



LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08120280-001  
**Client Sample ID:** PH, 0-2 inches

**Report Date:** 12/31/08  
**Collection Date:** 11/25/08 17:30  
**Date Received:** 12/02/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	18	%		1		ASA15-5	12/22/08 14:23 / srm
Silt	48	%		1		ASA15-5	12/22/08 14:23 / srm
Clay	34	%		1		ASA15-5	12/22/08 14:23 / srm
Texture	SiCL					ASA15-5	12/22/08 14:23 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	7.50	s.u.		0.10		ASAM10-3.2	12/22/08 14:23 / srm
Conductivity, sat. paste	0.74	mmhos/cm		0.01		ASA10-3	12/22/08 14:23 / srm
Saturation	74.8	%		0.1		USDA27a	12/22/08 14:23 / srm
Calcium, sat. paste	4.68	meq/L		0.05		SW6010B	12/18/08 21:08 / rh
Magnesium, sat. paste	3.20	meq/L		0.08		SW6010B	12/18/08 21:08 / rh
Sodium, sat. paste	0.50	meq/L		0.04		SW6010B	12/18/08 21:08 / rh
Sodium Adsorption Ratio (SAR)	0.25	unitless		0.01		Calculation	12/22/08 14:23 / srm
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	1.6	%		0.1		USDA23c	12/30/08 15:51 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	39.3	meq/100g	D	0.08		SW6010B	12/18/08 23:54 / rh
Exchangeable Sodium Percentage	0.18	%		0.01		USDA20a	12/24/08 09:58 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.11	meq/100g	D	0.0016		SW6010B	12/16/08 18:53 / rh

**Report Definitions:**

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Client: Marathon Ashland Pipeline  
Project: PDC AMPP  
Lab ID: B08120280-002  
Client Sample ID: PH, 0-6 inches

Report Date: 12/31/08  
Collection Date: 11/25/08 17:30  
Date Received: 12/02/08  
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	32	%		1		ASA15-5	12/22/08 14:23 / srm
Silt	33	%		1		ASA15-5	12/22/08 14:23 / srm
Clay	35	%		1		ASA15-5	12/22/08 14:23 / srm
Texture	CL					ASA15-5	12/22/08 14:23 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	7.00	s.u.		0.10		ASAM10-3.2	12/22/08 14:23 / srm
Conductivity, sat. paste	0.62	mmhos/cm		0.01		ASA10-3	12/22/08 14:23 / srm
Saturation	69.1	%		0.1		USDA27a	12/22/08 14:23 / srm
Calcium, sat. paste	4.05	meq/L		0.05		SW6010B	12/24/08 11:59 / rh
Magnesium, sat. paste	2.70	meq/L		0.08		SW6010B	12/24/08 11:59 / rh
Sodium, sat. paste	0.51	meq/L		0.04		SW6010B	12/24/08 11:59 / rh
Sodium Adsorption Ratio (SAR)	0.73	unitless		0.01		Calculation	12/22/08 14:23 / srm
Sulfate, sat. paste	117	mg/L		1		ASA10-3	12/18/08 15:14 / kh
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	1.2	%		0.1		USDA23c	12/30/08 15:51 / srm
Phosphorus, Olsen	ND	mg/kg		1		ASA24-5	12/12/08 10:35 / srm
Nitrate as N, KCL Extract	11	mg/kg		1		ASA33-8	12/19/08 13:41 / srm
Organic Matter	3.98	%		0.02		ASA29-3	12/22/08 14:33 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	40.6	meq/100g	D	0.08		SW6010B	12/19/08 00:01 / rh
Exchangeable Sodium Percentage	0.26	%		0.01		USDA20a	12/24/08 09:58 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.14	meq/100g	D	0.00039		SW6010B	12/23/08 23:14 / rh
Potassium, available	257	mg/kg	D	0.13		SW6010B	12/16/08 19:00 / rh
<b>METALS, DTPA EXTRACTABLE</b>							
Zinc	0.8	mg/kg		0.1		SW6010B	12/23/08 22:55 / rh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix interference.

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



LABORATORY ANALYTICAL REPORT

Client: Marathon Ashland Pipeline  
 Project: PDC AMPP  
 Lab ID: B08120280-003  
 Client Sample ID: PH, 6-12 inches

Report Date: 12/31/08  
 Collection Date: 11/25/08 17:30  
 Date Received: 12/02/08  
 Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	22	%		1		ASA15-5	12/22/08 14:23 / srm
Silt	43	%		1		ASA15-5	12/22/08 14:23 / srm
Clay	35	%		1		ASA15-5	12/22/08 14:23 / srm
Texture	CL					ASA15-5	12/22/08 14:23 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	7.50	s.u.		0.10		ASAM10-3.2	12/22/08 14:23 / srm
Conductivity, sat. paste	1.03	mmhos/cm		0.01		ASA10-3	12/22/08 14:23 / srm
Saturation	68.0	%		0.1		USDA27a	12/22/08 14:23 / srm
Calcium, sat. paste	5.28	meq/L		0.05		SW6010B	12/24/08 12:02 / rh
Magnesium, sat. paste	5.52	meq/L		0.08		SW6010B	12/24/08 12:02 / rh
Sodium, sat. paste	1.76	meq/L		0.04		SW6010B	12/24/08 12:02 / rh
Sodium Adsorption Ratio (SAR)	1.82	unitless		0.01		Calculation	12/22/08 14:23 / srm
Sulfate, sat. paste	388	mg/L		1		ASA10-3	12/18/08 15:25 / kh
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	1.7	%		0.1		USDA23c	12/30/08 15:51 / srm
Nitrate as N, KCL Extract	5	mg/kg		1		ASA33-8	12/19/08 13:41 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	33.9	meq/100g	D	0.08		SW6010B	12/19/08 00:09 / rh
Exchangeable Sodium Percentage	0.70	%		0.01		USDA20a	12/24/08 09:58 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.36	meq/100g	D	0.00039		SW6010B	12/23/08 23:18 / rh

Report Definitions:

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08120280-004  
**Client Sample ID:** PH, 12-24 inches

**Report Date:** 12/31/08  
**Collection Date:** 11/25/08 17:30  
**Date Received:** 12/02/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	21	%		1		ASA15-5	12/22/08 14:23 / srm
Silt	46	%		1		ASA15-5	12/22/08 14:23 / srm
Clay	33	%		1		ASA15-5	12/22/08 14:23 / srm
Texture	CL					ASA15-5	12/22/08 14:23 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	7.70	s.u.		0.10		ASAM10-3.2	12/22/08 14:23 / srm
Conductivity, sat. paste	2.21	mmhos/cm		0.01		ASA10-3	12/22/08 14:23 / srm
Saturation	58.4	%		0.1		USDA27a	12/22/08 14:23 / srm
Calcium, sat. paste	11.5	meq/L		0.05		SW6010B	12/18/08 21:31 / rh
Magnesium, sat. paste	9.74	meq/L		0.08		SW6010B	12/18/08 21:31 / rh
Sodium, sat. paste	5.91	meq/L		0.04		SW6010B	12/18/08 21:31 / rh
Sodium Adsorption Ratio (SAR)	1.82	unitless		0.01		Calculation	12/22/08 14:23 / srm
Sulfate, sat. paste	1130	mg/L		1		ASA10-3	12/19/08 13:33 / kh
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	4.3	%		0.1		USDA23c	12/30/08 15:51 / srm
Nitrate as N, KCL Extract	7	mg/kg		1		ASA33-8	12/19/08 13:42 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	29.6	meq/100g	D	0.08		SW6010B	12/19/08 00:13 / rh
Exchangeable Sodium Percentage	1.47	%		0.01		USDA20a	12/24/08 09:58 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.78	meq/100g	D	0.0016		SW6010B	12/16/08 19:12 / rh

**Report Definitions:**

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### LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08120280-005  
**Client Sample ID:** PH, 24-36 inches

**Report Date:** 12/31/08  
**Collection Date:** 11/25/08 17:30  
**Date Received:** 12/02/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	18	%		1		ASA15-5	12/22/08 14:23 / srm
Silt	47	%		1		ASA15-5	12/22/08 14:23 / srm
Clay	35	%		1		ASA15-5	12/22/08 14:23 / srm
Texture	SiCL					ASA15-5	12/22/08 14:23 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	7.80	s.u.		0.10		ASAM10-3.2	12/22/08 14:23 / srm
Conductivity, sat. paste	4.14	mmhos/cm		0.01		ASA10-3	12/22/08 14:23 / srm
Saturation	58.8	%		0.1		USDA27a	12/22/08 14:23 / srm
Calcium, sat. paste	26.8	meq/L		0.05		SW6010B	12/18/08 21:35 / rh
Magnesium, sat. paste	33.5	meq/L		0.08		SW6010B	12/18/08 21:35 / rh
Sodium, sat. paste	7.11	meq/L		0.04		SW6010B	12/18/08 21:35 / rh
Sodium Adsorption Ratio (SAR)	1.30	unitless		0.01		Calculation	12/22/08 14:23 / srm
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO <sub>3</sub>	5.1	%		0.1		USDA23c	12/30/08 15:51 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	25.9	meq/100g	D	0.08		SW6010B	12/19/08 00:48 / rh
Exchangeable Sodium Percentage	0.96	%		0.01		USDA20a	12/24/08 09:58 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.67	meq/100g	D	0.0016		SW6010B	12/16/08 19:15 / rh

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix interference.

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



LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08120280-006  
**Client Sample ID:** PH, 36-48 inches

**Report Date:** 12/31/08  
**Collection Date:** 11/25/08 17:30  
**Date Received:** 12/02/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	31	%		1		ASA15-5	12/22/08 14:23 / srm
Silt	35	%		1		ASA15-5	12/22/08 14:23 / srm
Clay	34	%		1		ASA15-5	12/22/08 14:23 / srm
Texture	CL					ASA15-5	12/22/08 14:23 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	7.90	s.u.		0.10		ASAM10-3.2	12/22/08 14:23 / srm
Conductivity, sat. paste	0.93	mmhos/cm		0.01		ASA10-3	12/22/08 14:23 / srm
Saturation	58.8	%		0.1		USDA27a	12/22/08 14:23 / srm
Calcium, sat. paste	5.45	meq/L		0.05		SW6010B	12/18/08 21:42 / rh
Magnesium, sat. paste	4.39	meq/L		0.08		SW6010B	12/18/08 21:42 / rh
Sodium, sat. paste	1.82	meq/L		0.04		SW6010B	12/18/08 21:42 / rh
Sodium Adsorption Ratio (SAR)	0.82	unitless		0.01		Calculation	12/22/08 14:23 / srm
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	5.5	%		0.1		USDA23c	12/30/08 15:51 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	35.7	meq/100g	D	0.08		SW6010B	12/19/08 00:52 / rh
Exchangeable Sodium Percentage	0.28	%		0.01		USDA20a	12/24/08 09:58 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.21	meq/100g	D	0.0016		SW6010B	12/16/08 19:19 / rh

**Report Definitions:**

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08120280-007  
**Client Sample ID:** PH, 48-60 inches

**Report Date:** 12/31/08  
**Collection Date:** 11/25/08 17:30  
**Date Received:** 12/02/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	7	%		1		ASA15-5	12/22/08 14:23 / srm
Silt	52	%		1		ASA15-5	12/22/08 14:23 / srm
Clay	41	%		1		ASA15-5	12/22/08 14:23 / srm
Texture	SiC					ASA15-5	12/22/08 14:23 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	8.10	s.u.		0.10		ASAM10-3.2	12/22/08 14:23 / srm
Conductivity, sat. paste	3.59	mmhos/cm		0.01		ASA10-3	12/22/08 14:23 / srm
Saturation	68.2	%		0.1		USDA27a	12/22/08 14:23 / srm
Calcium, sat. paste	26.5	meq/L		0.05		SW6010B	12/18/08 21:46 / rh
Magnesium, sat. paste	18.4	meq/L		0.08		SW6010B	12/18/08 21:46 / rh
Sodium, sat. paste	7.82	meq/L		0.04		SW6010B	12/18/08 21:46 / rh
Sodium Adsorption Ratio (SAR)	1.65	unitless		0.01		Calculation	12/22/08 14:23 / srm
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	4.3	%		0.1		USDA23c	12/30/08 15:51 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	33.2	meq/100g	D	0.08		SW6010B	12/19/08 00:56 / rh
Exchangeable Sodium Percentage	1.15	%		0.01		USDA20a	12/24/08 09:58 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.91	meq/100g	D	0.0016		SW6010B	12/16/08 19:23 / rh

**Report Definitions:**

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08120280-008  
**Client Sample ID:** PH, 60-72 inches

**Report Date:** 12/31/08  
**Collection Date:** 11/25/08 17:30  
**Date Received:** 12/02/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	18	%		1		ASA15-5	12/22/08 14:23 / srm
Silt	43	%		1		ASA15-5	12/22/08 14:23 / srm
Clay	39	%		1		ASA15-5	12/22/08 14:23 / srm
Texture	SiCL					ASA15-5	12/22/08 14:23 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	7.70	s.u.		0.10		ASAM10-3.2	12/22/08 14:23 / srm
Conductivity, sat. paste	3.12	mmhos/cm		0.01		ASA10-3	12/22/08 14:23 / srm
Saturation	68.8	%		0.1		USDA27a	12/22/08 14:23 / srm
Calcium, sat. paste	27.1	meq/L		0.05		SW6010B	12/18/08 21:50 / rh
Magnesium, sat. paste	16.4	meq/L		0.08		SW6010B	12/18/08 21:50 / rh
Sodium, sat. paste	3.01	meq/L		0.04		SW6010B	12/18/08 21:50 / rh
Sodium Adsorption Ratio (SAR)	0.65	unitless		0.01		Calculation	12/22/08 14:23 / srm
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	9.7	%		0.1		USDA23c	12/30/08 15:51 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	29.6	meq/100g	D	0.08		SW6010B	12/19/08 01:00 / rh
Exchangeable Sodium Percentage	0.69	%		0.01		USDA20a	12/24/08 09:58 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.41	meq/100g	D	0.0016		SW6010B	12/16/08 19:27 / rh

**Report Definitions:**

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08120280-009  
**Client Sample ID:** PH, 72-96 inches

**Report Date:** 12/31/08  
**Collection Date:** 11/25/08 17:30  
**Date Received:** 12/02/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	35	%		1		ASA15-5	12/22/08 14:23 / srm
Silt	32	%		1		ASA15-5	12/22/08 14:23 / srm
Clay	33	%		1		ASA15-5	12/22/08 14:23 / srm
Texture	CL					ASA15-5	12/22/08 14:23 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	7.60	s.u.		0.10		ASAM10-3.2	12/22/08 14:23 / srm
Conductivity, sat. paste	3.04	mmhos/cm		0.01		ASA10-3	12/22/08 14:23 / srm
Saturation	52.6	%		0.1		USDA27a	12/22/08 14:23 / srm
Calcium, sat. paste	28.1	meq/L		0.05		SW6010B	12/18/08 21:54 / rh
Magnesium, sat. paste	15.9	meq/L		0.08		SW6010B	12/18/08 21:54 / rh
Sodium, sat. paste	2.33	meq/L		0.04		SW6010B	12/18/08 21:54 / rh
Sodium Adsorption Ratio (SAR)	0.50	unitless		0.01		Calculation	12/22/08 14:23 / srm
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO <sub>3</sub>	4.3	%		0.1		USDA23c	12/30/08 15:51 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	33.3	meq/100g	D	0.08		SW6010B	12/19/08 01:04 / rh
Exchangeable Sodium Percentage	0.40	%		0.01		USDA20a	12/24/08 09:58 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.26	meq/100g	D	0.0016		SW6010B	12/16/08 19:39 / rh

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix interference.

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