



LABORATORY ANALYTICAL REPORT

Client: AMPP  
 Project: Tongue River Monitoring  
 Lab ID: H03100061-017  
 Client Sample ID: T2/OAA-10-(0-6")

Report Date: 01/20/04  
 Collection Date: 10/09/03 17:00  
 Date Received: 10/10/03  
 Matrix: Soil

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
<b>SATURATED PASTE</b>							
pH, Saturated Paste	7.8	s.u.		0.1		ASAM10-3.2	11/07/03 06:36 / jdh
Conductivity, Paste Extract	0.64	mmhos/cm		0.01		ASAM10-3	11/07/03 06:36 / jdh
Saturation	50.8	wt%		0.1		USDA27a	11/07/03 06:36 / jdh
Calcium, Saturated Paste	3.9	meq/l		0.1		SW6010B	10/27/03 11:44 / rp
Magnesium, Saturated Paste	2.0	meq/l		0.1		SW6010B	10/27/03 11:44 / rp
Sodium, Saturated Paste	0.8	meq/l		0.1		SW6010B	10/27/03 11:44 / rp
Sodium Adsorption Ratio (SAR)	0.4	unitless		0.1		Calculation	11/07/03 06:36 / jdh
Alkalinity, Saturated Paste	5.8	meq/L		1.0		ASA10-3	10/22/03 00:00 / rp
Nitrate as N, Saturated Paste	3.4	mg/L		0.1		ASA10-3	10/30/03 08:00 / cwh
Sulfate, Saturated Paste	0.6	meq/L		0.1		ASA10-3	10/27/03 03:09 / rp
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	30	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Silt	49	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Clay	21	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Texture	L	unitless				ASA15-5	11/07/03 06:36 / jdh
C=Clay, S=Sand(y), Si=Silt(y), L=Loam(y)							
<b>CHEMICAL CHARACTERISTICS</b>							
Fluoride	ND	mg/kg		1.0		A4500-F C	10/31/03 11:30 / ddb
Potassium, NH4OAc Extractable	336	mg/kg		1		AAA13-3	01/15/04 00:00 / jdh
Organic Matter	4.30	wt%		0.02		ASA29-3	11/07/03 06:36 / jdh
Cation Exchange Capacity	27.9	meq/100g		0.1		SW6010B	10/31/03 10:33 / rp
Exchangeable Sodium Percentage	1.9	%		0.1		USDA20b	11/07/03 06:36 / jdh
Lime as CaCO3	9.5	wt%		0.1		USDA23c	10/27/03 00:00 / nh
Phosphorus	11	mg/kg		0.1		ASA24-5	11/04/03 03:04 / rp
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, Extractable	0.6	meq/100g		0.1		SW6010B	10/24/03 10:28 / rp
<b>METALS, HOT WATER EXTRACTABLE</b>							
Barium	ND	mg/kg		5		SW6020	10/31/03 23:00 / jjw
Boron	0.8	mg/kg		0.1		SW6020	10/31/03 23:00 / jjw
Selenium	ND	mg/kg		0.01		SW6020	10/31/03 23:00 / jjw
<b>METALS, DTPA EXTRACTABLE</b>							
Zinc	0.78	mg/kg		0.02		SW6010B	10/31/03 02:17 / rp

Report RL - Analyte reporting limit.  
 Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Client: AMPP  
 Project: Tongue River Monitoring  
 Lab ID: H03100061-018  
 Client Sample ID: T2/OAA-10-(6-12")

Report Date: 01/20/04  
 Collection Date: 10/09/03 17:00  
 Date Received: 10/10/03  
 Matrix: Soil

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
<b>SATURATED PASTE</b>							
pH, Saturated Paste	7.6	s.u.		0.1		ASAM10-3.2	11/07/03 06:36 / jdh
Conductivity, Paste Extract	0.48	mmhos/cm		0.01		ASAM10-3	11/07/03 06:36 / jdh
Saturation	42.7	wt%		0.1		USDA27a	11/07/03 06:36 / jdh
Calcium, Saturated Paste	2.0	meq/l		0.1		SW6010B	10/27/03 11:46 / rp
Magnesium, Saturated Paste	1.4	meq/l		0.1		SW6010B	10/27/03 11:46 / rp
Sodium, Saturated Paste	1.2	meq/l		0.1		SW6010B	10/27/03 11:46 / rp
Sodium Adsorption Ratio (SAR)	0.9	unitless		0.1		Calculation	11/07/03 06:36 / jdh
Alkalinity, Saturated Paste	3.8	meq/L		1.0		ASA10-3	10/22/03 00:00 / rp
Nitrate as N, Saturated Paste	24.1	mg/L		0.6		ASA10-3	10/30/03 08:00 / cwh
Sulfate, Saturated Paste	0.6	meq/L		0.1		ASA10-3	10/27/03 03:12 / rp
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	27	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Silt	51	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Clay	22	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Texture	SiL	unitless				ASA15-5	11/07/03 06:36 / jdh
C=Clay, S=Sand(y), Si=Silt(y), L=Loam(y)							
<b>CHEMICAL CHARACTERISTICS</b>							
Fluoride	1.0	mg/kg		1.0		A4500-F C	10/31/03 11:30 / ddb
Cation Exchange Capacity	25.6	meq/100g		0.1		SW6010B	10/31/03 10:35 / rp
Exchangeable Sodium Percentage	1.5	%		0.1		USDA20b	11/07/03 06:36 / jdh
Lime as CaCO3	8.5	wt%		0.1		USDA23c	10/27/03 00:00 / nh
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, Extractable	0.4	meq/100g		0.1		SW6010B	10/24/03 03:50 / rp
<b>METALS, HOT WATER EXTRACTABLE</b>							
Barium	ND	mg/kg		5		SW6020	10/31/03 23:04 / jjw
Boron	0.7	mg/kg		0.1		SW6020	10/31/03 23:04 / jjw
Selenium	ND	mg/kg		0.01		SW6020	10/31/03 23:04 / jjw

Report Definitions: RL - Analyte reporting limit.  
 QCL - Quality control limit.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** AMPP  
**Project:** Tongue River Monitoring  
**Lab ID:** H03100061-019  
**Client Sample ID:** T2/OAA-10-(12-24")

**Report Date:** 01/20/04  
**Collection Date:** 10/09/03 17:00  
**Date Received:** 10/10/03  
**Matrix:** Soil

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
<b>SATURATED PASTE</b>							
pH, Saturated Paste	8.0	s.u.		0.1		ASAM10-3.2	11/07/03 06:36 / jdh
Conductivity, Paste Extract	0.78	mmhos/cm		0.01		ASAM10-3	11/07/03 06:36 / jdh
Saturation	40.5	wt%		0.1		USDA27a	11/07/03 06:36 / jdh
Calcium, Saturated Paste	2.8	meq/l		0.1		SW6010B	10/27/03 11:49 / rp
Magnesium, Saturated Paste	2.0	meq/l		0.1		SW6010B	10/27/03 11:49 / rp
Sodium, Saturated Paste	3.0	meq/l		0.1		SW6010B	10/27/03 11:49 / rp
Sodium Adsorption Ratio (SAR)	1.9	unitless		0.1		Calculation	11/07/03 06:36 / jdh
Alkalinity, Saturated Paste	3.1	meq/L		1.0		ASA10-3	10/22/03 00:00 / rp
Nitrate as N, Saturated Paste	4.0	mg/L		0.1		ASA10-3	10/30/03 08:00 / cwh
Sulfate, Saturated Paste	4.8	meq/L		0.1		ASA10-3	10/27/03 03:15 / rp
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	27	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Silt	51	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Clay	22	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Texture	SiL	unitless				ASA15-5	10/30/03 00:00 / jdh
C=Clay, S=Sand(y), Si=Silt(y), L=Loam(y)							
<b>CHEMICAL CHARACTERISTICS</b>							
Cation Exchange Capacity	21.2	meq/100g		0.1		SW6010B	10/31/03 10:43 / rp
Exchangeable Sodium Percentage	2.4	%		0.1		USDA20b	11/07/03 06:36 / jdh
Lime as CaCO3	8.9	wt%		0.1		USDA23c	10/27/03 00:00 / nh
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, Extractable	0.6	meq/100g		0.1		SW6010B	10/24/03 03:52 / rp

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.

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 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** AMPP  
**Project:** Tongue River Monitoring  
**Lab ID:** H03100061-020  
**Client Sample ID:** T2/OAA-10-(24-36")

**Report Date:** 01/20/04  
**Collection Date:** 10/09/03 17:00  
**Date Received:** 10/10/03  
**Matrix:** Soil

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
<b>SATURATED PASTE</b>							
pH, Saturated Paste	8.1	s.u.		0.1		ASAM10-3.2	11/07/03 06:36 / jdh
Conductivity, Paste Extract	0.89	mmhos/cm		0.01		ASAM10-3	11/07/03 06:36 / jdh
Saturation	37.3	wt%		0.1		USDA27a	11/07/03 06:36 / jdh
Calcium, Saturated Paste	2.2	meq/l		0.1		SW6010B	10/27/03 11:52 / rp
Magnesium, Saturated Paste	1.9	meq/l		0.1		SW6010B	10/27/03 11:52 / rp
Sodium, Saturated Paste	4.3	meq/l		0.1		SW6010B	10/27/03 11:52 / rp
Sodium Adsorption Ratio (SAR)	3.0	unitless		0.1		Calculation	11/07/03 06:36 / jdh
Alkalinity, Saturated Paste	3.2	meq/L		1.0		ASA10-3	10/22/03 00:00 / rp
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	41	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Silt	42	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Clay	17	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Texture	L	unitless				ASA15-5	11/07/03 06:36 / jdh
C=Clay, S=Sand(y), Si=Silt(y), L=Loam(y)							
<b>CHEMICAL CHARACTERISTICS</b>							
Cation Exchange Capacity	18.2	meq/100g		0.1		SW6010B	10/31/03 10:46 / rp
Exchangeable Sodium Percentage	3.8	%		0.1		USDA20b	11/07/03 06:36 / jdh
Lime as CaCO3	9.0	wt%		0.1		USDA23c	10/27/03 00:00 / nh
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, Extractable	0.9	meq/100g		0.1		SW6010B	10/24/03 03:55 / rp

**Report Definitions:** RL - Analyte reporting limit.  
 QCL - Quality control limit.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** AMPP  
**Project:** Tongue River Monitoring  
**Lab ID:** H03100061-021  
**Client Sample ID:** T2/OAA-10-(36-60")

**Report Date:** 01/20/04  
**Collection Date:** 10/09/03 17:00  
**Date Received:** 10/10/03  
**Matrix:** Soil

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
<b>SATURATED PASTE</b>							
pH, Saturated Paste	8.1	s.u.		0.1		ASAM10-3.2	11/07/03 06:36 / jdh
Conductivity, Paste Extract	0.96	mmhos/cm		0.01		ASAM10-3	11/07/03 06:36 / jdh
Saturation	44.5	wt%		0.1		USDA27a	11/07/03 06:36 / jdh
Calcium, Saturated Paste	2.8	meq/l		0.1		SW6010B	10/27/03 11:57 / rp
Magnesium, Saturated Paste	2.4	meq/l		0.1		SW6010B	10/27/03 11:57 / rp
Sodium, Saturated Paste	4.3	meq/l		0.1		SW6010B	10/27/03 11:57 / rp
Sodium Adsorption Ratio (SAR)	2.6	unitless		0.1		Calculation	11/07/03 06:36 / jdh
Alkalinity, Saturated Paste	3.0	meq/L		1.0		ASA10-3	10/22/03 00:00 / rp
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	21	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Silt	51	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Clay	28	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Texture	CL	unitless				ASA15-5	11/07/03 06:36 / jdh
C=Clay, S=Sand(y), Si=Silt(y), L=Loam(y)							
<b>CHEMICAL CHARACTERISTICS</b>							
Fluoride	1.1	mg/kg		1.0		A4500-F C	10/31/03 11:30 / ddb
Potassium, NH4OAc Extractable	172	mg/kg		1		AAA13-3	01/15/04 00:00 / jdh
Cation Exchange Capacity	25.3	meq/100g		0.1		SW6010B	10/31/03 10:51 / rp
Exchangeable Sodium Percentage	3.8	%		0.1		USDA20b	11/07/03 06:36 / jdh
Lime as CaCO3	9.2	wt%		0.1		USDA23c	10/27/03 00:00 / nh
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, Extractable	1.1	meq/100g		0.1		SW6010B	10/24/03 04:00 / rp
<b>METALS, HOT WATER EXTRACTABLE</b>							
Barium	ND	mg/kg		5		SW6020	10/31/03 23:08 / jjw
Boron	0.7	mg/kg		0.1		SW6020	10/31/03 23:08 / jjw
Selenium	ND	mg/kg		0.01		SW6020	10/31/03 23:08 / jjw

**Report Definitions:** RL - Analyte reporting limit.  
 QCL - Quality control limit.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** AMPP  
**Project:** Tongue River Monitoring  
**Lab ID:** H03100061-022  
**Client Sample ID:** T2/OAA-10-(60-96")

**Report Date:** 01/20/04  
**Collection Date:** 10/09/03 17:00  
**Date Received:** 10/10/03  
**Matrix:** Soil

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
<b>SATURATED PASTE</b>							
pH, Saturated Paste	8.2	s.u.		0.1		ASAM10-3.2	11/07/03 06:36 / jdh
Conductivity, Paste Extract	2.57	mmhos/cm		0.01		ASAM10-3	11/07/03 06:36 / jdh
Saturation	39.7	wt%		0.1		USDA27a	11/07/03 06:36 / jdh
Calcium, Saturated Paste	5.3	meq/l		0.1		SW6010B	10/27/03 11:59 / rp
Magnesium, Saturated Paste	10	meq/l		0.1		SW6010B	10/27/03 11:59 / rp
Sodium, Saturated Paste	15.0	meq/l		0.1		SW6010B	10/27/03 11:59 / rp
Sodium Adsorption Ratio (SAR)	5.4	unitless		0.1		Calculation	11/07/03 06:36 / jdh
Alkalinity, Saturated Paste	2.7	meq/L		1.0		ASA10-3	10/22/03 00:00 / rp
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	36	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Silt	42	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Clay	22	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Texture	L	unitless				ASA15-5	11/07/03 06:36 / jdh
C=Clay, S=Sand(y), Si=Silt(y), L=Loam(y)							
<b>CHEMICAL CHARACTERISTICS</b>							
Cation Exchange Capacity	21.7	meq/100g		0.1		SW6010B	10/31/03 10:54 / rp
Exchangeable Sodium Percentage	4.5	%		0.1		USDA20b	11/07/03 06:36 / jdh
Lime as CaCO3	6.7	wt%		0.1		USDA23c	10/27/03 00:00 / nh
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, Extractable	1.6	meq/100g		0.1		SW6010B	10/24/03 04:03 / rp

**Report Definitions:** RL - Analyte reporting limit.  
 QCL - Quality control limit.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** AMPP  
**Project:** Tongue River Monitoring  
**Lab ID:** H03100061-023  
**Client Sample ID:** T2/OAA-10-(0-2")

**Report Date:** 01/20/04  
**Collection Date:** 10/09/03 17:00  
**Date Received:** 10/10/03  
**Matrix:** Soil

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
<b>SATURATED PASTE</b>							
pH, Saturated Paste	7.7	s.u.		0.1		ASAM10-3.2	11/07/03 06:36 / jdh
Conductivity, Paste Extract	0.88	mmhos/cm		0.01		ASAM10-3	11/07/03 06:36 / jdh
Saturation	51.3	wt%		0.1		USDA27a	11/07/03 06:36 / jdh
Calcium, Saturated Paste	5.7	meq/l		0.1		SW6010B	10/27/03 12:02 / rp
Magnesium, Saturated Paste	2.3	meq/l		0.1		SW6010B	10/27/03 12:02 / rp
Sodium, Saturated Paste	0.6	meq/l		0.1		SW6010B	10/27/03 12:02 / rp
Sodium Adsorption Ratio (SAR)	0.3	unitless		0.1		Calculation	11/07/03 06:36 / jdh
Alkalinity, Saturated Paste	8.1	meq/L		1.0		ASA10-3	10/22/03 00:00 / rp
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	28	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Silt	47	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Clay	25	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Texture	L	unitless				ASA15-5	11/07/03 06:36 / jdh
C=Clay, S=Sand(y), Si=Silt(y), L=Loam(y)							
<b>CHEMICAL CHARACTERISTICS</b>							
Cation Exchange Capacity	29.6	meq/100g		0.1		SW6010B	10/31/03 10:56 / rp
Exchangeable Sodium Percentage	1.7	%		0.1		USDA20b	11/07/03 06:36 / jdh
Lime as CaCO3	8.1	wt%		0.1		USDA23c	10/27/03 00:00 / nh
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, Extractable	0.5	meq/100g		0.1		SW6010B	10/24/03 04:05 / rp

**Report Definitions:** RL - Analyte reporting limit.  
 QCL - Quality control limit.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Client: AMPP  
 Project: Tongue River Monitoring  
 Lab ID: H03100061-025  
 Client Sample ID: T2/OAA-1-(0-6")

Report Date: 01/20/04  
 Collection Date: 10/09/03 17:00  
 Date Received: 10/10/03  
 Matrix: Soil

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
<b>SATURATED PASTE</b>							
pH, Saturated Paste	7.7	s.u.		0.1		ASAM10-3.2	11/07/03 06:36 / jdh
Conductivity, Paste Extract	0.87	mmhos/cm		0.01		ASAM10-3	11/07/03 06:36 / jdh
Saturation	49.9	wt%		0.1		USDA27a	11/07/03 06:36 / jdh
Calcium, Saturated Paste	4.4	meq/l		0.1		SW6010B	10/27/03 12:07 / rp
Magnesium, Saturated Paste	4.4	meq/l		0.1		SW6010B	10/27/03 12:07 / rp
Sodium, Saturated Paste	0.7	meq/l		0.1		SW6010B	10/27/03 12:07 / rp
Sodium Adsorption Ratio (SAR)	0.3	unitless		0.1		Calculation	11/07/03 06:36 / jdh
Alkalinity, Saturated Paste	8.1	meq/L		1.0		ASA10-3	10/22/03 00:00 / rp
Nitrate as N, Saturated Paste	0.4	mg/L		0.1		ASA10-3	10/30/03 08:00 / cwh
Sulfate, Saturated Paste	0.6	meq/L		0.1		ASA10-3	10/27/03 03:18 / rp
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	28	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Silt	47	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Clay	25	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Texture	L	unitless				ASA15-5	11/07/03 06:36 / jdh
C=Clay, S=Sand(y), Si=Silt(y), L=Loam(y)							
<b>CHEMICAL CHARACTERISTICS</b>							
Potassium, NH4OAc Extractable	294	mg/kg		1		AAA13-3	01/15/04 00:00 / jdh
Organic Matter	3.30	wt%		0.02		ASA29-3	11/07/03 06:36 / jdh
Cation Exchange Capacity	31.0	meq/100g		0.1		SW6010B	10/31/03 11:02 / rp
Exchangeable Sodium Percentage	1.6	%		0.1		USDA20b	11/07/03 06:36 / jdh
Lime as CaCO3	7.5	wt%		0.1		USDA23c	10/27/03 00:00 / nh
Phosphorus	13	mg/kg		0.1		ASA24-5	11/04/03 03:07 / rp
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, Extractable	0.5	meq/100g		0.1		SW6010B	10/24/03 04:10 / rp
<b>METALS, DTPA EXTRACTABLE</b>							
Zinc	0.41	mg/kg		0.02		SW6010B	11/05/03 12:55 / jdh
<b>CLAY MINEROLOGY</b>							
Smectite	14	%		1		XrayDiffraction	11/07/03 00:00 / wjj
Illite	32	%		1		XrayDiffraction	11/07/03 00:00 / wjj
Kaolinite	36	%		1		XrayDiffraction	11/07/03 00:00 / wjj
Chlorite	18	%		1		XrayDiffraction	11/07/03 00:00 / wjj

Report RL - Analyte reporting limit.  
 Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** AMPP  
**Project:** Tongue River Monitoring  
**Lab ID:** H03100061-026  
**Client Sample ID:** T2/OAA-1-(6-15")

**Report Date:** 01/20/04  
**Collection Date:** 10/09/03 17:00  
**Date Received:** 10/10/03  
**Matrix:** Soil

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
<b>SATURATED PASTE</b>							
pH, Saturated Paste	8.1	s.u.		0.1		ASAM10-3.2	11/07/03 06:36 / jdh
Conductivity, Paste Extract	0.50	mmhos/cm		0.01		ASAM10-3	11/07/03 06:36 / jdh
Saturation	43.4	wt%		0.1		USDA27a	11/07/03 06:36 / jdh
Calcium, Saturated Paste	1.5	meq/l		0.1		SW6010B	10/27/03 12:10 / rp
Magnesium, Saturated Paste	2.1	meq/l		0.1		SW6010B	10/27/03 12:10 / rp
Sodium, Saturated Paste	1.2	meq/l		0.1		SW6010B	10/27/03 12:10 / rp
Sodium Adsorption Ratio (SAR)	0.9	unitless		0.1		Calculation	11/07/03 06:36 / jdh
Alkalinity, Saturated Paste	4.1	meq/L		1.0		ASA10-3	10/22/03 00:00 / rp
Nitrate as N, Saturated Paste	3.6	mg/L		0.1		ASA10-3	10/30/03 08:00 / cwh
Sulfate, Saturated Paste	0.6	meq/L		0.1		ASA10-3	10/27/03 03:21 / rp
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	20	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Silt	54	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Clay	26	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Texture	SiL	unitless				ASA15-5	10/30/03 00:00 / jdh
<b>CHEMICAL CHARACTERISTICS</b>							
Cation Exchange Capacity	29.3	meq/100g		0.1		SW6010B	10/31/03 11:04 / rp
Exchangeable Sodium Percentage	1.2	%		0.1		USDA20b	11/07/03 06:36 / jdh
Lime as CaCO3	8.2	wt%		0.1		USDA23c	10/27/03 00:00 / nh
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, Extractable	0.4	meq/100g		0.1		SW6010B	10/24/03 04:13 / rp

**Report Definitions:** RL - Analyte reporting limit.  
 QCL - Quality control limit.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** AMPP  
**Project:** Tongue River Monitoring  
**Lab ID:** H03100061-027  
**Client Sample ID:** T2/OAA-1-(15-39)

**Report Date:** 01/20/04  
**Collection Date:** 10/19/03 17:00  
**Date Received:** 10/10/03  
**Matrix:** Soil

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
<b>SATURATED PASTE</b>							
pH, Saturated Paste	7.9	s.u.		0.1		ASAM10-3.2	11/07/03 06:36 / jdh
Conductivity, Paste Extract	0.87	mmhos/cm		0.01		ASAM10-3	11/07/03 06:36 / jdh
Saturation	32.7	wt%		0.1		USDA27a	11/07/03 06:36 / jdh
Calcium, Saturated Paste	2.9	meq/l		0.1		SW6010B	10/27/03 12:12 / rp
Magnesium, Saturated Paste	3.0	meq/l		0.1		SW6010B	10/27/03 12:12 / rp
Sodium, Saturated Paste	1.8	meq/l		0.1		SW6010B	10/27/03 12:12 / rp
Sodium Adsorption Ratio (SAR)	1.1	unitless		0.1		Calculation	11/07/03 06:36 / jdh
Alkalinity, Saturated Paste	2.9	meq/L		1.0		ASA10-3	10/22/03 00:00 / rp
Nitrate as N, Saturated Paste	3.5	mg/L		0.1		ASA10-3	10/30/03 08:00 / cwh
Sulfate, Saturated Paste	0.6	meq/L		0.1		ASA10-3	10/27/03 03:23 / rp
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	51	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Silt	36	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Clay	13	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Texture	L	unitless				ASA15-5	10/30/03 00:00 / jdh
<b>CHEMICAL CHARACTERISTICS</b>							
Cation Exchange Capacity	15.7	meq/100g		0.1		SW6010B	10/31/03 11:07 / rp
Exchangeable Sodium Percentage	3.5	%		0.1		USDA20b	11/07/03 06:36 / jdh
Lime as CaCO3	8.6	wt%		0.1		USDA23c	10/27/03 00:00 / nh
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, Extractable	0.6	meq/100g		0.1		SW6010B	10/24/03 04:16 / rp

**Report Definitions:** RL - Analyte reporting limit.  
 QCL - Quality control limit.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** AMPP  
**Project:** Tongue River Monitoring  
**Lab ID:** H03100061-028  
**Client Sample ID:** T2/OAA-1-(39-60)

**Report Date:** 01/20/04  
**Collection Date:** 10/09/03 17:00  
**Date Received:** 10/10/03  
**Matrix:** Soil

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
<b>SATURATED PASTE</b>							
pH, Saturated Paste	8.2	s.u.		0.1		ASAM10-3.2	11/07/03 06:36 / jdh
Conductivity, Paste Extract	0.69	mmhos/cm		0.01		ASAM10-3	11/07/03 06:36 / jdh
Saturation	44.8	wt%		0.1		USDA27a	11/07/03 06:36 / jdh
Calcium, Saturated Paste	1.0	meq/l		0.1		SW6010B	10/27/03 12:15 / rp
Magnesium, Saturated Paste	0.8	meq/l		0.1		SW6010B	10/27/03 12:15 / rp
Sodium, Saturated Paste	3.9	meq/l		0.1		SW6010B	10/27/03 12:15 / rp
Sodium Adsorption Ratio (SAR)	4.1	unitless		0.1		Calculation	11/07/03 06:36 / jdh
Alkalinity, Saturated Paste	3.7	meq/L		1.0		ASA10-3	10/22/03 00:00 / rp
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	15	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Silt	55	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Clay	30	wt%		1.0		ASA15-5	11/07/03 06:36 / jdh
Texture	SiCL	unitless				ASA15-5	11/07/03 06:36 / jdh
C=Clay, S=Sand(y), Si=Silt(y), L=Loam(y)							
<b>CHEMICAL CHARACTERISTICS</b>							
Cation Exchange Capacity	33.8	meq/100g		0.1		SW6010B	10/31/03 11:09 / rp
Exchangeable Sodium Percentage	3.6	%		0.1		USDA20b	11/07/03 06:36 / jdh
Lime as CaCO3	8.4	wt%		0.1		USDA23c	10/27/03 00:00 / nh
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, Extractable	1.4	meq/100g		0.1		SW6010B	10/24/03 04:18 / rp
<b>CLAY MINEROLOGY</b>							
Smectite	14	%		1		XrayDiffraction	11/07/03 00:00 / wjj
Illite	41	%		1		XrayDiffraction	11/07/03 00:00 / wjj
Kaolinite	37	%		1		XrayDiffraction	11/07/03 00:00 / wjj
Chlorite	9	%		1		XrayDiffraction	11/07/03 00:00 / wjj

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.