



LABORATORY ANALYTICAL REPORT

Client: Marathon Ashland Pipeline
Project: PDC AMPP
Lab ID: B08120275-001
Client Sample ID: PD, 0-2 inches

Report Date: 12/30/08
Collection Date: 11/26/08 09:30
Date Received: 12/02/08
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	25	%		1		ASA15-5	12/22/08 13:43 / srm
Silt	45	%		1		ASA15-5	12/22/08 13:43 / srm
Clay	30	%		1		ASA15-5	12/22/08 13:43 / srm
Texture	CL					ASA15-5	12/22/08 13:43 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
SATURATED PASTE							
pH, sat. paste	7.10	s.u.		0.10		ASAM10-3.2	12/22/08 13:43 / srm
Conductivity, sat. paste	0.83	mmhos/cm		0.01		ASA10-3	12/22/08 13:43 / srm
Saturation	71.2	%		0.1		USDA27a	12/22/08 13:43 / srm
Calcium, sat. paste	4.87	meq/L		0.05		SW6010B	12/17/08 19:41 / rlh
Magnesium, sat. paste	3.40	meq/L		0.08		SW6010B	12/17/08 19:41 / rlh
Sodium, sat. paste	0.42	meq/L		0.04		SW6010B	12/17/08 19:41 / rlh
Sodium Adsorption Ratio (SAR)	0.20	unitless		0.01		Calculation	12/22/08 13:43 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	1.4	%		0.1		USDA23c	12/29/08 16:44 / srm
EXCHANGEABLES							
Cation Exchange Capacity	41.8	meq/100g	D	0.08		SW6010B	12/17/08 22:53 / rlh
Exchangeable Sodium Percentage	0.12	%		0.01		USDA20a	12/22/08 13:43 / srm
METALS, AMMONIUM ACETATE EXTRACTABLE							
Sodium, extractable	0.081	meq/100g	D	0.0016		SW6010B	12/16/08 15:03 / rlh

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: B08120275-002
Client Sample ID: PD, 0-6 inches

Report Date: 12/30/08
Collection Date: 11/26/08 09:30
Date Received: 12/02/08
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	29	%		1		ASA15-5	12/22/08 13:43 / srm
Silt	41	%		1		ASA15-5	12/22/08 13:43 / srm
Clay	30	%		1		ASA15-5	12/22/08 13:43 / srm
Texture	CL					ASA15-5	12/22/08 13:43 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
SATURATED PASTE							
pH, sat. paste	7.20	s.u.		0.10		ASAM10-3.2	12/22/08 13:43 / srm
Conductivity, sat. paste	0.67	mmhos/cm		0.01		ASA10-3	12/22/08 13:43 / srm
Saturation	69.5	%		0.1		USDA27a	12/22/08 13:43 / srm
Calcium, sat. paste	4.07	meq/L		0.05		SW6010B	12/17/08 19:57 / rlh
Magnesium, sat. paste	2.88	meq/L		0.08		SW6010B	12/17/08 19:57 / rlh
Sodium, sat. paste	0.56	meq/L		0.04		SW6010B	12/17/08 19:57 / rlh
Sodium Adsorption Ratio (SAR)	0.30	unitless		0.01		Calculation	12/22/08 13:43 / srm
Sulfate, sat. paste	61	mg/L		1		ASA10-3	12/18/08 00:41 / kh
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	1.5	%		0.1		USDA23c	12/29/08 16:44 / srm
Phosphorus, Olsen	4	mg/kg		1		ASA24-5	12/12/08 10:27 / srm
Nitrate as N, KCL Extract	10	mg/kg		1		ASA33-8	12/19/08 13:30 / srm
Organic Matter	4.10	%		0.02		ASA29-3	12/22/08 14:33 / srm
EXCHANGEABLES							
Cation Exchange Capacity	41.1	meq/100g	D	0.08		SW6010B	12/17/08 23:01 / rlh
Exchangeable Sodium Percentage	0.20	%		0.01		USDA20a	12/22/08 13:43 / srm
METALS, AMMONIUM ACETATE EXTRACTABLE							
Sodium, extractable	0.12	meq/100g	D	0.0016		SW6010B	12/16/08 15:10 / rlh
Potassium, available	294	mg/kg	D	0.13		SW6010B	12/16/08 15:10 / rlh
METALS, DTPA EXTRACTABLE							
Zinc	1.2	mg/kg		0.1		SW6010B	12/23/08 22:24 / rlh

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: B08120275-003
Client Sample ID: PD, 6-12 inches

Report Date: 12/30/08
Collection Date: 11/26/08 09:30
Date Received: 12/02/08
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	27	%		1		ASA15-5	12/22/08 13:43 / srm
Silt	41	%		1		ASA15-5	12/22/08 13:43 / srm
Clay	32	%		1		ASA15-5	12/22/08 13:43 / srm
Texture	CL					ASA15-5	12/22/08 13:43 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
SATURATED PASTE							
pH, sat. paste	7.20	s.u.		0.10		ASAM10-3.2	12/22/08 13:43 / srm
Conductivity, sat. paste	0.59	mmhos/cm		0.01		ASA10-3	12/22/08 13:43 / srm
Saturation	61.7	%		0.1		USDA27a	12/22/08 13:43 / srm
Calcium, sat. paste	3.30	meq/L		0.05		SW6010B	12/17/08 20:00 / rlh
Magnesium, sat. paste	2.50	meq/L		0.08		SW6010B	12/17/08 20:00 / rlh
Sodium, sat. paste	0.81	meq/L		0.04		SW6010B	12/17/08 20:00 / rlh
Sodium Adsorption Ratio (SAR)	0.48	unitless		0.01		Calculation	12/22/08 13:43 / srm
Sulfate, sat. paste	100	mg/L		1		ASA10-3	12/18/08 00:53 / kh
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	1.2	%		0.1		USDA23c	12/29/08 16:44 / srm
Nitrate as N, KCL Extract	9	mg/kg		1		ASA33-8	12/19/08 13:31 / srm
EXCHANGEABLES							
Cation Exchange Capacity	39.3	meq/100g	D	0.08		SW6010B	12/17/08 23:09 / rlh
Exchangeable Sodium Percentage	0.29	%		0.01		USDA20a	12/22/08 13:43 / srm
METALS, AMMONIUM ACETATE EXTRACTABLE							
Sodium, extractable	0.17	meq/100g	D	0.0016		SW6010B	12/16/08 15:26 / rlh

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: B08120275-004
Client Sample ID: PD, 12-24 inches

Report Date: 12/30/08
Collection Date: 11/26/08 09:30
Date Received: 12/02/08
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	25	%		1		ASA15-5	12/22/08 13:43 / srm
Silt	39	%		1		ASA15-5	12/22/08 13:43 / srm
Clay	36	%		1		ASA15-5	12/22/08 13:43 / srm
Texture	CL					ASA15-5	12/22/08 13:43 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
SATURATED PASTE							
pH, sat. paste	7.60	s.u.		0.10		ASAM10-3.2	12/22/08 13:43 / srm
Conductivity, sat. paste	0.64	mmhos/cm		0.01		ASA10-3	12/22/08 13:43 / srm
Saturation	69.3	%		0.1		USDA27a	12/22/08 13:43 / srm
Calcium, sat. paste	3.10	meq/L		0.05		SW6010B	12/17/08 20:04 / rlh
Magnesium, sat. paste	2.82	meq/L		0.08		SW6010B	12/17/08 20:04 / rlh
Sodium, sat. paste	1.03	meq/L		0.04		SW6010B	12/17/08 20:04 / rlh
Sodium Adsorption Ratio (SAR)	0.60	unitless		0.01		Calculation	12/22/08 13:43 / srm
Sulfate, sat. paste	128	mg/L		1		ASA10-3	12/18/08 01:51 / kh
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	2.6	%		0.1		USDA23c	12/29/08 16:44 / srm
Nitrate as N, KCL Extract	6	mg/kg		1		ASA33-8	12/19/08 13:31 / srm
EXCHANGEABLES							
Cation Exchange Capacity	38.5	meq/100g	D	0.08		SW6010B	12/17/08 23:13 / rlh
Exchangeable Sodium Percentage	0.45	%		0.01		USDA20a	12/22/08 13:43 / srm
METALS, AMMONIUM ACETATE EXTRACTABLE							
Sodium, extractable	0.24	meq/100g	D	0.0016		SW6010B	12/16/08 15:29 / rlh

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: B08120275-005
Client Sample ID: PD, 24-36 inches

Report Date: 12/30/08
Collection Date: 11/26/08 09:30
Date Received: 12/02/08
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	23	%		1		ASA15-5	12/22/08 13:43 / srm
Silt	41	%		1		ASA15-5	12/22/08 13:43 / srm
Clay	36	%		1		ASA15-5	12/22/08 13:43 / srm
Texture	CL					ASA15-5	12/22/08 13:43 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
SATURATED PASTE							
pH, sat. paste	7.80	s.u.		0.10		ASAM10-3.2	12/22/08 13:43 / srm
Conductivity, sat. paste	1.30	mmhos/cm		0.01		ASA10-3	12/22/08 13:43 / srm
Saturation	66.5	%		0.1		USDA27a	12/22/08 13:43 / srm
Calcium, sat. paste	7.42	meq/L		0.05		SW6010B	12/17/08 20:08 / rlh
Magnesium, sat. paste	6.99	meq/L		0.08		SW6010B	12/17/08 20:08 / rlh
Sodium, sat. paste	1.50	meq/L		0.04		SW6010B	12/17/08 20:08 / rlh
Sodium Adsorption Ratio (SAR)	0.56	unitless		0.01		Calculation	12/22/08 13:43 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	7.8	%		0.1		USDA23c	12/29/08 16:44 / srm
EXCHANGEABLES							
Cation Exchange Capacity	33.5	meq/100g	D	0.08		SW6010B	12/17/08 23:24 / rlh
Exchangeable Sodium Percentage	0.42	%		0.01		USDA20a	12/22/08 13:43 / srm
METALS, AMMONIUM ACETATE EXTRACTABLE							
Sodium, extractable	0.24	meq/100g	D	0.0016		SW6010B	12/16/08 15:33 / rlh

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: B08120275-006
Client Sample ID: PD, 36-48 inches

Report Date: 12/30/08
Collection Date: 11/26/08 09:30
Date Received: 12/02/08
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	31	%		1		ASA15-5	12/22/08 13:43 / srm
Silt	35	%		1		ASA15-5	12/22/08 13:43 / srm
Clay	34	%		1		ASA15-5	12/22/08 13:43 / srm
Texture	CL					ASA15-5	12/22/08 13:43 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
SATURATED PASTE							
pH, sat. paste	7.70	s.u.		0.10		ASAM10-3.2	12/22/08 13:43 / srm
Conductivity, sat. paste	3.13	mmhos/cm		0.01		ASA10-3	12/22/08 13:43 / srm
Saturation	63.4	%		0.1		USDA27a	12/22/08 13:43 / srm
Calcium, sat. paste	25.6	meq/L		0.05		SW6010B	12/17/08 20:16 / rlh
Magnesium, sat. paste	17.6	meq/L		0.08		SW6010B	12/17/08 20:16 / rlh
Sodium, sat. paste	2.01	meq/L		0.04		SW6010B	12/17/08 20:16 / rlh
Sodium Adsorption Ratio (SAR)	0.43	unitless		0.01		Calculation	12/22/08 13:43 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	7.9	%		0.1		USDA23c	12/29/08 16:44 / srm
EXCHANGEABLES							
Cation Exchange Capacity	30.6	meq/100g	D	0.08		SW6010B	12/17/08 23:28 / rlh
Exchangeable Sodium Percentage	0.34	%		0.01		USDA20a	12/22/08 13:43 / srm
METALS, AMMONIUM ACETATE EXTRACTABLE							
Sodium, extractable	0.23	meq/100g	D	0.0016		SW6010B	12/16/08 15:37 / rlh

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: B08120275-007
Client Sample ID: PD, 48-60 inches

Report Date: 12/30/08
Collection Date: 11/26/08 09:30
Date Received: 12/02/08
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	25	%		1		ASA15-5	12/22/08 13:43 / srm
Silt	39	%		1		ASA15-5	12/22/08 13:43 / srm
Clay	36	%		1		ASA15-5	12/22/08 13:43 / srm
Texture	CL					ASA15-5	12/22/08 13:43 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
SATURATED PASTE							
pH, sat. paste	7.70	s.u.		0.10		ASAM10-3.2	12/22/08 13:43 / srm
Conductivity, sat. paste	3.24	mmhos/cm		0.01		ASA10-3	12/22/08 13:43 / srm
Saturation	66.3	%		0.1		USDA27a	12/22/08 13:43 / srm
Calcium, sat. paste	25.9	meq/L		0.05		SW6010B	12/17/08 20:20 / rlh
Magnesium, sat. paste	17.7	meq/L		0.08		SW6010B	12/17/08 20:20 / rlh
Sodium, sat. paste	3.43	meq/L		0.04		SW6010B	12/17/08 20:20 / rlh
Sodium Adsorption Ratio (SAR)	0.74	unitless		0.01		Calculation	12/22/08 13:43 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	9.7	%		0.1		USDA23c	12/29/08 16:44 / srm
EXCHANGEABLES							
Cation Exchange Capacity	32.7	meq/100g	D	0.08		SW6010B	12/17/08 23:32 / rlh
Exchangeable Sodium Percentage	0.52	%		0.01		USDA20a	12/22/08 13:43 / srm
METALS, AMMONIUM ACETATE EXTRACTABLE							
Sodium, extractable	0.40	meq/100g	D	0.0016		SW6010B	12/16/08 15:41 / rlh

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: B08120275-008
Client Sample ID: PD, 60-72 inches

Report Date: 12/30/08
Collection Date: 11/26/08 09:30
Date Received: 12/02/08
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	23	%		1		ASA15-5	12/22/08 13:43 / srm
Silt	40	%		1		ASA15-5	12/22/08 13:43 / srm
Clay	37	%		1		ASA15-5	12/22/08 13:43 / srm
Texture	CL					ASA15-5	12/22/08 13:43 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
SATURATED PASTE							
pH, sat. paste	7.70	s.u.		0.10		ASAM10-3.2	12/22/08 13:43 / srm
Conductivity, sat. paste	3.38	mmhos/cm		0.01		ASA10-3	12/22/08 13:43 / srm
Saturation	66.5	%		0.1		USDA27a	12/22/08 13:43 / srm
Calcium, sat. paste	26.3	meq/L		0.05		SW6010B	12/17/08 20:24 / rlh
Magnesium, sat. paste	19.4	meq/L		0.08		SW6010B	12/17/08 20:24 / rlh
Sodium, sat. paste	3.93	meq/L		0.04		SW6010B	12/17/08 20:24 / rlh
Sodium Adsorption Ratio (SAR)	0.82	unitless		0.01		Calculation	12/22/08 13:43 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO ₃	10.9	%		0.1		USDA23c	12/29/08 16:44 / srm
EXCHANGEABLES							
Cation Exchange Capacity	31.8	meq/100g	D	0.08		SW6010B	12/17/08 23:36 / rlh
Exchangeable Sodium Percentage	0.55	%		0.01		USDA20a	12/22/08 13:43 / srm
METALS, AMMONIUM ACETATE EXTRACTABLE							
Sodium, extractable	0.44	meq/100g	D	0.0016		SW6010B	12/16/08 15:45 / rlh

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: B08120275-009
Client Sample ID: PD, 72-96 inches

Report Date: 12/30/08
Collection Date: 11/26/08 09:30
Date Received: 12/02/08
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	31	%		1		ASA15-5	12/22/08 13:43 / srm
Silt	37	%		1		ASA15-5	12/22/08 13:43 / srm
Clay	32	%		1		ASA15-5	12/22/08 13:43 / srm
Texture	CL					ASA15-5	12/22/08 13:43 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
SATURATED PASTE							
pH, sat. paste	7.80	s.u.		0.10		ASAM10-3.2	12/22/08 13:43 / srm
Conductivity, sat. paste	2.45	mmhos/cm		0.01		ASA10-3	12/22/08 13:43 / srm
Saturation	57.4	%		0.1		USDA27a	12/22/08 13:43 / srm
Calcium, sat. paste	15.9	meq/L		0.05		SW6010B	12/17/08 20:28 / rlh
Magnesium, sat. paste	12.9	meq/L		0.08		SW6010B	12/17/08 20:28 / rlh
Sodium, sat. paste	3.03	meq/L		0.04		SW6010B	12/17/08 20:28 / rlh
Sodium Adsorption Ratio (SAR)	0.80	unitless		0.01		Calculation	12/22/08 13:43 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	10.1	%		0.1		USDA23c	12/29/08 16:44 / srm
EXCHANGEABLES							
Cation Exchange Capacity	28.5	meq/100g	D	0.08		SW6010B	12/17/08 23:40 / rlh
Exchangeable Sodium Percentage	0.53	%		0.01		USDA20a	12/22/08 13:43 / srm
METALS, AMMONIUM ACETATE EXTRACTABLE							
Sodium, extractable	0.32	meq/100g	D	0.0016		SW6010B	12/16/08 15:48 / rlh

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.