): 38 L
Casing ID (in.): 2 inch PVC 38 x 5 = 190 L

Responsible Personnel: T. ROJAHN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole — ppm
PID Readings: Breathing Zone — ppm

Time	Cumulative Water Volume ~~(Gal.)~~ L	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.) 10min Surge Prior to Pumping
1330	0	6L	57.83	12.0	5.39	0.389	999+	START PUMPING BRN
1335	30	-	80.36	→			→	W.L.
1338	36	2 L	80.35	12.1	5.55	0.405	210	TAN
1345	50	2	80.60	12.9	5.58	0.407	183	"
1350	57.5	1.5	80.72	13.0	5.58	0.402	167	"
1355	65	1.5	81.12	13.8	5.60	0.395	142	TANNISH
1400	72.5	1.5	81.33	13.9	5.65	0.395	141	"
1405	80	1.5	81.37	14.4	5.60	0.395	75	SL. TANNISH
1410	87.5	1.5	81.60	14.7	5.58	0.394	55	CLEAR
1420	102.5	1.5	81.32	15.0	5.55	0.390	21	"
1430	117.5	1.5	81.52	15.0	5.56	0.389	<10	"
1440	132.5	1.5	81.62	15.0	5.55	0.391	<10	"
1450	147.5	1.5	81.63	15.1	5.53	0.391	<10	"
1500	162.5	1.5	81.63	15.2	5.53	0.393	<10	"
1510	177.5	1.5	81.52	15.3	5.53	0.391	<10	"
1520	192.5	1.5	81.50	15.4	5.52	0.392	<10	"

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: W ll was installed as part of a pr vious RFI and is be[illegible]d v loped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C37P3
Site: SWMU 10
Date Installed: ≈ 1988
Date Developed: 12.2.00
Dev. Method: Surged & Pumped
Pump Type: 12V SUB.- WHALE

Depth to Bottom (ft.): 36.50
Static Water Level Before (ft.): 22.52
Static Water Level After (ft.): 35.00
Screen Length (ft.): 10'
One Well Volume (Gal/L): 2.3
Casing ID (in.): 2 inch PVC

Responsible Personnel: K. SIMPSON
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0 ppm
PID Readings: Breathing Zone 0 ppm FID

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.) SURGED 1ST FOR ≈ 5 MIN
1349	0	2000	22.52	13.3	5.20	1.378	7999	START RED/RUST COLOR
1352	3.5	1800	30.25	14.0	4.43	1.505	550	LT BRN, NO ODOR
1356	5.0	1800	34.70	13.7	4.91	1.409	950	DRY TO PUMP INLET
1406	5.0	—	33.47	—			—	RECHARGING
1417	5.0	—	32.45	—			—	
1424	5.0	1800	32.00	13.0	4.95	1.386	250	
1426	6.0	DRY	35.00	—			—	DRY, END DEVELOPMENT

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is b ing redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C41
Site: SWMU 10
Date Installed: 2/15/89
Date Developed: 1/4/01
Dev. Method: Surged & Pumped
Pump Type: GRUNDFOS

Depth to Bottom (ft.): 103.10' TOC
Static Water Level Before (ft.): 70.10 TOC
Static Water Level After (ft.): NA
Screen Length (ft.): 10'
One Well Volume (gal/L): 11
Casing ID (in.): 2 Inch PVC

Responsible Personnel: B.A. Barnhart
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0.0 ppm
PID Readings: Breathing Zone 0.0 ppm

Time	Cumulative Water Volume (gal)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0858		START						SURGED 0915-0932
0900	4L	2L/min	82.25	9.5	5.26	1.94	787	
0910	219L	1L/min	90.35	11.0	5.41	1.45	7444	
0915	73L	800mL/min	89.00	11.0	5.50	1.44	7444	
→ SWITCHED PUMP TO LOWER PUMP								
0920		START	≈ 2-1.5L/min					DK BROWN/BLACK ORG. MATERIAL
0924	224L	STOP —	HOSE COMPLIED BETWEEN PUMP + WELL.					89.9' @ 0922
0930	—	START	—	9.1	5.36	1.45	7444	LIGHT BROWN
0935	39L	2L/min	—	11.1	5.31	1.45	7444	
0945	249L	700mL/min	93.00	10.7	5.52	1.47	7444	93.00 @ 0940
0950	58L	3L/min	—	14.3	5.34	1.46	7444	
0955	3 TOL	2L/min	DRY	—	—	—	—	
1005	—	START	87.55	—	—	—	—	
1010	79L	2.5L/min	—	11.0	5.39	1.45	7444	
1013	84L	2L/min	DRY	—	—	—	—	
→ END DEVELOPMENT								

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is b[illegible] develop d at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C41P3
Site: SWMU 10
Date Installed: > 1988
Date Developed: 12.2.00
Dev. Method: Surged & Pumped
Pump Type: 12V. SUB. - WHALE

Depth to Bottom (ft.): 39.15
Static Water Level Before (ft.): 35.80
Static Water Level After (ft.): 37.55
Screen Length (ft.): NA
One Well Volume (gal): 0.5
Casing ID (in.): 2 Inch PVC

Responsible Personnel: K. SIMPSON
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0 ppm
PID Readings: Breathing Zone 0 ppm FID

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.) SURGED 1ST FOR ≈ 5 MIN
1306	1	2000	38.00	11.9	6.92	2.177	>999	DRY AFTER 1 GAL
								LT BRN, NO ODOR
								COARSE SAND IN WELL RISER
1324	1.5	1500	37.55	12.1	8.86	2.272	>1000	DRY AFTER < 1 MIN.
								RUST TO CLEAR COLOR
								END DEVELOPMENT

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: W ll was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C52
Site: SWMU 10
Date Installed: ≈ 1988
Date Developed: 12-3-00
Dev. Method: Surged & Pumped
Pump Type: GRUNDFOS

Depth to Bottom (ft.): 70.50
Static Water Level Before (ft.): 40.88
Static Water Level After (ft.): 49.35
Screen Length (ft.): 10
One Well Volume (~~gal~~ L): 34L
Casing ID (in.): 2 Inch PVC

Responsible Personnel: K. SIMPSON, T. ROJAHN
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole 0 ppm
PID Readings: Breathing Zone 0 ppm FID

Time	Cumulative Water Volume (~~Gal.~~) L	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.) SURGED 1ST FOR ≈ 5 MIN
0909	0	3000	47.89 @ 0911	9.6	5.67	0.427	>999	START, RUST COLOR, NO ODOR
0915	12 L	2000	48.53	11.6	5.72	0.365	>999	
0921	15	1500	48.46	11.4	5.73	0.361	481	
0930	2740	2000	48.55	12.4	5.71	0.362	266	LT RUST COLOR
0937	4454	2000	48.45	12.5	5.73	0.362	209	
0946	5972	2000	48.59	12.5	5.72	0.360	346	
0955	7793	2000	48.62	12.6	5.76	0.361	270	
1016	134	2000	48.55	12.7	5.87	0.368	307	@ 1016
1020		2000	48.92	12.8	5.96	0.371	151	
1034	170	2000	49.35	11.9	5.77	0.361	47	5 VOL END DEV.
								TURNED PUMP UP TO
								@ 4 GPM FOR 10 MIN

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ___

SCREEN ANNULUS : 21L
2" PVC : 13
34

NOTE: Well was installed as part of a previous RFI and is b edeveloped at this tim .

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10655
Site: SWMU 10
Date Installed: 6/20/99
Date Developed: 1/5/01
Dev. Method: Surged & Pumped
Pump Type: Waterra Pump

Depth to Bottom (ft.): 33.40' TOC
Static Water Level Before (ft.): 14.50' TOC
Static Water Level After (ft.): NA
Screen Length (ft.): 10'
One Well Volume (gal/L): 9.5
Casing ID (in.): 2 Inch PVC

Responsible Personnel: Bob Parkovice
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole – ppm
PID Readings: Breathing Zone – ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/m)	Turbidity (NTU)	Remarks (odor, color, etc.)
0845	—	START	—	—	—	—	—	SURGED 0837–0843
0847	10L	5L/min	25.40	10.0	4.38	0.092	108	CLEAR/HAZY
0852	30L	5L/min	BELOW PUMP	4.7	4.52	0.146	6	
0857	45L	3L/min	—	10.3	4.74	0.160	3	
0902	60L	3L/min	—	10.4	4.84	0.161	2	
0907	75L	3L/min	—	10.4	4.90	0.161	1	
0912	90L	3L/min	—	10.5	4.89	0.162	<1	
0917	105L	3L/min	—	10.5	4.90	0.162	<1	
		END DEVELOPMENT						
			REMOVED	28 gal				
			PARAMETERS STABILIZED					

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C55P2
Site: SWMU 10
Date Installed: 6/9/99
Date Developed: 1/5/01
Dev. Method: Surged & Pumped
Pump Type: WHALE PUMP

Depth to Bottom (ft.): 10.57' TOC
Static Water Level Before (ft.): 6.60' TOC
Static Water Level After (ft.): NA
Screen Length (ft.): 5'
One Well Volume (gal/L): 3
Casing ID (in.): 2 inch PVC

Responsible Personnel: BOB BALLOUER
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole NA ppm
PID Readings: Breathing Zone NA ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0811		START						SURGED 0805 - 0810
0812	4L	4L/min	7.45	6.0	5.87	0.279	>999	
0817	24L	4L/min	8.80	6.1	5.71	0.200	607	
0822	34L	3L/min	Below Pump	5.6	5.68	0.192	4	BROWN
0827	49L	2L/min	—	5.7	5.63	0.141	2	
0832	54L	2L/min	—	5.7	5.65	0.141	2	
		END DEVELOPMENT						
			REMOVED 15.5 gal					
			PARAMETERS STABILIZED					

GOL: SUR.

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is below developed at this time.

Tetra Tech NUS, Inc.

EXISTING

MONITORING WELL DEVELOPMENT RECORD

Well: 10C57
Site: SWMU 10
Date Installed: 6/22/88
Date Developed: 1/5/01
Dev. Method: Surged & Pumped
Pump Type: WATER PUMP

Depth to Bottom (ft.): 21.55' TOC
Static Water Level Before (ft.): 11.1' TOC
Static Water Level After (ft.): NA
Screen Length (ft.): 10'
One Well Volume (gal/L): 7
Casing ID (in.): 2 Inch PVC

Responsible Personnel: BOB BALLOUGH
Drilling Co.: Bowser Morner
Project Name: NSWC CRANE
Project Number: 7141 CTO 010
PID Readings: Bore Hole – ppm
PID Readings: Breathing Zone – ppm

Time	Cumulative Water Volume (Gal.)	Flow Rate (mL/min.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~µS/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.)
1004	—	START	—	—	—	—	—	SURGED 1003 – 1006
1004	6L	6L/min	—	9.8	5.33	0.604	>999	CRANKISH BROWN
1010	12L	—	DRY	—	—	—	—	
1015	—	—	20.45	—	—	—	—	
1020	12L	—	20.75	—	—	—	—	
	→	END DEVELOPMENT			SLOW	RECHARGE	1.3' IN 10 min	
			REMOVED 3 gal					

MW location and ID were confirmed using figure, boring logs and 1999 MW Inventory YES ✓ NO ____

NOTE: Well was installed as part of a previous RFI and is being redeveloped at this time.

APPENDIX B.7

SWMUs 4, 5, 9, AND 10
WATER LEVEL MEASUREMENT SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSCW CRANE **Project No.:** 7141

Location: Crane, Indianna - SWMU 4- **Personnel:** T. ROJAHN

Weather Conditions: OVERCAST E high 30's **Measuring Device:** M-Scope

Date: 01-16-01 **Remarks:**

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
04-01	0810		31.26	0.00	40	25.3-34.5	
04-02	0820		20.53	0.00	30	15.4-24.6	
04-03	0833		3.94	0.00	15	3.1-10.1	
04-04	0836		27.46	0.00	36.9	22.9-31.9	
04-05	0827		11.54	0.00	19.75	5.22-14.4	
04-06	0823		16.80	0.00	28	1.62-19.83	
04T01	0813		26.29	0.00	34	24-34	
04T02	0853		33.58	0.00	40	30-40	
04T03	0845		5.36	0.00	16	6-16	

04C01 0802 125.29

*All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWC CRANE
Project No.: 7141
Location: Crane, Indiana -SWMU 5-
Personnel: B. BARKOVEC
Weather Conditions: CLOUDY - OVERCAST 30's
Measuring Device: M-Scope
Date: 1/16/01
Remarks:

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
05-01	0814		5.22	0.00	17	4-11.68	
05-02	0806		9.92	0.00	17	4.1-11.80	
05-03	0821		15.57	0.00	21.35	6.89-16	
05-04	0827		13.65 TOPVC 11.40 G.SURF	0.00	25	10.74-19.95	2.25' of R=SCR
05-05	0802		10.65	0.00			
05-06	0846		11.04	0.00	30	15.52-24.71	
05-07	0817		11.30	0.00	35	20.3-29.62	
05-08	0951		4.72	0.00	17.5	2.7-12.18	
05-09	0829		15.02	0.00	15	10.27-19.62	
05-10	0833		16.57	0.00			
05-11	0836		17.89	0.00			
05-12	0838		14.05	0.00			
05-13	0843		15.71	0.00	25	10.12-19.56	
05-14	0915		3.82	0.00			J-PLUG NEEDS REPLACED
05-15	0930		5.68	0.00	14.8	4.98-12.45	
05-16	0913		4.02	0.00	15	5.06-142.75	
05-17	0921		5.68	0.00			
05-18	0927		4.34	0.00			
05-19	0918		4.16	0.00	15	4.8-12.75	
05T01	0810		5.96	0.00	15	5-15	
05T02	0850		12.88	0.00	18	8-18	
05T03	0935		3.78	0.00	15	5-15	

*All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWC CRANE
Project No.: 7141
Location: Crane, Indiana -SWMU 9-
Personnel: R. SIMPSON
Weather Conditions: 15°F NO RAIN OVER THE LAST WEEK SOME LITE SNOW 1.5.01
Measuring Device: M-Scope
Date: 1.10.01
Remarks:

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
09-01				0.00			
09-02				0.00			
09-03	0812		3.55	0.00			
09-04				0.00			
09-05				0.00			
09-06				0.00			
09-07				0.00			
09-08				0.00			
09-09				0.00			
09-10				0.00	27	11.45-20.55	
09-11	0910		11.08	0.00			
09-12	0928		4.91	0.00	25	10.32-19.49	
09-13	0930		6.33	0.00			
09-14A	0822	DRY	52.65 DRY	0.00			NO LOCK NO "A" ON LABEL 9/14
09C01	0909		115.63	0.00			
09T01				0.00	26	11-26	
09T02				0.00	12	7-12	
09T03				0.00	17	7-17	
09T04				0.00	16	6-16	
09T05				0.00	17	7-17	
09WTP1				0.00			
09WTP2				0.00			
09WTP3				0.00			
09WTP4				0.00			
09WTP5				0.00	13.3	8-13	

*All measurements to the nearest 0.01 foot

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
09WTP5	0920		13.69	0.00	26.7	20.7-25.7	

*All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWC CRANE
Project No.: 7141
Location: Crane, Indiana -SWMU 9-
Personnel: T. ROJAHN
Weather Conditions:
Measuring Device: M-Scope
Date: 01-10-01
Remarks:

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
09-01				0.00			
09-02				0.00			
09-03				0.00			
09-04				0.00			
09-05				0.00			
09-06				0.00			
09-07				0.00			
09-08				0.00			
09-09				0.00			
09-10	0815		4.55	0.00	27	11.45-20.55	
[redacted]				0.00			
09-12				0.00	25	10.32-19.49	
09-13				0.00			
09-14A				0.00			
[redacted]				0.00			
09T01				0.00	26	11-26	
09T02				0.00	12	7-12	
09T03	0807		3.72	0.00	17	7-17	
09T04	0810		6.20	0.00	16	6-16	
09T05	0800		8.04	0.00	17	7-17	
09WTP1	0815		12.11	0.00			
09WTP2	0820		9.95	0.00			
09WTP3	0826		9.38	0.00			
09WTP4	0832		8.87	0.00			
09WTP5	0835		3.16	0.00	13.3	8-13	

*All measurements to the nearest 0.01 foot

Terra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWC CRANE
Project No.: 7141
Location: Crane, Indiana -SWMU 9-
Personnel: D. Bullovel
Weather Conditions:
Measuring Device: M-Scope
Date: 1/10/01
Remarks:

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
09-01	0873		17.89	0.00			NEEDS NEW LOCK
09-02	0813		9.90	0.00			
09-03				0.00			
09-04	0847		16.96	0.00			
09-05	0842		12.36	0.00			
09-06	0824		3.60	0.00			LOCK WOULD NOT OPEN
09-07	0804		19.06	0.00			
09-08	0844		13.21	0.00			
09-09	0807		8.19	0.00			NEEDS NEW LOCK
09-10				0.00	27	11.45-20.55	
09-11				0.00			
09-12				0.00	25	10.32-19.49	
09-13				0.00			
09-14A				0.00			
09C01				0.00			
09T01	0820		13.70	0.00	26	11-26	
09T02	0838		7.81	0.00	12	7-12	
09T03				0.00	17	7-17	
09T04				0.00	16	6-16	
09T05				0.00	17	7-17	
09WTP1				0.00			
09WTP2				0.00			
09WTP3				0.00			
09WTP4				0.00			
09WTP5				0.00	13.3	8-13	

*All measurements to the nearest 0.01 foot

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Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWC CRANE
Project No.: 7141
Location: Crane, Indiana -SWMU 10-
Personnel: KEITH SIMPSON
Weather Conditions: 33°F OVERCAST
Measuring Device: M-Scope
Date: 1.16.01
Remarks:

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
10-01				0.00			
10-02				0.00	24.9	10.58-19.8	
10-03				0.00	29.5	14.83-24.15	
10-04				0.00			
10-05				0.00			
10-06				0.00			
10-07				0.00			
10-08				0.00			
10-09				0.00			
10-10				0.00			
10-11				0.00			
10-12				0.00			
10-13				0.00			
10-14				0.00			
10-14A				0.00			
10-14B				0.00			
10-15				0.00			
10-16				0.00	33	18.45-27.59	
10-17				0.00	25	10.34-19.51	
10-18				0.00			
10-19				0.00			
10-20				0.00			
10-21				0.00			
10-22				0.00			
10C23				0.00			

*All measurements to the nearest 0.01 foot

RES
1.16.01

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
10C24				0.00			
10C24P2				0.00			
10C24P3				0.00			
10C25				0.00			
10C25P2				0.00			
10C25P3				0.00			
10C26				0.00	85	79.5-84.5	
10C26P2				0.00			
10C26P3				0.00	32	21-31	
10C27	1419		46.01	0.00			
10C27P2	1420		14.61	0.00			
10C28	1355		51.19	0.00			
10C28P2	1359		16.90	0.00			
10C29	1324		49.03	0.00			
10C29P2	1326		19.61	0.00			
10C30	1439		55.40	0.00			
10C30P2	1432		9.99	0.00			
10C31	1348		52.79	0.00	64	53-63	
10C31P3	1349		19.15	0.00	21	10-20	10C31P2 = 45.44 DRY
10C32	1429		50.11	0.00			
10C32P2	1429		18.77	0.00			
10C32P3	1430		15.16	0.00			
10C33	1340		47.39	0.00	61.5	50.5-60.5	
10C33P2	1342		31.12	0.00	34	23-33	
10C34	1333		56.72	0.00			
10C34P2	1334		46.55	0.00			
10C34P3	1336		19.57	0.00			
10C35	1316		65.94	0.00	80	69-79	
10C35P2	1317		20.30	0.00	50	39-49	
10C35P3	1318		18.34	0.00			
10C36	1308		57.50	0.00			
10C36P2	1310		12.96	0.00			

*All measurements to the nearest 0.01 foot

RES
11-2-01

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
10C36P3	1307		11.78	0.00			
10C37	1242		57.36	0.00	92	81-91	
10C37P2	1243		54.54	0.00			
10C37P3	1245		27.74	0.00	34	23-33	
10C38				0.00			
10C38P2				0.00			
10C39	1250		64.98	0.00			
10C39P2	1252		27.16	0.00			
10C40				0.00			
10C40P2				0.00			
10C40P3				0.00			
10C40P4				0.00			
10C41				0.00	101	90-100	
10C41P2				0.00			
10C41P3				0.00			
10C42				0.00			
10C42P2				0.00			
10C43				0.00			
10C43P2				0.00			
10C43P3				0.00			
10C44				0.00			
10C44P2				0.00			
10C45				0.00			
10C45P2				0.00			
10C46				0.00			
10C46P2				0.00			
10C46P3				0.00			
10C47				0.00			
10C47P2				0.00			
10C47P3				0.00			
10C48				0.00			
10C48P2				0.00			

*All measurements to the nearest 0.01 foot

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
NA ~~10C48P3~~				0.00			
10C49				0.00			
10C49P2				0.00			
10C50				0.00			
10C50P2				0.00			
10C51				0.00			
10C51P2				0.00			
10C52				0.00	69	58-68	
10C52P2				0.00			
10C53	1409		52.33	0.00			
10C53P2	1410		11.78	0.00			
10C54				0.00			
10C55				0.00	31	20-30	
10C55P2				0.00	8	3-8	
10C56				0.00			
10C57				0.00	20	9-19	
10C60				0.00			
10C61				0.00			

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*All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWC CRANE **Project No.:** 7141

Location: Crane, Indiana -SWMU 10- **Personnel:** BOB BALKOVEC

Weather Conditions: OVERCAST + 30's **Measuring Device:** M-Scope

Date: 1/16/01 **Remarks:**

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
10-01	1244		16.14	0.00			
10-02	1241		16.30	~~0.00~~	24.9	10.58-19.8	
10-03				0.00	29.5	14.83-24.15	
10-04				0.00			
10-05	1254		20.66	0.00			
10-06	1437		14.38	0.00			
10-07	1347		4.27	0.00			
10-08	1343		3.84	0.00			
10-09				0.00			
10-10				0.00			
10-11	1314		5.63	0.00			
10-12	1335		24.72	0.00			
10-13				0.00			
10-14	1621		32.54	0.00			
10-14A	1623		40.61	0.00			
10-14B	1620		15.08	0.00			
10-15				0.00			
10-16	1448		15.40	0.00	33	18.45-27.59	
10-17	1406		13.26	0.00	25	10.34-19.51	
10-18	1403		10.67	0.00			* LOCK LATCH BUSTED ON PVC-CAP
10-19	1425		10.57	0.00			
10-20	1340		25.02	0.00			
10-21	1400		15.00	0.00			
10-22				0.00			
10C23				0.00			

*All measurements to the nearest 0.01 foot

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
10C24				0.00			
10C24P2				0.00			
10C24P3				0.00			
10C25				0.00			
10C25P2				0.00			
10C25P3				0.00			
10C26				0.00	85	79.5-84.5	
10C26P2				0.00			
10C26P3				0.00	32	21-31	
10C27				0.00			
10C27P2				0.00			
10C28				0.00			
10C28P2				0.00			
10C29				0.00			
10C29P2				0.00			
10C30				0.00			
10C30P2				0.00			
10C31				0.00	64	53-63	
10C31P3				0.00	21	10-20	
10C32				0.00			
10C32P2				0.00			
10C32P3				0.00			
10C33				0.00	61.5	50.5-60.5	
10C33P2				0.00	34	23-33	
10C34				0.00			
10C34P2				0.00			
10C34P3				0.00			
10C35				0.00	80	69-79	
10C35P2				0.00	50	39-49	
10C35P3				0.00			
10C36				0.00			
10C36P2				0.00			

*All measurements to the nearest 0.01 foot

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
10C36P3				0.00			
10C37				0.00	92	81-91	
10C37P2				0.00			
10C37P3				0.00	34	23-33	
10C38				0.00			
10C38P2				0.00			
10C39			KS.	0.00			
10C39P2			KS.	0.00			
10C40	1219		DRY	0.00			
10C40P2	1221		67.25	0.00			
10C40P3	1222		52.38	0.00			
10C40P4	1223		14.86	0.00			
10C41				0.00	101	90-100	
10C41P2				0.00			
10C41P3				0.00			
10C42				0.00			
10C42P2				0.00			
10C43				0.00			
10C43P2				0.00			
10C43P3				0.00			
10C44				0.00			
10C44P2				0.00			
10C45				0.00			
10C45P2				0.00			
10C46	1305		55.56	0.00			
10C46P2	1307		30.34	0.00			
10C46P3	1308		17.36	0.00			
10C47	1325		54.46	0.00			
10C47P2	1327		43.03	0.00			
10C47P3	1329		25.45	0.00			
10C48	1354		31.81	0.00			NO LOCKS
10C48P2	1353		18.06	0.00			NO LOCKS

*All measurements to the nearest 0.01 foot

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
~~10C48P3~~				0.00			
10C49	1432		41.84	0.00			
10C49P2	14:31		23.63	0.00			
10C50	1445		39.07	0.00			
10C50P2	1443		23.84	0.00			
10C51	1501		44.38	0.00			
10C51P2	1459		DRY	0.00			
10C52				0.00	69	58-68	
10C52P2				0.00			
10C53				0.00			
10C53P2				0.00			
10C54				0.00			
10C55	1420		15.04	0.00	31	20-30	
10C55P2	1414		6.34	0.00	8	3-8	
10C56	1410		9.15	0.00			
10C57	1414		10.51	0.00	20	9-19	
10C60	1235		17.31	0.00			
10C61	1253		5.73	0.00			

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*All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWC CRANE
Project No.: 7141
Location: Crane, Indiana -SWMU 10-
Personnel: T. ROJAHN
Weather Conditions: OVERCAST & 30°S
Measuring Device: M-Scope
Date: 1-16-01
Remarks:

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
10-01				0.00			
10-02				0.00	24.9	10.58-19.8	
10-03	1403		15.63	0.00	29.5	14.83-24.15	
10-04	1504		17.51	0.00			
10-05				0.00			
10-06				0.00			
10-07				0.00			
10-08				0.00			
10-09	1324		18.64	0.00			
10-10	1326		14.08	0.00			
10-11				0.00			
10-12				0.00			
10-13	1424		16.17	0.00			
10-14				0.00			
10-14A				0.00			
10-14B				0.00			
10-15	1353		21.13	0.00			
10-16				0.00	33	18.45-27.59	
10-17				0.00	25	10.34-19.51	
10-18				0.00			
10-19				0.00			
10-20				0.00			
10-21				0.00			
10-22	1309		12.15	0.00			
10C23	1502		62.73	0.00			

*All measurements to the nearest 0.01 foot

T.R. 1/16/01 2 of 4

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
10C24	1454		53.73	0.00			
10C24P2	1456		53.83	0.00			
10C24P3	1458		8.32	0.00			
10C25	1443		47.79	0.00			
10C25P2	1445		46.93	0.00			
10C25P3	1447		7.58	0.00			
10C26	1430		45.97	0.00	85	79.5-84.5	
10C26P2	1432		45.49	0.00			
10C26P3	1434		16.06	0.00	32	21-31	
10C27				0.00			
10C27P2				0.00			
10C28				0.00			
10C28P2				0.00			
10C29				0.00			
10C29P2				0.00			
10C30				0.00			
10C30P2				0.00			
10C31				0.00	64	53-63	
10C31P3				0.00	21	10-20	
10C32				0.00			
10C32P2				0.00			
10C32P3				0.00			
10C33				0.00	61.5	50.5-60.5	
10C33P2				0.00	34	23-33	
10C34				0.00			
10C34P2				0.00			
10C34P3				0.00			
10C35				0.00	80	69-79	
10C35P2				0.00	50	39-49	
10C35P3				0.00			
10C36				0.00			
10C36P2				0.00			

*All measurements to the nearest 0.01 foot

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
10C36P3				0.00			
10C37				0.00	92	81-91	
10C37P2				0.00			
10C37P3				0.00	34	23-33	
10C38	1224		66.17	0.00			
10C38P2	1226		DRY	0.00			
10C39				0.00			
10C39P2				0.00			
10C40				0.00			
10C40P2				0.00			
10C40P3				0.00			
10C40P4				0.00			
10C41	1236		70.73	0.00	101	90-100	
10C41P2	1238		45.52	0.00			
10C41P3	1240		35.29	0.00			
10C42	1248		70.84	0.00			
10C42P2	1250		23.09	0.00			
10C43	1413		49.34	0.00			
10C43P2	1415		48.34	0.00			
10C43P3	1417		21.69	0.00			
10C44	1335		24.65	0.00			
10C44P2	1337		16.68	0.00			
10C45	1300		50.83	0.00			
10C45P2	1302		17.69	0.00			
10C46				0.00			
10C46P2				0.00			
10C46P3				0.00			
10C47				0.00			
10C47P2				0.00			
10C47P3				0.00			
10C48				0.00			
10C48P2				0.00			

*All measurements to the nearest 0.01 foot

TR 1/16/01 4 of 4

Well or Piezometer Number	Time	Elevation of Reference Point (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Total Well Depth from Ground Surface (feet)	Screen Interval	Comments
10C48P3				0.00			
10C49				0.00			
10C49P2				0.00			
10C50				0.00			
10C50P2				0.00			
10C51				0.00			
10C51P2				0.00			
10C52	1359		40.65	0.00	69	58-68	
10C52P2	1401		39.98	0.00			
10C53				0.00			
10C53P2				0.00			
10C54	1622		44.51	0.00			
10C55				0.00	31	20-30	
10C55P2				0.00	8	3-8	
10C56				0.00			
10C57				0.00	20	9-19	
10C60				0.00			
10C61				0.00			

*All measurements to the nearest 0.01 foot

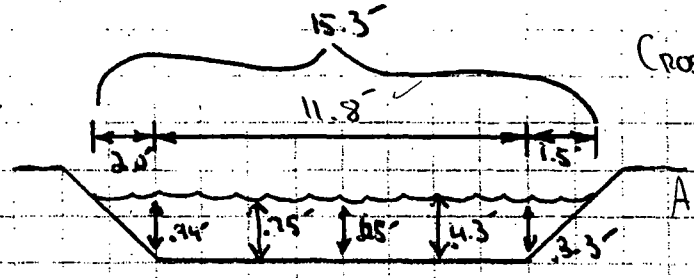
APPENDIX B.8

SWMUs 4, 5, 9, AND 10
STREAM FLOW MEASUREMENT CALCULATION SHEETS

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: B. BALKOVEC + T. ROJAHN	CHECKED BY: T.R (2/7/01)
APPROVED BY:	DATE:

DISTANCE 0'

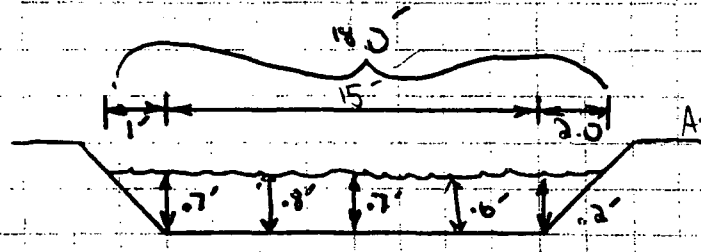


CROSS-SECTIONAL AREA (A) = AVE. DEPTH (D) × WIDTH (W)

$A_1 = \frac{(.94' + .75' + .65' + .43' + .33')}{5} \times 11.8'$

$A_1 = 7.32 \text{ FT}^2$

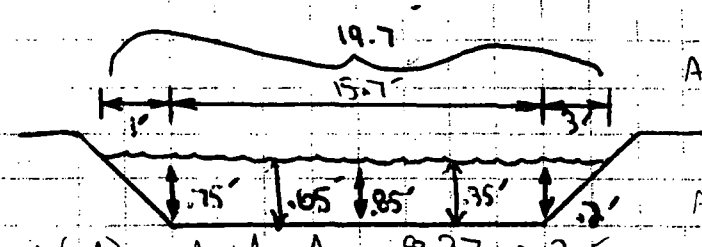
5'



$A_2 = \frac{(.7' + .8' + .7' + .6' + .2')}{5} \times 15'$

$A_2 = 9.00 \text{ FT}^2$

10'



$A_3 = \frac{(.75' + .65' + .85' + .35' + .2')}{5} \times 15.7'$

$A_3 = 8.79 \text{ FT}^2$

AVERAGE AREA (ΔA) $= \frac{A_1 + A_2 + A_3}{3} = 8.37 \text{ FT}^2$

LOCATION 04SW01

DATE 1/15/01

TIME 1640

TIMED RUN OF FLOATING OBJECT

1st 7.6 sec.

2ND 8.8 sec.

3RD 11.1 sec.

AVE 9.16 sec.

MEAN VELOCITY (V)

$V = \frac{10'}{9.16 \text{ sec}} = 1.09 \text{ FT/SEC}$

DISCHARGE (Q) = $\Delta A \times V$

$= 8.37 \text{ FT}^2 \times 1.09 \text{ FT/SEC} \times 448.83 \text{ gpm}$

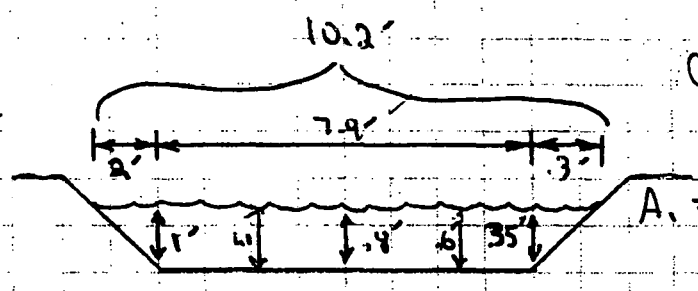
$Q = 4{,}094.8 \text{ gpm}$

Robert Balkovec

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: B. BALKOVEC & T. ROJAHN / CHECKED BY: TR (2-7-01)	APPROVED BY: / DATE:

Distance 0'

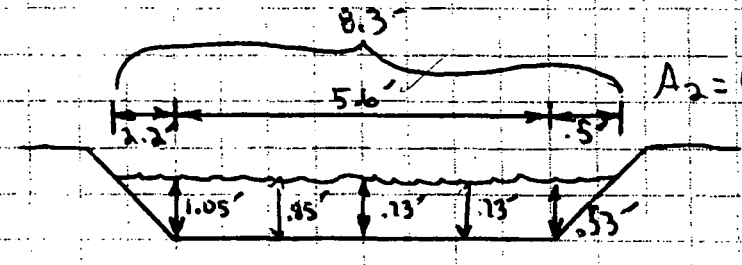


CROSS-SECTIONAL AREA (A) = AVE. DEPTH (D) x WIDTH (W)

$A_1 = \frac{(1' + 1.1' + .8' + .6' + .35')}{5} \times 7.9'$

$A_1 = 6.08\ FT^2$

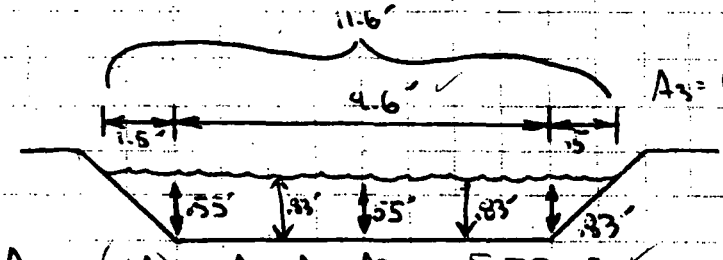
5'



$A_2 = \frac{(1.05' + .85' + .73' + .73' + .53')}{5} \times 5.6'$

$A_2 = 4.36\ FT^2$

10'



$A_3 = \frac{(.55' + .83' + .55' + .83' + .83')}{5} \times 9.6$

$A_3 = 6.89\ FT^2$

AVERAGE AREA (ΔA) = $\frac{A_1 + A_2 + A_3}{3}$ = $5.78\ FT^2$

LOCATION 045W02

DATE 1/15/01

TIME 1620

TIMED RUN OF FLOATING OBJECT

1st	8.0	sec
2ND	14.6	sec
3RD	8.9	sec
AVE	10.5	sec

MEAN VELOCITY (V) = $\frac{10'}{10.5\ SEC}$ = .95 FT/

DISCHARGE (Q) = ΔA x MEAN VELOCITY (V)

= $5.78\ FT^2 \times .95\ FT/SEC \times 448.83$ = gpm

Q = 2,464.5 gpm

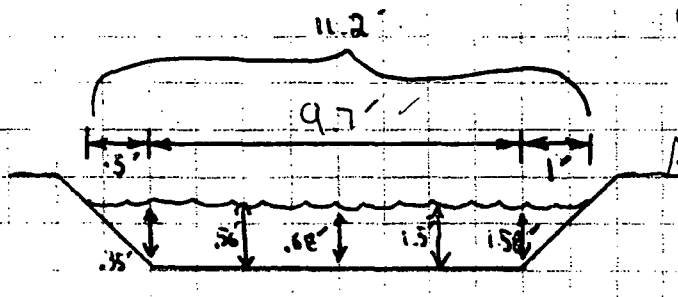
Robert Balkovec

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: B. BALKOVEC & T. ROSAHN	CHECKED BY: TR (2-7-01)
APPROVED BY:	DATE:

(CROSS-SECTIONAL AREA (A) = AVE. DEPTH (D) x WIDTH (W))

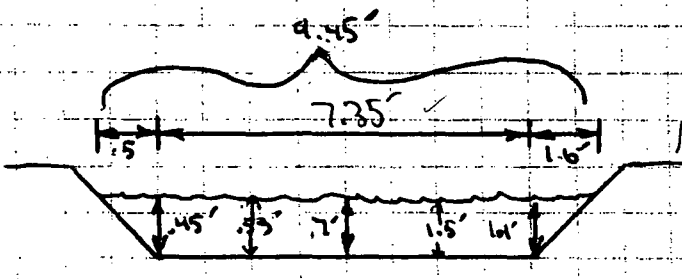
DISTANCE 0'



$A_1 = \frac{(.35' + .56' + .68' + 1.5' + 1.58')}{5} \times 9.7'$

$A_1 = 9.06 \ ft^2$

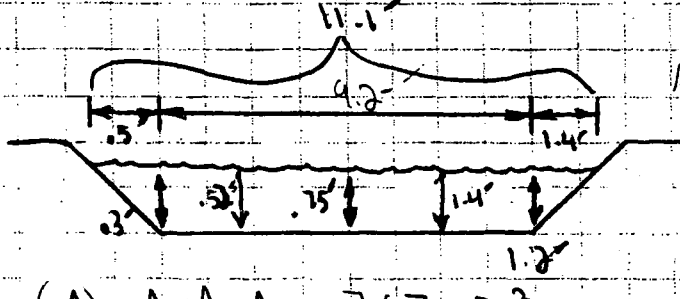
5'



$A_2 = \frac{(.45' + .53' + .7' + 1.5' + 1.4')}{5} \times 7.35'$

$A_2 = 6.29 \ ft^2$

10'



$A_3 = \frac{(.3' + .52' + .75' + 1.4' + 1.2')}{5} \times 9.2'$

$A_3 = 7.67 \ ft^2$

AVERAGE AREA (ΔA): $\frac{A_1 + A_2 + A_3}{3} = 7.67 \ ft^2$

LOCATION 045W03

DATE 1/15/00

TIME 1600

TIMED RUN OF FLOATING OBJECT

1st	8.7	sec.
2ND	10.8	sec.
3RD	32.8	sec.
AVE	17.43	sec.

MEAN VELOCITY (V) $= \frac{10'}{17.43 \ sec} = 0.57 \ ft/sec$

DISCHARGE (Q) = $\Delta A \times V$

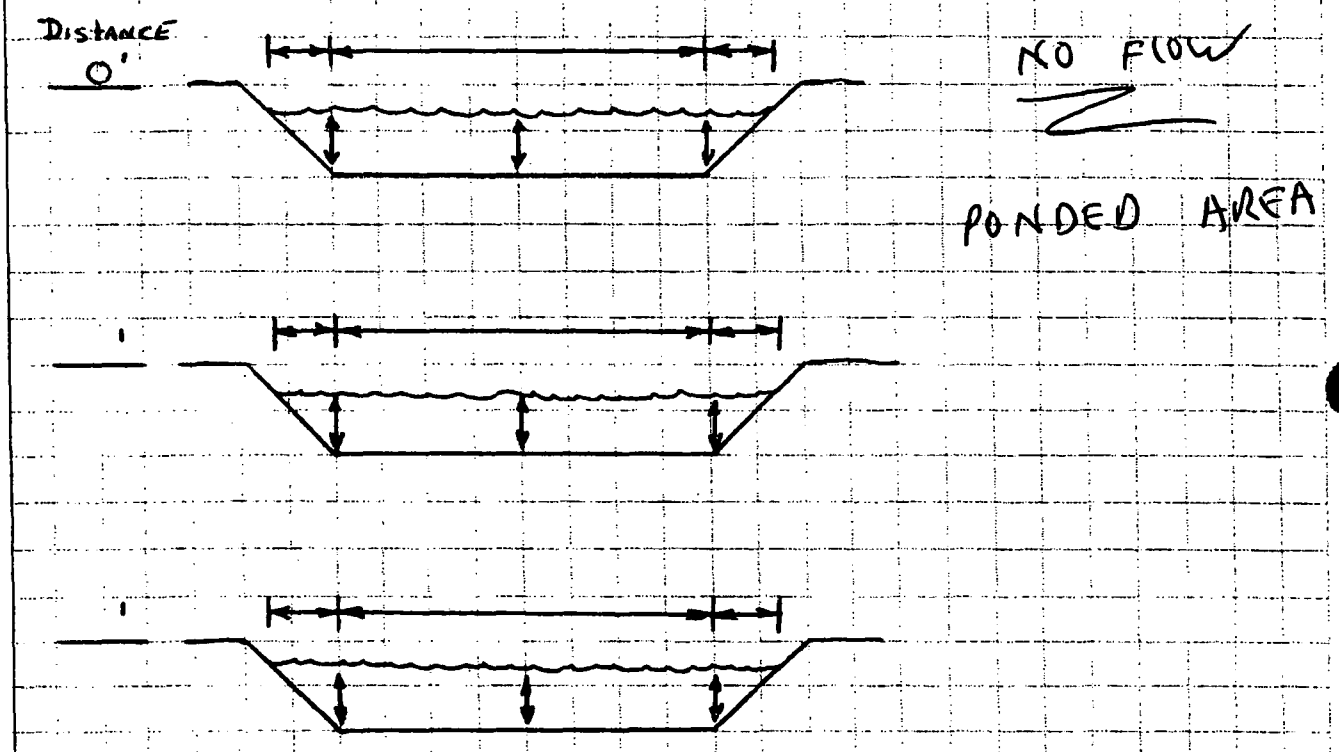
$= 7.67 \ ft^2 \times 0.57 \ ft/s \times 448.83 = gpm$

$Q = 1{,}962.2 \ gpm$

Robert Balkovec

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT NSWC CRANE		JOB NUMBER CTO 10 7141	
SUBJECT FLOW MEASUREMENT CALCULATION SHEET			
BASED ON FIELD MEASUREMENTS		DRAWING NUMBER	
BY KES	CHECKED BY (NA)	APPROVED BY	DATE 1.15.01



LOCATION 04SW04

DATE 1.15.01

TIME 1630

TIMED RUN OF FLOATING OBJECT

1st ____ Sec.

2ND ____ Sec.

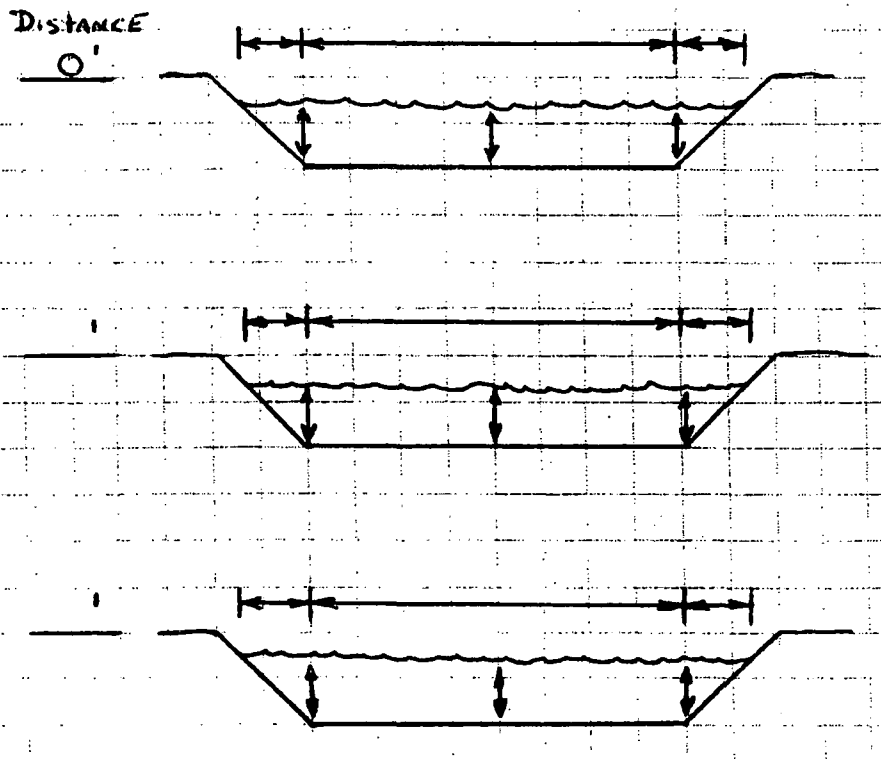
3RD ____ Sec.

AVE ____ Sec.

KES

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT NSWC CRANE		JOB NUMBER CTO 10 7141	
SUBJECT FLOW MEASUREMENT CALCULATION SHEET			
BASED ON FIELD MEASUREMENTS		DRAWING NUMBER	
BY KES	CHECKED BY (NA)	APPROVED BY	DATE 1.15.01



NO FLOW

LOCATION 04SW05

DATE 1.15.01

TIME 1620

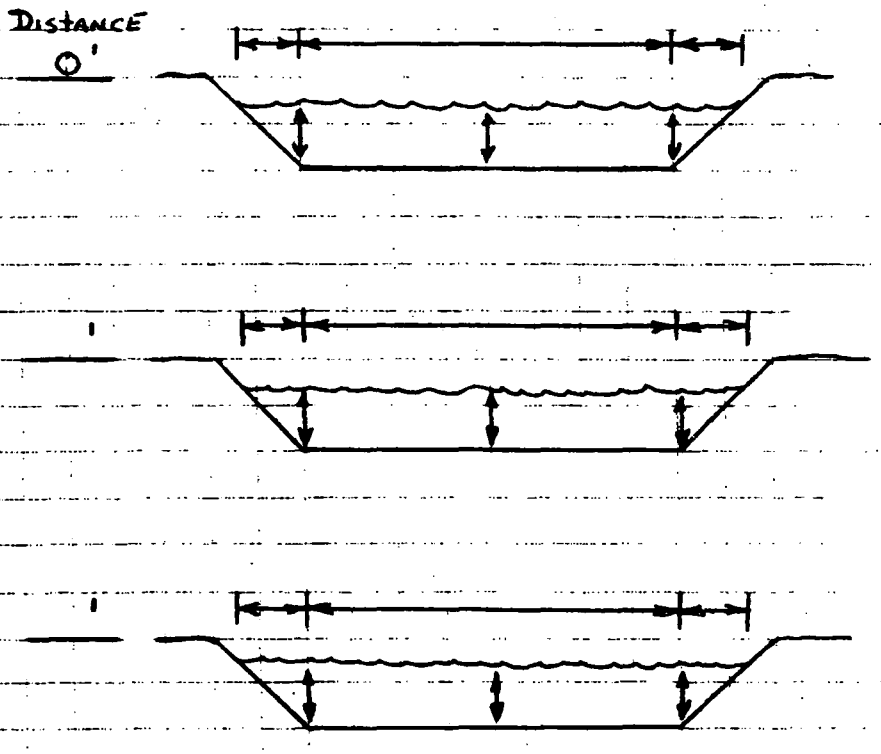
TIMED RUN OF FLOATING OBJECT

1st ____ Sec.
2ND ____ Sec.
3RD ____ Sec.
AVE ____ Sec.

K. E. Lungi

TETRA TECH NUS, INC. CALCULATION WORKSHEET PAGE / OF /

CLIENT NSWC CRANE	JOB NUMBER CTO 10 7141
SUBJECT FLOW MEASUREMENT CALCULATION SHEET	
BASED ON FIELD MEASUREMENTS	DRAWING NUMBER
BY KES / CHECKED BY (NA)	APPROVED BY / DATE 1.15-01



NO FLOW

LOCATION 04SW06

DATE 1.15.01

TIME 1625

TIMED RUN OF FLOATING OBJECT

1st ____ sec.

2ND ____ sec.

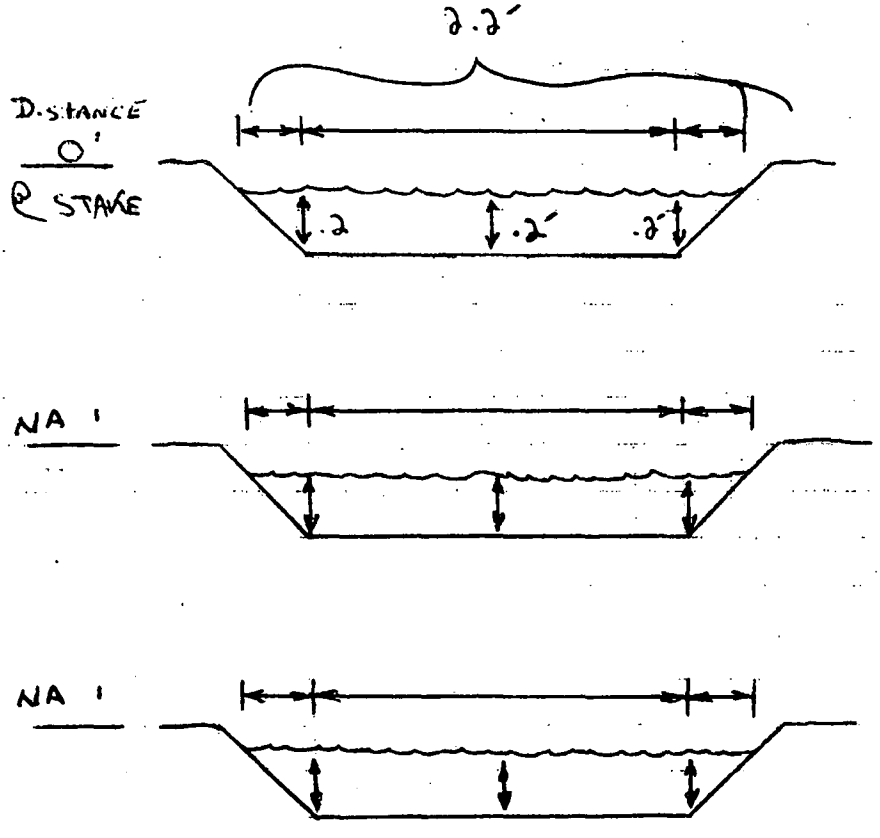
3RD ____ sec.

AVE ____ sec.

KES

TETRA TECH NUS, INC. CALCULATION WORKSHEET PAGE 1 OF 1

CLIENT NSWC CRANE	JOB NUMBER CTO 10 7141
SUBJECT FLOW MEASUREMENT CALCULATION SHEET	
BASED ON FIELD MEASUREMENTS	DRAWING NUMBER
BY B.B ETR / CHECKED BY TR (02-07-01)	APPROVED BY / DATE 1/16/01



LOCATION 05SW01

DATE 1/16/01

TIME 1012

TIMED RUN OF FLOATING OBJECT

1st NA sec.
2ND — sec.
3RD — sec
AVE — sec.

20 GB IN 2 SEC. MEASUREMENT TAKEN NEAR STAKE.

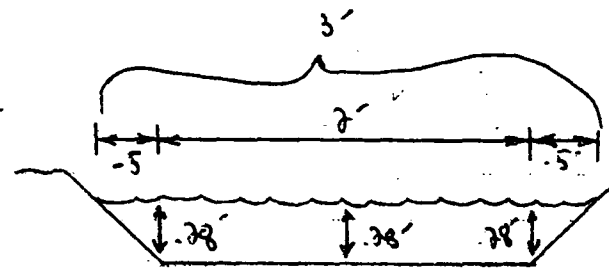
GPM = 4.7

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: B.B. & T.R. / CHECKED BY: TR (2-7-10)	APPROVED BY: / DATE: 1/16/01

(CROSS SECTIONAL AREA (A) = AVE. DEPTH (D) x WIDTH (W)

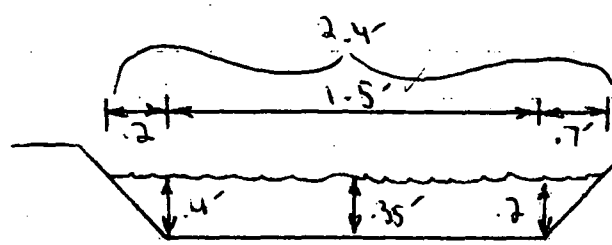
DISTANCE 0'



$A_1 = \frac{(.28' + .28' + .28)}{3} \times 2'$

$A_1 = 0.56\ ft^2$

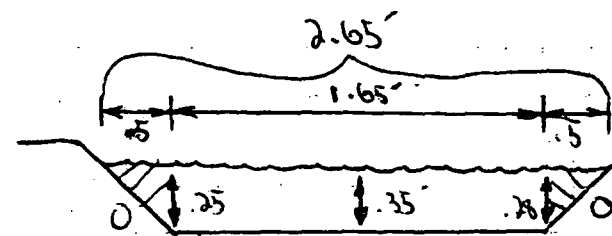
5'



$A_2 = \frac{(.4' + .35' + .2')}{3} \times 1.5'$

$A_2 = 0.48\ ft^2$

10'



$A_3 = \frac{(.25' + .35' + .28')}{3} \times 1.65'$

$A_3 = 0.48\ ft^2$

AVERAGE AREA (ΔA) = $\frac{A_1 + A_2 + A_3}{3} = 0.51\ ft^2$

LOCATION: 05SW/SD02

DATE: 1/16/01

TIME: 0955

TIMED RUN OF FLOATING OBJECT

1st 27.3 sec

2ND 24.5 sec

3RD 24.2 sec

AVE 25.3 sec

MEAN VELOCITY (V)

$(V) = \frac{10'}{25.3\ sec} = .40\ ft/sec$

DISCHARGE (Q) = $\Delta A \times V$

$Q = 0.51\ ft^2 \times .40\ ft/sec \times 448.83 = gpm$

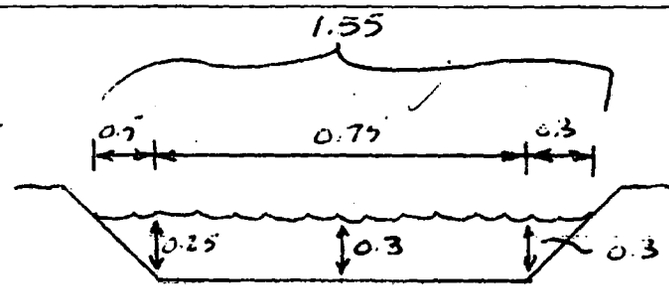
$Q = 91.56\ gpm$

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT: NSWC CRANE		JOB NUMBER: CTO 10 7141	
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET			
BASED ON: FIELD MEASUREMENTS		DRAWING NUMBER:	
BY: T. ROJAHN	CHECKED BY: TR (2-7-01)	APPROVED BY:	DATE: 1/16/01

CROSS-SECTIONAL AREA (A)
= AVE. DEPTH (D) × WIDTH (W)

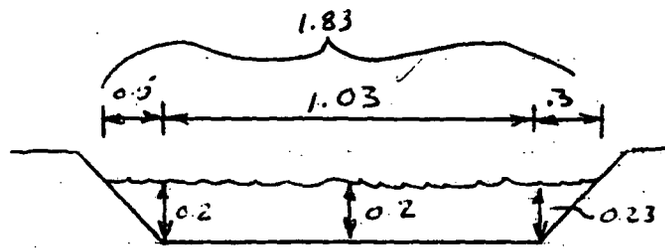
DISTANCE 0'



$A_1 = \frac{(0.25' + 0.3' + 0.3')}{3} \times 0.75'$

$A_1 = 0.21 \text{ FT}^2$

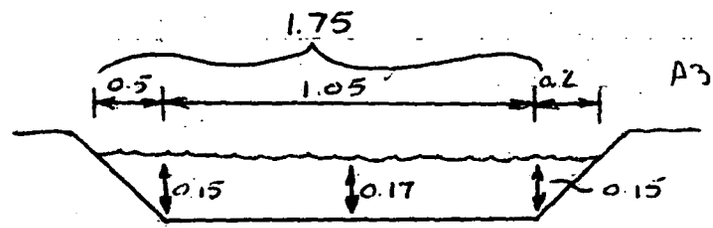
5'



$A_2 = \frac{(0.2' + 0.2' + 0.23')}{3} \times 1.03'$

$A_2 = 0.22 \text{ FT}^2$

10'



$A_3 = \frac{(0.15' + 0.17' + 0.15')}{3} \times 1.05'$

$A_3 = 0.16 \text{ FT}^2$

AVE. AREA (ΔA) = $\frac{A_1 + A_2 + A_3}{3}$ = .20 FT2

LOCATION: 05SW/SD03

DATE: 1/16/01

TIME: 0935

TIMED RUN OF FLOATING OBJECT

1st	14.0	sec
2ND	11.0	sec
3RD	11.2	sec
AVE	12.1	sec.

MEAN VELOCITY (V)

$= \frac{10 \text{ FT}}{12.1 \text{ sec}} = .83 \text{ FT/SEC}$

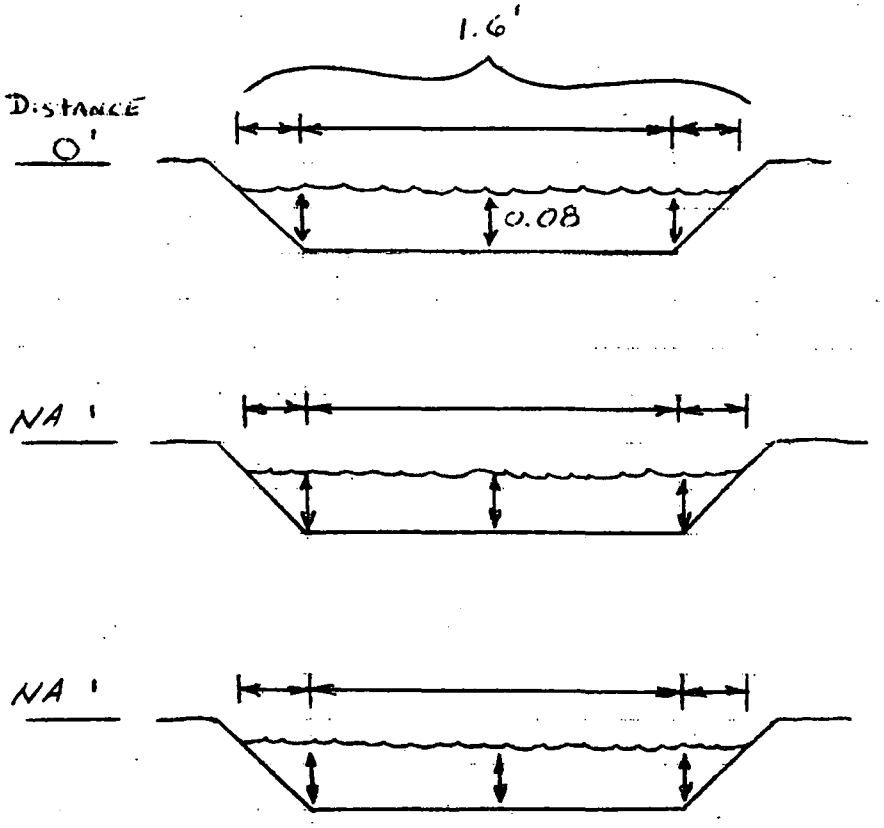
DISCHARGE (Q) = $\Delta A \times V$

= .20 FT2 × .83 FT/SEC = 448.83 gpm

Q = 74.5 gpm

TETRA TECH NUS, INC. CALCULATION WORKSHEET PAGE 1 OF 1

CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: T. ROJAHN / CHECKED BY: (NA) EST.	APPROVED BY: / DATE: 1/16/01



HEAVY LEAF COVER
FLOW <1 gpm
(relatively stagnate)

LOCATION 05 SW/SD 04

DATE 1/16/01

TIME 0926

TIMED RUN OF FLOATING OBJECT

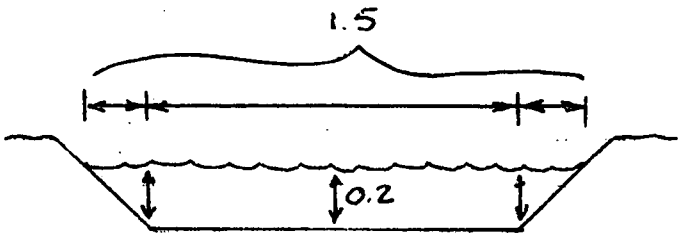
1st NA sec.
2ND — sec
3RD — sec
AVE — sec.

TETRA TECH NUS, INC. CALCULATION WORKSHEET PAGE 1 OF 1

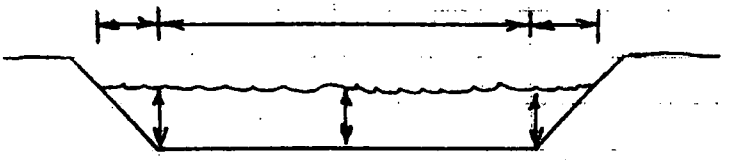
CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:

BY	CHECKED BY	APPROVED BY	DATE
T. ROJAWN	TR (02-07-01)		1/16/01

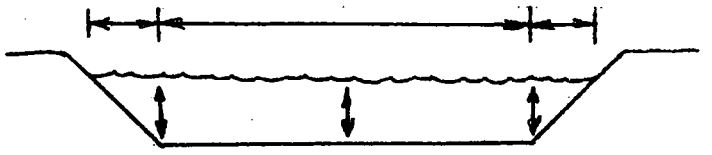
Distance 0' @ stake



NA :



NA :



10 oz/sec or 600 oz/min

GPM = 4.7

Flow meas. 33' up stream @ A Riffle .2' wide & 0.08' deep.

LOCATION 05 SW/SD 05

DATE 1/16/01

TIME 0910

TIMED RUN OF FLOATING OBJECT

1st NA sec.

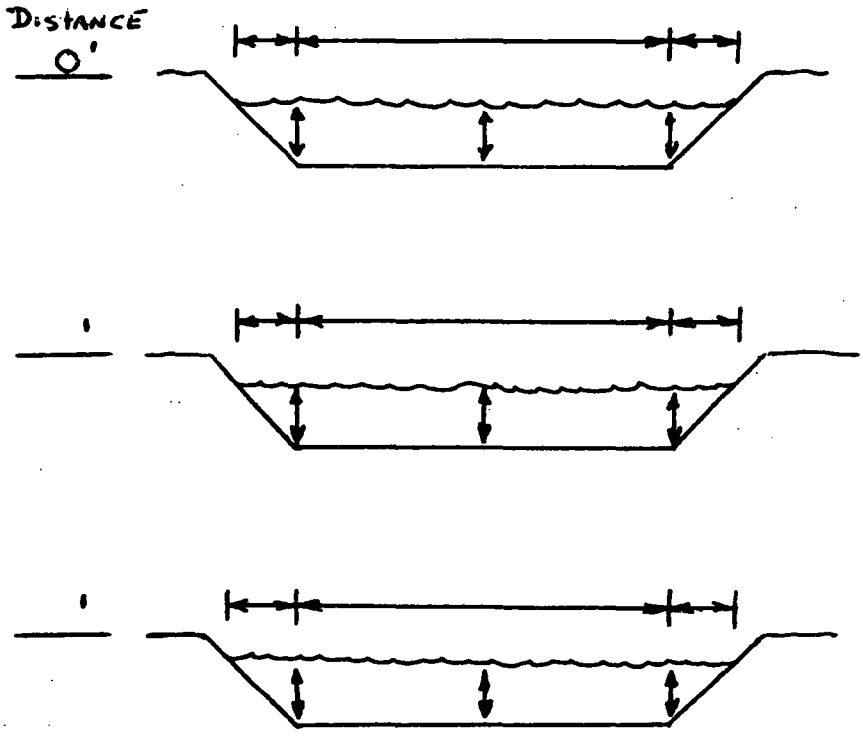
2ND — sec

3RD — sec

AVE — sec.

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT NSWC CRANE		JOB NUMBER CTO 10 7141	
SUBJECT FLOW MEASUREMENT CALCULATION SHEET			
BASED ON FIELD MEASUREMENTS		DRAWING NUMBER	
BY KES	CHECKED BY (NA) Est.	APPROVED BY	DATE 1.9.01



LOW FLOW
WETTED AREA

1 GPM

LOCATION 09SW01

DATE 1.9.01

TIME 1100

TIMED RUN OF FLOATING OBJECT

1st ____ sec.
2ND ____ sec.
3RD ____ sec.
AVE ____ sec.

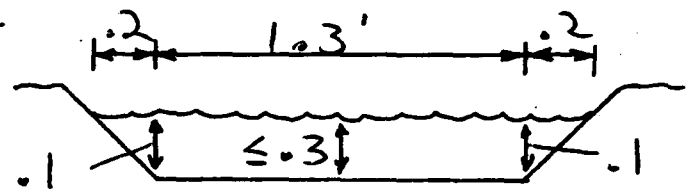
KES

SEE FIG 7-8

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

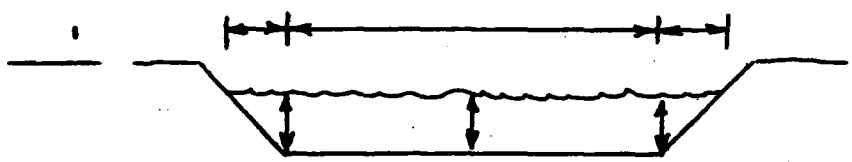
CLIENT NSWC CRANE		JOB NUMBER CTO 10 7141	
SUBJECT FLOW MEASUREMENT CALCULATION SHEET			
BASED ON FIELD MEASUREMENTS		DRAWING NUMBER	
BY KES	CHECKED BY TR (2-7-01)	APPROVED BY	DATE 1.9.01

DISTANCE 0'



LOW FLOW
EST. 3 GPM

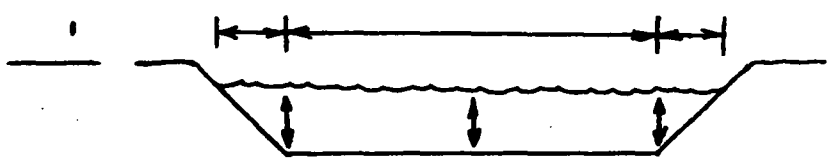
'



CROSS-SECTIONAL AREA (A)
= AVE. DEPTH (D) × WIDTH (W)

$= \frac{(.1' + .3' + .1')}{3} \times 1.3'$

'



A = 0.22 FT²

DISCHARGE Q = A × V × 448.83 gpm
= 0.22 FT² × 0.027 FT/sec × 448.83 = 2.6 gpm

LOCATION 09SW02

DATE 1.9.01

TIME 1115

TIMED RUN OF FLOATING OBJECT

1st 37 sec.
2ND 35 sec.
3RD 38 sec.
AVE. 36.6 sec.

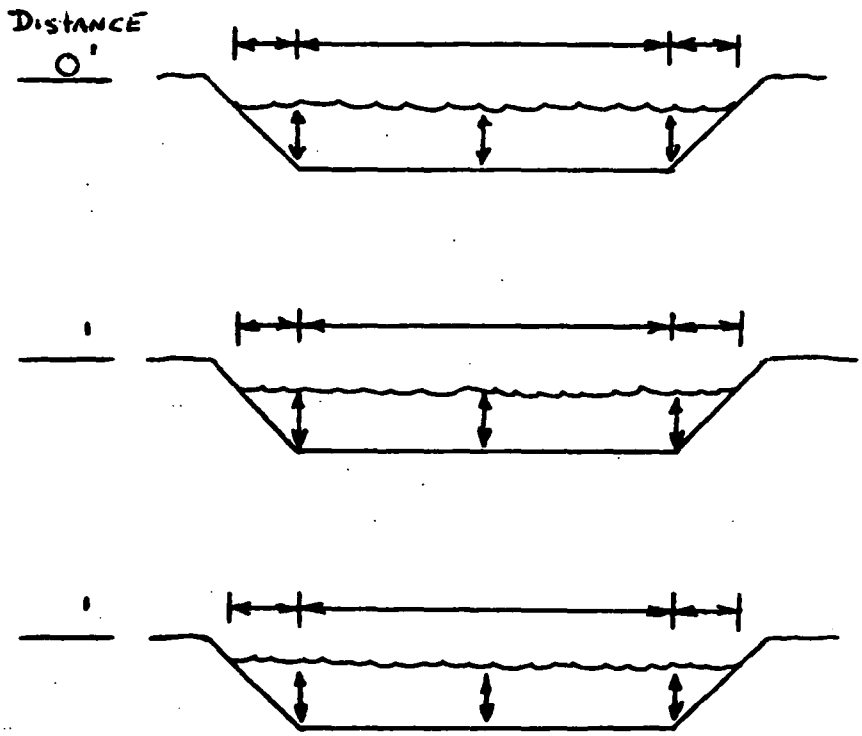
OVER 1 FOOT

MEAN VELOCITY (V) = $\frac{1 FT}{36.6 sec}$ = 0.027 FT/

SEE PG 7-8.

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT NSWC CRANE		JOB NUMBER CTO 10 7141	
SUBJECT FLOW MEASUREMENT CALCULATION SHEET			
BASED ON FIELD MEASUREMENTS		DRAWING NUMBER	
BY KES	CHECKED BY (NA) Est.	APPROVED BY	DATE 1.9.01



LOW FLOW

EST. 1.5 GPM

.3' WIDE

.03' DEEP

LOCATION 09SW03

DATE 1.9.01

TIME 1405

TIMED RUN OF FLOATING OBJECT

1st ____ Sec.

2ND ____ Sec.

3RD ____ Sec.

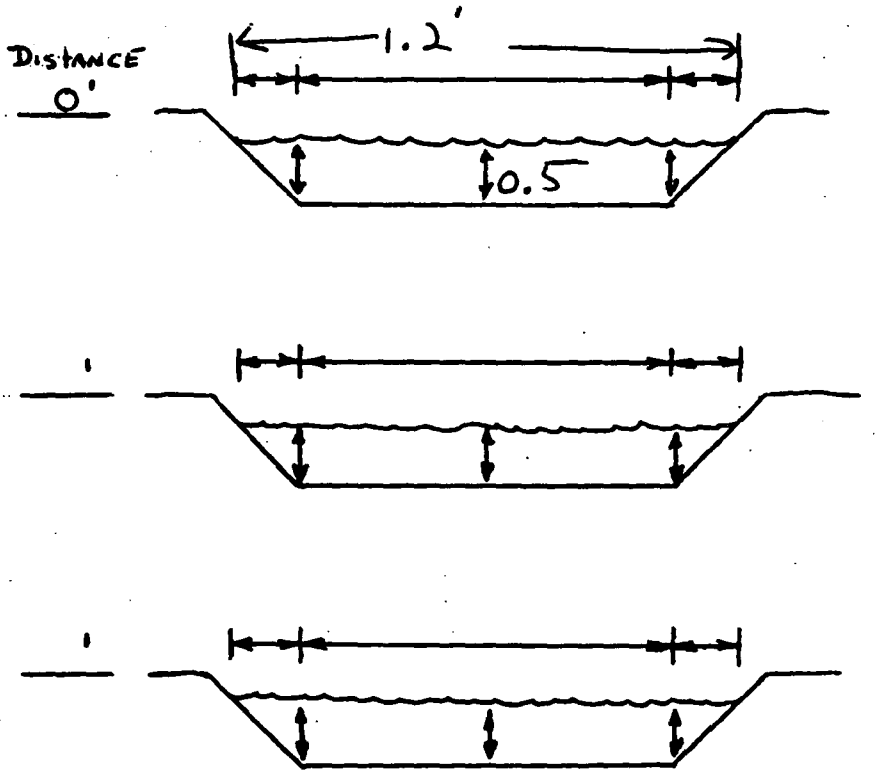
AVE ____ Sec.

Kit S. Sing

SEE FIG. 7-8

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT: NSWC CRANE		JOB NUMBER: CTO 10 7141	
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET			
BASED ON: FIELD MEASUREMENTS		DRAWING NUMBER:	
BY: KES	CHECKED BY: TR (2-7-01)	APPROVED BY:	DATE: 1.9.01



CROSS-SECTIONAL AREA (A)
= AVE. DEPTH (A) x WIDTH (W)
= $\frac{0.5'}{1} \times 1.2' = 0.6 ft^2$

EST. FLOW
8 GPM

LOCATION 09 SW 04

DATE 1.9.01

TIME 1415

TIMED RUN OF FLOATING OBJECT

1st 1.5 sec.
2ND 1.3 sec.
3RD 1.7 sec
AVE 1.5 sec.

OVER 1 FOOT

MEAN VELOCITY (V) = $\frac{1 ft}{1.5 sec} = .66$

DISCHARGE (Q) = A x V

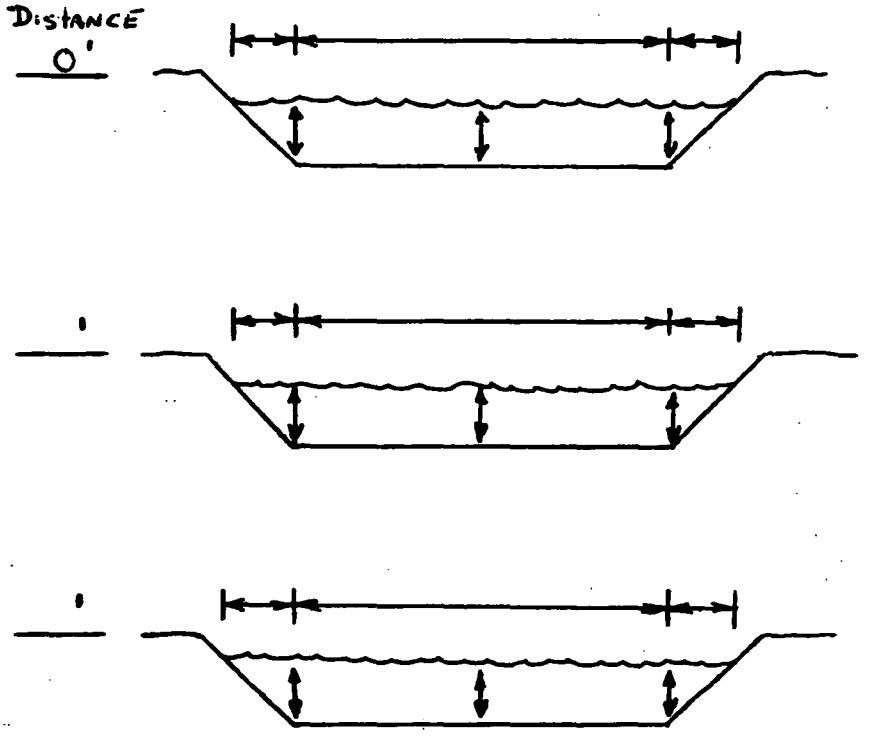
= $0.6 ft^2 \times .66 ft/sec = 449.83$ gpm

Q = 177.7 gpm

SEE FIG 7-8

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT NSWC CRANE		JOB NUMBER CTO 10 7141	
SUBJECT FLOW MEASUREMENT CALCULATION SHEET			
BASED ON FIELD MEASUREMENTS		DRAWING NUMBER	
BY KES	CHECKED BY (NA) Est.	APPROVED BY	DATE 1.9.01



18" PIPE

15' UPSTREAM OF SURVEYED (SAMPLE) LOCATION

DEPTH <0.01'

EST. FLOW 6 GPM

LOCATION 09SW05

DATE 1.9.01

TIME 1430

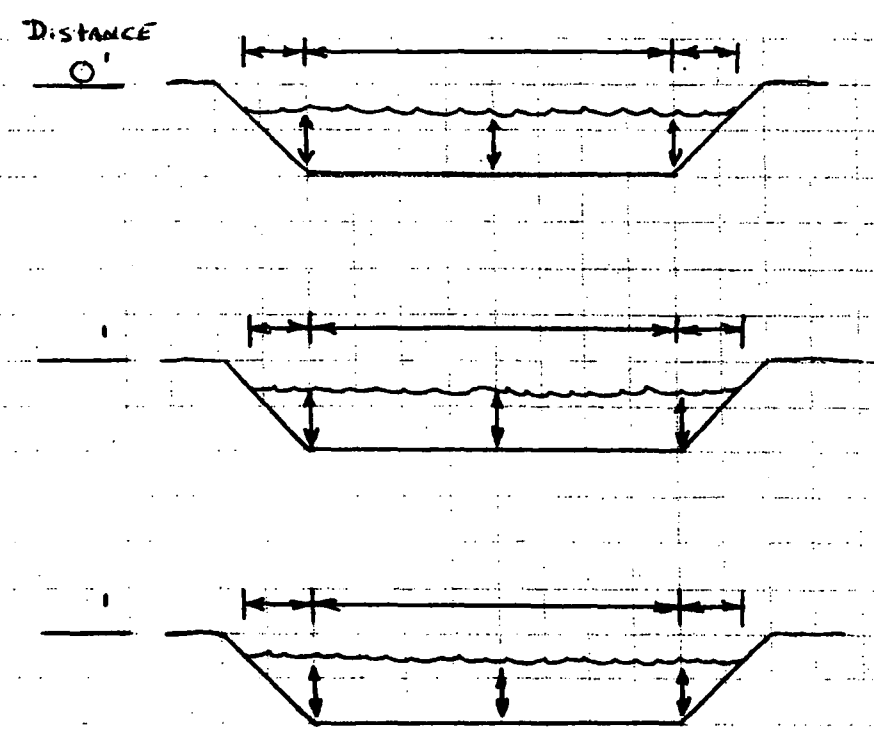
TIMED RUN OF FLOATING OBJECT

1st 1.2 sec.
2ND 1.0 sec.
3RD 1.1 sec.
AVE 1.1 sec.

SEE FIG. 7-8

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: B.B & T.R. / CHECKED BY: (NA)	APPROVED BY: / DATE:



LOCATION 105W01

DATE 1/17/01

TIME 1045

TIMED RUN OF FLOATING OBJECT

1st NA sec.

2ND ____ sec.

3RD ____ sec.

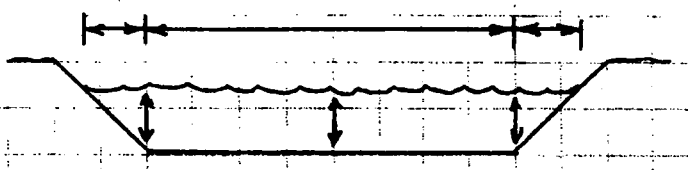
AVE ____ sec.

- FLOW MEASURED W/ A 5 gal BUCKET
  FLOW RATE ≈ 3 gal/min.

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

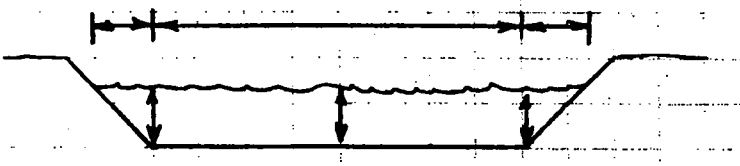
CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: BB + T.R. / CHECKED BY: TR (2-7-01)	APPROVED BY: / DATE:

DISTANCE 0'

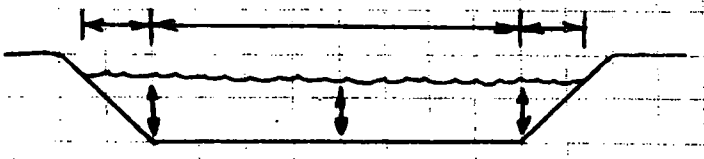


VERY SMALL AMOUNT OF WATER IN STREAM. ≈ .1' OF WATER. VERY ROCKY TERRAIN UNABLE TO CREATE A DETAILED PROFILE.

1'



1'



LOCATION 10SW02

DATE 1/17/01

TIME 0919

TIMED RUN OF FLOATING OBJECT

1st ____ sec.

2ND ____ sec.

3RD ____ sec.

AVE ____ sec.

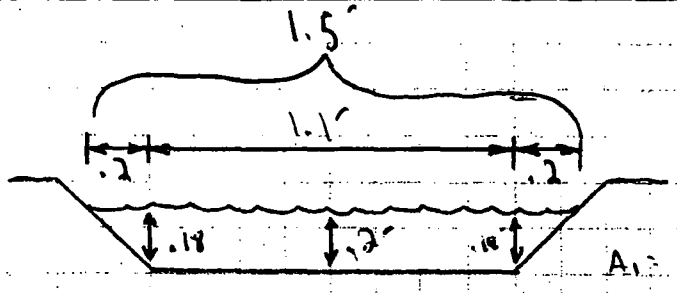
FLOW RATE 30 oz/min.

$\frac{30\,oz}{} \times \frac{1\,gal}{128\,oz} = 0.23\,gal$ FLOW RATE: 0.23 gpm

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: B.B + TR / CHECKED BY: TR (2-7-01)	APPROVED BY: / DATE:

Distance 0'



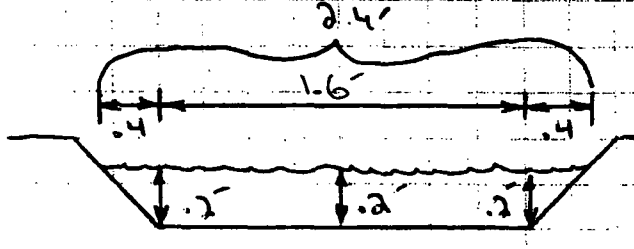
Stream Terrain Very Rocky

Cross-Sectional Area (A) = Ave. Depth (D) x Length

$A_1 = \frac{(.18' + .2' + .19')}{3} \times 1.1'$

$A_1 = 0.21\ ft^2$

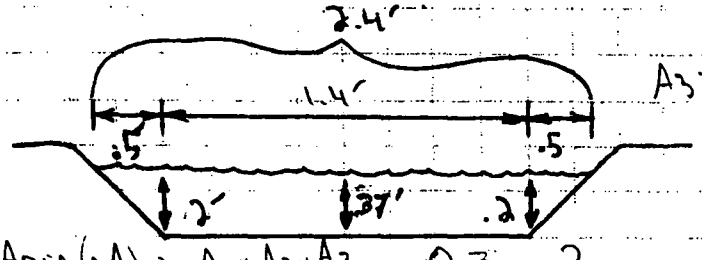
3'



$A_2 = \frac{(.2' + .2' + .2')}{3} \times 1.6'$

$A_2 = 0.32\ ft^2$

6'



$A_3 = \frac{(.2' + .37' + .2')}{3} \times 1.4'$

$A_3 = 0.36\ ft^2$ ✓

Average Area (ΔA) = $\frac{A_1 + A_2 + A_3}{3}$ = 0.3 ft^2

LOCATION 10SW03

DATE 1/17/01

TIME 0424

Timed Run of Floating Object

1st 10.8 sec 0-6'

2nd 8.4 sec

3rd 14.2 sec

Ave 11.13 sec

Mean Velocity (V)

$V = \frac{6\ ft}{11.13\ sec} = 0.54\ ft/sec$

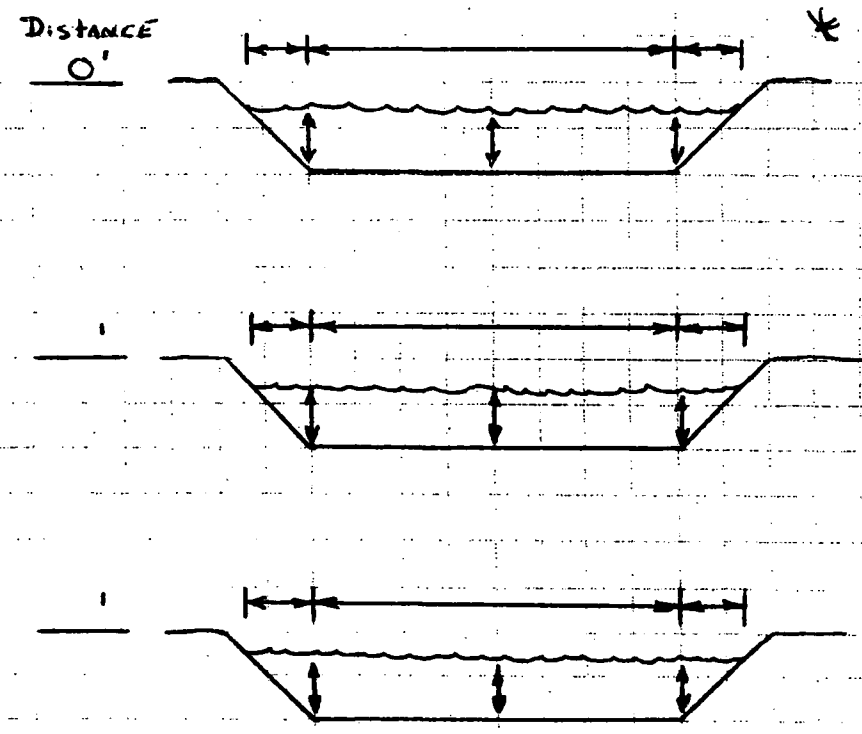
Discharge (Q) = $\Delta A \times V$

$Q = 0.3\ ft^2 \times 0.54\ ft/sec \times 448.83 = gpm$

$Q = 72.7$ gpm ✓

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT NSWC CRANE		JOB NUMBER CTO 10 7141	
SUBJECT FLOW MEASUREMENT CALCULATION SHEET			
BASED ON FIELD MEASUREMENTS		DRAWING NUMBER	
BY B.B. & T.R.	CHECKED BY (NA) EST.	APPROVED BY	DATE



* STREAM TERRAIN TOO ROCKY FOR AN ACCURATE PROFILE.

LOCATION 10SW04

DATE 1/17/01

TIME 0400

FLOW RATE 10-15 gpm

TIMED RUN OF FLOATING OBJECT

1st ____ sec.

2ND ____ sec.

3RD ____ sec.

AVE ____ sec.

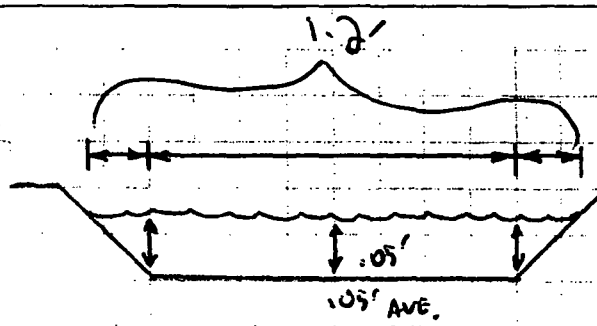
BASED ON VISUAL OBSERVATIONS

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: B.B. & T.R. / CHECKED BY: TR (2-7-01)	APPROVED BY: / DATE:

CROSS-SECTIONAL AREA (A) = AVE. DEPTH (D) x WIDTH (W)

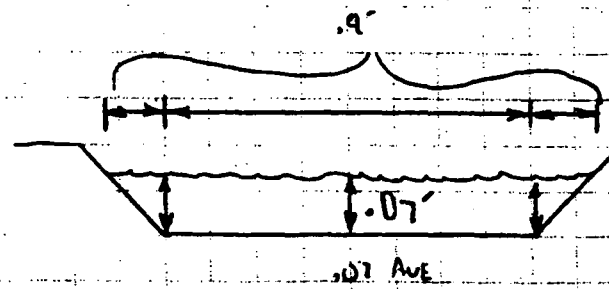
DISTANCE 0'



$A_1 = .05' \times 1.2'$

$A_1 = 0.06\ FT^2$

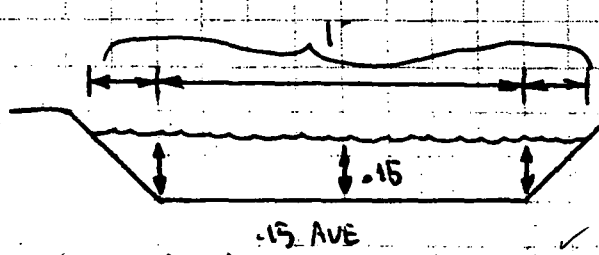
1.5'



$A_2 = 0.07' \times 0.9'$

$A_2 = 0.063\ FT^2$

3'



$A_3 = .15' \times 1'$

$A_3 = .15\ FT^2$

AVERAGE AREA (A) = $\frac{A_1 + A_2 + A_3}{3} = 0.091\ FT^2$

LOCATION 10SW.05

DATE 1/17/01

TIME 0945

TIMED RUN OF FLOATING OBJECT

1st	1	sec/FT
2ND	1.25	sec/FT
3RD	.75	sec/FT
AVE	1	sec/FT

MEAN VELOCITY (V) = 1 FT/SEC

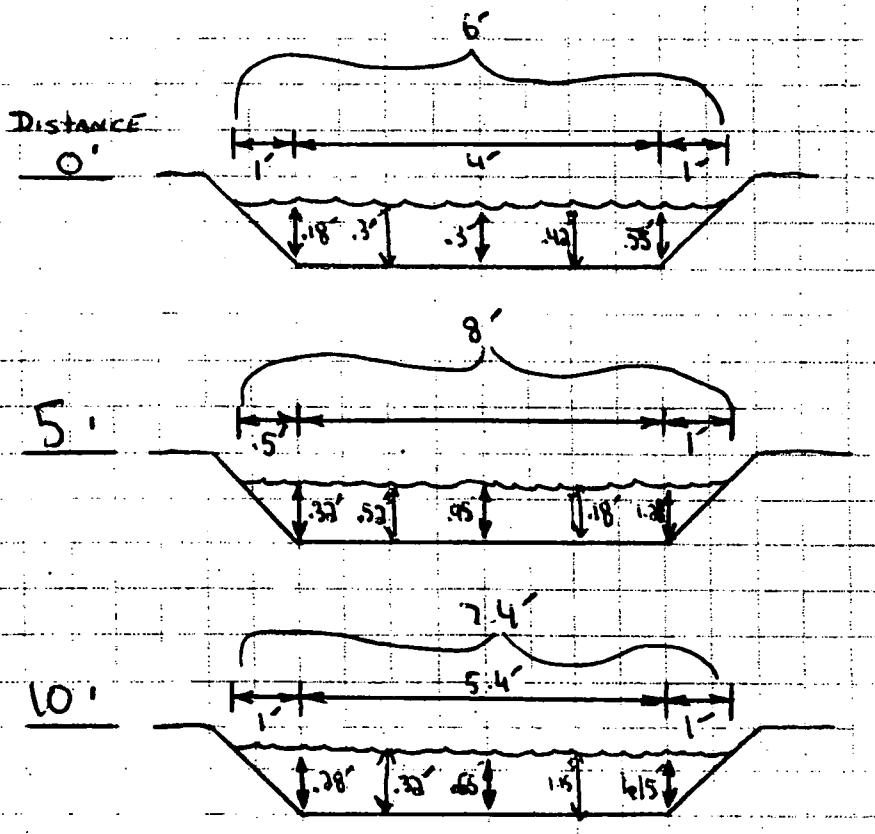
DISCHARGE (Q) = A x V

$= 0.091\ FT^2 \times 1\ FT/SEC \times 448.83 = gpm$

Q = 40.8 gpm

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: B.B. & T.R. / CHECKED BY: (NA)	APPROVED BY: / DATE:



LOCATION 10SW06

DATE 1/17/01

TIME 0815

TIMED RUN OF FLOATING OBJECT

1st ____ SEC.
2ND ____ SEC.
3RD ____ SEC.
AVE ____ SEC.

PROFILE WAS ON POOL UPGRADIENT OF STAKE LOCATION. FLOW NEGLIGIBLE IN POOL. WILL GO DOWN GRADIENT TO CALCULATE FLOW.

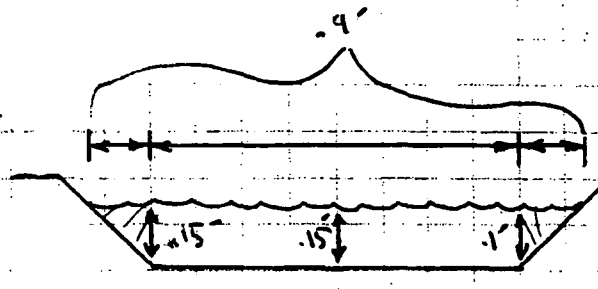
FLOW ≈ 5-10 gpm. ≈ 100FT DOWNSTREAM THERE IS A CULVERT ABSENT OF WATER. WATER APPEARS TO TRAVEL BENEATH GROUND SURFACE.

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: B.B + T.R. / CHECKED BY: TR (2-7-01)	APPROVED BY: / DATE:

(CROSS-SECTIONAL AREA (A) = AVE. DEPTH (D) × WIDTH (W))

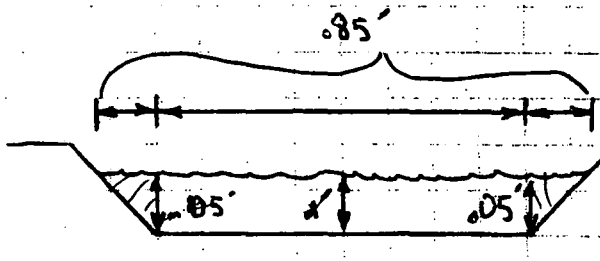
Distance 0'



$A_1 = \frac{(.15' + .15' + .1')}{3} \times .9'$

$A_1 = 0.12\ FT^2$

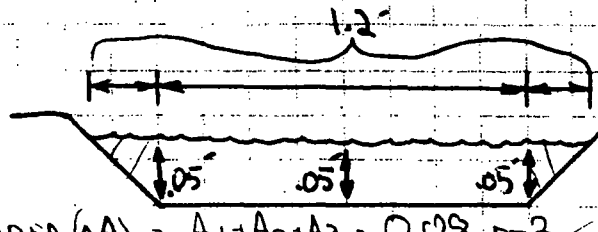
3'



$A_2 = \frac{(.05' + .1' + .05')}{3} \times .85'$

$A_2 = 0.06\ FT^2$

6'



$A_3 = \frac{(.05' + .05' + .05')}{3} \times 1.2'$

$A_3 = 0.06\ FT^2$

AVERAGE AREA (ΔA) $= \frac{A_1 + A_2 + A_3}{3} = 0.08\ FT^2$

LOCATION: 10SW07

DATE: 1/17/01

TIME: 0858

TIMED RUN OF FLOATING OBJECT

1st 19.1 sec.
2ND 20.2 sec.
3RD 17.2 sec.
AVE 18.83 sec.

PROFILE DOWN GRADIENT FROM STAKE.

MEAN VELOCITY (V)

$V = \frac{6\ FT}{18.83\ sec} = 0.32\ FT/sec$

DISCHARGE (Q) $= \Delta A \times V$

$= 0.08\ FT^2 \times 0.32\ FT/sec \times 448.83 = gpm$

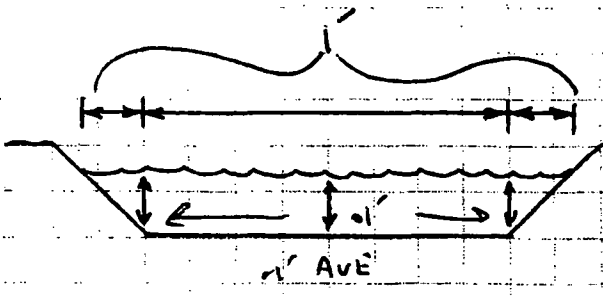
Q = 11.49 gpm

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: B.B & T.R. / CHECKED BY: TR (2-7-01)	APPROVED BY: / DATE:

CROSS SECTIONAL AREA (A) = AVE. DEPTH (D) × WIDTH (W)

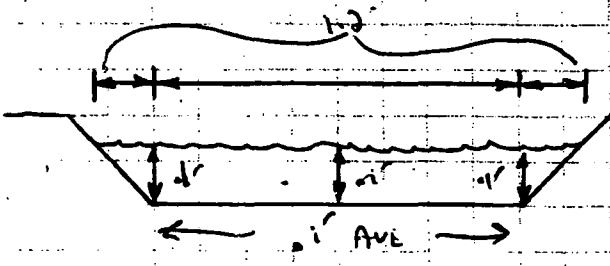
Distance 0'



$A_1 = .1' \times 1'$

$A_1 = .1 FT^2$

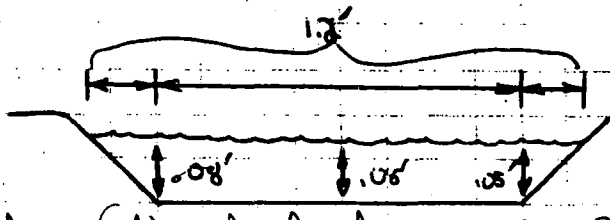
3'



$A_2 = .1' \times 1.2'$

$A_2 = 0.12 FT^2$

6'



$A_3 = \left(\frac{.08' + .08' + .05'}{3}\right) \times 1.2'$

$A_3 = 0.084 FT^2$

AVERAGE AREA (ΔA) = $\frac{A_1 + A_2 + A_3}{3} = 0.10 FT^2$

LOCATION: 10SW08

DATE: 1/12/01

TIME: 0838

TIMED RUN OF FLOATING OBJECT

1st 24 sec 0-6'
2ND 20.6 sec 0-6'
3RD 22 sec 0-6'
AVE 22.2 sec

MEAN VELOCITY (V) = $\frac{6 FT}{22.2 sec} = 0.27 FT/sec$

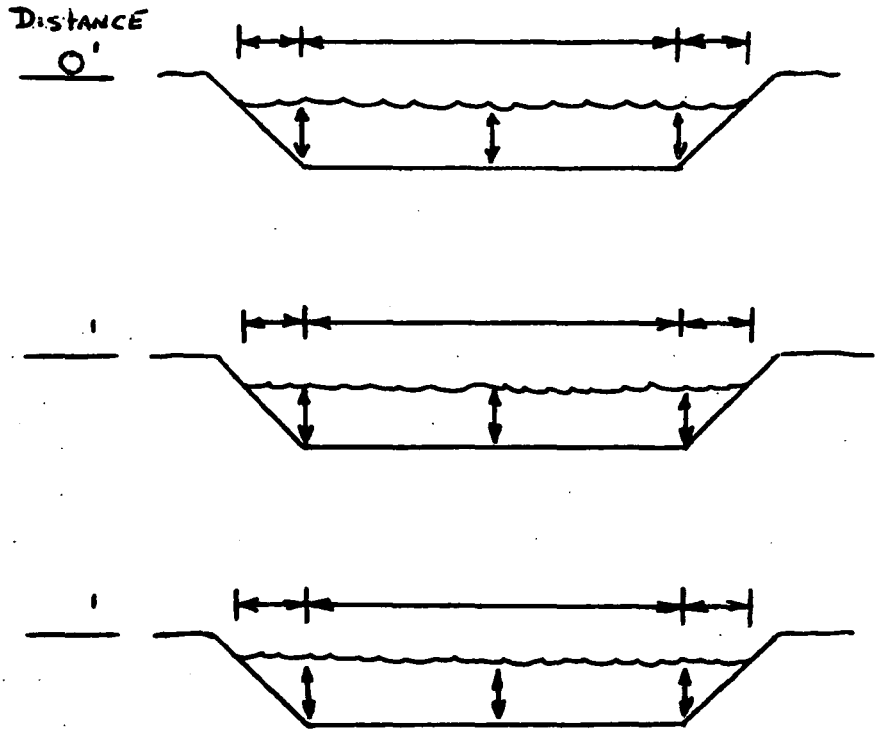
DISCHARGE (Q) = ΔA × V

$= 0.10 FT^2 \times 0.27 FT/sec \times 448.83 = gpm$

Q = 12.12 gpm

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT NSWC CRANE		JOB NUMBER CTO 10 7141	
SUBJECT FLOW MEASUREMENT CALCULATION SHEET			
BASED ON FIELD MEASUREMENTS		DRAWING NUMBER	
BY B.B & T.R.	CHECKED BY (NA)	APPROVED BY	DATE 1/16/01



No flow @ culvert
Soil Damp (No standing H2O)
~3' width

LOCATION 10SW/SD09

DATE 1/16/01

TIME 1518

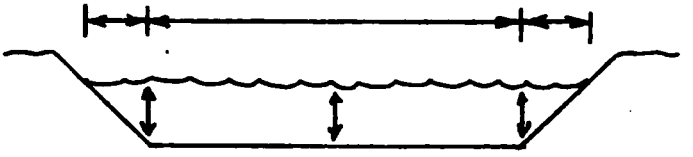
TIMED RUN OF FLOATING OBJECT

1st NA sec.
2nd – sec.
3rd – sec.
Ave – sec.

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

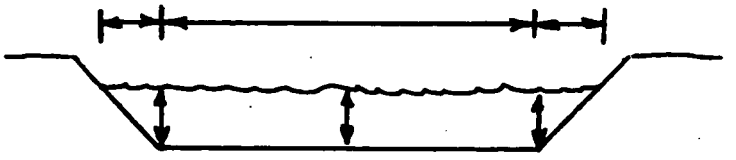
CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: B.B. ETR / CHECKED BY: (NA) Est.	APPROVED BY: / DATE: 1-16-01

DISTANCE 0'

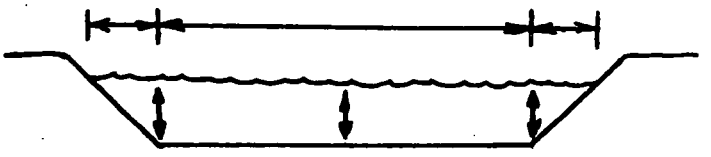


Sandstone BED
MINOR Flow
0.3' x 0.02' profile
Est. ~3-5gpm

NA '



NA '



LOCATION 10SW/SD10

DATE 1/16/01

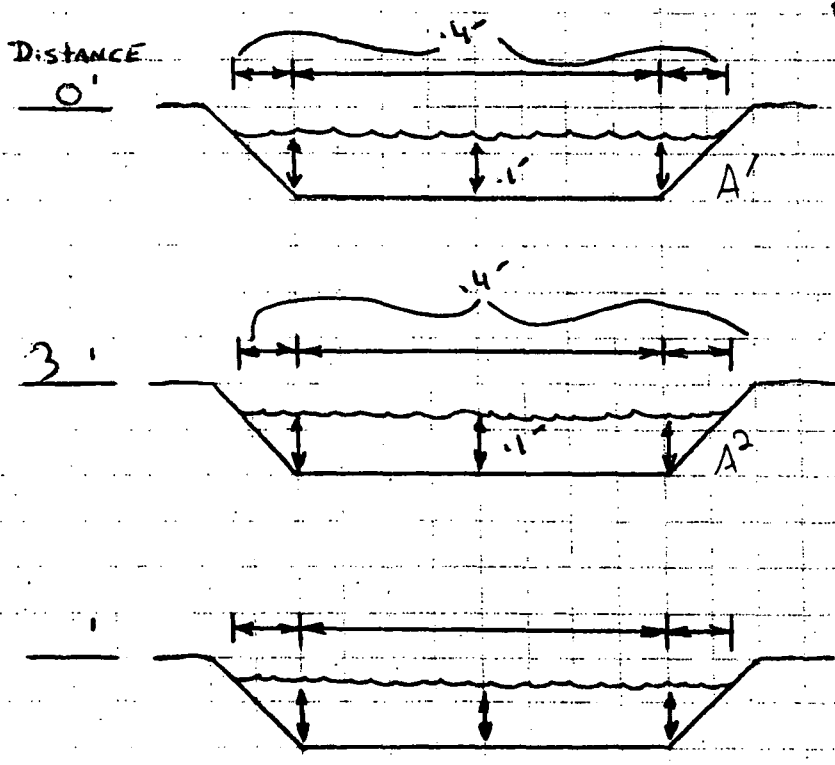
TIME 1527

TIMED RUN OF FLOATING OBJECT

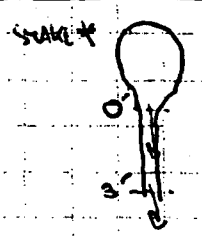
1st NA sec.
2ND – sec.
3RD – sec.
AVE – sec.

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: B.B. T.R. / CHECKED BY: TR (02-07-01)	APPROVED BY: / DATE:



* NEAR STAKE WITH POOL DIMENSIONS 2.5' x 4'



CROSS-SECTIONAL AREA (A) = AVE. DEPTH (D) x WIDTH (W)

$A_1 = .1' \times .4' = 0.04 FT^2$

$A_2 = .1' \times .4' = 0.04 FT^2$

AVERAGE AREA (ΔA) = $\frac{A_1 + A_2}{2}$ = $0.04 FT^2$

LOCATION: 10SW11

DATE: 1/17/01

TIME: 1056

TIMED RUN OF FLOATING OBJECT

1st	6 sec.	0.3'
2ND	7 sec.	0.3'
3RD	6 sec.	0.3'
AVE	6.3 sec.	

MEAN VELOCITY (V) = $\frac{3 FT}{6.3 SEC}$ = 0.48 FT/SEC

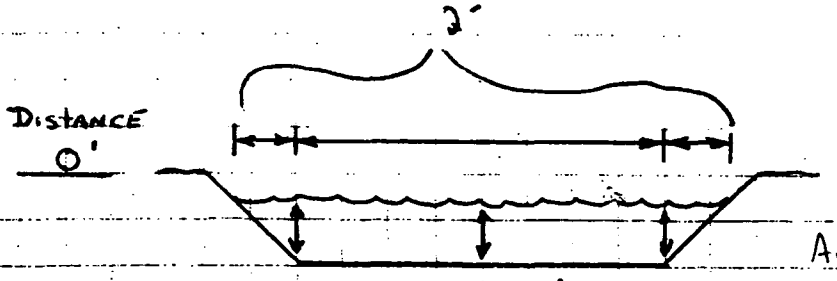
DISCHARGE (Q) = $\Delta A \times V$

= $0.04 FT^2 \times 0.48 FT/SEC \times 448.83$ = gpm

Q = 8.62 gpm

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

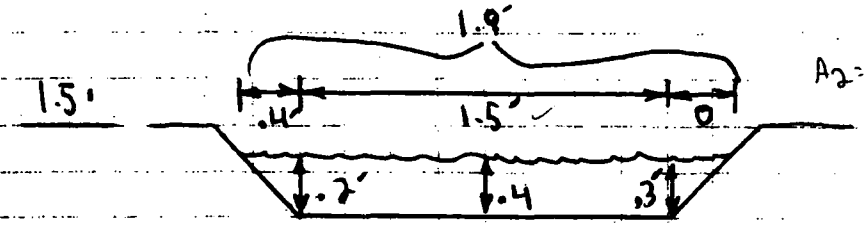
CLIENT: NSWC CRANE	JOB NUMBER: CTO 10 7141
SUBJECT: FLOW MEASUREMENT CALCULATION SHEET	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: B.B. + T.R. / CHECKED BY: TR (2-7-01)	APPROVED BY: / DATE:



ROCKY + V. SHALLOW AREA.
CROSS-SECTIONAL AREA (A)
= AVE. DEPTH (D) × WIDTH (W)

$A_1 = .1' \times 2' = 0.2\ FT^2$

AVE DEPTH .1'



$A_2 = \frac{(.2' + .4' + .3')}{3} \times 1.5'$

$A_2 = 0.45\ FT^2$

$A_3 = .05' \times 1' = 0.05\ FT^2$

AVE DEPTH .05'

AVERAGE AREA (A) $= \frac{A_1 + A_2 + A_3}{3} = 0.23\ FT^2$

LOCATION 105W12

DATE 1/17/01

TIME 1112

TIMED RUN OF FLOATING OBJECT

1st 4.1 sec 0-3'
2ND 5.2 sec 0-3'
3RD 5.0 sec 0-3'
AVE 4.76 sec.

MEAN VELOCITY (V) $= \frac{3\ FT}{4.76\ sec} = 0.63\ FT/sec$

DISCHARGE (Q) = A × V
$= 0.23\ FT^2 \times 0.63\ FT/sec \times 448.83 = gpm$
Q = 65.04 gpm

APPENDIX B.9

SWMUs 4, 5, 9, AND 10
FIELD TASK MODIFICATION REQUEST FORMS

File
CTO -10
"Field Task Mods

TETRA TECH NUS
FIELD TASK MODIFICATION REQUEST FORM

NSWC CRANE	CTO 10 #N714	111000 - 01
Project/Installation Name	CTO & Project Number	Task Mod. Number
WORK PLAN	SUBSURFACE SOIL SAMPLING	11·10·00
Modification To (e.g. Work Plan)	Site/Sample Location	Date

Activity Description: SUBSURFACE SOIL SAMPLING (SECT. 2.4.2.3)
1· FOOT INTERVAL TO BE SAMPLED

Reason for Change: DPT SAMPLING METHODS TYPICALLY USE 1.5" O.D. SAMPLE TUBES 1'X1.5" IS INSUFFICIENT SAMPLE VOLUME FOR REQUIRED ANALYSES.

Recommended Disposition: INCREASE SAMPLE INTERVAL TO 2'
EX. 02-04, 04-06, 06-08, 08-10'

[signature] 11·10.00
Field Operations Leader (Signature) Date

Approved Disposition:

[signature] 11/11/00
Project/Task Order Manager (Signature) Date

Distribution:

Program/Project File ✓
Project/Task Order Manager ✓
Field Operations Leader – ✓

Other:

TETRA TECH NUS
FIELD TASK MODIFICATION REQUEST FORM

NSWC CRANE	CTO 10 #N7141	122100-01
Project/Installation Name	CTO & Project Number	Task Mod. Number
WP/FSP	GROUNDWATER Sampling SWMUs 4, 5, 9 & 10	12/21/00
Modification To (e.g. Work Plan)	Site/Sample Location	Date

Activity Description: PROPOSED CHANGE IN QC Effort for GW SAMPLES COLLECTED USING BLADDER PUMPS.

Reason for Change: REFER to Attached E-MAIL AUthored by TOM JOHNSTON.

Recommended Disposition: SAME AS ABOVE.

Field Operations Leader (Signature) — Date: 12.21.00

Approved Disposition:

Project/Task Order Manager (Signature) — Date: 12/21/00

Distribution:

Program/Project File –
Project/Task Order Manager –
Field Operations Leader –

Other: _____

Fr m: Johnston, Tom
Sent: Thursday, December 21, 2000 3:27 PM
T : Basinski, Ralph
Cc: Simpson, Keith; Balkovec, Bob
Subject: GW QC Effort Proposed Change

Ralph, here is the requested note concerning bladder pump decon for CTO 10:

Proposed Change in QC Effort for GW Samples Collected Using Bladder Pumps.

The Work Plan for CTO 10 SWMUs 4/5/9/10 calls for the collection of 57 ground water (GW) samples. Approximately 25 of those GW samples will be collected using a non-disposable bladder pump; the remaining GW samples will be collected using a peristaltic pump with disposable tubing. the tubing will be changed between samples.

The Work Plan QC strategy associated with GW sample collection is to submit one rinsate blank (RB) per day for non-disposable equipment. Current projections are that the daily collection frequency of GW samples with bladder pumps will be only one or two per day. This would cause the QC percentage to fall between 50% and 100% for rinsate blanks relative to GW samples collected by bladder pump. This is an unusually high percentage.

A more efficient strategy would be to submit one RB per 5 GW samples collected by bladder pump. The RBs would be collected from those wells that are expected to be the most contaminated, based on the professional judgment of the FOL. This strategy, while relaxing the initially planned QC frequency, will still exceed the commonly used frequency of 10% (one QC per 10 GW samples).

Successful decontamination under worst case conditions would imply that successful decontamination is occurring under less than worst case conditions. Failure to successfully decontaminate under worst case conditions would imply that decontamination under less than worst case conditions might also be failing.

Tom Johnston
Tetra Tech NUS, Inc.
661 Andersen Dr
Pittsburgh, PA 15220-2745
412-921-8615

APPENDIX B.10

SWMUs 4, 5, 9, AND 10
EQUIPMENT CALIBRATION LOGS

US ENVIRONMENTAL

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : HORIBA U-10

PROJECT NAME : NSWC Crane

SERIAL NUMBER: 810016

PROJECT NUMBER : CTO 10 job N7141

MANUFACTURER : HORIBA LTD.

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
11/14/00	3.58/4.30/-10	LOT# 7200	PER MANUFACTURER	pH - / cond - / NTU -	pH 4 / cond 1.98 / NTU 0	B. Balhouse	Good Cal.
	pH / cond / NTU			pH / cond / NTU	pH / cond / NTU		
11/15/00	4.32/4.31/7	LOT# 7200	PER MANUFACTURER	- - -	3.99/4.49/0	B. Balhouse	
11/16/00	4.05/4.45/15	"	"	- - -	3.99/4.49/0	B. Balhouse	
11/17/00	4.14/4.55/13	"	"	- - -	3.97/4.49/0	B. Balhouse	
12/1/00	4.01/4.43/76	"	"	- - -	4.00/4.48/0	T. Rook	OK
12/2/00	4.04/4.45/7	"	"	- - -	3.98/4.49/0	T. Rook	OK
12/3/00	3.97/4.49/44	"	"	- - -	4.00/4.49/0	T. Rook	OK
12/8/00	4.11/4.48/2	"	"	- - -	3.99/4.48/0	T. Rook	OK
12/14/00	3.95/4.51/0	"	"	- - -	4.00/4.49/0	T. Rook	OK
1/3/01	3.90/4.44/10	"	"	- - -	4.00/4.51/0	B. Balhouse	O.K.
1/4/01	3.85/4.56/66	"	"	- - -	4.00/4.49/0	B. Balhouse	O.K.
1/5/01	3.49/4.54/51	"	"	- - -	4.01/4.49/0		

Instrument Rented From: US ENVIRONMENTAL
RETURNED 1.18.01

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : YSI 610 - DM

PROJECT NAME : NSWC Crane

SERIAL NUMBER: 318312R

PROJECT NUMBER : CTO 10 Job N7141

MANUFACTURER : YSI INC

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
12.1.00	OK		AS PER MANUF.	NONE	OK	RES	pH 4.0 LOT 2230 EX 4/02
12.11.00	OK		"	"	"	RSP	pH 7.0 LOT 2210 EX 4/02
1.2.01	OK		"	"	"	RSP	COND. 6.668 MS LOT 90203
1/3/01	OK		"	"	"	B Balkrue	EX 2/01
1/4/01	OK		"	"	"	B Balkrue	CHECKED READINGS
1/5/01	OK		"	"	"	B Balkrue	CHECKED READINGS
1-6-01	OK		"	"	"	B Balkrue	CHECKED READINGS
1-7-01	OK		"	"	"	B Balkrue	FULL CALIBRATION
1-8-01	OK		"	"	"	B Balkrue	CHECKED READINGS
1.17.01	OK	SEE COMMENTS	"	"	"	RSP	FULL CALIBRATION
1.18.01	OK		"	"	"	RSP	CHECKED READINGS
1.19.01	OK		"	"	"	RSP	"
1.20.01	OK		"	"	"	RSP	"
1.21.01	OK		"	"	"	RSP	"
1.22.01	OK		"	"	"	RSP	"
1.30.01	OK	SEE COMMENTS	"	"	"	RSP	FULL CALIBRATION
1.31.01	OK		"	"	"	RSP	CHECK READINGS
2.1.01	OK		"	"	"	RSP	↓
2.2.01	OK		"	"	"	RSP	↓

Instrument Rented From: US ENVIRONMENTAL

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : YSI 610 DM

PROJECT NAME : NSWC Crane

SERIAL NUMBER: 218030R

PROJECT NUMBER : CTO 10 Job N7141

MANUFACTURER : YSI INC.

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
1.3.01	OK		AS PER MANUF.	NONE	OK	RSP	PH 4.0 LOT 2230 EX 4/02
1/4/01	OK		"	"	"	B Balkovec	PH 7.0 LOT 2210 EX 4/02
1/5/01	OK		"	"	"	B Balkovec	COND. 6.668 MS LOT 40203
1/6/01	OK		"	"	"	B Balkovec	✓ EX 2/01
1/7/01	OK		"	"	"	B Balkovec	✓
1/8/01	OK		"	"	"	B Balkovec	FULL CALIBRATION
1.17.01	OK	SEE COMMENTS	"	"	"	RSP	FULL CALIBRATION
1.18.01	OK		"	"	"	RSP	CHECKED READINGS
1.19.01	OK		"	"	"	RSP	↓
1.20.01	OK		"	"	"	RSP	↓
1.21.01	OK		"	"	"	RSP	↓
1.22.01	OK		"	"	"	RSP	↓
1.30.01	OK	SEE COMMENTS	"	"	"	RSP	FULL CALIBRATION
1.31.01	OK		"	"	"	RSP	CHECK READINGS
2.1.01	OK		"	"	"	RSP	↓
2.2.01	OK		"	"	"	RSP	↓

Instrument Rented From: US ENVIRONMENTAL

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : LA MOTTE 2020

PROJECT NAME : NSWC Crane

SERIAL NUMBER: 1733-1600

PROJECT NUMBER : CTO 10 Job N7141

MANUFACTURER : LA MOTTE

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
1.2.01	—	10 & 0.NTU	AS PER MANUAL	—	0 & 10	RSP	
1/3/01	—	10 & 0.NTU	"	—	0.0 & 10	B. Balkwill	
1/4/01	—	0.0 & 10	"	—	"	B Balkwill	
1/5/01	—	0.0 & 10	"	—	"	B. Balkwill	
1/6/01	—	0.0 & 10	"	—	"	B. Balkwill	
1-7-01	—	0.0 & 10	"	—	"	B Balkwill	
1/8/01	—	0.0 & 10	"	—	0.0 & 10	B Balkwill	
1/17.01	—	0 & 10	"	NONE	0-10	RSP	
1.18.01	—	0 & 10	"	"	0-10	RSP	
1.19.01	—	0 & 10	"	"	0-10	RSP	
1.20.01	—	0 & 10	"	"	0-10	RSP	
1.21.01	—	0 & 10	"	"	0-10	RSP	
1.22.01	—	0 & 10	"	"	0-10	RSP	
1.30.01	—	0 & 10	"	10 ADJ.	0-10	RSP	
1.31.01	—	0 & 10	"	NONE	0-10	RSP	
2.1.01	—	0 & 10	"	"	0-10	RSP	
2.2.01	—	0 & 10	"	"	0-10	RSP	

Instru Rented From: US ENVIRONMENTAL

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : LAMOTTE 2020

PROJECT NAME : NSWC Crane

SERIAL NUMBER: 0899-4099

PROJECT NUMBER : CTO 10 Job N7141

MANUFACTURER : LAMOTTE

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
12-01-00	NA	0.00	Standard	NONE	0.00	T. Rogal	10 NTU - READ 10
12-02-00	NA	0.00	"	"	0.00	T. Rogal	SAME
12-03-00	NA	0.00	"	"	0.00	T. Rogal	SAME
12-13-00	NA	0.00	"	"	0.00	T. Rogal	"
12-14-00	NA	0.00	"	"	0.00	T. Rogal	"
12-15-00	NA	0.00	"	"	0.00	T. Rogal	"
12-16-00	NA	0.00	"	"	0.00	T. Rogal	"
12-17-00	NA	0.00	"	"	0.00	T. Rogal	"
12-18-00	NA	0.00	"	"	0.00	T. Rogal	"
12-19-00	NA	0.00	"	"	0.00	T. Rogal	"
1/3/01	NA	0.00	"	"	0.00	B. Bulkhum	"
1-4-01	NA	0.00	"	"	0.00	T. Rogal	"
1-5-01	NA	0.00	"	"	0.00	T. Rogal	"
1-6-01	NA	0.00	"	"	0.00	T. Rogal	"
1-7-01	NA	0.00	"	"	0.00	T. Rogal	"
1-8-01	NA	0.00	"	"	0.00	T. Rogal	"
1-9-01	NA	0.00	"	"	0.00	T. Rogal	"
1-17-01	—	0 & 10	"	NONE	0-10	TSP	0 READ 0 - 10 = 10
1-18-01	NA	0 & 10	"	"	"	T. Rogal	SAME
1-19-01	NA	0 & 10	"	"	"	T. Rogal	SAME
1-20-01	NA	"	"	"	"	T. Rogal	SAME
1-21-01	NA	"	"	"	"	T. Rogal	SAME
1-22-01	NA	"	"	"	"	T. Rogal	SAME
1-23-01	NA	"	"	"	"	T. Rogal	SAME
1-24-01	NA	"	"	"	"	T. Rogal	SAME

Instrument Rented From: US Environmental

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : LA MOTTE 2020

PROJECT NAME : NSWC Crane

SERIAL NUMBER: 0899-4098

PROJECT NUMBER : CTO 10 Job N7141

MANUFACTURER : LA MOTTE

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
1-30-01	NA	0 & 10	STANDARD	10 ADJ.	0 & 10	TRP	
1-31-01	NA	"	"	NA	"	T. Roch	
2-01-01	NA	"	"	NA	"	T. Roch	
2-02-01	NA	"	"	NA	"	T. Roch	

Instrument Rented From: US ENVIRONMENTAL

US ENVIRONMENTAL

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : PHOTOVAC MICROFID

PROJECT NAME : NSWC Crane

SERIAL NUMBER: CZ HD 316

PROJECT NUMBER : CTO 10 Job N7141

MANUFACTURER : PHOTOVAC

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
11/14/00	0.0 /100	UN 1556	PER MANUFACTURER	—	0.0 /100	B. Balhover	GOOD CH
11/15/00	0.0 / 100	"	"	—	0.0 / 100	B. Balhover	✓
11/16/00	0.0 / 100	"	"	—	0.0 / 100	B. Balhover	
11/17/00	0.0 / 100	"	"	—	0.0 / 100	B. Balhover	
11/28/00	0.0 / 100	"	"	—	0.0 / 100	B. Balhover	✓
11/29/00	0.0 / 100	"	"	—	0.0 / 100	B. Balhover	✓
11/30/00	0.0 / 100	"	"	—	0.0 / 100	B. Balhover	✓
12/1/00	0.0 / 100	"	"	—	0.0 / 100	B. Balhover	✓

Instrument Rented From: U.S. ENVIRONMENTAL

RECEIVED 11.13.00

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : Photovac MicroFID

SERIAL NUMBER: CZFH208

MANUFACTURER : PE Photovac

PROJECT NAME : NSWC Crane

PROJECT NUMBER : CTO 10 Job N7141

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
11/28/00	0.0 /100	UN 1956	Per Manufacturer	—	0.0/100	B Balkwe	✓
11/29/00	0.0/100	"	"	—	0.0/100	B. Balkwe	✓
11/30/00	0.0 /100	"	"	—	0.0/100	B Balkwe	✓
12/1/00	0.0/100	"	"	—	0.0/100	B Balkwe	✓
12/2/00	0.0/100	"	"	—	0.0/100	B. Balkwe	✓
12/3/00	0.0/100	"	"	—	0.0/100	B Balkwe	✓
12/4/00	0.0/100	"	"	—	0.0/100	B Balkwe	✓
12/5-00	0.0/100	"	"	—	0.0/100	B. Balkwe	✓
12-12-00	0.0/100	"	"	—	0.0/100	B. Balkwe	✓
12-13-00	0.0/100	"	"	—	0.0/100	B Balkwe	✓
12-14-00	0.0/100	"	"	—	0.0/100	B Balkwe	✓
12-15-00	0.0/100	"	"	—	0.0/100	B. Balkwe	✓
12-16-00	0.0/100	"	"	—	0.0/100	B. Balkwe	✓
12-17-00	0.0/100	"	"	—	0.0/100	B. Balkwe	✓

Instru Rented From: U.S. Environmental

RECEIVED 11.22.00

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : PHOTO VAC MICRO FID

PROJECT NAME : NSWC Crane

SERIAL NUMBER: CZ FR 310

PROJECT NUMBER : CTO 10 job N7141

MANUFACTURER : PHOTOVAC

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
12-1-00	OK	100 PPM	AS PER MANUA	NONE	OK	[illegible]	METHANE
12-4-00	0.0/100	UN1956	—	—	0.0/100	B. Balbuena	
12-5-00	0.0/100	"	—	—	0.0/100	B. Balbuena	
12-12-00	0.0/100	"	—	—	0.0/100	B. Balbuena	

Instrument Rented From: US ENVIRONMENTAL

RECEIVED 12-1-00

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : PE Photovac PID

PROJECT NAME : NSWC Crane

SERIAL NUMBER: LD HE 343

PROJECT NUMBER : CTO 10 Job N7141

MANUFACTURER : Photovac

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
1/3/01	0.0/100	Isobutylene 100ppm	PER MANUFACTURER	—	0.0/100	B Bulkner	OK
[illegible]	0.0/100	"	"	—	0.0/100	B. Bulkner	OK
1/5/01	0.0/100	"	"	—	0.0/100	B Bulkner	OK

Instru Rented From: US ENVIRONMENTAL
RETURNED 1.5.01

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : PE PHOTOVAC PID

PROJECT NAME : NSWC Crane

SERIAL NUMBER: ED HF 348

PROJECT NUMBER : CTO 10 Job N7141

MANUFACTURER : PHOTOVAC

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
1.16.01	0.0/100	ISOBU. 100 PPM	PER MANUF.	AUTO	0.0/100	RSP	
1.17.01	0.0/100	"	"	NONE		RSP	
1-30.01	"	"	"	"	100	RSP	
1.31.01	"	"	"	"	100	RSP	

Instrument Rented From: U.S. ENVIRONMENTAL

FIGURE 7-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: NSWC CRANE (T+NUS - PHOTOVAC) PROJECT NO.: 7141E3961

Dat f Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
2/20/01	PID	ED FK 203	T. ROJAHN	NA	NA	0.0/100	0.0/100	LOT 03-31-99 EXP 3/2002	OK
2/21/01	"	"	"	NA	NA	0.0/100	0.0/100	"	OK
2/22/01	"	"	"	NA	NA	0.0/100	0.0/100	"	OK
2/23/01	"	"	"	NA	NA	0.0/100	0.0/100	"	OK
2/24/01	"	"	"	NA	NA			"	OK