John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

March 18, 2013

Re: Morrow County
Peru Township
Ringler Energy, LLC
Biosolids Site Review

Mr. Bruce Bailey
quasar energy group
7524 Riverview Rd.
Cleveland, OH 44141

Ohio EPA received a request from quasar energy group to include the following site as part of their Ringler Energy facility biosolids management program:

Site Number	Ohio EPA Number	County	Township
MOQ-02-01	59-00073	Morrow	Peru

This site, owned by Alex Ringler and operated by Todd Etgen, is located south of Route 229 west of County Road 165 and north of Township Highway 224. A review of this site was conducted by Ohio EPA. Consideration was given to soil and landscape characteristics, isolation distances from residences, geology and ground water conditions and the proximity to waterways and wells.

The review indicated that the areas of this site that are classified as Glynwood silt loam and Glynwood clay loam have a depth to restrictive layer of less than three feet. These areas do not meet the isolation distance requirement of three feet to bedrock as contained in OAC 3745-40-08(C)(7) and are not authorized for the beneficial use of biosolids.

The remainder of site MOQ-02-01 is authorized to be included as part of the quasar energy group biosolids program, subject to conditions contained in both the NPDES permit and OAC 3745-40. Conditions contained in the NPDES permit and OAC 3745-40 may differ. In such cases, the more restrictive conditions from either the NPDES permit or OAC 3745-40 shall govern.

Highlights of these conditions are as follows:

1. Biosolids shall not be applied in buffer zones.
2. In accordance with federal/state rules, biosolids may not be applied within 33 feet of surface waters of the state. Surface waters of the state is defined as "drainage systems that effect a junction with natural surface or underground waters." Biosolids may not be

[illegible]
[illegible]
[illegible]
[illegible]

applied in grassed waterways.
Biosolids application shall be [illegible] to avoid periods of excessive wetness to help prevent runoff from a site.
Records for the application of biosolids at this site shall be maintained in accordance with the requirements found in OAC 3745-40-09(C).

All biosolids beneficially used at this site shall be injected beneath the surface of the ground or immediately incorporated into the soil. The areas of this site classified as Glynwood silt loam and Glynwood clay loam are not authorized for the beneficial use of biosolids.

[illegible] have any questions, please contact Betsy VanWormer at the Ohio EPA Central Office at [illegible] 644-2150 or via email at [illegible]

[illegible]

[illegible]

[illegible] A. Robinson, [illegible] Chief
[illegible] EPA Central District Office

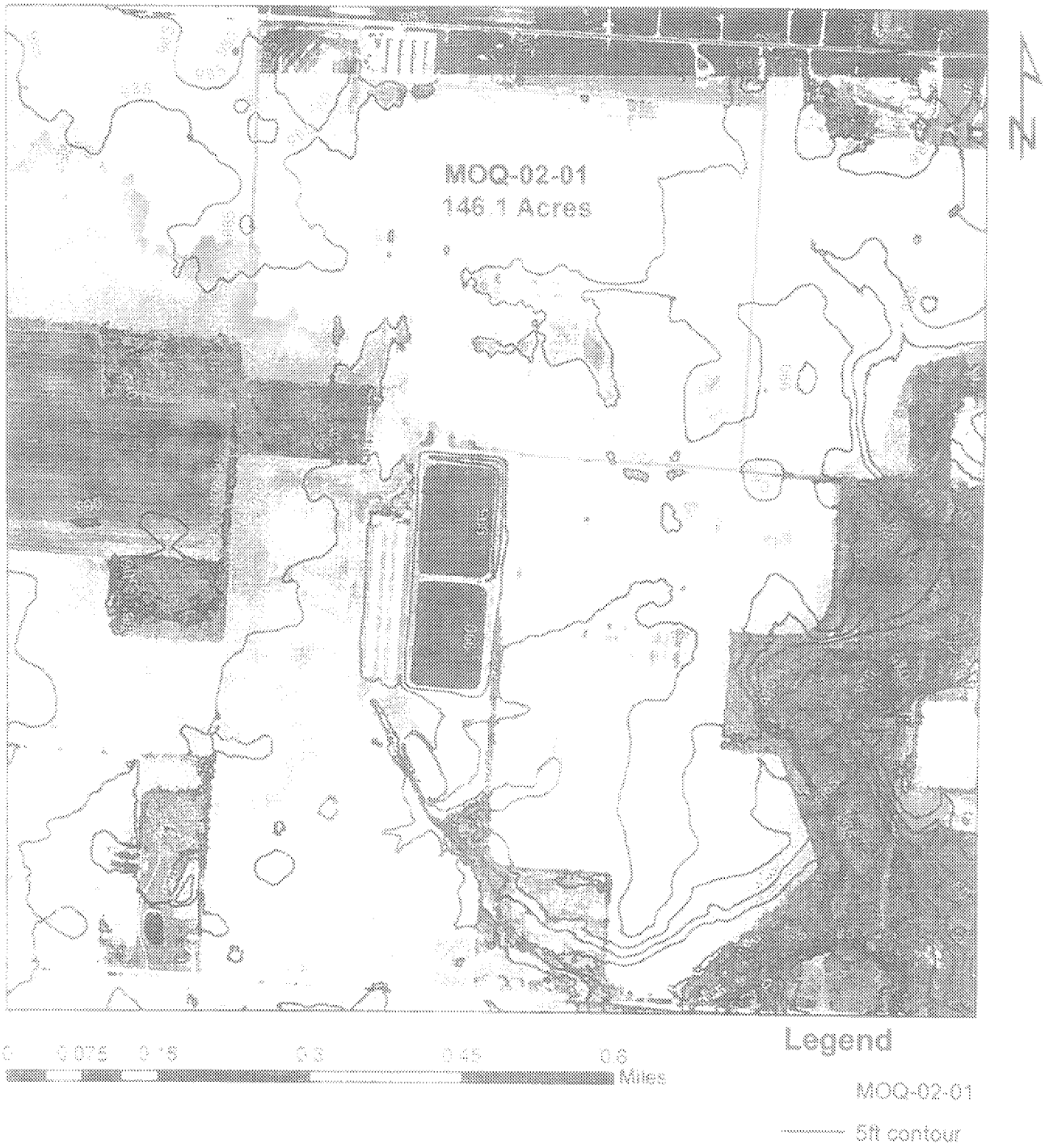
[illegible] Morrow County Health Department
Morrow County Soil and Water Conservation District
Peru Township Trustees
Alex Ringler
Todd Elden

[illegible] Betsy VanWormer, Ohio EPA, DSW/CO
Erin Sherer, Ohio EPA, DSW/CDO

N ↑

Morrow County
Peru Township

Ringler Farms MOQ-02-01



BROOKSIDE LABORATORIES, INC.

38734-14

SOIL ACCEPTANCE INVENTORY REPORT

Name: Pandiac Feedlots City: Nazareth State: OH

Other Soil Consultant: Brookside Consultants of Ohio, Inc. Date: 04/03/2014

Sample Location: STEAMTOWN	STEAM	STEAM	STEAM	STEAM
Sample Identification	SW1	SW2	SW3	SW4
Lab Number	0211-1	0212-1	0213-1	0214-1
Total Exchange Capacity - ME 100 g.	24.60	16.85	16.35	21.45
pH in CaCl2	6.6	6.2	5.7	5.2
Organic Matter (Humus) %	4.06	2.84	3.12	2.51
Estimated Nitrogen Release lb/A	91	77	81	70
ANIONS — SOLUBLE SULFUR ppm	8	8	16	14
ANIONS — NITROGEN — NO3 — lb/A Pas P.O.	82	64	78	64
ANIONS — NITROGEN — NO3 — ppm dP	18	14	17	14
ANIONS — NITROGEN — NH4 — lb/A Pas P.O.	224	142	119	96
ANIONS — NITROGEN — NH4 — ppm dP	49	31	26	21
ANIONS — NITROGEN — ORGN — lb/A Pas P.O.				
ANIONS — NITROGEN — ORGN — ppm dP				
EXCHANGEABLE CATIONS — CALCIUM — lb/A	6236	4114	3352	3298
EXCHANGEABLE CATIONS — CALCIUM — ppm	3112	2057	1676	1649
EXCHANGEABLE CATIONS — MAGNESIUM — lb/A	840	636	544	626
EXCHANGEABLE CATIONS — MAGNESIUM — ppm	420	318	272	313
EXCHANGEABLE CATIONS — POTASSIUM — lb/A	634	590	474	428
EXCHANGEABLE CATIONS — POTASSIUM — ppm	317	295	237	214
EXCHANGEABLE CATIONS — SODIUM — lb/A	140	120	88	84
EXCHANGEABLE CATIONS — SODIUM — ppm	70	60	44	42
BASE SATURATION PERCENTAGES				
Calcium %	63.83	61.04	51.25	38.44
Magnesium %	15.45	15.73	13.86	12.16
Potassium %	2.59	4.49	3.72	2.56
Sodium %	1.04	1.55	1.17	0.85
Other Bases %	6.80	5.20	6.00	7.00
Hydrogen %	6.20	12.00	24.00	39.00
EXTRACTABLE MINORS				
Boron (ppm)	0.68	0.66	0.62	0.46
Iron (ppm)	227	150	177	162
Manganese (ppm)	18	36	25	28
Copper (ppm)	1.46	2.54	2.09	1.87
Zinc (ppm)	2.24	1.95	1.79	2.02
Aluminum (ppm)	797	679	753	852
OTHER TESTS — Soluble Salts (mmhos/cm)				
OTHER TESTS — Chlorides (ppm)				

Mehlich III Extractable

BROOKSIDE LABORATORIES, INC.

36734-14

SOIL AUDIT AND INVENTORY REPORT

Name: [illegible] Farmlands — Narango — State OH

Drive Soil Consultant: Brookside Consultants of Ohio, Inc. — Date 06/03/2016

Sample Location	STRAWTOWN	STEAM	STEAM	STEAM	STEAM
Sample Identification		NW1	NW2	NW3	NW4
Lab Number		0219-1	0220-1	0221-1	0222-1
Total Exchange Capacity (ME 100 g)		[illegible]	18.21	16.24	22.21
pH		[illegible]	6.8	6.7	6.2
Organic Matter (%)		3.45	2.96	2.74	3.40
Estimated Nitrogen Release (lb/A)		[illegible]	79	75	84
ANIONS	SOLUBLE SULFUR (ppm)	[illegible]	7	9	9
	Mehlich-3 (lb/A P2O5)	[illegible]	82	174	92
	(ppm P)	[illegible]	18	38	20
	PRS™ (lb/A P2O5)	238	238	355	211
	(ppm P)	52	51	77	46
	Olsen (lb/A P2O5)				
	(ppm P)				
EXCHANGEABLE CATIONS	CALCIUM (lb/A)	6218	5076	4028	5640
	(%)	3139	2509	2014	2820
	MAGNESIUM (lb/A)	780	730	580	836
	(%)	392	365	290	418
	POTASSIUM* (lb/A)	926	936	1332	740
	(%)	372	468	666	370
	SODIUM* (lb/A)	22	160	252	162
	(%)	11	80	126	81
BASE SATURATION PERCENT					
	Calcium (%)	69.94	67.85	62.01	61.81
	Magnesium (%)	14.62	16.26	14.88	15.27
	Potassium (%)	5.19	6.41	10.52	4.16
	Sodium (%)	0.80	1.86	3.37	1.54
	Other Bases (%)	6.50	4.60	4.70	5.20
	Hydrogen (%)	6.95	3.00	4.50	12.00
EXTRACTABLE MINORS					
	Boron (ppm)	[illegible]	0.92	4.25	4.94
	Iron (ppm)	160	158	220	232
	Manganese* (ppm)	40	32	24	17
	Copper* (ppm)	2.59	2.62	2.80	4.14
	Zinc* (ppm)	[illegible]	1.40	1.85	2.60
	Aluminum* (ppm)	636	624	624	724
OTHER TESTS	Soluble Salts (mmhos/cm)				
	Chlorides (ppm)				

* Mehlich-3 Extractable

Lb/A

BROOKSIDE LABORATORIES, INC.

38734-14

SOIL AND LAND INVENTORY REPORT

Name Ringler Feedlots Marengo State OH

Independent Consultant Brookside Consultants of Ohio, Inc. Date 04/03/2014

Sample Location	STEAMTOWN	STEAM	STEAM	STEAM	STEAM	
Sample Identification		NE1	NE2	NE3	NE4	
Lab Number		0223-1	0224-1	0225-1	0226-1	
Total Exchange Capacity (ME/100 g)		17.65	23.71	18.49	22.07	
pH (H2O)		[illegible]	5.7	6.2	5.8	
Organic Matter (humus) %		3.39	3.08	2.91	2.92	
Estimated Nitrogen Release	lb/A	68	81	78	78	
ANIONS — SOLUBLE SULFUR*	ppm	[illegible]	10	12	11	
ANIONS — PHOSPHORUS — MEHLICH III	lb/A Pas/C	[illegible]	128	165	78	
	ppm of P	22	28	36	17	
ANIONS — PHOSPHORUS — BRAY II	lb/A Pas/C	[illegible]	266	289	165	
	ppm of P	[illegible]	58	63	36	
ANIONS — PHOSPHORUS — OLSEN	lb/A Pas/C					
	ppm of P					
EXCHANGEABLE CATIONS — CALCIUM*	lb/A	3250	4640	3968	4582	
	ppm	1625	2320	1984	2291	
EXCHANGEABLE CATIONS — MAGNESIUM*	lb/A	560	680	660	814	
	ppm	280	340	330	407	
EXCHANGEABLE CATIONS — POTASSIUM*	lb/A	1154	1328	1646	754	
	ppm	[illegible]	664	823	377	
EXCHANGEABLE CATIONS — SODIUM*	lb/A	192	212	244	156	
	ppm	96	106	122	78	
BASE SATURATION PERCENT						
Calcium	%	46.[illegible]	48.92	53.65	51.90	
Magnesium	%	13.[illegible]	11.95	14.87	15.37	
Potassium	%	8.38	7.18	11.41	4.38	
Sodium	%	2.36	1.94	2.87	1.54	
Other Bases	%	6.00	6.00	5.20	5.80	
Hydrogen	%	24.00	24.00	12.00	21.00	
EXTRACTABLE MINORS						
Boron* (ppm)		2.89	3.15	2.38	1.80	
Iron* (ppm)		144	167	191	179	
Manganese (ppm)		24	25	18	32	
Copper* (ppm)		1.96	3.06	2.65	3.12	
Zinc* (ppm)		1.36	2.42	2.75	3.14	
Aluminum* (ppm)		[illegible]	716	721	744	
OTHER TESTS — Soluble Salts (mmhos/cm)						
OTHER TESTS — Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

38754-10

SOIL AUDIT AND INVENTORY REPORT

Name Riggler Feedlots City Waldo State OH

Independent Consultant Brookside Consultants of Ohio, Inc. Date 08/27/2010

Sample Location		NW1	NW2	NW3	NW4
Sample Identification					
Lab Number		1031-1	1032-1	1033-1	1034-1
Total Exchange Capacity (ME/100 g)		14.64	12.98	14.63	16.14
pH	Buffer (SMP/Sikora)	7.2	7.2	7.0	7.0
	H_2O (1:1)	7.0	7.0	6.5	6.5
Organic Matter (humus) %		3.61	2.90	3.49	3.95
Estimated Nitrogen Release	lb/A	86	78	85	90
ANIONS: SOLUBLE SULFUR*	ppm	18	15	13	13
PHOSPHORUS: MEHLICH III	lb/A P as P_2O_5	275	101	119	96
	ppm of P	60	22	26	21
BRAY II	lb/A P as P_2O_5				
	ppm of P				
OLSEN	lb/A P as P_2O_5				
	ppm of P				
EXCHANGEABLE CATIONS:		4394	3728	4486	5102
		2197	1864	2243	2551
MAGNESIUM*	lb/A	662	634	548	574
	ppm	331	317	274	287
POTASSIUM*	lb/A	552	574	714	588
	ppm	276	287	357	294
SODIUM*	lb/A	88	128	126	112
	ppm	44	64	63	56
BASE SATURATION PERCENTAGES					
Calcium	%	75.03	71.80	76.34	79.03
Magnesium	%	18.84	20.35	15.54	14.22
Potassium	%	4.83	5.67	6.23	4.67
Sodium	%	1.31	2.14	1.86	1.51
Other Bases	%	NA	NA	NA	NA
Hydrogen	%	0.00	0.00	0.00	0.00
EXTRACTABLE MINORS					
Boron* (ppm)		0.66	0.62	0.77	0.85
Iron* (ppm)		263	200	222	208
Manganese* (ppm)		20	33	14	10
Copper* (ppm)		4.00	3.17	4.01	4.28
Zinc* (ppm)		3.86	2.82	2.22	1.42
Aluminum* (ppm)		552	590	660	692
OTHER TESTS: Soluble Salts (mmhos/cm)					
Chlorides (ppm)					

* Mehlich III Extractable

Lb/A

38734-11

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Ringler Feedlots City Waldo State OH

Independent Consultant Brookside Consultants of Ohio, Inc. Date 10/21/2010

Sample Location	STEAMTOWN NE	NE				
Sample Identification		1				
Lab Number		0232-1				
Total Exchange Capacity (ME/100 g)		15.92				
pH (H_2O 1:1)		6.4				
Organic Matter (humus) %		4.30				
Estimated Nitrogen Release	lb/A	93				
ANIONS: SOLUBLE SULFUR*	ppm	15				
PHOSPHORUS: MEHLICH III	lb/A P as P_2O_5	101				
	ppm of P	22				
BRAY II	lb/A P as P_2O_5	206				
	ppm of P	45				
OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS: CALCIUM*	%	3996				
	ppm	1996				
MAGNESIUM*	lb/A	562				
	ppm	281				
POTASSIUM*	lb/A	818				
	ppm	409				
SODIUM	%	144				
	ppm	72				
BASE SATURATION						
Calcium	%	62.75				
Magnesium	%	14.71				
Potassium	%	6.59				
Sodium	%	1.97				
Other Bases	%	5.00				
Hydrogen	%	9.00				
EXTRACTABLE MINORS						
Boron* (ppm)		0.66				
Iron* (ppm)		177				
Manganese* (ppm)		15				
Copper* (ppm)		1.17				
Zinc* (ppm)		3.37				
Aluminum* (ppm)		731				
OTHER TESTS: Soluble Salts (mmhos/cm)						
Chlorides (ppm)						

* Mehlich III Extractable

BROOKSIDE LABORATORIES, INC.

38734-11

SOIL AUDIT AND INVENTORY REPORT

Name Ringler Feedlots City Waldo State OH

Independent Consultant Brookside Consultants of Ohio, Inc. Date 10/21/2010

Sample Location STEAMTOWN NE			NE				
Sample Identification			2				
Lab Number			0833-1				
Total Exchange Capacity (ME/100 g)			15.05				
pH (H_2O 1:1)			7.2				
Organic Matter (humus) %			4.18				
Estimated Nitrogen Release		lb/A	92				
ANIONS	SOLUBLE SULFUR*	ppm	11				
	PHOSPHORUS MEHLICH III	lb/A P as P_2O_5	188				
		ppm of P	41				
	BRAY II	lb/A P as P_2O_5	311				
		ppm of P	68				
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	3872				
		ppm	1936				
	MAGNESIUM*	lb/A	722				
		ppm	361				
	POTASSIUM*	lb/A	1010				
		ppm	505				
	SODIUM*	lb/A	202				
		ppm	101				
BASE SATURATION PERCENT							
	Calcium	%	64.32				
	Magnesium	%	19.99				
	Potassium	%	6.60				
	Sodium	%	2.92				
	Other Bases	%	4.20				
	Hydrogen	%	0.00				
EXTRACTABLE MINORS							
	Boron* (ppm)		0.65				
	Iron* (ppm)		227				
	Manganese* (ppm)		17				
	Copper* (ppm)		3.27				
	Zinc* (ppm)		1.14				
	Aluminum* (ppm)		854				
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Ringler Feedlots City Waldo State OH

Independent Consultant Brookside Consultants of Ohio, Inc. Date 10/21/2010

Sample Location	STEAMTOWN NE	NE				
Sample Identification		3				
Lab Number		0834-3				
Total Exchange Capacity (ME/100 g)		12.76				
pH (H_2O 1:1)		6.6				
Organic Matter (humus) %		2.60				
*Estimated Nitrogen Release	lb/A	>6				
ANIONS	SOLUBLE SULFUR* ppm	12				
PHOSPHORUS	MEHLICH III lb/A P as P_2O_5	147				
	ppm of P	32				
	BRAY II lb/A P as P_2O_5	206				
	ppm of P	45				
	OLSEN lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS	CALCIUM* lb/A	2734				
	ppm	1367				
	MAGNESIUM* lb/A	536				
	ppm	268				
	POTASSIUM* lb/A	1462				
	ppm	37				
	SODIUM* lb/A	200				
	ppm	100				
BASE SATURATION PERCENT						
Calcium	%	53.57				
Magnesium	%	17.50				
Potassium	%	14.69				
Sodium	%	3.41				
Other Bases	%	4.80				
Hydrogen	%	6.00				
EXTRACTABLE MINORS						
Boron* (ppm)		< 0.20				
Iron* (ppm)		183				
Manganese* (ppm)		20				
Copper* (ppm)		2.77				
Zinc* (ppm)		1.00				
Aluminum* (ppm)		731				
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					

* Mehlich III Extractable

38734-11

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Ringler Feedlots City Waldo State OH

Independent Consultant Brookside Consultants of Ohio, Inc. Date 10/21/2010

Sample Location	STEAMTOWN NE	NE				
Sample Identification		4				
Lab Number		0835-1				
Total Exchange Capacity (ME/100 g)		14.42				
pH (H_2O 1:1)		7.0				
Organic Matter (humus) %		3.95				
Estimated Nitrogen Release	lb/A	90				
ANIONS: SOLUBLE SULFUR*	ppm	11				
PHOSPHORUS: MEHLICH III	lb/A P as P_2O_5	114				
	ppm of P	25				
BRAY II	lb/A P as P_2O_5	220				
	ppm of P	48				
OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS: CALCIUM*	lb/A	3638				
	ppm	1819				
MAGNESIUM*	lb/A	668				
	ppm	334				
POTASSIUM*	lb/A	1170				
	ppm	585				
SODIUM*	lb/A	88				
	ppm	94				
BASE SATURATION/PERCENT						
Calcium	%	63.07				
Magnesium	%	19.30				
Potassium	%	10.40				
Sodium	%	2.83				
Other Bases	%	4.40				
Hydrogen	%	0.00				
EXTRACTABLE MINORS						
Boron* (ppm)		2.49				
Iron* (ppm)		149				
Manganese* (ppm)		22				
Copper* (ppm)		3.54				
Zinc* (ppm)		22				
Aluminum* (ppm)		299				
OTHER TESTS: Soluble Salts (mmhos/cm)						
Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

39734-11

SOIL AUDIT AND INVENTORY REPORT

Name Ringler Feedlots City Walão State OH

Independent Consultant Brookside Consultants of Ohio, Inc. Date 10/21/2010

Sample Location	STEAMTOWN SW		SW			
Sample Identification			1			
Lab Number			0820-1			
Total Exchange Capacity (ME/100 g)			22.63			
pH (H_2O 1:1)			7.3			
Organic Matter (humus) %			3.61			
Estimated Nitrogen Release		lb/A	36			
ANIONS	SOLUBLE SULFUR*	ppm	15			
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	202			
		ppm of P	55			
	BRAY II	lb/A P as P_2O_5	781			
		ppm of P	164			
	OLSEN	lb/A P as P_2O_5				
		ppm of P				
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	7444			
		ppm	3722			
	MAGNESIUM*	lb/A	528			
		ppm	263			
	POTASSIUM*	lb/A	536			
		ppm	268			
		%	100			
		ppm	50			

BASE SATURATION (BIRCHARD)

Calcium	%	82.24				
Magnesium	%	5.68				
Potassium	%	7.04				
Sodium	%	0.96				
Other Bases	%	4.10				
Hydrogen	%	0.00				

EXTRACTABLE MINORS

Boron* (ppm)		0.63				
Iron* (ppm)		163				
Manganese* (ppm)		32				
Copper* (ppm)		4.52				
Zinc* (ppm)		7.75				
Aluminum* (ppm)		504				
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					

* Mehlich III Extractable

lb/A

38734-11

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Singler Feedlots City Waldo State OH

Independent Consultant Brookside Consultants of Ohio, Inc. Date 10/21/2010

Sample Location STEAMTOWN SW		SW				
Sample Identification		3				
Lab Number		0229-1				
Total Exchange Capacity (ME/100 g)		15.02				
pH (H_2O 1:1)		6.6				
Organic Matter (humus) %		3.81				
Estimated Nitrogen Release	lb/A	29				
ANIONS: SOLUBLE SULFUR*	ppm	11				
PHOSPHORUS: MEHLICH III	lb/A P as P_2O_5	00				
	ppm of P	13				
BRAY II	lb/A P as P_2O_5	64				
	ppm of P	14				
OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS: CALCIUM*	lb/A	4000				
	ppm	2000				
MAGNESIUM*	lb/A	578				
	ppm	289				
POTASSIUM*	lb/A	434				
	ppm	217				
SODIUM*	lb/A	88				
	ppm	44				
BASE SATURATION PERCENT						
Calcium	%	66.58				
Magnesium	%	16.03				
Potassium	%	3.70				
Sodium	%	1.27				
Other Bases	%	4.90				
Hydrogen	%	7.50				
EXTRACTABLE MINORS						
Boron* (ppm)		0.42				
Iron* (ppm)		153				
Manganese* (ppm)		42				
Copper* (ppm)		2.79				
Zinc* (ppm)		1.21				
Aluminum* (ppm)		335				
Soluble Salts (mmhos/cm)						
Chlorides (ppm)						

* Mehlich III Extractable

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name: Ringler Feedlots City: Waldo State: OH

Independent Consultant: Brookside Consultants of Ohio, Inc. Date: 10/21/2010

Sample Location STEAMTOWN SW		SW				
Sample Identification		3				
Lab Number		9230-3				
Total Exchange Capacity (ME/100 g)		12.79				
pH (H_2O 1:1)		6.4				
Organic Matter (humus) %		3.71				
Estimated Nitrogen Release	lb/A	87				
ANIONS: SOLUBLE SULFUR*	ppm	12				
PHOSPHORUS: MEHLICH III	lb/A P as P_2O_5	156				
	ppm of P	34				
BRAY II	lb/A P as P_2O_5	289				
	ppm of P	63				
OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS: CALCIUM*	lb/A	2964				
	ppm	1482				
MAGNESIUM*	lb/A	548				
	ppm	274				
POTASSIUM*	lb/A	786				
	ppm	393				
SODIUM*	lb/A	135				
	ppm	68				
BASE SATURATION PERCENT						
Calcium	%	57.94				
Magnesium	%	17.85				
Potassium	%	7.86				
Sodium	%	2.31				
Other Bases	%	5.00				
Hydrogen	%	9.00				
EXTRACTABLE MINORS						
Boron* (ppm)		0.53				
Iron* (ppm)		186				
Manganese* (ppm)		18				
Copper* (ppm)		2.43				
Zinc* (ppm)		2.29				
Aluminum* (ppm)		733				
OTHER TESTS: Soluble Salts (mmhos/cm)						
Chlorides (ppm)						

* Mehlich III Extractable

Lb-A

BROOKSIDE LABORATORIES, INC.

38734-11

SOIL AUDIT AND INVENTORY REPORT

Name Ringler Feedlots City Waldo State OH

Independent Consultant Brookside Consultants of Ohio, Inc. Date 10/21/2010

Sample Location	STEAMTOWN SW		SW				
Sample Identification			A				
Lab Number			0211-1				
Total Exchange Capacity (ME/100 g)			13.01				
pH (H_2O 1:1)			6.2				
Organic Matter (humus) %			3.85				
Estimated Nitrogen Release		lb/A	88				
ANIONS	SOLUBLE SULFUR*	ppm	13				
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	174				
		ppm of P	38				
	BRAY II	lb/A P as P_2O_5	279				
		ppm of P	61				
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	2952				
		ppm	1476				
	MAGNESIUM*	lb/A	440				
		ppm	220				
	POTASSIUM*	lb/A	1005				
		ppm	503				
	SODIUM*	lb/A	122				
		ppm	61				
BASE SATURATION PERCENT							
	Calcium	%	56.73				
	Magnesium	%	14.09				
	Potassium	%	9.91				
	Sodium	%	2.04				
	Other Bases	%	5.20				
	Hydrogen	%	12.00				
EXTRACTABLE MINORS							
	Boron* (ppm)		0.50				
	Iron* (ppm)		190				
	Manganese* (ppm)		22				
	Copper* (ppm)		2.36				
	Zinc* (ppm)		1.25				
	Aluminum* (ppm)		773				
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable