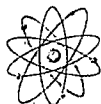


POWERTECH (USA) INC.

APPENDIX 2.8-G

WETLAND DETERMINATION DATA FORMS- GREAT PLAINS REGION

Note: At the time of field sampling, data forms were currently in draft form as provided by the US Army Corps of Engineers.



POWERTech (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

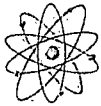
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W1
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
Landform (hillslope, terrace, etc.) Depression into tributary Local relief (concave, convex, none): Convex Slope (%): 0%
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification: PEMC
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present Yes No X
Remarks: R1 P1 - Depression ~10' x 15'
Is the Sampled Area Within a Wetland Yes X No

VEGETATION

Tree Stratum (Use scientific names) Absolute % Cover Dominant Species? Indicator Status
1. 2. 3. 4. Total Cover:
Sapling/Shrub Stratum
1. Rosa woodsii 100 X FACU
2. 3. 4. 5. Total Cover: 100
Herb Stratum
1. Hordeum jubatum 15 FACW
2. Elymus smithii 5 FACU
3. Polygonum aviculare 5 FACU
4. Eleocharis palustris 75 X OBL
5. 6. 7. 8. 9. 10. Total Cover: 100
Woody Vine Stratum
1. 2. 3. Total Cover:
% Bare Ground in Herb Stratum % Cover of Biotic Crust
Remarks:
Dominance Test Worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)
Prevalence Index Worksheet:
Total % Cover of: Multiply by:
OBL species 75 x1= 75
FACW species 15 x2= 30
FAC species x3=
FACU species 110 x4= 440
UPL species x5=
Column Totals: 200 (A) 545 (B)
Prevalence Index = B/A = 2.75
Hydrophytic Vegetation Indicators
Dominance Test is > 50%
X Prevalence Index is <= 3.0^1
Morphological Adaptations^1 (Providing supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation (Explain)
^1 Indicators of hydric soils and wetland hydrology must be present
Hydrophytic Vegetation Present? Yes X No



POWERTECH (USA) INC.

SOIL Sampling Point W1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-8	2.5Y 3/1	90	10YR 4/8	10	C	RC	SiCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

Field Observations:

Surface Water Present? Yes No Depth (inches): _____

Water Table Present? Yes No Depth (inches): _____

Saturation Present? Yes No Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W2
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Convex Slope (%): 3
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification: R2EM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present Yes X No
Remarks: Isolated wetland
Is the Sampled Area Within a Wetland Yes X No

VEGETATION

Tree Stratum (Use scientific names) Absolute % Cover Dominant Species? Indicator Status
1. 2. 3. 4. Total Cover:
Sapling/Shrub Stratum
1. 2. 3. 4. 5. Total Cover:
Herb Stratum
1. Hordeum jubatum 10 FACW
2. Elymus smithii 15 FACU
3. Spartina pectinata 60 X FACW
4. Bromus japonicus 5 FACU
5. Xanthium strumarium 2 FAC
6. Poa pratensis 3 FACU
7. Melilotus officinalis 5 FACU
8. 9. 10. Total Cover: 100
Woody Vine Stratum
1. 2. 3. Total Cover:
% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust
Dominance Test Worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)
Prevalence Index Worksheet:
Total % Cover of: Multiply by:
OBL species 0 x1= 0
FACW species 70 x2= 140
FAC species 2 x3= 6
FACU species 28 x4= 112
UPL species 0 x5= 0
Column Totals: 100 (A) 258 (B)
Prevalence Index = B/A = 2.58
Hydrophytic Vegetation Indicators
X Dominance Test is > 50%
X Prevalence Index is <= 3.0^1
Morphological Adaptations^1 (Providing supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation (Explain)
^1Indicators of hydric soils and wetland hydrology must be present
Hydrophytic Vegetation Present? Yes X No

Remarks:



POWERTECH (USA) INC.

SOIL

Sampling Point W2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/1	95	7.5YR 3/3	5	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soils Present? Yes No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)		<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Local Soil Survey Data (D8)	
<input type="checkbox"/> Water Stained Leaves (B9)			

Field Observations:

Surface Water Present? Yes No _____ Depth (inches): 5

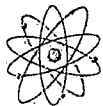
Water Table Present? Yes _____ No Depth (inches): _____

Saturation Present? Yes _____ No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:
 Soil is moist but not saturated. A definable channel is present.



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W3
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Convex Slope (%): 0
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No X
Hydric Soil Present? Yes No X
Wetland Hydrology Present Yes X No
Remarks:
R1 P 12: Upstream
R1 P13: Downstream
Is the Sampled Area Within a Wetland Yes No X

VEGETATION

Tree Stratum (Use scientific names) Absolute % Cover Dominant Species? Indicator Status
1. 2. 3. 4. Total Cover:
Sapling/Shrub Stratum
1. 2. 3. 4. 5. Total Cover:
Herb Stratum
1. Elymus smithii 40 X FACU
2. Xanthium strumarium 1 FAC
3. Bromus japonicus 20 X FACU
4. Polygonum aviculare 5 FACU
5. Lepidium densiflorum 15 FACU
6. Poa pratensis 6 FACU
7. Melilotus officinalis 10 FACU-
8. Symphoricarpos sp. 3 NI
9. 10. Total Cover: 100
Woody Vine Stratum
1. 2. 3. Total Cover:
% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust
Dominance Test Worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)
Prevalence Index Worksheet:
Total % Cover of: Multiply by:
OBL species x1=
FACW species x2=
FAC species x3=
FACU species x4=
UPL species x5=
Column Totals: (A) (B)
Prevalence Index = B/A =
Hydrophytic Vegetation Indicators
Dominance Test is > 50%
Prevalence Index is <= 3.0^1
Morphological Adaptations^1 (Providing supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation (Explain)
^1Indicators of hydric soils and wetland hydrology must be present
Hydrophytic Vegetation Present? Yes No X



POWERTECH (USA) INC.

SOIL Sampling Point W3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/1	100					SiCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soils Present? Yes _____ No _____ X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)		<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Local Soil Survey Data (D8)	
<input type="checkbox"/> Water Stained Leaves (B9)			

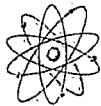
Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): _____
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:
 Definable channel is present.



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

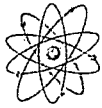
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W4
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Convex Slope (%): 3
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification: R2EM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present Yes X No
Is the Sampled Area Within a Wetland Yes X No
Remarks:
R2 P2: Upstream R2 P3: Downstream R2 P4: Tributary
Channel width is approximately 17 feet
R2 P6: Upstream at waypoint 3 R2 P7: Downstream at waypoint 3
R2 P8 Upstream at waypoint 4 R2 P9: Downstream at waypoint 4

VEGETATION

Tree Stratum (Use scientific names) Absolute % Cover Dominant Species? Indicator Status
1.
2.
3.
4.
Total Cover:
Sapling/Shrub Stratum
1.
2.
3.
4.
5.
Total Cover:
Herb Stratum
1. Spartina pectinata 35 X FACW
2. Cirsium arvense 10 FACU
3. Schoenoplectus pungens 20 X OBL
4. Eleocharis palustris 35 X OBL
5.
6.
7.
8.
9.
10.
Total Cover: 100
Woody Vine Stratum
1.
2.
3.
Total Cover:
% Bare Ground in Herb Stratum % Cover of Biotic Crust
Remarks:
Dominance Test Worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)
Prevalence Index Worksheet:
Total % Cover of: Multiply by:
OBL species x1=
FACW species x2=
FAC species x3=
FACU species x4=
UPL species x5=
Column Totals: (A) (B)
Prevalence Index = B/A =
Hydrophytic Vegetation Indicators
X Dominance Test is > 50%
Prevalence Index is <= 3.0^1
Morphological Adaptations^1 (Providing supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation (Explain)
^1 Indicators of hydric soils and wetland hydrology must be present
Hydrophytic Vegetation Present? Yes X No



POWERTECH (USA) INC.

SOIL Sampling Point W4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-2	Gley1 2.5/N	100					SCL	
2-10	Gley1 3/N	100					SCL	
10-14	Gley1 4/5GY	95	7.5YR 4/6	5			SC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)		
<input checked="" type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): _____

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes No

Remarks:
Faint hydrogen sulfide odor was present.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

Field Observations:

Surface Water Present? Yes No Depth (inches): _____

Water Table Present? Yes No Depth (inches): 2

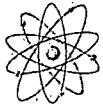
Saturation Present? Yes No Depth (inches): 2

(includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W5
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
 Landform (hillslope, terrace, etc.) Uplands Local relief (concave, convex, none): None Slope (%): 2
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present	Yes _____	No <u>X</u>	
Remarks: R1 P5: Upland area near Beaver Creek			

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. _____ 2. _____ 3. _____ 4. _____ Total Cover: _____	_____	_____	_____	
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____	_____	_____	_____	
Herb Stratum 1. <u>Poa pratensis</u> <u>45</u> <u>X</u> <u>FACU</u> 2. <u>Cirsium arvense</u> <u>15</u> _____ <u>FACU</u> 3. <u>Chenopodium album</u> <u>25</u> <u>X</u> <u>FAC</u> 4. <u>Helianthus annuus</u> <u>15</u> _____ <u>FACU</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>	_____	_____	_____	
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____	_____	_____	_____	
% Bare Ground in Herb Stratum <u>40</u> % Cover of Biotic Crust _____	_____	_____	_____	
Remarks:				Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present Hydrophytic Vegetation Present? Yes _____ No <u>X</u>



POWERTECH (USA) INC.

SOIL Sampling Point W5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features			Texture	Remarks
			Color (moist)	%	Type ¹		
0-6	10YR 3/2	100				SCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Local Soil Survey Data (D8)

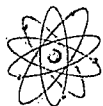
Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks: _____



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

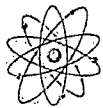
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W6
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): convex Slope (%): 2
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No X
Hydric Soil Present? Yes No X
Wetland Hydrology Present Yes No X
Is the Sampled Area Within a Wetland Yes No X
Remarks:
R1 P 17: Upstream
R1 P18: Downstream

VEGETATION

Tree Stratum (Use scientific names) Absolute % Cover Dominant Species? Indicator Status
1. 2. 3. 4. Total Cover:
Sapling/Shrub Stratum
1. Rosa woodsii 100 X FACU
2. 3. 4. 5. Total Cover: 100
Herb Stratum
1. Elymus smithii 85 X FACU
2. Astragalus sp. 5 UPL
3. Nassella viridula 5 NI
4. Ratibida columnifera 5 NI
5. 6. 7. 8. 9. 10. Total Cover: 100
Woody Vine Stratum
1. 2. 3. Total Cover:
% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust
Dominance Test Worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)
Prevalence Index Worksheet:
Total % Cover of: Multiply by:
OBL species x1=
FACW species x2=
FAC species x3=
FACU species 85 x4= 340
UPL species 5 x5= 25
Column Totals: 90 (A) 365 (B)
Prevalence Index = B/A = 4.05
Hydrophytic Vegetation Indicators
Dominance Test is > 50%
Prevalence Index is <= 3.0^1
Morphological Adaptations^1 (Providing supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation (Explain)
^1 Indicators of hydric soils and wetland hydrology must be present
Hydrophytic Vegetation Present? Yes No X



POWERTECH (USA) INC.

SOIL Sampling Point W6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 4/1	100					SiC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

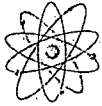
Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) Inc.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W7
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
 Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Convex Slope (%): 2
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: R4SB7
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland	Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____		
Wetland Hydrology Present	Yes <u>X</u> No _____		
Remarks: R1 P17 Upstream R1 P18 Downstream			

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover:	_____			
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover:	_____			
Herb Stratum				
1. <u>Elymus smithii</u>	<u>5</u>		<u>FACU</u>	
2. <u>Cirsium arvense</u>	<u>5</u>		<u>FACU</u>	
3. <u>Spartina pectinata</u>	<u>75</u>	<u>X</u>	<u>FACW</u>	
4. <u>Helianthus annuus</u>	<u>10</u>		<u>FACU</u>	
5. <u>Cynoglossum officinale</u>	<u>5</u>		<u>NI</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover:	<u>100</u>			
Woody Vine Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover:	_____			
% Bare Ground in Herb Stratum	<u>5</u>	% Cover of Biotic Crust	_____	
Remarks:				



POWERTECH (USA) INC.

SOIL Sampling Point W7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/1	70	7.5 YR 4/6	30	C	RC	SiC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): _____

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes No _____

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____

Water Table Present? Yes _____ No Depth (inches): _____

Saturation Present? Yes _____ No Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks: _____



POWERTECH (USA) Inc.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W8
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 31, T6S, R1E
Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Convex Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification: R2EM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Table with 2 columns: Hydrophytic Vegetation Present?, Hydric Soil Present?, Wetland Hydrology Present? and Is the Sampled Area Within a Wetland. Includes Remarks: R1 P19 Upstream, R1 P20 Downstream, Similar to W4 and all in between.

VEGETATION

Table with columns: Tree Stratum, Sapling/Shrub Stratum, Herb Stratum, Woody Vine Stratum, % Bare Ground in Herb Stratum, % Cover of Biotic Crust, and Dominance Test Worksheet. Includes species like Spartina pectinata, Eleocharis palustris, and Schoenoplectus pungens.

Remarks:



POWERTECH (USA) INC.

SOIL Sampling Point W8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-5	Gley1 3/10Y	70	7.5YR 4/4	20	C	M, RC	SC	
			2.5N	10	D	M	SC	
5+	Rock							

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input checked="" type="checkbox"/> Histosol (A1)	<input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (any one indicator is sufficient)		Secondary Indicators (2 or more required)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

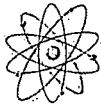
Field Observations:

Surface Water Present? Yes No _____ Depth (inches): 5
 Water Table Present? Yes No _____ Depth (inches): 5
 Saturation Present? Yes No _____ Depth (inches): 5
 (includes capillary fringe)

Wetland Hydrology Present? Yes No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

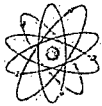
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W9
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 30-31, T6S R1E
 Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Convex Slope (%): _____
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PABJH
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present	Yes <u>X</u> No _____	
Remarks: R1 P23 Upstream R1 P24 Downstream		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover: _____	_____	_____	_____	
Herb Stratum				
1. <u>Xanthium strumarium</u>	<u>40</u>	<u>X</u>	<u>FAC</u>	
2. <u>Suckleya suckleyana</u>	<u>60</u>	<u>X</u>	<u>OBL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>100</u>	<u>100</u>	_____	_____	
Woody Vine Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover: _____	_____	_____	_____	
% Bare Ground in Herb Stratum <u>50</u>	% Cover of Biotic Crust _____			
Remarks:				
Hydrophytic Vegetation Indicators <u>X</u> Dominance Test is > 50% Prevalence Index is ≤ 3.0 ¹ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation (Explain) _____ ¹ Indicators of hydric soils and wetland hydrology must be present				
Hydrophytic Vegetation Present? Yes <u>X</u> No _____				



POWERTECH (USA) Inc.

SOIL

Sampling Point W9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features			Texture	Remarks
			Color (moist)	%	Type ¹		
0-6	10YR 4/1	50	5YR 4/6	50	C	RC/M	C

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): _____

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes No _____

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____

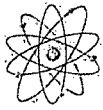
Water Table Present? Yes _____ No Depth (inches): _____

Saturation Present? Yes _____ No Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks: Slight soil cracks were present.



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

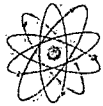
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W10
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
 Landform (hillslope, terrace, etc.) Drainage/ Depression Local relief (concave, convex, none): Convex Slope (%): _____
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PUSA
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	Is the Sampled Area Within a Wetland	Yes <u>X</u>	No _____
Hydric Soil Present?	Yes <u>X</u>	No _____			
Wetland Hydrology Present	Yes <u>X</u>	No _____			
Remarks: NWI previously mapped: PEMF R2 P1: Downstream R2 P2: Upstream Transitioning area changing to an upland area.					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)	
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover: _____				Total % Cover of: _____ Multiply by: _____	
Sapling/Shrub Stratum				OBL species _____ x1= _____	
1. _____	_____	_____	_____	FACW species <u>20</u> x2= <u>40</u>	
2. _____	_____	_____	_____	FAC species _____ x3= _____	
3. _____	_____	_____	_____	FACU species _____ x4= _____	
4. _____	_____	_____	_____	UPL species <u>80</u> x5= <u>400</u>	
5. _____	_____	_____	_____	Column Totals: <u>100</u> (A) <u>440</u> (B)	
6. _____	_____	_____	_____	Prevalence Index = B/A = <u>4.40</u>	
7. _____	_____	_____	_____	Hydrophytic Vegetation Indicators	
8. _____	_____	_____	_____	_____ Dominance Test is > 50%	
9. _____	_____	_____	_____	_____ Prevalence Index is ≤ 3.0 ¹	
10. _____	_____	_____	_____	_____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
Total Cover: <u>100</u>				_____ Problematic Hydrophytic Vegetation (Explain)	
Herb Stratum				¹ Indicators of hydric soils and wetland hydrology must be present	
1. <u>Carex filifolia</u>	<u>80</u>	<u>X</u>	<u>UPL</u>	Hydrophytic Vegetation Present?	
2. <u>Hordeum jubatum</u>	<u>20</u>	<u>X</u>	<u>FACW</u>	Yes _____ No <u>X</u>	
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: _____					
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____					
% Bare Ground in Herb Stratum <u>10</u>		% Cover of Biotic Crust _____			
Remarks: _____					



POWERTECH (USA) INC.

SOIL Sampling Point W10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 4/1	75	5YR 5/8	25	C	RC	C	
5-9	10YR 4/1	93	10YR 5/8	7	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes No _____

Remarks:

A few oxidized root channels existed, with a greater percentage in the top five inches.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____

Water Table Present? Yes _____ No Depth (inches): _____

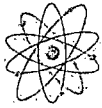
Saturation Present? Yes _____ No Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W11
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
 Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Convex Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present	Yes _____	No <u>X</u>	
Remarks: NWI previously mapped: PEMF Cottonwoods in area but not in five foot radius R2 P3: West R2 P4: East			

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>0</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)	
4. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species <u>5</u> x2= <u>10</u> FAC species <u>15</u> x3= <u>45</u> FACU species <u>80</u> x4= <u>320</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>375</u> (B) Prevalence Index = B/A = <u>3.75</u>	
Total Cover: _____	_____	_____	_____		
Sapling/Shrub Stratum				Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain)	
1. _____	_____	_____	_____		
2. _____	_____	_____	_____	¹ Indicators of hydric soils and wetland hydrology must be present Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		
Herb Stratum					
1. <u>Bassia sieveriana</u>	<u>70</u>	<u>X</u>	<u>FACU</u>		
2. <u>Hordeum jubatum</u>	<u>5</u>	_____	<u>FACW</u>		
3. <u>Chenopodium album</u>	<u>15</u>	_____	<u>FAC</u>		
4. <u>Cirsium arvense</u>	<u>5</u>	_____	<u>FACU</u>		
5. <u>Thlaspi arvense</u>	<u>5</u>	_____	<u>FACU</u>		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: <u>100</u>	_____	_____	_____		
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		
% Bare Ground in Herb Stratum <u>40</u>				% Cover of Biotic Crust _____	
Remarks:					



POWERTECH (USA) INC.

SOIL Sampling Point W11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 4/1	100					SiC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Local Soil Survey Data (D8)

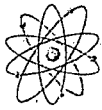
Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

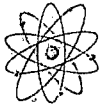
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W12
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Convex Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No X
Hydric Soil Present? Yes X No
Wetland Hydrology Present Yes No X
Remarks:
NWI previously mapped: PEMF
R2 P5: West
R2 P6: East
Is the Sampled Area Within a Wetland Yes No X

VEGETATION

Tree Stratum (Use scientific names) Absolute % Cover Dominant Species? Indicator Status
1.
2.
3.
4.
Total Cover:
Sapling/Shrub Stratum
1.
2.
3.
4.
5.
Total Cover:
Herb Stratum
1. Spartina pectinata 5 FACW
2. Chenopodium album 50 X FAC
3. Cirsium arvense 15 FACU
4. Thlaspi arvense 30 X FACU
5.
6.
7.
8.
9.
10.
Total Cover: 100
Woody Vine Stratum
1.
2.
3.
Total Cover:
% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust
Remarks:
Dominance Test Worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)
Prevalence Index Worksheet:
Total % Cover of: Multiply by:
OBL species x1=
FACW species 5 x2= 10
FAC species 50 x3= 150
FACU species 45 x4= 180
UPL species x5=
Column Totals: 100 (A) 340 (B)
Prevalence Index = B/A = 3.40
Hydrophytic Vegetation Indicators
Dominance Test is > 50%
Prevalence Index is <= 3.0^1
Morphological Adaptations^1 (Providing supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation (Explain)
^1Indicators of hydric soils and wetland hydrology must be present
Hydrophytic Vegetation Present? Yes No X



POWERTECH (USA) INC.

SOIL Sampling Point W12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 4/1	75	10YR 5/8	25	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

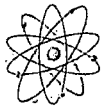
Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? Yes No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W13
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
 Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Convex Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: R4US
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

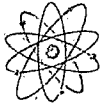
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland	Yes <u>X</u> No _____
Hydric Soil Present?	Yes _____ No <u>X</u>		
Wetland Hydrology Present	Yes <u>X</u> No _____		
Remarks: Just North of the area little bluestem is creeping into the drainage but it is still dominated by <i>Spartina pectinata</i> .			

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC:	<u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover:	_____	_____	_____	Total % Cover of:	Multiply by: _____
Sapling/Shrub Stratum				OBL species _____ x1= _____	
1. _____	_____	_____	_____	FACW species _____ x2= _____	
2. _____	_____	_____	_____	FAC species _____ x3= _____	
3. _____	_____	_____	_____	FACU species _____ x4= _____	
4. _____	_____	_____	_____	UPL species _____ x5= _____	
5. _____	_____	_____	_____	Column Totals: _____ (A)	_____ (B)
Total Cover:	_____	_____	_____	Prevalence Index = B/A = _____	
Herb Stratum				Hydrophytic Vegetation Indicators	
1. <u><i>Spartina pectinata</i></u>	<u>90</u>	<u>X</u>	<u>FACW</u>	<u>X</u> Dominance Test is > 50%	
2. <u><i>Andropogon scoparius</i></u>	<u>5</u>		<u>NI</u>	Prevalence Index is ≤ 3.0 ¹	
3. <u><i>Chenopodium album</i></u>	<u>5</u>		<u>FAC</u>	Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
4. _____	_____	_____	_____	Problematic Hydrophytic Vegetation (Explain)	
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover:	<u>100</u>			¹ Indicators of hydric soils and wetland hydrology must be present	
Woody Vine Stratum				Hydrophytic Vegetation Present?	
1. _____	_____	_____	_____	Yes <u>X</u> No _____	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover:	_____	_____	_____		
% Bare Ground in Herb Stratum	<u>10</u>	% Cover of Biotic Crust			

Remarks:



POWERTECH (USA) INC.

SOIL Sampling Point W13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/1	50	7.5YR 5/8	50	C	M	SiCL	
4-10	10YR 4/1	100					SiCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G; H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

Restrictive Layer (if present): _____

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:
There were small inclusions of mottles present in depths 4-10 in the matrix.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

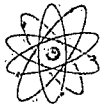
Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W14
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
 Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Convex Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: R4US
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

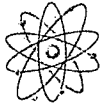
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Remarks: R2 P7: Upstream area extends from waypoints 015-019 R2P8: Downstream R2 P9: General area of PEMC	

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover: _____	_____	_____	_____		
Sapling/Shrub Stratum				OBL species <u>20</u> x1= <u>20</u> FACW species <u>80</u> x2= <u>160</u> FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>180</u> (B) Prevalence Index = B/A = <u>1.80</u>	
1. _____	_____	_____	_____	Hydrophytic Vegetation Indicators	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: <u>100</u>	_____	_____	_____	<input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation (Explain)	
Herb Stratum				¹ Indicators of hydric soils and wetland hydrology must be present	
1. <u>Spartina pectinata</u>	<u>40</u>	<u>X</u>	<u>FACW</u>	Hydrophytic Vegetation Present? Yes <u>X</u> No _____	
2. <u>Typha latifolia</u>	<u>20</u>	<u>X</u>	<u>OBL</u>		
3. <u>Juncus balticus</u>	<u>40</u>	<u>X</u>	<u>FACW</u>		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		
% Bare Ground in Herb Stratum <u>10</u>	% Cover of Biotic Crust _____				

Remarks: _____



POWERTECH (USA) INC.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	Gley1 4/N	55	7.5YR 5/8	45	C	RC	SiCL	
4-14	Gley1 4/N	80	7.5YR 4/6	20	C	M	SiCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes No _____

Remarks:
There were small inclusions of mottles present in depths 4-10 in the matrix.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____

Water Table Present? Yes _____ No Depth (inches): _____

Saturation Present? Yes _____ No Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

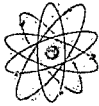
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W15
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 30, T6S, R1E
Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification: R2EM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present Yes X No
Remarks:
R2 P12: Upstream
R2 P13: Downstream
Wetland is upstream and the channel width is about 8 feet wide.

VEGETATION

Tree Stratum (Use scientific names) Absolute % Cover Dominant Species? Indicator Status
1. 2. 3. 4. Total Cover:
Sapling/Shrub Stratum
1. 2. 3. 4. 5. Total Cover:
Herb Stratum
1. Spartina pectinata 55 X FACW
2. Eleocharis palustris 15 OBL
3. Juncus balticus 10 FACW
4. Kochia scoparia 10 FAC
5. Bassia sieveriana 10 FACU
6. 7. 8. 9. 10. Total Cover: 100
Woody Vine Stratum
1. 2. 3. Total Cover:
% Bare Ground in Herb Stratum % Cover of Biotic Crust
Remarks:
Dominance Test Worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)
Prevalence Index Worksheet:
Total % Cover of: Multiply by:
OBL species x1=
FACW species x2=
FAC species x3=
FACU species x4=
UPL species x5=
Column Totals: (A) (B)
Prevalence Index = B/A =
Hydrophytic Vegetation Indicators
X Dominance Test is > 50%
Prevalence Index is <= 3.0
Morphological Adaptations (Providing supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation (Explain)
Indicators of hydric soils and wetland hydrology must be present
Hydrophytic Vegetation Present? Yes X No



POWERTECH (USA) INC.

SOIL

Sampling Point W15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	2.5Y 4/1	90	7.5YR 4/6	10	C	RC, M	CL	
8-10	Gley1 3/N	70	7.5YR 5/8	30	C	M	SIC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

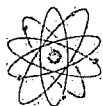
Field Observations:

Surface Water Present? Yes No Depth (inches): 10
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? Yes No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W16
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 31, T6S, R1E
 Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: R2EM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland	Yes	<u>X</u>	No	_____
Hydric Soil Present?	Yes	<u>X</u>	No	_____		Yes	<u>X</u>	No	_____
Wetland Hydrology Present	Yes	<u>X</u>	No	_____		Yes	<u>X</u>	No	_____
Remarks: R2 P18: Upstream R2 P19: Downstream Aquatic animals present									

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC:	<u>2</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover: _____			_____	Total % Cover of:	Multiply by:
Sapling/Shrub Stratum				OBL species	x1= _____
1. _____	_____	_____	_____	FACW species	x2= _____
2. _____	_____	_____	_____	FAC species	x3= _____
3. _____	_____	_____	_____	FACU species	x4= _____
4. _____	_____	_____	_____	UPL species	x5= _____
5. _____	_____	_____	_____	Column Totals:	<u>(A)</u> _____ (B)
Total Cover: _____			_____	Prevalence Index = B/A = _____	
Herb Stratum				Hydrophytic Vegetation Indicators	
1. <u>Spartina pectinata</u>	<u>30</u>	<u>X</u>	<u>FACW</u>	<u>X</u> Dominance Test is > 50%	
2. <u>Cirsium arvense</u>	<u>5</u>		<u>FACU</u>	Prevalence Index is ≤ 3.0 ¹	
3. <u>Eleocharis palustris</u>	<u>40</u>	<u>X</u>	<u>OBL</u>	Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
4. <u>Juncus balticus</u>	<u>15</u>		<u>FACW</u>	Problematic Hydrophytic Vegetation (Explain)	
5. <u>Xanthium strumarium</u>	<u>5</u>		<u>FAC</u>		
6. <u>Chenopodium album</u>	<u>3</u>		<u>FAC</u>		
7. <u>Schoenoplectus pungens</u>	<u>2</u>		<u>OBL</u>		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: <u>100</u>			_____		
Woody Vine Stratum				¹ Indicators of hydric soils and wetland hydrology must be present	
1. _____	_____	_____	_____	Hydrophytic Vegetation Present?	Yes <u>X</u> No _____
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____			_____		
% Bare Ground in Herb Stratum	<u>5</u>	% Cover of Biotic Crust			
Remarks:					



POWERTECH (USA) INC.

SOIL Sampling Point W16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-5	2.5Y 4/1	37	7.5YR 4/6	3	C	RC	C	
			Gley1 2.5/N	60	D	M	C	

¹Type: C=Concentration; D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

Field Observations:

Surface Water Present? Yes No Depth (inches): 5

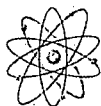
Water Table Present? Yes No Depth (inches): 5

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 5

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



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WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

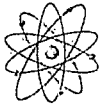
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W17
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 31, T6S, R1E
Landform (hillslope, terrace, etc.): Ditch around agricultural area Local relief (concave, convex, none): convex Slope (%): 2
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No X
Hydric Soil Present? Yes No X
Wetland Hydrology Present Yes No X
Is the Sampled Area Within a Wetland Yes No X
Remarks:
R2 P22: Upstream
R2 P23: Downstream
Previously mapped as PEMA

VEGETATION

Tree Stratum (Use scientific names) Absolute % Cover Dominant Species? Indicator Status
1.
2.
3.
4.
Total Cover:
Sapling/Shrub Stratum
1.
2.
3.
4.
5.
Total Cover:
Herb Stratum
1. Bromus inermis 95 X FACU
2. Cirsium arvense 2 FACU
3. Chenopodium album 3 FAC
4.
5.
6.
7.
8.
9.
10.
Total Cover: 100
Woody Vine Stratum
1.
2.
3.
Total Cover:
% Bare Ground in Herb Stratum % Cover of Biotic Crust
Dominance Test Worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)
Prevalence Index Worksheet:
Total % Cover of: Multiply by:
OBL species x1=
FACW species x2=
FAC species 3 x3= 9
FACU species 97 x4= 388
UPL species x5=
Column Totals: 100 (A) 397 (B)
Prevalence Index = B/A = 3.97
Hydrophytic Vegetation Indicators
Dominance Test is > 50%
Prevalence Index is <= 3.0^1
Morphological Adaptations^1 (Providing supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation (Explain)
^1 Indicators of hydric soils and wetland hydrology must be present
Hydrophytic Vegetation Present? Yes No X



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SOIL

Sampling Point W17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-2	2.5Y 2.5/1	100					C	
2-8	2.5Y 4/3	100					C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): _____

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

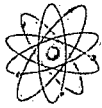
Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks: _____



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WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

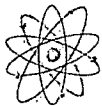
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W18
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 31, T6S, R1E
 Landform (hillslope, terrace, etc.) Drainage bank Local relief (concave, convex, none): Concave Slope (%): 5
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: R2EM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R3 P1: Upstream R3 P2: Downstream Wpt 026 is similar to W18, R2 P24: Upstream Width of wetland is about 17', width of channel is about 12'					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC:	<u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover: _____	_____	_____	_____	Total % Cover of:	Multiply by: _____
Sapling/Shrub Stratum				OBL species	x1= _____
1. _____	_____	_____	_____	FACW species	x2= _____
2. _____	_____	_____	_____	FAC species	x3= _____
3. _____	_____	_____	_____	FACU species	x4= _____
4. _____	_____	_____	_____	UPL species	x5= _____
5. _____	_____	_____	_____	Column Totals:	(A) _____ (B)
Total Cover: _____	_____	_____	_____	Prevalence Index = B/A = _____	
Herb Stratum				Hydrophytic Vegetation Indicators	
1. <u>Spartina pectinata</u>	<u>80</u>	<u>X</u>	<u>FACW</u>	<u>X</u> Dominance Test is > 50%	
2. <u>Xanthium strumarium</u>	<u>5</u>		<u>FAC</u>	Prevalence Index is ≤ 3.0 ¹	
3. <u>Schoenoplectus pungens</u>	<u>10</u>		<u>OBL</u>	Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
4. <u>Juncus balticus</u>	<u>5</u>		<u>FACW</u>	Problematic Hydrophytic Vegetation (Explain)	
5. _____	_____	_____	_____	¹ Indicators of hydric soils and wetland hydrology must be present	
6. _____	_____	_____	_____	Hydrophytic Vegetation Present?	
7. _____	_____	_____	_____	Yes	<u>X</u> No _____
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: _____	<u>100</u>	_____	_____		
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		
% Bare Ground in Herb Stratum	<u>5</u>	% Cover of Biotic Crust			
Remarks:					



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SOIL Sampling Point W18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features			Loc ²	Texture	Remarks
			Color (moist)	%	Type ¹			
0-6	Gley1 4/5GY	97	2.5YR 7/8	3	C	M	CL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 8

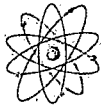
Saturation Present? Yes _____ No X Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:
The water table was present within 8" of the surface.



WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

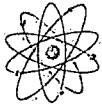
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W19
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 31, T6S, R1E
 Landform (hillslope, terrace, etc.) Low area Local relief (concave, convex, none): Concave Slope (%): _____
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	Is the Sampled Area Within a Wetland	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No _____			
Wetland Hydrology Present	Yes _____	No <u>X</u>			
Remarks: Low vegetation cover, Normal circumstances present within an active prairie dog community. Previously NWI mapped as PEMF. R3 P3: Northwest R3 P4: East					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover:	_____	_____	_____	
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species <u>99</u> x3= <u>297</u> FACU species <u>1</u> x4= <u>4</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>301</u> (B) Prevalence Index = B/A = <u>3.01</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover:	<u>100</u>	_____	_____	
Herb Stratum				
1. <u>Chenopodium berlandieri</u>	<u>99</u>	<u>X</u>	<u>FAC</u>	
2. <u>Bassia sieveriana</u>	<u>1</u>	_____	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover:	_____	_____	_____	
Woody Vine Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover:	_____	_____	_____	
% Bare Ground in Herb Stratum	<u>65</u>	% Cover of Biotic Crust		
Remarks:				
Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present Hydrophytic Vegetation Present? Yes _____ No <u>X</u>				



POWERTECH (USA) INC.

SOIL

Sampling Point W19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 4/1	95	7.5YR 5/8	5	C	M	SiCL	
2-4	10YR 4/1	100					SiCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

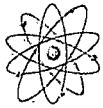
Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

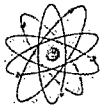
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W20
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 9, T7S, R1E
 Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland	Yes <u>X</u> No _____
Hydric Soil Present?	Yes _____ No <u>X</u>		
Wetland Hydrology Present	Yes <u>X</u> No _____		
Remarks: R2 P12: Upstream R2 P13: Downstream Wetland is upstream and the channel width is about 8 feet wide.			

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover: _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____	
Sapling/Shrub Stratum				OBL species _____ x1= _____	
1. _____	_____	_____	_____	FACW species _____ x2= _____	
2. _____	_____	_____	_____	FAC species _____ x3= _____	
3. _____	_____	_____	_____	FACU species _____ x4= _____	
4. _____	_____	_____	_____	UPL species _____ x5= _____	
5. _____	_____	_____	_____	Column Totals: _____ (A) _____ (B)	
6. _____	_____	_____	_____	Prevalence Index = B/A = _____	
7. _____	_____	_____	_____	Hydrophytic Vegetation Indicators	
8. _____	_____	_____	_____	<u>X</u> Dominance Test is > 50%	
9. _____	_____	_____	_____	Prevalence Index is ≤ 3.0 ¹	
10. _____	_____	_____	_____	Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
Total Cover: <u>100</u>	_____	_____	_____	Problematic Hydrophytic Vegetation (Explain)	
Herb Stratum				¹ Indicators of hydric soils and wetland hydrology must be present	
1. <u>Schoenoplectus pungens</u>	<u>90</u>	<u>X</u>	<u>OBL</u>	Hydrophytic Vegetation Present?	
2. <u>Cirsium arvense</u>	<u>5</u>	_____	<u>FACU</u>	Yes <u>X</u> No _____	
3. <u>Bassia sieveriana</u>	<u>5</u>	_____	<u>FACU</u>		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		
% Bare Ground in Herb Stratum		% Cover of Biotic Crust			
Remarks:					



POWERTECH (USA) INC.

SOIL Sampling Point W20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features			Texture	Remarks	
			Color (moist)	%	Type ¹			
0-12	10YR 3/1	98	5YR 5/8	2	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 5

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

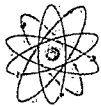
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W21
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 9, T7S, R1E
 Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present	Yes <u>X</u> No _____	
Remarks: R3 P10: Upstream R3 P11: Downstream R3 P12: Bridge Channel crosses the boundary and extends to the road		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Total Cover: _____				
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	Hydrophytic Vegetation Indicators <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present Hydrophytic Vegetation Present? Yes <u>X</u> No _____
Total Cover: _____				
Herb Stratum				
1. <u>Typha latifolia</u>	<u>55</u>	<u>X</u>	<u>OBL</u>	
2. <u>Asclepias speciosa</u>	<u>10</u>	_____	<u>FAC</u>	
3. <u>Glycyrrhiza lepidota</u>	<u>15</u>	_____	<u>FACU</u>	
4. <u>Spartina pectinata</u>	<u>5</u>	_____	<u>FACW</u>	
5. <u>Helianthus annuus</u>	<u>5</u>	_____	<u>FACU</u>	
6. <u>Melilotus sp.</u>	<u>5</u>	_____	<u>FACU</u>	
7. <u>Schoenoplectus pungens</u>	<u>5</u>	_____	<u>OBL</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>100</u>				
Woody Vine Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover: _____				
% Bare Ground in Herb Stratum		% Cover of Biotic Crust		
Remarks:				



POWERTECH (USA) INC.

SOIL Sampling Point W21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-3	5YR 3/4	100					SCL	
3-5	10YR 2/2	50	5YR 4/6	50	C	M	SCL	water filled the hole

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soils Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 0

Water Table Present? Yes X No _____ Depth (inches): _____

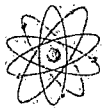
Saturation Present? Yes X No _____ Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) Inc.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

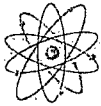
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W22
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 9, T7S, R1E
 Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black-Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	_____	No	<u>X</u>	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R3 P13: Upstream R3 P14: Downstream					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover: _____			_____	Total % Cover of: _____ Multiply by: _____	
Sapling/Shrub Stratum				OBL species _____ x1= _____	
1. _____	_____	_____	_____	FACW species <u>81</u> x2= <u>162</u>	
2. _____	_____	_____	_____	FAC species _____ x3= _____	
3. _____	_____	_____	_____	FACU species <u>19</u> x4= <u>76</u>	
4. _____	_____	_____	_____	UPL species _____ x5= _____	
5. _____	_____	_____	_____	Column Totals: <u>100</u> (A) <u>238</u> (B)	
Total Cover: _____			_____	Prevalence Index = B/A = <u>2.38</u>	
Herb Stratum				Hydrophytic Vegetation Indicators	
1. <u>Spartina pectinata</u>	<u>81</u>	<u>X</u>	<u>FACW</u>	<u>X</u> Dominance Test is > 50%	
2. <u>Cirsium arvense</u>	<u>19</u>	_____	<u>FACU</u>	_____ Prevalence Index is ≤ 3.0 ¹	
3. _____	_____	_____	_____	_____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
4. _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation (Explain)	
5. _____	_____	_____	_____	¹ Indicators of hydric soils and wetland hydrology must be present	
6. _____	_____	_____	_____	Hydrophytic Vegetation Present?	
7. _____	_____	_____	_____	Yes <u>X</u> No _____	
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: <u>100</u>			_____		
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____			_____		
% Bare Ground in Herb Stratum <u>15</u>		% Cover of Biotic Crust _____			
Remarks:					



POWERTECH (USA) INC.

SOIL

Sampling Point W22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 4/6	100					SC	
1-4	2.5YR 3/2	100					SC	Hit rock at 4 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input checked="" type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

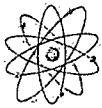
Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Dry throughout the area and there was encroachment of upland species.



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W23
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 10, T7S, R1E
 Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

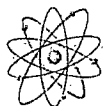
Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland	Yes	<u>X</u>	No	_____
Hydric Soil Present?	Yes	<u>X</u>	No	_____		Yes	<u>X</u>	No	_____
Wetland Hydrology Present	Yes		No	<u>X</u>					

Remarks:
 R3 P17: Upstream
 R3 P18: Downstream
 Possible low spot that collects water, dying cattails present.

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)	
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover: _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____	
Sapling/Shrub Stratum				OBL species <u>60</u> x1= <u>60</u>	
1. _____	_____	_____	_____	FACW species <u>9</u> x2= <u>18</u>	
2. _____	_____	_____	_____	FAC species <u>1</u> x3= <u>3</u>	
3. _____	_____	_____	_____	FACU species <u>30</u> x4= <u>120</u>	
4. _____	_____	_____	_____	UPL species _____ x5= _____	
5. _____	_____	_____	_____	Column Totals: <u>100</u> (A) <u>201</u> (B)	
Total Cover: _____	_____	_____	_____	Prevalence Index = B/A = <u>2.01</u>	
Herb Stratum				Hydrophytic Vegetation Indicators	
1. <u>Spartina pectinata</u>	<u>9</u>		<u>FACW</u>	_____ Dominance Test is > 50%	
2. <u>Cirsium arvense</u>	<u>20</u>	<u>X</u>	<u>FACU</u>	<u>X</u> Prevalence Index is ≤ 3.0 ¹	
3. <u>Bassia sieveriana</u>	<u>10</u>		<u>FACU</u>	_____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
4. <u>Typha latifolia</u>	<u>60</u>	<u>X</u>	<u>OBL</u>	_____ Problematic Hydrophytic Vegetation (Explain)	
5. <u>Chenopodium album</u>	<u>1</u>		<u>FAC</u>		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: _____	<u>100</u>	_____	_____	¹ Indicators of hydric soils and wetland hydrology must be present	
Woody Vine Stratum				Hydrophytic Vegetation Present?	
1. _____	_____	_____	_____	Yes <u>X</u> No _____	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust _____
 Remarks: _____



POWERTECH (USA) INC.

SOIL

Sampling Point W23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 3/1	100					SiC	
2-6	5YR 4/6	95	7.5YR 5/8	5	C	RC	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

Orange coloration due to parent material

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

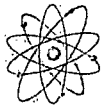
Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W25
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 34, T6S, R1E
 Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

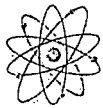
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present	Yes _____	No <u>X</u>	
Remarks: R4 P1: Upstream R4 P2: Downstream			

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>Populus deltoides</u>	100	X	FAC	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index Worksheet:
Total Cover: <u>100</u>				
Sapling/Shrub Stratum				OBL species _____ x1= _____
1. _____	_____	_____	_____	FACW species _____ x2= _____
2. _____	_____	_____	_____	FAC species <u>105</u> x3= <u>315</u>
3. _____	_____	_____	_____	FACU species <u>95</u> x4= <u>380</u>
4. _____	_____	_____	_____	UPL species _____ x5= _____
5. _____	_____	_____	_____	Column Totals: <u>200</u> (A) <u>695</u> (B)
Total Cover: _____				Prevalence Index = B/A = <u>3.48</u>
Herb Stratum				Hydrophytic Vegetation Indicators
1. <u>Elymus smithii</u>	95	X	FACU	_____ Dominance Test is > 50%
2. <u>Chenopodium album</u>	5	_____	FAC	_____ Prevalence Index is ≤ 3.0 ¹
3. _____	_____	_____	_____	_____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)
4. _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation (Explain)
5. _____	_____	_____	_____	¹ Indicators of hydric soils and wetland hydrology must be present
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>100</u>				
Woody Vine Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover: _____				
% Bare Ground in Herb Stratum <u>0</u>	% Cover of Biotic Crust _____			

Remarks:
Upland species in drainage and banks, there were two living *Populus deltoides* present.



POWERTECH (USA) INC.

SOIL Sampling Point W25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-4	5YR 2.5/1	60					SiCL	
Parent material	5YR 4/4	40						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input checked="" type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soils Present? Yes _____ No

Remarks:
 Orange coloration due to parent material

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Local Soil Survey Data (D8)

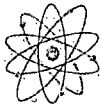
Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____
 Water Table Present? Yes _____ No Depth (inches): _____
 Saturation Present? Yes _____ No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W26
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 34, T6S, R1E
 Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	Is the Sampled Area Within a Wetland	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No _____			
Wetland Hydrology Present	Yes <u>X</u>	No _____			
Remarks: R4 P3: Upstream R4 P4: Downstream Upland vegetation has moved down the banks and in the area of the drainage on either side.					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC:	<u>0</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>0</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover: _____				Total % Cover of:	Multiply by:
Sapling/Shrub Stratum				OBL species	x1= _____
1. _____	_____	_____	_____	FACW species	15 x2= <u>30</u>
2. _____	_____	_____	_____	FAC species	10 x3= <u>30</u>
3. _____	_____	_____	_____	FACU species	75 x4= <u>300</u>
4. _____	_____	_____	_____	UPL species	x5= _____
5. _____	_____	_____	_____	Column Totals:	<u>100</u> (A) <u>360</u> (B)
Total Cover: _____				Prevalence Index = B/A =	<u>3.60</u>
Herb Stratum				Hydrophytic Vegetation Indicators	
1. <u>Elymus smithii</u>	<u>30</u>	<u>X</u>	<u>FACU</u>	_____ Dominance Test is > 50%	
2. <u>Elymus canadensis</u>	<u>25</u>	<u>X</u>	<u>FACU</u>	_____ Prevalence Index is ≤ 3.0 ¹	
3. <u>Thlaspi arvense</u>	<u>5</u>		<u>FACU</u>	_____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
4. <u>Bassia sieveriana</u>	<u>10</u>		<u>FACU</u>	_____ Problematic Hydrophytic Vegetation (Explain)	
5. <u>Phalaris arundinacea</u>	<u>15</u>		<u>FACW</u>		
6. <u>Chenopodium album</u>	<u>5</u>		<u>FAC</u>		
7. <u>Xanthium strumarium</u>	<u>5</u>		<u>FAC</u>		
8. <u>Helianthus annuus</u>	<u>5</u>		<u>FACU</u>		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: <u>100</u>				¹ Indicators of hydric soils and wetland hydrology must be present	
Woody Vine Stratum				Hydrophytic Vegetation Present?	
1. _____	_____	_____	_____	Yes _____	No <u>X</u>
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____					
% Bare Ground in Herb Stratum	<u>10</u>	% Cover of Biotic Crust			
Remarks:					



POWERTECH (USA) INC.

SOIL Sampling Point W26

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-1	2.5YR 4/8	100					C	
1-7	7.5YR 4/2	100					C	
7-9	Gley2 2.5/10B	100					C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)

- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR C)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16) (LRR H outside MLRA 72 & 73)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes No

Remarks:

Orange coloration due to parent material

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water Stained Leaves (B9)

- Salt Crusts (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Oder (C1)
- Dry-Season Water Table (C2)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remark)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surfaces (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres on Living Roots (C3)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Frost-Heave Hummocks (C11) (LRR F)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Local Soil Survey Data (D8)

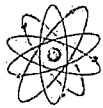
Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? Yes No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W27
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 34, T6S, R1E
 Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present	Yes <u>X</u>	No _____	
Remarks: R4 P1: Upstream R4 P2: Downstream			

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____ 2. _____ 3. _____ 4. _____ Total Cover: _____				
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Elymus smithii</u> 40 X FACU 2. <u>Elymus canadensis</u> 30 X FACU 3. <u>Chenopodium album</u> 10 FAC 4. <u>Xanthium strumarium</u> 10 FAC 5. <u>Helianthus annuus</u> 10 FACU 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain)
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				¹ Indicators of hydric soils and wetland hydrology must be present
% Bare Ground in Herb Stratum <u>98</u> % Cover of Biotic Crust _____				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
Remarks: The vegetation is only on the banks and not in the drainage; the percent bare ground in channel is 98%.				



POWERTECH (USA) INC.

SOIL Sampling Point W27

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features			Texture	Remarks
			Color (moist)	%	Type ¹		
0-1	2.5Y 5/3	100				C	
0.75	2.5YR 4/8	100				C	
1-8	2.5Y 5/3	100				C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input checked="" type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No

Remarks:

One inch to the red layer (red layer is about 2 cm thick). The black layer is organic.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

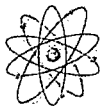
Surface Water Present? Yes _____ No Depth (inches): _____
 Water Table Present? Yes _____ No Depth (inches): _____
 Saturation Present? Yes _____ No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Soil is moist but not saturated.



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

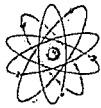
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W28
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 34, T6S, R1E
Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No X
Hydric Soil Present? Yes No X
Wetland Hydrology Present Yes No X
Is the Sampled Area Within a Wetland Yes No X
Remarks:
R4 P13: Upstream
R4 P14: Downstream

VEGETATION

Tree Stratum (Use scientific names) Absolute % Cover Dominant Species? Indicator Status
1. Populus deltoides 100 X FAC
2.
3.
4.
Total Cover: 100
Sapling/Shrub Stratum
1. Symphoricarpos albus 100 X FACU-
2.
3.
4.
5.
Total Cover: 100
Herb Stratum
1. Elymus smithii 35 X FACU
2. Bassia sieveriana 20 X FACU
3. Calamovilfa longifolia 12 NI
4. Descurainia pinnata 1 NI
5. Thlaspi arvense 3 FACU
6. Chenopodium album 17 FAC
7. Asclepias speciosa 2 FAC
8. Elymus cinerius 15 NI
9. Sisymbrium altissimum 2 UPL
10. Camelina microcarpa 1 NI
Total Cover: 100
Woody Vine Stratum
1.
2.
3.
Total Cover:
% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust
Remarks:



POWERTECH (USA) INC.

SOIL Sampling Point W28

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features			Texture	Remarks
			Color (moist)	%	Type ¹		
0-3	5YR 4/6	100				SC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input checked="" type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No

Remarks:

Orange coloration due to parent material

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

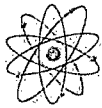
Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____
 Water Table Present? Yes _____ No Depth (inches): _____
 Saturation Present? Yes _____ No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W29
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 3, T7S, R1E
Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 2
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

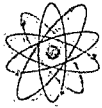
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Table with 4 columns: Question, Yes, No, and Is the Sampled Area Within a Wetland. Includes rows for Hydrophytic Vegetation Present, Hydric Soil Present, and Wetland Hydrology Present. Remarks: R4 P17: Upstream, R4 P18: Downstream, Area is similar through the drainage; the upland species are dominant in the drainage. The Drainage is about 3' across on average.

VEGETATION

Large table with columns: Tree Stratum, Sapling/Shrub Stratum, Herb Stratum, Woody Vine Stratum, % Bare Ground in Herb Stratum, % Cover of Biotic Crust, and Dominance Test Worksheet. Includes species names like Populus deltoides, Elymus smithii, and Bassia sieveriana.

Remarks:



POWERTECH (USA) INC.

SOIL

Sampling Point W29

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-3	5YR 4/6	100					C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input checked="" type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No

Remarks:
Hard to dig soil.

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

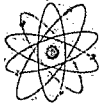
Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____
 Water Table Present? Yes _____ No Depth (inches): _____
 Saturation Present? Yes _____ No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W30
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 10, T7S, R1E
 Landform (hillslope, terrace, etc.) Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	Is the Sampled Area Within a Wetland	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No _____			
Wetland Hydrology Present	Yes _____	No <u>X</u>			
Remarks: R4 P19: East R4 P20: West Waypoints 46-49 mark the boundary					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC:	<u>0</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>0</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover:	_____			Total % Cover of:	Multiply by:
Sapling/Shrub Stratum				OBL species _____ x1= _____	
1. _____	_____	_____	_____	FACW species _____ x2= _____	
2. _____	_____	_____	_____	FAC species _____ x3= _____	
3. _____	_____	_____	_____	FACU species <u>85</u> x4= <u>340</u>	
4. _____	_____	_____	_____	UPL species <u>15</u> x5= <u>75</u>	
5. _____	_____	_____	_____	Column Totals: <u>100</u> (A) <u>415</u> (B)	
Total Cover:	_____			Prevalence Index = B/A = <u>4.15</u>	
Herb Stratum				Hydrophytic Vegetation Indicators	
1. <u>Elymus smithii</u>	<u>85</u>	<u>X</u>	<u>FACU</u>	_____ Dominance Test is > 50%	
2. <u>Carex filifolia</u>	<u>15</u>		<u>UPL</u>	_____ Prevalence Index is ≤ 3.0 ¹	
3. _____	_____	_____	_____	_____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
4. _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation (Explain)	
5. _____	_____	_____	_____	¹ Indicators of hydric soils and wetland hydrology must be present	
6. _____	_____	_____	_____	Hydrophytic Vegetation Present?	
7. _____	_____	_____	_____	Yes _____	No <u>X</u>
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover:	<u>100</u>				
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover:	_____				
% Bare Ground in Herb Stratum	<u>30</u>	% Cover of Biotic Crust	_____		
Remarks:					



POWERTECH (USA) Inc.

SOIL Sampling Point W30

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-8	7.5YR 4/1	70	7.5YR 4/6	30	C	M	SiC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:
Orange coloration due to parent material

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W31
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 10, T7S, R1E
 Landform (hillslope, terrace, etc.) Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PUB
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	_____	No	<u>X</u>	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R4 P21: Northeast R4 P22: East- southeast					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.67</u> (A/B)	
1. _____	_____	_____	_____		Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species <u>35</u> x2= <u>70</u> FAC species <u>20</u> x3= <u>60</u> FACU species <u>45</u> x4= <u>180</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>310</u> (B) Prevalence Index = B/A = <u>3.10</u>
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		
Sapling/Shrub Stratum					
1. _____	_____	_____	_____	Hydrophytic Vegetation Indicators <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		
Herb Stratum					
1. <u>Distichlis stricta</u>	<u>35</u>	<u>X</u>	<u>FACW</u>		
2. <u>Sporobolus airoides</u>	<u>20</u>	<u>X</u>	<u>FAC</u>		
3. <u>Salsola tragus</u>	<u>45</u>	<u>X</u>	<u>FACU-</u>		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: <u>100</u>	<u>100</u>	_____	_____		
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		
% Bare Ground in Herb Stratum <u>70</u>	% Cover of Biotic Crust _____		_____		
Remarks: _____					
Hydrophytic Vegetation Present? Yes <u>X</u> No _____					



POWERTECH (USA) INC.

SOIL Sampling Point W31

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-0.5	White salt crust							
0.5-14	10YR 4/3	100				C		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Local Soil Survey Data (D8)
<input type="checkbox"/> Water Stained Leaves (B9)		

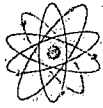
Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks: _____



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

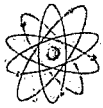
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W32
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 10, T7S R1E
 Landform (hillslope, terrace, etc.) Depression Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PUS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland	Yes	<u>X</u>	No	_____
Hydric Soil Present?	Yes	<u>X</u>	No	_____		Yes	<u>X</u>	No	_____
Wetland Hydrology Present	Yes		No	<u>X</u>					
Remarks: R4 P24: Of the previously mapped PEM wetland R4 P25: from the berm									

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover: _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____	
Sapling/Shrub Stratum				OBL species _____ x1= _____	
1. _____	_____	_____	_____	FACW species _____ x2= _____	
2. _____	_____	_____	_____	FAC species _____ x3= _____	
3. _____	_____	_____	_____	FACU species _____ x4= _____	
4. _____	_____	_____	_____	UPL species _____ x5= _____	
5. _____	_____	_____	_____	Column Totals: _____ (A) _____ (B)	
Total Cover: _____	_____	_____	_____	Prevalence Index = B/A = _____	
Herb Stratum				Hydrophytic Vegetation Indicators	
1. <u>Echinochloa muricata</u>	<u>100</u>	<u>X</u>	<u>OBL</u>	<u>X</u> Dominance Test is > 50%	
2. _____	_____	_____	_____	_____ Prevalence Index is ≤ 3.0 ¹	
3. _____	_____	_____	_____	_____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
4. _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation (Explain)	
5. _____	_____	_____	_____	¹ Indicators of hydric soils and wetland hydrology must be present	
6. _____	_____	_____	_____	Hydrophytic Vegetation Present?	
7. _____	_____	_____	_____	Yes <u>X</u> No _____	
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: <u>100</u>	_____	_____	_____		
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		
% Bare Ground in Herb Stratum		% Cover of Biotic Crust			
Remarks:					



POWERTECH (USA) INC.

SOIL Sampling Point W32

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features			Loc ²	Texture	Remarks
			Color (moist)	%	Type ¹			
0-8	5YR 4/1	50	7.5YR 4/6	50	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)		<input checked="" type="checkbox"/>	Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/>	Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/>	Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/>	Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/>	Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/>	Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/>	Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/>	Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/>	FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/>	Local Soil Survey Data (D8)
<input type="checkbox"/> Water Stained Leaves (B9)			

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

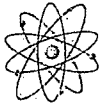
Saturation Present? Yes _____ No X Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks: _____



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W33
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 14, T7S, R1E
 Landform (hillslope, terrace, etc.) Pond Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

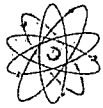
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R4 P1: Upstream R4 P2: Downstream					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
1. _____	_____	_____	_____		Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
Total Cover: _____					
Sapling/Shrub Stratum					
1. _____	_____	_____	_____	Hydrophytic Vegetation Indicators <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain)	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
Total Cover: _____					
Herb Stratum					
1. <u>Juncus balticus</u>	<u>20</u>	<u>X</u>	<u>FACW</u>		
2. <u>Distichlis stricta</u>	<u>50</u>	<u>X</u>	<u>FACW</u>		
3. <u>Schoenoplectus tabernaemontani</u>	<u>30</u>	<u>X</u>	<u>OBL</u>		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: <u>100</u>					
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____					
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust _____			

Remarks: Schoenoplectus tabernaemontani dominant on the fringe of the pond.



POWERTECH (USA) INC.

SOIL Sampling Point W33

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/6	90	Gley1 2.5/N	10	D	M	C	
4-8	Gley1 3/N	100					C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	(LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes No

Remarks:
Orange coloration due to parent material

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

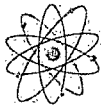
Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): 2
 Saturation Present? Yes No Depth (inches): 4
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

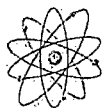
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W34
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 14, T7S, R1E
Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No X
Hydric Soil Present? Yes X No
Wetland Hydrology Present Yes No X
Is the Sampled Area Within a Wetland Yes No X
Remarks:
R5 P9: Upstream
R5 P10: Downstream
Waypoint 58 indicates the end of surface water (R5 P8)

VEGETATION

Tree Stratum (Use scientific names) Absolute % Cover Dominant Species? Indicator Status
1.
2.
3.
4.
Total Cover:
Sapling/Shrub Stratum
1.
2.
3.
4.
5.
Total Cover:
Herb Stratum
1. Hordeum jubatum 15 X FACW
2. Xanthium strumarium 10 FAC
3. Chenopodium album 10 FACU
4. Grindelia squarrosa 15 X UPL
5. Cirsium arvense 10 FACU
6. Polygonum aviculare 35 X FACU
7. Elymus smithii 5 FACU
8.
9.
10.
Total Cover: 100
Woody Vine Stratum
1.
2.
3.
Total Cover:
% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust
Dominance Test Worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)
Prevalence Index Worksheet:
Total % Cover of: Multiply by:
OBL species x1=
FACW species 15 x2= 30
FAC species 10 x3= 30
FACU species 60 x4= 240
UPL species 15 x5= 75
Column Totals: 100 (A) 375 (B)
Prevalence Index = B/A = 3.75
Hydrophytic Vegetation Indicators
Dominance Test is > 50%
Prevalence Index is <= 3.0^1
Morphological Adaptations^1 (Providing supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation (Explain)
^1Indicators of hydric soils and wetland hydrology must be present
Hydrophytic Vegetation Present? Yes No X



POWERTECH (USA) INC.

SOIL Sampling Point W34

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-5	Gley1 2.5/N	95	2.5YR 4/8	5	C	M, RC	CL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): _____

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes No

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)		<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Local Soil Survey Data (D8)	
<input type="checkbox"/> Water Stained Leaves (B9)			

Field Observations:

Surface Water Present? Yes No Depth (inches): _____

Water Table Present? Yes No Depth (inches): _____

Saturation Present? Yes No Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks: _____



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W35
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 14, T7S, R1E
 Landform (hillslope, terrace, etc.) Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PUB
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland	Yes	<u>X</u>	No	_____
Hydric Soil Present?	Yes	_____	No	<u>X</u>					
Wetland Hydrology Present	Yes	<u>X</u>	No	_____					
Remarks: R5 P11: Facing east R5 P12: Facing south Possible stock dam									

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)	
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover: _____				Total % Cover of:	Multiply by:
Sapling/Shrub Stratum				OBL species _____ x1= _____	
1. _____	_____	_____	_____	FACW species <u>80</u> x2= <u>160</u>	
2. _____	_____	_____	_____	FAC species _____ x3= _____	
3. _____	_____	_____	_____	FACU species <u>20</u> x4= <u>80</u>	
4. _____	_____	_____	_____	UPL species _____ x5= _____	
5. _____	_____	_____	_____	Column Totals: <u>100</u> (A) <u>240</u> (B)	
Total Cover: _____				Prevalence Index = B/A = <u>2.40</u>	
Herb Stratum				Hydrophytic Vegetation Indicators	
1. <u>Distichlis stricta</u>	<u>80</u>	<u>X</u>	<u>FACW</u>	_____ Dominance Test is > 50%	
2. <u>Melilotus sp.</u>	<u>20</u>	_____	<u>FACU</u>	<u>X</u> Prevalence Index is ≤ 3.0 ¹	
3. _____	_____	_____	_____	_____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
4. _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation (Explain)	
5. _____	_____	_____	_____	¹ Indicators of hydric soils and wetland hydrology must be present	
6. _____	_____	_____	_____	Hydrophytic Vegetation Present?	
7. _____	_____	_____	_____	Yes <u>X</u> No _____	
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: <u>100</u>					
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____					
% Bare Ground in Herb Stratum <u>80</u>		% Cover of Biotic Crust _____			
Remarks:					



POWERTECH (USA) INC.

SOIL Sampling Point W35

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-8	7.5YR 2.5/1	80	2.5YR 4/8	20	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Soil is moist but not saturated.



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W36
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 10, T7S, R1E
 Landform (hillslope, terrace, etc.) Outfall Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

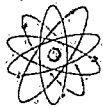
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R5 P20: Downstream R5 P21: Upstream to stock tank Stock tank overflow -waypoint 60- end of N - waypoint 68, R5 P18: Upstream, R5 P19: Downstream - waypoint 67 end of W, further SW there is <i>Hordeum jubatum</i> was dominant in channel and water disappears.					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover: _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____	
Sapling/Shrub Stratum				OBL species _____ x1= _____	
1. _____	_____	_____	_____	FACW species _____ x2= _____	
2. _____	_____	_____	_____	FAC species _____ x3= _____	
3. _____	_____	_____	_____	FACU species _____ x4= _____	
4. _____	_____	_____	_____	UPL species _____ x5= _____	
5. _____	_____	_____	_____	Column Totals: _____ (A) _____ (B)	
Total Cover: _____	_____	_____	_____	Prevalence Index = B/A = _____	
Herb Stratum				Hydrophytic Vegetation Indicators	
1. <i>Hordeum jubatum</i>	20	X	FACW	X Dominance Test is > 50%	
2. <i>Juncus balticus</i>	65	X	FACW	Prevalence Index is ≤ 3.0 ¹	
3. <i>Melilotus alba</i>	10		FACU-	Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
4. <i>Rumex occidentalis</i>	5		OBL	Problematic Hydrophytic Vegetation (Explain)	
5. _____	_____	_____	_____	¹ Indicators of hydric soils and wetland hydrology must be present	
6. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____	
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: _____	100	_____	_____		
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		
% Bare Ground in Herb Stratum <u>2</u>		% Cover of Biotic Crust _____			

Remarks:
Overflow area from stockpond.



POWERTECH (USA) INC.

SOIL Sampling Point W36

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-10	10YR 4/1	70	10YR 5/8	30	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

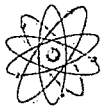
Surface Water Present? Yes No Depth (inches): 4
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? Yes No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Soil is moist, but not saturated.



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W37
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 34, T6S R1E
 Landform (hillslope, terrace, etc.) Outfall Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: Open water
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	Is the Sampled Area Within a Wetland	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present	Yes <u>X</u>	No _____			
Remarks: R6 P6 - P10 Panoramic east to west Approximately 30 feet across Previously NWI mapped as PUBGx					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC:	<u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>50</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover: _____	_____	_____	_____	Total % Cover of:	Multiply by: _____
Sapling/Shrub Stratum				OBL species	<u>25</u> x1= <u>25</u>
1. _____	_____	_____	_____	FACW species	x2= _____
2. _____	_____	_____	_____	FAC species	x3= _____
3. _____	_____	_____	_____	FACU species	<u>75</u> x4= <u>300</u>
4. _____	_____	_____	_____	UPL species	x5= _____
5. _____	_____	_____	_____	Column Totals:	<u>100</u> (A) <u>325</u> (B)
Total Cover: _____	_____	_____	_____	Prevalence Index = B/A =	<u>3.25</u>
Herb Stratum				Hydrophytic Vegetation Indicators	
1. <u>Typha latifolia</u>	<u>25</u>	<u>X</u>	<u>OBL</u>	_____ Dominance Test is > 50%	
2. <u>Cirsium arvense</u>	<u>75</u>	<u>X</u>	<u>FACU</u>	_____ Prevalence Index is ≤ 3.0 ¹	
3. _____	_____	_____	_____	_____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
4. _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation (Explain)	
5. _____	_____	_____	_____	_____ ¹ Indicators of hydric soils and wetland hydrology must be present	
6. _____	_____	_____	_____	Hydrophytic Vegetation Present?	
7. _____	_____	_____	_____	Yes _____	No <u>X</u>
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: <u>100</u>	_____	_____	_____		
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____	_____	_____	_____		
% Bare Ground in Herb Stratum		% Cover of Biotic Crust			

Remarks: Cattails dominate on water edge. *Cirsium arvense* dominate from water edge to 3 feet out. Rabbitbrush on upland bank.



POWERTECH (USA) INC.

SOIL

Sampling Point W37

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-6	5Y 5/3	100					SCL	Fibrous root channel

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:
Soils likely hydric where cattails are- across unavailable due to steep drop in to pit
Soils are moist not saturated.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:
Soil is moist, but not saturated.
Duck swimming in pond



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W38
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 2, T7S, R1E
Landform (hillslope, terrace, etc.) Depression Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification: PUS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present Yes X No
Remarks:
R6 P13: East
R6 P14: North
300-500 feet across and 80 or 81 feet long
Is the Sampled Area Within a Wetland Yes X No

VEGETATION

Table with columns: Tree Stratum, Sapling/Shrub Stratum, Herb Stratum, Woody Vine Stratum, % Bare Ground in Herb Stratum, % Cover of Biotic Crust, Dominance Test Worksheet, Prevalence Index Worksheet, Hydrophytic Vegetation Indicators, Hydrophytic Vegetation Present?

Remarks:



POWERTECH (USA) INC.

SOIL Sampling Point W38

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features			Loc ²	Texture	Remarks
			Color (moist)	%	Type ¹			
0-2	7.5YR 3/2	60	7.5YR 5/8	40	C	M	C	Lots of cow prints in area

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): _____

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes No

Remarks:
Soils likely hydric where cattails are- across unavailable due to steep drop in to pit
Soils are moist not saturated.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)		<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Local Soil Survey Data (D8)	
<input type="checkbox"/> Water Stained Leaves (B9)			

Field Observations:

Surface Water Present? Yes No Depth (inches): _____

Water Table Present? Yes No Depth (inches): _____

Saturation Present? Yes No Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W39
Investigator(s): C. Robinson and J. Eberly Section, Township, Range:
Landform (hillslope, terrace, etc.) Depression w/ manmade berm Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification: PUS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present Yes X No
Is the Sampled Area Within a Wetland Yes X No
Remarks:
R6 P16: of depression
R6 P17: of drainage to East
Waypoint 83, Hordeum jubatum depression with like soils as W39. R6 P15
Down the drainage there is HORJUB on banks and in bottom with same soil and hydrology

VEGETATION

Tree Stratum (Use scientific names) Absolute % Cover Dominant Species? Indicator Status
1.
2.
3.
4.
Total Cover:
Sapling/Shrub Stratum
1.
2.
3.
4.
5.
Total Cover:
Herb Stratum
1. Hordeum jubatum 95 X FACW
2. Melilotus officinalis 5 FACU-
3. Descurainia pinnata 5 NI
4.
5.
6.
7.
8.
9.
10.
Total Cover: 100
Woody Vine Stratum
1.
2.
3.
Total Cover:
% Bare Ground in Herb Stratum % Cover of Biotic Crust
Remarks:
Dominance Test Worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)
Prevalence Index Worksheet:
Total % Cover of: Multiply by:
OBL species x1=
FACW species x2=
FAC species x3=
FACU species x4=
UPL species x5=
Column Totals: (A) (B)
Prevalence Index = B/A =
Hydrophytic Vegetation Indicators
X Dominance Test is > 50%
Prevalence Index is <= 3.0^1
Morphological Adaptations^1 (Providing supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation (Explain)
^1 Indicators of hydric soils and wetland hydrology must be present
Hydrophytic Vegetation Present? Yes X No



POWERTECH (USA) INC.

SOIL Sampling Point W39

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features			Loc ²	Texture	Remarks
			Color (moist)	%	Type ¹			
0-6	5YR 4/1	55	2.5YR 4/6	45	C	M, RC	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	(LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes No

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

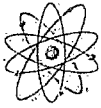
Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? Yes No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks: _____



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

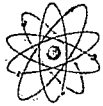
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W40
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 1, T7S, R1E
 Landform (hillslope, terrace, etc.) Pond Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland	Yes	<u>X</u>	No	_____
Hydric Soil Present?	Yes	<u>X</u>	No	_____		Yes	<u>X</u>	No	_____
Wetland Hydrology Present	Yes	<u>X</u>	No	_____		Yes	<u>X</u>	No	_____
Remarks: R6 P18: Pond									

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index Worksheet:
Total Cover: _____	_____	_____	_____	
Sapling/Shrub Stratum				OBL species _____ x1= _____
1. _____	_____	_____	_____	FACW species _____ x2= _____
2. _____	_____	_____	_____	FAC species _____ x3= _____
3. _____	_____	_____	_____	FACU species _____ x4= _____
4. _____	_____	_____	_____	UPL species _____ x5= _____
5. _____	_____	_____	_____	Column Totals: _____ (A) _____ (B)
Total Cover: _____	_____	_____	_____	Prevalence Index = B/A = _____
Herb Stratum				Hydrophytic Vegetation Indicators
1. <u>Spartina pectinata</u>	<u>100</u>	<u>X</u>	<u>FACW</u>	<u>X</u> Dominance Test is > 50%
2. _____	_____	_____	_____	Prevalence Index is ≤ 3.0 ¹
3. _____	_____	_____	_____	Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)
4. _____	_____	_____	_____	Problematic Hydrophytic Vegetation (Explain)
5. _____	_____	_____	_____	¹ Indicators of hydric soils and wetland hydrology must be present
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>100</u>	<u>100</u>	_____	_____	
Woody Vine Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover: _____	_____	_____	_____	
% Bare Ground in Herb Stratum		% Cover of Biotic Crust		
Remarks:				



POWERTECH (USA) INC.

SOIL Sampling Point W40

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-11	2.5Y 5/2	65	Gley1 5/N	15	D	RC	SiC	
			10YR 5/8	20	C	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes No

Remarks:
Soil is moist but not saturated.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

Field Observations:

Surface Water Present? Yes No Depth (inches): 3
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? Yes No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W41
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 1, T7S, R1E
 Landform (hillslope, terrace, etc.) Mine pit Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PUB
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland	Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____		
Wetland Hydrology Present	Yes _____ No <u>X</u>		
Remarks: R6 P19: Wetland R6 P20: General area Wetland has about a 20' circumference. This area may be a problematic wetland as some of the vegetation was dead.			

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				
Sapling/Shrub Stratum				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover: _____				
Herb Stratum				Hydrophytic Vegetation Indicators <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain)
1. <u><i>Typha latifolia</i></u>	<u>20</u>	<u>X</u>	<u>OBL</u>	
2. <u><i>Grindelia squarrosa</i></u>	<u>15</u>		<u>UPL</u>	
3. <u><i>Symphotrichum ericoides</i></u>	<u>15</u>		<u>FACU</u>	
4. <u><i>Distichlis stricta</i></u>	<u>50</u>	<u>X</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>100</u>				
Woody Vine Stratum				<input type="checkbox"/> Indicators of hydric soils and wetland hydrology must be present Hydrophytic Vegetation Present? Yes <u>X</u> No _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover: _____				
% Bare Ground in Herb Stratum		% Cover of Biotic Crust		

Remarks: Grindelia squarrosa, Symphotrichum ericoides, and rabbit brush are encroaching into the depression.



POWERTECH (USA) INC.

SOIL Sampling Point W41

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-10	Gley1 5/10Y	95	10YR 6/8	5	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes No _____

Remarks:
Soil is moist but not saturated.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____

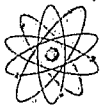
Water Table Present? Yes _____ No Depth (inches): _____

Saturation Present? Yes _____ No Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:
Other pits within the area are filled with water.



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W42
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 1, T7S, R1E
Landform (hillslope, terrace, etc.) Mine Pit Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification: PUB
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

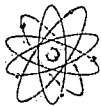
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes No X
Wetland Hydrology Present Yes X No
Remarks: R6 P22- 24: Panoramic west to east.
Is the Sampled Area Within a Wetland Yes X No

VEGETATION

Tree Stratum (Use scientific names) Absolute % Cover Dominant Species? Indicator Status
1. 2. 3. 4. Total Cover:
Sapling/Shrub Stratum
1. 2. 3. 4. 5. Total Cover:
Herb Stratum
1. Spartina pectinata 40 X FACW
2. Distichlis stricta 60 X FACW
3. 4. 5. 6. 7. 8. 9. 10. Total Cover: 100
Woody Vine Stratum
1. 2. 3. Total Cover:
% Bare Ground in Herb Stratum % Cover of Biotic Crust
Dominance Test Worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)
Prevalence Index Worksheet:
Total % Cover of: Multiply by:
OBL species x1=
FACW species x2=
FAC species x3=
FACU species x4=
UPL species x5=
Column Totals: (A) (B)
Prevalence Index = B/A =
Hydrophytic Vegetation Indicators
X Dominance Test is > 50%
Prevalence Index is <= 3.0^1
Morphological Adaptations^1 (Providing supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation (Explain)
^1Indicators of hydric soils and wetland hydrology must be present
Hydrophytic Vegetation Present? Yes X No

Remarks: Little bluestem dominates the upper banks.



POWERTECH (USA) INC.

SOIL Sampling Point W42

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features			Loc ²	Texture	Remarks
			Color (moist)	%	Type ¹			
0-6	10YR 5/1	45	Gley1 4/N	5	D		SC	
			10YR 5/6	50	C			

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:
Soil is moist but not saturated.

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

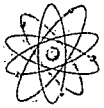
Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 6
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

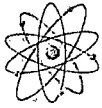
Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W43
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 36, T6S, R1E (Outside of Project Boundary)
 Landform (hillslope, terrace, etc.) Depression, ponded area due to berm Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland	Yes <u>X</u> No _____
Hydric Soil Present?	Yes _____ No <u>X</u>		Yes _____ No _____
Wetland Hydrology Present	Yes <u>X</u> No _____		Yes _____ No _____
Remarks: R7 P15: West R7 P17: East of pond R7 P16: Middle Cattle grazed here. On the other side of the berm there are <i>Pinus ponderosa</i> .			

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC:	<u>2</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index Worksheet:	
Total Cover: _____				Total % Cover of:	Multiply by:
Sapling/Shrub Stratum				OBL species _____ x1= _____	
1. _____	_____	_____	_____	FACW species _____ x2= _____	
2. _____	_____	_____	_____	FAC species _____ x3= _____	
3. _____	_____	_____	_____	FACU species _____ x4= _____	
4. _____	_____	_____	_____	UPL species _____ x5= _____	
5. _____	_____	_____	_____	Column Totals: _____ (A)	_____ (B)
Total Cover: _____				Prevalence Index = B/A = _____	
Herb Stratum				Hydrophytic Vegetation Indicators	
1. <u>Juncus balticus</u>	<u>60</u>	<u>X</u>	<u>FACW</u>	<u>X</u> Dominance Test is > 50%	
2. <u>Typha latifolia</u>	<u>40</u>	<u>X</u>	<u>OBL</u>	Prevalence Index is ≤ 3.0 ¹	
3. _____	_____	_____	_____	Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet)	
4. _____	_____	_____	_____	Problematic Hydrophytic Vegetation (Explain)	
5. _____	_____	_____	_____	¹ Indicators of hydric soils and wetland hydrology must be present	
6. _____	_____	_____	_____	Hydrophytic Vegetation Present?	
7. _____	_____	_____	_____	Yes <u>X</u> No _____	
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
Total Cover: <u>100</u>					
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
Total Cover: _____					
% Bare Ground in Herb Stratum	<u>90</u>	% Cover of Biotic Crust			
Remarks: Moss is present. <i>Distichlis stricta</i> present in the middle of the pond.					



POWERTECH (USA) INC.

SOIL

Sampling Point W43

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 5/3	75	Gley1 3/N	20	D	M	C	
			5YR 5/8	5	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:
Soil is moist but not saturated.

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)		
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

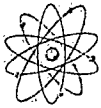
Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 4
 Water Table Present? Yes X No _____ Depth (inches): 3
 Saturation Present? Yes X No _____ Depth (inches): 3
 (includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W44
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 2, T7S, R1E
Landform (hillslope, terrace, etc.) Depression Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present Yes X No
Is the Sampled Area Within a Wetland Yes X No
Remarks:
R7 P24: Northwest
R8 P1: North
R8 P2: East

VEGETATION

Tree Stratum (Use scientific names) Absolute % Cover Dominant Species? Indicator Status
1.
2.
3.
4.
Total Cover:
Sapling/Shrub Stratum
1.
2.
3.
4.
5.
Total Cover:
Herb Stratum
1. Juncus balticus 85 X FACW
2. Distichlis stricta 15 FACW
3.
4.
5.
6.
7.
8.
9.
10.
Total Cover: 100
Woody Vine Stratum
1.
2.
3.
Total Cover:
% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust
Dominance Test Worksheet:
Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)
Prevalence Index Worksheet:
Total % Cover of: Multiply by:
OBL species x1=
FACW species x2=
FAC species x3=
FACU species x4=
UPL species x5=
Column Totals: (A) (B)
Prevalence Index = B/A =
Hydrophytic Vegetation Indicators
X Dominance Test is > 50%
Prevalence Index is <= 3.0^1
Morphological Adaptations^1 (Providing supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation (Explain)
^1 Indicators of hydric soils and wetland hydrology must be present
Hydrophytic Vegetation Present? Yes X No

Remarks:



POWERTECH (USA) INC.

SOIL Sampling Point W44

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-6	2.5Y 5/2	68	7.5YR 5/8	30	C	M	SiC	
			Gley1 3/N	2	D	M	SiC	
6-8	10YR 3/1	98	7.5YR 5/8	2	C	M	SiC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes No

Remarks:

Soil is moist, concentrations sparse in the 6-8 inches layer.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

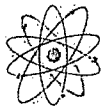
Field Observations:

Surface Water Present? Yes No Depth (inches): 3
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? Yes No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W45
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 1, T7S, R1E
 Landform (hillslope, terrace, etc.) Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R8 P4: Upstream R8 P5: Downstream Stockwater pond (20' wide by 50' long)					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover:	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover:	_____	_____	_____	
Herb Stratum				Hydrophytic Vegetation Indicators <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain)
1. <u>Mimulus guttatus</u>	<u>70</u>	<u>X</u>	<u>OBL</u>	
2. <u>Distichlis stricta</u>	<u>30</u>	<u>X</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover:	<u>100</u>	_____	_____	
Woody Vine Stratum				Hydrophytic Vegetation Present? Yes <u>X</u> No _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover:	_____	_____	_____	
% Bare Ground in Herb Stratum		% Cover of Biotic Crust		
Remarks:				



POWERTECH (USA) INC.

SOIL Sampling Point W45

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-8	Gley1 5/10Y	60	7.5Y 5/6	35	C	M, RC	C	
			Gley1 4/N	5	D	M		
8-10	2.5Y 5/4	90	5YR 5/6	10	C	M	SC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes No

Remarks:
Soil is moist but not saturated.
Black parent material in 8-10 inch layer.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)	

Field Observations:

Surface Water Present? Yes No Depth (inches): 3-5

Water Table Present? Yes No Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:



POWERTECH (USA) INC.

APPENDIX 2.8-H

LAB RESULTS – ENERGY LABORATORIES, INC.



ANALYTICAL SUMMARY REPORT

June 19, 2008

Jones and Stokes
1901 Energy Ct Ste 115
Gillette, WY 82718

Fish identifications corrected as marked.

A. Wones - ICF Jones & Stokes

Workorder No.: C08040910

Project Name: Dewey-Burdock 010996.07

Energy Laboratories, Inc. received the following 15 samples from Jones and Stokes on 4/18/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test	
C08040910-001	BVC01-Green Sunfish	04/16/08 00:00	04/18/08	Fish	Uranium, Total Digestion For RadioChemistry Lead 210 Polonium 210 Radium 226 Thorium, Isotopic Services Provided by Lab	
C08040910-002	BVC01-Plains Killfish	04/16/08 00:00	04/18/08	Fish	Same As Above	
C08040910-003	BVC01-Longnose Dace	04/16/08 00:00	04/18/08	Fish	Same As Above	
C08040910-004	BVC01- Emerald Shiner	04/16/08 00:00	04/18/08	Fish	Same As Above	Fathead Minnow
C08040910-005	BVC04-Plains Killfish	04/16/08 00:00	04/18/08	Fish	Same As Above	
C08040910-006	BVC04- Quill Back	04/16/08 00:00	04/18/08	Fish	Same As Above	River Carpsucker
C08040910-007	BVC04-Green Sunfish	04/16/08 00:00	04/18/08	Fish	Same As Above	
C08040910-008	BVC04- Emerald Shiner	04/16/08 00:00	04/18/08	Fish	Same As Above	Fathead Minnow
C08040910-009	BVC04-Channel Catfish	04/16/08 00:00	04/18/08	Fish	Same As Above	
C08040910-010	CHR05- Quill Back	04/15/08 00:00	04/18/08	Fish	Same As Above	River Carpsucker
C08040910-011	CHR05-Green Sunfish	04/15/08 00:00	04/18/08	Fish	Same As Above	
C08040910-012	CHR05- Mottled Sucker	04/15/08 00:00	04/18/08	Fish	Same As Above	Shorthead Redhorse Sucker
C08040910-013	CHR05- Fine Scale Dace	04/15/08 00:00	04/18/08	Fish	Same As Above	Creek Chub
C08040910-014	CHR05-Plains Killfish	04/15/08 00:00	04/18/08	Fish	Same As Above	
C08040910-015	CHR05- Shiner	04/15/08 00:00	04/18/08	Fish	Same As Above	Sand Shiner

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.

Report Approved By:


STEVE CARLSTON



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-001
Client Sample ID: BVC01-Green Sunfish

Report Date: 06/19/08
Collection Date: 04/16/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg		0.02		SW6020	05/11/08 01:09 / ts
Uranium, Activity	ND	uCi/kg	D	2.0E-05		SW6020	05/11/08 01:09 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	U	5.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	6.0E-05	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	U	5.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	2.0E-04	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	0.0E+00	uCi/kg	U	1.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	2.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	3.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 precision (±)	9.0E-05	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 MDC	1.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-002
Client Sample ID: BVC01-Plains Killfish

Report Date: 06/19/08
Collection Date: 04/16/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.3		SW6020	05/11/08 01:18 / ts
Uranium, Activity	ND	uCi/kg	D	2.0E-04		SW6020	05/11/08 01:18 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	UD	5.0E-04		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	8.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	2.0E-02	uCi/kg	D	5.0E-04		E909.0M	06/09/08 08:30 / dm
Lead 210 precision (±)	2.0E-02	uCi/kg				E909.0M	06/09/08 08:30 / dm
Thorium 230	2.0E-04	uCi/kg	D	1.0E-04		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	3.0E-04	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-4.0E-04	uCi/kg	U			E903.0	05/16/08 15:11 / trs
Radium 226 precision (±)	4.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs
Radium 226 MDC	9.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey-Burdock 010996.07
 Lab ID: C08040910-003
 Client Sample ID: BVC01-Longnose Dace

Report Date: 06/19/08
 Collection Date: 04/16/08
 Date Received: 04/18/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.9		SW6020	05/11/08 01:22 / ts
Uranium, Activity	ND	uCi/kg	D	6.0E-04		SW6020	05/11/08 01:22 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	2.0E-03	uCi/kg	D	1.0E-03		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	3.0E-03	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	1.0E-03		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	7.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	1.0E-03	uCi/kg	D	3.0E-04		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	1.0E-03	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-2.0E-03	uCi/kg	U			E903.0	05/16/08 15:11 / trs
Radium 226 precision (±)	1.0E-03	uCi/kg				E903.0	05/16/08 15:11 / trs
Radium 226 MDC	3.0E-03	uCi/kg				E903.0	05/16/08 15:11 / trs

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey-Burdock 010996.07
 Lab ID: C08040910-004
 Client Sample ID: BVC01-Emerald Shiner **Fathead Minnow**

Report Date: 06/19/08
 Collection Date: 04/16/08
 Date Received: 04/18/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.1		SW6020	05/11/08 01:42 / ts
Uranium, Activity	ND	uCi/kg	D	1.0E-04		SW6020	05/11/08 01:42 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	4.0E-04	uCi/kg	D	2.0E-04		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	5.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	2.0E-04		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	1.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	0.0E+00	uCi/kg	UD	5.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	7.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-1.0E-04	uCi/kg	U			E903.0	05/16/08 15:11 / trs
Radium 226 precision (±)	2.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs
Radium 226 MDC	5.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-005
Client Sample ID: BVC04-Plains Killfish

Report Date: 06/19/08
Collection Date: 04/16/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.8		SW6020	05/11/08 01:46 / ts
Uranium, Activity	ND	uCi/kg	D	5.0E-04		SW6020	05/11/08 01:46 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	U	1.0E-03		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	1.0E-03	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	1.0E-03		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	8.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	0.0E+00	uCi/kg	UD	3.0E-04		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	4.0E-04	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-1.0E-03	uCi/kg	U			E903.0	05/15/08 15:31 / trs
Radium 226 precision (±)	1.0E-03	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 MDC	2.0E-03	uCi/kg				E903.0	05/15/08 15:31 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey-Burdock 010996.07
 Lab ID: C08040910-006
 Client Sample ID: BVC04-Quill Back **River Carpsucker**

Report Date: 06/19/08
 Collection Date: 04/16/08
 Date Received: 04/18/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.03		SW6020	05/11/08 01:51 / ts
Uranium, Activity	ND	uCi/kg	D	2.0E-05		SW6020	05/11/08 01:51 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	4.0E-04	uCi/kg		5.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	2.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	U	5.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	3.0E-04	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	2.0E-05	uCi/kg		1.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	3.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-2.0E-05	uCi/kg	U			E903.0	05/15/08 15:31 / trs
Radium 226 precision (±)	6.0E-05	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 MDC	1.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-007
Client Sample ID: BVC04-Green Sunfish

Report Date: 06/19/08
Collection Date: 04/16/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.3		SW6020	05/11/08 01:55 / ts
Uranium, Activity	ND	uCi/kg	D	2.0E-04		SW6020	05/11/08 01:55 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	6.0E-04	uCi/kg	D	4.0E-04		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	7.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	4.0E-04		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	3.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	8.0E-04	uCi/kg	D	9.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	6.0E-04	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-3.0E-04	uCi/kg	U			E903.0	05/15/08 15:31 / trs
Radium 226 precision (±)	4.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 MDC	9.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey-Burdock 010996.07
 Lab ID: C08040910-008
 Client Sample ID: BVC04-~~Emerald Shiner~~ **Fathead Minnow**

Report Date: 06/19/08
 Collection Date: 04/16/08
 Date Received: 04/18/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg		0.02		SW6020	05/11/08 01:59 / ts
Uranium, Activity	ND	uCi/kg		1.0E-05		SW6020	05/11/08 01:59 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	U	5.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	2.0E-05	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	U	5.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	9.0E-05	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	1.0E-05	uCi/kg		1.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	1.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	1.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 precision (±)	3.0E-05	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 MDC	3.0E-05	uCi/kg				E903.0	05/15/08 15:31 / trs

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey-Burdock 010996.07
 Lab ID: C08040910-009
 Client Sample ID: BVC04-Channel Catfish

Report Date: 06/19/08
 Collection Date: 04/16/08
 Date Received: 04/18/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.05	mg/kg	D	0.05		SW6020	05/11/08 02:03 / ts
Uranium, Activity	3.0E-05	uCi/kg	D	3.0E-05		SW6020	05/11/08 02:03 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	9.0E-04	uCi/kg	D	8.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	3.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	8.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	5.0E-04	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	2.0E-05	uCi/kg	D	2.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	3.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-8.0E-05	uCi/kg	U			E903.0	05/15/08 15:31 / trs
Radium 226 precision (±)	6.0E-05	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 MDC	1.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey-Burdock 010996.07
 Lab ID: C08040910-010
 Client Sample ID: CHR05-Quill Back

River Carpsucker

Report Date: 06/19/08
 Collection Date: 04/15/08
 Date Received: 04/18/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.04		SW6020	05/11/08 02:07 / ts
Uranium, Activity	ND	uCi/kg	D	3.0E-05		SW6020	05/11/08 02:07 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	8.0E-04	uCi/kg	D	7.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	3.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	7.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	4.0E-04	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	0.0E+00	uCi/kg	U	1.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	5.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-9.0E-05	uCi/kg	U			E903.0	05/15/08 17:06 / trs
Radium 226 precision (±)	5.0E-05	uCi/kg				E903.0	05/15/08 17:06 / trs
Radium 226 MDC	1.0E-04	uCi/kg				E903.0	05/15/08 17:06 / trs

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey-Burdock 010996.07
 Lab ID: C08040910-011
 Client Sample ID: CHR05-Green Sunfish

Report Date: 06/19/08
 Collection Date: 04/15/08
 Date Received: 04/18/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.04		SW6020	05/11/08 02:11 / ts
Uranium, Activity	ND	uCi/kg	D	3.0E-05		SW6020	05/11/08 02:11 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	8.0E-05	uCi/kg	UD	7.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	1.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	7.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	4.0E-04	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	1.0E-05	uCi/kg	U	1.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	5.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-6.0E-05	uCi/kg	U			E903.0	05/15/08 17:06 / trs
Radium 226 precision (±)	7.0E-05	uCi/kg				E903.0	05/15/08 17:06 / trs
Radium 226 MDC	1.0E-04	uCi/kg				E903.0	05/15/08 17:06 / trs

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey-Burdock 010996.07
 Lab ID: C08040910-012
 Client Sample ID: CHR05-Mottled Sucker

Shorthead Redhorse Sucker

Report Date: 06/19/08
 Collection Date: 04/15/08
 Date Received: 04/18/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg		0.02		SW6020	05/11/08 02:15 / ts
Uranium, Activity	ND	uCi/kg		1.0E-05		SW6020	05/11/08 02:15 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	2.0E-04	uCi/kg		5.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	1.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	U	5.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	1.0E-04	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	2.0E-05	uCi/kg		1.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	2.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-1.0E-05	uCi/kg	U			E903.0	05/16/08 15:11 / trs
Radium 226 precision (±)	2.0E-05	uCi/kg				E903.0	05/16/08 15:11 / trs
Radium 226 MDC	3.0E-05	uCi/kg				E903.0	05/16/08 15:11 / trs

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey-Burdock 010996.07
 Lab ID: C08040910-013
 Client Sample ID: CHR05-Fine Scale Dace

Creek Chub

Report Date: 06/19/08
 Collection Date: 04/15/08
 Date Received: 04/18/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.2		SW6020	05/11/08 02:36 / ts
Uranium, Activity	ND	uCi/kg	D	1.0E-04		SW6020	05/11/08 02:36 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	UD	3.0E-04		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	3.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	3.0E-04		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	2.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	0.0E+00	uCi/kg	UD	7.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	2.0E-04	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-2.0E-04	uCi/kg	U			E903.0	05/16/08 15:11 / trs
Radium 226 precision (±)	3.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs
Radium 226 MDC	6.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-014
Client Sample ID: CHR05-Plains Killfish

Report Date: 06/19/08
Collection Date: 04/15/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.4		SW6020	05/11/08 02:40 / ts
Uranium, Activity	ND	uCi/kg	D	3.0E-04		SW6020	05/11/08 02:40 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	UD	6.0E-04		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	1.0E-03	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	6.0E-04		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	3.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	1.0E-03	uCi/kg	D	1.0E-04		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	8.0E-04	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-5.0E-04	uCi/kg	U			E903.0	05/16/08 15:11 / trs
Radium 226 precision (±)	5.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs
Radium 226 MDC	1.0E-03	uCi/kg				E903.0	05/16/08 15:11 / trs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey-Burdock 010996.07
 Lab ID: C08040910-015
 Client Sample ID: CHR05-Shiner Sand Shiner

Report Date: 06/19/08
 Collection Date: 04/15/08
 Date Received: 04/18/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.4		SW6020	05/11/08 02:44 / ts
Uranium, Activity	ND	uCi/kg	D	3.0E-04		SW6020	05/11/08 02:44 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	UD	6.0E-04		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	5.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	6.0E-04		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	3.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	1.0E-03	uCi/kg	D	1.0E-04		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	7.0E-04	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-3.0E-04	uCi/kg	U			E903.0	05/15/08 17:06 / trs
Radium 226 precision (±)	6.0E-04	uCi/kg				E903.0	05/15/08 17:06 / trs
Radium 226 MDC	1.0E-03	uCi/kg				E903.0	05/15/08 17:06 / trs

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



QA/QC Summary Report

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07

Report Date: 06/19/08
Work Order: C08040910

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0									Batch: 18521
Sample ID: C08041154-001AMS Radium 226	Sample Matrix Spike 0.14pCi/L			84	70	130			Run: BERTHOLD 770_080508E 05/15/08 17:06
Sample ID: C08041154-001AMSD Radium 226	Sample Matrix Spike Duplicate 0.14pCi/L			87	70	130	0.4	23.7	Run: BERTHOLD 770_080508E 05/15/08 17:06
Sample ID: MB-18521 Radium 226	Method Blank -0.7 pCi/L								Run: BERTHOLD 770_080508E 05/16/08 15:11 U
Sample ID: LCS-18521 Radium 226	Laboratory Control Sample 15 pCi/L			97	70	130			Run: BERTHOLD 770_080508E 05/16/08 08:10
Method: E907.0									Batch: 18521
Sample ID: C08041154-001AMS Thorium 230	Sample Matrix Spike 0.23 pCi/g-dry		0.10	113	70	130			Run: EGG-ORTEC_080509A 05/09/08 14:00
Sample ID: C08041154-001AMSD Thorium 230	Sample Matrix Spike Duplicate 0.15 pCi/g-dry		0.10	81	70	130	41	30	Run: EGG-ORTEC_080509A 05/09/08 14:00 R
- The RPD for the MSD is high. The individual spike recoveries are within range, the MB is acceptable, and the LCS is within range, therefore the batch is approved.									
Sample ID: LCS-18521 Thorium 230	Laboratory Control Sample 0.0431 pCi/g-dry		0.10	93	70	130			Run: EGG-ORTEC_080509A 05/09/08 14:00
Sample ID: MB-18521 Thorium 230	Method Blank -0.0006 pCi/g-dry								Run: EGG-ORTEC_080509A 05/09/08 14:00
Method: E909.0M									Batch: 18521
Sample ID: C08041154-001AMS Lead 210	Sample Matrix Spike 3.5 pCi/g-dry		0.10	130	70	130			Run: PACKARD 3100TR_080521A 05/21/08 09:00
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the MSD are acceptable the batch is approved.									
Sample ID: C08041154-001AMSD Lead 210	Sample Matrix Spike Duplicate 2.5 pCi/g-dry		0.10	91	70	130	36	30	Run: PACKARD 3100TR_080521A 05/21/08 09:00 R
Sample ID: MB-R101975 Lead 210	Method Blank ND pCi/g-dry								Run: PACKARD 3100TR_080521A 05/21/08 09:00
Sample ID: LCS-R101975 Lead 210	Laboratory Control Sample 0.0528 pCi/g-dry		0.10	76	70	130			Run: PACKARD 3100TR_080521A 05/21/08 09:00

Qualifiers:

RL - Analyte reporting limit.
 R - RPD exceeds advisory limit.

ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



QA/QC Summary Report

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07

Report Date: 06/19/08
Work Order: C08040910

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E909.0M Batch: R102568									
Sample ID: C08050798-003AMS	Sample Matrix Spike				Run: PACKARD 3100TR_080609A		06/09/08 08:30		
Lead 210	648	pCi/Filter		48	70	130			S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the MSD are acceptable the batch is approved.									
Sample ID: C08050798-003AMSD	Sample Matrix Spike Duplicate				Run: PACKARD 3100TR_080609A		06/09/08 08:30		
Lead 210	1350	pCi/Filter		108	70	130	70	30	R
Sample ID: MB-R102568	Method Blank				Run: PACKARD 3100TR_080609A		06/09/08 08:30		
Lead 210	10	pCi/L							
Sample ID: LCS-R102568	Laboratory Control Sample				Run: PACKARD 3100TR_080609A		06/09/08 08:30		
Lead 210	110	pCi/L		84	70	130			
Method: RMO-3008 Batch: 18521									
Sample ID: C08040910-015AMS	Sample Matrix Spike				Run: EGG-ORTEC_080602A		06/02/08 11:15		
Polonium 210	105	pCi/g-dry	0.10	96	70	130			
Sample ID: C08040910-015AMSD	Sample Matrix Spike Duplicate				Run: EGG-ORTEC_080602A		06/02/08 11:15		
Polonium 210	117	pCi/g-dry	0.10	107	70	130	11	30	
Sample ID: LCS-18521	Laboratory Control Sample				Run: EGG-ORTEC_080602A		06/02/08 11:15		
Polonium 210	79.2	pCi/g-dry	0.10	91	70	130			
Sample ID: MB-18521	Method Blank				Run: EGG-ORTEC_080602A		06/02/08 11:15		
Polonium 210	-0.3	pCi/g-dry							
Method: SW6020 Batch: 18521									
Sample ID: MB-18521	Method Blank				Run: ICPMS2-C_080510B		05/11/08 01:01		
Uranium	8E-05	mg/kg-dry	6E-05						
Sample ID: LCS1-18521	Laboratory Control Sample				Run: ICPMS2-C_080510B		05/11/08 01:05		
Uranium	0.515	mg/kg-dry	0.015	103	75	125			
Sample ID: C08040910-015AMS	Sample Matrix Spike				Run: ICPMS2-C_080510B		05/11/08 02:48		
Uranium	316	mg/kg-dry	0.38	100	75	125			
Sample ID: C08040910-015AMSD	Sample Matrix Spike Duplicate				Run: ICPMS2-C_080510B		05/11/08 02:52		
Uranium	316	mg/kg-dry	0.38	101	75	125	0.2	20	

Qualifiers:

RL - Analyte reporting limit.
 R - RPD exceeds advisory limit.

ND - Not detected at the reporting limit.
 S - Spike recovery outside of advisory limits.



Date: 19-Jun-08

CLIENT: Jones and Stokes
Project: Dewey-Burdock 010996.07
Sample Delivery Group: C08040910

CASE NARRATIVE

THIS IS THE FINAL PAGE OF THE LABORATORY ANALYTICAL REPORT

ORIGINAL SAMPLE SUBMITTAL(S)

All original sample submittals have been returned with the data package.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)

Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

GROSS ALPHA ANALYSIS

Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

RADON IN AIR ANALYSIS

The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

SOIL/SOLID SAMPLES

All samples reported on an as received basis unless otherwise indicated.

ATRAZINE, SIMAZINE AND PCB ANALYSIS USING EPA 505

Data for Atrazine and Simazine are reported from EPA 525.2, not from EPA 505. Data reported by ELI using EPA method 505 reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

SUBCONTRACTING ANALYSIS

Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BRANCH LABORATORY LOCATIONS

eli-b - Energy Laboratories, Inc. - Billings, MT
eli-g - Energy Laboratories, Inc. - Gillette, WY
eli-h - Energy Laboratories, Inc. - Helena, MT
eli-r - Energy Laboratories, Inc. - Rapid City, SD
eli-t - Energy Laboratories, Inc. - College Station, TX

CERTIFICATIONS:

USEPA: WY00002; FL-DOH NELAC: E87641; Arizona: AZ0699; California: 02118CA
Oregon: WY200001; Utah: 3072350515; Virginia: 00057; Washington: C1903

ISO 17025 DISCLAIMER:

The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER, WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.



ANALYTICAL SUMMARY REPORT

August 22, 2008

Jones and Stokes
1901 Energy Ct Ste 115
Gillette, WY 82718

Sample ID species corrected.
A. Wones ICF Jones &
Stokes

Workorder No.: C08070647

Project Name: Dewey Burdock 00996.07

Energy Laboratories, Inc. received the following 17 samples from Jones and Stokes on 7/15/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C08070647-001	BVC01-ICF JSA-FHM	07/10/08 00:00	07/15/08	Fish	Uranium, Total Digestion For RadioChemistry Lead 210 Polonium 210 Radium 226 Thorium, Isotopic
C08070647-002	BVC01-Plains Top Minow	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-003	BVC01-Plains Kill Fish	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-004	BVC01- Common Shiner	07/10/08 00:00	07/15/08	Fish	Same As Above Sand Shiner
C08070647-005	BVC01-ICF JSA- CAP Carp	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-006	BVC04- Common Shiner	07/10/08 00:00	07/15/08	Fish	Same As Above Sand Shiner
C08070647-007	BVC04-Short Head Red Horse Sucker	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-008	BVC04-Fathead Minow	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-009	BVC04-PLK	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-010	BVC04-Carp (Cap)	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-011	CHR04- WSM	07/09/08 00:00	07/15/08	Fish	Same As Above Sand Shiner
C08070647-012	CHR04-FHM	07/09/08 00:00	07/15/08	Fish	Same As Above
C08070647-013	CHR04-PLK	07/09/08 00:00	07/15/08	Fish	Same As Above
C08070647-014	CHR04-SRS	07/09/08 00:00	07/15/08	Fish	Same As Above
C08070647-015	CHR04-Carp	07/09/08 00:00	07/15/08	Fish	Same As Above
C08070647-016	CHR04-CHC	07/09/08 00:00	07/15/08	Fish	Same As Above
C08070647-017	CHR04-RCS	07/09/08 00:00	07/15/08	Fish	Composite of two or more samples Uranium, Total Digestion For RadioChemistry Lead 210 Polonium 210 Radium 226 Thorium, Isotopic



ENERGY LABORATORIES, INC. • 2393 Salt Creek Highway (82601) • P.O. Box 3258 • Casper, WY 82602
Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.

Report Approved By:

A handwritten signature in black ink, appearing to read "Steve Carlston", written over a horizontal line.

STEVE CARLSTON



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-001
 Client Sample ID: BVC01-ICF JSA-FHM

Report Date: 08/22/08
 Collection Date: 07/10/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.026	mg/kg-dry		0.0050		SW6020	07/27/08 05:51 / sml
Uranium, Activity	1.8E-05	uCi/kg		3.4E-06		SW6020	07/27/08 05:51 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	4.0E-04	uCi/kg		9.3E-05		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	2.3E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	1.4E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	3.6E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	6.0E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.2E-04	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.2E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	2.9E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	-1.2E-05	uCi/kg	U	1.9E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	6.2E-05	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-002
Client Sample ID: BVC01-Plains Top Minow

Report Date: 08/22/08
Collection Date: 07/10/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.021	mg/kg-dry		0.0050		SW6020	07/27/08 06:12 / sml
Uranium, Activity	1.4E-05	uCi/kg		3.4E-06		SW6020	07/27/08 06:12 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	3.5E-04	uCi/kg		1.1E-04		RMO-3008	07/31/08 14:15 / pij
Polonium 210 precision (±)	2.8E-04	uCi/kg				RMO-3008	07/31/08 14:15 / pij
Lead 210	-2.0E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.2E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	7.1E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.0E-04	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.1E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	2.7E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	1.0E-04	uCi/kg		2.2E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	1.0E-04	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-003
 Client Sample ID: BVC01-Plains Kill Fish

Report Date: 08/22/08
 Collection Date: 07/10/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.035	mg/kg-dry		0.0050		SW6020	07/27/08 06:16 / sml
Uranium, Activity	2.4E-05	uCi/kg		3.4E-06		SW6020	07/27/08 06:16 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	4.7E-04	uCi/kg		1.1E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	3.1E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	1.2E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.2E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	7.1E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.0E-04	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.1E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	2.8E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	5.7E-06	uCi/kg	U	2.2E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	1.0E-04	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-004
 Client Sample ID: BVC01-Common Shiner

SAS sand shiner

Report Date: 08/22/08
 Collection Date: 07/10/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.031	mg/kg-dry		0.0050		SW6020	07/27/08 06:20 / sml
Uranium, Activity	2.1E-05	uCi/kg		3.4E-06		SW6020	07/27/08 06:20 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	2.3E-04	uCi/kg		1.6E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	2.6E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	3.8E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	6.1E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	1.0E-02	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-3.0E-04	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.6E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	4.0E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	9.8E-05	uCi/kg		3.2E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	1.6E-04	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-005
 Client Sample ID: BVC01-ICF JSA- CAP Carp

Report Date: 08/22/08
 Collection Date: 07/10/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.0098	mg/kg-dry		0.0050		SW6020	07/27/08 06:24 / smf
Uranium, Activity	6.7E-06	uCi/kg		3.4E-06		SW6020	07/27/08 06:24 / smf
RADIONUCLIDES - TOTAL							
Polonium 210	7.8E-04	uCi/kg		5.0E-05		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	1.9E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	7.6E-05	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	5.0E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	8.4E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.3E-05	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.6E-05	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	3.6E-05	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	-7.4E-07	uCi/kg	U	2.6E-06		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	9.2E-06	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-006
 Client Sample ID: BVC04-Common Shiner

Sand Shiner

Report Date: 08/22/08
 Collection Date: 07/10/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.024	mg/kg-dry		0.0050		SW6020	07/27/08 06:28 / sml
Uranium, Activity	1.6E-05	uCi/kg		3.4E-06		SW6020	07/27/08 06:28 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	5.4E-04	uCi/kg		1.1E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	5.4E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	6.4E-04	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.4E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	7.3E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-7.7E-05	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.3E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	2.5E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	2.7E-05	uCi/kg		2.3E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	1.0E-04	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-007
 Client Sample ID: BVC04-Short Head Red Horse Sucker

Report Date: 08/22/08
 Collection Date: 07/10/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.0072	mg/kg-dry		0.0050		SW6020	07/27/08 06:32 / sml
Uranium, Activity	4.9E-06	uCi/kg		3.4E-06		SW6020	07/27/08 06:32 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	1.7E-04	uCi/kg		5.0E-05		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	1.0E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	1.2E-04	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	1.2E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	2.0E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-3.7E-05	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	3.2E-05	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	6.9E-05	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	1.9E-06	uCi/kg	U	6.3E-06		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	2.3E-05	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-008
Client Sample ID: BVC04-Fathead Minow

Report Date: 08/22/08
Collection Date: 07/10/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.031	mg/kg-dry		0.0050		SW6020	07/27/08 06:36 / sml
Uranium, Activity	2.1E-05	uCi/kg		3.4E-06		SW6020	07/27/08 06:36 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	1.8E-04	uCi/kg		1.2E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	3.1E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	7.9E-04	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.7E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	7.9E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-1.2E-04	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.6E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	3.2E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	-1.2E-05	uCi/kg	U	2.5E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	6.9E-05	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-009
 Client Sample ID: BVC04-PLK

Report Date: 08/22/08
 Collection Date: 07/10/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.019	mg/kg-dry		0.0050		SW6020	07/27/08 06:40 / sml
Uranium, Activity	1.3E-05	uCi/kg		3.4E-06		SW6020	07/27/08 06:40 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	8.5E-05	uCi/kg	U	1.2E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	1.3E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	3.2E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.7E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	7.8E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.1E-04	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	1.1E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	2.8E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	9.4E-05	uCi/kg		2.4E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	9.1E-05	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-010
 Client Sample ID: BVC04-Carp (Cap)

Report Date: 08/22/08
 Collection Date: 07/10/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.014	mg/kg-dry		0.0050		SW6020	07/27/08 06:44 / sml
Uranium, Activity	9.4E-06	uCi/kg		3.4E-06		SW6020	07/27/08 06:44 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	1.5E-04	uCi/kg		4.0E-06		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	7.1E-05	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	9.2E-05	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	1.5E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	2.6E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	4.8E-06	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	4.2E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	9.1E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	2.3E-06	uCi/kg		8.0E-07		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	3.7E-06	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-011
 Client Sample ID: CHR04-WSM

Report Date: 08/22/08
 Collection Date: 07/09/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.040	mg/kg-dry		0.0050		SW6020	07/27/08 07:00 / sml
Uranium, Activity	2.7E-05	uCi/kg		3.4E-06		SW6020	07/27/08 07:00 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	4.9E-04	uCi/kg		1.4E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	3.2E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	4.5E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	5.3E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	8.8E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.8E-04	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	1.5E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	3.8E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	1.4E-04	uCi/kg		2.7E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	1.1E-04	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-012
Client Sample ID: CHR04-FHM

Report Date: 08/22/08
Collection Date: 07/09/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.024	mg/kg-dry		0.0050		SW6020	07/27/08 07:04 / sml
Uranium, Activity	1.6E-05	uCi/kg		3.4E-06		SW6020	07/27/08 07:04 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	4.2E-04	uCi/kg		1.1E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	2.8E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	1.5E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.3E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	7.2E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.1E-04	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	1.3E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	3.0E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	1.3E-05	uCi/kg	U	2.2E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	4.5E-05	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-013
 Client Sample ID: CHR04-PLK

Report Date: 08/22/08
 Collection Date: 07/09/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.017	mg/kg-dry		0.0050		SW6020	07/27/08 07:09 / sml
Uranium, Activity	1.2E-05	uCi/kg		3.4E-06		SW6020	07/27/08 07:09 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	4.7E-04	uCi/kg		1.7E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	3.5E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	-1.8E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	6.5E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	1.1E-02	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.2E-04	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	1.9E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	4.1E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	1.6E-05	uCi/kg	U	3.4E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	8.9E-05	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-014
 Client Sample ID: CHR04-SRS

Report Date: 08/22/08
 Collection Date: 07/09/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.0066	mg/kg-dry		0.0050		SW6020	07/27/08 07:13 / sml
Uranium, Activity	4.4E-06	uCi/kg		3.4E-06		SW6020	07/27/08 07:13 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	5.0E-04	uCi/kg		1.3E-05		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	1.3E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	2.3E-04	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.9E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	8.1E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-8.7E-06	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	1.8E-05	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	3.4E-05	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	3.2E-06	uCi/kg		2.5E-06		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	5.3E-06	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-015
 Client Sample ID: CHR04-Carp

Report Date: 08/22/08
 Collection Date: 07/09/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.010	mg/kg-dry		0.0050		SW6020	07/27/08 07:17 / sml
Uranium, Activity	6.9E-06	uCi/kg		3.4E-06		SW6020	07/27/08 07:17 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	7.4E-04	uCi/kg		3.1E-05		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	2.2E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	1.5E-04	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	1.2E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	2.0E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-6.4E-05	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	4.4E-05	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	1.0E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	1.7E-05	uCi/kg		6.1E-06		E907.0	08/08/08 11:00 / dmf
Thorium 230 precision (±)	2.7E-05	uCi/kg				E907.0	08/08/08 11:00 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-016
 Client Sample ID: CHR04-CHC

Report Date: 08/22/08
 Collection Date: 07/09/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.017	mg/kg-dry		0.0050		SW6020	07/27/08 07:21 / sml
Uranium, Activity	1.2E-05	uCi/kg		3.4E-06		SW6020	07/27/08 07:21 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	1.6E-04	uCi/kg		3.5E-06		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	5.2E-05	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	3.2E-05	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	1.4E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	2.3E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-1.6E-06	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	4.4E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	8.4E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	9.0E-06	uCi/kg		7.0E-07		E907.0	08/08/08 11:00 / dmf
Thorium 230 precision (±)	2.6E-05	uCi/kg				E907.0	08/08/08 11:00 / dmf

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07
 Lab ID: C08070647-017
 Client Sample ID: CHR04-RCS

Report Date: 08/22/08
 Collection Date: 07/09/08
 Date Received: 07/15/08
 Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.031	mg/kg-dry		0.0050		SW6020	07/27/08 07:25 / sml
Uranium, Activity	2.1E-05	uCi/kg		3.4E-06		SW6020	07/27/08 07:25 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	6.6E-07	uCi/kg	U	2.7E-06		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	3.2E-06	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	1.1E-05	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	1.0E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	1.7E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	8.0E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	5.4E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	7.3E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	-1.3E-05	uCi/kg	U	5.3E-07		E907.0	08/08/08 11:00 / dmf
Thorium 230 precision (±)	2.3E-05	uCi/kg				E907.0	08/08/08 11:00 / dmf
FIELD PARAMETERS							
Total Mass	4160	g				FIELD	07/22/08 17:12 / ***
*** Performed by Sampler							

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



QA/QC Summary Report

Client: Jones and Stokes
Project: Dewey Burdock 00996.07

Report Date: 08/22/08
Work Order: C08070647

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0									
Batch: 19208									
Sample ID: C08070647-008AMS Radium 226	Sample Matrix Spike 23	pCi/g-dry		117	70	130			
									Run: BERTHOLD 770_080731C 08/07/08 10:33
Sample ID: C08070647-008AMSD Radium 226	Sample Matrix Spike Duplicate 20	pCi/g-dry		103	70	130	13	25.9	08/07/08 10:34
Sample ID: MB-19208 Radium 226	Method Blank -0.002	pCi/g-dry							Run: BERTHOLD 770_080731C 08/07/08 16:17 U
Sample ID: LCS-19208 Radium 226	Laboratory Control Sample 0.077	pCi/g-dry		102	70	130			Run: BERTHOLD 770_080731C 08/07/08 16:17
Method: E907.0									
Batch: 19208									
Sample ID: C08070647-013AMS Thorium 230	Sample Matrix Spike 15.1	pCi/g-dry	0.10	90	70	130			Run: EGG-ORTEC_080731C 08/11/08 09:23
Sample ID: C08070647-013AMSD Thorium 230	Sample Matrix Spike Duplicate 18.0	pCi/g-dry	0.10	108	70	130	17	30	Run: EGG-ORTEC_080731C 08/11/08 09:41
Sample ID: LCS-19208 Thorium 230	Laboratory Control Sample 0.0398	pCi/g-dry	0.10	90	70	130			Run: EGG-ORTEC_080731C 08/08/08 11:00
Sample ID: MB-19208 Thorium 230	Method Blank -0.0003	pCi/g-dry							Run: EGG-ORTEC_080731C 08/08/08 11:00 U
Method: E909.0M									
Batch: 19208									
Sample ID: C08070647-006AMS Lead 210	Sample Matrix Spike 150	pCi/g-dry		111	70	130			Run: PACKARD 3100TR_080728D 07/28/08 11:15
Sample ID: C08070647-006AMSD Lead 210	Sample Matrix Spike Duplicate 197	pCi/g-dry		146	70	130	27	30	Run: PACKARD 3100TR_080728D 07/28/08 11:15 S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the RPD for the MS MSD pair are acceptable, the response is considered to be matrix related. The batch is approved.									
Sample ID: MB-R106080 Lead 210	Method Blank 0.0001	pCi/g-dry							Run: PACKARD 3100TR_080728D 07/28/08 11:15 U
Sample ID: LCS-R106080 Lead 210	Laboratory Control Sample 0.103	pCi/g-dry		88	70	130			Run: PACKARD 3100TR_080728D 07/28/08 11:15

Qualifiers:

RL - Analyte reporting limit.
 S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



QA/QC Summary Report

Client: Jones and Stokes
 Project: Dewey Burdock 00996.07

Report Date: 08/22/08
 Work Order: C08070647

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RMO-3008							Batch: 19208		
Sample ID: C08070647-017AMS	Sample Matrix Spike				Run: EGG-ORTEC_080731B		07/31/08 14:15		
Polonium 210	0.371	pCi/g-dry	0.10	161	70	130			S
- Spike response is outside of the acceptance range for this analysis. Since the MB, LCS and the MSD are acceptable the batch is approved.									
Sample ID: C08070647-017AMSD	Sample Matrix Spike Duplicate				Run: EGG-ORTEC_080731B		07/31/08 14:15		
Polonium 210	0.229	pCi/g-dry	0.10	100	70	130	47	30	R
Sample ID: LCS-R105592	Laboratory Control Sample				Run: EGG-ORTEC_080731B		07/31/08 14:15		
Polonium 210	0.0918	pCi/g-dry	0.10	106	70	130			
Sample ID: MB-R105592	Method Blank				Run: EGG-ORTEC_080731B		07/31/08 14:15		
Polonium 210	7E-05	pCi/g-dry							U
Method: SW6020							Batch: 19208		
Sample ID: MB-19208	Method Blank				Run: ICPMS4-C_080726A		07/27/08 05:43		
Uranium	9E-06	mg/kg-dry	2E-06						
Sample ID: LCS1-19208	Laboratory Control Sample				Run: ICPMS4-C_080726A		07/27/08 05:47		
Uranium	0.0485	mg/kg-dry	0.015	97	75	125			
Sample ID: C08070647-017AMS	Sample Matrix Spike				Run: ICPMS4-C_080726A		07/27/08 07:29		
Uranium	1.41	mg/kg-dry	0.015	121	75	125			
Sample ID: C08070647-017AMSD	Sample Matrix Spike Duplicate				Run: ICPMS4-C_080726A		07/27/08 07:33		
Uranium	1.41	mg/kg-dry	0.015	120	75	125	0.6	20	

Qualifiers:

RL - Analyte reporting limit.
 R - RPD exceeds advisory limit.
 U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.
 S - Spike recovery outside of advisory limits.



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APPENDIX 2.8-I
COMPILED HABITAT DATA FORMS

SAMPLE COLLECTION FORM - STREAMS

Site ID	BVC01	Date	4/15/2008
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Water Chemistry		
Sample ID	Transect	Comments
		NA - Sampled by Respec

Reach-wide Benthos Sample		
Sample ID	No. of Jars	Comment
BVC01HF	1	High flow sampling. Composit sample from 11 transects. Midge hatch in progress.

Transect	A		B		C		D		E		F		G		H		I		J		K		
Substrate	Channel	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan		
Fine/Sand	Pool		P	F	P							F	P	F	P							F	P
Gravel	Glide							G		G												G	
Coarse	Riffle	C				C	R	C		C						C	R	C	R	C			
other	Run																						

Transect	A		B		C		D		E		F		G		H		I		J		K	
Sample Location	Left																					
	Right																					
	Center																					

Substrate Size Classes

Fine/Sand - ladybug or smaller (<2mm)

Gravel - ladybug to tennis ball (2 to 64mm)

Coarse - tennis ball to car sized (64 to 4000mm)

Other - bedrock, hardpan, wood etc

SAMPLE COLLECTION FORM - STREAMS

Site ID	BVC04	Date	4/14/2008
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Water Chemistry		
Sample ID	Transect	Comments
		NA - Sampled by Respec

Reach-wide Benthos Sample		
Sample ID	No. of Jars	Comment
BVC04HF	2	Spring sampling. Composit sample from 11 transects. Midge hatch in progress.

Transect	A		B		C		D		E		F		G		H		I		J		K		
Substrate	Channel	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan
Fine/Sand	Pool							F	P	F	P	F	P	F	P			F	P	F	P	F	P
Gravel	Glide	G		G		G																	
Coarse	Riffle		R		R		R									C	R						
Other	Run																						

Transect	A		B		C		D		E		F		G		H		I		J		K	
Sample Location	Left																					
	Right																					
	Center																					

Substrate Size Classes

Fine/Sand - ladybug or smaller (<2mm)

Gravel - ladybug to tennis ball (2 to 64mm)

Coarse - tennis ball to car sized (64 to 4000mm)

Other - bedrock, hardpan, wood etc

On Site Description Data

Section A

Project Site ID: BVC01		T <u>7S</u> , R <u>1E</u> , SW <u>1/4</u> of Sec <u>9</u>		Date: 14 APR 2008	
Stream Name: Beaver Creek				Time: 14:51	
Transect 1 (Downstream)			Transect 11 (Upstream)		
GPS Coordinates (utm):	Northing: 43°26' 57.11"	Easting: 104°00' 56.12"	Northing: 43°26' 57.00"	Easting: 104°00' 48.26"	
Investigators: C. Foreman, G. McKee (Sections A, B, C), A. Wones, K. Shook, E. Krantz (Sections D, E, F, G, H, I, J)					

Section B

Preliminary Mean Stream Width (PMSW)												
	Width Number										Sum	Avg. PMSW
	1	2	3	4	5	6	7	8	9	10		
Width (0.1m)	6.7	6.9	7.7	8.8	5.9	11.3	8.2	5.0	5.9	7.1	73.5	7.35
Transect Spacing *:	22 m											
*If PMSW <10m space transects every 3 PMSW. If >10m, transects are spaced every 2 PMSW.												
Total Reach Length: 220 m												
Reach Length = 11 Transects, 10 distances apart X 3 PMSW = 30 PMSW or 20 PMSW if width >10m.												

Section C

Water Quality								
Reading	Time (2400)	Water Temperature (°C)	Air Temperature (°C)	Turbidity (NTU)	Secchi (cm)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	Conductivity (µS/cm)
Morning								
Afternoon	14:55	16.0	16.9	14.3	-	12.21	7,186	
Visual Observations								
1) Odor (Yes- / No)		2) Septic (Yes / No)		3) Deadfish (Yes / No)		4) Surface Film (Yes- / No)		
5) Color: Clear				6) Ice Cover (Yes- / No)				
Weather Conditions:		Current	Past 24 hrs	Field Comments: Heavy silt deposition in pools. WQ by Respec. pH = 8.27				
Clear/sunny		✓	✓					
Partly cloudy		<input type="checkbox"/>	<input type="checkbox"/>					
Intermittent showers		<input type="checkbox"/>	<input type="checkbox"/>					
Steady rain		<input type="checkbox"/>	<input type="checkbox"/>					
Heavy rain		<input type="checkbox"/>	<input type="checkbox"/>					

Section D

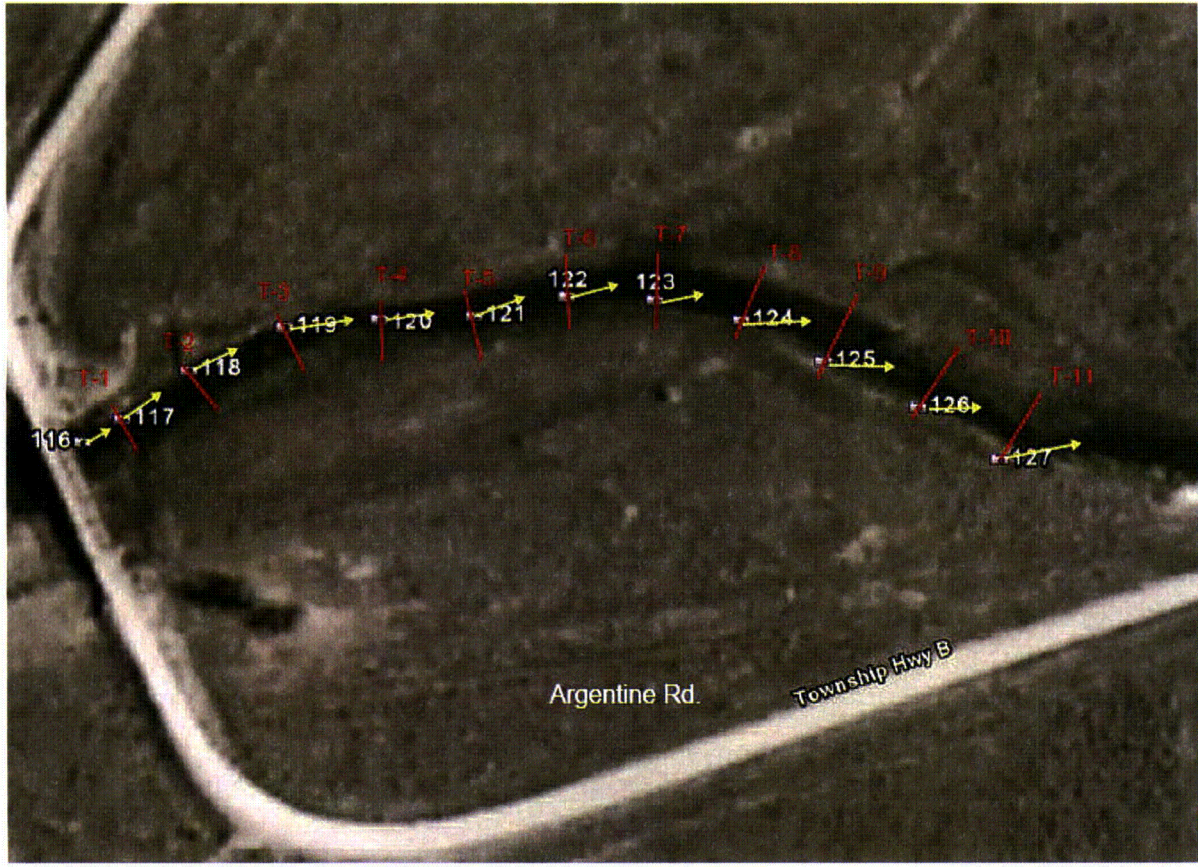
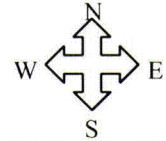
Habitats Available number of each (also place on map Section E)	Pool <u>3</u> Run/Glide <u>2</u> Riffle <u>3</u> Other (describe) <u>see Table 1</u>
	Lengths of Riffle(s): <u>10.7</u> , <u>10.7</u> , <u>6.7</u> , _____, _____.
	Nearest Transect #: <u>3</u> , <u>9</u> , <u>11</u> , _____, _____.
	Total Length (riffles) = <u>28.0</u>
	Pool Forming Elements See Table 1 = _____ LS, F

Map, Slope Measurements, and Photo-documentation Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Date: 16 APR 2008
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Section E cont.

Draw a map of the site with location of most upstream and most downstream transects. Include locations of photographic points, direction of photograph, and frame number.



Approximately 240 m.

Bed Substrate Composition

Project Site ID: BVC01	Stream Name: Beaver Creek	Date: 17 APR 2008
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Section F

Organic Substrates			
	Description	Tally	Number
Detritus	sticks, wood, coarse plant material (CPOM)		2
Muck-Mud	black, very fine organic (FPOM)		
Inorganic Substrates			
	Diameter	Tally	Number
Clay	<0.004 (slick)		1
Silt	0.004-0.062		15
Sand	0.062-2 (gritty)		
Very Fine Gravel	>2-4		
Fine Gravel	>4-8		
Medium Gravel	>8-16		1
Coarse Gravel	>16-32		7
Very Coarse Gravel	>32-64		17
Cobble	>64-128		9
Large Cobble	>128-256		3
Boulder	>256-512		
Large Boulder	>512		
Total Number:			55

Section G

Large Woody Debris Data

Project Site ID: BVC01 Stream Name: Beaver Creek m/d/yr: 04/17/2008 Page 1 of 1

Transect Spacing	Log Jam Number	LWD Number	Zone	Meander Location	Habitat Association	Angle	Length	Diameter
1-2	0	0						
2-3	0	0						
3-4	0	0						
4-5	0	0						
5-6	0	0						
6-7	0	0						
7-8	0	0						
8-9	0	0						
9-10	0	0						
10-11	0	0						

Zone: Zone 1 is water surface at baseflow, Zone 2 is between baseflow surface and bankfull flow surface, Zone 3 is bankfull channel width above bankfull flow surface.
 Meander Location: IM=inside meander, OM=outside meander, CO=crossover, SS=straight section
 Habitat Association: PL=pool, RF=riffle, RN=run

Categories	1	2	3	4
Diameter Large End	0.1-<0.3m	0.3-0.6m	0.6-0.8m	>0.8m
Length	>1.5-5m	5-15m	>15m	-

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 4/15/08		1 of 11
Habitat Type Along Transect (circle one): <u>pool</u> riffle run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank																				
Bank Substrate (dominant)	Silt/Clay	Silt/Clay																				
Bank Slumpage (present, p or absent, a)	A	A																				
Bank Height (0.1 m)	1.3	1.3																				
Bank Angle (degrees)	25	21																				
Streambank length (0.1 m)	8.6	2.7																				
Length of Streambank Vegetated (0.1 m)	8.6	2.7																				
Length of Streambank Eroded (0.1 m)	0	0																				
Length of Streambank Deposition (0.1 m)	0	0																				
Riparian Buffer Width (m)	0	0																				
Overhanging Vegetation (0.1 m)	0	0																				
Undercut Bank (0.1 m)	0	0																				
Riparian landuse (circle one)	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: none;">Cropland</td> <td style="width: 50%; border: none;">woodland/forested</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">pasture/rangeland</td> <td style="border: none;">barnyard</td> </tr> <tr> <td style="border: none;">prairie</td> <td style="border: none;">developed</td> </tr> <tr> <td style="border: none;">wetland</td> <td style="border: none;">other-specify</td> </tr> <tr> <td style="border: none;">shrub</td> <td style="border: none;"></td> </tr> </table>	Cropland	woodland/forested	pasture/rangeland	barnyard	prairie	developed	wetland	other-specify	shrub		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: none;">cropland</td> <td style="width: 50%; border: none;">woodland/forested</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">pasture/rangeland</td> <td style="border: none;">barnyard</td> </tr> <tr> <td style="border: none;">prairie</td> <td style="border: none;">developed</td> </tr> <tr> <td style="border: none;">wetland</td> <td style="border: none;">other-specify</td> </tr> <tr> <td style="border: none;">shrub</td> <td style="border: none;"></td> </tr> </table>	cropland	woodland/forested	pasture/rangeland	barnyard	prairie	developed	wetland	other-specify	shrub	
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wetland	other-specify																					
shrub																						
cropland	woodland/forested																					
pasture/rangeland	barnyard																					
prairie	developed																					
wetland	other-specify																					
shrub																						
Animal Vegetation Use (circle one)	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: none;">none</td> <td style="width: 50%; border: none;">moderate</td> </tr> <tr> <td style="border: none;">low</td> <td style="border: 1px solid black; padding: 2px;">high</td> </tr> </table>	none	moderate	low	high	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: none;">none</td> <td style="width: 50%; border: none;">moderate</td> </tr> <tr> <td style="border: none;">low</td> <td style="border: 1px solid black; padding: 2px;">high</td> </tr> </table>	none	moderate	low	high												
none	moderate																					
low	high																					
none	moderate																					
low	high																					
Riparian Vegetation Type (Dominant)	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: none;">sedge/rush</td> <td style="width: 50%; border: none;">willows</td> </tr> <tr> <td style="border: none;">cottonwoods</td> <td style="border: none;">silver maple</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">grass/forb</td> <td style="border: none;">shrubs</td> </tr> <tr> <td style="border: none;">green ash</td> <td style="border: none;">other_____</td> </tr> </table>	sedge/rush	willows	cottonwoods	silver maple	grass/forb	shrubs	green ash	other_____	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: none;">sedge/rush</td> <td style="width: 50%; border: none;">willows</td> </tr> <tr> <td style="border: none;">cottonwoods</td> <td style="border: none;">silver maple</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">grass/forb</td> <td style="border: none;">shrubs</td> </tr> <tr> <td style="border: none;">green ash</td> <td style="border: none;">other_____</td> </tr> </table>	sedge/rush	willows	cottonwoods	silver maple	grass/forb	shrubs	green ash	other_____				
sedge/rush	willows																					
cottonwoods	silver maple																					
grass/forb	shrubs																					
green ash	other_____																					
sedge/rush	willows																					
cottonwoods	silver maple																					
grass/forb	shrubs																					
green ash	other_____																					
Riparian Age Class(es) of Trees, if present	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: none;">seedling/sprout</td> <td style="width: 50%; border: none;">decadent</td> </tr> <tr> <td style="border: none;">young/sapling</td> <td style="border: none;">dead</td> </tr> <tr> <td style="border: none;">mature</td> <td style="border: 1px solid black; padding: 2px;">none</td> </tr> </table>	seedling/sprout	decadent	young/sapling	dead	mature	none	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: none;">seedling/sprout</td> <td style="width: 50%; border: none;">decadent</td> </tr> <tr> <td style="border: none;">young/sapling</td> <td style="border: none;">dead</td> </tr> <tr> <td style="border: none;">mature</td> <td style="border: 1px solid black; padding: 2px;">none</td> </tr> </table>	seedling/sprout	decadent	young/sapling	dead	mature	none								
seedling/sprout	decadent																					
young/sapling	dead																					
mature	none																					
seedling/sprout	decadent																					
young/sapling	dead																					
mature	none																					
Submergent Macrophytes (0.1 m)	0																					
Emergent Macrophytes (0.1 m)	0																					

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.3			
LBF	1.5	0.0		
LEW	3.0	0.4	0.00	
LCB	3.5	0.5	0.09	
STR (@1/4)	4.9	0.5	0.12	
STR (@1/2)	6.1	0.4	0.03	
STR (@3/4)	7.5	0.5	0.09	
RCB	8.8	0.4	0.03	
REW	9.4	0.4	0.00	
RBF	11.8	0.0		
RTB	13.7			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull

- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water

- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 13.4

Bankfull width (RBF-LBF) = 10.2

Channel Bottom Width (RCB-LCB) = 5.4

Stream Width (REW-LEW) = 6.3

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 4/15/08		2 of 11
Habitat Type Along Transect (circle one): <input checked="" type="checkbox"/> pool <input type="checkbox"/> riffle <input type="checkbox"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	P
Bank Height (0.1 m)	1.7	1.8
Bank Angle (degrees)	15	41
Streambank length (0.1 m)	8.6	2.7
Length of Streambank Vegetated (0.1 m)	8.6	2.7
Length of Streambank Eroded (0.1 m)	0	0
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	<input type="checkbox"/> Cropland <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> prairie <input type="checkbox"/> wetland <input type="checkbox"/> shrub	<input type="checkbox"/> woodland/forested <input type="checkbox"/> barnyard <input type="checkbox"/> developed <input type="checkbox"/> other-specify
Animal Vegetation Use (circle one)	<input type="checkbox"/> none <input type="checkbox"/> low <input checked="" type="checkbox"/> moderate <input type="checkbox"/> high	<input type="checkbox"/> none <input type="checkbox"/> low <input type="checkbox"/> moderate <input checked="" type="checkbox"/> high
Riparian Vegetation Type (Dominant)	<input type="checkbox"/> sedge/rush <input type="checkbox"/> cottonwoods <input type="checkbox"/> grass/forb <input type="checkbox"/> green ash	<input type="checkbox"/> willows <input type="checkbox"/> silver maple <input type="checkbox"/> shrubs <input type="checkbox"/> other
Riparian Age Class(es) of Trees, if present	<input type="checkbox"/> seedling/sprout <input type="checkbox"/> young/sapling <input type="checkbox"/> mature	<input type="checkbox"/> decadent <input type="checkbox"/> dead <input checked="" type="checkbox"/> not present
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.3			
LBF	6.9	0.0		
LEW	8.1	0.3	0.00	
LCB	10.4	0.6	0.30	
STR (@1/4)	9.6	0.4	0.09	
STR (@1/2)	11.8	0.8	0.52	
STR (@3/4)	13.3	0.7	0.43	
RCB	13.9	0.6	0.37	
REW	14.6	0.3	0.00	
RBF	15.0	0.0		
RTB	15.9			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 15.5

Bankfull width (RBF-LBF) = 8.1

Channel Bottom Width (RCB-LCB) = 3.5

Stream Width (REW-LEW) = 6.5

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 4/15/08		3 of 11
Habitat Type Along Transect (circle one): pool riffle <u>run</u>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	P
Bank Height (0.1 m)	1.6	1.6
Bank Angle (degrees)	8	48
Streambank length (0.1 m)	12.0	3.3
Length of Streambank Vegetated (0.1 m)	12.0	0.5
Length of Streambank Eroded (0.1 m)	0	2.9
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.2	0.2
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate <input type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>	none <input type="checkbox"/> moderate <input type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.3			
LBF	9.8	0.0		
LEW	11.2	0.5	0.00	
LCB	12.7	0.5	0.06	
STR (@1/4)	12.9	0.5	0.09	
STR (@1/2)	14.2	0.5	0.06	
STR (@3/4)	15.1	0.5	0.09	
RCB	15.6	0.5	0.06	
REW	16.0	0.3	0.00	
RBF	16.9	0.0		
RTB	17.7			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 17.4

Bankfull width (RBF-LBF) = 7.2

Channel Bottom Width (RCB-LCB) = 3.0

Stream Width (REW-LEW) = 4.8

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 4/15/08		4 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input checked="" type="checkbox"/> run <input type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	A
Bank Height (0.1 m)	1.7	1.7
Bank Angle (degrees)	15	43
Streambank length (0.1 m)	8.1	2.6
Length of Streambank Vegetated (0.1 m)	8.1	2.6
Length of Streambank Eroded (0.1 m)	0	0
Length of Streambank Deposition (0.1 m)	0.6	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.3	0.1
Undercut Bank (0.1 m)	0.2	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input checked="" type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input checked="" type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input checked="" type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input checked="" type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)					Location Codes: LTB left top bank RTB right top bank LBF left bankfull RBF right bankfull LCB left channel bottom RCB right channel bottom LEW left edge water REW right edge water STR stream
Location Code	Station	Bankfull Depth	Water Depth	Velocity	
LTB	0.3				
LBF	7.9	0.0			
LEW	7.8	0.2	0.00		
LCB	8.0	0.3	0.12		
STR (@1/4)	9.6	0.3	0.06		
STR (@1/2)	11.2	0.4	0.15		
STR (@3/4)	12.9	0.4	0.15		
RCB	13.9	0.3	0.06		
REW	14.3	0.2	0.00		
RBF	14.4	0.0			
RTB	15.7				

Bank top width (RTB-LTB) = 15.4

Bankfull width (RBF-LBF) = 6.5

Channel Bottom Width (RCB-LCB) = 5.8

Stream Width (REW-LEW) = 6.6

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08, 4/17/08		5 of 11
Habitat Type Along Transect (circle one): <input checked="" type="checkbox"/> pool <input type="checkbox"/> riffle <input type="checkbox"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	P
Bank Height (0.1 m)	1.6	1.5
Bank Angle (degrees)	23	45
Streambank length (0.1 m)	4.0	4.0
Length of Streambank Vegetated (0.1 m)	3.9	3.2
Length of Streambank Eroded (0.1 m)	0.1	0.8
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	<input type="checkbox"/> Cropland woodland/forested <input checked="" type="checkbox"/> pasture/rangeland barnyard <input type="checkbox"/> prairie developed <input type="checkbox"/> wetland other-specify <input type="checkbox"/> shrub	<input type="checkbox"/> cropland woodland/forested <input checked="" type="checkbox"/> pasture/rangeland barnyard <input type="checkbox"/> prairie developed <input type="checkbox"/> wetland other-specify <input type="checkbox"/> shrub
Animal Vegetation Use (circle one)	<input type="checkbox"/> none moderate <input checked="" type="checkbox"/> low high	<input type="checkbox"/> none moderate <input checked="" type="checkbox"/> low high
Riparian Vegetation Type (Dominant)	<input type="checkbox"/> sedge/rush willows <input type="checkbox"/> cottonwoods silver maple <input checked="" type="checkbox"/> grass/forb shrubs <input type="checkbox"/> green ash other_____	<input type="checkbox"/> sedge/rush willows <input type="checkbox"/> cottonwoods silver maple <input checked="" type="checkbox"/> grass/forb shrubs <input type="checkbox"/> green ash other_____
Riparian Age Class(es) of Trees, if present	<input type="checkbox"/> seedling/sprout decadent <input type="checkbox"/> young/sapling dead <input type="checkbox"/> mature <input checked="" type="checkbox"/> none	<input type="checkbox"/> seedling/sprout decadent <input type="checkbox"/> young/sapling dead <input type="checkbox"/> mature <input checked="" type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)					Location Codes: LTB left top bank RTB right top bank LBF left bankfull RBF right bankfull LCB left channel bottom RCB right channel bottom LEW left edge water REW right edge water STR stream
Location Code	Station	Bankfull Depth	Water Depth	Velocity	
LTB	0.0				
LBF	3.7	0.0			
LEW	3.7	0.4	0.07		
LCB	4.7	0.7	0.21		
STR (@1/4)	5.8	0.6	0.29		
STR (@1/2)	7.3	0.6	0.31		
STR (@3/4)	9.5	0.6	0.25		
RCB	10.9	0.6	0.21		
REW	11.3	0.5	0.12		
RBF	11.7	0.1			
RTB	12.9				

Bank top width (RTB-LTB) = 12.9

Bankfull width (RBF-LBF) = 8.0

Channel Bottom Width (RCB-LCB) = 6.2

Stream Width (REW-LEW) = 7.6

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08, 4/17/08		6 of 11
Habitat Type Along Transect (circle one): <input checked="" type="checkbox"/> pool <input type="checkbox"/> riffle <input type="checkbox"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	P
Bank Height (0.1 m)	1.8	1.5
Bank Angle (degrees)	25	55
Streambank length (0.1 m)	3.0	2.2
Length of Streambank Vegetated (0.1 m)	3.0	
Length of Streambank Eroded (0.1 m)	0	
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	<input type="checkbox"/> Cropland <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> prairie <input type="checkbox"/> wetland <input type="checkbox"/> shrub	<input type="checkbox"/> woodland/forested <input type="checkbox"/> barnyard <input type="checkbox"/> developed <input type="checkbox"/> other-specify
Animal Vegetation Use (circle one)	<input type="checkbox"/> none <input checked="" type="checkbox"/> low	<input type="checkbox"/> moderate <input type="checkbox"/> high
Riparian Vegetation Type (Dominant)	<input type="checkbox"/> sedge/rush <input type="checkbox"/> cottonwoods <input type="checkbox"/> grass/forb <input type="checkbox"/> green ash	<input type="checkbox"/> willows <input type="checkbox"/> silver maple <input type="checkbox"/> shrubs <input type="checkbox"/> other
Riparian Age Class(es) of Trees, if present	<input type="checkbox"/> seedling/sprout <input type="checkbox"/> young/sapling <input type="checkbox"/> mature	<input type="checkbox"/> decadent <input checked="" type="checkbox"/> dead <input type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.5			
LBF	4.1	0.0		
LEW	4.7	0.9*	0.30	
LCB	4.7	0.9	0.30	
STR (@1/4)	6.4	0.9	0.42	
STR (@1/2)	8.5	1.0	0.64	
STR (@3/4)	10.5	0.9	0.59	
RCB	11.5	0.7	0.31	
REW	11.8	0.5*	0.14	
RBF	12.2	0.0		
RTB	13.1			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 12.6

Bankfull width (RBF-LBF) = 8.1

Channel Bottom Width (RCB-LCB) = 6.9

Stream Width (REW-LEW) = 7.2

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08, 4/17/08		7 of 11
Habitat Type Along Transect (circle one): <input checked="" type="checkbox"/> pool <input type="checkbox"/> riffle <input type="checkbox"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	P
Bank Height (0.1 m)	1.6	1.8
Bank Angle (degrees)	23	50
Streambank length (0.1 m)	3.0	2.2
Length of Streambank Vegetated (0.1 m)	2.9	1.5
Length of Streambank Eroded (0.1 m)	0.1	0.7
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.2	0.2
Undercut Bank (0.1 m)	0	0.25
Riparian landuse (circle one)	Cropland	woodland/forested
	<input checked="" type="checkbox"/> pasture/rangeland	barnyard
	prairie	developed
	wetland	other-specify
	shrub	
Animal Vegetation Use (circle one)	none	<input checked="" type="checkbox"/> moderate
	low	high
Riparian Vegetation Type (Dominant)	sedge/rush	willows
	<input checked="" type="checkbox"/> cottonwoods	silver maple
	<input checked="" type="checkbox"/> grass/forb	shrubs
	green ash	other
Riparian Age Class(es) of Trees, if present	seedling/sprout	decadent
	<input checked="" type="checkbox"/> young/sapling	dead
	mature	<input checked="" type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.5			
LBF	4.1	0.0		
LEW	4.7	0.7	0.21	
LCB	4.7	0.7	0.21	
STR (@1/4)	6.4	1.0	0.50	
STR (@1/2)	8.4	1.0	0.51	
STR (@3/4)	10.1	0.9	0.40	
RCB	12.0	0.9	0.39	
REW	12.5	0.7	0.16	
RBF	13.2	0.0		
RTB	14.0			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull

- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water

- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 13.5

Bankfull width (RBF-LBF) = 9.1

Channel Bottom Width (RCB-LCB) = 7.3

Stream Width (REW-LEW) = 7.8

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08, 4/17/08		8 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input checked="" type="checkbox"/> run <input type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	P
Bank Height (0.1 m)	1.5	1.5
Bank Angle (degrees)	23	41
Streambank length (0.1 m)	3.0	3.0
Length of Streambank Vegetated (0.1 m)	3.0	1.8
Length of Streambank Eroded (0.1 m)	0	1.2
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.2	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input checked="" type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input checked="" type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate <input type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>	none <input type="checkbox"/> moderate <input type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input checked="" type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other _____ <input type="checkbox"/>	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input checked="" type="checkbox"/> green ash <input type="checkbox"/> other _____ <input type="checkbox"/>
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.5			
LBF	3.4	0.0		
LEW	4.0	0.6	0.10	
LCB	4.4	0.6	0.20	
STR (@1/4)	5.6	0.6	0.20	
STR (@1/2)	7.2	0.6	0.19	
STR (@3/4)	8.8	0.7	0.24	
RCB	10.1	0.7	0.20	
REW	10.6	0.5	0.00	
RBF	11.9	1.0		
RTB	12.5			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 12.0

Bankfull width (RBF-LBF) = 8.5

Channel Bottom Width (RCB-LCB) = 5.7

Stream Width (REW-LEW) = 6.6

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08, 4/17/08		9 of 11
Habitat Type Along Transect (circle one): pool riffle <u>run</u>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	A
Bank Height (0.1 m)	1.6	1.5
Bank Angle (degrees)	25	25
Streambank length (0.1 m)	3.3	4.8
Length of Streambank Vegetated (0.1 m)	2.9	8.8
Length of Streambank Eroded (0.1 m)	0.4	0.4
Length of Streambank Deposition (0.1 m)	0	1.0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0.7
Undercut Bank (0.1 m)	0.2	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> pasture/rangeland prairie wetland shrub	woodland/forested <input type="checkbox"/> barnyard developed other-specify _____
Animal Vegetation Use (circle one)	none low	<input type="checkbox"/> moderate <input type="checkbox"/> high
Riparian Vegetation Type (Dominant)	sedge/rush cottonwoods grass/forb green ash	willows silver maple <input type="checkbox"/> shrubs other _____
Riparian Age Class(es) of Trees, if present	seedling/sprout young/sapling mature	decadent dead <input type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.5			
LBF	3.7	0.0		
LEW	4.0	0.5	0.00	
LCB	4.7	0.5	0.18	
STR (@1/4)	5.6	0.5	0.19	
STR (@1/2)	6.9	0.5	0.19	
STR (@3/4)	8.7	0.5	0.11	
RCB	9.4	0.4	0.11	
REW	10.9	0.5	0.01	
RBF	12.5	0.0		
RTB	14.3			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 13.8

Bankfull width (RBF-LBF) = 8.8

Channel Bottom Width (RCB-LCB) = 4.7

Stream Width (REW-LEW) = 6.9

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08, 4/17/08		10 of 11
Habitat Type Along Transect (circle one): pool riffle run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	P
Bank Height (0.1 m)	1.8	2.0
Bank Angle (degrees)	29	20
Streambank length (0.1 m)	2.8	6
Length of Streambank Vegetated (0.1 m)	2.4	5.8
Length of Streambank Eroded (0.1 m)	0.4	0.2
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.2	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland woodland/forested <input type="checkbox"/> pasture/rangeland barnyard prairie developed wetland other-specify shrub	cropland woodland/forested <input type="checkbox"/> pasture/rangeland barnyard prairie developed wetland other-specify shrub
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate low high	none <input type="checkbox"/> moderate low high
Riparian Vegetation Type (Dominant)	sedge/rush willows cottonwoods silver maple <input type="checkbox"/> grass/forb shrubs green ash other_____	sedge/rush willows cottonwoods silver maple <input type="checkbox"/> grass/forb shrubs green ash other_____
Riparian Age Class(es) of Trees, if present	seedling/sprout decadent young/sapling dead mature <input type="checkbox"/> none	seedling/sprout decadent young/sapling dead mature <input type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.5			
LBF	3.4	0.0		
LEW	3.6	0.4	0.02	
LCB	3.9	0.6	0.20	
STR (@1/4)	4.9	0.7	0.32	
STR (@1/2)	6.1	0.8	0.38	
STR (@3/4)	7.5	0.8	0.19	
RCB	8.0	0.8	0.14	
REW	8.5	0.7	0.00	
RBF	10.2	0.2		
RTB	14.3			

Location Codes:

LTB left top bank
 RTB right top bank
 LBF left bankfull
 RBF right bankfull

LCB left channel bottom
 RCB right channel bottom
 LEW left edge water

REW right edge water
 STR stream

Bank top width (RTB-LTB) = 13.8

Bankfull width (RBF-LBF) = 6.8

Channel Bottom Width (RCB-LCB) = 4.0

Stream Width (REW-LEW) = 4.9

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08, 4/17/08		11 of 11
Habitat Type Along Transect (circle one): pool <u>riffle</u> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	A
Bank Height (0.1 m)		
Bank Angle (degrees)	35	10
Streambank length (0.1 m)	5.0	10.4
Length of Streambank Vegetated (0.1 m)	2.4	9.7
Length of Streambank Eroded (0.1 m)	2.6	0.7
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.2	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify _____ shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify _____ shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate <input type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>	none <input type="checkbox"/> moderate <input type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other _____	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other _____
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)					Location Codes: LTB left top bank RTB right top bank LBF left bankfull RBF right bankfull LCB left channel bottom RCB right channel bottom LEW left edge water REW right edge water STR stream
Location Code	Station	Bankfull Depth	Water Depth	Velocity	
LTB	0.5				
LBF	1.5	0.0			
LEW	3.3	0.5	0.01		
LCB	3.5	0.7	0.13		
STR (@1/4)	4.2	0.7	0.20		
STR (@1/2)	5.1	0.7	0.18		
STR (@3/4)	5.8	0.7	0.11		
RCB	6.3	0.7	0.08		
REW	6.7	0.5	0.00		
RBF	8.8	0.2			
RTB	16.8				

Bank top width (RTB-LTB) = 16.3

Bankfull width (RBF-LBF) = 7.3

Channel Bottom Width (RCB-LCB) = 2.9

Stream Width (REW-LEW) = 3.5

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

SAMPLE COLLECTION FORM - STREAMS

Site ID	BVC01	Date	7/9/2008
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Water Chemistry		
Sample ID	Transect	Comments
		NA

Reach-wide Benthos Sample		
Sample ID	No. of Jars	Comment
BVC01	1	Low flow sampling. Composit sample from 11 transects. Appears to have low benthic abundance.

Transect	A		B		C		D		E		F		G		H		I		J		K			
Substrate	Channel	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	
Fine/Sand	Pool								P		P									P		P		P
Gravel	Glide	G	GL	G	GL			G		G		G		G		G		G		G		G		G
Coarse	Riffle					C	R								R		R		R					
other	Run																							

Transect	A	B	C	D	E	F	G	H	I	J	K	
Sample Location	Left	X			X			X			X	
	Right		X			X			X			X
	Center			X			X			X		

Substrate Size Classes

Fine/Sand - ladybug or smaller (<2mm)

Gravel - ladybug to tennis ball (2 to 64mm)

Coarse - tennis ball to car sized (64 to 4000mm)

Other - bedrock, hardpan, wood etc

SAMPLE COLLECTION FORM - STREAMS

Site ID	BVC04	Date	7/8/2008
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Water Chemistry		
Sample ID	Transect	Comments

Reach-wide Benthos Sample		
Sample ID	No. of Jars	Comment
BVC04	2	Spring sampling. Composit sample from 11 transects.

Transect	A		B		C		D		E		F		G		H		I		J		K		
Substrate	Channel	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan	Sub	Chan
Fine/Sand	Pool											F				F	P	F	P	F	P		P
Gravel	Glide		GL			G	GL	G		G			GL	G									
Coarse	Riffle	C		C	R				R		R				R								C
Other	Run																						

Transect	A	B	C	D	E	F	G	H	I	J	K
Sample Location	Left	X			X			X			X
	Right		X			X			X		
	Center			X			X			X	

Substrate Size Classes

Fine/Sand - ladybug or smaller (<2mm)

Gravel - ladybug to tennis ball (2 to 64mm)

Coarse - tennis ball to car sized (64 to 4000mm)

Other - bedrock, hardpan, wood etc

On Site Description Data

Section A

Project Site ID: BVC01		T____, R____, ____ 1/4 of Sec____		Date: 09 JUL 2008	
Stream Name: Beaver Creek				Time: 14:51	
Transect 1(Upstream)			Transect 11(Downstream)		
GPS Coordinates (utm): WGS84	Northing: 4820631.96	Easting: 0571323.79	Northing: 4820515.00	Easting: 0571485.75	
Investigators: C. Foreman, G. McKee (Sections A, B, C), A. Wones, K. Shook, M. Winland (Sections D, E, F, G, H, I, J)					

Section B

Preliminary Mean Stream Width (PMSW)												
	Width Number										Sum	Avg. PMSW
	1	2	3	4	5	6	7	8	9	10		
Width (0.1m)	6.7	6.9	7.7	8.8	5.9	11.3	8.2	5.0	5.9	7.1	73.5	7.35
Transect Spacing *:	22 m											
*If PMSW <10m space transects every 3 PMSW. If >10m, transects are spaced every 2 PMSW.												
Total Reach Length: 220 m												
Reach Length = 11 Transects, 10 distances apart X 3 PMSW = 30 PMSW or 20 PMSW if width >10m.												

Section C

Water Quality								
Reading	Time (2400)	Water Temperature (°C)	Air Temperature (°C)	Turbidity (NTU)	Secchi (cm)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	Conductivity (µS/cm)
Morning	0945	23.63	25.5			8.41		5,939
Afternoon								
Visual Observations								
1) Odor (Yes / No)		2) Septic (Yes / No)		3) Deadfish (Yes / No)		4) Surface Film (Yes / No)		
5) Color: Olive Drab, clear				6) Ice Cover (Yes / No)				
Weather Conditions:		Current	Past 24 hrs	Field Comments: wind 5-10 mph, sparse high clouds.				
Clear/sunny		<input type="checkbox"/>	<input type="checkbox"/>					
Partly cloudy		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Intermittent showers		<input type="checkbox"/>	<input type="checkbox"/>					
Steady rain		<input type="checkbox"/>	<input type="checkbox"/>					
Heavy rain		<input type="checkbox"/>	<input type="checkbox"/>					

Section D

Habitats Available number of each (also place on map Section E)	Pool <u> 2 </u> Run/Glide <u> 1 </u> Riffle <u> 2 </u> Other (describe) <u>see Table 1</u> Lengths of Riffle(s): <u> 13 </u> , <u> 57.8 </u> , <u> 6.7 </u> , _____, _____ Nearest Transect #: <u> 3 </u> , <u> 7 </u> , _____, _____, _____ Total Length (riffles) = <u> 70.8 </u> Pool Forming Elements See Table 1 = _____ F
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Map, Slope Measurements, and Photo-documentation Data

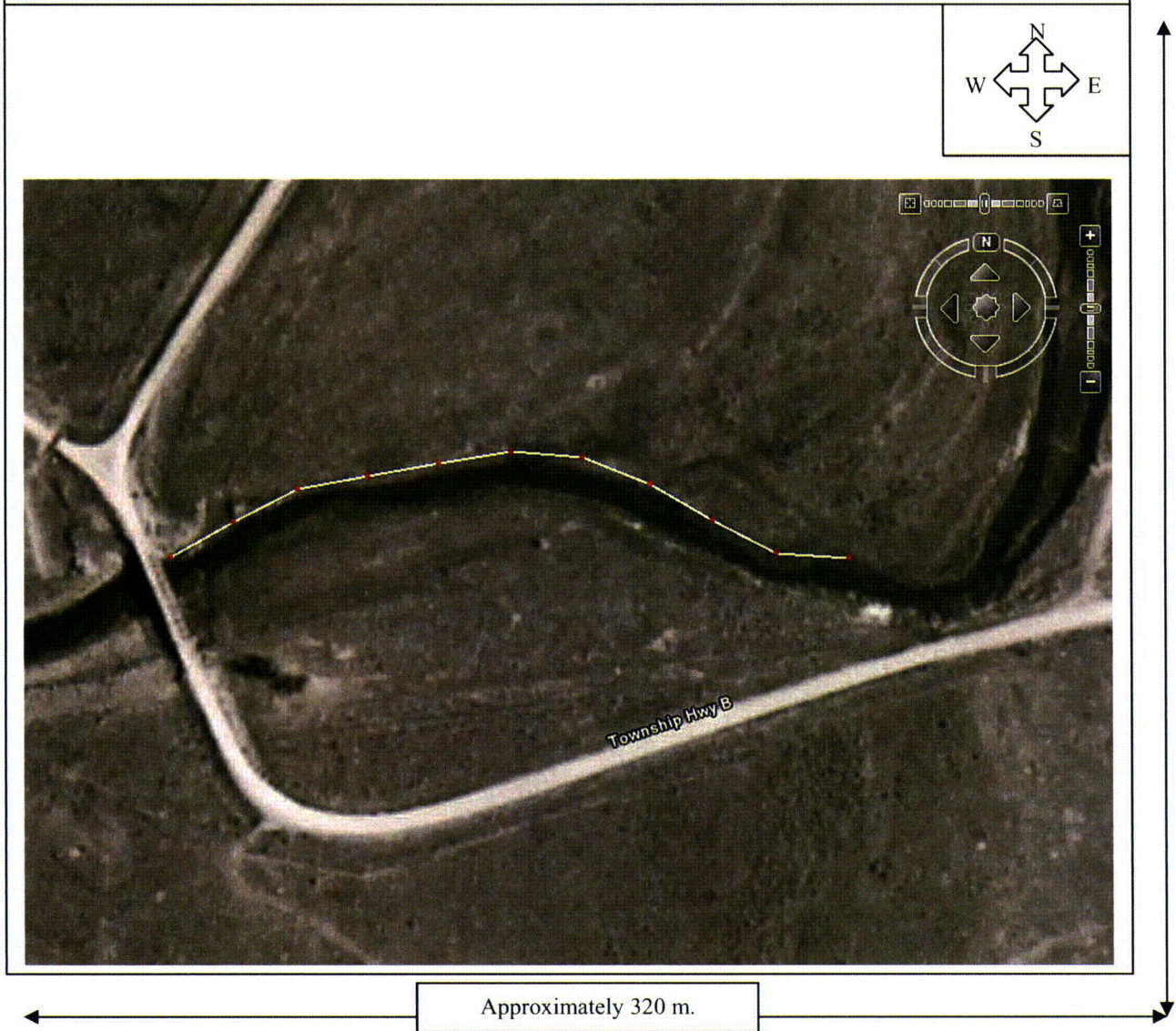
Project Site ID: BVC01

Stream Name: Beaver Creek

Date: 09 JUL 2008

Section E cont.

Draw a map of the site with location of most upstream and most downstream transects. Include locations of photographic points, direction of photograph, and frame number.



Bed Substrate Composition

Project Site ID: BVC01	Stream Name: Beaver Creek	Date: 09 JUL 2008
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Section F

Organic Substrates			
	Description	Tally	Number
Detritus	sticks, wood, coarse plant material (CPOM)		2
Muck-Mud	black, very fine organic (FPOM)		6
Inorganic Substrates			
	Diameter	Tally	Number
Clay	<0.004 (slick)		1
Silt	0.004-0.062		8
Sand	0.062-2 (gritty)		1
Very Fine Gravel	>2-4		6
Fine Gravel	>4-8		2
Medium Gravel	>8-16		19
Coarse Gravel	>16-32		15
Very Coarse Gravel	>32-64		28
Cobble	>64-128		20
Large Cobble	>128-256		5
Boulder	>256-512		1
Large Boulder	>512		1
Total Number:			105

Section G

Large Woody Debris Data

1

Project Site ID: BVC01

Stream Name: Beaver Creek

m/d/yr: 07/09/2008

Page 1 of 1

Transect Spacing	Log Jam Number	LWD Number	Zone	Meander Location	Habitat Association	Angle	Length	Diameter
1-2	0	0						
2-3	0	0						
3-4	0	0						
4-5	0	0						
5-6	0	0						
6-7	0	0						
7-8	0	0						
8-9	0	0						
9-10	0	0						
10-11	0	0						

Zone: Zone 1 is water surface at baseflow, Zone 2 is between baseflow surface and bankfull flow surface, Zone 3 is bankfull channel width above bankfull flow surface.
 Meander Location: IM=inside meander, OM=outside meander, CO=crossover, SS=straight section
 Habitat Association: PL=pool, RF=rifle, RN=run

LARGE WOODY DEBRIS CATEGORIES (≥10 cm small end diameter; ≥1.5 m length)				
Categories	1	2	3	4
Diameter Large End	0.1-<0.3m	0.3-0.6m	0.6-0.8m	>0.8m
Length	>1.5-5m	5-15m	>15m	-

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		1 of 11
Habitat Type Along Transect (circle one): pool riffle <u>run</u>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	P
Bank Height (0.1 m)	1.56	1.52
Bank Angle (degrees)	24	16
Streambank length (0.1 m)	3.5	6.4
Length of Streambank Vegetated (0.1 m)	3.5	6.4
Length of Streambank Eroded (0.1 m)	0	0
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> pasture/rangeland prairie wetland shrub	woodland/forested barnyard developed other-specify
Animal Vegetation Use (circle one)	none low	<input checked="" type="checkbox"/> moderate high
Riparian Vegetation Type (Dominant)	sedge/rush cottonwoods <input type="checkbox"/> grass/forb green ash	willows silver maple shrubs other_____
Riparian Age Class(es) of Trees, if present	seedling/sprout young/sapling mature	decadent dead <input checked="" type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i> 0.2	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.0			
LBF	1.0	0.0		
LEW	2.6	0.66	0.00	
LCB	3.3	0.73	0.12	
STR (@1/4)	4.5	0.74	0.18	
STR (@1/2)	6.0	0.77	0.23	
STR (@3/4)	7.8	0.77	0.25	
RCB	8.7	0.69	0.16	
REW	9.2	0.56	0.00	
RBF	10.9	0.18		
RTB	14.6			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull

- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water

- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 14.6

Bankfull width (RBF-LBF) = 9.9

Channel Bottom Width (RCB-LCB) = 5.4

Stream Width (REW-LEW) = 6.6

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		2 of 11
Habitat Type Along Transect (circle one): pool riffle <u>run</u>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank																					
Bank Substrate (dominant)	Silt/Clay	Silt/Clay																					
Bank Slumpage (present, p or absent, a)	A	A																					
Bank Height (0.1 m)	2.57	2.80																					
Bank Angle (degrees)	8	55																					
Streambank length (0.1 m)	10.35	3.2																					
Length of Streambank Vegetated (0.1 m)	10.32	3.2																					
Length of Streambank Eroded (0.1 m)	0	0																					
Length of Streambank Deposition (0.1 m)	0	0																					
Riparian Buffer Width (m)	0	0																					
Overhanging Vegetation (0.1 m)	0	0.10																					
Undercut Bank (0.1 m)	0	0.10																					
Riparian landuse (circle one)	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <table style="width: 100%; border: none;"> <tr><td style="border: 1px solid black;">Cropland</td><td style="border: none;">woodland/forested</td></tr> <tr><td style="border: 1px solid black;">pasture/rangeland</td><td style="border: none;">barnyard</td></tr> <tr><td style="border: none;">prairie</td><td style="border: none;">developed</td></tr> <tr><td style="border: none;">wetland</td><td style="border: none;">other-specify</td></tr> <tr><td style="border: none;">shrub</td><td style="border: none;"></td></tr> </table> </td> <td style="width: 50%; border: none;"> <table style="width: 100%; border: none;"> <tr><td style="border: 1px solid black;">cropland</td><td style="border: none;">woodland/forested</td></tr> <tr><td style="border: 1px solid black;">pasture/rangeland</td><td style="border: none;">barnyard</td></tr> <tr><td style="border: none;">prairie</td><td style="border: none;">developed</td></tr> <tr><td style="border: none;">wetland</td><td style="border: none;">other-specify</td></tr> <tr><td style="border: none;">shrub</td><td style="border: none;"></td></tr> </table> </td> </tr> </table>	<table style="width: 100%; border: none;"> <tr><td style="border: 1px solid black;">Cropland</td><td style="border: none;">woodland/forested</td></tr> <tr><td style="border: 1px solid black;">pasture/rangeland</td><td style="border: none;">barnyard</td></tr> <tr><td style="border: none;">prairie</td><td style="border: none;">developed</td></tr> <tr><td style="border: none;">wetland</td><td style="border: none;">other-specify</td></tr> <tr><td style="border: none;">shrub</td><td style="border: none;"></td></tr> </table>	Cropland	woodland/forested	pasture/rangeland	barnyard	prairie	developed	wetland	other-specify	shrub		<table style="width: 100%; border: none;"> <tr><td style="border: 1px solid black;">cropland</td><td style="border: none;">woodland/forested</td></tr> <tr><td style="border: 1px solid black;">pasture/rangeland</td><td style="border: none;">barnyard</td></tr> <tr><td style="border: none;">prairie</td><td style="border: none;">developed</td></tr> <tr><td style="border: none;">wetland</td><td style="border: none;">other-specify</td></tr> <tr><td style="border: none;">shrub</td><td style="border: none;"></td></tr> </table>	cropland	woodland/forested	pasture/rangeland	barnyard	prairie	developed	wetland	other-specify	shrub	
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Animal Vegetation Use (circle one)	<table style="width: 100%; border: none;"> <tr><td style="border: none;">none</td><td style="border: 1px solid black;">moderate</td></tr> <tr><td style="border: none;">low</td><td style="border: none;">high</td></tr> </table>	none	moderate	low	high	<table style="width: 100%; border: none;"> <tr><td style="border: none;">none</td><td style="border: 1px solid black;">moderate</td></tr> <tr><td style="border: none;">low</td><td style="border: none;">high</td></tr> </table>	none	moderate	low	high													
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low	high																						
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Riparian Vegetation Type (Dominant)	<table style="width: 100%; border: none;"> <tr><td style="border: none;">sedge/rush</td><td style="border: none;">willows</td></tr> <tr><td style="border: none;">cottonwoods</td><td style="border: none;">silver maple</td></tr> <tr><td style="border: 1px solid black;">grass/forb</td><td style="border: none;">shrubs</td></tr> <tr><td style="border: none;">green ash</td><td style="border: none;">other</td></tr> </table>	sedge/rush	willows	cottonwoods	silver maple	grass/forb	shrubs	green ash	other	<table style="width: 100%; border: none;"> <tr><td style="border: none;">sedge/rush</td><td style="border: none;">willows</td></tr> <tr><td style="border: none;">cottonwoods</td><td style="border: none;">silver maple</td></tr> <tr><td style="border: 1px solid black;">grass/forb</td><td style="border: none;">shrubs</td></tr> <tr><td style="border: none;">green ash</td><td style="border: none;">other</td></tr> </table>	sedge/rush	willows	cottonwoods	silver maple	grass/forb	shrubs	green ash	other					
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green ash	other																						
Riparian Age Class(es) of Trees, if present	<table style="width: 100%; border: none;"> <tr><td style="border: none;">seedling/sprout</td><td style="border: none;">decadent</td></tr> <tr><td style="border: none;">young/sapling</td><td style="border: none;">dead</td></tr> <tr><td style="border: none;">mature</td><td style="border: 1px solid black;">not present</td></tr> </table>	seedling/sprout	decadent	young/sapling	dead	mature	not present	<table style="width: 100%; border: none;"> <tr><td style="border: none;">seedling/sprout</td><td style="border: none;">decadent</td></tr> <tr><td style="border: none;">young/sapling</td><td style="border: none;">dead</td></tr> <tr><td style="border: none;">mature</td><td style="border: 1px solid black;">not present</td></tr> </table>	seedling/sprout	decadent	young/sapling	dead	mature	not present									
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mature	not present																						
seedling/sprout	decadent																						
young/sapling	dead																						
mature	not present																						
Submergent Macrophytes (0.1 m)	0																						
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i> 0.5																						

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	20.5			
LBF	27.3	0.0		
LEW	28.0	0.59	0.00	
LCB	30.0	0.95	0.35	
STR (@1/4)	31.0	1.09	0.48	
STR (@1/2)	32.4	1.20	0.54	
STR (@3/4)	33.9	1.24	0.53	
RCB	34.7	1.18	0.46	
REW	35.0	0.77	0.00	
RBF	35.0	0.25		
RTB	36.2			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 15.7

Bankfull width (RBF-LBF) = 7.7

Channel Bottom Width (RCB-LCB) = 4.7

Stream Width (REW-LEW) = 7.0

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		3 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input checked="" type="checkbox"/> run <input type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	A
Bank Height (0.1 m)	1.9	2.5
Bank Angle (degrees)	8	54
Streambank length (0.1 m)	12.7	3.0
Length of Streambank Vegetated (0.1 m)	12.7	2.0
Length of Streambank Eroded (0.1 m)	0	1.0
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows cottonwoods <input type="checkbox"/> silver maple grass/forb <input type="checkbox"/> shrubs green ash <input type="checkbox"/> other _____	sedge/rush <input type="checkbox"/> willows cottonwoods <input type="checkbox"/> silver maple grass/forb <input type="checkbox"/> shrubs green ash <input type="checkbox"/> other _____
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent young/sapling <input type="checkbox"/> dead mature <input type="checkbox"/> none <input checked="" type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent young/sapling <input type="checkbox"/> dead mature <input type="checkbox"/> none <input checked="" type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i> 0.2, <i>grass sp.</i> 0.2. Total = 0.4	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	20.0			
LBF	29.1	0.00		
LEW	31.7	0.67	0.00	
LCB	32.4	0.77	0.11	
STR (@1/4)	33.2	0.85	0.17	
STR (@1/2)	34.1	0.87	0.19	
STR (@3/4)	35.0	0.93	0.18	
RCB	35.4	0.91	0.15	
REW	35.8	0.77	0.00	
RBF	35.9	0.35		
RTB	37.0			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 17.0

Bankfull width (RBF-LBF) = 6.8

Channel Bottom Width (RCB-LCB) = 3.0

Stream Width (REW-LEW) = 4.1

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		4 of 11
Habitat Type Along Transect (circle one): <u>pool</u> riffle run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	A
Bank Height (0.1 m)	1.6	2.0
Bank Angle (degrees)	14	25
Streambank length (0.1 m)	7.9	6.0
Length of Streambank Vegetated (0.1 m)	7.4	5.4
Length of Streambank Eroded (0.1 m)	0.5	0.6
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify _____ shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify _____ shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate <input type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>	none <input type="checkbox"/> moderate <input type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other _____	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other _____
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input type="checkbox"/>
Submergent Macrophytes (0.1 m)	<i>Chara sp.</i> 0.5	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i> 0.5	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)					Location Codes: LTB left top bank RTB right top bank LBF left bankfull RBF right bankfull LCB left channel bottom RCB right channel bottom LEW left edge water REW right edge water STR stream
Location Code	Station	Bankfull Depth	Water Depth	Velocity	
LTB	0.3				
LBF	5.8	0.00			
LEW	6.1	0.65	0.00		
LCB	7.6	0.80	0.27		
STR (@1/4)	8.5	0.81	0.23		
STR (@1/2)	9.9	0.91	0.29		
STR (@3/4)	11.8	1.10	0.26		
RCB	12.7	0.85	0.22		
REW	13.4	0.70	0.00		
RBF	13.9	0.00			
RTB	19.4				

Bank top width (RTB-LTB) = 19.1

Bankfull width (RBF-LBF) = 8.2

Channel Bottom Width (RCB-LCB) = 5.1

Stream Width (REW-LEW) = 7.3

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		5 of 11
Habitat Type Along Transect (circle one): <input checked="" type="checkbox"/> pool <input type="checkbox"/> riffle <input type="checkbox"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	A
Bank Height (0.1 m)	2.1	2.1
Bank Angle (degrees)	21	32
Streambank length (0.1 m)	7.7	4.2
Length of Streambank Vegetated (0.1 m)	7.7	3.18
Length of Streambank Eroded (0.1 m)	0	0.2
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.2	0.1
Undercut Bank (0.1 m)	0.2	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input checked="" type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input checked="" type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input checked="" type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other _____	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input checked="" type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other _____
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i> 0.3	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.4			
LBF	6.2	0.00		
LEW	6.5	0.70	0.02	
LCB	7.2	0.98	0.35	
STR (@1/4)	8.5	1.12	0.49	
STR (@1/2)	10.1	1.28	0.59	
STR (@3/4)	12.5	1.12	0.48	
RCB	13.8	0.99	0.30	
REW	14.1	0.87	0.15	
RBF	14.6	0.00		
RTB	17.0			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 16.6

Bankfull width (RBF-LBF) = 8.4

Channel Bottom Width (RCB-LCB) = 6.7

Stream Width (REW-LEW) = 7.7

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		6 of 11
Habitat Type Along Transect (circle one): <input checked="" type="checkbox"/> pool <input type="checkbox"/> riffle <input type="checkbox"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	A
Bank Height (0.1 m)	1.9	1.9
Bank Angle (degrees)	22	36
Streambank length (0.1 m)	7.0	3.4
Length of Streambank Vegetated (0.1 m)	6.9	3.2
Length of Streambank Eroded (0.1 m)	0.1	0.2
Length of Streambank Deposition (0.1 m)	0	2.5
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.1	0.1
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i> 0.1	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	2.0			
LBF	5.0	0.00		
LEW	5.7	0.61	0.00	
LCB	5.8	0.89	0.34	
STR (@1/4)	7.4	0.90	0.48	
STR (@1/2)	9.4	1.03	0.55	
STR (@3/4)	11.7	0.98	0.44	
RCB	13.4	0.91	0.37	
REW	13.9	0.79	0.24	
RBF	14.5	0.05		
RTB	15.3			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 13.3

Bankfull width (RBF-LBF) = 9.5

Channel Bottom Width (RCB-LCB) = 7.6

Stream Width (REW-LEW) = 8.2

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		7 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input checked="" type="checkbox"/> run <input type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	P
Bank Height (0.1 m)	1.7	1.5
Bank Angle (degrees)	22	23
Streambank length (0.1 m)	5.8	4.8
Length of Streambank Vegetated (0.1 m)	5.7	4.6
Length of Streambank Eroded (0.1 m)	0.1	0.2
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>
Submergent Macrophytes (0.1 m)	<i>Chara sp.</i> 0.05	
Emergent Macrophytes (0.1 m)	<i>Juncus Sp.</i> & Grass 0.30	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	1.0			
LBF	4.7	0.00		
LEW	5.4	0.60	0.17	
LCB	6.0	0.62	0.20	
STR (@1/4)	7.1	0.58	0.16	
STR (@1/2)	8.5	0.50	0.17	
STR (@3/4)	6.0	0.49	0.19	
RCB	10.7	0.44	0.15	
REW	11.2	0.35	0.01	
RBF	13.4	0.03		
RTB	15.0			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 14.0

Bankfull width (RBF-LBF) = 8.7

Channel Bottom Width (RCB-LCB) = 4.7

Stream Width (REW-LEW) = 5.8

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		8 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input checked="" type="checkbox"/> run <input type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	P
Bank Height (0.1 m)	1.9	1.6
Bank Angle (degrees)	25	11
Streambank length (0.1 m)	4.3	5.5
Length of Streambank Vegetated (0.1 m)	3.9	5.3
Length of Streambank Eroded (0.1 m)	0.4	0.2
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.10	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input type="checkbox"/>
Submergent Macrophytes (0.1 m)	<i>Chara sp.</i> 0.1	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i> 0.25	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.7			
LBF	4.0	0.00		
LEW	4.1	0.58	0.13	
LCB	4.4	0.75	0.30	
STR (@1/4)	5.6	0.58	0.29	
STR (@1/2)	7.0	0.48	0.18	
STR (@3/4)	8.6	0.42	0.17	
RCB	9.9	0.38	0.15	
REW	10.3	0.35	0.10	
RBF	10.6	0.00		
RTB	14.5			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 16.9

Bankfull width (RBF-LBF) = 11.3

Channel Bottom Width (RCB-LCB) = 8.1

Stream Width (REW-LEW) = 8.1

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		9 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input checked="" type="checkbox"/> run <input type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	A
Bank Height (0.1 m)	2.2	2.0
Bank Angle (degrees)	32	12.5
Streambank length (0.1 m)	3.9	8.4
Length of Streambank Vegetated (0.1 m)	2.9	8.2
Length of Streambank Eroded (0.1 m)	1.0	0.2
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.1	0
Undercut Bank (0.1 m)	0.1	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>	none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input checked="" type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input checked="" type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>
Submergent Macrophytes (0.1 m)	<i>Chara sp.</i> 0.20	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i> 0.1	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	3.7			
LBF	5.5	0.0		
LEW	6.5	0.2	0.05	
LCB	7.0	0.2	0.10	
STR (@1/4)	8.8	0.4	0.31	
STR (@1/2)	10.4	0.3	0.35	
STR (@3/4)	12.2	0.4	0.31	
RCB	14.3	0.2	0.14	
REW	14.7	0.0	0.01	
RBF	14.9	-0.4		
RTB	22.6			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 18.9

Bankfull width (RBF-LBF) = 9.4

Channel Bottom Width (RCB-LCB) = 7.3

Stream Width (REW-LEW) = 8.2

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number 10 of 11
Date: 7/11/08		
Habitat Type Along Transect (circle one): <u>pool</u> riffle run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	A
Bank Height (0.1 m)	2.0	1.7
Bank Angle (degrees)	33	34.5
Streambank length (0.1 m)	6.0	7.6
Length of Streambank Vegetated (0.1 m)	4.5	6.60
Length of Streambank Eroded (0.1 m)	1.5	1.0
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.1	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> prairie <input type="checkbox"/> wetland <input type="checkbox"/> shrub	woodland/forested <input type="checkbox"/> barnyard <input type="checkbox"/> developed <input type="checkbox"/> other-specify
Animal Vegetation Use (circle one)	none low	<input type="checkbox"/> moderate <input type="checkbox"/> high
Riparian Vegetation Type (Dominant)	<input type="checkbox"/> sedge/rush <input type="checkbox"/> cottonwoods <input type="checkbox"/> grass/forb <input type="checkbox"/> green ash	<input type="checkbox"/> willows <input type="checkbox"/> silver maple <input type="checkbox"/> shrubs <input type="checkbox"/> other_____
Riparian Age Class(es) of Trees, if present	<input type="checkbox"/> seedling/sprout <input type="checkbox"/> young/sapling <input type="checkbox"/> mature	<input type="checkbox"/> decadent <input type="checkbox"/> dead <input type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i> 0.1	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	-0.6			
LBF	2.6	0.0		
LEW	2.9	0.60	0.01	
LCB	3.9	1.19	0.60	
STR (@1/4)	5.0	1.04	0.58	
STR (@1/2)	6.3	0.87	0.45	
STR (@3/4)	8.2	0.82	0.24	
RCB	9.2	0.92	0.18	
REW	9.8	0.84	0.00	
RBF	11.5	0		
RTB	16.0			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull

- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water

- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 16.6

Bankfull width (RBF-LBF) = 8.9

Channel Bottom Width (RCB-LCB) = 5.3

Stream Width (REW-LEW) = 6.9

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC01	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		11 of 11
Habitat Type Along Transect (circle one): <input checked="" type="checkbox"/> pool <input type="checkbox"/> riffle <input type="checkbox"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	P
Bank Height (0.1 m)	2.1	1.9
Bank Angle (degrees)	30	30
Streambank length (0.1 m)	4.3	4.0
Length of Streambank Vegetated (0.1 m)	3.6	3.9
Length of Streambank Eroded (0.1 m)	0.7	0.1
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	<input type="checkbox"/> Cropland <input type="checkbox"/> woodland/forested <input checked="" type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub	<input type="checkbox"/> cropland <input type="checkbox"/> woodland/forested <input checked="" type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub
Animal Vegetation Use (circle one)	<input type="checkbox"/> none <input checked="" type="checkbox"/> moderate <input type="checkbox"/> low <input type="checkbox"/> high	<input type="checkbox"/> none <input checked="" type="checkbox"/> moderate <input type="checkbox"/> low <input type="checkbox"/> high
Riparian Vegetation Type (Dominant)	<input type="checkbox"/> sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input checked="" type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other_____	<input type="checkbox"/> sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input checked="" type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other_____
Riparian Age Class(es) of Trees, if present	<input type="checkbox"/> seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input checked="" type="checkbox"/> dead <input type="checkbox"/> mature <input checked="" type="checkbox"/> none	<input type="checkbox"/> seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input checked="" type="checkbox"/> dead <input type="checkbox"/> mature <input checked="" type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus Sp.</i> 0.5	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	1.0			
LBF	2.8	0.0		
LEW	3.6	0.90	0.00	
LCB	4.0	1.15	0.30	
STR (@1/4)	5.4	1.42	0.52	
STR (@1/2)	7.0	1.53	0.63	
STR (@3/4)	9.0	1.45	0.55	
RCB	9.7	1.30	0.41	
REW	11.0	0.96	0.00	
RBF	11.6	0.44		
RTB	13.6			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull

- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water

- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 12.6

Bankfull width (RBF-LBF) = 8.8

Channel Bottom Width (RCB-LCB) = 5.6

Stream Width (REW-LEW) = 7.4

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

On Site Description Data

Section A

Project Site ID: BVC04		T_____, R_____, _____ 1/4 of Sec _____		Date: 14 APR 2008	
Stream Name: Beaver Creek				Time: 17:32	
Transect 1(Upstream)			Transect 11(Downstream)		
GPS Coordinates (utm):	Northing: 4810963	Easting: 0579684	Northing:	Easting:	
Investigators: C. Foreman, G. McKee (Sections A, B, C), A. Wones, K. Shook, E. Krantz (Sections D, E, F, G, H, I, J)					

Section B

Preliminary Mean Stream Width (PMSW)												
	Width Number										Sum	Avg. PMSW
	1	2	3	4	5	6	7	8	9	10		
Width (0.1m)	6.1	7.1	3.6	6.7	7.7	7.0	8.0	5.5	5.4	4.5	61.6	6.2
Transect Spacing *:	18.5											
*If PMSW <10m space transects every 3 PMSW. If >10m, transects are spaced every 2 PMSW.												
Total Reach Length: 184.9												
Reach Length = 11 Transects, 10 distances apart X 3 PMSW = 30 PMSW or 20 PMSW if width >10m.												

Section C

Water Quality								
Reading	Time (2400)	Water Temperature (°C)	Air Temperature (°C)	Turbidity (NTU)	Secchi (cm)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	Conductivity (µS/cm)
Morning	11:28	7.0	-	-	-	-	-	-
Afternoon	18:43	16.03	-	11.8	-	9.20	5109	
Visual Observations								
1) Odor (Yes / No)		2) Septic (Yes / No)		3) Deadfish (Yes / No)		4) Surface Film (Yes / No)		
5) Color: Clear				6) Ice Cover (Yes / No)				
Weather Conditions:		Current	Past 24 hrs	Field Comments: Heavy silt deposition in pools.				
Clear/sunny		✓	✓					
Partly cloudy		□	□					
Intermittent showers		□	□					
Steady rain		□	□					
Heavy rain		□	□					

Section D

Habitats Available number of each (also place on map Section E)	Pool <u> 2 </u> Run/Glide <u> 2 </u> Riffle <u> 3 </u> Other (describe) <u>see Table 1</u> Lengths of Riffle(s): <u> 22.0 </u> , <u> 22.0 </u> , <u> 10.7 </u> , _____, _____ Nearest Transect #: <u> 1,2 </u> , <u> 2,3 </u> , <u> 8 </u> , _____, _____ Total Length (riffles) = <u> 54.6 </u> Pool Forming Elements See Table 1 = <u> </u> LS, F
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Map, Slope Measurements, and Photo-documentation Data

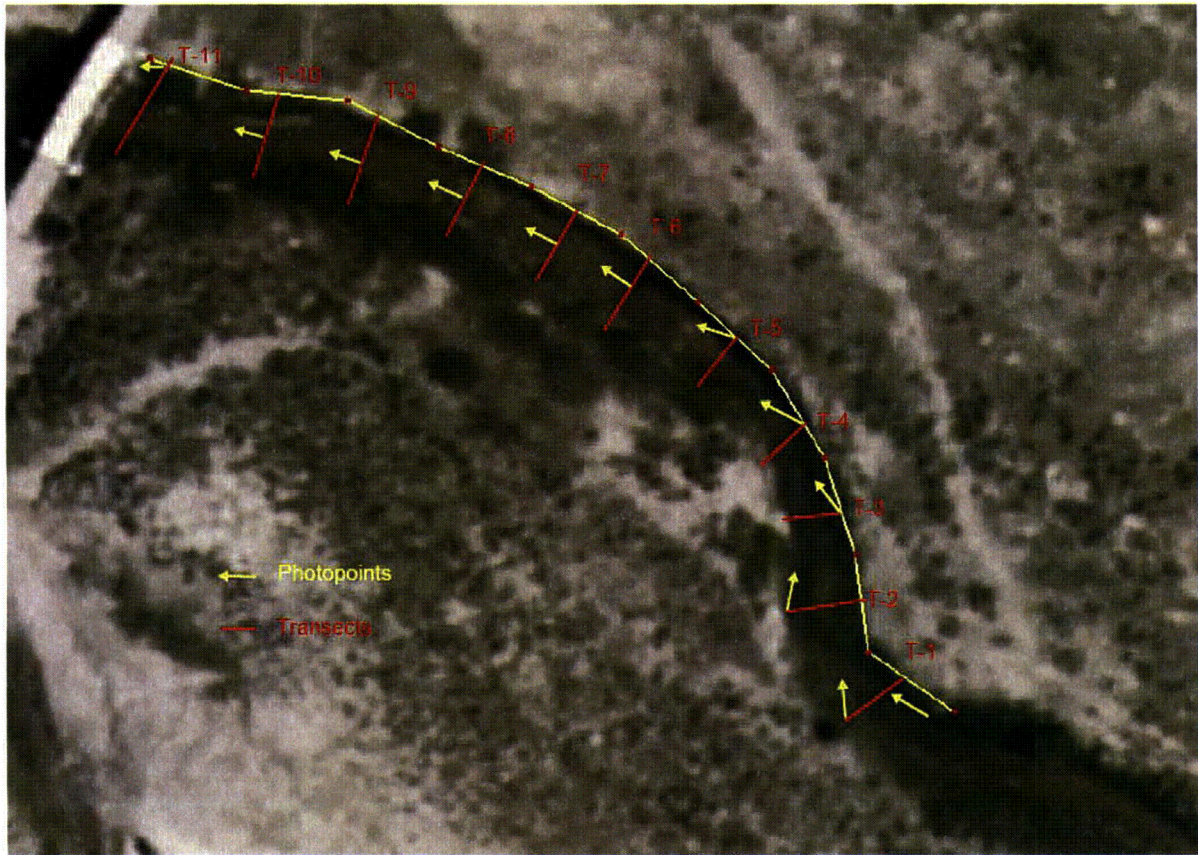
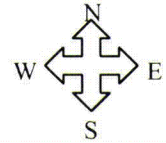
Project Site ID: BVC04

Stream Name: Beaver Creek

Date: 16 APR 2008

Section E cont.

Draw a map of the site with location of most upstream and most downstream transects. Include locations of photographic points, direction of photograph, and frame number.



Approximately 200 m.

Bed Substrate Composition

Project Site ID: BVC04	Stream Name: Beaver Creek	Date: 16 APR 2008
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Section F

Organic Substrates			
	Description	Tally	Number
Detritus	sticks, wood, coarse plant material (CPOM)		1
Muck-Mud	black, very fine organic (FPOM)		
Inorganic Substrates			
	Diameter	Tally	Number
Clay	<0.004 (slick)		1
Silt	0.004-0.062		26
Sand	0.062-2 (gritty)		4
Very Fine Gravel	>2-4		3
Fine Gravel	>4-8		3
Medium Gravel	>8-16		3
Coarse Gravel	>16-32		5
Very Coarse Gravel	>32-64		5
Cobble	>64-128		4
Large Cobble	>128-256		
Boulder	>256-512		
Large Boulder	>512		
Total Number:			55

Section G

Large Woody Debris Data

1

Project Site ID: BVC04 Stream Name: Beaver Creek m/d/yr: 04/16/2008 Page 1 of 1

Transect Spacing	Log Jam Number	LWD Number	Zone	Meander Location	Habitat Association	Angle	Length	Diameter
1-2	0	0						
2-3	0	0						
3-4	0	0						
4-5	0	1	2	IM	Run	0	4.5	0.25
5-6	1	1	2	OM	Riffle	90	3.0	0.15
5-6	1	2	2	OM	Riffle	45	1.5	0.10
5-6	1	3	2	OM	Riffle	35	1.8	0.25
5-6	1	4	2	OM	Riffle	125	2.0	0.10
5-6	1	5	2	OM	Riffle	45	1.6	0.15
6-7	0	0						
7-8	0	0						
8-9	0	1	2	SS	Riffle	45	2.0	0.17
8-9	0	2	2	SS	Riffle	45	2.2	0.15
9-10	0	0						
10-11	0	0						

Zone: Zone 1 is water surface at baseflow, Zone 2 is between baseflow surface and bankfull flow surface, Zone 3 is bankfull channel width above bankfull flow surface.
 Meander Location: IM=inside meander, OM=outside meander, CO=crossover, SS=straight section
 Habitat Association: PL=pool, RF=riffle, RN=run

LARGE WOODY DEBRIS CATEGORIES (≥10 cm small end diameter; ≥1.5 m length)				
Categories	1	2	3	4
Diameter Large End	0.1-<0.3m	0.3-0.6m	0.6-0.8m	>0.8m
Length	>1.5-5m	5-15m	>15m	-

Stream Shade and Canopy Cover Monitoring

Project Site ID: BVC04	Stream Name: Beaver Creek	Date: 16 APR 2008
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Section H

Site Name: BVC04							Date: 4/16/2008
Reach Length: 220 m				Transect Interval: 22 m			Initials: AW
Transect	Left Bank	Center Upstream	Center Right	Center-downstream	Center Left	Right Bank	Comments:
1	0	0	0	0	0	5	RB = Shrubs
2	0	0	0	0	0	2	RB = Tree
3	0	0	0	0	0	5	RB = Tree
4	2	0	0	0	0	0	LB = Shrubs
5	6	0	0	0	0	0	LB = Shrubs
6	4	0	0	0	0	0	LB = Bank
7	8	0	0	0	0	3	LB = Bank RB = Shrub
8	6	0	0	0	0	0	LB = Bank
9	3	0	0	0	0	10	LB = Bank RB = Shrubs
10	2	0	0	0	0	4	LB = Forbs RB = Grass
11	5	13	0	0	4	4	LB, CU, CL = Bridge RB = Shrubs
<p>Note: No leaves on trees and shrubs. Cover from shrubs reported here is more potential than actual cover at this time of year.</p>							

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08		1 of 11
Habitat Type Along Transect (circle one): pool <u>riffle</u> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	P
Bank Height (0.1 m)	3.7	3.9
Bank Angle (degrees)	26.0	40.0
Streambank length (0.1 m)	8.0	6.0
Length of Streambank Vegetated (0.1 m)	8.0	5.4
Length of Streambank Eroded (0.1 m)	0	0.6
Length of Streambank Deposition (0.1 m)	0.4	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> pasture/rangeland prairie wetland shrub	woodland/forested barnyard developed other-specify
Animal Vegetation Use (circle one)	none <input type="checkbox"/> low	moderate high
Riparian Vegetation Type (Dominant)	sedge/rush cottonwoods <input type="checkbox"/> grass/forb green ash	willows silver maple shrubs other_____
Riparian Age Class(es) of Trees, if present	seedling/sprout young/sapling <input type="checkbox"/> mature	decadent dead
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.3			
LBF	5.1	0.0		
LEW	7.1	1.0	0.0	
LCB	7.9	1.1	0.18	
STR (@1/4)	9.1	1.2	0.19	
STR (@1/2)	10.1	1.2	0.21	
STR (@3/4)	11.6	1.4	0.20	
RCB	12.2	1.3	0.17	
REW	13.1	1.3	0.09	
RBF	13.5	0.4		
RTB	17.4			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull

- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water

- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 17.1

Bankfull width (RBF-LBF) = 8.4

Channel Bottom Width (RCB-LCB) = 4.4

Stream Width (REW-LEW) = 6.0

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08		2 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input checked="" type="checkbox"/> run <input type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	P
Bank Height (0.1 m)	2.3	2.2
Bank Angle (degrees)	27	34
Streambank length (0.1 m)	4.6	4.8
Length of Streambank Vegetated (0.1 m)	4.0	3.6
Length of Streambank Eroded (0.1 m)	0.6	1.2
Length of Streambank Deposition (0.1 m)	0	0.4
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate low <input checked="" type="checkbox"/> high	none <input type="checkbox"/> moderate low <input checked="" type="checkbox"/> high
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows cottonwoods <input type="checkbox"/> silver maple grass/forb <input type="checkbox"/> shrubs green ash <input type="checkbox"/> other <input type="checkbox"/>	sedge/rush <input type="checkbox"/> willows cottonwoods <input type="checkbox"/> silver maple grass/forb <input type="checkbox"/> shrubs green ash <input type="checkbox"/> other <input type="checkbox"/>
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent young/sapling <input type="checkbox"/> dead mature <input type="checkbox"/> not present <input checked="" type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent young/sapling <input type="checkbox"/> dead mature <input checked="" type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)					Location Codes: LTB left top bank RTB right top bank LBF left bankfull RBF right bankfull LCB left channel bottom RCB right channel bottom LEW left edge water REW right edge water STR stream Bank top width (RTB-LTB) = <u>10.7</u> Bankfull width (RBF-LBF) = <u>8.2</u> Channel Bottom Width (RCB-LCB) = <u>3.5</u> Stream Width (REW-LEW) = <u>4.7</u> * Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.
Location Code	Station	Bankfull Depth	Water Depth	Velocity	
LTB	0.3				
LBF	1.8	0.0			
LEW	4.1	0.3	0.0		
LCB	4.6	0.4	0.20		
STR (@1/4)	5.4	0.3	0.12		
STR (@1/2)	6.4	0.3	0.12		
STR (@3/4)	7.5	0.4	0.17		
RCB	8.1	0.4	0.17		
REW	8.8	0.3	0.0		
RBF	10.0	0.0			
RTB	11.0				

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08		3 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input checked="" type="checkbox"/> run <input type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	P
Bank Height (0.1 m)	1.8	2.0
Bank Angle (degrees)	11	50
Streambank length (0.1 m)	11.3	2.4
Length of Streambank Vegetated (0.1 m)	10.7	1.2
Length of Streambank Eroded (0.1 m)	0.6	1.2
Length of Streambank Deposition (0.1 m)	0	0.4
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	1.0
Undercut Bank (0.1 m)	0	0.1
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate low <input checked="" type="checkbox"/> high	none <input type="checkbox"/> moderate low <input checked="" type="checkbox"/> high
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows cottonwoods <input type="checkbox"/> silver maple grass/forb <input type="checkbox"/> shrubs green ash <input type="checkbox"/> other _____	sedge/rush <input type="checkbox"/> willows cottonwoods <input type="checkbox"/> silver maple grass/forb <input type="checkbox"/> shrubs green ash <input type="checkbox"/> other _____
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent young/sapling <input type="checkbox"/> dead mature <input type="checkbox"/> none <input checked="" type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent young/sapling <input type="checkbox"/> dead mature <input type="checkbox"/> dead
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	1.4			
LBF	10.6	0.0		
LEW	11.7	*	0.0	
LCB	12.0	0.4	0.06	
STR (@1/4)	12.7	0.5	0.11	
STR (@1/2)	13.7	0.5	0.12	
STR (@3/4)	14.9	0.5	0.13	
RCB	15.9	0.6	0.20	
REW	15.9	*	0.20	
RBF	16.6	0.0		
RTB	17.3			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 15.9

Bankfull width (RBF-LBF) = 5.9

Channel Bottom Width (RCB-LCB) = 4.0

Stream Width (REW-LEW) = 4.2

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08		4 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input checked="" type="checkbox"/> run <input type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	A
Bank Height (0.1 m)	1.8	1.6
Bank Angle (degrees)	26.5	38.0
Streambank length (0.1 m)	4.7	3.0
Length of Streambank Vegetated (0.1 m)	3.5	2.6
Length of Streambank Eroded (0.1 m)	1.2	0.4
Length of Streambank Deposition (0.1 m)	0.6	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input checked="" type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input checked="" type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input checked="" type="checkbox"/> low <input type="checkbox"/> moderate high <input type="checkbox"/>	none <input checked="" type="checkbox"/> low <input type="checkbox"/> moderate high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> cottonwoods <input checked="" type="checkbox"/> grass/forb <input type="checkbox"/> green ash <input type="checkbox"/>	willows <input type="checkbox"/> silver maple <input type="checkbox"/> shrubs <input type="checkbox"/> other <input type="checkbox"/>
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> young/sapling <input type="checkbox"/> mature <input type="checkbox"/>	decadent <input type="checkbox"/> dead <input checked="" type="checkbox"/> none <input type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0			
LBF	3.0	0.0		
LEW	4.1	0.5	0.0	
LCB	4.5	0.6	0.15	
STR (@1/4)	6.0	0.5	0.09	
STR (@1/2)	7.5	0.4	0.10	
STR (@3/4)	9.1	0.4	0.10	
RCB	10.5	0.4	0.05	
REW	11.0	0.4	0	
RBF	12.3	-0.1		
RTB	13.1			

Location Codes:

LTB left top bank
 RTB right top bank
 LBF left bankfull
 RBF right bankfull

LCB left channel bottom
 RCB right channel bottom
 LEW left edge water
 REW right edge water
 STR stream

Bank top width (RTB-LTB) = 13.1

Bankfull width (RBF-LBF) = 9.3

Channel Bottom Width (RCB-LCB) = 6.0

Stream Width (REW-LEW) = 6.9

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08		5 of 11
Habitat Type Along Transect (circle one): pool riffle <u>run</u>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	P
Bank Height (0.1 m)	2.5	2.2
Bank Angle (degrees)	48	40.0
Streambank length (0.1 m)	3.2	6.0
Length of Streambank Vegetated (0.1 m)	0.3	5.4
Length of Streambank Eroded (0.1 m)	2.9	0.6
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> pasture/rangeland prairie wetland shrub	woodland/forested <input type="checkbox"/> barnyard developed other-specify
Animal Vegetation Use (circle one)	none <input type="checkbox"/> low moderate high	none <input type="checkbox"/> low moderate high
Riparian Vegetation Type (Dominant)	sedge/rush cottonwoods grass/forb green ash	willows silver maple <input type="checkbox"/> shrubs other_____
Riparian Age Class(es) of Trees, if present	seedling/sprout young/sapling mature	decadent dead <input type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.3			
LBF	1.3	0.0		
LEW	2.5	0.8	0.00	
LCB	2.8	1.0	0.20	
STR (@1/4)	9.7	1.0	0.28	
STR (@1/2)	5.5	0.8	0.15	
STR (@3/4)	7.3	0.7	0.12	
RCB	8.7	0.7	0.06	
REW	9.0	0.7	0.00	
RBF	11.0	0.0		
RTB	14.3			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 14.0

Bankfull width (RBF-LBF) = 9.7

Channel Bottom Width (RCB-LCB) = 5.9

Stream Width (REW-LEW) = 6.5

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08		6 of 11
Habitat Type Along Transect (circle one): <input type="radio"/> pool <input checked="" type="radio"/> riffle <input type="radio"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	A
Bank Height (0.1 m)	3.5	3.6
Bank Angle (degrees)	46	20
Streambank length (0.1 m)	4.6	6.3
Length of Streambank Vegetated (0.1 m)	1.6	5.6
Length of Streambank Eroded (0.1 m)	2.8	0.7
Length of Streambank Deposition (0.1 m)	0	2.5
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	<input type="checkbox"/> Cropland <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> prairie <input type="checkbox"/> wetland <input type="checkbox"/> shrub	<input type="checkbox"/> woodland/forested <input type="checkbox"/> barnyard <input type="checkbox"/> developed <input type="checkbox"/> other-specify
Animal Vegetation Use (circle one)	<input type="checkbox"/> none <input checked="" type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high	<input type="checkbox"/> none <input checked="" type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high
Riparian Vegetation Type (Dominant)	<input type="checkbox"/> sedge/rush <input type="checkbox"/> cottonwoods <input type="checkbox"/> grass/forb <input type="checkbox"/> green ash	<input type="checkbox"/> willows <input type="checkbox"/> silver maple <input type="checkbox"/> shrubs <input type="checkbox"/> other_____
Riparian Age Class(es) of Trees, if present	<input type="checkbox"/> seedling/sprout <input type="checkbox"/> young/sapling <input type="checkbox"/> mature	<input type="checkbox"/> decadent <input type="checkbox"/> dead <input checked="" type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.0			
LBF	1.9	0		
LEW	2.7	0.4*	0.00	
LCB	3.2	0.6	0.24	
STR (@1/4)	4.4	0.7	0.31	
STR (@1/2)	6.1	0.7	0.26	
STR (@3/4)	8.0	0.6	0.20	
RCB	8.8	0.6	0.10	
REW	10.0	0.5*	0.00	
RBF	13.1	0.0		
RTB	12.1			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 17.1

Bankfull width (RBF-LBF) = 11.3

Channel Bottom Width (RCB-LCB) = 5.6

Stream Width (REW-LEW) = 7.3

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08		7 of 11
Habitat Type Along Transect (circle one): <input checked="" type="checkbox"/> pool <input type="checkbox"/> riffle <input type="checkbox"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	A
Bank Height (0.1 m)	3.2	3.1
Bank Angle (degrees)	55	50
Streambank length (0.1 m)	4.0	5.2
Length of Streambank Vegetated (0.1 m)	1.8	4.2
Length of Streambank Eroded (0.1 m)	2.2	1.0
Length of Streambank Deposition (0.1 m)	0	0.5
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0.2
Undercut Bank (0.1 m)	0	0.25
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input checked="" type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input checked="" type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate low <input checked="" type="checkbox"/> high	none <input type="checkbox"/> moderate low <input checked="" type="checkbox"/> high
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows cottonwoods <input type="checkbox"/> silver maple grass/forb <input checked="" type="checkbox"/> shrubs green ash <input type="checkbox"/> other _____	sedge/rush <input type="checkbox"/> willows cottonwoods <input type="checkbox"/> silver maple grass/forb <input type="checkbox"/> shrubs green ash <input type="checkbox"/> other _____
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent young/sapling <input type="checkbox"/> dead mature <input checked="" type="checkbox"/> none	seedling/sprout <input type="checkbox"/> decadent young/sapling <input checked="" type="checkbox"/> dead mature <input type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	1.6			
LBF	3.4	0.0		
LEW	3.7	0.3	0.00	
LCB	4.0	0.5	0.20	
STR (@1/4)	6.4	0.8	0.60	
STR (@1/2)	8.5	0.6	0.61	
STR (@3/4)	11.4	0.7	0.73	
RCB	13.7	0.4	0.42	
REW	14.3	0.2	0.04	
RBF	14.5	-0.5		
RTB	17.7			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 16.1

Bankfull width (RBF-LBF) = 11.1

Channel Bottom Width (RCB-LCB) = 9.7

Stream Width (REW-LEW) = 10.7

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08		8 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input checked="" type="checkbox"/> run <input type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	P
Bank Height (0.1 m)	3.2	3.1
Bank Angle (degrees)	55	25
Streambank length (0.1 m)	3.9	8.3
Length of Streambank Vegetated (0.1 m)	1.3	5.8
Length of Streambank Eroded (0.1 m)	2.6	2.5
Length of Streambank Deposition (0.1 m)	0	0.4
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate <input type="checkbox"/> low <input checked="" type="checkbox"/> high <input type="checkbox"/>	none <input type="checkbox"/> moderate <input type="checkbox"/> low <input checked="" type="checkbox"/> high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input checked="" type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	1.4			
LBF	2.4	0.0		
LEW	3.4	0.6*	0.10	
LCB	3.5	0.6	0.04	
STR (@1/4)	4.3	0.6	0.18	
STR (@1/2)	8.5	0.5	0.12	
STR (@3/4)	10.6	0.5	0.18	
RCB	11.6	0.5	0.16	
REW	11.6	0.5*	0.16	
RBF	13.7	0.0		
RTB	18.3			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 16.9

Bankfull width (RBF-LBF) = 11.3

Channel Bottom Width (RCB-LCB) = 8.1

Stream Width (REW-LEW) = 8.1

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08		9 of 11
Habitat Type Along Transect (circle one): <input checked="" type="checkbox"/> pool <input type="checkbox"/> riffle <input type="checkbox"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	A
Bank Height (0.1 m)	3.2	3.2
Bank Angle (degrees)	48	24.5
Streambank length (0.1 m)	4.1	9.0
Length of Streambank Vegetated (0.1 m)	2.1	8.8
Length of Streambank Eroded (0.1 m)	2.0	0.2
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0.7
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	<input type="checkbox"/> Cropland <input type="checkbox"/> woodland/forested <input checked="" type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub	<input type="checkbox"/> cropland <input type="checkbox"/> woodland/forested <input checked="" type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub
Animal Vegetation Use (circle one)	<input type="checkbox"/> none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high	<input type="checkbox"/> none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high
Riparian Vegetation Type (Dominant)	<input type="checkbox"/> sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input checked="" type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other _____	<input type="checkbox"/> sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input checked="" type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other _____
Riparian Age Class(es) of Trees, if present	<input type="checkbox"/> seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input checked="" type="checkbox"/> none	<input type="checkbox"/> seedling/sprout <input type="checkbox"/> decadent <input checked="" type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	3.7			
LBF	5.5	0.0		
LEW	6.5	0.2	0.05	
LCB	7.0	0.2	0.10	
STR (@1/4)	8.8	0.4	0.31	
STR (@1/2)	10.4	0.3	0.35	
STR (@3/4)	12.2	0.4	0.31	
RCB	14.3	0.2	0.14	
REW	14.7	0.0	0.01	
RBF	14.9	-0.4		
RTB	22.6			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 18.9

Bankfull width (RBF-LBF) = 9.4

Channel Bottom Width (RCB-LCB) = 7.3

Stream Width (REW-LEW) = 8.2

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08		10 of 11
Habitat Type Along Transect (circle one): <u>pool</u> riffle run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	A
Bank Height (0.1 m)	1.7	1.8
Bank Angle (degrees)	25	28
Streambank length (0.1 m)	3.0	4.2
Length of Streambank Vegetated (0.1 m)	2.7	3.8
Length of Streambank Eroded (0.1 m)	0.3	0.4
Length of Streambank Deposition (0.1 m)	0.8	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland woodland/forested <input type="checkbox"/> pasture/rangeland barnyard prairie developed wetland other-specify shrub	cropland woodland/forested <input type="checkbox"/> pasture/rangeland barnyard prairie developed wetland other-specify shrub
Animal Vegetation Use (circle one)	none moderate <input type="checkbox"/> low high	none <input type="checkbox"/> moderate low high
Riparian Vegetation Type (Dominant)	sedge/rush willows cottonwoods silver maple grass/forb shrubs green ash other _____	sedge/rush willows cottonwoods silver maple <input type="checkbox"/> grass/forb shrubs green ash other _____
Riparian Age Class(es) of Trees, if present	seedling/sprout decadent young/sapling dead mature <input type="checkbox"/> none	seedling/sprout decadent young/sapling dead mature <input type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.7			
LBF	1.8	0.0		
LEW	3.2	0.5	0.02	
LCB	3.5	0.6	0.10	
STR (@1/4)	4.9	0.7	0.26	
STR (@1/2)	7.3	0.7	0.35	
STR (@3/4)	8.5	0.6	0.30	
RCB	10.1	0.6	0.17	
REW	10.3	0.5	0.00	
RBF	10.4	0.1		
RTB	13.1			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull

- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water

- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 12.4

Bankfull width (RBF-LBF) = 8.6

Channel Bottom Width (RCB-LCB) = 6.6

Stream Width (REW-LEW) = 7.1

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 4/16/08		11 of 11
Habitat Type Along Transect (circle one): <u>pool</u> riffle run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	P
Bank Height (0.1 m)	1.9	2.1
Bank Angle (degrees)	30	37
Streambank length (0.1 m)	3.2	3.7
Length of Streambank Vegetated (0.1 m)	1.7	2.7
Length of Streambank Eroded (0.1 m)	1.5	1.0
Length of Streambank Deposition (0.1 m)	2.0	0.5
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland woodland/forested <input type="checkbox"/> pasture/rangeland barnyard prairie developed wetland other-specify shrub	cropland woodland/forested <input type="checkbox"/> pasture/rangeland barnyard prairie developed wetland other-specify shrub
Animal Vegetation Use (circle one)	none moderate <input type="checkbox"/> low high	none moderate <input type="checkbox"/> low high
Riparian Vegetation Type (Dominant)	sedge/rush willows cottonwoods silver maple grass/forb <input type="checkbox"/> shrubs green ash other	sedge/rush willows cottonwoods silver maple grass/forb <input type="checkbox"/> shrubs green ash other
Riparian Age Class(es) of Trees, if present	seedling/sprout decadent young/sapling dead mature <input type="checkbox"/> none	seedling/sprout decadent young/sapling dead mature <input type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	0	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)					Location Codes:
Location Code	Station	Bankfull Depth	Water Depth	Velocity	
LTB	0.0				LTB left top bank RTB right top bank LBF left bankfull RBF right bankfull LCB left channel bottom RCB right channel bottom LEW left edge water REW right edge water STR stream Bank top width (RTB-LTB) = <u>12.5</u> Bankfull width (RBF-LBF) = <u>6.7</u> Channel Bottom Width (RCB-LCB) = <u>5.2</u> Stream Width (REW-LEW) = <u>6.5</u> * Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.
LBF	0.6	0.0			
LEW	3.0	0.6	0.01		
LCB	3.7	0.8	0.20		
STR (@1/4)	4.9	0.8	0.24		
STR (@1/2)	6.1	1.0	0.35		
STR (@3/4)	7.9	1.0	0.31		
RCB	8.8	1.0	0.20		
REW	9.6	0.8	0.00		
RBF	7.3	0.4			
RTB	12.5				

On Site Description Data

Section A

Project Site ID: BVC04		T _____, R _____, _____ 1/4 of Sec _____		Date: 8 JUL 2008	
Stream Name: Beaver Creek				Time: 12:05	
Transect 1(Upstream)			Transect 11(Downstream)		
GPS Coordinates (utm): WGS 84	Northing: 4811175.61	Easting: 0579834.93	Northing: 4811171.63	Easting: 0579653.03	
Investigators: A. Wones, K. Shook, L. Dunn					

Section B

Preliminary Mean Stream Width (PMSW)												
	Width Number										Sum	Avg. PMSW
	1	2	3	4	5	6	7	8	9	10		
Width (0.1m)	6.1	7.1	3.6	6.7	7.7	7.0	8.0	5.5	5.4	4.5	61.6	6.2
Transect Spacing *:	18.5											
*If PMSW <10m space transects every 3 PMSW. If >10m, transects are spaced every 2 PMSW.												
Total Reach Length: 184.9												
Reach Length = 11 Transects, 10 distances apart X 3 PMSW = 30 PMSW or 20 PMSW if width >10m.												

Section C

Water Quality								
Reading	Time (2400)	Water Temperature (°C)	Air Temperature (°C)	Turbidity (NTU)	Secchi (cm)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	Conductivity (µS/cm)
Morning			-	-	-	-	-	-
Afternoon	12:05	24	25	-	-	-	-	-
Visual Observations								
1) Odor (Yes / No)		2) Septic (Yes / No)		3) Deadfish (Yes / No)		4) Surface Film (Yes / No)		
5) Color: Clear, Olive drab				6) Ice Cover (Yes / No)				
Weather Conditions:		Current	Past 24 hrs	Field Comments: Heavy silt deposition in pools.				
Clear/sunny		<input type="checkbox"/>	<input type="checkbox"/>					
Partly cloudy		<input checked="" type="checkbox"/>	<input type="checkbox"/>					
Intermittent showers		<input type="checkbox"/>	<input checked="" type="checkbox"/>					
Steady rain		<input type="checkbox"/>	<input type="checkbox"/>					
Heavy rain		<input type="checkbox"/>	<input type="checkbox"/>					

Section D

Habitats Available number of each (also place on map Section E)	Pool <u> 1 </u> Run/Glide <u> 3 </u> Riffle <u> 3 </u> Other (describe) see Table 1 Lengths of Riffle(s): <u> 25.3 </u> , <u> 18.6 *</u> , <u> 14.0 *</u> . * Two sides of an island Nearest Transect #: <u> 2 </u> , <u> 4 </u> , <u> 7 </u> , _____, _____ Total Length (riffles) = <u> 57.9 </u> Pool Forming Elements See Table 1 = <u> </u> F
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Map, Slope Measurements, and Photo-documentation Data

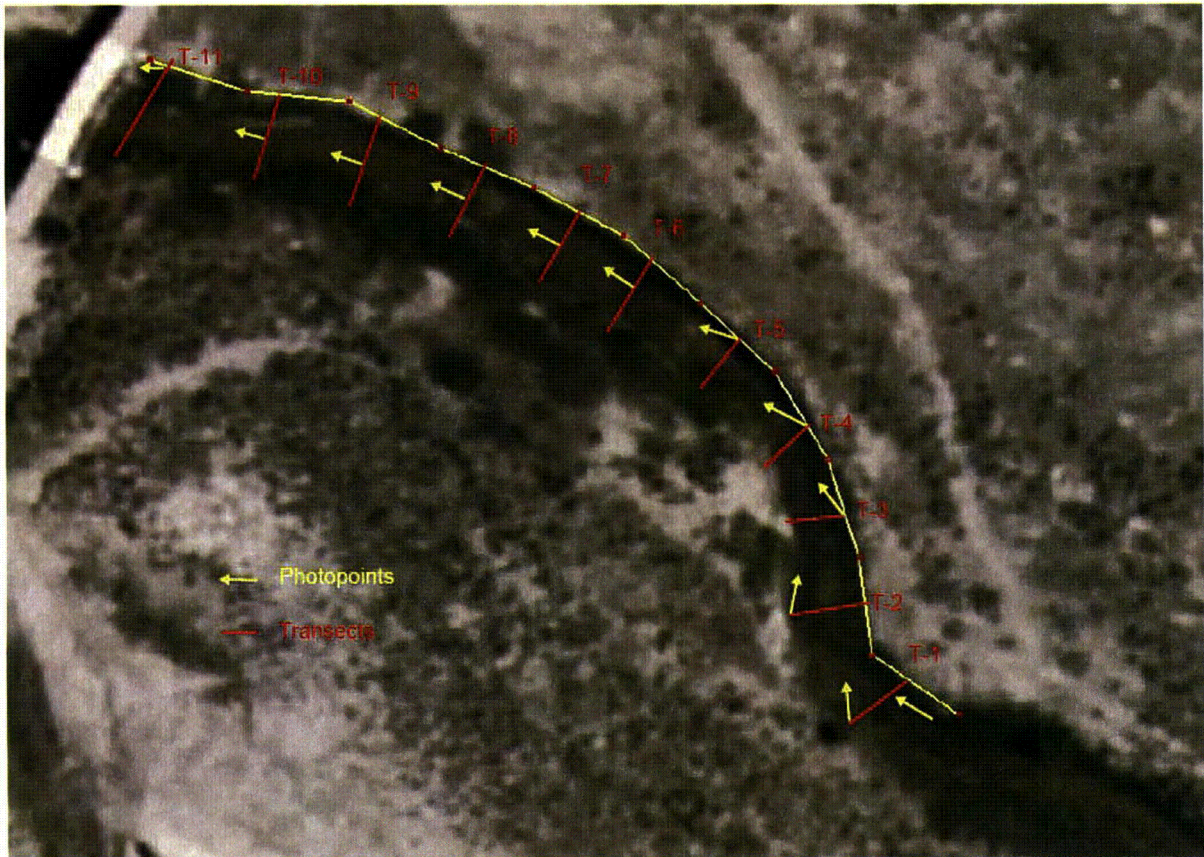
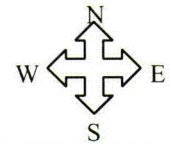
Project Site ID: BVC04

Stream Name: Beaver Creek

Date: 8 July 2008

Section E cont.

Draw a map of the site with location of most upstream and most downstream transects. Include locations of photographic points, direction of photograph, and frame number.



Approximately 200 m.

Bed Substrate Composition

Project Site ID: BVC04	Stream Name: Beaver Creek	Date: 8JUL 2008
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Section F

Organic Substrates			
	Description	Tally	Number
Detritus	sticks, wood, coarse plant material (CPOM)		
Muck-Mud	black, very fine organic (FPOM)		20
Inorganic Substrates			
	Diameter	Tally	Number
Clay	<0.004 (slick)		1
Silt	0.004-0.062		15
Sand	0.062-2 (gritty)		10
Very Fine Gravel	>2-4		0
Fine Gravel	>4-8		7
Medium Gravel	>8-16		9
Coarse Gravel	>16-32		13
Very Coarse Gravel	>32-64		18
Cobble	>64-128		11
Large Cobble	>128-256		1
Boulder	>256-512		
Large Boulder	>512		
Total Number:			105

Section G

Large Woody Debris Data

1

Project Site ID: BVC04 Stream Name: Beaver Creek m/d/yr: 07/11/2008 Page 1 of 1

Transect Spacing	Log Jam Number	LWD Number	Zone	Meander Location	Habitat Association	Angle	Length	Diameter
1-2	0	0						
2-3	0	0						
3-4	0	0						
4-5	0	0						
5-6	0	0						
6-7	0	0						
7-8	0	1	2	SS	Riffle	250	2.0	0.12
8-9	0	0						
9-10	0	0						
10-11	0	2	3	SS	Pool	180	8.0	0.4

Zone: Zone 1 is water surface at baseflow, Zone 2 is between baseflow surface and bankfull flow surface, Zone 3 is bankfull channel width above bankfull flow surface.
 Meander Location: IM=inside meander, OM=outside meander, CO=crossover, SS=straight section
 Habitat Association: PL=pool, RF=riffle, RN=run

LARGE WOODY DEBRIS CATEGORIES (≥ 10 cm small end diameter, ≥ 1.5 m length)				
Categories	1	2	3	4
Diameter Large End	0.1- <0.3 m	0.3- 0.6 m	0.6- 0.8 m	>0.8 m
Length	>1.5 - 5 m	5 - 15 m	>15 m	-

Stream Shade and Canopy Cover Monitoring

Project Site ID: BVC04	Stream Name: Beaver Creek	Date: 8 JUL 2008
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Section H

Site Name: BVC04							Date: 7/8/2008
Reach Length: 185 m				Transect Interval: 18.5 m			Initials: KS, LD
Transect	Left Bank	Center Upstream	Center Right	Center-downstream	Center Left	Right Bank	Comments:
1	0	0	0	0	0	8	RB = Shrubs
2	0	0	0	0	0	0	RB = Tree
3	2	0	0	0	0	1	RB = Tree
4	4	0	0	0	0	0	LB = Shrubs
5	8	0	0	0	0	4	LB = Shrubs
6	5	0	0	0	0	3	LB = Bank
7	13	0	0	0	0	3	LB = Bank RB = Shrub
8	8	0	0	0	0	9	LB = Bank
9	3	0	0	0	0	13	LB = Bank RB = Shrubs
10	11	0	0	0	0	11	LB = Forbs RB = Grass
11	12	16	2	0	9	12	LB, CU, CL = Bridge RB = Shrubs
Note: Cover in Transect 11 from bridge.							

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 7/8/08		1 of 11
Habitat Type Along Transect (circle one): pool riffle <u>run</u>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	P
Bank Height (0.1 m)	2.1	2.8
Bank Angle (degrees)	14	57
Streambank length (0.1 m)	8.3	5.0
Length of Streambank Vegetated (0.1 m)	7.3	4.0
Length of Streambank Eroded (0.1 m)	0	1.0
Length of Streambank Deposition (0.1 m)	1.0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.1	0.3
Undercut Bank (0.1 m)	0	0.3
Riparian landuse (circle one)	Cropland <input type="checkbox"/> pasture/rangeland prairie wetland shrub	woodland/forested barnyard developed other-specify
Animal Vegetation Use (circle one)	none <input type="checkbox"/> low moderate high	cropland <input type="checkbox"/> pasture/rangeland prairie wetland shrub
Riparian Vegetation Type (Dominant)	sedge/rush cottonwoods <input type="checkbox"/> grass/forb green ash	willows silver maple shrubs other_____
Riparian Age Class(es) of Trees, if present	seedling/sprout young/sapling mature	decedent dead <input type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus Sp.</i>	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.4			
LBF	7.8	0.00		
LEW	9.3	0.58	0.00	
LCB	10.7	0.90	0.32	
STR (@1/4)	11.3	1.31	0.45	
STR (@1/2)	11.8	0.90	0.40	
STR (@3/4)	12.4	0.90	0.40	
RCB	13.3	1.60	0.39	
REW	13.6	0.81	0.35	
RBF	13.7	0.10		
RTB	16.5			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 16.1

Bankfull width (RBF-LBF) = 6.0

Channel Bottom Width (RCB-LCB) = 2.6

Stream Width (REW-LEW) = 4.3

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		2 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input checked="" type="checkbox"/> run <input type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	P
Bank Height (0.1 m)	2.2	2.3
Bank Angle (degrees)	16	27
Streambank length (0.1 m)	8.1	4.6
Length of Streambank Vegetated (0.1 m)	8.5	3.1
Length of Streambank Eroded (0.1 m)	0.5	1.0
Length of Streambank Deposition (0.1 m)	0	0.5
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.1	0.1
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input checked="" type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input checked="" type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input checked="" type="checkbox"/> low <input type="checkbox"/> moderate high <input type="checkbox"/>	none <input checked="" type="checkbox"/> low <input type="checkbox"/> moderate high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> cottonwoods <input checked="" type="checkbox"/> grass/forb <input type="checkbox"/> green ash <input type="checkbox"/>	willows <input type="checkbox"/> silver maple <input type="checkbox"/> shrubs <input type="checkbox"/> other <input type="checkbox"/>
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> young/sapling <input type="checkbox"/> mature <input type="checkbox"/>	decadent <input type="checkbox"/> dead <input type="checkbox"/> not present <input checked="" type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus Sp.</i>	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	1.0			
LBF	6.1	0.00		
LEW	8.5	0.25	0.00	
LCB	8.9	0.38	0.11	
STR (@1/4)	9.8	0.41	0.15	
STR (@1/2)	10.6	0.47	0.22	
STR (@3/4)	11.6	0.46	0.17	
RCB	12.0	0.47	0.12	
REW	13.1	0.38	0.00	
RBF	14.2	-0.02		
RTB	16.0			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 15.0

Bankfull width (RBF-LBF) = 8.2

Channel Bottom Width (RCB-LCB) = 3.1

Stream Width (REW-LEW) = 4.6

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		3 of 11
Habitat Type Along Transect (circle one): pool riffle <input checked="" type="checkbox"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	A
Bank Height (0.1 m)	2.7	2.4
Bank Angle (degrees)	30	25
Streambank length (0.1 m)	5.3	6.3
Length of Streambank Vegetated (0.1 m)	5.0	4.3
Length of Streambank Eroded (0.1 m)	0.3	1.0
Length of Streambank Deposition (0.1 m)	0	1.0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0.1	0.1
Undercut Bank (0.1 m)	0.2	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> pasture/rangeland prairie wetland shrub	woodland/forested barnyard developed other-specify
Animal Vegetation Use (circle one)	none <input checked="" type="checkbox"/> low	moderate high
Riparian Vegetation Type (Dominant)	sedge/rush cottonwoods <input type="checkbox"/> grass/forb green ash	willows silver maple shrubs other_____
Riparian Age Class(es) of Trees, if present	seedling/sprout young/sapling mature	decadent dead <input checked="" type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i>	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.5			
LBF	4.0	0.00		
LEW	4.6	0.31	0.05	
LCB	5.1	0.69	0.31	
STR (@1/4)	6.2	0.58	0.29	
STR (@1/2)	7.6	0.44	0.19	
STR (@3/4)	9.0	0.45	0.15	
RCB	9.8	0.43	0.16	
REW	10.3	0.33	0.00	
RBF	12.6	-0.34		
RTB	15.5			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 15.0

Bankfull width (RBF-LBF) = 8.6

Channel Bottom Width (RCB-LCB) = 4.7

Stream Width (REW-LEW) = 5.7

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		4 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input checked="" type="checkbox"/> run <input type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	A
Bank Height (0.1 m)	3.7	3.7
Bank Angle (degrees)	45	22
Streambank length (0.1 m)	4.7	7.3
Length of Streambank Vegetated (0.1 m)	1.0	7.30
Length of Streambank Eroded (0.1 m)	3.7	0
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0.2
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate <input type="checkbox"/> low <input checked="" type="checkbox"/> high <input type="checkbox"/>	none <input type="checkbox"/> moderate <input type="checkbox"/> low <input checked="" type="checkbox"/> high <input type="checkbox"/>
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input checked="" type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>	sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input checked="" type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other <input type="checkbox"/>
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input checked="" type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input checked="" type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none <input type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i>	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)					Location Codes:
Location Code	Station	Bankfull Depth	Water Depth	Velocity	
LTB	0.3				LTB left top bank RTB right top bank LBF left bankfull RBF right bankfull LCB left channel bottom RCB right channel bottom LEW left edge water REW right edge water STR stream Bank top width (RTB-LTB) = <u>17.3</u> Bankfull width (RBF-LBF) = <u>8.1</u> Channel Bottom Width (RCB-LCB) = <u>5.5</u> Stream Width (REW-LEW) = <u>7.0</u> * Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.
LBF	3.0	0.0			
LEW	3.4	0.54	0.06		
LCB	3.7	0.74	0.31		
STR (@1/4)	4.6	0.79	0.36		
STR (@1/2)	6.4	0.63	0.12		
STR (@3/4)	8.4	0.71	0.21		
RCB	9.2	0.76	0.17		
REW	10.4	0.67	0.00		
RBF	11.1	0.05			
RTB	17.6				

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		5 of 11
Habitat Type Along Transect (circle one): pool riffle <u>run</u>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	P
Bank Height (0.1 m)	3.5	3.2
Bank Angle (degrees)	55	21
Streambank length (0.1 m)	4.4	8.0
Length of Streambank Vegetated (0.1 m)	2.0	7.5
Length of Streambank Eroded (0.1 m)	2.4	0.5
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0.2
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	Cropland <input type="checkbox"/> pasture/rangeland prairie wetland shrub	woodland/forested barnyard developed other-specify
Animal Vegetation Use (circle one)	none <input type="checkbox"/> low moderate high	cropland <input type="checkbox"/> pasture/rangeland prairie wetland shrub
Riparian Vegetation Type (Dominant)	sedge/rush cottonwoods <input type="checkbox"/> grass/forb green ash	willows silver maple shrubs other_____
Riparian Age Class(es) of Trees, if present	seedling/sprout young/sapling mature	decadent dead <input type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i>	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	0.7			
LBF	2.2	0.0		
LEW	3.0	0.50	0.00	
LCB	3.3	0.84	0.32	
STR (@1/4)	4.6	0.91	0.49	
STR (@1/2)	6.8	0.75	0.38	
STR (@3/4)	8.6	0.50	0.26	
RCB	9.8	0.48	0.21	
REW	10.7	0.40	0.00	
RBF	13.4	0.0		
RTB	17.7			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 17.0

Bankfull width (RBF-LBF) = 11.2

Channel Bottom Width (RCB-LCB) = 6.6

Stream Width (REW-LEW) = 7.7

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		6 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input type="checkbox"/> run <input checked="" type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank		
Bank Substrate (dominant)	Silt/Clay	Silt/Clay		
Bank Slumpage (present, p or absent, a)	A	A		
Bank Height (0.1 m)	3.7	3.9		
Bank Angle (degrees)	53	40		
Streambank length (0.1 m)	4.6	5.7		
Length of Streambank Vegetated (0.1 m)	4.1	5.7		
Length of Streambank Eroded (0.1 m)	0.5	0		
Length of Streambank Deposition (0.1 m)	0	0		
Riparian Buffer Width (m)	0	0		
Overhanging Vegetation (0.1 m)	0.1	2.0		
Undercut Bank (0.1 m)	0.1	0.3		
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>		
Animal Vegetation Use (circle one)	none <input type="checkbox"/> <input checked="" type="checkbox"/> low moderate high	none <input type="checkbox"/> <input checked="" type="checkbox"/> low moderate high		
Riparian Vegetation Type (Dominant)	sedge/rush cottonwoods grass/forb <input type="checkbox"/> green ash	willows silver maple shrubs other _____	sedge/rush cottonwoods grass/forb <input type="checkbox"/> green ash	willows silver maple shrubs other _____
Riparian Age Class(es) of Trees, if present	seedling/sprout young/sapling mature	decadent dead <input checked="" type="checkbox"/> none	seedling/sprout <input checked="" type="checkbox"/> young/sapling mature	decadent dead
Submergent Macrophytes (0.1 m)	0			
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i>			

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	8.0			
LBF	10.3	0		
LEW	11.0	0.52	0.06	
LCB	11.3	0.85	0.38	
STR (@1/4)	13.0	0.97	0.52	
STR (@1/2)	14.6	1.02	0.53	
STR (@3/4)	18.4	1.02	0.50	
RCB	20.0	1.07	0.45	
REW	20.9	0.67	0.00	
RBF	21.5	0.0		
RTB	25.5			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 17.5

Bankfull width (RBF-LBF) = 11.2

Channel Bottom Width (RCB-LCB) = 8.7

Stream Width (REW-LEW) = 9.9

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		7 of 11
Habitat Type Along Transect (circle one): pool <input type="checkbox"/> riffle <input checked="" type="checkbox"/> run <input type="checkbox"/>		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	P
Bank Height (0.1 m)	3.4	3.6
Bank Angle (degrees)	60	29
Streambank length (0.1 m)	3.9	8.0
Length of Streambank Vegetated (0.1 m)	0.1	8.0
Length of Streambank Eroded (0.1 m)	3.8	0
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0.3
Undercut Bank (0.1 m)	0	0.4
Riparian landuse (circle one)	Cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>	cropland <input type="checkbox"/> woodland/forested pasture/rangeland <input type="checkbox"/> barnyard prairie <input type="checkbox"/> developed wetland <input type="checkbox"/> other-specify shrub <input type="checkbox"/>
Animal Vegetation Use (circle one)	none <input type="checkbox"/> moderate low <input checked="" type="checkbox"/> high	none <input type="checkbox"/> moderate low <input checked="" type="checkbox"/> high
Riparian Vegetation Type (Dominant)	sedge/rush <input type="checkbox"/> willows cottonwoods <input type="checkbox"/> silver maple grass/forb <input type="checkbox"/> shrubs green ash <input type="checkbox"/> other _____	sedge/rush <input type="checkbox"/> willows cottonwoods <input type="checkbox"/> silver maple grass/forb <input type="checkbox"/> shrubs green ash <input type="checkbox"/> other _____
Riparian Age Class(es) of Trees, if present	seedling/sprout <input type="checkbox"/> decadent young/sapling <input type="checkbox"/> dead mature <input type="checkbox"/> none <input checked="" type="checkbox"/>	seedling/sprout <input type="checkbox"/> decadent young/sapling <input type="checkbox"/> dead mature <input type="checkbox"/> none <input checked="" type="checkbox"/>
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i>	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	13.0			
LBF	14.1	0.0		
LEW	14.5	0.68	0.00	
LCB	14.9	0.84	0.19	
STR (@1/4)	15.9	0.99	0.34	
STR (@1/2)	22.2	1.01	0.29	
STR (@3/4)	23.6	1.13	0.23	
RCB	24.4	1.11	0.33	
REW	24.6	1.17	0.30	
RBF	25.3	0.02		
RTB	31.0			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bank full
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 18.0

Bankfull width (RBF-LBF) = 11.2

Channel Bottom Width (RCB-LCB) = 9.5

Stream Width (REW-LEW) = 10.1

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		8 of 11
Habitat Type Along Transect (circle one): <input checked="" type="checkbox"/> pool <input type="checkbox"/> riffle <input type="checkbox"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	P
Bank Height (0.1 m)	3.2	3.3
Bank Angle (degrees)	55	30
Streambank length (0.1 m)	4.4	7.6
Length of Streambank Vegetated (0.1 m)	3.4	7.2
Length of Streambank Eroded (0.1 m)	1.0	0
Length of Streambank Deposition (0.1 m)	0	0.4
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0.1
Undercut Bank (0.1 m)	0	0
Riparian landuse (circle one)	<input type="checkbox"/> Cropland <input type="checkbox"/> woodland/forested <input checked="" type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub	<input type="checkbox"/> cropland <input type="checkbox"/> woodland/forested <input checked="" type="checkbox"/> pasture/rangeland <input type="checkbox"/> barnyard <input type="checkbox"/> prairie <input type="checkbox"/> developed <input type="checkbox"/> wetland <input type="checkbox"/> other-specify <input type="checkbox"/> shrub
Animal Vegetation Use (circle one)	<input type="checkbox"/> none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high	<input type="checkbox"/> none <input type="checkbox"/> moderate <input checked="" type="checkbox"/> low <input type="checkbox"/> high
Riparian Vegetation Type (Dominant)	<input type="checkbox"/> sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input checked="" type="checkbox"/> grass/forb <input type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other_____	<input type="checkbox"/> sedge/rush <input type="checkbox"/> willows <input type="checkbox"/> cottonwoods <input type="checkbox"/> silver maple <input type="checkbox"/> grass/forb <input checked="" type="checkbox"/> shrubs <input type="checkbox"/> green ash <input type="checkbox"/> other_____
Riparian Age Class(es) of Trees, if present	<input type="checkbox"/> seedling/sprout <input type="checkbox"/> decadent <input type="checkbox"/> young/sapling <input checked="" type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none	<input type="checkbox"/> seedling/sprout <input type="checkbox"/> decadent <input checked="" type="checkbox"/> young/sapling <input type="checkbox"/> dead <input type="checkbox"/> mature <input type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i>	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	1.0			
LBF	2.8	0.0		
LEW	3.1	1.05	0.00	
LCB	3.5	0.61	0.31	
STR (@1/4)	5.0	0.70	0.34	
STR (@1/2)	7.4	0.89	0.52	
STR (@3/4)	10.5	0.85	0.50	
RCB	11.7	0.70	0.27	
REW	12.5	0.60	0.11	
RBF	13.0	0.0		
RTB	18.0			

Location Codes:

LTB left top bank
 RTB right top bank
 LBF left bankfull
 RBF right bankfull

LCB left channel bottom
 RCB right channel bottom
 LEW left edge water

REW right edge water
 STR stream

Bank top width (RTB-LTB) = 17.0

Bankfull width (RBF-LBF) = 10.2

Channel Bottom Width (RCB-LCB) = 8.2

Stream Width (REW-LEW) = 9.4

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 7/8/08		9 of 11
Habitat Type Along Transect (circle one): <input checked="" type="checkbox"/> pool <input type="checkbox"/> riffle <input type="checkbox"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	A
Bank Height (0.1 m)	3.8	3.7
Bank Angle (degrees)	40	26
Streambank length (0.1 m)	5.2	8.4
Length of Streambank Vegetated (0.1 m)	4.1	8.4
Length of Streambank Eroded (0.1 m)	1.1	0
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0.2
Undercut Bank (0.1 m)	0	0.1
Riparian landuse (circle one)	<input type="checkbox"/> Cropland <input type="checkbox"/> pasture/rangeland <input type="checkbox"/> prairie <input type="checkbox"/> wetland <input type="checkbox"/> shrub	<input type="checkbox"/> woodland/forested <input type="checkbox"/> barnyard <input type="checkbox"/> developed <input type="checkbox"/> other-specify
Animal Vegetation Use (circle one)	<input type="checkbox"/> none <input checked="" type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high	<input type="checkbox"/> none <input checked="" type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high
Riparian Vegetation Type (Dominant)	<input type="checkbox"/> sedge/rush <input type="checkbox"/> cottonwoods <input type="checkbox"/> grass/forb <input type="checkbox"/> green ash	<input type="checkbox"/> willows <input type="checkbox"/> silver maple <input checked="" type="checkbox"/> shrubs <input type="checkbox"/> other
Riparian Age Class(es) of Trees, if present	<input type="checkbox"/> seedling/sprout <input type="checkbox"/> young/sapling <input type="checkbox"/> mature	<input type="checkbox"/> seedling/sprout <input checked="" type="checkbox"/> young/sapling <input type="checkbox"/> mature
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	Juncus sp.	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	1.0			
LBF	3.5	0.0		
LEW	4.2	0.60	0.02	
LCB	4.3	1.05	0.42	
STR (@1/4)	7.2	0.90	0.44	
STR (@1/2)	9.3	1.02	0.55	
STR (@3/4)	11.2	1.10	0.40	
RCB	12.4	0.95	0.28	
REW	12.9	0.90	0.20	
RBF	13.1	0.0		
RTB	20.0			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bankfull
- RBF right bankfull
- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water
- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 19.0

Bankfull width (RBF-LBF) = 9.6

Channel Bottom Width (RCB-LCB) = 8.1

Stream Width (REW-LEW) = 8.7

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 7/11/08		10 of 11
Habitat Type Along Transect (circle one): <u>pool</u> riffle run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	A	A
Bank Height (0.1 m)	3.5	3.7
Bank Angle (degrees)	20.5	28
Streambank length (0.1 m)	3.0	4.0
Length of Streambank Vegetated (0.1 m)	10.7	6.8
Length of Streambank Eroded (0.1 m)	10.7	6.8
Length of Streambank Deposition (0.1 m)	0.8	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	0.2
Undercut Bank (0.1 m)	0	0.2
Riparian landuse (circle one)	Cropland woodland/forested <input type="checkbox"/> pasture/rangeland barnyard prairie developed wetland other-specify shrub	cropland woodland/forested <input type="checkbox"/> pasture/rangeland barnyard prairie developed wetland other-specify shrub
Animal Vegetation Use (circle one)	none moderate <input type="checkbox"/> low high	none moderate <input type="checkbox"/> low high
Riparian Vegetation Type (Dominant)	sedge/rush willows cottonwoods silver maple grass/forb <input type="checkbox"/> shrubs green ash other _____	sedge/rush willows cottonwoods silver maple grass/forb <input type="checkbox"/> shrubs green ash other _____
Riparian Age Class(es) of Trees, if present	seedling/sprout decadent young/sapling dead mature <input type="checkbox"/> none	seedling/sprout decadent young/sapling dead mature <input type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i>	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)					Location Codes: LTB left top bank RTB right top bank LBF left bank full RBF right bankfull LCB left channel bottom RCB right channel bottom LEW left edge water REW right edge water STR stream Bank top width (RTB-LTB) = <u>21.0</u> Bankfull width (RBF-LBF) = <u>8.4</u> Channel Bottom Width (RCB-LCB) = <u>5.7</u> Stream Width (REW-LEW) = <u>7.6</u> * Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.
Location Code	Station	Bankfull Depth	Water Depth	Velocity	
LTB	1.5				
LBF	9.9	0.0			
LEW	10.3	0.55	0.01		
LCB	11.5	0.82	0.31		
STR (@1/4)	12.5	0.85	0.36		
STR (@1/2)	14.3	0.95	0.41		
STR (@3/4)	16.3	1.04	0.38		
RCB	17.2	1.00	0.32		
REW	17.9	0.75	0.01		
RBF	18.3	0.0			
RTB	22.5				

Transect Data

Project Site ID: BVC04	Stream Name: Beaver Creek	Transect Number
Date: 7/8/08		11 of 11
Habitat Type Along Transect (circle one): <input checked="" type="checkbox"/> pool <input type="checkbox"/> riffle <input type="checkbox"/> run		

Section I

Streambank and Riparian Features	Left Bank	Right Bank
Bank Substrate (dominant)	Silt/Clay	Silt/Clay
Bank Slumpage (present, p or absent, a)	P	A
Bank Height (0.1 m)	3.2	3.8
Bank Angle (degrees)	35	37
Streambank length (0.1 m)	5.4	6.5
Length of Streambank Vegetated (0.1 m)	4.4	5.5
Length of Streambank Eroded (0.1 m)	1.0	1.0
Length of Streambank Deposition (0.1 m)	0	0
Riparian Buffer Width (m)	0	0
Overhanging Vegetation (0.1 m)	0	1.0
Undercut Bank (0.1 m)	0	0.1
Riparian landuse (circle one)	<input type="checkbox"/> Cropland <input checked="" type="checkbox"/> pasture/rangeland <input type="checkbox"/> prairie <input type="checkbox"/> wetland <input type="checkbox"/> shrub	<input type="checkbox"/> woodland/forested <input type="checkbox"/> barnyard <input type="checkbox"/> developed <input type="checkbox"/> other-specify
Animal Vegetation Use (circle one)	<input type="checkbox"/> none <input checked="" type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high	<input type="checkbox"/> none <input checked="" type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high
Riparian Vegetation Type (Dominant)	<input type="checkbox"/> sedge/rush <input type="checkbox"/> cottonwoods <input type="checkbox"/> grass/forb <input type="checkbox"/> green ash	<input checked="" type="checkbox"/> willows <input type="checkbox"/> silver maple <input type="checkbox"/> shrubs <input type="checkbox"/> other_____
Riparian Age Class(es) of Trees, if present	<input checked="" type="checkbox"/> seedling/sprout <input checked="" type="checkbox"/> young/sapling <input type="checkbox"/> mature	<input type="checkbox"/> decadent <input type="checkbox"/> dead <input type="checkbox"/> none
Submergent Macrophytes (0.1 m)	0	
Emergent Macrophytes (0.1 m)	<i>Juncus sp.</i>	

Section J

Transect Data and Depth Velocity Data (record units under the heading for each column)				
Location Code	Station	Bankfull Depth	Water Depth	Velocity
LTB	5.0			
LBF	6.8	0.0		
LEW	8.6	0.78	0.01	
LCB	9.1	0.90	0.24	
STR (@1/4)	11.0	1.21	0.40	
STR (@1/2)	12.9	1.32	0.39	
STR (@3/4)	14.3	1.52	0.42	
RCB	15.8	1.50	0.28	
REW	16.2	1.31	0.14	
RBF	16.6	0.0		
RTB	20.9			

Location Codes:

- LTB left top bank
- RTB right top bank
- LBF left bank full
- RBF right bank full

- LCB left channel bottom
- RCB right channel bottom
- LEW left edge water

- REW right edge water
- STR stream

Bank top width (RTB-LTB) = 15.9

Bankfull width (RBF-LBF) = 9.8

Channel Bottom Width (RCB-LCB) = 6.7

Stream Width (REW-LEW) = 7.7

* Bankfull Depth for LEW or REW should equal L(R)CB Bankfull Depth minus L(R)CB Water Depth.



Photo 1. Site BVC01 looking upstream at Transect 1, April 15, 2008.

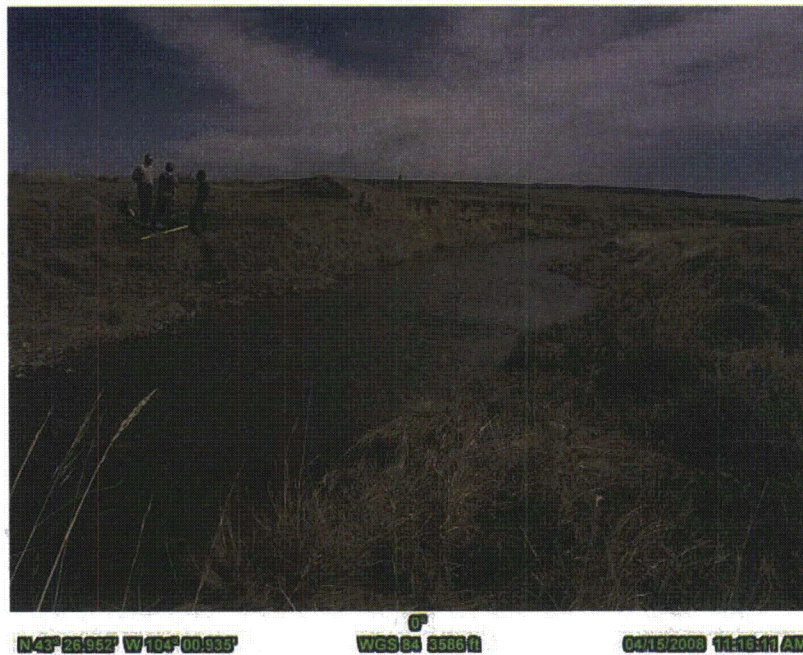


Photo 2. Site BVC01 looking upstream at Transect 2, April 15, 2008.



N 43° 26.965' W 104° 00.920'

WGS 84 3579 ft

04/15/2008 11:18:07 AM

Photo 3. Site BVC01 looking upstream at Transect 3, April 15, 2008.

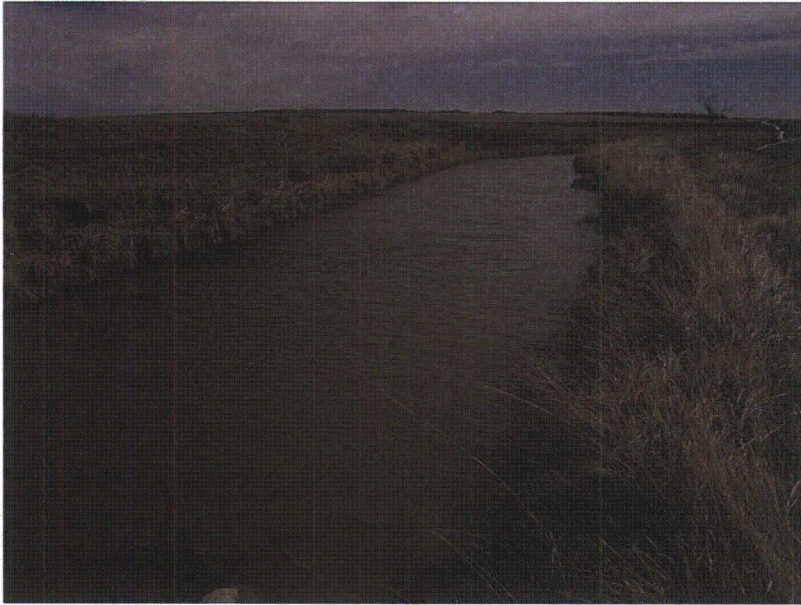


N 43° 26.964' W 104° 00.908'

WGS 84 3563 ft

04/15/2008 11:18:30 AM

Photo 4. Site BVC01 looking upstream at Transect 4, April 15, 2008.

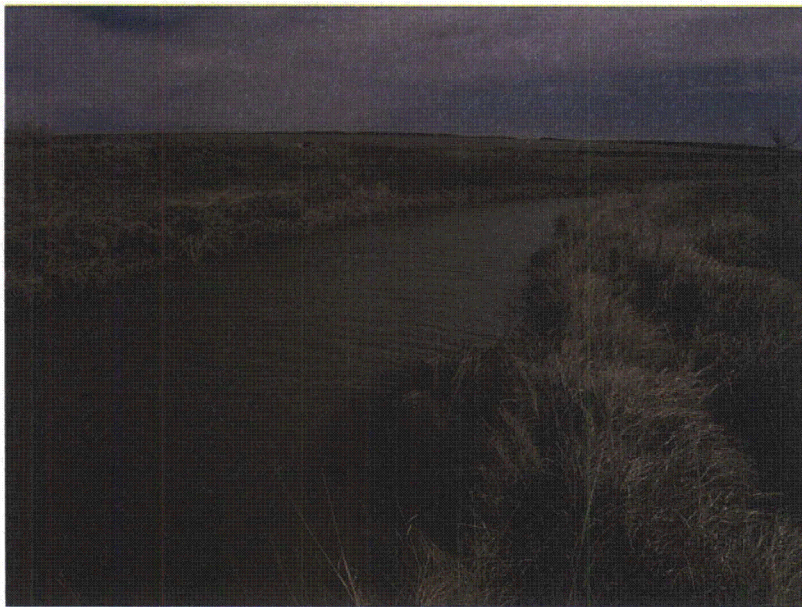


N45° 23.665' W104° 00.663'

WGS 84 8566 ft

04/15/2008 11:18:49 AM

Photo 5. Site BVC01 looking upstream at Transect 5, April 15, 2008.



N45° 23.665' W104° 00.873'

WGS 84 8579 ft

04/15/2008 11:19:09 AM

Photo 6. Site BVC01 f looking upstream at Transect 6, April 15, 2008.

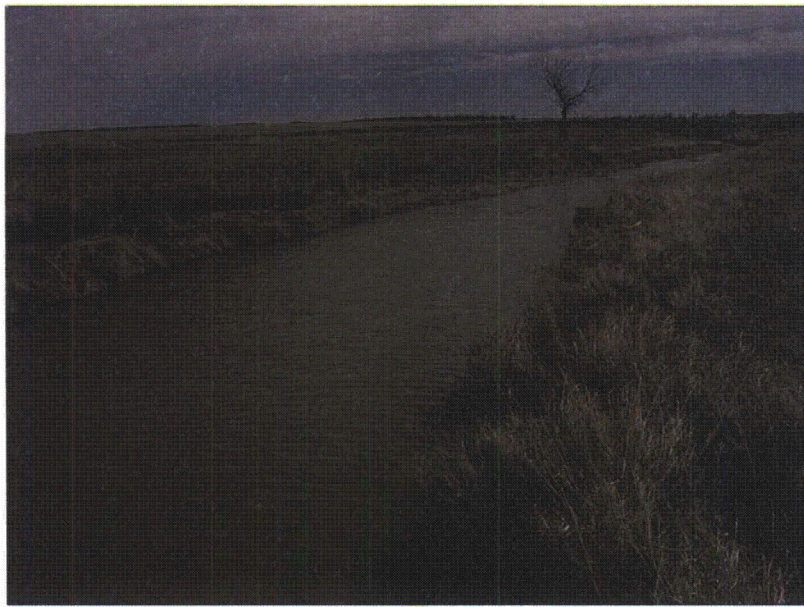


N 43° 26' 96" W 104° 00' 666"

WGS84 3589 ft

04/15/2008 11:19:29 AM

Photo 7. Site BVC01 looking upstream at Transect 7, April 15, 2008.



N 43° 26' 96" W 104° 00' 666"

WGS84 3589 ft

04/15/2008 11:19:45 AM

Photo 8. Site BVC01 looking upstream at Transect 8, April 15, 2008.

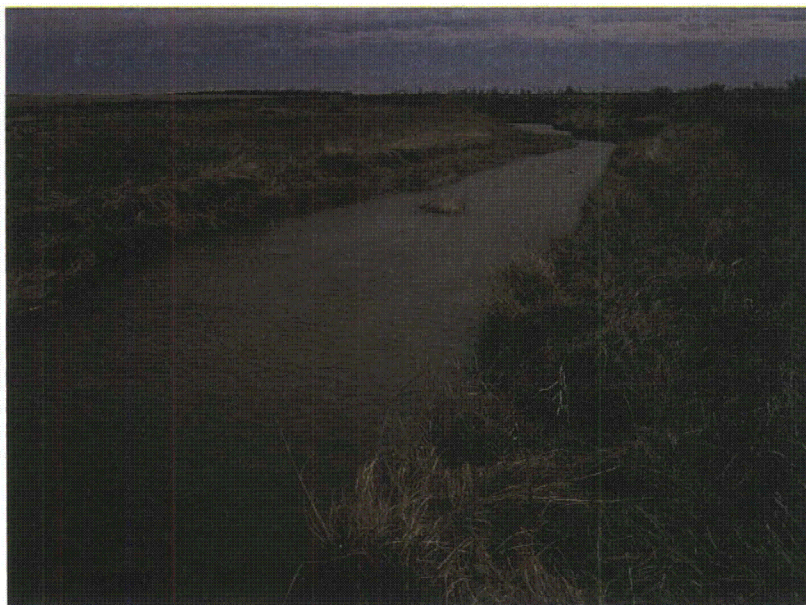


N 43° 26.954' W 104° 00.644'

WGS 84 3583 ft

04/15/2008 11:20:10 AM

Photo 9. Site BVC01 looking upstream at Transect 9, April 15, 2008.



N 43° 26.960' W 104° 00.829'

WGS 84 3583 ft

04/15/2008 11:20:30 AM

Photo 10. Site BVC01 looking upstream at Transect 10, April 15, 2008.



N 43° 26.955' W 104° 00.915'

WGS 84 3593 ft

04/15/2008 11:20:47 AM

Photo 11. Site BVC01 looking upstream at Transect 11 April 15, 2008.



N 43° 26.955' W 104° 00.804'

WGS 84 3602 ft

04/15/2008 11:21:11 AM

Photo 12. Site BVC01 looking upstream from Transect 11 April 15, 2008.



N 43° 32.080' W 104° 06.962' 0' WGS 84 3861 ft 04/16/2008 10:35:42 AM

Photo 13. Site BVC04 looking upstream from Transect 1 April 16, 2008.



N 43° 32.055' W 104° 06.940' 0' WGS 84 3704 ft 04/16/2008 10:38:35 AM

Photo 14. Site BVC04 looking upstream from Transect 2 April 16, 2008.



Photo 15. Site BVC04 looking upstream from Transect 3 April 16, 2008.

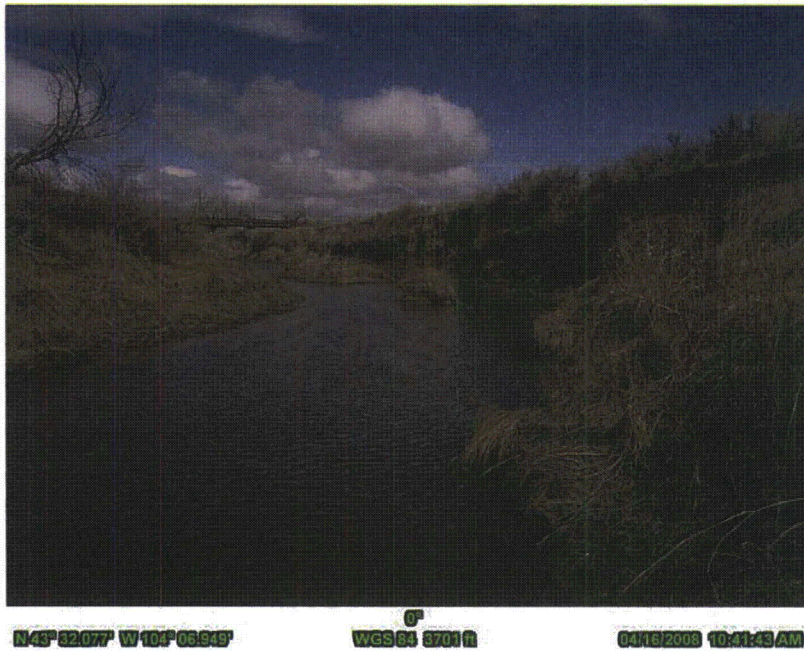


Photo 16. Site BVC04 looking upstream from Transect 4 April 16, 2008.



N 45° 32.065' W 104° 06.954'

WGS 84 5684 ft

04/16/2008 10:42:28 AM

Photo 17. Site BVC04 looking upstream from Transect 5 April 16, 2008.



N 45° 32.095' W 104° 06.957'

WGS 84 5673 ft

04/16/2008 10:43:15 AM

Photo 18. Site BVC04 looking upstream from Transect 6 April 16, 2008.



N 43° 32.102' W 104° 06.981' WGS 84 3684 ft 04/16/2008 10:44:18 AM

Photo 19. Site BVC04 looking upstream from Transect 7 April 16, 2008.



N 43° 32.107' W 104° 06.995' WGS 84 3681 ft 04/16/2008 10:45:23 AM

Photo 20. Site BVC04 looking upstream from Transect 8 April 16, 2008.

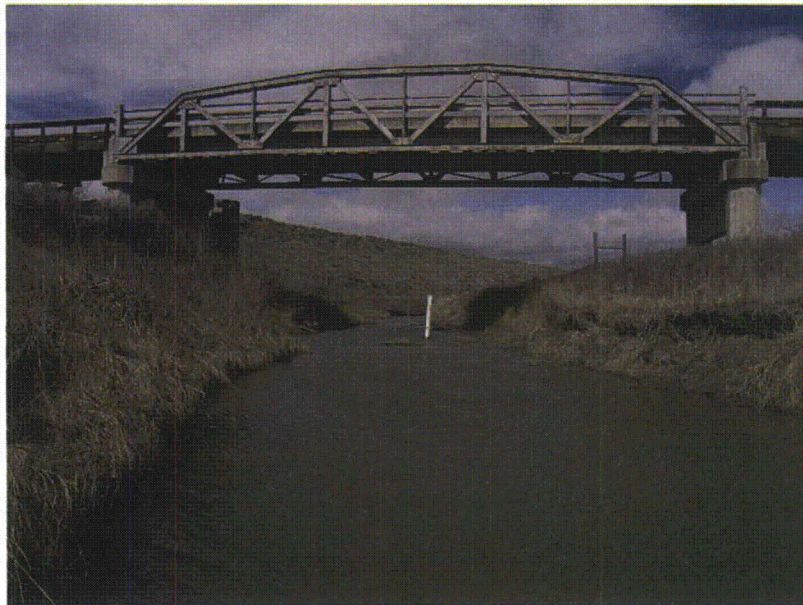


N 45° 52.105' W 104° 07.005'

WGS 84 3689 ft

04/16/2008 10:48:43 AM

Photo 21. Site BVC04 looking upstream from Transect 9 April 16, 2008.



N 45° 52.110' W 104° 07.025'

WGS 84 3694 ft

04/16/2008 10:47:10 AM

Photo 22. Site BVC04 looking upstream from Transect 10 April 16, 2008.



N 43° 32.115' W 104° 07.039'

WGS 84 3688 ft

04/16/2008 10:47:58 AM

Photo 23. Site BVC04 looking upstream from Transect 11 April 16, 2008.



Photo 24. Site BVC01 looking upstream at Transect 1, July 9, 2008.



Photo 25. Site BVC01 looking upstream at Transect 2, July 9, 2008.



Photo 26. Site BVC01 looking upstream at Transect 3, July 9, 2008.



Photo 27. Site BVC01 looking upstream at Transect 4, July 9, 2008.



Photo 28. Site BVC01 looking upstream at Transect 5, July 9, 2008.



Photo 29. Site BVC01 f looking upstream at Transect 6, July 9, 2008.



Photo 30. Site BVC01 looking upstream at Transect 7, July 9, 2008.



Photo 31. Site BVC01 looking upstream at Transect 8, July 9, 2008.



Photo 32. Site BVC01 looking upstream at Transect 9, July 9, 2008.



Photo 33. Site BVC01 looking upstream at Transect 10, July 9, 2008.



Photo 34. Site BVC01 looking upstream at Transect 11, July 9, 2008.



Photo 35. Site BVC04 looking upstream at Transect 1, July 8, 2008.



Photo 36. Site BVC04 looking upstream from Transect 1 July 8, 2008.



Photo 37. Site BVC04 looking upstream from Transect 2 July 8, 2008.



Photo 38. Site BVC04 looking upstream from Transect 3 July 8, 2008.



Photo 39. Site BVC04 looking upstream from Transect 4 July 8, 2008.



Photo 40. Site BVC04 looking upstream from Transect 5 July 8, 2008.



Photo 41. Site BVC04 looking upstream from Transect 6 July 8, 2008.



Photo 42. Site BVC04 looking upstream from Transect 7 July 8, 2008.



Photo 43. Site BVC04 looking upstream from Transect 8 July 8, 2008.



Photo 44. Site BVC04 looking upstream from Transect 9 July 8, 2008.



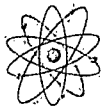
Photo 45. Site BVC04 looking upstream from Transect 10 July 8, 2008.



Photo 46. Site BVC04 looking upstream from Transect 11 July 8, 2008.



Photo 47. Site BVC04 looking downstream from Transect 11 July 8, 2008.



POWERTECH (USA) INC.

APPENDIX 2.8-J

FISH COLLECTION DATA FORMS

S. D. GAME FISH AND PARKS - STREAM SURVEY FIELD DATA SHEET
REVISED 2JUL2008



Stream Name: Beaver Creek

Page 1 of 1

Site Number:

DATE
 (d d m m m y y)

Site Description: BVC01 - Beaver Creek downstream

Site Length (meters): S R E T S

pH: . Dist. below top net
 Cond. (umhos/cm): (meters) Stream Widths (meters) Smith-Roots
 Temp. (C) air: . Mode:
 Water: . 0 0 7 . 4 5 0 0 5 . 7 Volts:
 1 0 0 7 . 5 6 0 0 4 . 8
 2 0 .0 7 . 6 7 0 0 5 . 6
 3 0 0 7 . 1 8 0 0 6 . 5
 4 0 0 6 . 6 9 0 0 6 . 4
 1 0 0 0 6 . 3

Personnel: A. Wones, K. Shook

#1 #2 #3 #4
 #5 #6 #7 #8
 Data Scales Lengths Weights

	Pass #1	Pass #2	Pass #3	Pass #4	Pass #5
Start time: (hhmm)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
End time: (hhmm)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root (seconds)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Shocker #1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root (seconds)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Shocker #2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root (seconds)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Shocker #3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Barge Shocker:
 Range (H/L): Percent: Amps: Pulse:

Pass	Start time (h h m m)	End time (h h m m)	Duration (seconds)	Anode #1	Anode #2	Anode #3
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

REVISED 2JUL2008



Stream Name: Beaver Creek

Bulk Weights - (Record #5)

	(m m)		to	(m m)		Pass#	Species			Total Number			Total Weight			
Size Range:	2	9		0	6	4	1	F	H	M	0	6	4	0	8	1
Size Range:	4	1		4	8		1	P	L	K	0	0	2	0	0	8
Size Range:				1	2	0	1	G	R	S	0	0	1	0	2	5
Size Range:	4	8		0	4	8	1	L	N	D	0	0	1	0	0	<1
Size Range:																
Size Range:																
Size Range:																
Size Range:																
Size Range:																
Size Range:																

Digital Photos - Description

Top Blocking Net Looking Upstream 122 _____
 Top Blocking Net Looking Downstream _____
 Bottom Blocking Net Looking Upstream 116 _____
 Bottom Blocking Net Looking Downstream _____
 Upstream blocknet UTM: E 579651; N 4811171 _____
 Downstream blocknet UTM: E 579745; N 4811201 _____

Video Camera

Tape #: _____
 Begin: _____
 End: _____

	(d d m m m y y)						Personnel		
Photos labeled:									
Photos filed:									

Comments: FHM = fathead minnow, GRS = Green Sunfish, LND = Long-Nosed Dace.
 PLK = Plains Killifish.

DATA ENTRY - RECORD 2									
	(d d m m m y y)						Personnel		
Data Entry									
Verification:									

Field Q.C. by: _____

Batch Number: _____

DATA ENTRY - RECORD 3									
	(d d m m m y y)						Personnel		
Data Entry									
Verification:									

DATA ENTRY - RECORD 4									
	(d d m m m y y)						Personnel		
Data Entry									
Verification:									

DATA ENTRY - RECORD 5									
	(d d m m m y y)						Personnel		
Data Entry									
Verification:									

REVISED 2JUL2008

Stream Name Beaver Creek

Site Number BVC01

DATE					
dd-mmm-yy					
1	6	A	P	R	08

Page 1 of 1

example 0 2 M A Y 9 2

Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S c a.	M r.	S e x	Comments	Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S c a.	M r.	S e x	Comments
1	1	F H M	0 3 0					fathead minnow	51	1	F H M	0 5 3					
2	1	F H M	0 4 8						52	1	F H M	0 4 0					
3	1	F H M	0 6 0						53	1	F H M	0 5 6					
4	1	F H M	0 6 2						54	1	F H M	0 4 9					
5	1	F H M	0 4 6						55	1	F H M	0 5 0					
6	1	F H M	0 5 0						56	1	F H M	0 3 0					
7	1	F H M	0 6 1						57	1	F H M	0 6 1					
8	1	F H M	0 5 9						58	1	F H M	0 3 6					
9	1	F H M	0 4 8						59	1	F H M	0 4 9					
10	1	F H M	0 5 2						60	1	F H M	0 5 3					
11	1	F H M	0 5 8						61	1	F H M	0 5 9					
12	1	F H M	0 4 3						62	1	F H M	0 3 8					
13	1	F H M	0 4 3						63	1	F H M	0 3 6					
14	1	F H M	0 5 9						64	1	F H M	0 4 2	0 0 8	1			Combined Wt. For all fish
15	1	F H M	0 5 9						65	1	P L K	0 4 1					Plain Killifish
16	1	F H M	0 6 2						66	1	P L K	0 4 8	0 0 0	8			Combined Wt. For all fish
17	1	F H M	0 4 1						67	1	G R S	1 2 0	0 0 2	5			Green Sunfish
18	1	F H M	0 4 8						68	1	L N D	0 4 8	0 0 0	<1			Long-Nosed Dace
19	1	F H M	0 5 6						69	1							
20	1	F H M	0 6 0						70	1							
21	1	F H M	0 5 0						71	1							
22	1	F H M	0 4 4						72	1							
23	1	F H M	0 4 5						73	1							
24	1	F H M	0 6 1						74	1							
25	1	F H M	0 5 4						75	1							
26	1	F H M	0 3 0						76	1							
27	1	F H M	0 5 9						77	1							
28	1	F H M	0 3 0						78	1							
29	1	F H M	0 5 5						79	1							
30	1	F H M	0 4 6						80	1							
31	1	F H M	0 5 0						81	1							
32	1	F H M	0 3 1						82	1							
33	1	F H M	0 5 2						83	1							
34	1	F H M	0 6 6						84	1							
35	1	F H M	0 5 6						85	1							
36	1	F H M	0 3 0						86	1							
37	1	F H M	0 3 2						87	1							
38	1	F H M	0 3 5						88	1							
39	1	F H M	0 3 0						89	1							
40	1	F H M	0 3 4						90	1							
41	1	F H M	0 5 9						91	1							
42	1	F H M	0 5 2						92	1							
43	1	F H M	0 5 7						93	1							
44	1	F H M	0 6 4						94	1							
45	1	F H M	0 5 8						95	1							
46	1	F H M	0 3 7						96	1							
47	1	F H M	0 2 9						97	1							
48	1	F H M	0 4 6						98	1							
49	1	F H M	0 3 5						99	1							
50	1	F H M	0 6 4						00	1							

S. D. GAME FISH AND PARKS - STREAM SURVEY FIELD DATA SHEET
 REVISED 2JUL2008



Stream Name: Beaver Creek

Page 1 of 2

Site Number:

DATE
 (d d m m m y y)

Site Description: BVC04 - Upstream Site

Site Length (meters): S R T

pH:

Cond. (umhos/cm):

Temp. (C) air:

Water:

Dist. below top net (meters):
 0

Stream Widths (meters):
 5 0

Smith-Roots
 Mode:

Volts:

Personnel:

#1 #2 #3 #4

#5 #6 #7 #8

Data Scales Lengths Weights

	Pass #1	Pass #2	Pass #3	Pass #4	Pass #5
Start time: (hhmm)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
End time: (hhmm)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Smith-Root (seconds)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Shocker #1	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Smith-Root (seconds)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Shocker #2	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Smith-Root (seconds)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Shocker #3	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

Barge Shocker:

Range (H/L): Percent: Amps: Pulse:

Pass	Start time (h h m m)	End time (h h m m)	Duration (seconds)	Anode #1	Anode #2	Anode #3
1	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
2	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
3	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
4	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
5	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

Stream Name: Beaver Creek



Bulk Weights - (Record #5)

	(m m)		to	(m m)		Pass#	Species			Total Number			Total Weight			
Size Range:	4	9		1	1	2	1	G	R	S	0	0	4	0	3	0
Size Range:		0		2	1	5	1	C	H	C	0	0	1	0	7	2
Size Range:							1	C	A	P			3		2	8
Size Range:	4	2		0	6	6	1	P	L	K	0	1	0	0	1	4
Size Range:	2	1		0	6	6	1	F	H	M		8	4	0	9	2
Size Range:																
Size Range:																
Size Range:																
Size Range:																
Size Range:																

Digital Photos - Description

Top Blocking Net Looking Upstream _____
 Top Blocking Net Looking Downstream _____
 Bottom Blocking Net Looking Upstream _____
 Bottom Blocking Net Looking Downstream _____
Upstream Blocknet E 571380 N 4820615
Downstream blocknet E 571444 N4820551

Video Camera

Tape #: _____
 Begin: _____
 End: _____

	(d d m m m y y)						Personnel		
Photos labeled:									
Photos filed:									

Comments: GRS=Green Sunfish, CHC= Channel Catfish, PLK= Plains Killifish,
FHM= Fathead Minnow CAP= CARP
 Water temp 7.0 C at 11:28 and 16.03 at 18:43; Turbidity 11.8, DO 9.20

DATA ENTRY - RECORD 2									
	(d d m m m y y)						Personnel		
Data Entry:									
Verification:									

Field Q.C. by: A. Wones

Batch Number: _____

DATA ENTRY - RECORD 3									
	(d d m m m y y)						Personnel		
Data Entry:									
Verification:									

DATA ENTRY - RECORD 4									
	(d d m m m y y)						Personnel		
Data Entry:									
Verification:									

DATA ENTRY - RECORD 5									
	(d d m m m y y)						Personnel		
Data Entry:									
Verification:									

Stream Name Beaver Creek
 Site Number BVC04

DATE					
dd-mmm-yy					
1	6	A	P	R	08

example 0 2 M A Y 9 2

Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S a.	M r.	S x	Comments	Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S a.	M r.	S x	Comments
1	1	G R S	112	0025				Green Sunfish	51	1	F H M	045					
2	1	G R S	050						52	1	F H M	047					
3	1	G R S	049						53	1	F H M	031					
4	1	G R S	053	0030				Comb. Wt	54	1	F H M	048					
5	1	C H C	215	0072				Channel Catfish	55	1	F H M	055					
6	1	P L K	04					Plains Killifish	56	1	F H M	040					
7	1	P L K	06						57	1	F H M	045					
8	1	P L K	04					Comb. Wt	58	1	F H M	046					
9	1	P L K	05						59	1	F H M	035					
10	1	P L K	04						60	1	F H M	045					
11	1	P L K	04						61	1	F H M	054					
12	1	P L K	04						62	1	F H M	039					
13	1	P L K	05						63	1	F H M	043					
14	1	P L K	04						64	1	F H M	031					
15	1	P L K	04						65	1	F H M	058					
16	1	C A P	111	0021				Carp	66	1	F H M	056					
17	1	C A P	062					Comb. Wt of #17,18+7g	67	1	F H M	047					
18	1	C A P	053			7		Comb. Wt	68	1	F H M	053					
19	1	F H M	052					Fathead Minnow	69	1	F H M	032					
20	1	F H M	041			9	2	Comb. Wt	70	1	F H M	038					
21	1	F H M	042						71	1	F H M	041					
22	1	F H M	054						72	1	F H M	039					
23	1	F H M	035						73	1	F H M	051					
24	1	F H M	037						74	1	F H M	044					
25	1	F H M	041						75	1	F H M	038					
26	1	F H M	043						76	1	F H M	057					
27	1	F H M	036						77	1	F H M	050					
28	1	F H M	033						78	1	F H M	041					
29	1	F H M	044						79	1	F H M	044					
30	1	F H M	046						80	1	F H M	057					
31	1	F H M	052						81	1	F H M	045					
32	1	F H M	036						82	1	F H M	047					
33	1	F H M	050						83	1	F H M	043					
34	1	F H M	039						84	1	F H M	045					
35	1	F H M	057						85	1	F H M	046					
36	1	F H M	036						86	1	F H M	052					
37	1	F H M	033						87	1	F H M	047					
38	1	F H M	039						88	1	F H M	040					
39	1	F H M	065						89	1	F H M	048					
40	1	F H M	043						90	1	F H M	045					
41	1	F H M	060						91	1	F H M	047					
42	1	F H M	021						92	1	F H M	041					
43	1	F H M	040						93	1	F H M	045					
44	1	F H M	030						94	1	F H M	035					
45	1	F H M	039						95	1	F H M	039					
46	1	F H M	056						96	1	F H M	047					
47	1	F H M	054						97	1	F H M	058					
48	1	F H M	063						98	1	F H M	047					
49	1	F H M	049						99	1	F H M	031					
50	1	F H M	066						00	1	F H M	027					

S. D. GAME FISH AND PARKS - STREAM SURVEY FIELD DATA SHEET
 REVISED 2JUL2008



Stream Name: Cheyenne River

Page 1 of 2

Site Number:

DATE
 (d d m m m y y)

Site Description: Site CHR05 - Cheyenne River at Marietta

Site Length (meters): S R E T N

pH: .
 Cond. (umhos/cm):
 Temp. (C) air: .
 Water:

Dist. below top net (meters):
 0
 1 0
 2 0
 3 0
 4 0

Stream Widths (meters):
 5 0
 6 0
 7 0
 8 0
 9 0
 1 0 0

Smith-Roots
 Mode:
 Volts:

Personnel:

#1 #2 #3 #4
 #5 #6 #7 #8
 Data Scales Lengths Weights

	Pass #1	Pass #2	Pass #3	Pass #4	Pass #5
Start time: (hhmm)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
End time: (hhmm)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root (seconds)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Shocker #1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root (seconds)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Shocker #2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root (seconds)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Shocker #3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Barge Shocker:

Range (H/L): Percent: Amps: . Pulse:

Pass	Start time (h h m m)	End time (h h m m)	Duration (seconds)	Anode #1	Anode #2	Anode #3
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Bulk Weights - (Record #5)

	(m m)	to	(m m)	Pass#	Species	Total Number	Total Weight
Size Range:	9 7		0 9 7		R I C	0 0 1	0 1 3
Size Range:	9 8		0 9 8		G R S	0 0 1	0 2 0
Size Range:	3 2		0 7 4		P L K	0 4 8	0 6 9
Size Range:	8 2		2 2 0		S R S	0 1 4	6 1 2
Size Range:	5 1		0 5 1		P T M	0 0 1	0 0 <1
Size Range:	3 1		0 6 7		S A S	0 3 8	0 5 3
Size Range:	2 5		0 8 8		C R C	1 0 0	0 9 1
Size Range:							
Size Range:							
Size Range:							

Digital Photos - Description

Top Blocking Net Looking Upstream _____

Top Blocking Net Looking Downstream _____

Bottom Blocking Net Looking Upstream _____

Bottom Blocking Net Looking Downstream _____

Upstream blocknet at UTM E0587455 N4804678

Downstream blocknet at UTM E0587538 N4804736

Video Camera

Tape #:

--	--	--	--

Begin:

--	--	--	--

End:

--	--	--	--

Photos Labeled:	(d d m m m y y)	Personnel
Photos Filed:		

Comments: RIC= River Carpsucker; GRS = Green Sunfish; PLK = Plains kilifish;
SRS = Shorthead Redhorse Sucker; PTM = Plains Topminnow; SAS = Sand Shiner;
CRC = Creek Chub.

DATA ENTRY - RECORD 2	(d d m m m y y)	Personnel
Data Entry:		
Verification:		

Field Q.C. by: A. Wones

Batch Number:

--	--	--	--

DATA ENTRY - RECORD 3	(d d m m m y y)	Personnel
Data Entry:		
Verification:		

DATA ENTRY - RECORD 4	(d d m m m y y)	Personnel
Data Entry:		
Verification:		

DATA ENTRY - RECORD 5	(d d m m m y y)	Personnel
Data Entry:		
Verification:		

Revised: 08JUL08

Stream Name Cheyenne River

Site Number CHR05

DATE					
dd-mmm-yy					
1	5	A	P	R	08

example 0 2 M A Y 9 2

Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S a.	M r.	S x	Comments	Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S a.	M r.	S x	Comments
1	1	C R C	0 3 9					Creek Chu	51	1	C R C	0 4 4					
2	1	C R C	0 6 8	0 9 1				Combined wt =	52	1	C R C	0 4 2					
3	1	C R C	0 4 9						53	1	C R C	0 4 5					
4	1	C R C	0 5 0						54	1	C R C	0 7 7					
5	1	C R C	0 6 1						55	1	C R C	0 3 7					
6	1	C R C	0 4 5						56	1	C R C	0 4 8					
7	1	C R C	0 7 5						57	1	C R C	0 4 1					
8	1	C R C	0 3 9						58	1	C R C	0 7 4					
9	1	C R C	0 4 6						59	1	C R C	0 3 7					
10	1	C R C	0 3 8						60	1	C R C	0 3 8					
11	1	C R C	0 4 1						61	1	C R C	0 3 9					
12	1	C R C	0 3 5						62	1	C R C	0 4 0					
13	1	C R C	0 3 5						63	1	C R C	0 2 5					
14	1	C R C	0 5 8						64	1	C R C	0 4 2					
15	1	C R C	0 4 3						65	1	C R C	0 3 0					
16	1	C R C	0 4 0						66	1	C R C	0 5 2					
17	1	C R C	0 4 0						67	1	C R C	0 3 0					
18	1	C R C	0 6 0						68	1	C R C	0 5 8					
19	1	C R C	0 4 9						69	1	C R C	0 4 3					
20	1	C R C	0 3 7						70	1	C R C	0 6 0					
21	1	C R C	0 4 1						71	1	C R C	0 6 2					
22	1	C R C	0 3 3						72	1	C R C	0 5 2					
23	1	C R C	0 3 2						73	1	C R C	0 4 1					
24	1	C R C	0 5 2						74	1	C R C	0 5 8					
25	1	C R C	0 3 1						75	1	C R C	0 4 4					
26	1	C R C	0 2 6						76	1	C R C	0 4 1					
27	1	C R C	0 5 0						77	1	C R C	0 4 0					
28	1	C R C	0 4 6						78	1	C R C	0 4 2					
29	1	C R C	0 5 4						79	1	C R C	0 6 0					
30	1	C R C	0 4 5						80	1	C R C	0 3 8					
31	1	C R C	0 5 2						81	1	C R C	0 7 0					
32	1	C R C	0 3 3						82	1	C R C	0 5 7					
33	1	C R C	0 3 0						83	1	C R C	0 4 9					
34	1	C R C	0 5 0						84	1	C R C	0 4 7					
35	1	C R C	0 3 5						85	1	C R C	0 5 9					
36	1	C R C	0 7 1						86	1	C R C	0 5 9					
37	1	C R C	0 4 8						87	1	C R C	0 3 8					
38	1	C R C	0 6 6						88	1	C R C	0 5 8					
39	1	C R C	0 4 4						89	1	C R C	0 4 0					
40	1	C R C	0 4 1						90	1	C R C	0 3 2					
41	1	C R C	0 4 0						91	1	C R C	0 3 7					
42	1	C R C	0 3 9						92	1	C R C	0 3 6					
43	1	C R C	0 3 6						93	1	C R C	0 4 7					
44	1	C R C	0 7 0						94	1	C R C	0 4 1					
45	1	C R C	0 5 1						95	1	C R C	0 5 6					
46	1	C R C	0 4 2						96	1	C R C	0 4 8					
47	1	C R C	0 8 8						97	1	C R C	0 5 0					
48	1	C R C	0 3 6						98	1	C R C	0 4 0					
49	1	C R C	0 7 7						99	1	C R C	0 4 0					
50	1	C R C	0 7 5						00	1	C R C	0 4 5					

Revised: 2JUL08

Stream Name Cheyenne River

Site Number CHR05

DATE					
dd-mmm-yy					
1	5	A	P	R	08

Page 2 of 3

example 0 2 M A Y 9 2

Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S c a.	M o r.	S e x	Comments	Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S c a.	M o r.	S e x	Comments
1	1	R I C	097	0013				Likely River carpsucker	51	1	S R S	174	0072				Shorthead redhorse sucker
2	1	G R S	098	0020				Green sunfish	52	1	S R S	220	0122				
3	1	P L K	058					Plains killifish.	53	1	S R S	201	1000				
4	1	P L K	065	0069				Combined wt	54	1	S R S	197	0094				
5	1	P L K	035						55	1	S R S	178	0080				
6	1	P L K	057						56	1	S R S	169	0054				
7	1	P L K	039						57	1	S R S	110	0007				
8	1	P L K	070						58	1	S R S	084	0005				
9	1	P L K	042						59	1	S R S	085	0003				
10	1	P L K	072						60	1	S R S	195	0098				
11	1	P L K	046						61	1	S R S	173	0068				
12	1	P L K	036						62	1	S R S	082	0003				
13	1	P L K	044						63	1	S R S	083	0003				
14	1	P L K	052						64	1	S R S	088	0003				
15	1	P L K	065						65	1	P T M	051	000<1				Plains Topminnow Sand Shiner.
16	1	P L K	040						66	1	S A S	067					
17	1	P L K	067						67	1	S A S	038	0053				Combined Wt
18	1	P L K	068						68	1	S A S	062					
19	1	P L K	052						69	1	S A S	058					
20	1	P L K	060						70	1	S A S	059					
21	1	P L K	060						71	1	S A S	060					
22	1	P L K	074						72	1	S A S	049					
23	1	P L K	048						73	1	S A S	047					
24	1	P L K	041						74	1	S A S	058					
25	1	P L K	040						75	1	S A S	059					
26	1	P L K	032						76	1	S A S	044					
27	1	P L K	064						77	1	S A S	047					
28	1	P L K	057						78	1	S A S	040					
29	1	P L K	040						79	1	S A S	055					
30	1	P L K	043						80	1	S A S	062					
31	1	P L K	053						81	1	S A S	051					
32	1	P L K	068						82	1	S A S	063					
33	1	P L K	037						83	1	S A S	044					
34	1	P L K	042						84	1	S A S	031					
35	1	P L K	034						85	1	S A S	045					
36	1	P L K	046						86	1	S A S	039					
37	1	P L K	036						87	1	S A S	057					
38	1	P L K	040						88	1	S A S	057					
39	1	P L K	049						89	1	S A S	057					
40	1	P L K	048						90	1	S A S	035					
41	1	P L K	060						91	1	S A S	034					
42	1	P L K	041						92	1	S A S	043					
43	1	P L K	032						93	1	S A S	046					
44	1	P L K	051						94	1	S A S	057					
45	1	P L K	038						95	1	S A S	049					
46	1	P L K	040						96	1	S A S	033					
47	1	P L K	060						97	1	S A S	050					
48	1	P L K	045						98	1	S A S	029					
49	1	P L K	036						99	1	S A S	043					
50	1	P L K	044						00	1	S A S	045					

Revised: 2JUL08

Stream Name Cheyenne River

Site Number CHR05

DATE					
dd-mmm-yy					
1	5	A	P	R	08

Page 3 of 3

example 0 2 M A Y 9 2

Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S c a	M o r	S e x	Comments	Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S c a	M o r	S e x	Comments
1	1	S A S	0 3 3					Sand Shiner	51	1							
2	1	S A S	0 3 2						52	1							
3	1	S A S	0 3 2						53	1							
4	1								54	1							
5	1								55	1							
6	1								56	1							
7	1								57	1							
8	1								58	1							
9	1								59	1							
10	1								60	1							
11	1								61	1							
12	1								62	1							
13	1								63	1							
14	1								64	1							
15	1								65	1							
16	1								66	1							
17	1								67	1							
18	1								68	1							
19	1								69	1							
20	1								70	1							
21	1								71	1							
22	1								72	1							
23	1								73	1							
24	1								74	1							
25	1								75	1							
26	1								76	1							
27	1								77	1							
28	1								78	1							
29	1								79	1							
30	1								80	1							
31	1								81	1							
32	1								82	1							
33	1								83	1							
34	1								84	1							
35	1								85	1							
36	1								86	1							
37	1								87	1							
38	1								88	1							
39	1								89	1							
40	1								90	1							
41	1								91	1							
42	1								92	1							
43	1								93	1							
44	1								94	1							
45	1								95	1							
46	1								96	1							
47	1								97	1							
48	1								98	1							
49	1								99	1							
50	1								00	1							

S. D. GAME FISH AND PARKS - STREAM SURVEY FIELD DATA SHEET



Stream Name: Beaver Creek

Page 1 of 1

Site Number:

DATE
(d d m m m y y)

Site Description: BVC01 - Beaver Creek downstream

Site Length (meters): S R E T S

Dist. below

pH:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	top net	Stream Widths				Smith-Roots
Cond. (umhos/cm):	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	(meters)	(meters)				Mode:
Temp. (C) air:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	0	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Volts:
Water:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
					2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
					3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
					4	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Personnel: A. Wones, K. Shook, M. Winland

#1	<input type="text"/>	#2	<input type="text"/>	#3	<input type="text"/>	#4	<input type="text"/>
#5	<input type="text"/>	#6	<input type="text"/>	#7	<input type="text"/>	#8	<input type="text"/>
Data	<input type="text"/>	Scales	<input type="text"/>	Lengths	<input type="text"/>	Weights	<input type="text"/>

	Pass #1	Pass #2	Pass #3	Pass #4	Pass #5
Start time:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
(hhmm)					
End time:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
(hhmm)					
Smith-Root	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
(seconds)					
Shocker #1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
(seconds)					
Shocker #2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
(seconds)					
Shocker #3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Barge Shocker: Range (H/L): Percent: Amps: Pulse:

Pass	Start time	End time	Duration	Anode	Anode	Anode
	(h h m m)	(h h m m)	(seconds)	#1	#2	#3
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Stream Name: Beaver Creek

Bulk Weights - (Record #5)

	(m m)	to	(m m)	Pass#	Species	Total Number	Total Weight
Size Range:			1 7 1	1	C A P		7 3
Size Range:	4 8		6 3	1	P T M		1 2
Size Range:			7 3	1	P L M		3
Size Range:			5 9	1	L N D		2
Size Range:	4 4		5 6	1	S A S	1 0	1 0
Size Range:	5 0		7 1	1	P L K		9
Size Range:	4 1		6 7	1	F H M	3 3	5 2
Size Range:							
Size Range:							
Size Range:							

Digital Photos - Description

Top Blocking Net Looking Upstream 107
 Top Blocking Net Looking Downstream 108
 Bottom Blocking Net Looking Upstream 103
 Bottom Blocking Net Looking Downstream 104
 Upstream blocknet UTM: N 579656; E 4811179
 Downstream blocknet UTM: E 579641; N 4811209

Video Camera

Tape #:

 Begin:

 End:

	(d d m m m y y)	Personnel
Photos labeled:		
Photos filed:		

Comments: FHM = fathead minnow, LND = Long-Nosed Dace, SAS = Sand Shiner.
PLK = Plains Killifish, CAP = Carp, PTM = Plains Topminnow.
Mid reach looking upstream = 107, looking downstream 108.

DATA ENTRY - RECORD 2	
	(d d m m m y y) Personnel
Data Entry:	
Verification:	

Field Q.C. by: A. Wones

Batch Number:

--	--	--	--	--

DATA ENTRY - RECORD 3	
	(d d m m m y y) Personnel
Data Entry:	
Verification:	

DATA ENTRY - RECORD 4	
	(d d m m m y y) Personnel
Data Entry:	
Verification:	

DATA ENTRY - RECORD 5	
	(d d m m m y y) Personnel
Data Entry:	
Verification:	

Stream Name Beaver Creek
 Site Number BVC01

DATE					
dd-mmm-yy					
1	0	J	U	L	08

example 0 2 M A Y 9 2

Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S c a r	M a r	S e x	Comments	Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S c a r	M a r	S e x	Comments
1	1	C A P	171	73				R	51	1	F H M	57					
2	1	P T M	61	12				R,C(#2-7)	52	1	F H M	48					
3	1	P T M	52					R	53	1	F H M	47					
4	1	P T M	48					R	54	1	F H M	44					
5	1	P T M	63					R	55	1	F H M	47					
6	1	P T M	62					V	56	1	F H M	42					
7	1	P T M	50					R	57	1	S A S	44	<1				
8	1	P L M	73	3				V	58	1							
9	1	L N D	59	2				V	59	1							
10	1	S A S	62	7				R,(#10-14)	60	1							
11	1	S A S	53					R	61	1							
12	1	S A S	53					R	62	1							
13	1	S A S	46					R	63	1							
14	1	S A S	56					R	64	1							
15	1	S A S	49	3				V,C(#15-18)	65	1							
16	1	S A S	58					V	66	1							
17	1	S A S	40					V	67	1							
18	1	S A S	43					V	68	1							
19	1	P L K	71	9				R,(#19-23)	69	1							
20	1	P L K	60					R	70	1							
21	1	P L K	62					R	71	1							
22	1	P L K	57					R	72	1							
23	1	P L K	50					R	73	1							
24	1	F H M	48	52				C(#24-56)	74	1							
25	1	F H M	50						75	1							
26	1	F H M	48						76	1							
27	1	F H M	42						77	1							
28	1	F H M	43						78	1							
29	1	F H M	42						79	1							
30	1	F H M	59						80	1							
31	1	F H M	50						81	1							
32	1	F H M	48						82	1							
33	1	F H M	46						83	1							
34	1	F H M	58						84	1							
35	1	F H M	49						85	1							
36	1	F H M	54						86	1							
37	1	F H M	49						87	1							
38	1	F H M	60						88	1							
39	1	F H M	67						89	1							
40	1	F H M	57						90	1							
41	1	F H M	45						91	1							
42	1	F H M	53						92	1							
43	1	F H M	46						93	1							
44	1	F H M	44						94	1							
45	1	F H M	41						95	1							
46	1	F H M	58						96	1							
47	1	F H M	46						97	1							
48	1	F H M	56						98	1							
49	1	F H M	55						99	1							
50	1	F H M	50						00	1							

Comments: R = sample collected for radiological testing, V = voucher specimen, C = combined weight
 5 voucher and 5 radiological samples taken from # 24-56

S. D. GAME FISH AND PARKS - STREAM SURVEY FIELD DATA SHEET



Stream Name: Beaver Creek

Page 1 of 1

Site Number:

DATE
(d d m m m y. y)

Site Description: BVC04 - Beaver Creek upstream

Site Length (meters): S R T

pH:

Cond. (umhos/cm):

Temp. (C) air:

Water:

Dist. below top net (meters):

Stream Widths (meters):

Smith-Roots Mode:

Volts:

Personnel: A. Wones, K. Shook, M. Winland

#1 #2 #3 #4

#5 #6 #7 #8

Data Scales Lengths Weights

	Pass #1	Pass #2	Pass #3	Pass #4	Pass #5
Start time: (hhmm)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
End time: (hhmm)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root (seconds)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Shocker #1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root (seconds)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Shocker #2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root (seconds)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Shocker #3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Barge Shocker:
 Range (H/L): Percent: Amps: Pulse:

Pass	Start time (h h m m)	End time (h h m m)	Duration (seconds)	Anode #1	Anode #2	Anode #3
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Stream Name: Beaver Creek

Bulk Weights - (Record #5)

	(m m)	to	(m m)	Pass#	Species	Total Number	Total Weight
Size Range:			1 3 6	1	S H R	1	1 3 0
Size Range:			2 6 0	1	C A P	1	2 3 7
Size Range:	4 8		6 8	1	P L K	9	1 3
Size Range:	4 3		6 1	1	F H M	4 7	6 4
Size Range:	6 3		6 4	1	L N D	2	5
Size Range:	4 5		5 8	1	S A S	2 6	3 5
Size Range:							
Size Range:							
Size Range:							
Size Range:							

Digital Photos - Description

Top Blocking Net Looking Upstream 122
 Top Blocking Net Looking Downstream 123
 Bottom Blocking Net Looking Upstream 118
 Bottom Blocking Net Looking Downstream 119
 Upstream blocknet WGS84 UTM: E 5791444; N 4820573
 Downstream blocknet WGS84 UTM: E 571373; N 4820623

Video Camera

Tape #:

 Begin:

 End:

	(d d m m m y y)	Personnel
Photos labeled:		
Photos filed:		

Comments: FHM = fathead minnow, LND = Long-Nosed Dace, SAS = Sand Shiner.
 SHR = Shorthead Redhorse Sucker, CAP = Carp, PLK = Plains Killifish.
 Photo of the middle of reach looking upstream: 120, looking downstream: 121

DATA ENTRY - RECORD 2	
	(d d m m m y y) Personnel
Data Entry:	
Verification:	

Field Q.C. by: A. Wones

Batch Number:

--	--	--	--

DATA ENTRY - RECORD 3	
	(d d m m m y y) Personnel
Data Entry:	
Verification:	

DATA ENTRY - RECORD 4	
	(d d m m m y y) Personnel
Data Entry:	
Verification:	

DATA ENTRY - RECORD 5	
	(d d m m m y y) Personnel
Data Entry:	
Verification:	

Stream Name Beaver Creek
 Site Number BVC04

DATE					
dd-mm-yy					
1	0	J	U	L	08

example 0 2 M A Y 9 2

Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S a.	M r.	S e x	Comments	Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S a.	M r.	S e x	Comments
1	1	S H R	136	130				R	51	1	F H M	45					
2	1	C A P	260	237				R	52	1	F H M	51					
3	1	P L K	56	13				C	53	1	F H M	57					
4	1	P L K	68						54	1	F H M	55					
5	1	P L K	58						55	1	F H M	47					
6	1	P L K	48						56	1	F H M	53					
7	1	P L K	48						57	1	F H M	42					
8	1	P L K	62						58	1	F H M	49					
9	1	P L K	54						59	1	L N D	63			3		V
10	1	P L K	52						60	1	L N D	64			2		V
11	1	P L K	50						61	1	S A S	45			35		C
12	1	F H M	50	64				c	62	1	S A S	50					
13	1	F H M	49						63	1	S A S	47					
14	1	F H M	47						64	1	S A S	48					
15	1	F H M	55						65	1	S A S	51					
16	1	F H M	47						66	1	S A S	56					
17	1	F H M	55						67	1	S A S	55					
18	1	F H M	57						68	1	S A S	52					
19	1	F H M	49						69	1	S A S	55					
20	1	F H M	43						70	1	S A S	58					
21	1	F H M	60						71	1	S A S	57					
22	1	F H M	50						72	1	S A S	52					
23	1	F H M	55						73	1	S A S	51					
24	1	F H M	46						74	1	S A S	54					
25	1	F H M	51						75	1	S A S	48					
26	1	F H M	50						76	1	S A S	51					
27	1	F H M	51						77	1	S A S	53					
28	1	F H M	51						78	1	S A S	48					
29	1	F H M	50						79	1	S A S	52					
30	1	F H M	47						80	1	S A S	54					
31	1	F H M	44						81	1	S A S	54					
32	1	F H M	54						82	1	S A S	57					
33	1	F H M	50						83	1	S A S	51					
34	1	F H M	46						84	1	S A S	52					
35	1	F H M	45						85	1	S A S	52					
36	1	F H M	49						86	1	S A S	52					
37	1	F H M	55						87	1							
38	1	F H M	49						88	1							
39	1	F H M	47						89	1							
40	1	F H M	49						90	1							
41	1	F H M	52						91	1							
42	1	F H M	49						92	1							
43	1	F H M	55						93	1							
44	1	F H M	53						94	1							
45	1	F H M	49						95	1							
46	1	F H M	50						96	1							
47	1	F H M	61						97	1							
48	1	F H M	45						98	1							
49	1	F H M	46						99	1							
50	1	F H M	49						00	1							

Comments: R = sample collected for radiological testing, V = voucher specimen, C = combined weight
 > voucher and > radiological samples taken from # 12-58 (FHM), and from #61-86 (SAS)

S. D. GAME FISH AND PARKS - STREAM SURVEY FIELD DATA SHEET
REVISED 2JUL2008



Stream Name: Cheyenne River

Site Number:

DATE
 (d d m m m y y)
 A P R

Site Description: Site CHR05 - Cheyenne River at Marietta

Site Length (meters): S R E T N

pH: .
 Cond. (umhos/cm):
 Temp. (C) air:
 Water:
 Dist. below top net (meters):
 0
 1 0
 2 0
 3 0
 4 0
 Stream Widths (meters):
 5 0
 6 0
 7 0
 8 0
 9 0
 1 0 0

Smith-Roots
 Mode:
 Volts:

Personnel:

#1 #2 #3 #4
 #5 #6 #7 #8
 Data Scales Lengths Weights

	Pass #1	Pass #2	Pass #3	Pass #4	Pass #5
Start time: (hhmm)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
End time: (hhmm)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root (seconds)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Shocker #1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root (seconds)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Shocker #2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Smith-Root (seconds)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Shocker #3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Barge Shocker:

Range (H/L): Percent: Amps: . Pulse:

Pass	Start time (h h m m)	End time (h h m m)	Duration (seconds)	Anode #1	Anode #2	Anode #3
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Bulk Weights - (Record #5)

	(m m)	to	(m m)	Pass#	Species	Total Number	Total Weight
Size Range:	9 7		0 9 7		R I C	0 0 1	0 1 3
Size Range:	9 8		0 9 8		G R S	0 0 1	0 2 0
Size Range:	3 2		0 7 4		P L K	0 4 8	0 6 9
Size Range:	8 2		2 2 0		S R S	0 1 4	6 1 2
Size Range:	5 1		0 5 1		P T M	0 0 1	0 0 <1
Size Range:	3 1		0 6 7		S A S	0 3 8	0 5 3
Size Range:	2 5		0 8 8		C R C	1 0 0	0 9 1
Size Range:							
Size Range:							
Size Range:							

Digital Photos - Description

Top Blocking Net Looking Upstream _____
 Top Blocking Net Looking Downstream _____
 Bottom Blocking Net Looking Upstream _____
 Bottom Blocking Net Looking Downstream _____

Video Camera

Tape #: _____
 Begin: _____
 End: _____

Upstream blocknet at UTM E0587455 N4804678

Downstream blocknet at UTM E0587538 N4804736

	(d d m m m y y)	Personnel
Photos labeled:		
Photos filed:		

Comments: RIC= River Carpsucker; GRS = Green Sunfish; PLK = Plains kilifish;
SRS = Shorthead Redhorse Sucker; PTM = Plains Topminnow; SAS = Sand Shiner;
CRC = Creek Chub.

DATA ENTRY - RECORD 2	
	(d d m m m y y) Personnel
Data Entry	
Verification:	

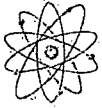
Field Q.C. by: A. Wones

Batch Number: _____

DATA ENTRY - RECORD 3	
	(d d m m m y y) Personnel
Data Entry	
Verification:	

DATA ENTRY - RECORD 4	
	(d d m m m y y) Personnel
Data Entry	
Verification:	

DATA ENTRY - RECORD 5	
	(d d m m m y y) Personnel
Data Entry	
Verification:	



POWERTECH (USA) INC.

APPENDIX 2.9-A

BASELINE RADIOLOGICAL REPORT

**BASELINE RADIOLOGICAL INVESTIGATION
REPORT**

**POWERTECH (USA) INC.
DEWEY-BURDOCK ISR LICENSING SUPPORT
KNIGHT PIESOLD PROJECT NO. DV10200279.01**

January 29, 2009

Prepared By:



Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, New Mexico 87113

BASELINE RADIOLOGICAL INVESTIGATION REPORT

**POWERTECH (USA) INC.
BASELINE SOIL AND VEGETATION RADIOLOGICAL INVESTIGATION
KNIGHT PIESOLD PROJECT NO. DV10200279.01**

**Prepared for: Knight Piesold, Inc.
Denver, CO**

**Prepared by: Environmental Restoration Group, Inc
Albuquerque, NM**

Author Approval

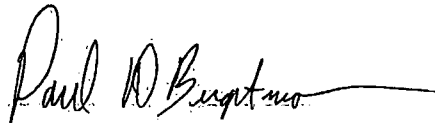


Michael J. Schierman, Health Physicist

1/29/2009

Date

Project Manager Approval:



Paul Bergstrom, Project Manager

1/29/2009

Date

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Acronyms and Abbreviations

<u>Acronym</u>	<u>Definition</u>
AMS	Air Monitoring Station
CFR	Code of Federal Regulations
cm	centimeters
cpm	counts per minute
Powertech	Powertech Uranium (Corporation)
ERG	Environmental Restoration Group
EPA	U.S. Environmental Protection Agency
GIS	Geographic Information System
GPS	Global Positioning System
IQR	Interquartile Range
ISR	In Situ Recovery
LLD	Lower Limit of Detection
MDC	Minimum Detectable Concentration
mrem/yr	millirem per year
N	sample number
NaI	Sodium Iodide (detector)
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
pCi/f, g, L, m ² -s	picocuries per filter, gram, liter, per meter square per second
PIC	pressurized ion chamber
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RER	Relative Error Ratio
RPD	Relative Percent Difference
SOP	Standard Operating Procedure
TLD	Thermoluminescent Detector
μCi/g, kg, ml	microcuries per gram, kilogram, milliliter

Acronyms and Abbreviations (concluded)

<u>Acronym</u>	<u>Definition</u>
U-nat	Natural Uranium
$\mu\text{R/hr}$	microRoentgens per hour

1.0 INTRODUCTION

This report presents the results of a baseline radiological study conducted for the Dewey-Burdock uranium in situ recovery (ISR) Project site owned by Powertech (USA), Inc. The work was performed by Environmental Restoration Group (ERG) under contract to Knight Piesold and Company (Knight Piesold) in accordance with the Baseline Radiological Sampling Plan, herein referred to as the Sampling Plan (ERG, 2007). The work was performed between August 2007 and August 2008 to obtain a radioactive materials license from the U.S. Nuclear Regulatory Commission (NRC).

1.1 Description of the Project

The approximately 11,000-acre project site is a sparsely populated region of open rangeland north of the city of Edgemont, South Dakota as shown in Figure 1-1. It is located in Fall River and Custer Counties on the southwest flank of the Black Hills uplift. It is part of the northern extension of the Edgemont uranium district discovered in the 1950s. The eastern portion of the site includes historic open pit surface uranium mines that have not been reclaimed. This area is referred to as the surface mine area in this report.

The general process of uranium in situ recovery will involve the oxidation of uranium from its reduced state within the rollfront using a leaching solution (lixiviant) such as gaseous oxygen, hydrogen peroxide and gaseous carbon dioxide to solubilize the uranium ion causing it to go into solution in the ore bearing aquifer. Once solubilized, the uranium will be pumped to the surface where it is complexed onto ion exchange resins, then eluted and precipitated before drying and packaging. Mining units will include wellfields consisting of injection, recovery and monitoring wells. A central processing plant will be constructed on the site to recover and package the final product.

Figure 1-2 shows the site, including the roll fronts near the towns of Dewey and Burdock, the main permit and surface mine areas, and an anomalous area of elevated radioactivity in the north portion of the main permit area.

1.2 Purpose and Scope

This report provides baseline radiological data for surface soils (0-5 and 0-15 centimeters [cm]), subsurface soils to a depth of 1 meter, vegetation, locally grazed livestock, direct radiation, radon-222 in air; and radon-222 flux rates representative of the Dewey-Burdock property.

Field investigations, sample collection, and other quality-related work performed were conducted in accordance with applicable ERG standard operating procedures (SOPs), listed below:

- SOP .010 Radon Flux Cannister Deployment
- SOP 1.22 Determining the Concentration of Airborne Radioactive Particles
- SOP 1.05 Calibration of Scaler, Ratemeters

- SOP 1.51 Correlation between Gamma-Ray Count Rate and Exposure Rate
- SOP 2.02 General Equipment Decontamination
- SOP 2.07 Function Check of Equipment
- SOP 2.09 Correlation between Gamma-Ray Measurements and Radium-226 in Soil
- SOP 3.02 Sample Control and Documentation
- SOP 5.01 Setup and Operation of Trimble Pro XRS GPS Receiver with Trimble TSCe Datalogger
- SOP 5.02 Download, Correction, and Export of GPS Survey Data
- SOP 5.06 Creating, Uploading, and Navigating to Waypoints
- SOP 7.08 Surface and Shallow Subsurface Soil Sampling
- SOP 7.09 Vegetation Sampling

2.0 SCOPE OF BASELINE FIELD INVESTIGATION

2.1 Overall Scope of Project

The baseline radiological field investigations consisted of the following activities:

- Performing a Global Positioning System (GPS)-based gamma survey at 100 to 500 meter transects spanning the permit area;
- Performing a second GPS-based gamma survey of two, collective land application areas at 100 meter transects;
- Collecting surface soil samples (0-15 cm) at 75 randomly selected and at 5 biased locations;
- Collecting subsurface soil samples at nine randomly selected locations taken at depth intervals of 15-30 cm and 30-100 cm;
- Collecting surface (0-15 cm) and subsurface samples at the same depth intervals at 17 randomly selected locations in the land application areas;
- Monitoring radionuclide concentrations in air at one background and seven additional Air Monitoring Stations (AMS) locations;

- Collecting shallow (0-5 cm) surface soil and vegetation samples at each AMS;
- Monitoring radon concentrations in ambient air;
- Taking radon flux measurements at nine locations coinciding with the subsurface samples;
- Monitoring exposure rates, using a High Pressurized Ion Chamber (PIC) and thermoluminescent detectors (TLDs); and
- Collecting three samples of locally grazed livestock.

Table 2-1 summarizes the scope of the field investigation. All soil, vegetation, and air particulate samples were shipped under chain-of-custody to a National Environmental Accreditation Conference-certified laboratory, Energy Laboratories in Casper, Wyoming.

The units reported in the body, tables, and figures of this document vary. NRC Regulatory Guide 4.14, *Radiological Effluent and Environmental Monitoring at Uranium Mills* has specific requirements for unit reporting in tables. For example, NRC Regulatory Guide 4.14 recommends that radionuclide soil concentrations be reported in units of microcuries per gram ($\mu\text{Ci/g}$). Where applicable, the tables adopt this unit. The main body of the report, however, adopts the unit picocuries per gram (pCi/g) for this parameter, as this unit is used more generally and consistently by the uranium industry and public.

3.0 GPS-BASED GAMMA-RAY (DIRECT RADIATION) SURVEYS

This section documents the results of the baseline direct radiation (gamma-ray) survey of the Dewey-Burdock property conducted in September 2007. An introduction to the survey methods is followed by a discussion of the results.

3.1 GPS Survey Methods

A GPS-based gamma survey was conducted over the main permit and surface mine areas of the Dewey-Burdock Uranium Project from September 13-27, 2007 and completed on July 14, 2008. Unshielded 2"x 2" sodium iodide (NaI) detectors were coupled to a ratemeter/scaler (set in ratemeter mode) and a Trimble Pro XRS GPS Receiver with Trimble TSCe Datalogger. Survey transects were spaced at approximately 500-meter intervals in the main permit area and 100 meters in the surface mine area. The transect spacing was reduced in the surface mine area in anticipation of finding a greater variation in gamma-ray emissions, due to historical mining in the area. The survey speed was maintained between 2 and 5 feet per second with x- and y-coordinates and gamma-ray count rates recorded every second. The detector height was held relatively constant at approximately 18 inches above ground surface. Depending on the terrain, field personnel surveyed using ATVs or by walking with the equipment in backpacks.

A second GPS-based gamma survey was conducted over the land application areas from July 17-19, 2008, using the Ludlum gamma-ray detection system described above with the same response characteristics as used in the initial survey. The scanning speed and detection height were unchanged from the initial survey and the transect spacing was 100 meters.

The function of survey instruments was checked at the beginning and end of each work day using a National Institute of Standards and Technology-traceable cesium-137 source. Calibration Sheets and function check data are provided in Appendix A.

3.2 Observed Gamma-Ray Count Rates

The gamma-ray count rate data were first evaluated as an entire set and then subdivided into the main permit (the entire data set less the surface mine area) and surface mine areas.

The observed gamma-ray count rates are presented as colors representing ranges of counts in Figure 3-1. This figure was developed using ArcView Geographic Information System (GIS), Version 9.3. Table 3-1 presents summary statistics for each data set. The difference between the median and mean count rates is the first indication of skewness in each of the data set. The count rate data are presented as histograms in Figures 3-2a through 3-2f. Neither the entire data set nor the main permit and surface mine area data sets pass the Anderson-Darling Normality Test at a 95 percent level of significance. That is, the data sets are not normally distributed. Additional tests of the data sets indicated that none of them followed a lognormal or exponential distribution. Furthermore, normalizing data transformations were conducted and the transformed data did not follow standard distributions. For these reasons, data analysis and summaries were performed using non-parametric statistical methods, which are less sensitive to extreme observations typical of skewed data distributions.

The median and interquartile range (IQR) are non-parametric measures of central tendency and variability, respectively. The IQR is the difference between the first (Q1) and third (Q3) quartiles, i.e., 25 and 75 percent of the data area less than Q1 and Q3, respectively. Any datum that is outside the range of 1.5 times the IQR lower than Q1 and 1.5 times the IQR higher than Q3 is considered an outlier. Extreme outliers, or extremes, are those exceeding three times the IQR to the left and right from the first and third quartiles respectively (Ott and Longnecker, 2001).

3.2.1 Entire Data Set

The summary statistics of the GPS-based gamma-ray survey are listed in Table 3.-1. The median of the gamma-ray count rates for the overall data set was 12,687 counts per minute (cpm). Field personnel collected 157,075 readings ranging from 5,550 to 460,485 cpm.

3.2.2 Main Permit Area

As shown in Table 3-1, the median gamma-ray count rate for the main permit area data set was 12,664 cpm for 71,148 observations. The IQR was 2,539 cpm. The count rates ranged from 5,883 to 171,243 cpm.

Low outliers in the main permit area data set, count rates below 7,790 cpm, appear to be limited to two clusters. High outliers in the data set, count rates exceeding 17,946 cpm, appear to be limited to an approximately 600-acre located at the north end of the main permit area. The area is identified as an anomalous area on Figure 3-1.

Approximately 0.2 and 3 % of the gamma-ray count rates observed in the main permit area are comprised of low and high outliers, respectively.

The majority of high outliers are located in the north section of the main permit area. The source of these anomalous gamma-ray count rate data has not been characterized. The count rates ranged from 8,863 to 22,130 cpm and the median was 15,503 cpm.

High outliers also occur in the southeast portion of the main permit area. The elevated count rates occur near an artesian well and associated localized discharge. This area is identified on Figure 3-1.

3.2.2 Surface Mine Area

In the surface mine area, the gamma-ray count rates ranged from 5,550 to 460,485 cpm and the median was 12,717 cpm. The IQR was 3,658. In general, clusters of higher readings are associated with open pits, waste rock, and drainages in the surface mine area. Low and high outliers in this area are gamma-ray count rates below 5,638 cpm and exceeding 20,270 cpm, respectively. Approximately 0.004 and 9 % of the gamma-ray count rates observed in the surface mine area are low and high outliers, respectively.

3.2.3 Discussion

Given the greater variability in the surface mine area data and the assumption that elevated areas of activity are indicative of statistically significant differences in the data sets, the variations in the main permit and surface mine area data sets were compared using Levene's Test for Equal Variance, a non-parametric statistical test. The Levene's Test was also used to compare the variances of the main permit and anomalous north area gamma-ray count rates.

The null hypothesis in this case is that the two variances are equal. The results of the Levene's Test indicate that the null hypothesis can be rejected at the level of 95 percent significance level. That is, there is sufficient evidence for the variances in the main permit and surface mine area gamma-ray count rates being distinct. The variances in the main permit anomalous area are also distinct.

Based on the above information, it is clear that the surface mine area in the eastern quarter of the site exhibits radiological impacts from historic and/or current anthropogenic activities within the area. In addition, gamma-ray count rates in the anomalous north area also are clearly distinct from those in the wider main permit area. The precise sources of the differences are not relevant in the context of this investigation since they are part of the baseline or background radiological characteristics of the site.

3.2.4 Land Application Areas

The summary statistics of the GPS-based gamma-ray survey of the Dewey and Burdock land application areas are listed in Table 3-2. The gamma-ray count rates obtained in the main permit area are listed in the table to facilitate comparison between the land application areas and the larger area in which they occur. The data are shown as ranges of count rates on Figure 3-3.

Gamma-ray count rates in the land application areas are similar to those obtained in the larger main permit area. In the Dewey land application area, the median of the gamma-ray count rates was 12,523 cpm. Field personnel collected 23,480 readings ranging from 6,798 to 20,422 cpm. In the Burdock land application area, the median of the gamma-ray count rates was 12,232 cpm. Field personnel collected 13,647 readings ranging from 8,498 to 24,248 cpm.

4.0 BASELINE RADIOLOGICAL INVESTIGATION SOIL SAMPLING

This section presents the results of the baseline soil sampling conducted in October 2007 and July 2008. Baseline soil sampling in the land application areas is included. Table 2-1 summarizes the Dewey-Burdock baseline soil sampling program.

4.1 Sampling Strategy and Methods

The soil sampling strategy for the Dewey-Burdock site consisted of biased and random sampling at the eight AMS (Figure 4-1), a set of 80 additional locations (Figure 4-2), and 17 locations in the land applications areas (Figure 4-3).

Shallow (0-5 cm) surface soil samples were collected at the eight AMS locations (the seven surrounding and one background locations shown on Figure 4.1). The offsite AMS is located approximately 3 miles west of the site.

Biased samples were collected at 5 of the set of 80 locations, the remainder was placed randomly, using Visual Sampling Plan, Version 5.0. The biased samples were obtained in the surface mine area and selected to bound the upper range of radionuclide concentrations. The five biased samples are not sufficient to characterize radium-226 concentrations in impacted areas.

The additional 80 surface soil samples were collected from 0 to 15 cm below ground surface. Seventy one of these samples were collected using a hand shovel. A hand auger was used to collect samples at 0 to 15, 15 to 30, and 30 to 100 cm at nine of the 80 locations.

The 17 land application soil samples were placed randomly, using Visual Sampling Plan, Version 5.0. With one exception, the samples were collected from 0 to 15, 15 to 30, and 30 to 100 cm below ground surface, using a hand auger. The exception occurred due to refusal encountered in one borehole.

All samples were analyzed for radium-226. Ten of the set of 80 samples were also analyzed for natural uranium, lead-210, and thorium-230. Thirteen duplicates were collected in the set of 80 samples: 11 with the surface set and two with the subsurface set. All duplicate samples in this set were analyzed for radium-226 while two were also analyzed for natural uranium, thorium-230, and lead-210.

All of the samples collected from the land application area were analyzed for radium-226, natural uranium, thorium-230 and lead-210. Duplicate samples were collected at one location for the three depth intervals and analyzed for the same radionuclides.

The analytes and corresponding analytical methods were:

- Radium-226 via gamma spectroscopy or radon emanation: U.S. Environmental Protection Agency (EPA) Methods 901.1 and 903.1, respectively. *Prescribed Procedures for Measurement of Radioactivity in Drinking Water* (EPA/600/4-80-032), August, 1980. The majority of radium-226 analyses were performed using EPA Method 901.1.
- Thorium-230: EPA 907.0 *Prescribed Procedures for Measurement of Radioactivity in Drinking Water* (EPA/600/4-80-032), August, 1980.
- Natural Uranium: EPA 6020 ICP-MS, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)*, June, 2007
- Lead-210: EPA 909.0M *Prescribed Procedures for Measurement of Radioactivity in Drinking Water* (EPA/600/4-80-032), August, 1980.

4.2 Analytical Results for Soil Samples

Table 4-1 presents the radionuclide concentrations in soil samples collected as part of the baseline radiological investigation. The radium-226 results described in this section are those determined using only EPA Method 901.1.

Samples are identified as follows, with duplicates labeled as “dup”:

- AMS: air monitoring station
- SMA: surface mine area
- MPA: main permit area
- NEA: northeast area
- RFA: roll front area
- LAN: land application area north (Dewey)
- LAS: land application south (Burdock)

The laboratory analytical data reports are provided in Appendix B.

4.3 Analysis of Concentration of Radium in Soil

The purpose of the following analysis is to determine the baseline distributions of radium-226 concentrations in site soils.

4.3.1 Surface Soil Concentrations in Overall Data Set

In the set of 80 surface samples, the mean and median radium-226 concentrations are 2.9 and 1.3 pCi/g, respectively. Q1 and Q3 are 1.1 and 1.7 pCi/g, respectively (Table 4-1). The IQR is 0.6. The mode is 1.1 pCi/g (12 observations). One result (0.45 pCi/g, Sample Location SMA-18) was a low outlier. Thirteen values exceeded 2.3 pCi/g, the cutoff for high outliers.

The soil data were fitted to normal and lognormal distributions. The p-values for both distributions are less than 0.005, indicating that at a 95% confidence level ($p = 0.05$), the distributions are non-normal and non-lognormal.

Considering that the data do not fit normal or lognormal distributions, and clear differences in the gamma-ray count rates obtained in the surface mine and main permit areas are indicative of differences in the levels of gamma-emitting radionuclides therein, the set of surface soil data was divided into surface mine and main permit area subsets, as discussed in the following sections.

4.3.2 Surface Soil Concentrations in Surface Mine Area

Twenty-five surface soil samples were collected in the surface mine area. The mean and median radium-226 concentrations in the surface mine area are 5.9 and 1.4 pCi/g respectively. Q1 and Q3 are 1.0 and 2.75 pCi/g, respectively. The IQR is 1.75. The mode is 1.0 pCi/g (3 observations).

The data were compiled into a histogram and fitted to a normal distribution and a lognormal distribution. When tests for goodness of fit were applied to the distributions, the associated p-values were both less than 0.005 for the normal and lognormal distributions. These low p-values denote the hypotheses that the data came from a normal distribution or a lognormal distribution are rejected at a 95% confidence level.

There are five values exceeding 5.9 pCi/g, the cutoff for outliers. The outliers are the radium-226 concentrations in the five biased samples, all collected in the surface mine area. All of the other samples (75 of 80) were placed randomly in undisturbed areas. The five biased samples are not sufficient to characterize radium-226 concentrations in impacted areas.

With the outliers omitted from the surface mine area data set, the process of fitting its histogram was repeated. The resulting p-values were 0.006 (for normal distribution) and 0.418 (lognormal distribution). The p-value for the data being a lognormal distribution is greater than 0.05, thus the distribution is accepted as lognormal, with statistical significance.

The central tendency and variability of a lognormal distribution are best represented by the geometric mean and geometric standard deviation, each of which is 1.3 pCi/g radium-226 in the case of the surface mine area data set. The data lie within a population range of $1.3/1.3^2$ to $1.3*1.3^2$, or 0.76 to 2.2 pCi/g.

4.3.3 Surface Soil Concentrations in Main Permit Area

Fifty-five surface soil samples were collected in the main permit area. The data were compiled into a histogram and fitted to normal and lognormal distributions. When tests for goodness of fit were applied to the distributions, the associated p-values were both less than 0.005. These low p-values denote the hypotheses that the data came from a normal or lognormal distribution are both rejected at a 95% confidence level.

The mean and median radium-226 concentrations in the main permit area are 1.5 and 1.3 pCi/g respectively. Q1 and Q3 are 1.1 and 1.7 pCi/g, respectively. The IQR is 0.6 pCi/g. There are three values exceeding 2.6 pCi/g, the cutoff for outliers in the main permit area data set. With the outliers omitted from the main permit area data set, the process of fitting its histogram was repeated. The results of fitting the histogram without the possible outliers were p-values of less than 0.005 (normal distribution) and 0.068 (lognormal distribution). The p-value for the data being a lognormal distribution is greater than 0.05, thus the distribution is accepted as lognormal, with statistical significance.

The geometric mean and geometric standard deviation of the set of main permit area radium-226 concentrations are each 1.3 pCi/g. The data lie within a population range of $1.3/1.3^2$ to $1.3*1.3^2$, or 0.76 to 2.2 pCi/g.

4.3.3.1 North Section of Main Permit Area

It was stated above that elevated gamma-ray count rates were observed in an approximately 600-acre area located at the north end of the main permit area. Considering that the elevated levels are likely due to relatively higher increased levels of one or more gamma-emitting radionuclides, radium-226 concentrations in soil samples collected from this area were evaluated.

Eight surface soil samples were collected in this area (MPA-R01, NEA-R02, NEA-R03, NEA-R04, NEA-R05, RFA-03, RFA-06, and RFA-17). One of these samples was considered an outlier of the main permit area data set (NEA-R05).

There are too few soil samples collected in this area to characterize it statistically. However, the gamma-ray count rates therein differ from the main permit area, with statistical significance.

4.3.4 Surface Soil Concentrations in Land Application Area Soils

Radium-226 concentrations in surface soils in the land application areas are summarized as follows:

- In both areas, radium-226 concentrations ranged from 0.7 to 4.4 pCi/g, with a median of 0.9 and average of 1.1 pCi/g.
- The median radium-226 concentration in the Dewey land application area was 1.0 pCi/g.
- The median radium-226 concentration in the Burdock land application area was 0.8 pCi/g.

4.3.5 Discussion

Although the distributions of the main permit and surface mine area radium-226 concentration data sets are similar, the gamma-ray count rate distributions in these two areas differ, with statistical significance. The gamma-ray count rates observed in the anomalous portion of the main permit area also differ from the main permit area.

4.4 Subsurface Soil Sampling Results

Table 4-1 lists the subset of subsurface biased samples that were collected at depth in the Dewey and Burdock roll front areas: RFA-B01, RFA-B02 RFA-B13 RFA-B15, RFA-B17, RFA-B21, RFA-B30, RFA-B36, and RFA-B37. Subsurface radium-226 concentrations in these samples, ranging from 0.7 to 5.6 pCi/g, are comparable to those observed in the associated 0 to 15 cm surface samples in the samples. There is no apparent trend with depth.

Subsurface radium-226 concentrations in the land application areas can be summarized as follows:

- Radium-226 concentrations range from 0.4 to 4.1 pCi/g, with a median of 0.9 pCi/g.
- Radium-226 concentrations in the Dewey land application area have a median of 1.2 pCi/g.
- Radium-226 concentrations in the Burdock land application area have a median of 0.8 pCi/g.

The subsurface results in both land application areas are comparable to those observed in the 0 to 15 cm surface samples in the samples. There is no apparent trend with depth.

4.5 Other Radiological Parameters

Table 4-1 summarizes the analytical results for all samples analyzed for the extended suite of radiological parameters (all locations and depths combined). Table 4-2 summarizes the concentrations of all radionuclides by depth interval. Arithmetic and geometric means and standard deviations can be used to compare normal and lognormal distributions, respectively. Medians can be used to compare non-parametric distributions. A positive relationship between

radium-226 concentrations and concentrations of natural uranium, thorium-230, and lead-210 is apparent at all depths. At 0 to 15, 15 to 30, and 30 to 100 cm:

- Radium-226 concentrations are 1.0 (median), 1.0 (median) and 1.1 (geometric mean) pCi/g.
- Thorium-230 concentrations are 0.6 (mean), 0.5 (median) and 0.7 (mean) pCi/g.
- Natural uranium concentrations are 1.0 (mean), 1.0 (median) and 1.2 (geometric mean) pCi/g.
- Lead-210 concentrations are 1.2 (mean), 1.1 (median) and 0.9 (mean) pCi/g.

The concentrations of uranium, lead-210, and thorium-230 are consistently lower in the Burdock than in the Dewey Land Application Area, indicating that the lower radium-226 concentration in Burdock is not a laboratory artifact.

4.6 Soil Data Quality

4.6.1 Analysis of Duplicate Samples

This section briefly summarizes the results of the quality control (QC) samples collected for the baseline soil sampling program. The results of this QC effort are documented in Table 4-3, which lists the analytical results for each duplicate pair along with corresponding errors and lower limits of detection (LLDs). Table 4-3 documents associated comparisons, presenting the corresponding RPD (in the case of natural uranium) and/or Replicate Error Ratio (RER) for each QC pair. The calculation of RPDs and RERs is a standard technique used to evaluate laboratory precision.

The RPD is calculated as follows:

$$RPD = \frac{|A - B|}{\frac{A + B}{2}}$$

Where A and B are the sample and duplicate results, respectively.

The RER is calculated as follows:

$$RER = \frac{|S - R|}{\sqrt{(S \times 0.15)^2 + (E_s)^2} + \sqrt{(R \times 0.15)^2 + (E_r)^2}}$$

Where S and E_S are the sample and duplicate concentrations, respectively. E_S and E_R are the sample (E_S) and duplicate errors (E_R). The factor of 0.15 accounts for any inherent systematic error which cannot be quantified.

The acceptance criteria are an RPD and RER of less than 40 and 1 percent for data above the minimal detectable concentration (MDC), respectively, as established in a Quality Assurance Project Plan (QAPP) (ERG 2006).

This data set shows four cases where the RER for lead-210 was greater than 1 and five cases where the RPD exceeded 40. There are three cases where the RER for radium-226 is exceeded.

The consequences of the few results exceeding the acceptance criteria are minimal since in each case the concentrations are low. In addition, lead-210 largely has no impact when addressing the impact of the baseline radiological characteristics of the site and potential impacts from site operations.

There is close agreement for all other analytical results reported for each duplicate pair collected for all parameters. Overall, duplicate results are generally comparable for the majority of QC samples collected. Considering the low level of radioactivity observed in most of the QC pairs, the laboratory performance on blind duplicates is satisfactory.

4.6.2 Limits of Detection

A summary of the results with respect to reporting limits and minimum detectable concentrations (MDCs) is as follows:

- The radium-226, lead-210, and thorium-230 LLDs (reported as MDCs or reporting limits) in the NEA, MPA, RFA, and SMA soil samples were all 1×10^{-7} $\mu\text{Ci/g}$.
- The natural uranium LLDs in the NEA, MPA, RFA, and SMA samples ranged from 1.7×10^{-8} to 2.0×10^{-8} $\mu\text{Ci/g}$.
- None of the results NEA, MPA, RFA, and SMA samples were below their respective LLDs.
- The lead-210 LLDs for the LAN and LAS samples ranged from 1.9×10^{-6} to 3.8×10^{-6} $\mu\text{Ci/g}$. In all but one case, the lead-210 results were lower than their respective LLDs.
- The radium-226 LLDs for the LAN and LAS samples ranged from 4.0×10^{-8} to 1.0×10^{-7} $\mu\text{Ci/g}$. All of the LAN and LAS results exceeded their respective LLDs.
- The thorium-230 LLD for the LAN and LAS samples was 1.0×10^{-7} $\mu\text{Ci/g}$. Results for 17 of the 53 (surface and subsurface) samples were reported below 1.0×10^{-7} $\mu\text{Ci/g}$.
- The natural uranium LLD for the LAN and LAS samples was 7.0×10^{-9} $\mu\text{Ci/g}$. All of the results exceeded the LLD.

The LLD recommended in RG 4.14 for natural uranium, thorium-230, radium-226, and lead-210 in soils is 2×10^{-7} $\mu\text{Ci/g}$. The only case for which the guidance values were not attained was the LLD for lead-210 in the LAN and LAS samples.

5.0 RADIUM-226 ESTIMATES BASED ON GAMMA-SOIL CORRELATION

To estimate site-wide radium-226 concentrations at each of the GPS-based gamma survey points, a gamma-soil radium correlation was established by performing a regression between the surface soil analytical results documented in Section 4 for the 80 surface (0 to 15 cm) soil samples and one-minute integrated direct radiation measurements collected at each of these locations prior to sample collection. The measurements were collected with the same Ludlum 44-10/2221 2-in by 2-in sodium iodide gamma detection systems used in the GPS-based gamma survey. The measurements are listed in Table 4-1.

Two linear correlation iterations were performed to derive the site-wide gamma-soil radium correlation used as the basis for the soil radium-226 values plotted in Figures 5-1 and 5-2. The first attempt included all 80 data points, followed by the use of a truncated data set that excluded outlying data.

Figure 5-1 displays a plot of concentrations of radium in soil over 1-minute counts of gamma radiation (all 80 points). Overlaid on the plot are a linear fit and its 95% predicted interval. The linear fit of the data resulted in an R^2 of 0.75, denoting that 75% of the variability of the data is accounted for by the linear fit. The equation of the linear fit is:

$$[\text{Radium-226}] = -0.87 + 0.0002 \times \text{Gamma Count Rate}$$

Where $[\text{Radium-226}]$ is the predicted concentration based on the gamma-ray count rate in cpm.

While the R^2 determines that the linear fit is a fair model for all the data, it appears that outliers and large values of radium-226 are increasing the slope of the line, resulting in an over prediction of radium-226 concentrations. The regression analysis was repeated after removing the five outlying radium-226 results from the surface mine area data set. The data without the five outliers are shown in Figure 5-2 and the equation of the linear fit is:

$$[\text{Radium-226}] = -1.04 + 0.000187 \times \text{Gamma Count Rate}$$

This model has an R^2 of 0.43, denoting a poor fit, the model accounting for 43 percent of the variance in the data set.

The two equations predict slightly different radium-226 concentrations. Using an arbitrary gamma count rate of 10,000 cpm in both equations yields predicted radium-226 concentrations of 1.1 pCi/g in the first case and 0.83 pCi/g with the five outliers removed.

Using the latter equation, soil radium-226 concentrations were estimated for each discrete gamma survey measurement. These data were then interpolated as reflected in Figure 5-3, using

a grid block averaging method. The smallest sized grid block that fits within the survey transects without missing data coverage is 700x700 ft. Table 5-1 lists summary data for the predicted radium-226 concentrations in each of the major areas.

Of the 1,015 grid blocks covering the entire permit area, the majority (approximately 78 percent) of the interpolated surface radium-226 concentrations is less than 1.5 pCi/g. In the overall data set, the median predicted radium-226 concentration is 1.1 pCi/g and the range is 0.0 to 24.9 pCi/g. In the main permit area (excluding the anomalous area), the median predicted radium-226 concentration is 0.0 pCi/g and the range is 0.0 to 9.0 pCi/g. In the surface mine area, the median predicted radium-226 concentration is 1.5 pCi/g and the range is 0.0 to 24.9 pCi/g. In the anomalous portion of the main permit area, the median predicted radium-226 concentration is 1.4 pCi/g and the range is 0.0 to 2.3 pCi/g.

It is important to acknowledge that discrepancies between measured soil radium-226 concentrations reported by the laboratory and corresponding radium-226 concentrations estimated by gamma surveys are inevitable in a characterization survey of this nature and magnitude, given the heterogeneity of the site (at least in some areas) and differing detector-source geometry at various sample/survey locations.

At the same time, Figure 5-3 shows that without a gamma survey, reliance on a random soil sampling program alone would not have identified elevated areas of radioactivity at the site.

6.0 RADON FLUX MEASUREMENTS

This section documents the results of pre-operational radon-222 (radon) flux measurements and ambient air monitoring.

6.1 Radon Flux Measurements

The Sampling Plan specified that three rounds of radon flux measurements would be taken to characterize pre-operational conditions in accordance with NRC Regulatory Guide 4.14. The following documents the results of the three rounds of measurements taken in September 2007; and April and July 2008.

Radon flux rates were measured at nine locations on three occasions in the Dewey and Burdock roll front areas. The locations are shown on Figure 4-1. The locations coincide with the nine soil samples collected from 0 to 100 cm below ground surface (not in land application areas).

The first round of flux canisters was deployed on September 26, retrieved on September 27, and analyzed on September 28, 2007. The second round of flux canisters was deployed on April 20, retrieved on April 21, and analyzed on April 22, 2008. The third round of flux canisters was deployed on July 14, retrieved on July 15, and analyzed on July 16, 2008. The canisters were analyzed using EPA Test Method 115, *Monitoring for Radon-222 Emissions (40 Code of Federal Regulations [CFR] 61, Appendix B)*. Results are documented in the Table 6-1. Sampling for the three periods yielded average flux rates of 1.22, 0.74, and 1.5 picocuries per

meter squared second ($\text{pCi}/\text{m}^2\text{-s}$), respectively. Flux rates ranged between 0.68 and 1.77 $\text{pCi}/\text{m}^2\text{-s}$ in Fall 2007, 0.28 and 1.33 $\text{pCi}/\text{m}^2\text{-s}$ in Spring 2008 and 0.48 and 2.38 $\text{pCi}/\text{m}^2\text{-s}$ in Summer 2008.

These values are one to two orders of magnitude below the National Emissions Standards for Hazardous Air Pollutants (NESHAPS) requirements of 20 $\text{pCi}/\text{m}^2\text{-s}$ specified in 10 CFR 40, Appendix A, Criterion 6. Although the latter requirement applies to tailings and thus is not directly germane to this characterization, it is useful as a context to demonstrate the relatively low magnitude of baseline radon flux rates measured at the site.

Completed radon flux measurement forms are provided in Appendix C.

7.0 VEGETATION CHARACTERIZATION

This section documents the results of the first round of vegetation sampling conducted for the baseline radiological characterization.

7.1 Sampling Methods and Analytes

One vegetation sample was collected at each AMS in August, 2007; and April and July, 2008. The samples were collected using grass clippers and placed in large plastic lawn bags, labeled appropriately, and stored in a laboratory supplied cooler until transferred to the laboratory. The analytes and corresponding analytical methods were the same as those used for soil. Polonium-210, determined using a laboratory-specific digestion and alpha spectrometry method, was added to the analytical suite (Energy Laboratories, 2008).

7.2 Results

Table 7-1 presents the results of the vegetation sampling. There appear to be no temporal or spatial trends in the data. The following list is a summary of the averages for the set of samples:

- Radium-226 concentrations ranged from 0.02 to 0.09 pCi/g , averaging 0.05 pCi/g .
- Natural uranium concentrations ranged from 0.01 to 0.04 pCi/g , averaging 0.02 pCi/g .
- Thorium-230 concentrations ranged from 0.01 to 0.03 pCi/g , averaging 0.02 pCi/g .
- Lead-210 concentrations ranged from 0.6 to 1.7 pCi/g , averaging 1.2 pCi/g .
- Polonium-210 concentrations ranged from 0.08 to 0.23 pCi/g , averaging 0.15 pCi/g .

Analytical errors associated with the reported concentrations results are high, relative to the reported means.

With the exception of lead-210, radionuclide concentrations in the vegetation samples are one to orders of magnitude lower than those in the corresponding shallow (0 to 5 cm) soil samples. There are no apparent spatial or temporal patterns in the vegetation.

8.0 AIR MONITORING

This section documents the results of baseline radiological air monitoring, which was comprised of two tasks: high volume particulate and radon sampling.

Eight Hi-Q Model HVP-4200AFC high volume air samplers were established within and surrounding the proposed permit area. The samplers operated continuously from August 13, 2007 to August 13, 2008. The locations of the air samplers are shown on Figure 4-1.

Passive track etch detectors were placed at each of the eight AMS locations and an additional eight biased locations to measure radon-222 concentrations in air. For QC purposes, one duplicate detector was placed at each of two locations during each sampling event. The locations of the passive radon detectors are also shown on Figure 4-1.

8.1 Sampling Methods and Analytes

8.1.1 High Volume Air Sampling

Airborne particulates were collected using the Hi-Q high volume air samplers. The samplers operated nearly continuously from August 2007 to August 2008. The locations of the air samplers are shown on Figure 4-1.

Each high volume air sampler was equipped with an 8-in. by 10-in. 0.8 micron glass fiber filter paper. The air filters were collected approximately bi-weekly, prior to saturation, from each of the eight air samplers. Flow rate and total flow data were recorded at the same time. Over the course of 351 days, the filters were collected as follows:

- Period 1: August 13 to October 2, 2007
- Period 2: October 2, 2007 to January 4, 2008
- Period 3: January 4 to April 1, 2008.
- Period 4: April 1 to July 9, 2008
- Period 5: July 9 to August 13, 2008

The filters were composited and digested by the external analytical laboratory. The samples were analyzed for radium-226, thorium-230, natural uranium, and lead-210, using the same methods as listed for the soil samples.

The laboratory data were reported in units of picocuries per filter composite (pCi/f). The data were converted to units of microcuries per milliliter ($\mu\text{Ci/ml}$), as follows:

$$\text{Concentration, } \mu\text{Ci/ml} = \frac{\text{Filter Concentration}}{\text{Total Flow}} (1 * 10^{-12})$$

The units of total flow and filter concentration in the equation are cubic meters and pCi/f, respectively. The resulting concentrations for each radionuclide and high volume sampler were compared to effluent concentration limits listed in Table 2 of 10 CFR 20 Appendix B and reported in Table 8-1 as percentages of the respective effluent limits. The most conservative effluent limits were applied to thorium-230 ($3 * 10^{-12} \mu\text{Ci/ml}$) and lead-210 ($6 * 10^{-13} \mu\text{Ci/ml}$). The Class D and W limits were applied to natural uranium ($3 * 10^{-12} \mu\text{Ci/ml}$) and radium-226 ($9 * 10^{-13} \mu\text{Ci/ml}$), respectively.

8.1.2 Ambient Radon

Radtrak passive radon-222 (track etch) detectors were used to determine ambient radon concentrations in air.

The detector measures average radon concentrations in air over the measurement period. The results are reported in picocuries per liter (pCi/L).

With an overlap in time across the group of detectors, but not on an individual location basis, the four quarterly measurement periods were: August 14 to September 27, 2007; September 27, 2007 to February 1 through 12, 2008; February 1 through 12, 2008 to May 17, 2008; and May 17 to July 17, 2008.

8.2 Results

8.2.1 High Volume Air Sampling

In general and relative to one another (e.g., natural uranium to radium-226), the average concentrations of radionuclides were consistent at each location from period to period. The radionuclide with the lowest average concentration was radium-226, followed by thorium-230, natural uranium, and lead-210. Average radium-226 concentrations were five orders of magnitude lower than lead-210 concentrations. The data are listed in Table 8-1, where they are also summarized as averages and ranges.

Site-wide, the data can be summarized as follows:

- Natural uranium concentrations ranged from $-3.0 * 10^{-17}$ to $9.1 * 10^{-15} \mu\text{Ci/ml}$ and averaged $7.5 * 10^{-16} \mu\text{Ci/ml}$.
- Thorium-230 concentrations ranged from $-9.5 * 10^{-19}$ to $5.6 * 10^{-17} \mu\text{Ci/ml}$ and averaged $1.2 * 10^{-17} \mu\text{Ci/ml}$.

- Radium-226 concentrations ranged from -4.9×10^{-17} to 4.7×10^{-17} $\mu\text{Ci/ml}$ and averaged 8.9×10^{-19} $\mu\text{Ci/ml}$.
- Lead-210 concentrations ranged from -1.1×10^{-16} to 4.1×10^{-14} $\mu\text{Ci/ml}$ and averaged 1.4×10^{-14} $\mu\text{Ci/ml}$.

There are no clear patterns in the radionuclide concentrations, when evaluating them spatially or temporally. Natural uranium concentrations at each location were on the order of 10^{-16} $\mu\text{Ci/ml}$ over the course of monitoring. Thorium-230 concentrations fluctuated between the orders of 10^{-17} and 10^{-18} $\mu\text{Ci/ml}$. Radium-226 concentrations fluctuated between the orders of 10^{-17} and 10^{-19} $\mu\text{Ci/ml}$. Finally, lead-210 concentrations at each location were all on the order of 10^{-14} $\mu\text{Ci/ml}$ over the course of monitoring.

With the exception of natural uranium, the values determined above are similar to U.S. background concentrations reported in the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) Report to the General Assembly, Sources and Effects of Ionizing Radiation, Annex B. The regional concentrations reported in this reference document are: uranium-238 (2.4×10^{-17} to 1.4×10^{-16} $\mu\text{Ci/ml}$), thorium-230 (1.6×10^{-17} $\mu\text{Ci/ml}$), radium-226 (1.6×10^{-17} $\mu\text{Ci/ml}$), and lead-210 (2.7×10^{-15} to 2.7×10^{-14} $\mu\text{Ci/ml}$).

In terms of comparison to 10 CFR 20 Appendix B effluent concentrations, the data can be summarized as follows:

- Natural uranium concentrations were 0.0 to 0.3 percent of its effluent concentration.
- Thorium-230 concentrations were 0.0 percent of its effluent concentration.
- Radium-226 concentrations were -0.01 to 0.01 percent of its effluent concentration.
- Lead-210 concentrations were -0.02 to 6.78 percent of its effluent concentration.

The LLDs, in pCi/f, reported by the laboratory for each radionuclide were converted to $\mu\text{Ci/ml}$ by multiplying pCi/f by 1×10^{-12} . In no cases were the LLDs higher than their respective 10 CFR 20 effluent concentration limits. The LLDs reported in Period 2 by the laboratory for uranium exceeded the recommendation in NRC Regulatory Guide 4.14.

The LLDs for each of the radionuclides are listed in Table 8-1.

8.2.2 Ambient Radon

The ambient radon monitoring results are listed in Table 8-2. Quarter 1 ambient radon concentrations ranged from 1.0 to 9.8, averaging 2.4 pCi/L. Quarter 2 concentrations ranged from 0.4 to 1.8, averaging 1.2 pCi/L. Quarter 3 concentrations ranged from 0.4 to 3.3, averaging 1.8 pCi/L. Quarter 4 concentrations ranged from 0.5 to 0.8, averaging 0.5 pCi/L. Site-wide, annual radon concentrations ranged from 0.6 to 3.9, and averaged 1.7 pCi/L.

Figure 8-1 presents the ambient radon concentrations in relation to the radium-226 concentrations predicted from the gamma-ray count rate data. One expects higher radon concentrations in the historically mined areas. However, there is only one case where this is true: the Quarter 1 observation at Rn-02, located adjacent to the edge of an open pit mine, is 9.8 pCi/L. There appear to be no spatial trends in the current data set, other than the levels are within the same order of magnitude across the site.

Duplicates were collected at AMS-01 and AMS-BKG in each of the monitoring periods. The QC summary for the radon monitoring is as follows:

- AMS-01: In Quarters 1 and 4, the RPD was 0. In Quarters 2 and 3, the RPD was 55.5.
- AMS-BKG: The RPDs were 30 (Quarter 1), 6.5 (Quarter 2), 12.5 (Quarter 3), and 0.7 (Quarter 4).

In terms of effluent concentrations, the measured values exceed the 10 CFR 20 limit of 0.1 pCi/L for radon-222 with daughters present. However, on average the measured values are within the range of reported worldwide ambient background radon concentrations, 0.027 to 2.7 pCi/L (United Nations Scientific Committee on the Effects of Atomic Radiation [UNSCEAR], 2000).

9.0 AMBIENT EXPOSURE RATES

9.1 Cross-Calibration of Sodium Iodide Detectors and High-Pressure Ion Chamber

Both the sodium iodide detector and PIC measure gamma radiation. The sodium iodide detection system measures the rate that the gamma rays interact with the detector in cpm, has a lower sensitivity than the PIC and is energy dependent. The PIC is a highly accurate ionization chamber for measuring exposure rate in microRoentgens per hour ($\mu\text{R}/\text{h}$) but requires a longer count time. The PIC was used because it measures exposure rates directly and is considered a primary standard by NIST, when calibrated. The PIC measures gamma, X-rays, and cosmic radiation without discrimination. It is highly stable, relatively energy independent, and serves as an excellent tool to calibrate other survey equipment to measure exposure rates. Because of its portability and shorter measurement times, the sodium iodide detector is more efficient than the PIC for use in large area surveys. By performing the large area gamma surveys with sodium iodide detectors, then developing a correlation between the two instruments, exposure rates derived from the sodium iodide measurements can represent site wide gamma emissions from surface soils.

Powertech collected 12 co-located static gamma counts and exposure rate measurements to develop the correlation between gamma counts and exposure rates. The locations were biased towards areas where gamma shine was not relatively high; that is, where gamma count rates remained relatively constant at 18 in, 1 m, and 2 m above ground surface. In addition, locations were chosen to encompass most of the range of sodium iodide detector readings observed in the GPS-based gamma surveys. The sodium iodide measurements were taken using one of the 2-inch

by 2-inch sodium iodide detectors that was used in the baseline gamma survey. A 1-minute integrated count was taken at each of the 12 locations with the detector suspended at 18 in. above the ground surface. Exposure rate measurements were then collected at a 1-m height at each location, directly above the location where the sodium iodide detector was held. Exposure rates were determined after 20-minute integrated counts. The PIC and gross gamma measurements were performed on July 14 to 16, 2008 at the locations shown on Figure 9-1.

The linear equation representing the correlation between exposure rates and gamma-ray count rates, determined using the PIC and average of the two sodium iodide detectors is:

$$\text{Exposure Rate} = 0.0007 \times \text{Gamma Count Rate} + 2.02$$

where the exposure rate is in gross microRoentgens per hour ($\mu\text{R/hr}$) and the gamma count rate is in gross cpm.

The linear regression model for the average is a good fit, with an R^2 of 0.96. Nearly all of the data align along the slope of the line, as shown in Figure 9-2. The correlations are similar for the individual sodium iodide detectors and not discussed further.

The linear regression model predicts an average exposure rate of 10.9 $\mu\text{R/hr}$ for the site. The range of predicted exposure rates is 5.9 to 324 $\mu\text{R/hr}$, based on the observed gamma-ray count rates at the site. The predicted site-wide exposure rates are shown as ranges of colors in 700 by 700 ft grid block averages on Figure 9-3.

9.2 Ambient Exposure Rates Determined using Thermoluminescent Detectors

Ambient exposure rates were determined for three periods, using TLDs supplied and analyzed by Landauer, Inc. The monitoring periods were: August 18, 2007 to February 4, 2008, February 4 to May 17, 2008, and May 17 to July 17, 2008.

The TLDs were deployed at each of the eight AMS locations. Duplicates were deployed at AMS-01 and the background location (AMS-BKG).

Five of the nine TLDs deployed in the August 2007 to February 2008 period were lost, presumably by way of cattle consumption and/or disturbance.

The ambient gamma dose rate monitoring results are listed in Table 9-1. The results for the TLDs reported in millirem per year (mrem/yr) ambient dose equivalents are as follows:

- AMS-01: 94.9 for 303 monitored days, projected to 114 mrem/yr
- AMS-02: 54.0 for 61 monitored days, projected to 323 mrem/yr
- AMS-03: 38.6 for 103 monitored days, projected to 137 mrem/yr
- AMS-04: 152.8 for 303 monitored days, projected to 184 mrem/yr

- AMS-05: 123.7 for 303 monitored days, projected to 149 mrem/yr
- AMS-06: 88.0, for 164 monitored days projected to 196 mrem/yr
- AMS-07: 145.3 for 303 monitored days, projected to 175 mrem/yr
- AMS-BKG: 167.8 for 303 monitored days, projected to 202 mrem/yr

Excluding the result at AMS-02, the range of exposure rates (114 to 202 mrem/yr) and average (165 mrem/yr) is similar to average worldwide exposures to natural radiation sources comprised of cosmic radiation, cosmogenic radionuclides, and external terrestrial radiation reported in the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) Report to the General Assembly, Sources and Effects of Ionizing Radiation, Annex. The typical ranges of average worldwide exposures reported in this reference document are to 60 to 160 mrem/yr.

10.0 FOOD SAMPLING

To determine baseline radionuclide concentrations in local food, Powertech collected three tissue samples (one of liver [DBAT-03], two of meat [DBAT-01, DBAT-02]) from a locally grazing cow on June 25, 2008. The samples were analyzed for natural uranium, radium-226, lead-210, and polonium-210. The results are listed in Table 10-1.

For the majority of analytes, the reported concentrations are at or below LLDs that, in turn, exceed the LLDs recommended in RG 4.14. This is evident for all reported concentrations of natural uranium, radium-226 and polonium-210 in Sample DBAT-01, and lead-210 in all three samples. There are only three cases where radionuclide concentrations exceed LLDs. Radium-226 concentrations are 0.003 and 0.06 pCi/g in Samples DBAT-01 and DBAT-02. The concentration of polonium-210 in Sample DBAT-03 is 0.02 pCi/g.

11.0 SUMMARY AND CONCLUSIONS

The results of the Dewey-Burdock baseline field investigation documented herein indicate the following:

- Baseline gamma-ray count rates have been obtained across the permit area. Twenty-five percent of the count rates were lower than 11,395 cpm. Seventy-five percent of the count rates were below 14,437 cpm. Three distinct populations of gamma-ray count rates were observed: an anomalous 600-acre portion of the main permit area, the main permit area itself, and the surface mine area. Considered individually, each has non-parametric count-rate distributions.
- Elevated levels of radioactivity, as characterized by gamma readings greater than 17,945 cpm in the main permit area and 20,270 cpm in the surface mine area, occur in the

anomalous portion of the main permit area and legacy mine wastes and open pits in the surface mine area.

- The surface soil sampling results corroborate the findings discussed above regarding spatial trends of radioactivity at the site. The majority of the site is characterized by an average predicted surface radium-226 concentration of 0.9 pCi/g. One exception is in the north end of the main permit area where the average predicted radium-226 concentration is 1.1 pCi/g. Also, areas in the surface mine area exhibit higher levels of radioactivity which are indicative of anthropogenic or other impacts.
- Experience at other milling sites underscores the need for using detailed baseline radiological information that shows varying site wide radium-226 concentrations, as adherence to a single number (especially if a conservative estimator such as a mean is used) can result in unnecessary cleanup and/or habitat destruction.
- Average radon flux rates ranged between 0.60 and 1.57 pCi/m²-s. The highest individual measurement was 2.38 pCi/m²-s. These values are one to two orders of magnitude below the NESHAPS limit of 20 pCi/m²-s specified in 10 CFR 40, Appendix A, Criterion 6. Although the latter requirement applies to uranium mill tailings and thus is not directly germane to this characterization, it is informative to demonstrate the relatively low magnitude of baseline radon flux levels measured at the site.
- Analytical errors associated with the low radionuclide concentrations in vegetation samples do not allow for a correlation to radionuclide concentrations in soils at the same sample locations.
- Particulate radionuclide concentrations in air across the site have been consistently low and at levels at least 95 % below their respective 10 CFR 20 effluent levels.
- Site-wide, annual radon concentrations ranged from 0.6 to 3.9, and averaged 1.7 pCi/L. There appear to be no temporal or spatial trends in the current data set other than the levels are within the same order of magnitude across the site.
- A linear regression model comparing PIC to gamma-ray count rate measurements predicts an average exposure rate of 10.9 µR/hr for the site. The range of predicted exposure rates is 5.9 to 324 µR/hr, based on the observed gamma-ray count rates at the site.
- Baseline ambient exposure rates, as determined using TLDs, range from 108.6 to 158.2 mrem/yr.

In summary, it is clear that portions of the surface mine area, in the eastern quarter of the site exhibits radiological impacts from historic and or current anthropogenic activities within the area. The precise sources of these impacts are not relevant in the context of this investigation since the apparent impacts are part of the baseline or background radiological characteristics of the site.

11.0 REFERENCES

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Tables

Table 2-1. Summary of Baseline Radiological Investigation Scope

Survey Method/Endpoint	Baseline Investigation Scope	Parameters Evaluated
A. GPS-based Gamma Surveys	18- inch high, unshielded gamma-ray readings coupled with x- and y- coordinates taken every second moving along 100 or 500 meter transects at ≤ 1.5 meters per second. Surveys were made over the entire site along 17 transects in the main permit area, 48 transects in the surface mine area, and along two roads. A second survey covered land application areas along 100 meter transects.	Serve as basis to estimate exposure rates, surface soil radium-226 concentrations, and to identify additional areas for biased sampling.
B. Biased Soil Sampling	Biased samples at 5 locations, all collected from 0 to 15 cm.	Radium-226 for all samples; Thorium-230, natural uranium, lead-210, for a subset (2 locations)
C. Random Soil Sampling	Random samples at 75 locations. Nine of the 75 locations were sampled at depth (15-30 cm and 30-100 cm). Ten duplicates at 0 to 15 cm. One duplicate at 15 to 30 cm. One duplicate at 30 to 100 cm.	Radium-226 for all samples; Thorium-230, natural uranium, lead-210 (8 from 0 to 15 cm and one each at 15 to 30 and 30 to 100 cm)
D. Soil sampling in land application areas	Random samples at 17 locations, all but one of which were sampled at 0 to 15, 15 to 30 and 30 to 100 cm. Refusal was encountered at 45 cm in the exceptional location. One duplicate each at 0 to 5, 15 to 30, and 30 to 100 cm.	Radium-226, thorium-230, natural uranium, and lead-210 for all samples
E. Exposure Rate Monitoring	Exposure rate determinations based on TLD and PIC measurements. TLD measurements collected for four quarters.	Exposure Rates
F. Soil and Vegetation Sampling at Air Monitoring Stations	Eight locations: seven onsite (AMS-01 through AMS-07) and one located approximately 1.9 miles west of the southwest corner of the permit area (AMS-BKG). Vegetation samples collected for four quarters. Given the diurnal nature of winds, at various times this station would be representative of downwind and upwind locations.	Vegetation: radium-226, thorium-230, natural uranium, lead-210, and polonium-210 Soil: All of above except polonium-210
G. Air Particulate Sampling	Eight locations: seven onsite (AMS-01 through AMS-07) and one located approximately 1.9 miles west of the southwest corner of the permit area (AMS-BKG). Air particulate samples collected for four quarters.	Air filters: radium-226, thorium-230, natural uranium, lead-210 and polonium-210

Table 2-1. Summary of Baseline Radiological Investigation Scope (concluded)

Survey Method/Endpoint	Baseline Investigation Scope	Parameters Evaluated
H. Radon in air	16 locations: eight AMS and eight additional locations. Radon in air measurements taken for four quarters.	Radon-222
I. Radon Flux Measurements	Radon flux measurements at nine locations (coinciding with biased soil samples collected at depth in Task C above). The first two of three rounds of measurements is documented herein.	Radon-222
J. Locally Grazed Livestock Sampling	Three samples collected from one locally grazing cow.	Radium-226, thorium-230, natural uranium, lead-210 and polonium-210

Table 3-1. Statistical Summary of Gamma-Ray Count Rates in Entire Data Set, Main Permit and Surface Mine Areas

Statistic	Gamma-Ray Count Rate (cpm)		
	Entire Data Set	Main Permit Area	Surface Mine Area
Mean	15,025	13,073	16,823
Standard Deviation	17,095	2,995	23,377
Median	12,687	12,664	12,717
Mode	12,487 (n=53)	12,585 (n=35)	12,138 (n=31)
Minimum	5,550	5,883	5,550
Maximum	460,485	171,243	460,485
Q1	11,395	11,598	11,125
Q3	14,437	14,137	14,783
IQR	3,042	2,539	3,658
No. of Counts	157,075	75,345	81,757

Notes:

Entire data set does not include gamma-ray counts obtained along the eastern haul road. In addition, the sum of the counts in the main permit and surface mine areas is 27 counts greater than the counts in the entire data set, due to an overlap in counts within the two shapes placed as a layer in ArcView GIS to select the data sets.

Table 3-2. Statistical Summary of Gamma-Ray Count Rates in Land Application Areas

Statistic	Gamma-Ray Count Rate (cpm)		
	Main Permit Area	Land Application Area	
		Dewey	Burdock
Mean	13,073	12,815	12,308
Standard Deviation	2,995	1,940	1,318
Median	12,664	12,523	12,232
Mode	12,585 (n=35)	11,778 (n=15)	12,266 (n=16)
Minimum	5,883	6,798	8,498
Maximum	171,243	20,422	24,248
Q1	11,598	11,437	11,504
Q3	14,137	13,993	12,958
IQR	2,539	2,556	1,454
No. of Counts	75,345	23,480	13,647

Table 4-1. Radionuclide Concentrations in All Soil Samples

Sample ID	Date Collected	Depth (cm)	1-minute Gamma-Ray Count Rate (cpm)	U-nat (µCi/g)	Pb-210 (µCi/g)	Pb-210 Error (µCi/g)	Th-230 (µCi/g)	Th-230 Error (µCi/g)	Ra-226 (µCi/g)	Ra-226 Error (µCi/g)
AMS-1	9/27/2007	0-5	-	9.6E-07	2.0E-06	3.0E-07	4.0E-07	1.0E-07	1.4E-06	2.0E-07
AMS-2	9/27/2007	0-5	-	9.5E-07	3.0E-06	3.0E-07	5.0E-07	1.0E-07	1.1E-06	2.0E-07
AMS-3	9/27/2007	0-5	-	8.2E-07	2.0E-06	2.0E-07	4.0E-07	1.0E-07	1.5E-06	2.0E-07
AMS-4	9/27/2007	0-5	-	1.4E-06	2.0E-06	2.0E-07	8.0E-07	2.0E-07	1.5E-06	3.0E-07
AMS-5	9/27/2007	0-5	-	6.8E-07	2.0E-06	2.0E-07	6.0E-07	1.0E-07	1.3E-06	3.0E-07
AMS-6	9/27/2007	0-5	-	5.5E-07	1.0E-06	2.0E-07	4.0E-07	1.0E-07	8.0E-07	2.0E-07
AMS-7	9/27/2007	0-5	-	5.8E-07	2.0E-06	2.0E-07	3.0E-07	8.0E-08	1.1E-06	2.0E-07
AMS-BKG	9/27/2007	0-5	-	1.9E-06	2.0E-06	2.0E-07	9.0E-07	1.0E-07	2.4E-06	4.0E-07
MPA-B01	9/25/2007	0-15	13824	-	-	-	-	-	1.4E-06	3.0E-07
MPA-B02	9/25/2007	0-15	14176	-	-	-	-	-	1.1E-06	2.0E-07
MPA-B03	9/25/2007	0-15	13006	-	-	-	-	-	1.3E-06	3.0E-07
MPA-R01	9/24/2007	0-15	13749	-	-	-	-	-	1.4E-06	2.0E-07
MPA-R02	9/24/2007	0-15	16059	-	-	-	-	-	2.6E-06	3.0E-07
MPA-R03	9/24/2007	0-15	10796	7.5E-07	7.0E-07	1.0E-07	4.0E-07	1.0E-07	1.1E-06	2.0E-07
MPA-R04	9/24/2007	0-15	10810	-	-	-	-	-	9.0E-07	2.0E-07
MPA-R04-Dup	9/24/2007	0-15	-	-	-	-	-	-	8.0E-07	2.0E-07
MPA-R05	9/24/2007	0-15	11850	-	-	-	-	-	1.2E-06	2.0E-07
NEA-R01	9/24/2007	0-15	12302	9.1E-07	7.0E-07	2.0E-07	6.0E-07	1.0E-07	1.1E-06	2.0E-07
NEA-R02	9/24/2007	0-15	13176	-	-	-	-	-	1.3E-06	2.0E-07
NEA-R03	9/24/2007	0-15	16393	-	-	-	-	-	2.2E-06	3.0E-07
NEA-R04	9/24/2007	0-15	17356	-	-	-	-	-	2.3E-06	3.0E-07
NEA-R04-Dup	9/24/2007	0-15	-	-	-	-	-	-	2.5E-06	3.0E-07
NEA-R05	9/24/2007	0-15	17269	-	-	-	-	-	2.8E-06	3.0E-07
RFA-B01A	9/26/2007	0-15	13115	8.7E-07	1.0E-06	2.0E-07	7.0E-07	1.0E-07	1.2E-06	2.0E-07
RFA-B01A-Dup	9/26/2007	0-15	-	9.0E-07	8.0E-07	1.0E-07	7.0E-07	1.0E-07	1.1E-06	2.0E-07
RFA-B02A	9/26/2007	0-15	13360	-	-	-	-	-	1.1E-06	2.0E-07
RFA-B03	9/25/2007	0-15	14253	-	-	-	-	-	1.1E-06	2.0E-07
RFA-B04	9/25/2007	0-15	13963	-	-	-	-	-	1.5E-06	3.0E-07
RFA-B06	9/25/2007	0-15	13819	-	-	-	-	-	1.1E-06	2.0E-07
RFA-B07	9/25/2007	0-15	12700	-	-	-	-	-	1.7E-06	2.0E-07
RFA-B08	9/25/2007	0-15	13433	-	-	-	-	-	9.0E-07	2.0E-07
RFA-B08-Dup	9/25/2007	0-15	13528	-	-	-	-	-	1.1E-06	2.0E-07
RFA-B09	9/25/2007	0-15	14825	-	-	-	-	-	1.1E-06	2.0E-07
RFA-B10	9/25/2007	0-15	13366	-	-	-	-	-	1.0E-06	2.0E-07
RFA-B11	9/25/2007	0-15	14253	8.8E-07	1.0E-06	2.0E-07	5.0E-07	1.0E-07	1.8E-06	3.0E-07
RFA-B12	9/25/2007	0-15	13135	-	-	-	-	-	1.0E-06	2.0E-07
RFA-B13A	9/26/2007	0-15	13987	-	-	-	-	-	1.8E-06	3.0E-07
RFA-B14	9/25/2007	0-15	13872	-	-	-	-	-	1.7E-06	3.0E-07

Table 4-1. Radionuclide Concentrations in All Soil Samples (Continued)

Sample ID	Date Collected	Depth (cm)	1-minute Gamma-Ray Count Rate (cpm)	U-nat (μCi/g)	Pb-210 (μCi/g)	Pb-210 Error (μCi/g)	Th-230 (μCi/g)	Th-230 Error (μCi/g)	Ra-226 (μCi/g)	Ra-226 Error (μCi/g)
RFA-B15A	9/26/2007	0-15	13535	-	-	-	-	-	1.4E-06	3.0E-07
RFA-B16	9/25/2007	0-15	13675	-	-	-	-	-	9.0E-07	2.0E-07
RFA-B17A	9/26/2007	0-15	16283	-	-	-	-	-	2.0E-06	3.0E-07
RFA-B18	9/25/2007	0-15	13835	-	-	-	-	-	1.7E-06	3.0E-07
RFA-B19	9/25/2007	0-15	13689	-	-	-	-	-	1.2E-06	2.0E-07
RFA-B20	9/25/2007	0-15	13113	8.8E-07	1.0E-06	2.0E-07	5.0E-07	1.0E-07	1.3E-06	3.0E-07
RFA-B21A	9/26/2007	0-15	16641	-	-	-	-	-	5.6E-06	4.0E-07
RFA-B22	9/25/2007	0-15	14087	-	-	-	-	-	1.5E-06	2.0E-07
RFA-B23	9/25/2007	0-15	19674	-	-	-	-	-	3.6E-06	4.0E-07
RFA-B24	9/25/2007	0-15	12766	-	-	-	-	-	1.3E-06	2.0E-07
RFA-B25	9/25/2007	0-15	10300	6.7E-07	1.0E-06	2.0E-07	4.0E-07	1.0E-07	1.2E-06	2.0E-07
RFA-B26	9/25/2007	0-15	11791	-	-	-	-	-	1.1E-06	2.0E-07
RFA-B27	9/25/2007	0-15	13794	-	-	-	-	-	1.5E-06	2.0E-07
RFA-B28	9/25/2007	0-15	15246	-	-	-	-	-	2.4E-06	3.0E-07
RFA-B28-Dup	9/25/2007	0-15	-	-	-	-	-	-	1.8E-06	3.0E-07
RFA-B29	9/25/2007	0-15	14345	-	-	-	-	-	1.7E-06	3.0E-07
RFA-B30A	9/26/2007	0-15	12461	-	-	-	-	-	1.8E-06	2.0E-07
RFA-B31	9/25/2007	0-15	12221	-	-	-	-	-	1.3E-06	2.0E-07
RFA-B33	9/25/2007	0-15	13221	-	-	-	-	-	9.0E-07	2.0E-07
RFA-B34	9/25/2007	0-15	13408	-	-	-	-	-	1.0E-06	2.0E-07
RFA-B35	9/25/2007	0-15	12290	-	-	-	-	-	1.2E-06	2.0E-07
RFA-B36A	9/25/2007	0-15	12465	-	-	-	-	-	1.0E-06	2.0E-07
RFA-B37A	9/26/2007	0-15	11170	-	-	-	-	-	9.0E-07	2.0E-07
RFA-B38	9/25/2007	0-15	11852	-	-	-	-	-	1.0E-06	2.0E-07
RFA-B39	9/25/2007	0-15	11478	-	-	-	-	-	1.1E-06	2.0E-07
RFA-B40	9/25/2007	0-15	12629	5.6E-07	1.0E-06	2.0E-07	3.0E-07	1.0E-07	1.1E-06	2.0E-07
RFA-B41	9/25/2007	0-15	11806	-	-	-	-	-	1.2E-06	2.0E-07
RFA-B43	9/25/2007	0-15	13264	-	-	-	-	-	1.7E-06	3.0E-07
RFA-B44	9/25/2007	0-15	11436	-	-	-	-	-	1.4E-06	2.0E-07
RFA-B45	9/25/2007	0-15	12242	-	-	-	-	-	1.6E-06	3.0E-07
SMA-B01	9/24/2007	0-15	10459	1.2E-06	6.0E-07	1.0E-07	5.0E-07	1.0E-07	9.0E-07	2.0E-07
SMA-B01-Dup	9/24/2007	0-15	-	1.5E-06	2.0E-06	2.0E-07	6.0E-07	1.0E-07	1.4E-06	3.0E-07
SMA-B03	9/24/2007	0-15	22410	-	-	-	-	-	1.5E-06	2.0E-07
SMA-B04	9/24/2007	0-15	15263	-	-	-	-	-	1.0E-06	2.0E-07
SMA-B07	9/24/2007	0-15	22925	-	-	-	-	-	3.2E-06	3.0E-07

Table 4-1. Radionuclide Concentrations in All Soil Samples (Continued)

Sample ID	Date Collected	Depth (cm)	1-minute Gamma-Ray Count Rate (cpm)	U-nat (µCi/g)	Pb-210 (µCi/g)	Pb-210 Error (µCi/g)	Th-230 (µCi/g)	Th-230 Error (µCi/g)	Ra-226 (µCi/g)	Ra-226 Error (µCi/g)
SMA-B09	9/24/2007	0-15	12879	-	-	-	-	-	1.2E-06	2.0E-07
SMA-B09-Dup	9/24/2007	0-15	-	-	-	-	-	-	1.7E-06	2.0E-07
SMA-B10	9/25/2007	0-15	13184	-	-	-	-	-	1.4E-06	2.0E-07
SMA-B11	9/24/2007	0-15	17346	-	-	-	-	-	2.3E-06	3.0E-07
SMA-B13	9/25/2007	0-15	13252	-	-	-	-	-	1.7E-06	3.0E-07
SMA-B14	9/24/2007	0-15	14483	-	-	-	-	-	1.4E-06	3.0E-07
SMA-B14-Dup	9/24/2007	0-15	-	-	-	-	-	-	1.6E-06	2.0E-07
SMA-B15	9/24/2007	0-15	8474	-	-	-	-	-	8.0E-07	2.0E-07
SMA-B16	9/24/2007	0-15	10235	-	-	-	-	-	9.0E-07	2.0E-07
SMA-B17	9/24/2007	0-15	10139	-	-	-	-	-	1.0E-06	2.0E-07
SMA-B18	9/25/2007	0-15	8511	-	-	-	-	-	5.0E-07	1.0E-07
SMA-B18-Dup	9/25/2007	0-15	-	-	-	-	-	-	4.0E-07	1.0E-07
SMA-B19	9/24/2007	0-15	10074	-	-	-	-	-	1.2E-06	2.0E-07
SMA-B20	9/27/2007	0-15	10897	-	-	-	-	-	9.0E-07	2.0E-07
SMA-B21	9/24/2007	0-15	16712	-	-	-	-	-	1.4E-06	2.0E-07
SMA-B22	9/24/2007	0-15	10618	-	-	-	-	-	8.0E-07	2.0E-07
SMA-B23	9/24/2007	0-15	16233	-	-	-	-	-	2.7E-06	3.0E-07
SMA-B23-Dup	9/24/2007	0-15	-	-	-	-	-	-	2.8E-06	3.0E-07
SMA-B24	9/24/2007	0-15	12662	-	-	-	-	-	1.3E-06	2.0E-07
SMA-B25	9/24/2007	0-15	9991	-	-	-	-	-	1.0E-06	2.0E-07
SMA-B26	9/28/2007	0-15	73243	-	-	-	-	-	1.1E-05	5.0E-07
SMA-B27	9/28/2007	0-15	130293	6.7E-05	3.0E-05	8.0E-07	3.0E-05	8.0E-07	4.0E-05	1.1E-06
SMA-B28	9/29/2007	0-15	39061	-	-	-	-	-	6.4E-06	4.0E-07
SMA-B29	9/28/2007	0-15	231041	1.6E-05	2.0E-05	7.0E-07	2.0E-05	6.0E-07	2.9E-05	9.0E-07
SMA-B30	9/28/2007	0-15	89139	-	-	-	-	-	3.4E-05	9.0E-07
LAN 001A	7/18/2008	0-15	-	1.8E-06	2.4E-06	2.3E-06	1.2E-06	6.0E-07	8.0E-07	9.0E-08
LAN 002A	7/18/2008	0-15	-	8.6E-07	3.4E-06	2.3E-06	9.0E-07	5.0E-07	9.0E-07	1.0E-07
LAN 003A	7/18/2008	0-15	-	7.8E-07	8.0E-07	2.2E-06	7.0E-07	6.0E-07	1.2E-06	1.0E-07
LAN 004A	7/18/2008	0-15	-	6.9E-07	1.0E-06	1.4E-06	6.0E-07	6.0E-07	1.9E-06	2.0E-07
LAN 004A-DUP	7/18/2008	0-15	-	7.2E-07	5.0E-07	1.4E-06	4.0E-07	3.0E-07	7.0E-07	1.0E-07
LAN 005A	7/18/2008	0-15	-	8.4E-07	1.2E-06	1.4E-06	9.0E-07	5.0E-07	4.4E-06	3.0E-07
LAN 006A	7/18/2008	0-15	-	7.1E-07	-5.0E-09	1.4E-06	3.0E-07	5.0E-07	1.1E-06	1.0E-07
LAN 007A	7/18/2008	0-15	-	8.1E-07	6.0E-07	1.4E-06	3.0E-07	5.0E-07	7.0E-07	1.0E-07
LAN 008A	7/18/2008	0-15	-	2.1E-06	1.0E-06	1.4E-06	1.0E-06	7.0E-07	9.0E-07	1.0E-07
LAN 009A	7/18/2008	0-15	-	1.1E-06	-4.0E-07	1.4E-06	3.0E-07	6.0E-07	8.0E-07	1.0E-07
LAN 010A	7/18/2008	0-15	-	1.6E-06	1.8E-06	1.2E-06	1.2E-06	6.0E-07	1.2E-06	2.0E-07
LAS 001A	7/19/2008	0-15	-	1.2E-06	1.6E-06	1.2E-06	6.0E-07	5.0E-07	9.0E-07	1.0E-07
LAS 002A	7/19/2008	0-15	-	4.8E-07	1.4E-06	1.2E-06	1.0E-07	5.0E-07	7.0E-07	1.0E-07

Table 4-1. Radionuclide Concentrations in All Soil Samples (Continued)

Sample ID	Date Collected	Depth (cm)	1-minute Gamma-Ray Count Rate (cpm)	U-nat (μCi/g)	Pb-210 (μCi/g)	Pb-210 Error (μCi/g)	Th-230 (μCi/g)	Th-230 Error (μCi/g)	Ra-226 (μCi/g)	Ra-226 Error (μCi/g)
LAS 003A	7/19/2008	0-15	-	5.0E-07	1.4E-06	1.2E-06	3.0E-07	4.0E-07	7.0E-07	1.0E-07
LAS 004A	7/19/2008	0-15	-	1.1E-06	1.2E-06	1.2E-06	6.0E-07	5.0E-07	8.0E-07	1.0E-07
LAS 005A	7/19/2008	0-15	-	1.2E-06	1.6E-06	1.2E-06	4.0E-07	3.0E-07	9.0E-07	1.0E-07
LAS 006A	7/19/2008	0-15	-	3.7E-07	7.0E-07	1.1E-06	6.0E-07	6.0E-07	7.0E-07	1.0E-07
LAS 007A	7/19/2008	0-15	-	4.3E-07	6.0E-07	1.5E-06	6.0E-07	1.0E-07	8.0E-07	1.0E-07
RFA-B01B	9/26/2007	15-30	13115	1.1E-06	2.0E-06	2.0E-07	9.0E-01	2.0E-01	1.7E-06	2.0E-07
RFA-B01B-Dup	9/26/2007	15-30	-	9.9E-07	9.0E-07	2.0E-07	9.0E-01	2.0E-01	1.5E-06	2.0E-07
RFA-B02B	9/26/2007	15-30	-	-	-	-	-	-	9.0E-07	2.0E-07
RFA-B13B	9/26/2007	15-30	-	-	-	-	-	-	1.8E-06	2.0E-07
RFA-B15B	9/26/2007	15-30	-	-	-	-	-	-	1.5E-06	2.0E-07
RFA-B17B	9/26/2007	15-30	-	-	-	-	-	-	2.2E-06	3.0E-07
RFA-B21B	9/26/2007	15-30	-	-	-	-	-	-	1.3E-06	2.0E-07
RFA-B30B	9/26/2007	15-30	-	-	-	-	-	-	2.1E-06	3.0E-07
RFA-B36B	9/26/2007	15-30	-	-	-	-	-	-	1.1E-06	2.0E-07
RFA-B37B	9/26/2007	15-30	-	-	-	-	-	-	7.0E-07	2.0E-07
LAN 001B	7/18/2008	15-30	-	1.9E-06	4.6E-06	2.3E-06	1.4E-06	6.0E-07	8.0E-07	1.0E-07
LAN 002B	7/18/2008	15-30	-	7.5E-07	1.5E-06	2.3E-06	4.0E-07	4.0E-07	1.0E-06	1.0E-07
LAN 003B	7/18/2008	15-30	-	1.1E-06	2.4E-06	2.3E-06	8.0E-07	5.0E-07	1.2E-06	1.0E-07
LAN 004B	7/18/2008	15-30	-	7.9E-07	2.2E-06	1.4E-06	2.0E-07	5.0E-07	1.3E-06	2.0E-07
LAN 004B-DUP	7/18/2008	15-30	-	6.8E-07	-3.0E-07	1.4E-06	5.0E-07	4.0E-07	7.0E-07	1.0E-07
LAN 005B	7/18/2008	15-30	-	7.1E-07	9.0E-07	1.4E-06	6.0E-07	4.0E-07	1.6E-06	2.0E-07
LAN 006B	7/18/2008	15-30	-	7.5E-07	5.0E-07	1.4E-06	6.0E-07	4.0E-07	1.3E-06	1.0E-07
LAN 007B	7/18/2008	15-30	-	1.5E-06	6.0E-07	1.4E-06	4.0E-07	4.0E-07	7.0E-07	1.0E-07
LAN 008B	7/18/2008	15-30	-	3.5E-06	1.0E-07	1.4E-06	9.0E-07	7.0E-07	1.0E-06	1.0E-07
LAN 009B	7/18/2008	15-30	-	1.8E-06	-3.0E-07	1.4E-06	7.0E-07	5.0E-07	4.1E-06	3.0E-07
LAN 010B	7/18/2008	15-30	-	1.5E-06	1.1E-06	1.1E-06	7.9E-06	1.2E-06	1.4E-06	2.0E-07
LAS 001B	7/19/2008	15-30	-	8.6E-07	1.1E-06	1.2E-06	4.0E-07	5.0E-07	8.0E-07	1.0E-07
LAS 002B	7/19/2008	15-30	-	7.1E-07	7.0E-07	1.2E-06	4.0E-07	4.0E-07	7.0E-07	1.0E-07
LAS 003B	7/19/2008	15-30	-	1.2E-06	1.1E-06	1.1E-06	5.0E-07	4.0E-07	9.0E-07	1.0E-07
LAS 004B	7/19/2008	15-30	-	9.5E-07	1.3E-06	1.2E-06	5.0E-07	4.0E-07	8.0E-07	1.0E-07
LAS 005B	7/19/2008	15-30	-	1.6E-06	1.4E-06	1.1E-06	4.0E-07	4.0E-07	1.0E-06	2.0E-07
LAS 006B	7/19/2008	15-30	-	4.8E-07	1.4E-06	1.2E-06	3.0E-07	4.0E-07	7.0E-07	1.0E-07
LAS 007B	7/19/2008	15-30	-	4.5E-07	6.0E-07	1.5E-06	6.0E-07	1.0E-07	7.0E-07	1.0E-07
LAN 008B	7/18/2008	15-30	-	3.5E-06	1.0E-07	1.4E-06	9.0E-07	7.0E-07	1.0E-06	1.0E-07
LAN 009B	7/18/2008	15-30	-	1.8E-06	-3.0E-07	1.4E-06	7.0E-07	5.0E-07	4.1E-06	3.0E-07
LAN 010B	7/18/2008	15-30	-	1.5E-06	1.1E-06	1.1E-06	7.9E-06	1.2E-06	1.4E-06	2.0E-07
LAS 001B	7/19/2008	15-30	-	8.6E-07	1.1E-06	1.2E-06	4.0E-07	5.0E-07	8.0E-07	1.0E-07

Table 4-1. Radionuclide Concentrations in All Soil Samples (Concluded)

Sample ID	Date Collected	Depth (cm)	1-minute Gamma-Ray Count Rate (cpm)	U-nat (μCi/g)	Pb-210 (μCi/g)	Pb-210 Error (μCi/g)	Th-230 (μCi/g)	Th-230 Error (μCi/g)	Ra-226 (μCi/g)	Ra-226 Error (μCi/g)
LAS 002B	7/19/2008	15-30	-	7.1E-07	7.0E-07	1.2E-06	4.0E-07	4.0E-07	7.0E-07	1.0E-07
LAS 003B	7/19/2008	15-30	-	1.2E-06	1.1E-06	1.1E-06	5.0E-07	4.0E-07	9.0E-07	1.0E-07
LAS 004B	7/19/2008	15-30	-	9.5E-07	1.3E-06	1.2E-06	5.0E-07	4.0E-07	8.0E-07	1.0E-07
LAS 005B	7/19/2008	15-30	-	1.6E-06	1.4E-06	1.1E-06	4.0E-07	4.0E-07	1.0E-06	2.0E-07
LAS 006B	7/19/2008	15-30	-	4.8E-07	1.4E-06	1.2E-06	3.0E-07	4.0E-07	7.0E-07	1.0E-07
LAS 007B	7/19/2008	15-30	-	4.5E-07	6.0E-07	1.5E-06	6.0E-07	1.0E-07	7.0E-07	1.0E-07
RFA-B01C	9/26/2007	30-100	-	1.5E-06	6.0E-07	1.0E-07	8.0E-01	1.0E-01	1.2E-06	2.0E-07
RFA-B01C-Dup	9/29/2007	30-100	-	1.3E-06	1.0E-06	2.0E-07	1.0E+00	2.0E-01	1.7E-06	3.0E-07
RFA-B02C	9/26/2007	30-100	-	-	-	-	-	-	9.0E-07	2.0E-07
RFA-B13C	9/26/2007	30-100	-	-	-	-	-	-	1.6E-06	2.0E-07
RFA-B15C	9/26/2007	30-100	-	-	-	-	-	-	1.5E-06	3.0E-07
RFA-B17C	9/26/2007	30-100	-	-	-	-	-	-	2.5E-06	3.0E-07
RFA-B21C	9/26/2007	30-100	-	-	-	-	-	-	1.2E-06	2.0E-07
RFA-B30C	9/26/2007	30-100	-	-	-	-	-	-	1.7E-06	3.0E-07
RFA-B36C	9/26/2007	30-100	-	-	-	-	-	-	1.0E-06	2.0E-07
RFA-B37C	9/26/2007	30-100	-	-	-	-	-	-	1.1E-06	2.0E-07
LAN 001C	7/18/2008	30-100	-	1.9E-06	1.9E-06	2.2E-06	1.6E-06	7.0E-07	9.0E-07	1.0E-07
LAN 002C	7/18/2008	30-100	-	1.5E-06	1.1E-06	2.2E-06	3.0E-07	3.0E-07	1.2E-06	1.0E-07
LAN 003C	7/18/2008	30-100	-	2.0E-06	2.6E-06	2.3E-06	6.0E-07	3.0E-07	1.0E-06	1.0E-07
LAN 004C	7/18/2008	30-100	-	1.5E-06	8.0E-07	1.4E-06	7.0E-07	5.0E-07	1.0E-06	1.0E-07
LAN 004C-DUP	7/18/2008	30-100	-	1.3E-06	1.2E-06	1.4E-06	5.0E-07	4.0E-07	8.0E-07	1.0E-07
LAN 005C	7/18/2008	30-100	-	7.1E-07	6.0E-07	1.4E-06	5.0E-07	4.0E-07	1.5E-06	2.0E-07
LAN 006C	7/18/2008	30-100	-	1.1E-06	7.0E-07	1.4E-06	5.0E-07	3.0E-07	1.4E-06	2.0E-07
LAN 007C	7/18/2008	30-100	-	2.5E-06	1.0E-07	1.4E-06	8.0E-07	6.0E-07	4.0E-07	1.0E-07
LAN 009C	7/18/2008	30-100	-	1.6E-06	5.0E-07	1.4E-06	1.1E-06	6.0E-07	3.9E-06	3.0E-07
LAN 010C	7/18/2008	30-100	-	2.7E-06	1.9E-06	1.2E-06	1.9E-06	8.0E-07	1.5E-06	2.0E-07
LAS 001C	7/19/2008	30-100	-	6.1E-07	9.0E-07	1.1E-06	1.0E-07	3.0E-07	8.0E-07	1.0E-07
LAS 002C	7/19/2008	30-100	-	6.3E-07	4.0E-07	1.1E-06	4.0E-07	4.0E-07	7.0E-07	1.0E-07
LAS 003C	7/19/2008	30-100	-	9.3E-07	7.0E-07	1.2E-06	1.0E-06	5.0E-07	8.0E-07	1.0E-07
LAS 004C	7/19/2008	30-100	-	1.3E-06	1.2E-06	1.1E-06	5.0E-07	3.0E-07	9.0E-07	1.0E-07
LAS 005C	7/19/2008	30-100	-	9.8E-07	1.2E-06	1.1E-06	7.0E-07	5.0E-07	1.1E-06	2.0E-07
LAS 006C	7/19/2008	30-100	-	6.5E-07	-3.0E-07	1.5E-06	3.0E-07	9.0E-08	6.0E-07	1.0E-07
LAS 007C	7/19/2008	30-100	-	7.2E-07	-7.0E-07	1.5E-06	5.0E-07	1.0E-07	7.0E-07	1.0E-07

Notes:
All errors reported are ± 2σ.

Table 4-2. Statistical Summary of Radionuclide Concentrations by Depth Interval

Depth Interval (cm)	Statistic	Radium-226 (pCi/g)	Thorium-230 (pCi/g)	Natural Uranium (pCi/g)	Lead-210 (pCi/g)
0-15	Mean	1.4	0.6	1.0	1.2
	Median	1.0	0.6	0.9	1.1
	No.	26	18	18	18
	σ	1.1	0.3	0.5	0.9
	Range	0.7-5.6	0.1-1.2	0.4-2.1	-0.4-3.4
	Distribution	Non-parametric	Normal	Normal	Normal
15-30	Mean	1.3	1.1	1.2	1.1
	Median	1.0	0.5	1.0	1.1
	No.	36	27	28	28
	σ	0.8	2.0	0.8	0.9
	Range	0.7-4.1	0.3-7.9	0.5-3.5	-0.3-4.6
	Distribution	Non-parametric	Non-parametric	Non-parametric	Non-parametric
30-100	Mean	1.3	0.7	1.3	0.9
	Median	1.1	0.6	1.3	0.8
	No.	25	16	17	17
	σ	0.7	0.5	0.6	0.8
	Range	0.4-3.9	0.1-1.9	0.6-2.7	-0.7-2.6
	Distribution	Lognormal ^a	Normal	Lognormal ^b	Normal

Notes:

- a. The geometric mean for radium-226 at 30 to 100 cm is 1.1 pCi/g.
- b. The geometric mean for natural uranium at 30 to 100 cm is 1.2 pCi/g.

Table 4-3. Quality Control Summary for Soil Samples

Sample ID	Depth (cm)	RPD	Replicate Error Ratio			
		U-nat	Pb-210	Th-230	Ra-226	
MPA-R04+Duplicate	0-15	-	-	-	0.2	
NEA-R04+Duplicate	0-15	-	-	-	0.2	
RFA-B01A+Duplicate	0-15	3.4	0.0	0.0	0.2	
RFA-B01B+Duplicate	15-30	10.5	1.8	0.0	0.3	
RFA-B01C+Duplicate	30-100	14.3	1.0	0.5	0.8	
RFA-B08+Duplicate	0-15	-	-	-	0.0	
RFA-B28+Duplicate	0-15	-	-	-	0.7	
SMA-B01+Duplicate	0-15	22.2	2.8	0.4	0.8	
SMA-B09+Duplicate	0-15	-	-	-	0.8	
SMA-B14+Duplicate	0-15	-	-	-	0.3	
SMA-B18+Duplicate	0-15	-	-	-	0.4	
SMA-B23+Duplicate	0-15	-	-	-	0.1	
LAN-004A+Duplicate	0-15	-4.3	0.5	0.6	8.5	
LAN-004B+Duplicate	15-30	15.0	2.5	0.9	4.2	
LAN-004C+Duplicate	30-100	14.3	0.4	0.6	1.4	

Notes:

The radium-226, lead-210, and thorium-230 LLDs were all 1×10^{-7} $\mu\text{Ci/g}$. All results are greater than 5 times their respective MDC, with the exception of radium-226 in Sample Location SMA-B18-Dup.

The natural uranium LLDs ranged from 1.7×10^{-8} to 2.0×10^{-8} $\mu\text{Ci/g}$.

None of the results were below their respective LLDs.

Bolded values are anomalous QC results.

Table 5-1. Summary of Predicted Radium-226 Concentrations in Grid Blocks

Data Set	No. of Grid Blocks	Predicted Radium-226 Concentration Based on Average of Counts Within Grid Block (pCi/g)					
		Median	Minimum	Maximum	Q1	Q3	IQR
All Data	1,015	1.1	0	24.9	0	1.4	1.4
Surface Mine Area	171	1.5	0	24.9	1.1	1.8	0.7
Main Permit Area without Anomalous Area	791	1.0	0	9.0	0	1.3	1.3
Anomalous Area	53	1.4	0	2.3	0	1.8	1.8

Table 6-1. Baseline Radon Flux Measurements

Location	Date	Flux (pCi/m ² s)	Std. Dev. (pCi/m ² s)	LLD (pCi/m ² s)	Average Flux @ Location (pCi/m ² s)
RFA-B01	September 2007	1.68	0.06	0.18	1.57
	April 2008	0.64	0.05	0.15	
	July 2008	2.38	0.06	0.15	
RFA-B02	September 2007	0.89	0.05	0.15	0.86
	April 2008	0.76	0.05	0.16	
	July 2008	0.94	0.05	0.15	
RFA-B13	September 2007	1.77	0.06	0.17	1.53
	April 2008	0.56	0.05	0.16	
	July 2008	2.27	0.06	0.15	
RFA-B15	September 2007	1.22	0.05	0.15	1.35
	April 2008	1.12	0.06	0.16	
	July 2008	1.71	0.05	0.15	
RFA-B17	September 2007	1.25	0.06	0.16	1.05
	April 2008	0.61	0.05	0.16	
	July 2008	1.30	0.05	0.15	
RFA-B21	September 2007	0.97	0.05	0.14	0.71
	April 2008	0.28	0.05	0.16	
	July 2008	0.89	0.05	0.14	
RFA-B30	September 2007	1.73	0.06	0.17	1.49
	April 2008	0.70	0.05	0.16	
	July 2008	2.03	0.05	0.15	
RFA-B36	September 2007	0.68	0.05	0.16	0.60
	April 2008	0.64	0.05	0.16	
	July 2008	0.48	0.06	0.15	
RFA-B37	September 2007	0.80	0.05	0.14	1.13
	April 2008	1.33	0.06	0.16	
	July 2008	1.27	0.05	0.14	

Table 7-1. Baseline Radionuclide Concentrations in Vegetation

Location	Date Collected	8/14/2007	4/20/08	7/15/08	Average (μCi/kg)	
AMS-01	U-nat (μCi/kg)	Concentration	1.4E-05	2.8E-02D	9.4E-06	1.4E-05
		Error ± 2σ	-	-	-	
		LLD	1.7E-06	2.4E-06	2.0E-07	
	Ra-226 (μCi/kg)	Concentration	5.5E-05	3.3E-05	8.1E-05	5.6E-05
		Error ± 2σ	3.2E-05	5.5E-06	1.2E-05	
		LLD	1.7E-06	3.7E-06	7.4E-06	
	Th-230 (μCi/kg)	Concentration	<1.7E-06	1.2E-05	1.2E-05	8.6E-06
		Error ± 2σ	<1.7E-06	5.2E-06	8.4E-06	
		LLD	1.7E-06	2.0E-07	8.4E-07	
	Pb-210 (μCi/kg)	Concentration	1.8E-03	2.9E-03	3.3E-04	1.7E-03
		Error ± 2σ	5.4E-04	1.1E-04	1.3E-04	
		LLD	8.6E-06	1.0E-06	2.1E-04	
	Po-210 (μCi/kg)	Concentration	1.3E-04	4.7E-04	1.7E-05	2.1E-04
		Error ± 2σ	9.8E-05	7.2E-05	1.5E-05	
		LLD	8.6E-06	1.0E-06	1.0E-06	
AMS-02	Date Collected		8/14/2007	4/20/08	7/14/08	Average (μCi/kg)
	U-nat (μCi/kg)	Concentration	1.0E-05	2.7E-02D	3.2E-06	6.6E-06
		Error ± 2σ	-	-	-	
		LLD	5.5E-07	2.0E-07	2.0E-07	
	Ra-226 (μCi/kg)	Concentration	2.2E-05	3.0E-05	9.3E-06	2.0E-05
		Error ± 2σ	1.1E-05	4.5E-06	3.6E-06	
		LLD	5.5E-07	2.8E-06	4.0E-06	
	Th-230 (μCi/kg)	Concentration	4.7E-06	1.4E-05	9.5E-07U	5.9E-06
		Error ± 2σ	6.0E-06	4.9E-06	5.0E-06	
		LLD	5.5E-07	2.0E-07	4.7E-07	
	Pb-210 (μCi/kg)	Concentration	3.3E-04	1.3E-03	1.5E-04	5.9E-04
		Error ± 2σ	1.5E-04	6.9E-05	7.3E-05	
		LLD	2.7E-06	1.0E-06	1.2E-04	
	Po-210 (μCi/kg)	Concentration	1.8E-05	2.0E-04	9.1E-06U	7.6E-05
		Error ± 2σ	2.0E-05	4.2E-05	8.5E-06	
LLD		2.7E-06	1.0E-06	1.0E-06		

Table 7-1. Baseline Radionuclide Concentrations in Vegetation (continued)

Location	Date Collected		8/14/2007	4/20/08	7/14/08	Average (µCi/kg)
AMS-03	U-nat (µCi/kg)	Concentration	9.8E-06	1.5E-01D	7.7E-06	9.8E-06
		Error ± 2σ	-	-	-	
		LLD	6.4E-07	2.4E-06	2.0E-07	
	Ra-226 (µCi/kg)	Concentration	7.4E-05	1.1E-04	7.5E-06	9.2E-05
		Error ± 2σ	2.2E-05	9.7E-06	4.9E-06	
		LLD	6.4E-07	3.7E-06	6.6E-06	
	Th-230 (µCi/kg)	Concentration	2.6E-06	4.1E-05	1.0E-05	2.2E-05
		Error ± 2σ	4.4E-06	1.1E-05	6.6E-06	
		LLD	6.4E-07	2.0E-07	7.7E-07	
	Pb-210 (µCi/kg)	Concentration	9.1E-04	1.4E-03	3.3E-04	8.8E-04
		Error ± 2σ	2.2E-04	8.2E-05	1.2E-04	
		LLD	3.2E-06	1.0E-06	1.9E-04	
	Po-210 (µCi/kg)	Concentration	7.8E-05	2.3E-04	9.6E-06U	1.5E-04
		Error ± 2σ	4.4E-05	4.4E-05	1.1E-05	
		LLD	3.2E-06	1.0E-06	1.0E-06	
AMS-04	Date Collected		8/14/2007	4/20/08	7/14/08	Average (µCi/kg)
	U-nat (µCi/kg)	Concentration	9.3E-06	2.1E-02D	8.4E-06	9.3E-06
		Error ± 2σ	-	-	-	
		LLD	8.1E-07	1.9E-06	2.0E-07	
	Ra-226 (µCi/kg)	Concentration	2.3E-05	3.1E-05	9.3E-06	2.7E-05
		Error ± 2σ	1.4E-05	4.6E-06	5.2E-06	
		LLD	8.0E-07	2.8E-06	6.7E-06	
	Th-230 (µCi/kg)	Concentration	3.6E-06	8.3E-06	-2.7E-06U	6.0E-06
		Error ± 2σ	5.6E-06	4.2E-06	4.2E-06	
		LLD	8.0E-07	2.0E-07	7.7E-07	
	Pb-210 (µCi/kg)	Concentration	1.5E-03	1.2E-03	2.1E-04	1.4E-03
		Error ± 2σ	3.0E-04	6.6E-05	1.2E-04	
		LLD	4.0E-06	1.0E-06	1.9E-04	
	Po-210 (µCi/kg)	Concentration	9.8E-05	1.7E-04	9.0E-06U	1.3E-04
		Error ± 2σ	6.4E-05	3.9E-05	9.6E-06	
LLD		4.0E-06	1.0E-06	1.0E-06		

Table 7-1. Baseline Radionuclide Concentrations in Vegetation (continued)

Location	Date Collected		8/14/2007	4/20/08	7/14/08	Average (µCi/kg)
AMS-05	U-nat (µCi/kg)	Concentration	3.7E-05	2.3E-01D	1.4E-05	3.7E-05
		Error ± 2σ	-	-		
		LLD	1.3E-06	1.3E-06	2.0E-07	
	Ra-226 (µCi/kg)	Concentration	2.4E-05	7.9E-05	5.9E-06U	5.2E-05
		Error ± 2σ	1.8E-05	5.7E-06	5.3E-06	
		LLD	1.3E-06	1.8E-06	7.7E-06	
	Th-230 (µCi/kg)	Concentration	1.5E-05	4.8E-05	-8.8E-07U	3.2E-05
		Error ± 2σ	1.7E-05	8.1E-06	5.7E-06	
		LLD	1.3E-06	2.0E-07	8.8E-07	
	Pb-210 (µCi/kg)	Concentration	1.7E-03	3.3E-04	3.4E-04	1.0E-03
		Error ± 2σ	4.2E-04	3.0E-05	1.4E-04	
		LLD	6.5E-06	1.0E-06	2.2E-04	
	Po-210 (µCi/kg)	Concentration	6.6E-05	1.6E-04	2.1E-05	1.1E-04
		Error ± 2σ	6.0E-05	3.1E-05	1.6E-05	
		LLD	6.5E-06	1.0E-06	1.0E-06	
AMS-06	Date Collected		8/14/2007	4/20/08	7/14/08	Average (µCi/kg)
	U-nat (µCi/kg)	Concentration	3.8E-05	1.3E-01D	2.2E-05	3.8E-05
		Error ± 2σ	-	-		
		LLD	8.3E-07	3.2E-06	2.0E-07	
	Ra-226 (µCi/kg)	Concentration	3.2E-05	9.2E-05	1.8E-05	6.2E-05
		Error ± 2σ	1.6E-05	9.9E-06	5.0E-06	
		LLD	8.2E-07	4.6E-06	5.0E-06	
	Th-230 (µCi/kg)	Concentration	1.9E-05	3.9E-05	2.1E-05	2.9E-05
		Error ± 2σ	1.3E-05	1.1E-05	7.4E-06	
		LLD	8.2E-07	2.0E-07	5.7E-07	
	Pb-210 (µCi/kg)	Concentration	1.0E-03	1.8E-03	1.4E-04U	1.4E-03
		Error ± 2σ	2.6E-04	1.1E-04	8.7E-05	
		LLD	4.1E-06	1.0E-06	1.4E-04	
	Po-210 (µCi/kg)	Concentration	6.0E-05	4.0E-04	5.7E-06U	2.3E-04
		Error ± 2σ	4.4E-05	7.7E-05	5.7E-06	
LLD		4.1E-06	1.0E-06	1.0E-06		

Table 7-1. Baseline Radionuclide Concentrations in Vegetation (concluded)

Location	Date Collected	8/14/2007	4/20/08	7/14/08	Average (µCi/kg)	
AMS-07	U-nat (µCi/kg)	Concentration	1.8E-05	1.4E-01 D	2.7E-05	1.8E-05
		Error ± 2σ	-	-		
		LLD	9.7E-07	21E-06	2.0E-07	
	Ra-226 (µCi/kg)	Concentration	2.7E-05	7.6E-05	2.4E-05	5.2E-05
		Error ± 2σ	1.6E-05	7.2E-06	7.5E-06	
		LLD	9.7E-07	3.0E-06	7.7E-06	
	Th-230 (µCi/kg)	Concentration	1.6E-05	4.0E-05	2.0E-05	2.8E-05
		Error ± 2σ	1.8E-05	1.2E-05	8.6E-06	
		LLD	9.7E-07	2.0E-07	8.6E-07	
	Pb-210 (µCi/kg)	Concentration	2.1E-03	6.2E-04	-3.2E-05U	1.4E-03
		Error ± 2σ	3.6E-04	5.3E-05	1.3E-04	
		LLD	4.8E-06	1.0E-06	2.1E-04	
	Po-210 (µCi/kg)	Concentration	1.5E-04	2.3E-04	2.0E-05	1.9E-04
		Error ± 2σ	8.2E-05	4.7E-05	1.3E-05	
		LLD	4.8E-06	1.0E-06	1.0E-06	
AMS-BKG	Date Collected	8/14/2007	4/20/08	7/14/08	Average (µCi/kg)	
	U-nat (µCi/kg)	Concentration	4.0E-05	9.0E-02D	1.0E-05	2.5E-05
		Error ± 2σ	-	-	-	
		LLD	9.7E-07	3.8E-06	2.0E-07	
	Ra-226 (µCi/kg)	Concentration	4.1E-05	8.3E-05	1.3E-05	6.2E-05
		Error ± 2σ	2.0E-05	1.1E-05	4.6E-06	
		LLD	9.7E-07	6.4E-06	5.1E-06	
	Th-230 (µCi/kg)	Concentration	1.0E-05	3.5E-05	7.3E-06	2.3E-05
		Error ± 2σ	1.3E-05	1.2E-05	4.2E-06	
		LLD	9.7E-07	2.0E-07	5.6E-07	
	Pb-210 (µCi/kg)	Concentration	6.9E-04	1.4E-03	1.3E-04U	1.0E-03
		Error ± 2σ	2.8E-04	1.0E-04	8.6E-05	
		LLD	4.8E-06	1.0E-06		
	Po-210 (µCi/kg)	Concentration	2.5E-05	2.2E-04	9.3E-06	1.2E-04
		Error ± 2σ	3.2E-05	5.1E-05	8.8E-06	
LLD		4.8E-06	1.0E-06	1.0E-06		

Notes:

D = Lower limit of detection increased due to sample matrix interference. Average concentrations do not include "D"-qualified results.

Table 8-1. Baseline Radionuclide Concentrations in Air

Location	Monitoring Period ^a	Concentration (µCi/ml)						% of Effluent Concentration				Lower Limit of Detection (µCi/ml)				
		U-nat	Th-230	Th-230 2σ Error	Ra-226	Ra-226 2σ Error	Pb-210	Pb-210 2σ Error	U-nat	Th-230	Ra-226	Pb-210	U-nat	Th-230	Ra-226	Pb-210
AMS-01	1	-1.3E-17	3.4E-18	1.0E-17	1.8E-17	1.7E-17	2.1E-14	2.4E-16	0.00%	0.00%	0.00%	3.54%	1.7E-18	1.7E-18	1.2E-17	2.1E-16
	2	2.4E-17	1.3E-17	9.8E-18	1.4E-17	9.7E-18	2.1E-14	4.9E-16	0.00%	0.00%	0.00%	3.51%	1.5E-18	1.5E-18	8.3E-18	4.2E-16
	3	3.7E-15	1.3E-17	4.2E-17	1.2E-17	5.7E-17	1.9E-14	9.8E-16	0.12%	0.00%	0.00%	3.13%	3.9E-15	2.3E-18	5.7E-17	3.7E-16
	4	0.0E+00	1.6E-18	1.1E-17	7.2E-18	9.1E-18	4.1E-14	6.9E-16	0.00%	0.00%	0.00%	6.78%	1.6E-16	1.6E-18	1.6E-18	7.9E-18
	5	-1.7E-17	6.5E-18	2.5E-17	-3.1E-17	2.7E-17	1.0E-14	6.5E-16	0.00%	0.00%	0.00%	1.74%	4.3E-18	4.3E-18	5.6E-17	6.7E-16
AMS-02	1	-2.0E-17	4.7E-18	1.1E-17	-8.6E-18	1.3E-17	8.9E-15	2.5E-16	0.00%	0.00%	0.00%	1.49%	1.6E-18	1.6E-18	1.1E-17	1.9E-16
	2	4.2E-18	0.0E+00	7.4E-18	-4.2E-18	7.4E-18	8.2E-15	4.2E-16	0.00%	0.00%	0.00%	1.37%	1.4E-18	1.4E-18	7.6E-18	3.9E-16
	3	2.9E-15	1.8E-18	2.5E-17	-2.6E-17	3.3E-17	1.2E-14	7.5E-16	0.10%	0.00%	0.00%	1.96%	3.1E-15	1.8E-18	4.1E-17	3.0E-16
	4	0.0E+00	1.6E-17	1.1E-17	-2.3E-18	7.0E-18	2.0E-14	4.7E-16	0.00%	0.00%	0.00%	3.26%	1.5E-16	1.5E-18	1.5E-18	7.6E-18
	5	-1.3E-17	0.0E+00	8.0E-18	-4.9E-17	2.3E-17	1.5E-14	6.5E-16	0.00%	0.00%	0.01%	2.44%	4.0E-18	4.0E-18	5.3E-17	6.2E-16
AMS-03	1	-3.0E-17	9.3E-18	1.2E-17	-1.4E-17	1.3E-17	9.2E-15	2.5E-16	0.00%	0.00%	0.00%	1.53%	1.5E-18	1.5E-18	1.2E-17	1.9E-16
	2	1.8E-17	8.9E-18	9.0E-18	9.6E-18	9.5E-18	8.0E-15	4.4E-16	0.00%	0.00%	0.00%	1.34%	1.5E-18	1.5E-18	8.9E-18	4.1E-16
	3	2.8E-15	6.9E-18	2.2E-17	-4.8E-18	3.7E-17	1.2E-14	7.5E-16	0.09%	0.00%	0.00%	1.98%	2.9E-15	1.7E-18	3.6E-17	2.8E-16
	4	0.0E+00	9.3E-18	1.0E-17	5.4E-18	8.8E-18	1.3E-14	3.9E-16	0.00%	0.00%	0.00%	2.16%	1.6E-16	1.6E-18	1.6E-18	7.8E-18
	5	-1.6E-17	1.9E-17	9.7E-18	-3.2E-18	3.1E-17	1.2E-14	6.5E-16	0.00%	0.00%	0.00%	1.99%	4.2E-18	4.2E-18	5.0E-17	6.6E-16
AMS-04	1	-2.6E-17	2.5E-18	1.1E-17	-2.8E-17	1.2E-17	8.5E-15	2.6E-16	0.00%	0.00%	0.00%	1.42%	1.7E-18	1.7E-18	9.9E-18	2.0E-16
	2	1.9E-17	6.6E-18	9.0E-18	1.2E-17	9.5E-18	1.0E-14	4.6E-16	0.00%	0.00%	0.00%	1.74%	1.5E-18	1.5E-18	8.1E-18	4.1E-16
	3	3.0E-15	-9.5E-19	3.0E-17	2.5E-17	4.7E-17	-1.1E-16	7.0E-16	0.10%	0.00%	0.00%	0.02%	3.2E-15	1.9E-18	4.4E-17	3.1E-16
	4	0.0E+00	9.4E-18	1.1E-17	2.3E-18	8.3E-18	2.2E-14	5.1E-16	0.00%	0.00%	0.00%	3.66%	1.6E-16	1.6E-18	1.6E-18	7.8E-18
	5	-1.0E-18	2.7E-17	9.7E-18	-5.2E-18	3.3E-17	1.3E-14	6.7E-16	0.00%	0.00%	0.00%	2.23%	4.2E-18	4.2E-18	5.5E-17	6.6E-16

Table 8-1. Radionuclide Concentrations in Air (concluded)

Location	Monitoring Period ^a	Concentration (µCi/ml)							% of Effluent Concentration				Lower Limit of Detection (µCi/ml)			
		U-nat	Th-230	Th-230 2σ Error	Ra-226	Ra-226 2σ Error	Pb-210	Pb-210 2σ Error	U-nat	Th-230	Ra-226	Pb-210	U-nat	Th-230	Ra-226	Pb-210
AMS-05	1	1.0E-18	4.7E-18	1.1E-17	1.1E-17	1.5E-17	1.0E-14	2.3E-16	0.00%	0.00%	0.00%	1.68%	1.6E-18	1.6E-18	1.1E-17	1.9E-16
	2	2.7E-17	1.5E-17	1.0E-17	1.5E-17	9.9E-18	1.1E-14	4.8E-16	0.00%	0.00%	0.00%	1.91%	1.5E-18	1.5E-18	8.5E-18	4.3E-16
	3	2.8E-15	3.6E-17	2.3E-17	-1.3E-17	4.0E-17	1.0E-14	7.2E-16	0.09%	0.00%	0.00%	1.68%	2.9E-15	1.7E-18	4.3E-17	2.8E-16
	4	0.0E+00	2.0E-17	1.4E-17	4.7E-17	1.3E-17	2.5E-14	5.3E-16	0.00%	0.00%	0.01%	4.09%	1.5E-16	1.5E-18	1.5E-18	7.7E-18
	5	2.4E-17	5.6E-17	9.5E-18	2.2E-17	3.4E-17	1.1E-14	6.3E-16	0.00%	0.00%	0.00%	1.85%	4.1E-18	4.1E-18	4.9E-17	6.4E-16
AMS-06	1	-1.4E-17	9.4E-18	1.2E-17	0.0E+00	1.4E-17	6.0E-15	2.2E-16	0.00%	0.00%	0.00%	1.00%	1.6E-18	1.6E-18	1.1E-17	1.9E-16
	2	1.7E-17	5.5E-18	1.0E-17	-5.5E-18	8.4E-18	1.1E-14	4.9E-16	0.00%	0.00%	0.00%	1.80%	1.6E-18	1.6E-18	9.5E-18	4.4E-16
	3	2.9E-15	1.0E-17	2.4E-17	-2.0E-17	3.9E-17	1.7E-14	8.2E-16	0.10%	0.00%	0.00%	2.89%	3.1E-15	1.8E-18	4.2E-17	2.9E-16
	4	0.0E+00	1.4E-17	1.2E-17	2.3E-17	1.0E-17	2.1E-14	4.8E-16	0.00%	0.00%	0.00%	3.56%	1.5E-16	1.5E-18	1.5E-18	7.3E-18
	5	-2.6E-18	2.0E-17	9.1E-18	6.9E-18	3.3E-17	1.9E-14	6.9E-16	0.00%	0.00%	0.00%	3.25%	4.0E-18	4.0E-18	4.9E-17	6.2E-16
AMS-07	1	-1.1E-17	6.4E-18	9.1E-18	-1.3E-17	1.1E-17	7.2E-15	2.2E-16	0.00%	0.00%	0.00%	1.20%	1.4E-18	1.4E-18	9.2E-18	1.7E-16
	2	2.0E-17	7.9E-18	8.1E-18	-6.6E-19	7.5E-18	1.3E-14	4.4E-16	0.00%	0.00%	0.00%	2.13%	1.3E-18	1.3E-18	7.3E-18	3.7E-16
	3	9.1E-15	2.0E-17	2.6E-17	3.9E-18	4.2E-17	1.7E-14	7.8E-16	0.30%	0.00%	0.00%	2.85%	2.9E-15	1.7E-18	4.3E-17	2.8E-16
	4	0.0E+00	1.3E-17	1.2E-17	2.9E-17	1.0E-17	2.8E-14	5.4E-16	0.00%	0.00%	0.00%	4.66%	1.4E-16	1.4E-18	1.4E-18	7.0E-18
	5	-9.2E-19	1.7E-17	8.5E-18	1.4E-17	3.0E-17	1.3E-14	5.9E-16	0.00%	0.00%	0.00%	2.10%	3.7E-18	3.7E-18	4.6E-17	5.8E-16
AMS-BKG	1	1.6E-18	2.0E-17	1.3E-17	-5.6E-18	1.4E-17	8.3E-15	2.5E-16	0.00%	0.00%	0.00%	1.38%	1.6E-18	1.6E-18	1.2E-17	2.2E-16
	2	2.1E-17	2.0E-18	1.2E-17	3.0E-18	1.1E-17	1.8E-14	6.6E-16	0.00%	0.00%	0.00%	3.05%	2.0E-18	2.0E-18	1.2E-17	5.7E-16
	3	3.0E-15	2.8E-17	2.9E-17	-5.1E-18	4.0E-17	1.3E-14	7.7E-16	0.10%	0.00%	0.00%	2.18%	3.2E-15	1.9E-18	4.1E-17	2.5E-16
	4	0.0E+00	-7.8E-19	9.4E-18	1.2E-17	9.5E-18	2.0E-14	4.8E-16	0.00%	0.00%	0.00%	3.29%	1.6E-16	1.6E-18	1.6E-18	7.8E-18
	5	-8.1E-18	2.4E-17	9.3E-18	-1.7E-17	2.4E-17	1.2E-14	6.3E-16	0.00%	0.00%	0.00%	2.00%	4.0E-18	4.0E-18	4.0E-17	5.3E-16

Notes:

- a. The laboratory reported no blank assay data for Period 5. Blank assays in the sample concentration calculation were assumed to be 50 percent of the values for blanks reported for the previous period. The assumption is based on the relative, approximate run-time of the air samplers in both periods.
- NR = Not reported by the laboratory.

Table 8-2. Baseline Radon Ambient Air Monitoring Measurements

Location	Starting Date	Ending Date	Radon-222 Conc. ($\mu\text{Ci}/\text{ml}$)	Error \pm ($\mu\text{Ci}/\text{ml}$)	LLD ($\mu\text{Ci}/\text{ml}$)	Percent Effluent Conc.	Average Rn-222 Conc. ($\mu\text{Ci}/\text{ml}$)	Standard Deviation of Average ($\mu\text{Ci}/\text{ml}$)	Minimum Rn-222 Conc. ($\mu\text{Ci}/\text{ml}$)	Maximum Rn-222 Conc. ($\mu\text{Ci}/\text{ml}$)
AMS-1	8/14/07	9/27/07	1.00E-09	-	6.82E-10	1000	7.23E-10	2.09E-10	4.92E-10	1.00E-09
	9/27/07	2/1/08	7.00E-10	-	2.00E-10	700				
	2/1/08	5/17/08	7.00E-10	7.1E-11	2.83E-10	700				
	5/17/08	7/17/08	4.92E-10	-	4.92E-10	492				
AMS-1 ^a	8/14/07	9/27/07	1.00E-09	-	6.82E-10	1000	5.73E-10	2.88E-10	4.00E-10	1.00E-09
	9/27/07	2/1/08	4.00E-10	-	2.00E-10	400				
	2/1/08	5/17/08	4.00E-10	5.2E-11	2.83E-10	400				
	5/17/08	7/17/08	4.92E-10	-	4.92E-10	492				
AMS-2	8/15/07	9/27/07	2.20E-09	-	6.98E-10	2200	1.70E-09	7.62E-10	4.92E-10	2.20E-09
	9/27/07	2/1/08	1.20E-09	-	2.00E-10	1200				
	2/1/08	5/17/08	7.00E-10	7.0E-11	2.83E-10	700				
	5/17/08	7/17/08	4.92E-10	-	4.92E-10	492				
AMS-3	8/14/07 ^b	9/27/07 ^b	1.20E-09	-	6.82E-10	1200	1.20E-09	9.30E-10	4.92E-10	2.70E-09
	9/27/07	2/4/08	1.20E-09	-	2.00E-10	1200				
	2/4/08	5/17/08	2.70E-09	7.9E-11	2.91E-10	2700				
	5/17/08	7/17/08	4.92E-10	-	4.92E-10	492				
AMS-4	8/14/07	9/24/07	1.20E-09	-	7.32E-10	1200	1.20E-09	9.98E-10	5.75E-10	2.90E-09
	9/27/07	2/4/08	1.20E-09	-	2.00E-10	1200				
	2/4/08	5/17/08	2.90E-09	7.8E-11	2.91E-10	2900				
	5/17/08	7/17/08	5.75E-10	-	4.92E-10	575				
AMS-5	8/15/07	9/27/07	2.20E-09	-	6.98E-10	2200	1.60E-09	7.16E-10	4.92E-10	2.20E-09
	9/27/07	2/1/08	1.00E-09	-	2.00E-10	1000				
	2/1/08	5/17/08	1.20E-09	7.9E-11	2.83E-10	1200				
	5/17/08	7/17/08	4.92E-10	-	4.92E-10	492				

Table 8-2. Baseline Radon Ambient Air Monitoring Measurements (concluded)

Location	Starting Date	Ending Date	Radon-222 Conc. ($\mu\text{Ci/ml}$)	Error \pm ($\mu\text{Ci/ml}$)	LLD ($\mu\text{Ci/ml}$)	Percent Effluent Conc.	Average Rn-222 Conc. ($\mu\text{Ci/ml}$)	Standard Deviation of Average ($\mu\text{Ci/ml}$)	Minimum Rn-222 Conc. ($\mu\text{Ci/ml}$)	Maximum Rn-222 Conc. ($\mu\text{Ci/ml}$)
AMS-6	8/17/07	9/27/07	2.60E-09	-	7.32E-10	2600	1.80E-09	8.40E-10	6.89E-10	2.60E-09
	9/27/07	2/1/08	1.00E-09	-	2.00E-10	1000				
	2/11/08	5/17/08	1.30E-09	7.6E-11	2.83E-10	1300				
	5/17/08	7/17/08	6.89E-10	-	4.92E-10	689				
AMS-7	8/14/07	9/27/07	1.10E-09	-	6.82E-10	1100	1.30E-09	4.15E-10	4.92E-10	1.50E-09
	9/27/07	2/1/08	1.50E-09	-	2.00E-10	1500				
	2/1/08	5/17/08	1.00E-09	7.2E-11	2.83E-10	1000				
	5/17/08	7/17/08	4.92E-10	-	4.92E-10	492				
AMS-BKG	8/14/07	9/24/07	2.00E-09	-	7.32E-10	2000	1.80E-09	6.58E-10	4.95E-10	2.00E-09
	9/27/07	2/1/08	1.60E-09	-	2.00E-10	1600				
	2/1/08	5/17/08	1.70E-09	8.1E-11	2.83E-10	1700				
	5/17/08	7/17/08	4.95E-10	-	4.92E-10	495				
AMS-BKG ^a	8/14/07	9/27/07	2.70E-09	-	6.82E-10	2700	2.10E-09	9.03E-10	4.92E-10	2.70E-09
	9/27/07	2/1/08	1.50E-09	-	2.00E-10	1500				
	2/1/08	5/17/08	1.50E-09	8.1E-11	2.83E-10	1500				
	5/17/08	7/17/08	4.92E-10	-	4.92E-10	492				
Rn 01	8/14/07	9/23/07	2.00E-09	-	7.50E-10	2000	1.65E-09	8.35E-10	5.00E-10	2.40E-09
	9/23/07	2/11/08	1.30E-09	-	2.00E-10	1300				
	2/11/08	5/17/08	2.40E-09	8.5E-11	3.13E-10	2400				
	5/17/08	7/17/08	5.00E-10	-	4.76E-10	500				
Rn 02	8/14/07	9/23/07	9.80E-09	-	7.50E-10	9800	3.86E-09	5.15E-09	5.75E-10	9.80E-09
	9/23/07	2/11/08	1.20E-09	-	2.00E-10	1200				
	no data	-	-	-	-	-				
	5/17/08	7/17/08	5.75E-10	1.5E-10	4.92E-10	575				

Table 8-2. Baseline Radon Ambient Air Monitoring Measurements (concluded)

Location	Starting Date	Ending Date	Radon-222 Conc. (µCi/ml)	Error ± (µCi/ml)	LLD (µCi/ml)	Percent Effluent Conc.	Average Rn-222 Conc. (µCi/ml)	Standard Deviation of Average (µCi/ml)	Minimum Rn-222 Conc. (µCi/ml)	Maximum Rn-222 Conc. (µCi/ml)
Rn 03	8/14/07	9/23/07	1.20E-09	-	7.50E-10	1200	1.05E-09	9.63E-10	4.92E-10	2.70E-09
	9/23/07	2/11/08	9.00E-10	-	2.00E-10	900				
	2/11/08	5/17/08	2.70E-09	8.6E-11	3.13E-10	2700				
	5/17/08	7/17/08	4.92E-10	-	4.92E-10	492				
Rn 04	8/14/07	9/23/07	2.00E-09	-	7.50E-10	2000	1.70E-09	6.34E-10	5.00E-10	2.00E-09
	9/23/07	2/1/08	1.40E-09	-	2.00E-10	1400				
	2/11/08	5/17/08	1.00E-09	7.7E-11	2.83E-10	1000				
	5/17/08	7/17/08	5.00E-10	-	4.92E-10	500				
Rn 05	8/14/07	9/23/07	1.50E-09	-	7.50E-10	1500	1.30E-09	7.82E-10	8.18E-10	2.60E-09
	9/23/07	2/12/08	1.10E-09	-	2.00E-10	1100				
	2/11/08	5/17/08	2.60E-09	8.6E-11	3.16E-10	2600				
	5/17/08	7/17/08	8.18E-10	-	4.92E-10	818				
Rn 06	8/19/07	9/23/07	3.30E-09	-	8.57E-10	3300	2.30E-09	1.35E-09	4.92E-10	3.30E-09
	9/23/07	2/11/08	1.30E-09	-	2.00E-10	1300				
	2/11/08	5/17/08	3.00E-09	8.5E-11	3.13E-10	3000				
	5/17/08	7/17/08	4.92E-10	-	4.92E-10	492				
Rn 07	8/15/07	9/23/07	3.00E-09	-	7.69E-10	3000	2.40E-09	1.18E-09	7.21E-10	3.30E-09
	9/23/07	2/12/08	1.80E-09	-	2.00E-10	1800				
	2/12/08	5/17/08	3.30E-09	8.3E-11	3.16E-10	3300				
	5/17/08	7/17/08	7.21E-10	-	4.92E-10	721				
Rn 08	8/14/07	9/23/07	1.50E-09	-	7.50E-10	1500	1.40E-09	4.39E-10	4.92E-10	1.50E-09
	9/23/07	2/1/08	1.30E-09	-	2.00E-10	1300				
	9/23/07	2/1/08	1.00E-09	7.2E-11	2.83E-10	1000				
	5/17/08	7/17/08	4.92E-10	-	4.92E-10	492				

Notes:
a. Duplicate track etch detector
b. Seal potentially compromised

Table 9-1. Ambient Gamma Dose Rates using TLDs

Location	Starting Date	End Date	Dose (mrem)	Projected Annual Dose (mrem)
AMS-01	9/18/07	2/4/08	-	114
	2/4/08	5/17/08	37.2 ^a	
	5/17/08	7/17/08	57.7 ^a	
AMS-02	9/18/07	2/4/08	-	323
	2/4/08	5/17/08	-	
	5/17/08	7/17/08	54.0	
AMS-03	9/18/07	2/4/08	-	137
	2/4/08	5/17/08	38.6	
	5/17/08	7/17/08		
AMS-04	9/18/07	2/4/08	62.4	184
	2/4/08	5/17/08	36.1	
	5/17/08	7/17/08	54.3	
AMS-05	9/18/07	2/4/08	50.6	149
	2/4/08	5/17/08	36.7	
	5/17/08	7/17/08	36.4	
AMS-06	9/18/07	2/4/08	-	196
	2/4/08	5/17/08	36.9	
	5/17/08	7/17/08	51.1	
AMS-07	9/18/07	2/4/08	73.7	175
	2/4/08	5/17/08	35.5	
	5/17/08	7/17/08	36.1	
AMS-BKG	9/18/07	2/4/08	68.8 ^a	202
	2/4/08	5/17/08	40.5 ^a	
	5/17/08	7/17/08	58.5 ^a	

Notes:

a. Result is average of measurement plus duplicate.

Table 10-1. Baseline Radionuclide Concentrations in Local Food

Sample ID	Radionuclide	Parameter	Result
DBAT-01	U-nat (μCi/kg)	Concentration	<7.0E-06
		Error ± 2σ	-
		LLD	7.0E-06
	Ra-226 (μCi/kg)	Concentration	3.0E-06
		Error ± 2σ	2.0E-06
		LLD	3.0E-06
	Th-230 (μCi/kg)	Concentration	0.0
		Error ± 2σ	2.0E-05
		LLD	8.0E-06
	Pb-210 (μCi/kg)	Concentration	-7.0E-06
		Error ± 2σ	4.0E-05
		LLD	7.0E-06
	Po-210 (μCi/kg)	Concentration	8.0E-06
		Error ± 2σ	1.0E-04
		LLD	8.0E-06
DBAT-02	U-nat (μCi/kg)	Concentration	<7.0E-06
		Error ± 2σ	-
		LLD	7.0E-06
	Ra-226 (μCi/kg)	Concentration	6.0E-05
		Error ± 2σ	3.0E-05
		LLD	4.0E-05
	Th-230 (μCi/kg)	Concentration	0.0
		Error ± 2σ	1.4E-03
		LLD	1.0E-04
	Pb-210 (μCi/kg)	Concentration	2.0E-04
		Error ± 2σ	7.0E-04
		LLD	1.2E-03
	Po-210 (μCi/kg)	Concentration	0.0
		Error ± 2σ	1.2E-03
		LLD	1.0E-04
DBAT-03	U-nat (μCi/kg)	Concentration	<7.0E-06
		Error ± 2σ	-
		LLD	7.0E-06
	Ra-226 (μCi/kg)	Concentration	3.0E-06
		Error ± 2σ	1.0E-06
		LLD	2.0E-06
	Th-230 (μCi/kg)	Concentration	0.0
		Error ± 2σ	1.0E-04
		LLD	6.0E-06
	Pb-210 (μCi/kg)	Concentration	-7.0E-06
		Error ± 2σ	4.0E-05
		LLD	6.0E-05
	Po-210 (μCi/kg)	Concentration	2.0E-05
		Error ± 2σ	2.0E-04
		LLD	6.0E-06

Figures

Appendix A
GPS-Based Gamma-Ray Survey Calibration Sheets and
Function Check Data



Reuter-Stokes

Calibration Certificate

Reuter-Stokes certifies that the Environmental Radiation Monitor, identified below, has been calibrated for output using the shadow shield technique*, and calibrated with radiation sources traceable to the National Institute of Standards and Technology.

Sensor Type: 100 R/Hr

Serial Number: 07J00KM1

Calibration Date: 6/19/08

Sensitivity: 10.21 mV/ μ R/h

Brandon Brady 6/23/08
Authorized Signature

*Calibration Procedure: RS-SOP 238.1



Reuter-Stokes

Calibration Data

Sensor Type: 100 R/Hr Source (CS-137): BB-400
 Serial Number: 07J00KM1 Date of Certification: 12/1/94
 Calibration Date: 6/19/08 Exposure Rate at 1 meter: 4.226 mR/h
 Customer Name: ENVIRONMENTAL RESTORATION
 Sensitivity (Ra-226): 10.21 mV/ μ R/h

Distance		Exposure Rate	P+S+A	S+A	P	k(CS-137)
Feet	cm	μ R/h	V	V	V	mV/ μ R/h
11.8	359	235.064	3.692	1.264	2.428	10.33
13.8	420	171.114	3.202	1.435	1.768	10.33
15.8	481	129.972	3.173	1.832	1.341	10.31
17.8	542	101.968	3.335	2.283	1.052	10.32

$k(\text{CS-137}) = 10.32 \text{ mV}/\mu\text{R/h}$

$\bar{k} = 10.32 \text{ mV}/\mu\text{R/h}$

$k(\text{Ra-226}) = .9892 k(\text{CS-137})$

$\sigma = .008 \text{ mV}/\mu\text{R/h}$

$k(\text{Ra-226}) = 10.21 \text{ mV}/\mu\text{R/h}$

$V = \frac{\sigma}{k} = 0.074\%$

By:

Date:

6/19/08



Reuter-Stokes

RSS-131 FIRMWARE PARAMETERS

S/N 07J00KM1

RAC 2.210E-08

ZLN 0.000E-00

ZMN 4.324E-01

ZHN -2.127E-03

ZLD 0.000E-00

ZMD -2.414E-04

ZHD -6.174E-07

RLN 4.619E+11

RMN 2.231E+09

RHN 1.001E+07

RLV -1.524E+08

RMV 2.094E+04

RHV -1.548E+02

Only change in constants is
In the RAC from 2.228E-08

By:



Level 2 Nuclear / Electrical Inspector

Date:

4/19/08

Reviewed By:



Product Engineer



EBERLINE
SERVICES

CERTIFICATE OF CALIBRATION

Gamma Standard

S.O.# 3951
P.O.# N/A

Description of Standard:

Model No. CS-7AS Serial No. 4054-02 Isotope Cs-137

The source of gamma radiation is mounted on a 2.54 cm diameter PLASTIC disc, 3 mm thick and sealed in a PLASTIC RESIN.

Measurement Method:

The gamma ray emission rate was compared with a similar standard, which was calibrated by NIST S/N 2752-91. The comparison of relative gamma ray emission rates was accomplished using a high resolution gamma-ray detector (nominal active volume 100 cm³) and a multichannel pulse height analyzer.

Measurement Result:

The gamma ray activity of the standard on 10-03-2002 was 8.5 μ Ci.
The uncertainty of the measurement is 5 %, which is the sum of the uncertainty assigned to the NIST reference (2.2 %), random counting error at the 99% confidence level, and the estimated upper limit of systematic errors.

Calibrated by: ART REUST

Reviewed by: [Signature]

Calibration Technician: [Signature]

Q.A. Representative: Anthony W. Joth

Calibration Date: 10-03-2002

Reviewed Date: 10-4-02

Analytical Services
7021 Pan American Freeway NE
Albuquerque, New Mexico 87109-4238
(505) 345-3461 Fax (505) 761-5416
Toll Free (866) RAD-LABS (723-5227)
www.eberlineservices.com

Certificate of Calibration

Ratemeter / Scaler Certificate of Calibration



Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224

Manufacturer: Ludlum Model: 2221r Serial No.: 190171

All Ranges Calibrated Electronically; Ludlum Pulsar Generator Serial No.: 97743 201932

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997,
NMRCB Registration No. 481-3 - Calibration of Radiation Detection Instruments & Devices

- Mechanical ck. Meter Zeroed Geotropism ck. F/S Response ck. Audio ck.
 THR/WIN ck. High Voltage ck.: 500v 1000v 1500v Battery ck. (min 4.4 vdc)

Threshold Setting: 10 mV

Instrument found within tolerance (+/- 10%) Yes No

Reference Calibration Point	Instrument "As Found Reading"	Instrument Meter Reading
400 Kcpm	<u>+/- 10%</u>	<u>400 Kcpm</u>
100 Kcpm	<u>+/- 10%</u>	<u>100 Kcpm</u>
40 Kcpm	<u>+/- 10%</u>	<u>40 Kcpm</u>
10 Kcpm	<u>+/- 10%</u>	<u>10 Kcpm</u>
4 Kcpm	<u>+/- 10%</u>	<u>4 Kcpm</u>
1 Kcpm	<u>+/- 10%</u>	<u>1 Kcpm</u>
400 cpm	<u>+/- 10%</u>	<u>400 cpm</u>
100 cpm	<u>+/- 10%</u>	<u>100 cpm</u>

Reference Calibration Point	Instrument "As Found Reading"	Log Scale Count Rate	Integrated Counts (1-minute count)
400 Kcpm	<u>+/- 10%</u>	<u>400 Kcpm</u>	<u>3998866</u>
40 Kcpm	<u>+/- 10%</u>	<u>40 Kcpm</u>	<u>39888</u>
4 Kcpm	<u>+/- 10%</u>	<u>4 Kcpm</u>	<u>3988</u>
400 cpm	<u>+/- 10%</u>	<u>400 cpm</u>	<u>398</u>

Calibrated By: [Signature]

Calibration Date: 10-9-07

Reviewed By: [Signature]

Calibration Due: 10-9-08

Date: 10/9/07

Certificate of Calibration

Ratemeter / Scaler Certificate of Calibration



Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224

Manufacturer: Ludlum Model: 2221 Serial No.: 117634

All Ranges Calibrated Electronically; Ludlum Pulsar Generator Serial No.: 97743 201932

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997.
NMRCB Registration No. 481-3 - Calibration of Radiation Detection Instruments & Devices

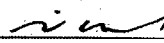
- Mechanical ck. Meter Zeroed Geotropism ck. F/S Response ck. Audio ck.
 THR/WIN ck. High Voltage ck.: 500v 1000v 1500v Battery ck. (min 4.4 vdc)
 Threshold Setting: 10 mV
 Instrument found within tolerance (+/- 10%) Yes No

Reference Calibration Point	Instrument "As Found Reading"	Instrument Meter Reading
400 Kcpm	<u>+/- 10%</u>	<u>400 Kcpm</u>
100 Kcpm	<u>+/- 10%</u>	<u>100 Kcpm</u>
40 Kcpm	<u>+/- 10%</u>	<u>40 Kcpm</u>
10 Kcpm	<u>+/- 10%</u>	<u>10 Kcpm</u>
4 Kcpm	<u>+/- 10%</u>	<u>4 Kcpm</u>
1 Kcpm	<u>+/- 10%</u>	<u>1 Kcpm</u>
400 cpm	<u>+/- 10%</u>	<u>400 cpm</u>
100 cpm	<u>+/- 10%</u>	<u>100 cpm</u>

Reference Calibration Point	Instrument "As Found Reading"	Log Scale Count Rate	Integrated Counts (1-minute count)
400 Kcpm	<u>+/- 10%</u>	<u>400 Kcpm</u>	<u>398978</u>
40 Kcpm	<u>+/- 10%</u>	<u>40 Kcpm</u>	<u>39900</u>
4 Kcpm	<u>+/- 10%</u>	<u>4 Kcpm</u>	<u>3990</u>
400 cpm	<u>+/- 10%</u>	<u>400 cpm</u>	<u>399</u>

Calibrated By: 

Calibration Date: 9-6-07

Reviewed By: 

Calibration Due: 9-6-08

Date: 9-6-07

Certificate of Calibration

Ratemeter / Scaler Certificate of Calibration



Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224

Manufacturer: Ludlum Model: 2221 Serial No.: 117648

All Ranges Calibrated Electronically: Ludlum Pulsar Generator Serial No.: 97743 201932

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997.
NMRCB Registration No. 481-3 • Calibration of Radiation Detection Instruments & Devices

- Mechanical ck. Meter Zeroed Geotropism ck. F/S Response ck. Audio ck.
 THR/WIN ck. High Voltage ck.: 500v 1000v 1500v Battery ck. (min 4.4 vdc)
 Threshold Setting: 10 mV
 Instrument found within tolerance (+/- 10%) Yes No

Reference Calibration Point	Instrument "As Found Reading"	Instrument Meter Reading
400 Kcpm	<u>+/- 10%</u>	<u>400 Kcpm</u>
100 Kcpm	<u>+/- 10%</u>	<u>100 Kcpm</u>
40 Kcpm	<u>+/- 10%</u>	<u>40 Kcpm</u>
10 Kcpm	<u>+/- 10%</u>	<u>10 Kcpm</u>
4 Kcpm	<u>+/- 10%</u>	<u>4 Kcpm</u>
1 Kcpm	<u>+/- 10%</u>	<u>1 Kcpm</u>
400 cpm	<u>+/- 10%</u>	<u>400 cpm</u>
100 cpm	<u>+/- 10%</u>	<u>100 cpm</u>

Reference Calibration Point	Instrument "As Found Reading"	Log Scale Count Rate	Integrated Counts (1-minute count)
400 Kcpm	<u>+/- 10%</u>	<u>400 Kcpm</u>	<u>399233</u>
40 Kcpm	<u>+/- 10%</u>	<u>40 Kcpm</u>	<u>39924</u>
4 Kcpm	<u>+/- 10%</u>	<u>4 Kcpm</u>	<u>3992</u>
400 cpm	<u>+/- 10%</u>	<u>400 cpm</u>	<u>399</u>

Calibrated By: [Signature]

Calibration Date: 9-5-07

Calibration Due: 9-5-08

Reviewed By: [Signature]

Date: 9-6-07

Certificate of Calibration

Ratemeter / Scaler Certificate of Calibration



Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224

Manufacturer: Ludlum Model: 2221r Serial No.: 138377

All Ranges Calibrated Electronically; Ludlum Pulser Generator Serial No.: 97743 201932

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997.
NMRCB Registration No. 481-3 - Calibration of Radiation Detection Instruments & Devices

Mechanical ck. Meter Zeroed Geotropism ck. F/S Response ck. Audio ck.

THR/WIN ck. High Voltage ck.: 500v 1000v 1500v Battery ck. (min 4.4 vdc)

Threshold Setting: 10 mV

Instrument found within tolerance (+/- 10%) Yes No


Reference Calibration Point	Instrument "As Found Reading"	Instrument Meter Reading
400 Kcpm	<u>400 Kcpm</u>	<u>400 Kcpm</u>
100 Kcpm	<u>100 Kcpm</u>	<u>100 Kcpm</u>
40 Kcpm	<u>40 Kcpm</u>	<u>40 Kcpm</u>
10 Kcpm	<u>10 Kcpm</u>	<u>10 Kcpm</u>
4 Kcpm	<u>4 Kcpm</u>	<u>4 Kcpm</u>
1 Kcpm	<u>1 Kcpm</u>	<u>1 Kcpm</u>
400 cpm	<u>400 cpm</u>	<u>400 cpm</u>
100 cpm	<u>100 cpm</u>	<u>102 cpm</u>

Reference Calibration Point	Instrument "As Found Reading"	Log Scale Count Rate	Integrated Counts (1-minute count)
400 Kcpm	<u>400 Kcpm</u>	<u>400 Kcpm</u>	<u>398495</u>
40 Kcpm	<u>40 Kcpm</u>	<u>40 Kcpm</u>	<u>39859</u>
4 Kcpm	<u>4 Kcpm</u>	<u>4 Kcpm</u>	<u>3987</u>
400 cpm	<u>400 cpm</u>	<u>400 cpm</u>	<u>399</u>

Calibrated By: 

Calibration Date: 7-8-08

Calibration Due: 7-8-09

Reviewed By: 

Date: 7/9/08

Certificate of Calibration

Ratemeter / Scaler Certificate of Calibration



Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224

Manufacturer: Ludlum Model: 2221r Serial No.: 149942

All Ranges Calibrated Electronically; Ludlum Pulsar Generator Serial No.: 97743 201932

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997.
NMRCB Registration No. 481-3 • Calibration of Radiation Detection Instruments & Devices

- Mechanical ck. Meter Zeroed Geotropism ck. F/S Response ck. Audio ck.
 THR/WIN ck. High Voltage ck.: 500v 1000v 1500v Battery ck. (min 4.4 vdc)
 Threshold Setting: 10 mV
 Instrument found within tolerance (+/- 10%) Yes No

Reference Calibration Point	Instrument "As Found Reading"	Instrument Meter Reading
400 Kcpm	<u>400 Kcpm</u>	<u>400 Kcpm</u>
100 Kcpm	<u>100 Kcpm</u>	<u>100 Kcpm</u>
40 Kcpm	<u>40 Kcpm</u>	<u>40 Kcpm</u>
10 Kcpm	<u>10 Kcpm</u>	<u>10 Kcpm</u>
4 Kcpm	<u>4 Kcpm</u>	<u>4 Kcpm</u>
1 Kcpm	<u>1 Kcpm</u>	<u>1 Kcpm</u>
400 cpm	<u>400 cpm</u>	<u>400 cpm</u>
100 cpm	<u>100 cpm</u>	<u>102 cpm</u>

Reference Calibration Point	Instrument "As Found Reading"	Log Scale Count Rate	Integrated Counts (1-minute count)
400 Kcpm	<u>400 Kcpm</u>	<u>400 Kcpm</u>	<u>397437</u>
40 Kcpm	<u>40 Kcpm</u>	<u>40 Kcpm</u>	<u>39749</u>
4 Kcpm	<u>4 Kcpm</u>	<u>4 Kcpm</u>	<u>3975</u>
400 cpm	<u>400 cpm</u>	<u>400 cpm</u>	<u>398</u>

Calibrated By: [Signature]

Calibration Date: 7-8-08

Reviewed By: [Signature]

Calibration Due: 7-8-09

Date: 7/9/08

Certificate of Calibration

Voltage Plateau Form



Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224

Detector Mfg.: Ludlum Model: 44-10 Serial No.: PR118372
Counter Mfg.: Ludlum Model: 2221r Serial No.: 149942


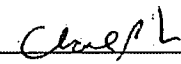
This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997.
NMRCB Registration No. 481-3 • Calibration of Radiation Detection Instruments & Devices

Counter Threshold Setting: 10 mV Cable Length: 39 inch, 5 foot, Other: Curly
Detector geometry to source: Face, Side, Below, Other: _____
Distance to source: Contact, 6-Inches, Other: _____
Gamma Source: Cs-137 @ 5.7µCi (2/18/08) sn: 4097-03 Other: _____

Count Time: 1 Minute

High Voltage	Gross Source Counts	Background Counts
700	22785	
800	48024	
900	67222	
1000	74072	
1050	75152	
1100	77671	10353
1150	78495	10558
1200	78943	

Comments: Recommended Operating High Voltage: 1150 volts

Calibrated By:  Calibration Date: 7-8-08
Calibration Due: 7-8-09
Reviewed By:  Date: 7/9/08

Certificate of Calibration

Voltage Plateau Form



Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224

Detector Mfg.: Ludlum Model: 44-10 Serial No.: PR198936
Counter Mfg.: Ludlum Model: 2221 Serial No.: 117648

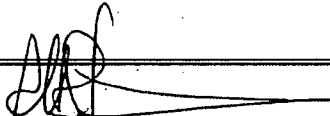
This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997.
NMRCB Registration No. 481-3 - Calibration of Radiation Detection Instruments & Devices

Counter Threshold Setting: 10 mV Cable Length: 39 inch, 5 foot, Other: Curly
Detector geometry to source: Face, Side, Below, Other: _____
Distance to source: Contact, 6-Inches, Other: _____
Gamma Source: Cs-137 @ 5.81 μCi (3/07/07) sn: 4097-03 Other: _____

Count Time: 1 Minute

High Voltage	Gross Source Counts	Background Counts
700	34348	
800	62611	
900	75761	
1000	80115	
1100	81583	9258
1200	82568	

Comments: Recommended Operating High Voltage: 1100 volts

Calibrated By: 

Calibration Date: 9-5-07

Reviewed By: 

Calibration Due: 9-5-08

Date: 9-6-07

Certificate of Calibration

Voltage Plateau Form



Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224

Detector Mfg.: Ludlum Model: 44-10 Serial No.: PR118372
Counter Mfg.: Ludlum Model: 2221 Serial No.: 117634

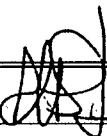
This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997,
NMRCB Registration No. 481-3 • Calibration of Radiation Detection Instruments & Devices

Counter Threshold Setting: 10 mV Cable Length: 39 inch, 5 foot, Other: Curly
Detector geometry to source: Face, Side, Below, Other: _____
Distance to source: Contact, 6-Inches, Other: _____
Gamma Source: Cs-137 @ 5.81 μ Ci (3/07/07) sn: 4097-03 Other: _____

Count Time: 1 Minute

High Voltage	Gross Source Counts	Background Counts
700	33013	
800	61587	
900	76444	
1000	81227	
1100	82653	9657
1200	83660	

Comments: Recommended Operating High Voltage: 1100 volts

Calibrated By: 

Calibration Date: 9-6-07

Calibration Due: 9-6-08

Reviewed By: 

Date: 9-6-07

Certificate of Calibration

Voltage Plateau Form



Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224

Detector Mfg.: Ludlum Model: 44-10 Serial No.: PR198936
Counter Mfg.: Ludlum Model: 2221r Serial No.: 138377

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997.
NMRCB Registration No. 481-3 • Calibration of Radiation Detection Instruments & Devices

Counter Threshold Setting: 10 mV Cable Length: 39 inch, 5 foot, Other: Curly

Detector geometry to source: Face, Side, Below, Other: _____

Distance to source: Contact, 6-Inches, Other: _____

Gamma Source: Cs-137 @ 5.7 μ Ci (2/18/08) sn: 4097-03 Other: _____

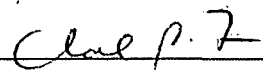
Count Time: 1 Minute

High Voltage	Gross Source Counts	Background Counts
700	27018	
800	52935	
900	70350	
1000	75558	
1050	76535	
1100	77714	<u>10137</u>
1150	77995	10243
1200	78417	

Comments: Recommended Operating High Voltage: 1150 volts

Calibrated By: 

Calibration Date: 7-8-08

Reviewed By: 

Calibration Due: 7-8-09

Date: 7/9/08

Certificate of Calibration

Voltage Plateau Form



Environmental Restoration Group, Inc.
 8809 Washington St. NE, Suite 150
 Albuquerque, NM 87113
 (505) 298-4224

Detector Mfg.: Ludlum Model: 44-10 Serial No.: PR153990
 Counter Mfg.: Ludlum Model: 2221 Serial No.: 190171

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997.
 NMRCB Registration No. 481-J - Calibration of Radiation Detection Instruments & Devices

Counter Threshold Setting: 10 mV Cable Length: 39 inch, 5 foot, Other: Curly

Detector geometry to source: Face, Side, Below, Other: _____


Distance to source: Contact, 6-Inches, Other: _____

Gamma Source: Cs-137 @ 5.81 μ Ci (3/07/07) sn: 4097-03 Other: _____

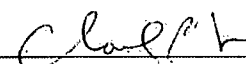
Count Time: 1 Minute

High Voltage	Gross Source Counts	Background Counts
700	1058	
800	24638	
900	47539	
1000	68923	
1100	77419	
1150	79281	9781
1200	80757	

Comments: Recommended Operating High Voltage: 1150 volts

Calibrated By: 

Calibration Date: 10-9-07

Reviewed By: 

Calibration Due: 10-9-08

Date: 10/9/07

Certificate of Calibration

Voltage Plateau Form



Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224

Detector Mfg.: Ludlum Model: 44-10 Serial No.: PR153990
Counter Mfg.: Ludlum Model: 2221 Serial No.: 190171

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997.
NMRCB Registration No. 481-J • Calibration of Radiation Detection Instruments & Devices

Counter Threshold Setting: 10 mV Cable Length: 39 inch, 5 foot, Other: Curly

Detector geometry to source: Face, Side, Below, Other: _____

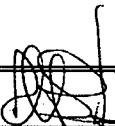
Distance to source: Contact, 6-Inches, Other: _____

Gamma Source: Cs-137 @ 5.81 μ Ci (3/07/07) sn: 4097-03 Other: _____

Count Time: 1 Minute

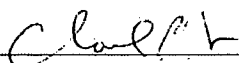
High Voltage	Gross Source Counts	Background Counts
700	1058	
800	24638	
900	47539	
1000	68923	
1100	77419	
1150	79281	9781
1200	80757	

Comments: Recommended Operating High Voltage: 1150 volts

Calibrated By: 

Calibration Date: 10-9-07

Calibration Due: 10-9-08

Reviewed By: 

Date: 10/9/07

(A)

Daily Function Check Form

Site: Powertech, SD

Ratemeter: Ludlum 2221

Serial No. 117634

Cal. Due Date 9-6-08

Detector: Ludlum 44-10

Serial No. PR 118372

Cal. Due Date 9-6-08

Source: CS-137

Activity: 8.5 m Ci on 10-3-07

Serial No. 4059-02 CS-7AS

Distance to Source: 6-in. see notes

Notes: _____

Date	Time	Battery	High Voltage	Threshold (mV)	Gross Counts (CPM)	Background (CPM)	Net Counts (CPM)	Efficiency (CPM/DPM)	Initials	Location
9/13/07	0700	5.9	1102	100	97668	7912	89756	0.5%	NW	Barn
9/13/07	1710	5.8	1092	98	84431	7860	76271	0.5%	NW	Barn
9/14/07	6:50am	5.9	1108	100	91644	7958	83676	0.5%	DRF	Barn
9/14/07	8:20pm	5.7	1100	100	55681*	8100	47581	0.3%	DRF	Barn
9/15/07	8:35am	5.7	1105	100	66877*	8325	58512	0.4%	DRF	Barn
9/15/07	5:00pm	5.5	1083	97	68577*	8210	60339	0.4%	DRF	Barn
9/17/07	7:15am	5.7	1102	99	363081**	8820**	354268	2%	DRF	Barn
9/17/07	4:20pm	5.5	1090	99	368305**	8838**	359467	2%	DRF	Barn
9/18/07	7:10am	5.6	1101	100	137052***	9060***	127992	0.7%	DRF	Barn
9/18/07	2:30pm	5.4	1100	99	130824***	8542***	122282	0.7%	DRF	Barn
9/19/07	5:45am	5.7	1106	100	134695	7805***	126454	0.7%	DRF	Barn
-	-	-	-	-	-	7241	-	-	-	-

Reviewed By: [Signature]

Date: 12/02/08

- * Detector was raised by ~2" due to the mount on the ATV lifting during survey on 9/14/07.
- ** Function check jig used (source-detector distance of ~2")
- *** Detector was placed on the ground (source-detector distance of 6" center-to-center)

(A)

Daily Function Check Form

Site: Powertech, SD

Ratemeter: Ludlum 2221

Serial No. PE1182726

Cal. Due Date 9-6-08

Detector: Ludlum 44-10

Serial No. 117634

Cal. Due Date 9-6-09

Source: C-137

Activity: 0.5 M.Ci on 10-3-02

Serial No. 4059-02 C-7A5

Distance to Source 6-in. see note

Notes: _____

9/26/07

Date	Time	Battery	High Voltage	Threshold (mV)	Gross Counts (CPM)	Background (CPM)	Net Counts (CPM)	Efficiency (CPM/DPM)	Initials	Location
9/19/07	5:35am	5.4	1096	98	126365	8274	127971	0.7%	DRF	Barn
9/20/07	6:15am	5.5	1103	100	136370	8382	127988	0.7%	DRF	Barn
9/20/07	5:17pm	5.4	1078	97	121286	8210	123076	0.7%	DRF	Barn
9/21/07	7:10am	5.6	1102	99	136577	8422	128155	0.7%	DRF	Barn
9/21/07	4:20pm	5.3	1091	98	124782	8112	126670	0.7%	DRF	Barn
9/25/07	7:50am	5.5	1107	100	135603	8512	127091	0.7%	DRF	Barn
9/25/07	1745	5.4	1095	99	126887	8282	118605	0.7%	NW	Grn
9/25/07	0700	5.5	1106	100	133522	8903	124619	0.7%	NW	Barn
9/26/07	4:40pm	5.4	1096	98	135888	8143	127545	0.7%	DRF	Barn
9/27/07	0616	5.5	1107	100	137172	9263	127909	0.7%	NW	Barn
9/27/07	3:15pm	5.3	1089	99	132525	8267	124258	0.7%	DRF	Barn
-	-	-	-	-	-	-	-	-	-	-

Reviewed By: [Signature]

Date 12/08/1

(B)

Daily Function Check Form

Site: Power Tech, SD

Ratemeter: Ludlum 2221
Detector: Ludlum 44-10
Source: Cs-137
Distance to Source: 6"-in. seconds

Serial No. 117648
Serial No. PR198936
Activity: 8.5 µCi or 10-3-02

Cal. Due Date 9-6-08
Cal. Due Date 9-6-08
Serial No. 4054-07 CS-7A1

Notes: _____

Date	Time	Battery	High Voltage	Threshold (mv)	Gross Counts (CPM)	Background (CPM)	Net Counts (CPM)	Efficiency (CPM/DPM)	Initials	Location
9/13/07	07:00	5.3	1104	102	105016	7486	97530	0.6%	NW	Barn
9/13/07	12:10	5.3	1092	101	116576	7627	108949	0.7%		
9/14/07	6:50am	5.3	1108	101	116036	7785	108251	0.7%	DRF	Barn
9/14/07	8:30pm	5.3	1098	101	103725	7742	95983	0.6%	DRF	Barn
9/15/07	6:35am	5.3	1104	101	95925	8086	87839	0.5%	DRF	Barn
9/15/07	5:30pm	5.2	1088	100	102852	7904	94948	0.6%	DRF	Barn
9/17/07	5:15am	5.3	1102	100	292273*	8350*	283923	2%	DRF	Barn
9/17/07	8:42pm	5.2	1092	100	202007*	8154*	293853	2%	DRF	Barn
9/18/07	6:45am	5.8	1101	100	133803**	8418**	125385	0.7%	DRF	Barn
9/18/07	2:30pm	5.6	1102	101	131147**	8147**	122995	0.7%	DRF	Barn
9/19/07	5:45am	5.6	1107	100	134695**	8241**	123954	0.7%	DRF	Barn
					131759	805				

Reviewed By: MJW

Date: 12/01/08

* Check done on function check jig (distance to source of 2 1/2")
** Check done by setting detector on the ground (distance to source of 6" center-to-center)

(B)

Daily Function Check Form

Site: Powertech, SD

Ratemeter: 2221 (Ludlum)
 Detector: Ludlum 44-10
 Source: CS-137
 Distance to Source: 6-in

Serial No. 117648
 Serial No. PR198936
 Activity: 8.5 μ Ci Co-60 10-302

Cal Due Date: 9-6-08
 Cal Due Date: 9-6-08
 Serial No: 4054-02 CS-7AS

Notes: _____

Date	Time	Battery	High Voltage	Threshold (mV) DRF	Gross Counts (CPM)	Background (CPM)	Net Counts (CPM)	Efficiency (CPM/DPM)	Initials	Location
9/19/07	5:35 pm	5.4	1096	100	132023	7849	124174	0.7%	DRF	Barn
9/20/07	6:15 am	5.5	1103	100	135383	7894	127489	0.7%	DRF	Barn
9/20/07	5:15 pm	5.3	1088	99	131507	7677	123830	0.7%	DRF	Barn
9/21/07	7:10 am	5.4	1104	100	137336	8011	129325	0.7%	DRF	Barn
9/21/07	1902	5.2	1097	100	126207	7676	118531	0.7%	NW	Barn
9/25/07	7:50 am	5.4	1110	101	132611	8052	124559	0.7%	DRF	Barn
9/27/07	17:36	5.2	1099	100	127141 ¹³⁰⁷⁶	7914	123162	0.7%	NW	Barn
9/25/07	0705	5.3	1107	101	132784	8447	124337	0.7%	NW	Barn
9/27/07	0622	5.3	1107	100	133717	8681	125036	0.7%	NW	Barn
9/27/07	5:16 pm	5.2	1098	100	134674	7814	126860	0.7%	DRF	Barn
9/28/07	0755	5.3	1106	101	130787	8242	122545	0.7%	NW	Barn
9/28/07	1037	5.2	1101	100	129316	8110	121206	0.7%	NW	Barn

Reviewed By: [Signature]

Date: 12/01/08

21

Daily Function Check Form

Site: Dewey Burlock

Ratemeter: LUDLUM 2221
 Detector: 44-10
 Source: CS-137
 Distance to Source: 6-in (1/4)

Serial No. 149942 Cal. Due Date 7-8-09
 Serial No. 149942 NW Cal. Due Date 7-8-09
 Activity: 85 MCI 03-02 Serial No. 4054-02
 Acceptance Range 82660 to 84723

Notes:

Date	Time	Battery	High Voltage	Threshold	Gross Counts (CPM)	Background (CPM)	Net Counts (CPM)	Efficiency (CPM/DPM)	Initials	Location
7/14/08	1042	5.5	1142	101	92278	8055	84223	0.005	NW	Elbow Cap Ad
					91566	8154	83412			
					91851	8211	83640			
					91751	8138	83613			
					91742	7882	83910			
					91184	8141	83043			
					91781	8017	83764			
					91595	8161	83434			
					91935	8167	83808			
					92129	8061	84068			
7/14/08	1712	5.3	1083	97	90998	7672	83326			
7/15/08	0753	5.5	1129	100	90010	7955	82055			
7/15/08	1423	5.3	1081	96	91301	7444	83857			
7/16/08	0736	5.7	1162	103	93043	7899	85144			
7/16/08	1524	5.3	1092	98	90511	7781	82730			
7/17/08	1202	5.5	1126	100	93565	7500	86065			
7/17/08	1946	5.4	1115	100	93121	7414	82707			
7/18/08	0838	5.1	1154	102	89584	7084	82500			

Reviewed By: [Signature]

Date: 12/02/08

#1

Daily Function Check Form

Site: Deer Barlock

Ratemeter: Wellman 2221
Detector: 44-10
Source: CJ-137
Distance to Source: 6-in. (jig)

Serial No. ^{PK118372} 149942 Cal. Due Date 7-8-09
Serial No. 438377 NW Cal. Due Date 7-8-09
Activity: 8.5 uCi, 10-3-02 Serial No. _____
Acceptance Range 82660 to 84723

Notes:

Date	Time	Battery	High Voltage	Threshold	Gross Counts (CPM)	Background (CPM)	Net Counts (CPM)	Efficiency (CPM/DPM)	Initials	Location
7-19-08	0758	5.5	1153	102	96860	6572	<u>90268</u>	0.005	NW	Elbow corner of
7-19-08	1441	5.4	1132	100	90159	7207	82872	↓	NW	
<i>2007</i>										

Reviewed By: *[Signature]*

Date: 12/02/08

Daily Function Check Form

Site: Dewey Burdick

Ratemeter: Ludlow 2221
 Detector: 44-10
 Source: CS-137
 Distance to Source: 6 in (jig)

Serial No. 138377 Cal. Due Date 7-8-09
 Serial No. PK 198936 Cal. Due Date 7-8-09
 Activity: 8.5 uCi, 10-3-02 Serial No. 4054-02
 Acceptance Range 80 190 to 840 83

Notes:

Date	Time	Battery	High Voltage	Threshold	Gross Counts (CPM)	Background (CPM)	Net Counts (CPM)	Efficiency (CPM/DPM)	Initials	Location
7/14/08	1035	5.8	1148	100	90546	7106	83440	0.005	NW	56 Bow Carson RD
					89803	7021	82782			
					90015	7466	82549			
					89675	7456	82219			
					89520	7393	82127			
					89607	7697	81910			
					89010	7488	81522			
					89102	7522	81580			
					89350	7633	81717			
					89152	7685	81467			
	1712	5.7	1140	99	90957	7200	83757			
7/15/08	0751	5.7	1143	98	89384	7394	81990			
7/15/08	1423	5.7	1139	98	89870	7143	82727			
7/16/08	0737	5.7	1145	98	89462	7337	82125			
7/16/08	1526	5.5	1141	98	89532	7386	82146			
7/17/08	1203	5.6	1143	98	90804	6841	83963			
7/17/08	1946	5.4	1142	98	91557	6685	84872			
7/18/08	0841	5.5	1145	98	87936	6304	81552			

Reviewed By: [Signature]

Date: 12/02/08

#2

Daily Function Check Form

Site: Dewey Banklock

Ratemeter: Ludlum 2221
 Detector: Ludlum 44-10
 Source: C-137
 Distance to Source: 6-in. (jig)

Serial No. 132377 Cal. Due Date 7-8-09
 Serial No. 9219893C Cal. Due Date 7-8-09
 Activity: 8.5 μCi, 10-3-02 Serial No. 4054-02
 Acceptance Range 80190 to 84083

Notes:

Date	Time	Battery	High Voltage	Threshold	Gross Counts (CPM)	Background (CPM)	Net Counts (CPM)	Efficiency (CPM/DPM)	Initials	Location
7/19/08	0758	5.4	1146	99	94840	6360	88480	0.005	NW	ELROW CANTON RD
7/19/08	1440	5.4	1143	98	90961	6712	84249	0.005	NW	

Reviewed By: [Signature]

Date: 12/02/08

Appendix B
Laboratory Analytical Data



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08030221-008
 Client Sample ID: AMS-07

Report Date: 04/24/08
 Collection Date: 10/02/07
 Date Received: 03/19/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By	
				RL	QCL			
METALS - TOTAL								
Uranium	1.6	mg/filter		0.5		10	SW6020	04/02/08 17:44/eli-c
RADIONUCLIDES - TOTAL								
Radium 226 MDC	2.4	pCi/Filter				1	E903.0	04/01/08 15:03/eli-c
Lead 210	1300	pCi/Filter		1.0		1	E909.0M	03/25/08 12:00/eli-c
Lead 210 precision (±)	28.9	pCi/Filter				1	E909.0M	03/25/08 12:00/eli-c
Radium 226	1.3	pCi/Filter	U			1	E903.0	04/01/08 15:03/eli-c
Radium 226 precision (±)	1.6	pCi/Filter				1	E903.0	04/01/08 15:03/eli-c
Thorium 230	2.8	pCi/Filter		0.2		1	E907.0	03/26/08 15:15/eli-c
Thorium 230 precision (±)	1.2	pCi/Filter				1	E907.0	03/26/08 15:15/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



ANALYTICAL SUMMARY REPORT

April 24, 2008

Michael Schierman
Environmental Restoration Group Inc
8809 Washington St NE
Albuquerque, NM 87113

Workorder No.: R08030221

Project Name: Edgemont (Soils/Air filters)

Energy Laboratories Inc. received the following 8 samples from Environmental Restoration Group Inc on 3/19/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
R08030221-001	AMS-BKG	10/02/07 0:00	03/19/08	Filter	Composite Fee Metals, Total Digestion, Total Metals For Radio Chemistry Lead 210 Radium 226 Thorium, Isotopic
R08030221-002	AMS-01	10/02/07 0:00	03/19/08	Filter	Same As Above
R08030221-003	AMS-02	10/02/07 0:00	03/19/08	Filter	Same As Above
R08030221-004	AMS-03	10/02/07 0:00	03/19/08	Filter	Same As Above
R08030221-005	AMS-04	10/02/07 0:00	03/19/08	Filter	Same As Above
R08030221-006	AMS-05	10/02/07 0:00	03/19/08	Filter	Same As Above
R08030221-007	AMS-06	10/02/07 0:00	03/19/08	Filter	Same As Above
R08030221-008	AMS-07	10/02/07 0:00	03/19/08	Filter	Composite Fee Metals, Total Digestion, Total Metals Lead 210 Radium 226 Thorium, Isotopic

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.

Report Approved By: 



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08030221-001
 Client Sample ID: AMS-BKG

Report Date: 04/24/08
 Collection Date: 10/02/07
 Date Received: 03/19/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS - TOTAL							
Uranium	ND	mg/filter		0.5		10 SW6020	04/02/08 16:59/eli-c
RADIONUCLIDES - TOTAL							
Radium 226 MDC	2.4	pCi/Filter				1 E903.0	04/01/08 13:23/eli-c
Lead 210	834	pCi/Filter		1.0		1 E909.0M	03/25/08 12:00/eli-c
Lead 210 precision (±)	23.1	pCi/Filter				1 E909.0M	03/25/08 12:00/eli-c
Radium 226	1.9	pCi/Filter	U			1 E903.0	04/01/08 13:23/eli-c
Radium 226 precision (±)	1.7	pCi/Filter				1 E903.0	04/01/08 13:23/eli-c
Thorium 230	3.2	pCi/Filter		0.2		1 E907.0	03/26/08 15:15/eli-c
Thorium 230 precision (±)	1.3	pCi/Filter				1 E907.0	03/26/08 15:15/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08030221-002
Client Sample ID: AMS-01

Report Date: 04/24/08
Collection Date: 10/02/07
Date Received: 03/19/08
Matrix: FILTER

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By
					QCL	DF		
METALS - TOTAL								
Uranium	ND	mg/filter		0.5		10	SW6020	04/02/08 17:03/eli-c
RADIONUCLIDES - TOTAL								
Radium 226 MDC	2.3	pCi/Filter				1	E903.0	04/01/08 13:23/eli-c
Lead 210	1160	pCi/Filter		1.0		1	E909.0M	03/25/08 12:00/eli-c
Lead 210 precision (±)	27.3	pCi/Filter				1	E909.0M	03/25/08 12:00/eli-c
Radium 226	4.1	pCi/Filter				1	E903.0	04/01/08 13:23/eli-c
Radium 226 precision (±)	1.9	pCi/Filter				1	E903.0	04/01/08 13:23/eli-c
Thorium 230	2.2	pCi/Filter		0.2		1	E907.0	03/26/08 15:15/eli-c
Thorium 230 precision (±)	1.0	pCi/Filter				1	E907.0	03/26/08 15:15/eli-c

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

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



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08030221-003
 Client Sample ID: AMS-02

Report Date: 04/24/08
 Collection Date: 10/02/07
 Date Received: 03/19/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS - TOTAL							
Uranium	ND	mg/filter		0.5		10 SW6020	04/02/08 17:07/eli-c
RADIONUCLIDES - TOTAL							
Radium 226 MDC	1.8	pCi/Filter				1 E903.0	04/01/08 13:23/eli-c
Lead 210	560	pCi/Filter		1.0		1 E909.0M	03/25/08 12:00/eli-c
Lead 210 precision (±)	19.0	pCi/Filter				1 E909.0M	03/25/08 12:00/eli-c
Radium 226	1.2	pCi/Filter	U			1 E903.0	04/01/08 13:23/eli-c
Radium 226 precision (±)	1.2	pCi/Filter				1 E903.0	04/01/08 13:23/eli-c
Thorium 230	1.6	pCi/Filter		0.2		1 E907.0	03/26/08 15:15/eli-c
Thorium 230 precision (±)	1.0	pCi/Filter				1 E907.0	03/26/08 15:15/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08030221-004
 Client Sample ID: AMS-03

Report Date: 04/24/08
 Collection Date: 10/02/07
 Date Received: 03/19/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By	
				RL	QCL			
METALS - TOTAL								
Uranium	ND	mg/filter		0.5		10	SW6020	04/02/08 17:12/eli-c
RADIONUCLIDES - TOTAL								
Radium 226 MDC	1.8	pCi/Filter				1	E903.0	04/01/08 13:23/eli-c
Lead 210	821	pCi/Filter		1.0		1	E909.0M	03/25/08 12:00/eli-c
Lead 210 precision (±)	23.0	pCi/Filter				1	E909.0M	03/25/08 12:00/eli-c
Radium 226	1.2	pCi/Filter	U			1	E903.0	04/01/08 13:23/eli-c
Radium 226 precision (±)	1.2	pCi/Filter				1	E903.0	04/01/08 13:23/eli-c
Thorium 230	1.3	pCi/Filter		0.2		1	E907.0	03/26/08 15:15/eli-c
Thorium 230 precision (±)	1.0	pCi/Filter				1	E907.0	03/26/08 15:15/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08030221-005
 Client Sample ID: AMS-04

Report Date: 04/24/08
 Collection Date: 10/02/07
 Date Received: 03/19/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By	
				RL	QCL			
METALS - TOTAL								
Uranium	ND	mg/filter		0.5		10	SW6020	04/02/08 17:16/eli-c
RADIONUCLIDES - TOTAL								
Radium 226 MDC	2.0	pCi/Filter				1	E903.0	04/01/08 13:23/eli-c
Lead 210	790	pCi/Filter		1.0		1	E909.0M	03/25/08 12:00/eli-c
Lead 210 precision (±)	22.5	pCi/Filter				1	E909.0M	03/25/08 12:00/eli-c
Radium 226	4.7	pCi/Filter				1	E903.0	04/01/08 13:23/eli-c
Radium 226 precision (±)	1.8	pCi/Filter				1	E903.0	04/01/08 13:23/eli-c
Thorium 230	1.8	pCi/Filter		0.2		1	E907.0	04/10/08 15:00/eli-c
Thorium 230 precision (±)	1.4	pCi/Filter				1	E907.0	04/10/08 15:00/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

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



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08030221-006
 Client Sample ID: AMS-05

Report Date: 04/24/08
 Collection Date: 10/02/07
 Date Received: 03/19/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/			Method	Analysis Date / By
				RL	QCL	DF		
METALS - TOTAL								
Uranium	ND	mg/filter		0.5		10	SW6020	04/02/08 17:36/eli-c
RADIONUCLIDES - TOTAL								
Radium 226 MDC	2.6	pCi/Filter				1	E903.0	04/01/08 15:03/eli-c
Lead 210	654	pCi/Filter		1.0		1	E909.0M	03/25/08 12:00/eli-c
Lead 210 precision (±)	20.5	pCi/Filter				1	E909.0M	03/25/08 12:00/eli-c
Radium 226	-1	pCi/Filter	U			1	E903.0	04/01/08 15:03/eli-c
Radium 226 precision (±)	1.2	pCi/Filter				1	E903.0	04/01/08 15:03/eli-c
Thorium 230	2.9	pCi/Filter		0.2		1	E907.0	03/26/08 15:15/eli-c
Thorium 230 precision (±)	1.1	pCi/Filter				1	E907.0	03/26/08 15:15/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08030221-007
 Client Sample ID: AMS-06

Report Date: 04/24/08
 Collection Date: 10/02/07
 Date Received: 03/19/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/			Method	Analysis Date / By
				RL	QCL	DF		
METALS - TOTAL								
Uranium	ND	mg/filter		0.5		10	SW6020	04/02/08 17:40/eli-c
RADIONUCLIDES - TOTAL								
Radium 226 MDC	2.1	pCi/Filter				1	E903.0	04/01/08 15:03/eli-c
Lead 210	942	pCi/Filter		1.0		1	E909.0M	03/25/08 12:00/eli-c
Lead 210 precision (±)	24.6	pCi/Filter				1	E909.0M	03/25/08 12:00/eli-c
Radium 226	-1	pCi/Filter	U			1	E903.0	04/01/08 15:03/eli-c
Radium 226 precision (±)	1.0	pCi/Filter				1	E903.0	04/01/08 15:03/eli-c
Thorium 230	1.5	pCi/Filter		0.2		1	E907.0	03/26/08 15:15/eli-c
Thorium 230 precision (±)	1.0	pCi/Filter				1	E907.0	03/26/08 15:15/eli-c

Report: RL - Analyte reporting limit.
 Definitions: QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



QA/QC Summary Report

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)

Report Date: 04/24/08
 Work Order: R08030221

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0							Batch: C_RA226-2688		
Sample ID: C08030621-004AMS Radium 226	Sample Matrix Spike 3.8	pCi/g	125	70	130	Run: SUB-C98992		04/01/08 11:46	
Sample ID: C08030621-004AMSD Radium 226	Sample Matrix Spike Duplicate 4.1	pCi/g	135	70	130	7.9	26.2	04/01/08 11:46	S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the RPD for the MS MSD pair are acceptable, the high response is considered to be matrix related. The batch is approved.									
Sample ID: LCS-18083 Radium 226	Laboratory Control Sample 11	pCi/L	82	70	130	Run: SUB-C98992		04/01/08 15:03	
Sample ID: MB-18083 Radium 226	Method Blank -1	pCi/L				Run: SUB-C98992		04/01/08 15:03	
Method: E907.0							Batch: C_18083		
Sample ID: C08030720-001KMS Thorium 230	Sample Matrix Spike 23.1	pCi/L	0.20	94	70	130	Run: SUB-C99086	03/26/08 15:15	
Sample ID: C08030720-001KMSD Thorium 230	Sample Matrix Spike Duplicate 23.8	pCi/L	0.20	97	70	130	2.8	03/26/08 15:15	30
Sample ID: LCS-18083 Thorium 230	Laboratory Control Sample 46.1	pCi/g-dry	0.10	98	70	130	Run: SUB-C99086	03/26/08 15:15	
Sample ID: MB-18083 Thorium 230	Method Blank ND	pCi/g-dry				Run: SUB-C99086		03/26/08 15:15	
Method: E907.0							Batch: C_R99819		
Sample ID: C08040278-005DMS Thorium 228	Sample Matrix Spike 13.4	pCi/L	0.20	115	70	130	Run: SUB-C99819	04/10/08 15:00	
Sample ID: C08040278-005DMSD Thorium 228	Sample Matrix Spike Duplicate 13.8	pCi/L	0.20	117	70	130	2.9	04/10/08 15:00	30
Sample ID: MB-R99819 Thorium 230	Method Blank 0.1	pCi/L				Run: SUB-C99819		04/10/08 15:00	
Sample ID: LCS-R99819 Thorium 228	Laboratory Control Sample 10.0	pCi/L	0.20	123	70	130	Run: SUB-C99819	04/10/08 15:00	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



QA/QC Summary Report

Client: Environmental Restoration Group Inc

Report Date: 04/24/08

Project: Edgemont (Soils/Air filters)

Work Order: R08030221

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E909.0M							Batch: C_18083		
Sample ID: R08030221-004A Lead 210	Sample Matrix Spike 1540	pCi/Filter	1.0	121	70	130			03/25/08 12:00
Run: SUB-C98854									
Sample ID: R08030221-004A Lead 210	Sample Matrix Spike Duplicate 1300	pCi/Filter	1.0	81	70	130	17	30	03/25/08 12:00
Run: SUB-C98854									
Sample ID: MB-R98854 Lead 210	Method Blank 5	pCi/Filter							03/25/08 12:00
Run: SUB-C98854									
Sample ID: LCS-R98854 Lead 210	Laboratory Control Sample 94.1	pCi/Filter	1.0	75	70	130			03/25/08 12:00
Run: SUB-C98854									
Method: SW6020							Batch: C_18083		
Sample ID: MB-18083 Uranium	Method Blank 0.0001	mg/kg	6E-05						04/02/08 16:51
Run: SUB-C99006									
Sample ID: LCS1-18083 Uranium	Laboratory Control Sample 0.0470	mg/kg	0.015	89	75	125			04/02/08 16:55
Run: SUB-C99006									
Sample ID: C08030621-004AMS Uranium	Sample Matrix Spike 24.4	mg/kg	0.028	102	75	125			04/03/08 20:44
Run: SUB-C99175									
Sample ID: C08030621-004AMSD Uranium	Sample Matrix Spike Duplicate 24.1	mg/kg	0.029	100	75	125	1.6	20	04/03/08 20:50
Run: SUB-C99175									

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Chain of Custody and Analytical Request Record

PLEASE PRINT - Provide as much information as possible.

Company Name: <u>Environmental Restoration Group</u>		Project Name: <u>PWS, Permit, Etc. Dewey - Burdock</u>		Sample Origin: <u>South Dakota</u>		EPA/State Compliance: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Report Mail Address: <u>9809 Washington St NE Suite 150 Albuquerque NM 87113</u>		Contact Name: <u>Michael Schierman</u>		Phone/Fax: <u>505-298-4224</u>		Email: <u>mikeschierman@energylab.com</u>	
Invoice Address: <u>Same as above</u>		Invoice Contact & Phone: <u>Michael Schierman</u>		Purchase Order:		Quote/Bottle Order: <u>NA</u>	
Special Report/Formats - ELI must be notified prior to sample submittal for the following: <u>Please send ZDD to Cary Schierman @ RESPEC</u>			ANALYSIS REQUESTED			Contact ELI prior to RUSH sample submittal for charges and scheduling - See Instruction Page	
<input type="checkbox"/> DW <input type="checkbox"/> GSA <input type="checkbox"/> POTW/WWTP <input type="checkbox"/> State: <input type="checkbox"/> Other:			<input type="checkbox"/> A2LA <input checked="" type="checkbox"/> EDD/EDT (Electronic Data) Format:			Shipped by: <u>MJS</u> Cooler ID(s): Receipt Temp: _____ °C On Ice: Yes <input type="checkbox"/> No <input type="checkbox"/> Custody Seal Intact: Y <input type="checkbox"/> N <input type="checkbox"/> Signature Match: Y <input type="checkbox"/> N <input type="checkbox"/>	
SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)		Collection Date	Collection Time	MATRIX	SEE ATTACHED Normal Turnaround (TAT)	RUSH	Comments: <u>Please composite all filters</u>
<u>AMS-Bkg</u>		<u>9/28/07</u>	<u>NA</u>	<u>O</u>			
<u>AMS-01</u>				<u>X</u>			
<u>AMS-02</u>				<u>X</u>			
<u>AMS-03</u>				<u>X</u>			
<u>AMS-04</u>				<u>X</u>			
<u>AMS-05</u>				<u>X</u>			
<u>AMS-06</u>				<u>X</u>			
<u>AMS-07</u>				<u>X</u>			
<u>AMS-08</u>				<u>X</u>			

ENERGY LABORATORIES, INC. • 2821 Plant Street • Rapid City, SD 57702 • www.energylab.com
 Toll Free 888.672.1225 • Voice 605.342.1225 • Fax 605.342.1397 • rapid_city@energylab.com

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report. Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.



ANALYTICAL SUMMARY REPORT

February 12, 2008

Michael Schierman

Environmental Restoration Group Inc.
8809 Washington St NE
Albuquerque, NM 87113

Workorder No.: R08010193 Quote ID: R279

Project Name: Edgemont (Soils/Air filters)

Energy Laboratories Inc. received the following 9 samples from Environmental Restoration Group Inc on 1/17/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
R08010193-001	BKG	10/09/07 0:00	01/17/08	Filter	Composite Fee. Metals, Total Digestion, Total Metals For Radio Chemistry Lead 210 Radium 226 Thorium, Isotopic
R08010193-002	AMS-01	10/09/07 0:00	01/17/08	Filter	Same As Above
R08010193-003	AMS-02	10/09/07 0:00	01/17/08	Filter	Same As Above
R08010193-004	AMS-03	10/09/07 0:00	01/17/08	Filter	Same As Above
R08010193-005	AMS-04	10/09/07 0:00	01/17/08	Filter	Same As Above
R08010193-006	AMS-05	10/09/07 0:00	01/17/08	Filter	Same As Above
R08010193-007	AMS-06	10/09/07 0:00	01/17/08	Filter	Same As Above
R08010193-008	AMS-07	10/09/07 0:00	01/17/08	Filter	Same As Above
R08010193-009	AMS-08	10/09/07 0:00	01/17/08	Filter	Same As Above

Thank you for submitting your samples to Energy Laboratories, Inc. - Rapid City. The following pages contain the results of the sample tests listed above and applicable analytical notes.

The samples were analyzed in accordance with the methods specified on the analytical reports. All analyses were accompanied by appropriate quality control samples throughout the test. Where applicable, the results of these quality control samples will be included, following your analytical data.

If you have any questions regarding the analyses performed or the results of these analyses, please contact Energy Laboratories Inc. - Rapid City at (605) 342-1225, (888) 672-1225 or Rapid_City@energylab.com.

Report Approved By:


Linda Larson

Rapid City - Project Manager



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08010193-002
 Client Sample ID: AMS-01

Report Date: 02/12/08
 Collection Date: 10/09/07
 Date Received: 01/17/08
 Matrix: FILTER

Analyses	Result	Units	Qual	RL	MCL/ QCL	DF	Method	Analysis Date / By
METALS - TOTAL								
Uranium	ND	mg/filter	D	0.03		10	SW6020	02/05/08 20:59/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	5140	pCi/Filter		1.0		1	E909.0M	02/01/08 08:30/eli-c
Lead 210 precision (±)	86.1	pCi/Filter				1	E909.0M	02/01/08 08:30/eli-c
Radium 226	2.5	pCi/Filter		0.2		1	E903.0	02/06/08 11:08/eli-c
Radium 226 precision (±)	0.9	pCi/Filter				1	E903.0	02/06/08 11:08/eli-c
Thorium 230	1.6	pCi/Filter		0.2		1	E907.0	01/28/08 15:30/eli-c
Thorium 230 precision (±)	1.0	pCi/Filter				1	E907.0	01/28/08 15:30/eli-c

Report: RL - Analyte reporting limit.

Definitions: 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: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08010193-003
 Client Sample ID: AMS-02

Report Date: 02/12/08
 Collection Date: 10/09/07
 Date Received: 01/17/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
METALS - TOTAL								
Uranium	ND	mg/filter	D	0.03		10	SW6020	02/05/08 21:05/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	2610	pCi/Filter		1.0		1	E909.0M	02/01/08 08:30/eli-c
Lead 210 precision (±)	61.4	pCi/Filter				1	E909.0M	02/01/08 08:30/eli-c
Radium 226	1.3	pCi/Filter		0.2		1	E903.0	02/06/08 11:08/eli-c
Radium 226 precision (±)	0.6	pCi/Filter				1	E903.0	02/06/08 11:08/eli-c
Thorium 230	3.5	pCi/Filter		0.2		1	E907.0	01/28/08 15:30/eli-c
Thorium 230 precision (±)	1.2	pCi/Filter				1	E907.0	01/28/08 15:30/eli-c

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: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08010193-004
 Client Sample ID: AMS-03

Report Date: 02/12/08
 Collection Date: 10/09/07
 Date Received: 01/17/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS - TOTAL							
Uranium	ND	mg/filter	D	0.03		10 SW6020	02/05/08 21:12/eli-c
RADIONUCLIDES - TOTAL							
Lead 210	1690	pCi/Filter		1.0		1 E909.0M	02/01/08 08:30/eli-c
Lead 210 precision (±)	49.4	pCi/Filter				1 E909.0M	02/01/08 08:30/eli-c
Radium 226	2.3	pCi/Filter		0.2		1 E903.0	02/06/08 11:08/eli-c
Radium 226 precision (±)	0.9	pCi/Filter				1 E903.0	02/06/08 11:08/eli-c
Thorium 230	2.6	pCi/Filter		0.2		1 E907.0	01/28/08 15:30/eli-c
Thorium 230 precision (±)	1.0	pCi/Filter				1 E907.0	01/28/08 15:30/eli-c

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: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08010193-005
 Client Sample ID: AMS-04

Report Date: 02/12/08
 Collection Date: 10/09/07
 Date Received: 01/17/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS - TOTAL							
Uranium	ND	mg/filter	D	0.03		10	SW6020 02/05/08 21:18/eli-c
RADIONUCLIDES - TOTAL							
Lead 210	2830	pCi/Filter		1.0		1	E909.0M 02/01/08 08:30/eli-c
Lead 210 precision (±)	63.8	pCi/Filter				1	E909.0M 02/01/08 08:30/eli-c
Radium 226	1.9	pCi/Filter		0.2		1	E903.0 02/06/08 11:08/eli-c
Radium 226 precision (±)	0.8	pCi/Filter				1	E903.0 02/06/08 11:08/eli-c
Thorium 230	2.6	pCi/Filter		0.2		1	E907.0 01/28/08 15:30/eli-c
Thorium 230 precision (±)	1.1	pCi/Filter				1	E907.0 01/28/08 15:30/eli-c

Report RL - Analyte reporting limit.

Definitions: 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: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08010193-006
 Client Sample ID: AMS-05

Report Date: 02/12/08
 Collection Date: 10/09/07
 Date Received: 01/17/08
 Matrix: FILTER

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By
					QCL	DF		
METALS - TOTAL								
Uranium	ND	mg/filter	D	0.03		10	SW6020	02/01/08 21:14/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	3200	pCi/Filter		1.0		1	E909.0M	02/01/08 08:30/eli-c
Lead 210 precision (±)	67.9	pCi/Filter				1	E909.0M	02/01/08 08:30/eli-c
Radium 226	7.7	pCi/Filter		0.2		1	E903.0	02/06/08 11:08/eli-c
Radium 226 precision (±)	1.5	pCi/Filter				1	E903.0	02/06/08 11:08/eli-c
Thorium 230	4.0	pCi/Filter		0.2		1	E907.0	01/28/08 15:30/eli-c
Thorium 230 precision (±)	1.5	pCi/Filter				1	E907.0	01/28/08 15:30/eli-c

Report Definitions: RL - Analyte reporting limit.
 OCL - 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: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08010193-007
 Client Sample ID: AMS-06

Report Date: 02/12/08
 Collection Date: 10/09/07
 Date Received: 01/17/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS - TOTAL							
Uranium	ND	mg/filter	D	0.03		10 SW6020	02/05/08 21:25/eli-c
RADIONUCLIDES - TOTAL							
Lead 210	2940	pCi/Filter		1.0		1 E909.0M	02/01/08 08:30/eli-c
Lead 210 precision (±)	65.1	pCi/Filter				1 E909.0M	02/01/08 08:30/eli-c
Radium 226	4.8	pCi/Filter		0.2		1 E903.0	02/06/08 11:08/eli-c
Radium 226 precision (±)	1.2	pCi/Filter				1 E903.0	02/06/08 11:08/eli-c
Thorium 230	3.3	pCi/Filter		0.2		1 E907.0	01/28/08 15:30/eli-c
Thorium 230 precision (±)	1.4	pCi/Filter				1 E907.0	01/28/08 15:30/eli-c

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: Environmental Restoration Group (nc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08010193-008
 Client Sample ID: AMS-07

Report Date: 02/12/08
 Collection Date: 10/09/07
 Date Received: 01/17/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
METALS - TOTAL								
Uranium	ND	mg/filter	D	0.03		10	SW6020	02/05/08 21:32/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	4010	pCi/Filter		1.0		1	E909.0M	02/01/08 08:30/eli-c
Lead 210 precision (±)	76.0	pCi/Filter				1	E909.0M	02/01/08 08:30/eli-c
Radium 226	5.8	pCi/Filter		0.2		1	E903.0	02/06/08 11:08/eli-c
Radium 226 precision (±)	1.3	pCi/Filter				1	E903.0	02/06/08 11:08/eli-c
Thorium 230	3.3	pCi/Filter		0.2		1	E907.0	01/28/08 15:30/eli-c
Thorium 230 precision (±)	1.5	pCi/Filter				1	E907.0	01/28/08 15:30/eli-c

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: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08010193-009
 Client Sample ID: AMS-08

Report Date: 02/12/08
 Collection Date: 10/09/07
 Date Received: 01/17/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
METALS - TOTAL								
Uranium	ND	mg/filter	D	0.03		10	SW6020	02/05/08 21:38/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	21.9	pCi/Filter		1.0		1	E909.0M	02/01/08 08:30/eli-c
Lead 210 precision (±)	10.4	pCi/Filter				1	E909.0M	02/01/08 08:30/eli-c
Radium 226	1.6	pCi/Filter		0.2		1	E903.0	02/06/08 12:12/eli-c
Radium 226 precision (±)	0.7	pCi/Filter				1	E903.0	02/06/08 12:12/eli-c
Thorium 230	1.4	pCi/Filter		0.2		1	E907.0	01/28/08 15:30/eli-c
Thorium 230 precision (±)	0.9	pCi/Filter				1	E907.0	01/28/08 15:30/eli-c

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: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08010193-001
 Client Sample ID: BKG

Report Date: 02/12/08
 Collection Date: 10/09/07
 Date Received: 01/17/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS - TOTAL							
Uranium	ND	mg/filter	D	0.03		10	SW6020 02/05/08 20:52/elc
RADIONUCLIDES - TOTAL							
Lead 210	2550	pCi/Filter		1.0		1	E909.0M 02/01/08 08:30/elc
Lead 210 precision (±)	60.6	pCi/Filter				1	E909.0M 02/01/08 08:30/elc
Radium 226	3.2	pCi/Filter		0.2		1	E903.0 02/06/08 11:08/elc
Radium 226 precision (±)	1.0	pCi/Filter				1	E903.0 02/06/08 11:08/elc
Thorium 230	1.3	pCi/Filter		0.2		1	E907.0 01/28/08 15:30/elc
Thorium 230 precision (±)	0.8	pCi/Filter				1	E907.0 01/28/08 15:30/elc

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.



QA/QC Summary Report

Client: Environmental Restoration Group Inc.
 Project: Edgemont (Soils/Air filters)

Report Date: 02/12/08
 Work Order: R08010193

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8							Batch: C_17568		
Sample ID: MB-17568	Method Blank								
Uranium	2E-05	mg/L	1E-05						
Run: SUB-C96493									02/01/08 15:45
Sample ID: LCS1-17568	Laboratory Control Sample								
Uranium	0.0487	mg/L	0.00030	97	80	120			
Run: SUB-C96493									02/01/08 15:49
Sample ID: C08010900-005BMS4	Post Digestion Spike								
Uranium	0.0583	mg/L	0.00030	107	70	130			
Run: SUB-C96493									02/01/08 16:59
Sample ID: C08010900-005BMSD4	Post Digestion Spike Duplicate								
Uranium	0.0582	mg/L	0.00030	107	70	130	0.2	20	
Run: SUB-C96493									02/01/08 17:03
Method: E903.0							Batch: C_17568		
Sample ID: R08010193-001A	Sample Duplicate								
Radium 226	1.66	pCi/Filter	0.20				65	78.7	
Run: SUB-C96642									02/06/08 11:08
Sample ID: R08010193-008A	Sample Matrix Spike								
Radium 226	31.5	pCi/Filter	0.20	41	70	130			S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the RPD for the Duplicate are acceptable, the low response is considered to be matrix related. The batch is approved.									
Run: SUB-C96642									02/06/08 12:12
Sample ID: LCS-17568	Laboratory Control Sample								
Radium 226	14.5	pCi/Filter	0.20	114	70	130			
Run: SUB-C96642									02/06/08 12:12
Sample ID: MB-17568	Method Blank								
Radium 226	ND	pCi/Filter	0.2						
Run: SUB-C96642									02/06/08 12:12
Method: E907.0							Batch: C_17568		
Sample ID: R08010193-009A	Sample Matrix Spike								
Thorium 230	42.6	pCi/Filter	0.20	88	70	130			
Run: SUB-C96487									01/28/08 15:30
Sample ID: R08010193-009A	Sample Matrix Spike Duplicate								
Thorium 230	44.7	pCi/Filter	0.20	93	70	130	4.8	30	
Run: SUB-C96487									01/28/08 15:30
Sample ID: LCS-17568	Laboratory Control Sample								
Thorium 230	4.60	pCi/Filter	0.20	94	70	130			
Run: SUB-C96487									01/28/08 15:30
Sample ID: MB-17568	Method Blank								
Thorium 230	ND	pCi/Filter	0.2						
Run: SUB-C96487									01/28/08 15:30

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



QA/QC Summary Report

Client: Environmental Restoration Group Inc.
 Project: Edgemont (Soils/Air filters)

Report Date: 02/12/08
 Work Order: R08010193

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E909.0M							Batch: C_R96680		
Sample ID: R08010193-003A Lead 210	Sample Matrix Spike 3540	pCi/Filter	1.0	78	70	130			02/01/08 08:30
Sample ID: R08010193-003A Lead 210	Sample Matrix Spike Duplicate 3490	pCi/Filter	1.0	74	70	130	1.3	30	02/01/08 08:30
Sample ID: MB-R96680 Lead 210	Method Blank ND	pCi/Filter	1						02/01/08 08:30
Sample ID: LCS-R96680 Lead 210	Laboratory Control Sample 112	pCi/Filter	1.0	94	70	130			02/01/08 08:30
Method: SW6020							Batch: C_17568		
Sample ID: MB-17568 Uranium	Method Blank ND	mg/filter	0.003						02/05/08 19:17
Sample ID: LCS1-17568 Uranium	Laboratory Control Sample 0.0509	mg/kg	0.015	102	75	125			02/05/08 20:39
Sample ID: R08010193-009A Uranium	Sample Matrix Spike 0.545	mg/filter	0.030	109	75	125			02/05/08 22:05
Sample ID: R08010193-009A Uranium	Sample Matrix Spike Duplicate 0.558	mg/filter	0.030	112	75	125	2.4	20	02/05/08 22:12

Qualifiers:

RL - Analyte reporting limit

ND - Not detected at the reporting limit



ANALYTICAL SUMMARY REPORT

August 14, 2008

Michael Schierman
Environmental Restoration Group Inc
8809 Washington St NE
Albuquerque, NM 87113

Workorder No.: R08060209

Project Name: Edgemont (Soils/Air filters)

Energy Laboratories Inc. received the following 9 samples from Environmental Restoration Group Inc on 6/11/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
R08060209-001	AMS-01	03/08/08 0:00	06/11/08	Filter	Composite Fee Metals, Total Digestion, Total Metals For Radio Chemistry Lead 210 Radium 226 Thorium, Isotopic
R08060209-002	AMS-02	03/08/08 0:00	06/11/08	Filter	Same As Above
R08060209-003	AMS-03	03/08/08 0:00	06/11/08	Filter	Same As Above
R08060209-004	AMS-04	03/08/08 0:00	06/11/08	Filter	Same As Above
R08060209-005	AMS-05	03/08/08 0:00	06/11/08	Filter	Same As Above
R08060209-006	AMS-06	03/08/08 0:00	06/11/08	Filter	Same As Above
R08060209-007	AMS-07	03/08/08 0:00	06/11/08	Filter	Same As Above
R08060209-008	AMS-08	03/08/08 0:00	06/11/08	Filter	Same As Above
R08060209-009	AMS-BKG	03/08/08 0:00	06/11/08	Filter	Same As Above

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.

Report Approved By: 



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08060209-008
 Client Sample ID: AMS-08

Report Date: 08/14/08
 Collection Date: 03/08/08
 Date Received: 06/11/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
Uranium	0.0094	mg/filter		0.00030		5	SW6020	06/28/08 19:59/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	11.6	pCi/Filter	U			1	E909.0M	06/30/08 09:40/eli-c
Lead 210 MDC	24.6	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 precision (±)	14.8	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Thorium 230	0.5	pCi/Filter		0.2		1	E907.0	07/01/08 13:03/eli-c
Thorium 230 precision (±)	0.8	pCi/Filter				1	E907.0	07/01/08 13:03/eli-c
Radium 226	2.5	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c
Radium 226 precision (±)	1.3	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c
Radium 226 MDC	1.5	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08060209-001
 Client Sample ID: AMS-01

Report Date: 08/14/08
 Collection Date: 03/08/08
 Date Received: 06/11/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
Uranium	0.0072	mg/filter		0.00030		5	SW6020	06/28/08 19:31/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	2510	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 MDC	24.6	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 precision (±)	38.2	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Thorium 230	0.9	pCi/Filter		0.2		1	E907.0	06/30/08 21:30/eli-c
Thorium 230 precision (±)	0.9	pCi/Filter				1	E907.0	06/30/08 21:30/eli-c
Radium 226	4.6	pCi/Filter				1	E903.0	06/26/08 09:11/eli-c
Radium 226 precision (±)	1.5	pCi/Filter				1	E903.0	06/26/08 09:11/eli-c
Radium 226 MDC	1.4	pCi/Filter				1	E903.0	06/26/08 09:11/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

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



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08060209-002
Client Sample ID: AMS-02

Report Date: 08/14/08
Collection Date: 03/08/08
Date Received: 06/11/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/			Method	Analysis Date / By
				RL	QCL	DF		
Uranium	0.0057	mg/filter		0.00030		5	SW6020	06/28/08 19:35/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	1160	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 MDC	24.6	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 precision (±)	28.1	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Thorium 230	1.1	pCi/Filter		0.2		1	E907.0	07/01/08 13:03/eli-c
Thorium 230 precision (±)	1.2	pCi/Filter				1	E907.0	07/01/08 13:03/eli-c
Radium 226	1.4	pCi/Filter				1	E903.0	06/26/08 09:11/eli-c
Radium 226 precision (±)	1.0	pCi/Filter				1	E903.0	06/26/08 09:11/eli-c
Radium 226 MDC	1.4	pCi/Filter				1	E903.0	06/26/08 09:11/eli-c

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

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



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08060209-003
 Client Sample ID: AMS-03

Report Date: 08/14/08
 Collection Date: 03/08/08
 Date Received: 06/11/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
Uranium	0.0036	mg/filter		0.00030		5 SW6020	06/28/08 19:39/eli-c
RADIONUCLIDES - TOTAL							
Lead 210	1200	pCi/Filter				1 E909.0M	06/30/08 09:40/eli-c
Lead 210 MDC	24.6	pCi/Filter				1 E909.0M	06/30/08 09:40/eli-c
Lead 210 precision (±)	28.4	pCi/Filter				1 E909.0M	06/30/08 09:40/eli-c
Thorium 230	1.7	pCi/Filter		0.2		1 E907.0	07/01/08 13:03/eli-c
Thorium 230 precision (±)	1.3	pCi/Filter				1 E907.0	07/01/08 13:03/eli-c
Radium 226	0.7	pCi/Filter	U			1 E903.0	06/26/08 11:15/eli-c
Radium 226 precision (±)	1	pCi/Filter				1 E903.0	06/26/08 11:15/eli-c
Radium 226 MDC	1.5	pCi/Filter				1 E903.0	06/26/08 11:15/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08060209-004
 Client Sample ID: AMS-04

Report Date: 08/14/08
 Collection Date: 03/08/08
 Date Received: 06/11/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
Uranium	0.0048	mg/filter		0.00030		5	SW6020	06/28/08 19:43/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	1040	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 MDC	24.6	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 precision (±)	27.1	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Thorium 230	0.8	pCi/Filter		0.2		1	E907.0	07/01/08 13:03/eli-c
Thorium 230 precision (±)	1.0	pCi/Filter				1	E907.0	07/01/08 13:03/eli-c
Radium 226	-0.9	pCi/Filter	U			1	E903.0	06/26/08 11:15/eli-c
Radium 226 precision (±)	0.6	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c
Radium 226 MDC	1.2	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08060209-005
 Client Sample ID: AMS-05

Report Date: 08/14/08
 Collection Date: 03/08/08
 Date Received: 06/11/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/			Method	Analysis Date / By
				RL	QCL	DF		
Uranium	0.0096	mg/filter		0.00030		5	SW6020	06/28/08 19:47/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	1270	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 MDC	24.6	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 precision (±)	29.1	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Thorium 230	1.1	pCi/Filter		0.2		1	E907.0	07/01/08 13:03/eli-c
Thorium 230 precision (±)	1.1	pCi/Filter				1	E907.0	07/01/08 13:03/eli-c
Radium 226	3.9	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c
Radium 226 precision (±)	1.4	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c
Radium 226 MDC	1.4	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

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



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08060209-006
 Client Sample ID: AMS-06

Report Date: 08/14/08
 Collection Date: 03/08/08
 Date Received: 06/11/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/			Method	Analysis Date / By
				RL	QCL	DF		
Uranium	0.0067	mg/filter		0.00030		5	SW6020	06/28/08 19:51/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	775	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 MDC	24.6	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 precision (±)	24.5	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Thorium 230	1.7	pCi/Filter		0.2		1	E907.0	07/01/08 13:03/eli-c
Thorium 230 precision (±)	1.3	pCi/Filter				1	E907.0	07/01/08 13:03/eli-c
Radium 226	2.5	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c
Radium 226 precision (±)	1.2	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c
Radium 226 MDC	1.4	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

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



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08060209-007
 Client Sample ID: AMS-07

Report Date: 08/14/08
 Collection Date: 03/08/08
 Date Received: 06/11/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
Uranium	0.0071	mg/filter		0.00030		5	SW6020	06/28/08 19:55/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	1030	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 MDC	24.6	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 precision (±)	26.9	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Thorium 230	1.4	pCi/Filter		0.2		1	E907.0	07/01/08 13:03/eli-c
Thorium 230 precision (±)	1.0	pCi/Filter				1	E907.0	07/01/08 13:03/eli-c
Radium 226	0.6	pCi/Filter	U			1	E903.0	06/26/08 11:15/eli-c
Radium 226 precision (±)	0.8	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c
Radium 226 MDC	1.3	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08060209-009
 Client Sample ID: AMS-BKG

Report Date: 08/14/08
 Collection Date: 03/08/08
 Date Received: 06/11/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/			Method	Analysis Date / By
				RL	QCL	DF		
Uranium	0.0097	mg/filter		0.00030		5	SW6020	06/28/08 20:03/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	1040	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 MDC	24.6	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Lead 210 precision (±)	27.1	pCi/Filter				1	E909.0M	06/30/08 09:40/eli-c
Thorium 230	3.0	pCi/Filter		0.2		1	E907.0	07/01/08 13:03/eli-c
Thorium 230 precision (±)	1.4	pCi/Filter				1	E907.0	07/01/08 13:03/eli-c
Radium 226	1.8	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c
Radium 226 precision (±)	1.1	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c
Radium 226 MDC	1.5	pCi/Filter				1	E903.0	06/26/08 11:15/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

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



Chain of Custody and Analytical Request Record

PLEASE PRINT - Provide as much information as possible.

Company Name: Environmental Restoration Group		Project Name, PWS, Permit, Etc. Dewey, Burdock		Sample Origin State: S. Dakota	EPA/State Compliance: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Report Mail Address: 8809 Washington St NE, Suite 150		Contact Name: Michael Schierman	Phone/Fax: 505-278-4024	Email: mikeschierman@ergonline.com	Sampler: (Please Print) Mike Schierman	
Invoice Address: Albuquerque NM 87113		Invoice Contact & Phone: Same as above		Purchase Order: NA	Quote/Bottle Order: NA	
Special Report/Formats - ELI must be notified prior to sample submittal for the following: <input type="checkbox"/> DW <input type="checkbox"/> A2LA <input type="checkbox"/> GSA <input checked="" type="checkbox"/> EDD/EDT (Electronic Data) <input type="checkbox"/> POTW/WWTP Format: Excel <input type="checkbox"/> State: _____ <input type="checkbox"/> LEVEL IV <input type="checkbox"/> Other: _____ <input type="checkbox"/> NELAC			ANALYSIS REQUESTED		Contact ELI prior to RUSH sample submittal for charges and scheduling - See Instruction Page Shipped by: MJS Cooler ID(s): N/A Receipt Temp: Filters °C On Ice: Yes No Custody Seal Y N Intact Y N Signature Match Y N	
<input type="checkbox"/> Number of Containers <input type="checkbox"/> Sample Type: A W S V B O <input type="checkbox"/> Air/Water/Solids/Solids <input type="checkbox"/> Vegetation/Biosassay/Other			SEE ATTACHED Normal Turnaround (TAT) RUSH			
SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)		Collection Date	Collection Time	MATRIX	ANALYSIS REQUESTED	Please use entire filter composite LABORATORY USE ONLY 002A 003A 004A 005A 006A 007A 008A 009A
1 AMS-01		1/08 - 708	NA	0		
2 AMS-02						
3 AMS-03						
4 AMS-04						
5 AMS-05						
6 AMS-06						
7 AMS-07						
8 AMS-08						
9 AMS-BKG						
10						

Custody Record MUST be Signed	Relinquished by (print): Michael Schierman	Date/Time: 6/10/08	Signature: Michael Schierman	Received by (print): Steve Frit	Date/Time: 6/10/08 1100	Signature: Steve Frit
	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Sample Disposal: Return to Client: _____		Lab Disposal: _____		Accepted by Laboratory: _____		Date/Time: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report. Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ENERGY LABORATORIES, INC. • 2821 Plant St. Rapid City, SD 57702 • www.energylab.com
 Toll Free 888.672.1225 • Voice 605.342.1225 • Fax 605.342.1397 • Email rapid_city@energylab.com





LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08080024-001
 Client Sample ID: AMS-BKG

Report Date: 09/30/08
 Collection Date: 07/09/08
 Date Received: 08/04/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
Uranium	0.0065	mg/filter		0.00030		1	SW6020	08/13/08 01:25/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	1840	pCi/Filter				1	E909.0M	08/22/08 10:14/eli-c
Lead 210 MDC	56.1	pCi/Filter				1	E909.0M	08/22/08 10:14/eli-c
Lead 210 precision (±)	56.1	pCi/Filter				1	E909.0M	08/22/08 10:14/eli-c
Thorium 230	1.2	pCi/Filter		0.2		1	E907.0	08/22/08 10:30/eli-c
Thorium 230 precision (±)	1.0	pCi/Filter				1	E907.0	08/22/08 10:30/eli-c
Radium 226	1.2	pCi/Filter				1	E903.0	08/26/08 16:58/eli-c
Radium 226 precision (±)	0.8	pCi/Filter				1	E903.0	08/26/08 16:58/eli-c
Radium 226 MDC	1.2	pCi/Filter				1	E903.0	08/26/08 16:58/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

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



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08080024-002
Client Sample ID: AMS-01

Report Date: 09/30/08
Collection Date: 07/09/08
Date Received: 08/04/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
Uranium	0.0081	mg/filter		0.00030		1	SW6020	08/13/08 01:29/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	2820	pCi/Filter				1	E909.0M	08/22/08 10:14/eli-c
Lead 210 MDC	56.1	pCi/Filter				1	E909.0M	08/22/08 10:14/eli-c
Lead 210 precision (±)	65.1	pCi/Filter				1	E909.0M	08/22/08 10:14/eli-c
Thorium 230	2.7	pCi/Filter		0.2		1	E907.0	08/22/08 10:30/eli-c
Thorium 230 precision (±)	1.1	pCi/Filter				1	E907.0	08/22/08 10:30/eli-c
Radium 226	2.8	pCi/Filter				1	E903.0	08/26/08 16:58/eli-c
Radium 226 precision (±)	1.0	pCi/Filter				1	E903.0	08/26/08 16:58/eli-c
Radium 226 MDC	1.1	pCi/Filter				1	E903.0	08/26/08 16:58/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

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



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08080024-003
Client Sample ID: AMS-02

Report Date: 09/30/08
Collection Date: 07/09/08
Date Received: 08/04/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
Uranium	0.0043	mg/filter		0.00030		1 SW6020	08/13/08 01:33/eli-c
RADIONUCLIDES - TOTAL							
Lead 210	1210	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Lead 210 MDC	56.1	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Lead 210 precision (±)	49.5	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Thorium 230	1.0	pCi/Filter		0.2		1 E907.0	08/22/08 10:30/eli-c
Thorium 230 precision (±)	0.8	pCi/Filter				1 E907.0	08/22/08 10:30/eli-c
Radium 226	0.3	pCi/Filter	U			1 E903.0	08/27/08 09:21/eli-c
Radium 226 precision (±)	0.7	pCi/Filter				1 E903.0	08/27/08 09:21/eli-c
Radium 226 MDC	1.1	pCi/Filter				1 E903.0	08/27/08 09:21/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08080024-004
Client Sample ID: AMS-03

Report Date: 09/30/08
Collection Date: 07/09/08
Date Received: 08/04/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
Uranium	0.0071	mg/filter		0.00030		1	SW6020	08/13/08 01:53/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	1110	pCi/Filter				1	E909.0M	08/22/08 10:14/eli-c
Lead 210 MDC	56.1	pCi/Filter				1	E909.0M	08/22/08 10:14/eli-c
Lead 210 precision (±)	48.4	pCi/Filter				1	E909.0M	08/22/08 10:14/eli-c
Thorium 230	2.2	pCi/Filter		0.2		1	E907.0	08/22/08 10:30/eli-c
Thorium 230 precision (±)	1.0	pCi/Filter				1	E907.0	08/22/08 10:30/eli-c
Radium 226	2.2	pCi/Filter				1	E903.0	08/27/08 09:21/eli-c
Radium 226 precision (±)	1	pCi/Filter				1	E903.0	08/27/08 09:21/eli-c
Radium 226 MDC	1.2	pCi/Filter				1	E903.0	08/27/08 09:21/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

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



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08080024-005
Client Sample ID: AMS-04

Report Date: 09/30/08
Collection Date: 07/09/08
Date Received: 08/04/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
Uranium	0.0073	mg/filter		0.00030		5 SW6020	08/13/08 01:57/eli-c
RADIONUCLIDES - TOTAL							
Lead 210	1440	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Lead 210 MDC	56.1	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Lead 210 precision (±)	52.1	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Thorium 230	1.9	pCi/Filter		0.2		1 E907.0	08/22/08 10:30/eli-c
Thorium 230 precision (±)	1.0	pCi/Filter				1 E907.0	08/22/08 10:30/eli-c
Radium 226	2.5	pCi/Filter				1 E903.0	08/27/08 09:21/eli-c
Radium 226 precision (±)	1	pCi/Filter				1 E903.0	08/27/08 09:21/eli-c
Radium 226 MDC	1.1	pCi/Filter				1 E903.0	08/27/08 09:21/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

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



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08080024-006
 Client Sample ID: AMS-05

Report Date: 09/30/08
 Collection Date: 07/09/08
 Date Received: 08/04/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
Uranium	0.0086	mg/filter		0.00030		5	SW6020	08/13/08 02:02/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	1510	pCi/Filter				1	E909.0M	08/22/08 10:14/eli-c
Lead 210 MDC	56.1	pCi/Filter				1	E909.0M	08/22/08 10:14/eli-c
Lead 210 precision (±)	52.7	pCi/Filter				1	E909.0M	08/22/08 10:14/eli-c
Thorium 230	2.9	pCi/Filter		0.2		1	E907.0	08/22/08 10:30/eli-c
Thorium 230 precision (±)	1.1	pCi/Filter				1	E907.0	08/22/08 10:30/eli-c
Radium 226	2.8	pCi/Filter				1	E903.0	08/27/08 09:21/eli-c
Radium 226 precision (±)	1.0	pCi/Filter				1	E903.0	08/27/08 09:21/eli-c
Radium 226 MDC	1.1	pCi/Filter				1	E903.0	08/27/08 09:21/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

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



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08080024-007
Client Sample ID: AMS-06

Report Date: 09/30/08
Collection Date: 07/09/08
Date Received: 08/04/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
Uranium	0.0067	mg/filter		0.00030		5 SW6020	08/13/08 02:06/eli-c
RADIONUCLIDES - TOTAL							
Lead 210	1390	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Lead 210 MDC	56.1	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Lead 210 precision (±)	51.5	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Thorium 230	1.7	pCi/Filter		0.2		1 E907.0	08/22/08 10:30/eli-c
Thorium 230 precision (±)	1.1	pCi/Filter				1 E907.0	08/22/08 10:30/eli-c
Radium 226	0.2	pCi/Filter	U			1 E903.0	08/27/08 09:21/eli-c
Radium 226 precision (±)	0.7	pCi/Filter				1 E903.0	08/27/08 09:21/eli-c
Radium 226 MDC	1.2	pCi/Filter				1 E903.0	08/27/08 09:21/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08080024-008
Client Sample ID: AMS-07

Report Date: 09/30/08
Collection Date: 07/09/08
Date Received: 08/04/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
Uranium	0.0080	mg/filter		0.00030		5 SW6020	08/13/08 02:10/eli-c
RADIONUCLIDES - TOTAL							
Lead 210	1960	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Lead 210 MDC	56.1	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Lead 210 precision (±)	57.3	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Thorium 230	2.2	pCi/Filter		0.2		1 E907.0	08/22/08 10:30/eli-c
Thorium 230 precision (±)	1.0	pCi/Filter				1 E907.0	08/22/08 10:30/eli-c
Radium 226	0.8	pCi/Filter	U			1 E903.0	08/27/08 09:21/eli-c
Radium 226 precision (±)	0.8	pCi/Filter				1 E903.0	08/27/08 09:21/eli-c
Radium 226 MDC	1.1	pCi/Filter				1 E903.0	08/27/08 09:21/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08080024-009
Client Sample ID: AMS-08

Report Date: 09/30/08
Collection Date: 07/09/08
Date Received: 08/04/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
Uranium	0.0034	mg/filter		0.00030		1 SW6020	08/13/08 02:14/eli-c
RADIONUCLIDES - TOTAL							
Lead 210	23.9	pCi/Filter	U			1 E909.0M	08/22/08 10:14/eli-c
Lead 210 MDC	56.1	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Lead 210 precision (±)	33.8	pCi/Filter				1 E909.0M	08/22/08 10:14/eli-c
Thorium 230	1.0	pCi/Filter		0.2		1 E907.0	08/22/08 10:30/eli-c
Thorium 230 precision (±)	0.7	pCi/Filter				1 E907.0	08/22/08 10:30/eli-c
Radium 226	0.9	pCi/Filter	U			1 E903.0	08/27/08 09:21/eli-c
Radium 226 precision (±)	0.8	pCi/Filter				1 E903.0	08/27/08 09:21/eli-c
Radium 226 MDC	1.1	pCi/Filter				1 E903.0	08/27/08 09:21/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08090099-001
Client Sample ID: AMS-1

Report Date: 10/16/08
Collection Date: 08/13/08
Date Received: 09/08/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
Uranium	0.00056	mg/filter		0.00030		1 SW6020	09/30/08 20:13/eli-c
RADIONUCLIDES - TOTAL							
Lead 210	497	pCi/Filter				1 E909.0M	10/01/08 08:40/eli-c
Lead 210 MDC	31.3	pCi/Filter				1 E909.0M	10/01/08 08:40/eli-c
Lead 210 precision (±)	25.2	pCi/Filter				1 E909.0M	10/01/08 08:40/eli-c
Thorium 230	0.8	pCi/Filter	U	0.2		1 E907.0	10/12/08 13:45/eli-c
Thorium 230 precision (±)	1.1	pCi/Filter				1 E907.0	10/12/08 13:45/eli-c
Radium 226	-1	pCi/Filter	U			1 E903.0	10/07/08 17:20/eli-c
Radium 226 precision (±)	1.2	pCi/Filter				1 E903.0	10/07/08 17:20/eli-c
Radium 226 MDC	2.6	pCi/Filter				1 E903.0	10/07/08 17:20/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08090099-002
Client Sample ID: AMS-2

Report Date: 10/16/08
Collection Date: 08/13/08
Date Received: 09/08/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
Uranium	0.00078	mg/filter		0.00030		1 SW6020	09/30/08 20:17/eli-c
RADIONUCLIDES - TOTAL							
Lead 210	752	pCi/Filter				1 E909.0M	10/01/08 08:40/eli-c
Lead 210 MDC	31.3	pCi/Filter				1 E909.0M	10/01/08 08:40/eli-c
Lead 210 precision (±)	27.9	pCi/Filter				1 E909.0M	10/01/08 08:40/eli-c
Thorium 230	0.5	pCi/Filter		0.2		1 E907.0	09/30/08 16:00/eli-c
Thorium 230 precision (±)	0.2	pCi/Filter				1 E907.0	09/30/08 16:00/eli-c
Radium 226	-2	pCi/Filter	U			1 E903.0	10/07/08 17:20/eli-c
Radium 226 precision (±)	1.1	pCi/Filter				1 E903.0	10/07/08 17:20/eli-c
Radium 226 MDC	2.7	pCi/Filter				1 E903.0	10/07/08 17:20/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08090099-003
Client Sample ID: AMS-3

Report Date: 10/16/08
Collection Date: 08/13/08
Date Received: 09/08/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
Uranium	0.00056	mg/filter		0.00030		1 SW6020	09/30/08 20:21/eli-c
RADIONUCLIDES - TOTAL							
Lead 210	579	pCi/Filter				1 E909.0M	10/01/08 08:40/eli-c
Lead 210 MDC	31.3	pCi/Filter				1 E909.0M	10/01/08 08:40/eli-c
Lead 210 precision (±)	26.1	pCi/Filter				1 E909.0M	10/01/08 08:40/eli-c
Thorium 230	1.4	pCi/Filter		0.2		1 E907.0	09/30/08 16:00/eli-c
Thorium 230 precision (±)	0.3	pCi/Filter				1 E907.0	09/30/08 16:00/eli-c
Radium 226	0.3	pCi/Filter	U			1 E903.0	10/07/08 17:20/eli-c
Radium 226 precision (±)	1.4	pCi/Filter				1 E903.0	10/07/08 17:20/eli-c
Radium 226 MDC	2.4	pCi/Filter				1 E903.0	10/07/08 17:20/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08090099-004
Client Sample ID: AMS-4

Report Date: 10/16/08
Collection Date: 08/13/08
Date Received: 09/08/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
Uranium	0.0016	mg/filter		0.00030		1 SW6020	09/30/08 20:25/eli-c
RADIONUCLIDES - TOTAL							
Lead 210	650	pCi/Filter				1 E909.0M	10/01/08 08:40/eli-c
Lead 210 MDC	31.3	pCi/Filter				1 E909.0M	10/01/08 08:40/eli-c
Lead 210 precision (±)	26.9	pCi/Filter				1 E909.0M	10/01/08 08:40/eli-c
Thorium 230	1.8	pCi/Filter		0.2		1 E907.0	09/30/08 16:00/eli-c
Thorium 230 precision (±)	0.3	pCi/Filter				1 E907.0	09/30/08 16:00/eli-c
Radium 226	0.2	pCi/Filter	U			1 E903.0	10/07/08 17:20/eli-c
Radium 226 precision (±)	1.5	pCi/Filter				1 E903.0	10/07/08 17:20/eli-c
Radium 226 MDC	2.6	pCi/Filter				1 E903.0	10/07/08 17:20/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Edgemont (Soils/Air filters)
 Lab ID: R08090099-005
 Client Sample ID: AMS-5

Report Date: 10/16/08
 Collection Date: 08/13/08
 Date Received: 09/08/08
 Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
Uranium	0.0034	mg/filter		0.00030		1	SW6020	09/30/08 20:29/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	552	pCi/Filter				1	E909.0M	10/01/08 08:40/eli-c
Lead 210 MDC	31.3	pCi/Filter				1	E909.0M	10/01/08 08:40/eli-c
Lead 210 precision (±)	25.7	pCi/Filter				1	E909.0M	10/01/08 08:40/eli-c
Thorium 230	3.2	pCi/Filter		0.2		1	E907.0	09/30/08 16:00/eli-c
Thorium 230 precision (±)	0.3	pCi/Filter				1	E907.0	09/30/08 16:00/eli-c
Radium 226	1.5	pCi/Filter	U			1	E903.0	10/07/08 17:20/eli-c
Radium 226 precision (±)	1.6	pCi/Filter				1	E903.0	10/07/08 17:20/eli-c
Radium 226 MDC	2.4	pCi/Filter				1	E903.0	10/07/08 17:20/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08090099-006
Client Sample ID: AMS-6

Report Date: 10/16/08
Collection Date: 08/13/08
Date Received: 09/08/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
Uranium	0.0015	mg/filter		0.00030		1	SW6020	09/30/08 20:33/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	998	pCi/Filter				1	E909.0M	10/01/08 08:40/eli-c
Lead 210 MDC	31.3	pCi/Filter				1	E909.0M	10/01/08 08:40/eli-c
Lead 210 precision (±)	30.4	pCi/Filter				1	E909.0M	10/01/08 08:40/eli-c
Thorium 230	.15	pCi/Filter		0.2		1	E907.0	09/30/08 16:00/eli-c
Thorium 230 precision (±)	0.3	pCi/Filter				1	E907.0	09/30/08 16:00/eli-c
Radium 226	0.8	pCi/Filter	U			1	E903.0	10/07/08 17:20/eli-c
Radium 226 precision (±)	1.6	pCi/Filter				1	E903.0	10/07/08 17:20/eli-c
Radium 226 MDC	2.5	pCi/Filter				1	E903.0	10/07/08 17:20/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08090099-007
Client Sample ID: AMS-7

Report Date: 10/16/08
Collection Date: 08/13/08
Date Received: 09/08/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
Uranium	0.0016	mg/filter		0.00030		1	SW6020	09/30/08 20:37/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	696	pCi/Filter				1	E909.0M	10/01/08 08:40/eli-c
Lead 210 MDC	31.3	pCi/Filter				1	E909.0M	10/01/08 08:40/eli-c
Lead 210 precision (±)	27.4	pCi/Filter				1	E909.0M	10/01/08 08:40/eli-c
Thorium 230	1.4	pCi/Filter		0.2		1	E907.0	09/30/08 16:00/eli-c
Thorium 230 precision (±)	0.3	pCi/Filter				1	E907.0	09/30/08 16:00/eli-c
Radium 226	1.2	pCi/Filter	U			1	E903.0	10/07/08 17:20/eli-c
Radium 226 precision (±)	1.6	pCi/Filter				1	E903.0	10/07/08 17:20/eli-c
Radium 226 MDC	2.5	pCi/Filter				1	E903.0	10/07/08 17:20/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08090099-008
Client Sample ID: AMS-BKG

Report Date: 10/16/08
Collection Date: 08/13/08
Date Received: 09/08/08
Matrix: FILTER

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
Uranium	0.0011	mg/filter		0.00030		1	SW6020	09/30/08 20:41/eli-c
RADIONUCLIDES - TOTAL								
Lead 210	606	pCi/Filter				1	E909.0M	10/01/08 08:40/eli-c
Lead 210 MDC	31.3	pCi/Filter				1	E909.0M	10/01/08 08:40/eli-c
Lead 210 precision (±)	26.4	pCi/Filter				1	E909.0M	10/01/08 08:40/eli-c
Thorium 230	1.7	pCi/Filter		0.2		1	E907.0	09/30/08 16:00/eli-c
Thorium 230 precision (±)	0.3	pCi/Filter				1	E907.0	09/30/08 16:00/eli-c
Radium 226	-0.4	pCi/Filter	U			1	E903.0	10/07/08 18:55/eli-c
Radium 226 precision (±)	1.1	pCi/Filter				1	E903.0	10/07/08 18:55/eli-c
Radium 226 MDC	2.0	pCi/Filter				1	E903.0	10/07/08 18:55/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration

ANALYTICAL SUMMARY REPORT

December 14, 2007

Michael Schierman
Environmental Restoration Group Inc
8809 Washington St NE
Albuquerque, NM 87113

Workorder No.: R07100004

Project Name: Dewey Burdock Baseline Soil Sampling

Energy Laboratories Inc. received the following 118 samples from Environmental Restoration Group Inc on 9/29/2007 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
R07100004-001	SMA-B01	09/24/07 0:00	09/29/07	Soil	Metals, Total Digestion, Total Metals For Radio Chemistry Gross Gamma Lead 210 Radium 226 Thorium, Isotopic
R07100004-002	SMA-B01Dup	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-003	SMA-B03	09/24/07 0:00	09/29/07	Soil	Gross Gamma
R07100004-004	SMA-B04	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-005	SMA-B07	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-006	SMA-B09	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-007	SMA-B09Dup	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-008	SMA-B10	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-009	SMA-B11	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-010	SMA-B13	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-011	SMA-B14	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-012	SMA-B14Dup	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-013	SMA-B15	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-014	SMA-B16	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-015	SMA-B17	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-016	SMA-B18	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-017	SMA-B18Dup	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-018	SMA-B19	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-019	SMA-B20	09/27/07 0:00	09/29/07	Soil	Same As Above
R07100004-020	SMA-B21	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-021	SMA-B22	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-022	SMA-B23	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-023	SMA-B23Dup	09/24/07 0:00	09/29/07	Soil	Same As Above

R07100004-024	SMA-B24	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-025	SMA-B25	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-026	SMA-B26	09/28/07 0:00	09/29/07	Soil	Same As Above
R07100004-027	SMA-B27	09/28/07 0:00	09/29/07	Soil	Metals, Total Digestion, Total Metals For Radio Chemistry Gross Gamma Lead 210 Radium 226 Thorium, Isotopic
R07100004-028	SMA-B28	09/28/07 0:00	09/29/07	Soil	Gross Gamma
R07100004-029	SMA-B29	09/28/07 0:00	09/29/07	Soil	Metals, Total Digestion, Total Metals For Radio Chemistry Gross Gamma Lead 210 Radium 226 Thorium, Isotopic
R07100004-030	SMA-B30	09/28/07 0:00	09/29/07	Soil	Gross Gamma
R07100004-031	MPA-R01	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-032	MPA-R02	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-033	MPA-R03	09/24/07 0:00	09/29/07	Soil	Metals, Total Digestion, Total Metals For Radio Chemistry Gross Gamma Lead 210 Radium 226 Thorium, Isotopic
R07100004-034	MPA-R04	09/24/07 0:00	09/29/07	Soil	Gross Gamma
R07100004-035	MPA-R04Dup	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-036	MPA-R05	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-037	NEA-R01	09/24/07 0:00	09/29/07	Soil	Metals, Total Digestion, Total Metals For Radio Chemistry Gross Gamma Lead 210 Radium 226 Thorium, Isotopic
R07100004-038	NEA-R02	09/24/07 0:00	09/29/07	Soil	Gross Gamma
R07100004-039	NEA-R03	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-040	NEA-R04	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-041	NEA-R04Dup	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-042	NEA-R05	09/24/07 0:00	09/29/07	Soil	Same As Above
R07100004-043	AMS-1	09/27/07 0:00	09/29/07	Soil	Metals, Total Digestion, Total Metals For Radio Chemistry Gross Gamma Lead 210 Radium 226 Thorium, Isotopic
R07100004-044	AMS-2	09/27/07 0:00	09/29/07	Soil	Same As Above
R07100004-045	AMS-3	09/27/07 0:00	09/29/07	Soil	Same As Above
R07100004-046	AMS-4	09/27/07 0:00	09/29/07	Soil	Same As Above

R07100004-047 AMS-5	09/27/07 0:00	09/29/07	Soil	Same As Above
R07100004-048 AMS-6	09/27/07 0:00	09/29/07	Soil	Same As Above
R07100004-049 AMS-7	09/27/07 0:00	09/29/07	Soil	Same As Above
R07100004-050 AMS-BKG	09/27/07 0:00	09/29/07	Soil	Same As Above
R07100004-051 MPA-B01	09/25/07 0:00	09/29/07	Soil	Gross Gamma
R07100004-052 MPA-B02	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-053 MPA-B03	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-054 RFA-B01A	09/26/07 0:00	09/29/07	Soil	Metals, Total Digestion, Total Metals For Radio Chemistry Gross Gamma Lead 210 Radium 226 Thorium, Isotopic
R07100004-055 RFA-B01B	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-056 RFA-B01C	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-057 RFA-B01ADup	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-058 RFA-B01BDup	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-059 RFA-B01CDup	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-060 RFA-B02A	09/26/07 0:00	09/29/07	Soil	Gross Gamma
R07100004-061 RFA-B02B	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-062 RFA-B02C	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-063 RFA-B03	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-064 RFA-B04	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-065 RFA-B06	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-066 RFA-B07	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-067 RFA-B08	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-068 RFA-B08Dup	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-069 RFA-B09	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-070 RFA-B10	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-071 RFA-B11	09/25/07 0:00	09/29/07	Soil	Metals, Total Digestion, Total Metals For Radio Chemistry Gross Gamma Lead 210 Radium 226 Thorium, Isotopic
R07100004-072 RFA-B12	09/25/07 0:00	09/29/07	Soil	Gross Gamma
R07100004-073 RFA-B13A	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-074 RFA-B13B	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-075 RFA-B13C	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-076 RFA-B14	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-077 RFA-B15A	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-078 RFA-B15B	09/26/07 0:00	09/29/07	Soil	Same As Above

R07100004-079 RFA-B15C	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-080 RFA-B16	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-081 RFA-B17A	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-082 RFA-B17B	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-083 RFA-B17C	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-084 RFA-B18	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-085 RFA-B19	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-086 RFA-B20	09/25/07 0:00	09/29/07	Soil	Metals, Total Digestion, Total Metals For Radio Chemistry Gross Gamma Lead 210 Radium 226 Thorium, Isotopic
R07100004-087 RFA-B21A	09/26/07 0:00	09/29/07	Soil	Gross Gamma
R07100004-088 RFA-B21B	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-089 RFA-B21C	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-090 RFA-B22	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-091 RFA-B23	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-092 RFA-B24	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-093 RFA-B25	09/25/07 0:00	09/29/07	Soil	Metals, Total Digestion, Total Metals For Radio Chemistry Gross Gamma Lead 210 Radium 226 Thorium, Isotopic
R07100004-094 RFA-B26	09/25/07 0:00	09/29/07	Soil	Gross Gamma
R07100004-095 RFA-B27	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-096 RFA-B28	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-097 RFA-B28Dup	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-098 RFA-B29	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-099 RFA-B30A	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-100 RFA-B30B	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-101 RFA-B30C	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-102 RFA-B31	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-103 RFA-B33	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-104 RFA-B34	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-105 RFA-B35	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-106 RFA-B36A	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-107 RFA-B36B	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-108 RFA-B36C	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-109 RFA-B37A	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-110 RFA-B37B	09/26/07 0:00	09/29/07	Soil	Same As Above

R07100004-111 RFA-B37C	09/26/07 0:00	09/29/07	Soil	Same As Above
R07100004-112 RFA-B38	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-113 RFA-B39	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-114 RFA-B40	09/25/07 0:00	09/29/07	Soil	Metals, Total Digestion, Total Metals For Radio Chemistry Gross Gamma Lead 210 Radium 226 Thorium, Isotopic
R07100004-115 RFA-B41	09/25/07 0:00	09/29/07	Soil	Gross Gamma
R07100004-116 RFA-B43	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-117 RFA-B44	09/25/07 0:00	09/29/07	Soil	Same As Above
R07100004-118 RFA-B45	09/25/07 0:00	09/29/07	Soil	Same As Above

Thank you for submitting your samples to Energy Laboratories, Inc. - Rapid City. The following pages contain the results of the sample tests listed above and applicable analytical notes.

The samples were analyzed in accordance with the methods specified on the analytical reports. All analyses were accompanied by appropriate quality control samples throughout the test. Where applicable, the results of these quality control samples will be included, following your analytical data.

If you have any questions regarding the analyses performed or the results of these analyses, please contact Energy Laboratories Inc. - Rapid City at (605) 342-1225, (888) 672-1225 or Rapid_City@energylab.com.

Report Approved By: _____

Linda Larson
Rapid City - Project Manager

LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline Soil Sampling
Workorder: R07100004

Report Date: 12/14/07
Date Received: 09/29/07

Sample ID	Client Sample ID	Analysis	Uranium	Pb210	Pb210 ±	Ra226	Ra226 ±	Th230	Th230 ±	Ra226	Ra226 ±	
		Units	Activity	uCi/g-dry	uCi/g-dry	Chemical	Chemical	uCi/g-dry	uCi/g-dry	Gamma	Gamma	
		Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	
R07100004-001	SMA-B01	1.2E-06	6.0E-07	1.0E-07	9.0E-07	2.0E-07	5.0E-07	1.0E-07	9.0E-07	2.0E-07	1.4E-06	3.0E-07
R07100004-002	SMA-B01Dup	1.5E-06	2.0E-06	2.0E-07	1.0E-06	2.0E-07	6.0E-07	1.0E-07	1.4E-06	2.0E-07	1.5E-06	2.0E-07
R07100004-003	SMA-B03								1.0E-06	2.0E-07	1.0E-06	2.0E-07
R07100004-004	SMA-B04								3.2E-06	3.0E-07	1.2E-06	2.0E-07
R07100004-005	SMA-B07								1.7E-06	2.0E-07	1.4E-06	2.0E-07
R07100004-006	SMA-B09								2.3E-06	3.0E-07	1.7E-06	2.0E-07
R07100004-007	SMA-B09Dup								1.4E-06	2.0E-07	8.0E-07	2.0E-07
R07100004-008	SMA-B10								9.0E-07	2.0E-07	9.0E-07	2.0E-07
R07100004-009	SMA-B11								1.0E-06	2.0E-07	1.0E-06	2.0E-07
R07100004-010	SMA-B13								5.0E-07	1.0E-07	4.0E-07	1.0E-07
R07100004-011	SMA-B14								1.2E-06	2.0E-07	9.0E-07	2.0E-07
R07100004-012	SMA-B14Dup								2.8E-06	3.0E-07	1.3E-06	2.0E-07
R07100004-013	SMA-B15								1.0E-06	2.0E-07	1.0E-06	2.0E-07
R07100004-014	SMA-B16								1.1E-05	5.0E-07	4.0E-05	1.1E-06
R07100004-015	SMA-B17								4.0E-05	1.1E-06	6.4E-06	4.0E-07
R07100004-016	SMA-B18								2.9E-05	9.0E-07	3.4E-05	9.0E-07
R07100004-017	SMA-B18Dup								1.4E-06	2.0E-07	1.4E-06	2.0E-07
R07100004-018	SMA-B19								8.0E-07	2.0E-07	2.7E-06	3.0E-07
R07100004-019	SMA-B20								2.8E-06	3.0E-07	2.8E-06	3.0E-07
R07100004-020	SMA-B21								1.3E-06	2.0E-07	1.3E-06	2.0E-07
R07100004-021	SMA-B22								8.0E-07	2.0E-07	2.7E-06	3.0E-07
R07100004-022	SMA-B23								2.8E-06	3.0E-07	2.8E-06	3.0E-07
R07100004-023	SMA-B23Dup								1.3E-06	2.0E-07	1.3E-06	2.0E-07
R07100004-024	SMA-B24								1.0E-06	2.0E-07	1.0E-06	2.0E-07
R07100004-025	SMA-B25								1.1E-05	5.0E-07	4.0E-05	1.1E-06
R07100004-026	SMA-B26								4.0E-05	1.1E-06	6.4E-06	4.0E-07
R07100004-027	SMA-B27	6.7E-05	3.0E-05	8.0E-07	3.0E-05	1.0E-06	3.0E-05	8.0E-07	2.9E-05	9.0E-07	3.4E-05	9.0E-07
R07100004-028	SMA-B28								1.4E-06	2.0E-07	1.4E-06	2.0E-07
R07100004-029	SMA-B29	1.6E-05	2.0E-05	7.0E-07	2.0E-05	8.0E-07	2.0E-05	6.0E-07	2.6E-06	3.0E-07	2.6E-06	3.0E-07
R07100004-030	SMA-B30								1.1E-06	2.0E-07	1.1E-06	2.0E-07
R07100004-031	MPA-R01								9.0E-07	2.0E-07	8.0E-07	2.0E-07
R07100004-032	MPA-R02								8.0E-07	2.0E-07	1.2E-06	2.0E-07
R07100004-033	MPA-R03	7.5E-07	7.0E-07	1.0E-07	8.0E-07	2.0E-07	4.0E-07	1.0E-07	1.1E-06	2.0E-07	1.1E-06	2.0E-07
R07100004-034	MPA-R04								9.0E-07	2.0E-07	8.0E-07	2.0E-07
R07100004-035	MPA-R04Dup								8.0E-07	2.0E-07	1.2E-06	2.0E-07
R07100004-036	MPA-R05								1.1E-06	2.0E-07	1.1E-06	2.0E-07
R07100004-037	NEA-R01	9.1E-07	7.0E-07	2.0E-07	9.0E-07	2.0E-07	6.0E-07	1.0E-07	1.3E-06	2.0E-07	2.2E-06	3.0E-07
R07100004-038	NEA-R02								2.2E-06	3.0E-07	2.3E-06	3.0E-07
R07100004-039	NEA-R03								2.3E-06	3.0E-07	2.3E-06	3.0E-07
R07100004-040	NEA-R04								2.5E-06	3.0E-07	2.5E-06	3.0E-07
R07100004-041	NEA-R04Dup								2.5E-06	3.0E-07	2.5E-06	3.0E-07

LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline Soil Sampling
 Workorder: R07100004

Report Date: 12/14/07
 Date Received: 09/29/07

Sample ID	Client Sample ID	Analysis	Uranium	Pb210	Pb210 ±	Ra226	Ra226 ±	Th230	Th230 ±	Ra226	Ra226 ±
		Units	Activity			Chemical	Chemical			Gamma	Gamma
			uCi/g-dry	uCi/g-dry	uCi/g-dry	uCi/g-dry	uCi/g-dry	uCi/g-dry	uCi/g-dry	uCi/g-dry	uCi/g-dry
		Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
R07100004-042	NEA-R03									2.8E-06	3.0E-07
R07100004-043	AMS-1	9.6E-07	2.0E-06	3.0E-07	7.0E-07	2.0E-07	4.0E-07	1.0E-07	1.4E-06	2.0E-07	
R07100004-044	AMS-2	9.5E-07	3.0E-06	3.0E-07	1.0E-06	2.0E-07	5.0E-07	1.0E-07	1.1E-06	2.0E-07	
R07100004-045	AMS-3	8.2E-07	2.0E-06	2.0E-07	1.0E-06	2.0E-07	4.0E-07	1.0E-07	1.5E-06	2.0E-07	
R07100004-046	AMS-4	1.4E-06	2.0E-06	2.0E-07	7.0E-07	1.0E-07	8.0E-07	2.0E-07	1.5E-06	3.0E-07	
R07100004-047	AMS-5	6.8E-07	2.0E-06	2.0E-07	8.0E-07	2.0E-07	6.0E-07	1.0E-07	1.3E-06	3.0E-07	
R07100004-048	AMS-6	5.5E-07	1.0E-06	2.0E-07	3.0E-07	1.0E-07	4.0E-07	1.0E-07	8.0E-07	2.0E-07	
R07100004-049	AMS-7	5.8E-07	2.0E-06	2.0E-07	3.0E-07	1.0E-07	3.0E-07	8.0E-08	1.1E-06	2.0E-07	
R07100004-050	AMS-BKG	1.9E-06	2.0E-06	2.0E-07	1.0E-06	2.0E-07	9.0E-07	1.0E-07	2.4E-06	4.0E-07	
R07100004-051	MPA-B01								1.4E-06	3.0E-07	
R07100004-052	MPA-B02								1.1E-06	2.0E-07	
R07100004-053	MPA-B03								1.3E-06	3.0E-07	
R07100004-054	RFA-B01A	8.7E-07	1.0E-06	2.0E-07	7.0E-07	1.0E-07	7.0E-07	1.0E-07	1.2E-06	2.0E-07	
R07100004-055	RFA-B01B	1.1E-06	2.0E-06	2.0E-07	1.0E-06	2.0E-07	9.0E-07	2.0E-07	1.7E-06	2.0E-07	
R07100004-056	RFA-B01C	1.5E-06	6.0E-07	1.0E-07	1.0E-06	2.0E-07	8.0E-07	1.0E-07	1.2E-06	2.0E-07	
R07100004-057	RFA-B01ADup	9.0E-07	8.0E-07	1.0E-07	1.0E-06	2.0E-07	7.0E-07	1.0E-07	1.1E-06	2.0E-07	
R07100004-058	RFA-B01BDup	9.9E-07	8.0E-07	2.0E-07	1.0E-06	2.0E-07	9.0E-07	2.0E-07	1.5E-06	2.0E-07	
R07100004-059	RFA-B01CDup	1.3E-06	1.0E-06	2.0E-07	1.0E-06	2.0E-07	1.0E-06	2.0E-07	1.7E-06	3.0E-07	
R07100004-060	RFA-B02A								1.1E-06	2.0E-07	
R07100004-061	RFA-B02B								9.0E-07	2.0E-07	
R07100004-062	RFA-B02C								9.0E-07	2.0E-07	
R07100004-063	RFA-B03								1.5E-06	3.0E-07	
R07100004-064	RFA-B04								1.1E-06	2.0E-07	
R07100004-065	RFA-B06								1.7E-06	2.0E-07	
R07100004-066	RFA-B07								9.0E-07	2.0E-07	
R07100004-067	RFA-B08								1.1E-06	2.0E-07	
R07100004-068	RFA-B08Dup								1.1E-06	2.0E-07	
R07100004-069	RFA-B09								1.0E-06	2.0E-07	
R07100004-070	RFA-B10								1.8E-06	3.0E-07	
R07100004-071	RFA-B11	8.8E-07	1.0E-06	2.0E-07	9.0E-07	2.0E-07	5.0E-07	1.0E-07	1.0E-06	2.0E-07	
R07100004-072	RFA-B12								1.8E-06	3.0E-07	
R07100004-073	RFA-B13A								1.6E-06	2.0E-07	
R07100004-074	RFA-B13B								1.8E-06	2.0E-07	
R07100004-075	RFA-B13C								1.6E-06	2.0E-07	
R07100004-076	RFA-B14								1.7E-06	3.0E-07	
R07100004-077	RFA-B15A								1.4E-06	3.0E-07	
R07100004-078	RFA-B15B								1.5E-06	2.0E-07	
R07100004-079	RFA-B15C								1.5E-06	3.0E-07	
R07100004-080	RFA-B16								9.0E-07	2.0E-07	
R07100004-081	RFA-B17A								2.0E-06	3.0E-07	
R07100004-082	RFA-B17B								2.2E-06	3.0E-07	

LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline Soil Sampling
 Workorder: R07100004

Report Date: 12/14/07
 Date Received: 09/29/07

Sample ID	Client Sample ID	Analysis	Uranium	Pb210	Pb210 ±	Ra226	Ra226 ±	Th230	Th230 ±	Ra226	Ra226 ±
		Units	Activity			Chemical	Chemical			Gamma	Gamma
			uCi/g-dry	uCi/g-dry	uCi/g-dry	uCi/g-dry	uCi/g-dry	uCi/g-dry	uCi/g-dry	uCi/g-dry	uCi/g-dry
		Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
R07100004-083	RFA-B17C									2.5E-06	3.0E-07
R07100004-084	RFA-B18									1.7E-06	3.0E-07
R07100004-085	RFA-B19									1.2E-06	2.0E-07
R07100004-086	RFA-B20	8.8E-07	1.0E-06	2.0E-07	6.0E-07	1.0E-07	5.0E-07	1.0E-07		1.3E-06	3.0E-07
R07100004-087	RFA-B21A									5.3E-06	4.0E-07
R07100004-088	RFA-B21B									1.3E-06	2.0E-07
R07100004-089	RFA-B21C									1.2E-06	2.0E-07
R07100004-090	RFA-B22									1.5E-06	2.0E-07
R07100004-091	RFA-B23									3.6E-06	4.0E-07
R07100004-092	RFA-B24									1.3E-06	2.0E-07
R07100004-093	RFA-B25	6.7E-07	1.0E-06	2.0E-07	6.0E-07	1.0E-07	4.0E-07	1.0E-07		1.2E-06	2.0E-07
R07100004-094	RFA-B26									1.1E-06	2.0E-07
R07100004-095	RFA-B27									1.5E-06	2.0E-07
R07100004-096	RFA-B28									2.4E-06	3.0E-07
R07100004-097	RFA-B28Dup									1.8E-06	3.0E-07
R07100004-098	RFA-B29									1.7E-06	3.0E-07
R07100004-099	RFA-B30A									1.8E-06	2.0E-07
R07100004-100	RFA-B30B									2.1E-06	3.0E-07
R07100004-101	RFA-B30C									1.7E-06	3.0E-07
R07100004-102	RFA-B31									1.3E-06	2.0E-07
R07100004-103	RFA-B33									9.0E-07	2.0E-07
R07100004-104	RFA-B34									1.0E-06	2.0E-07
R07100004-105	RFA-B35									1.2E-06	2.0E-07
R07100004-106	RFA-B36A									1.0E-06	2.0E-07
R07100004-107	RFA-B36B									1.1E-06	2.0E-07
R07100004-108	RFA-B36C									1.0E-06	2.0E-07
R07100004-109	RFA-B37A									9.0E-07	2.0E-07
R07100004-110	RFA-B37B									7.0E-07	2.0E-07
R07100004-111	RFA-B37C									1.1E-06	2.0E-07
R07100004-112	RFA-B38									1.0E-06	2.0E-07
R07100004-113	RFA-B39									1.1E-06	2.0E-07
R07100004-114	RFA-B40	5.6E-07	1.0E-06	2.0E-07	6.0E-07	1.0E-07	3.0E-07	1.0E-07		1.1E-06	2.0E-07
R07100004-115	RFA-B41									1.2E-06	2.0E-07
R07100004-116	RFA-B43									1.7E-06	3.0E-07
R07100004-117	RFA-B44									1.4E-06	2.0E-07
R07100004-118	RFA-B45									1.6E-06	3.0E-07

QA/QC Summary Report

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline Soil Sampling

Report Date: 12/14/07
Work Order: R07100004

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E901.1									Batch: C_16378
Sample ID: MB-R92021	Method Blank								Run: SUB-C92021 10/22/07 12:00
Bismuth 214	ND	pCi/g-dry	0.05						
Radium 226	ND	pCi/g-dry	0.05						
Sample ID: LCS-R92021	Laboratory Control Sample								Run: SUB-C92021 10/22/07 12:00
Bismuth 214	50.3	pCi/g-dry	0.10	106	70	130			
Sample ID: R07100004-103A	Sample Duplicate								Run: SUB-C94009 11/30/07 12:35
Radium 226	1.00	pCi/g-dry	0.10				11	30	
Radium 226 precision (±)	0.200	pCi/g-dry							
Sample ID: R07100004-105A	Sample Duplicate								Run: SUB-C94009 11/30/07 12:35
Radium 226	1.40	pCi/g-dry	0.10				15	30	
Radium 226 precision (±)	0.200	pCi/g-dry							
Sample ID: R07100004-107A	Sample Duplicate								Run: SUB-C94009 11/30/07 12:35
Radium 226	0.900	pCi/g-dry	0.10				20	30	
Radium 226 precision (±)	0.200	pCi/g-dry							
Sample ID: R07100004-109A	Sample Duplicate								Run: SUB-C94009 11/30/07 12:35
Radium 226	0.800	pCi/g-dry	0.10				12	30	
Radium 226 precision (±)	0.200	pCi/g-dry							
Sample ID: R07100004-111A	Sample Duplicate								Run: SUB-C94009 11/30/07 12:35
Radium 226	1.00	pCi/g-dry	0.10				9.5	30	
Radium 226 precision (±)	0.200	pCi/g-dry							
Sample ID: R07100004-113A	Sample Duplicate								Run: SUB-C94009 11/30/07 12:35
Radium 226	1.10	pCi/g-dry	0.10				0.0	30	
Radium 226 precision (±)	0.200	pCi/g-dry							
Sample ID: R07100004-115A	Sample Duplicate								Run: SUB-C94009 11/30/07 12:35
Radium 226	1.20	pCi/g-dry	0.10				0.0	30	
Radium 226 precision (±)	0.300	pCi/g-dry							
Sample ID: R07100004-117A	Sample Duplicate								Run: SUB-C94009 11/30/07 12:35
Radium 226	1.30	pCi/g-dry	0.10				7.4	30	
Radium 226 precision (±)	0.200	pCi/g-dry							

Qualifiers:

- Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline Soil Sampling

Report Date: 12/14/07
Work Order: R07100004

Analyte	Result	Units	RL	%REC	LowLimit	High Limit	RPD	RPDLimit	Qual
Method: E903.0 Batch: C_16379									
Sample ID: R07100004-047A	Sample Matrix Spike								
Radium 226	3.2	pCi/g-dry	0.10	75	70	130			10/18/07 12:11
MSD failed and was not imported to Omega.									
Sample ID: LCS-16379	Laboratory Control Sample								
Radium 226	0.059	pCi/g-dry	0.10	92	70	130			10/18/07 12:11
Sample ID: MB-16379	Method Blank								
Radium 226	ND	pCi/g-dry	0.0002						10/18/07 12:11
Method: E903.0 Batch: C_16398									
Sample ID: LCS-16398	Laboratory Control Sample								
Radium 226	34	pCi/g-dry	0.10	108	70	130			10/22/07 12:54
Sample ID: R07100004-086A	Sample Matrix Spike								
Radium 226	3.7	pCi/g-dry	0.50	101	70	130			10/29/07 13:32
Sample ID: R07100004-086A	Sample Matrix Spike Duplicate								
Radium 226	3.7	pCi/g-dry	0.50	98	70	130	1.6	27.5	10/29/07 13:32
Method: E907.0 Batch: C_16379									
Sample ID: R07100004-047A	Sample Matrix Spike								
Thorium 230	2.97	pCi/g-dry	0.10	103	70	130			10/09/07 15:00
Sample ID: LCS-16379	Laboratory Control Sample								
Thorium 230	5.20	pCi/g-dry	0.10	106	70	130			10/09/07 15:00
Sample ID: MB-16379	Method Blank								
Thorium 230	ND	pCi/g-dry	0.0002						10/09/07 15:00
Method: E907.0 Batch: C_16398									
Sample ID: R07100004-048A	Sample Matrix Spike								
Thorium 230	3.19	pCi/g-dry	0.10	98	70	130			10/18/07 00:00
Sample ID: R07100004-048A	Sample Matrix Spike Duplicate								
Thorium 230	3.22	pCi/g-dry	0.10	100	70	130	1.1	30	10/18/07 00:00
Sample ID: LCS-R91708	Laboratory Control Sample								
Thorium 230	5.50	pCi/g-dry	0.10	93	70	130			10/18/07 00:00
Sample ID: MB-R91708	Method Blank								
Thorium 230	ND	pCi/g-dry	0.01						10/18/07 00:00

Qualifiers:

L - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline Soil Sampling

Report Date: 12/14/07
Work Order: R07100004

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E907.0							Batch: C_R91728		
Sample ID: C07061601-002AMSD Thorium 230	Sample Matrix Spike Duplicate 58.5 pCi/L		1.0	100	70	130	3.0	30	10/17/07 15:00
Sample ID: C07070262-015AMS Thorium 230	Sample Matrix Spike 63.7 pCi/L		0.20	101	70	130			10/17/07 15:00
Sample ID: LCS-15162 Thorium 230	Laboratory Control Sample 5.40 pCi/L		0.20	92	70	130			10/17/07 15:00
Sample ID: MB-R91728 Thorium 230	Method Blank ND pCi/L		0.2						10/17/07 15:00
Method: E909.0M							Batch: C_16379		
Sample ID: R07100004-047A Lead 210	Sample Matrix Spike Duplicate 497 pCi/g-dry		0.10	123	70	130	88	30	R 11/06/07 08:10
Sample ID: MB-R92688 Lead 210	Method Blank ND pCi/g-dry		0.05						11/06/07 08:10
Sample ID: LCS-R92688 Lead 210	Laboratory Control Sample 90.0 pCi/g-dry		0.10	112	70	130			11/06/07 08:10
Method: E909.0M							Batch: C_16398		
Sample ID: R07100004-114A Lead 210	Sample Matrix Spike 485 pCi/g-dry		0.10	120	70	130			11/08/07 09:20
Sample ID: R07100004-114A Lead 210	Sample Matrix Spike Duplicate 458 pCi/g-dry		0.10	114	70	130	5.8	30	11/08/07 09:20

Qualifiers:

- Analyte reporting limit.
 R * RPD exceeds advisory limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline Soil Sampling

Report Date: 12/14/07
 Work Order: R07100004

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020							Batch: C_16405		
Sample ID: MB-16405	Method Blank								
Uranium	9E-05	mg/kg-dry	6E-05						
Uranium, Activity	6E-05	pCi/g-dry	4E-05						
Sample ID: LCS1-16405	Laboratory Control Sample								
Uranium	0.0203	mg/kg-dry	0.015	101	75	125			
Uranium, Activity	0.0137	pCi/g-dry	0.010	101	75	125			
Sample ID: LCS-16405	Laboratory Control Sample								
Uranium	1.02	mg/kg-dry	0.015	101	75	125			
Uranium, Activity	0.687	pCi/g-dry	0.010	101000	75	125			S
Sample ID: R07100004-033A	Sample Matrix Spike								
Uranium	26.1	mg/kg-dry	0.029	104	75	125			
Uranium, Activity	17.7	pCi/g-dry	0.019	104	75	125			
Sample ID: R07100004-033A	Sample Matrix Spike Duplicate								
Uranium	25.8	mg/kg-dry	0.029	103	75	125	1,1	20	
Uranium, Activity	17.5	pCi/g-dry	0.019	5140	75	125	1,1	20	S
Method: SW6020							Batch: C_16406		
Sample ID: MB-16406	Method Blank								
Uranium	ND	mg/kg-dry	6E-05						
Uranium, Activity	ND	pCi/g-dry	4E-05						
Sample ID: LCS1-16406	Laboratory Control Sample								
Uranium	0.0212	mg/kg-dry	0.015	106	75	125			
Uranium, Activity	0.0144	pCi/g-dry	0.010	106	75	125			
Sample ID: LCS-16406	Laboratory Control Sample								
Uranium	1.00	mg/kg-dry	0.015	100	75	125			
Uranium, Activity	0.679	pCi/g-dry	0.010	100000	75	125			S
Sample ID: R07100004-114A	Sample Matrix Spike								
Uranium	22.7	mg/kg-dry	0.026	101	75	125			
Uranium, Activity	15.4	pCi/g-dry	0.017	101	75	125			
Sample ID: R07100004-114A	Sample Matrix Spike Duplicate								
Uranium	23.1	mg/kg-dry	0.026	103	75	125	1.7	20	
Uranium, Activity	15.6	pCi/g-dry	0.017	5160	75	125	1.7	20	S

Qualifiers:

- Analyte reporting limit.
 S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-001
 Client Sample ID: LAN 001A

Report Date: 09/30/08
 Collection Date: 07/18/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	2.4	pCi/g-dry	U				1	E909.0M	08/14/08 09:53/eli-c
Lead 210 precision (±)	2.3	pCi/g-dry					1	E909.0M	08/14/08 09:53/eli-c
Lead 210 MDC	3.8	pCi/g-dry					1	E909.0M	08/14/08 09:53/eli-c
Radium 226	0.8	pCi/g-dry					1	E903.0	08/28/08 17:12/eli-c
Radium 226 precision (±)	0.09	pCi/g-dry					1	E903.0	08/28/08 17:12/eli-c
Radium 226 MDC	0.04	pCi/g-dry					1	E903.0	08/28/08 17:12/eli-c
Thorium 230	1.2	pCi/g-dry		0.1			1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.6	pCi/g-dry					1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES									
Uranium	2.7	mg/kg-dry		0.01			10	SW6020	08/14/08 03:14/eli-c
Uranium, Activity	1.8	pCi/g-dry		0.007			10	SW6020	08/14/08 03:14/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-002
Client Sample ID: LAN 001B

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
RADIONUCLIDES - TOTAL								
Lead 210	4.6	pCi/g-dry				1	E909.0M	08/14/08 09:53/eli-c
Lead 210 precision (±)	2.3	pCi/g-dry				1	E909.0M	08/14/08 09:53/eli-c
Lead 210 MDC	3.8	pCi/g-dry				1	E909.0M	08/14/08 09:53/eli-c
Radium 226	0.8	pCi/g-dry				1	E903.0	08/28/08 17:12/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/28/08 17:12/eli-c
Radium 226 MDC	0.04	pCi/g-dry				1	E903.0	08/28/08 17:12/eli-c
Thorium 230	1.4	pCi/g-dry		0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.6	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	2.8	mg/kg-dry		0.01		10	SW6020	08/14/08 03:22/eli-c
Uranium, Activity	1.9	pCi/g-dry		0.007		10	SW6020	08/14/08 03:22/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

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



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-003
 Client Sample ID: LAN 001C

Report Date: 09/30/08
 Collection Date: 07/18/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	1.9	pCi/g-dry	U				1	E909.0M	08/14/08 09:53/eli-c
Lead 210 precision (±)	2.2	pCi/g-dry					1	E909.0M	08/14/08 09:53/eli-c
Lead 210 MDC	3.7	pCi/g-dry					1	E909.0M	08/14/08 09:53/eli-c
Radium 226	0.9	pCi/g-dry					1	E903.0	08/28/08 17:12/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/28/08 17:12/eli-c
Radium 226 MDC	0.04	pCi/g-dry					1	E903.0	08/28/08 17:12/eli-c
Thorium 230	1.6	pCi/g-dry		0.1			1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.7	pCi/g-dry					1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES									
Uranium	2.8	mg/kg-dry		0.01			10	SW6020	08/14/08 03:26/eli-c
Uranium, Activity	1.9	pCi/g-dry		0.007			10	SW6020	08/14/08 03:26/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-004
Client Sample ID: LAN 002A

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	3.4	pCi/g-dry	U				1	E909.0M	08/14/08 09:53/eli-c
Lead 210 precision (±)	2.3	pCi/g-dry					1	E909.0M	08/14/08 09:53/eli-c
Lead 210 MDC	3.7	pCi/g-dry					1	E909.0M	08/14/08 09:53/eli-c
Radium 226	0.9	pCi/g-dry					1	E903.0	08/28/08 17:12/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/28/08 17:12/eli-c
Radium 226 MDC	0.05	pCi/g-dry					1	E903.0	08/28/08 17:12/eli-c
Thorium 230	0.9	pCi/g-dry		0.1			1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry					1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES									
Uranium	1.3	mg/kg-dry		0.01			10	SW6020	08/14/08 03:46/eli-c
Uranium, Activity	0.86	pCi/g-dry		0.007			10	SW6020	08/14/08 03:46/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-005
Client Sample ID: LAN 002B

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	1.5	pCi/g-dry	U				1	E909.0M	08/14/08 09:53/eli-c
Lead 210 precision (±)	2.3	pCi/g-dry					1	E909.0M	08/14/08 09:53/eli-c
Lead 210 MDC	3.8	pCi/g-dry					1	E909.0M	08/14/08 09:53/eli-c
Radium 226	1.0	pCi/g-dry					1	E903.0	08/28/08 17:12/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/28/08 17:12/eli-c
Radium 226 MDC	0.06	pCi/g-dry					1	E903.0	08/28/08 17:12/eli-c
Thorium 230	0.4	pCi/g-dry	U	0.1			1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry					1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES									
Uranium	1.1	mg/kg-dry		0.01			10	SW6020	08/14/08 03:50/eli-c
Uranium, Activity	0.75	pCi/g-dry		0.007			10	SW6020	08/14/08 03:50/eli-c

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-006
Client Sample ID: LAN 002C

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By
					QCL	DF		
RADIONUCLIDES - TOTAL								
Lead 210	1.1	pCi/g-dry	U			1	E909.0M	08/14/08 09:53/eli-c
Lead 210 precision (±)	2.2	pCi/g-dry				1	E909.0M	08/14/08 09:53/eli-c
Lead 210 MDC	3.6	pCi/g-dry				1	E909.0M	08/14/08 09:53/eli-c
Radium 226	1.2	pCi/g-dry				1	E903.0	08/27/08 17:52/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/27/08 17:52/eli-c
Radium 226 MDC	0.06	pCi/g-dry				1	E903.0	08/27/08 17:52/eli-c
Thorium 230	0.3	pCi/g-dry	U	0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.3	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	2.2	mg/kg-dry		0.01		10	SW6020	08/14/08 03:55/eli-c
Uranium, Activity	1.5	pCi/g-dry		0.007		10	SW6020	08/14/08 03:55/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-007
Client Sample ID: LAN 003A

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/	DF	Method	Analysis Date / By
					QCL			
RADIONUCLIDES - TOTAL								
Lead 210	0.8	pCi/g-dry	U			1	E909.0M	08/14/08 09:53/eli-c
Lead 210 precision (±)	2.2	pCi/g-dry				1	E909.0M	08/14/08 09:53/eli-c
Lead 210 MDC	3.6	pCi/g-dry				1	E909.0M	08/14/08 09:53/eli-c
Radium 226	1.2	pCi/g-dry				1	E903.0	08/27/08 17:52/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/27/08 17:52/eli-c
Radium 226 MDC	0.05	pCi/g-dry				1	E903.0	08/27/08 17:52/eli-c
Thorium 230	0.7	pCi/g-dry		0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.6	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	1.2	mg/kg-dry		0.01		10	SW6020	08/14/08 03:59/eli-c
Uranium, Activity	0.78	pCi/g-dry		0.007		10	SW6020	08/14/08 03:59/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-008
 Client Sample ID: LAN 003B

Report Date: 09/30/08
 Collection Date: 07/18/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	2.4	pCi/g-dry	U				1	E909.0M	08/14/08 09:53/eli-c
Lead 210 precision (±)	2.3	pCi/g-dry					1	E909.0M	08/14/08 09:53/eli-c
Lead 210 MDC	3.8	pCi/g-dry					1	E909.0M	08/14/08 09:53/eli-c
Radium 226	1.2	pCi/g-dry					1	E903.0	08/27/08 17:52/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/27/08 17:52/eli-c
Radium 226 MDC	0.05	pCi/g-dry					1	E903.0	08/27/08 17:52/eli-c
Thorium 230	0.8	pCi/g-dry		0.1			1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry					1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES									
Uranium	1.7	mg/kg-dry		0.01			10	SW6020	08/14/08 04:03/eli-c
Uranium, Activity	1.1	pCi/g-dry		0.007			10	SW6020	08/14/08 04:03/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-009
Client Sample ID: LAN 003C

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES - TOTAL							
Lead 210	2.6	pCi/g-dry	U			1 E909.0M	08/14/08 09:53/eli-c
Lead 210 precision (±)	2.3	pCi/g-dry				1 E909.0M	08/14/08 09:53/eli-c
Lead 210 MDC	3.7	pCi/g-dry				1 E909.0M	08/14/08 09:53/eli-c
Radium 226	1	pCi/g-dry				1 E903.0	08/27/08 17:52/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1 E903.0	08/27/08 17:52/eli-c
Radium 226 MDC	0.05	pCi/g-dry				1 E903.0	08/27/08 17:52/eli-c
Thorium 230	0.6	pCi/g-dry		0.1		1 E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.3	pCi/g-dry				1 E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES							
Uranium	2.9	mg/kg-dry		0.01		10 SW6020	08/14/08 04:07/eli-c
Uranium, Activity	2.0	pCi/g-dry		0.007		10 SW6020	08/14/08 04:07/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-010
 Client Sample ID: LAN 004A

Report Date: 09/30/08
 Collection Date: 07/18/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	1	pCi/g-dry	U				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.4	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Radium 226	1.9	pCi/g-dry					1	E903.0	08/21/08 11:46/eli-c
Radium 226 precision (±)	0.2	pCi/g-dry					1	E903.0	08/21/08 11:46/eli-c
Radium 226 MDC	0.08	pCi/g-dry					1	E903.0	08/21/08 11:46/eli-c
Thorium 230	0.6	pCi/g-dry	U	0.1			1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.6	pCi/g-dry					1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES									
Uranium	1.0	mg/kg-dry		0.01			10	SW6020	08/14/08 04:11/eli-c
Uranium, Activity	0.69	pCi/g-dry		0.007			10	SW6020	08/14/08 04:11/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-011
Client Sample ID: LAN 004B

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By
					QCL	DF		
RADIONUCLIDES - TOTAL								
Lead 210	2.2	pCi/g-dry	U			1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.3	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Radium 226	1.3	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 precision (±)	0.2	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 MDC	0.08	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Thorium 230	0.2	pCi/g-dry	U	0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	1.2	mg/kg-dry		0.01		10	SW6020	08/14/08 04:15/eli-c
Uranium, Activity	0.79	pCi/g-dry		0.007		10	SW6020	08/14/08 04:15/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-012
Client Sample ID: LAN 004C

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
RADIONUCLIDES - TOTAL								
Lead 210	0.8	pCi/g-dry	U			1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.3	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Radium 226	1.0	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 MDC	0.08	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Thorium 230	0.7	pCi/g-dry		0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	2.2	mg/kg-dry		0.01		10	SW6020	08/14/08 04:19/eli-c
Uranium, Activity	1.5	pCi/g-dry		0.007		10	SW6020	08/14/08 04:19/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-013
Client Sample ID: LAN 005A

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	1.2	pCi/g-dry	U				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.3	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Radium 226	4.4	pCi/g-dry					1	E903.0	08/21/08 11:46/eli-c
Radium 226 precision (±)	0.3	pCi/g-dry					1	E903.0	08/21/08 11:46/eli-c
Radium 226 MDC	0.08	pCi/g-dry					1	E903.0	08/21/08 11:46/eli-c
Thorium 230	0.9	pCi/g-dry		0.1			1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry					1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES									
Uranium	1.2	mg/kg-dry		0.01			10	SW6020	08/14/08 04:39/eli-c
Uranium, Activity	0.84	pCi/g-dry		0.007			10	SW6020	08/14/08 04:39/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-014
 Client Sample ID: LAN 005B

Report Date: 09/30/08
 Collection Date: 07/18/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
RADIONUCLIDES - TOTAL								
Lead 210	0.9	pCi/g-dry	U			1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Radium 226	1.6	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 precision (±)	0.2	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 MDC	0.08	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Thorium 230	0.6	pCi/g-dry		0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	1.0	mg/kg-dry		0.01		10	SW6020	08/14/08 04:43/eli-c
Uranium, Activity	0.71	pCi/g-dry		0.007		10	SW6020	08/14/08 04:43/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-015
 Client Sample ID: LAN 005C

Report Date: 09/30/08
 Collection Date: 07/18/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By
					QCL	DF		
RADIONUCLIDES - TOTAL								
Lead 210	0.6	pCi/g-dry	U			1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.3	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Radium 226	1.5	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 precision (±)	0.2	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 MDC	0.08	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Thorium 230	0.5	pCi/g-dry		0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	1.0	mg/kg-dry		0.01		10	SW6020	08/14/08 04:47/eli-c
Uranium, Activity	0.71	pCi/g-dry		0.007		10	SW6020	08/14/08 04:47/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-016
Client Sample ID: LAN 004A Dup

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/			Method	Analysis Date / By
				RL	QCL	DF		
RADIONUCLIDES - TOTAL								
Lead 210	0.5	pCi/g-dry	U			1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Radium 226	0.7	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 MDC	0.08	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Thorium 230	0.4	pCi/g-dry		0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.3	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	1.1	mg/kg-dry		0.01		10	SW6020	08/14/08 04:51/eli-c
Uranium, Activity	0.72	pCi/g-dry		0.007		10	SW6020	08/14/08 04:51/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-017
Client Sample ID: LAN 004B Dup

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/ QCL	DF	Method	Analysis Date / By
RADIONUCLIDES - TOTAL								
Lead 210	-0.3	pCi/g-dry	U			1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.3	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Radium 226	0.7	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 MDC	0.08	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Thorium 230	0.5	pCi/g-dry		0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	1.0	mg/kg-dry		0.01		10	SW6020	08/14/08 04:55/eli-c
Uranium, Activity	0.68	pCi/g-dry		0.007		10	SW6020	08/14/08 04:55/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-018
Client Sample ID: LAN 004C Dup

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/			Method	Analysis Date / By
				RL	QCL	DF		
RADIONUCLIDES - TOTAL								
Lead 210	1.2	pCi/g-dry	U			1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Radium 226	0.8	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Radium 226 MDC	0.08	pCi/g-dry				1	E903.0	08/21/08 11:46/eli-c
Thorium 230	0.5	pCi/g-dry		0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	2.0	mg/kg-dry		0.01		10	SW6020	08/14/08 04:59/eli-c
Uranium, Activity	1.3	pCi/g-dry		0.007		10	SW6020	08/14/08 04:59/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-019
 Client Sample ID: LAN 006A

Report Date: 09/30/08
 Collection Date: 07/18/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	-0.005	pCi/g-dry	U				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.4	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Radium 226	1.1	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Radium 226 precision (±)	-0.1	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Radium 226 MDC	0.08	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Thorium 230	0.3	pCi/g-dry	U	0.1			1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry					1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES									
Uranium	1.0	mg/kg-dry		0.01			10	SW6020	08/14/08 05:03/eli-c
Uranium, Activity	0.71	pCi/g-dry		0.007			10	SW6020	08/14/08 05:03/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-020
 Client Sample ID: LAN 006B

Report Date: 09/30/08
 Collection Date: 07/18/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/ QCL	DF	Method	Analysis Date / By
RADIONUCLIDES - TOTAL								
Lead 210	0.5	pCi/g-dry	U			1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.3	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Radium 226	1.3	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Radium 226 MDC	0.08	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Thorium 230	0.6	pCi/g-dry		0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	1.1	mg/kg-dry		0.01		10	SW6020	08/14/08 05:07/eli-c
Uranium, Activity	0.75	pCi/g-dry		0.007		10	SW6020	08/14/08 05:07/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-021
 Client Sample ID: LAN 006C

Report Date: 09/30/08
 Collection Date: 07/18/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	0.7	pCi/g-dry	U				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.4	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Radium 226	1.4	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Radium 226 precision (±)	0.2	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Radium 226 MDC	0.08	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Thorium 230	0.5	pCi/g-dry		0.1			1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.3	pCi/g-dry					1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES									
Uranium	1.7	mg/kg-dry		0.01			10	SW6020	08/14/08 05:43/eli-c
Uranium, Activity	1.1	pCi/g-dry		0.007			10	SW6020	08/14/08 05:43/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-022
Client Sample ID: LAN 007A

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	0.6	pCi/g-dry	U				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.4	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Radium 226	0.7	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Radium 226 MDC	0.08	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Thorium 230	0.3	pCi/g-dry	U	0.1			1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry					1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES									
Uranium	1.2	mg/kg-dry		0.01			10	SW6020	08/14/08 05:51/eli-c
Uranium, Activity	0.81	pCi/g-dry		0.007			10	SW6020	08/14/08 05:51/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-023
 Client Sample ID: LAN 007B

Report Date: 09/30/08
 Collection Date: 07/18/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	0.6	pCi/g-dry	U				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.4	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Radium 226	0.7	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Radium 226 MDC	0.08	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Thorium 230	0.4	pCi/g-dry	U	0.1			1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry					1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES									
Uranium	2.2	mg/kg-dry		0.01			10	SW6020	08/14/08 05:55/eli-c
Uranium, Activity	1.5	pCi/g-dry		0.007			10	SW6020	08/14/08 05:55/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-024
 Client Sample ID: LAN 007C

Report Date: 09/30/08
 Collection Date: 07/18/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	0.1	pCi/g-dry	U				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.3	pCi/g-dry					1	E909.0M	08/18/08 09:32/eli-c
Radium 226	0.4	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Radium 226 MDC	0.08	pCi/g-dry					1	E903.0	08/21/08 13:55/eli-c
Thorium 230	0.8	pCi/g-dry		0.1			1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.6	pCi/g-dry					1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES									
Uranium	3.6	mg/kg-dry		0.01			10	SW6020	08/14/08 05:59/eli-c
Uranium, Activity	2.5	pCi/g-dry		0.007			10	SW6020	08/14/08 05:59/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-025
Client Sample ID: LAN 008A

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
RADIONUCLIDES - TOTAL								
Lead 210	1.0	pCi/g-dry	U			1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.3	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Radium 226	0.9	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Radium 226 MDC	0.09	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Thorium 230	1	pCi/g-dry		0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.7	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	3.1	mg/kg-dry		0.01		10	SW6020	08/14/08 07:15/eli-c
Uranium, Activity	2.1	pCi/g-dry		0.007		10	SW6020	08/14/08 07:15/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-026
 Client Sample ID: LAN 008B

Report Date: 09/30/08
 Collection Date: 07/18/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/ QCL	DF	Method	Analysis Date / By
RADIONUCLIDES - TOTAL								
Lead 210	0.1	pCi/g-dry	U			1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.3	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Radium 226	1.0	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Radium 226 MDC	0.08	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Thorium 230	0.9	pCi/g-dry		0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.7	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	5.1	mg/kg-dry		0.01		10	SW6020	08/14/08 07:19/eli-c
Uranium, Activity	3.5	pCi/g-dry		0.007		10	SW6020	08/14/08 07:19/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-027
Client Sample ID: LAN 009A

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
RADIONUCLIDES - TOTAL								
Lead 210	-0.4	pCi/g-dry	U			1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.3	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Radium 226	0.8	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Radium 226 MDC	0.08	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Thorium 230	0.3	pCi/g-dry	U	0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.6	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	1.6	mg/kg-dry		0.01		10	SW6020	08/14/08 07:23/eli-c
Uranium, Activity	1.1	pCi/g-dry		0.007		10	SW6020	08/14/08 07:23/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-028
 Client Sample ID: LAN 009B

Report Date: 09/30/08
 Collection Date: 07/18/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
RADIONUCLIDES - TOTAL								
Lead 210	-0.3	pCi/g-dry	U			1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.3	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Radium 226	4.1	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Radium 226 precision (±)	0.3	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Radium 226 MDC	0.08	pCi/g-dry				1	E903.0	08/21/08 13:55/eli-c
Thorium 230	0.7	pCi/g-dry		0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	2.6	mg/kg-dry		0.01		10	SW6020	08/14/08 07:27/eli-c
Uranium, Activity	1.8	pCi/g-dry		0.007		10	SW6020	08/14/08 07:27/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-029
Client Sample ID: LAN 009C

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
RADIONUCLIDES - TOTAL								
Lead 210	0.5	pCi/g-dry	U			1	E909.0M	08/18/08 09:32/eli-c
Lead 210 precision (±)	1.4	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Lead 210 MDC	2.3	pCi/g-dry				1	E909.0M	08/18/08 09:32/eli-c
Radium 226	3.9	pCi/g-dry				1	E903.0	08/21/08 15:29/eli-c
Radium 226 precision (±)	0.3	pCi/g-dry				1	E903.0	08/21/08 15:29/eli-c
Radium 226 MDC	0.08	pCi/g-dry				1	E903.0	08/21/08 15:29/eli-c
Thorium 230	1.1	pCi/g-dry		0.1		1	E907.0	09/05/08 13:00/eli-c
Thorium 230 precision (±)	0.6	pCi/g-dry				1	E907.0	09/05/08 13:00/eli-c
TOTAL METALS ANALYSES								
Uranium	2.4	mg/kg-dry		0.01		10	SW6020	08/14/08 07:31/eli-c
Uranium, Activity	1.6	pCi/g-dry		0.007		10	SW6020	08/14/08 07:31/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-030
Client Sample ID: LAN 010A

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	1.8	pCi/g-dry	U				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.2	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	2.0	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Radium 226	1.2	pCi/g-dry					1	E903.0	08/18/08 15:15/eli-c
Radium 226 precision (±)	0.2	pCi/g-dry					1	E903.0	08/18/08 15:15/eli-c
Radium 226 MDC	0.1	pCi/g-dry					1	E903.0	08/18/08 15:15/eli-c
Thorium 230	1.2	pCi/g-dry		0.1			1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.6	pCi/g-dry					1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES									
Uranium	2.3	mg/kg-dry		0.01			10	SW6020	08/14/08 07:35/eli-c
Uranium, Activity	1.6	pCi/g-dry		0.007			10	SW6020	08/14/08 07:35/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-031
Client Sample ID: LAN 010B

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
RADIONUCLIDES - TOTAL								
Lead 210	1.1	pCi/g-dry	U			1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.1	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Radium 226	1.4	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Radium 226 precision (±)	0.2	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Radium 226 MDC	0.1	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Thorium 230	7.9	pCi/g-dry		0.1		1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	1.2	pCi/g-dry				1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES								
Uranium	2.2	mg/kg-dry		0.01		10	SW6020	08/14/08 07:39/eli-c
Uranium, Activity	1.5	pCi/g-dry		0.007		10	SW6020	08/14/08 07:39/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-032
Client Sample ID: LAN 010C

Report Date: 09/30/08
Collection Date: 07/18/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
RADIONUCLIDES - TOTAL								
Lead 210	1.9	pCi/g-dry	U			1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.2	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	2.0	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Radium 226	1.5	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Radium 226 precision (±)	0.2	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Radium 226 MDC	0.1	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Thorium 230	1.9	pCi/g-dry		0.1		1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.8	pCi/g-dry				1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES								
Uranium	4.0	mg/kg-dry		0.01		10	SW6020	08/14/08 07:44/eli-c
Uranium, Activity	2.7	pCi/g-dry		0.007		10	SW6020	08/14/08 07:44/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-033
 Client Sample ID: LAS 001A

Report Date: 09/30/08
 Collection Date: 07/19/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	MCL/			Method	Analysis Date / By
				RL	QCL	DF		
RADIONUCLIDES - TOTAL								
Lead 210	1.6	pCi/g-dry	U			1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.2	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.9	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Radium 226 MDC	0.1	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Thorium 230	0.6	pCi/g-dry		0.1		1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry				1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES								
Uranium	1.8	mg/kg-dry		0.01		10	SW6020	08/14/08 07:48/eli-c
Uranium, Activity	1.2	pCi/g-dry		0.007		10	SW6020	08/14/08 07:48/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-034
Client Sample ID: LAS 001B

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By
					QCL	DF		
RADIONUCLIDES - TOTAL								
Lead 210	1.1	pCi/g-dry	U			1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.2	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	2.0	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.8	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Radium 226 MDC	0.1	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Thorium 230	0.4	pCi/g-dry	U	0.1		1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry				1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES								
Uranium	1.3	mg/kg-dry		0.01		10	SW6020	08/14/08 08:08/eli-c
Uranium, Activity	0.86	pCi/g-dry		0.007		10	SW6020	08/14/08 08:08/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-035
 Client Sample ID: LAS 001C

Report Date: 09/30/08
 Collection Date: 07/19/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	0.9	pCi/g-dry	U				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.1	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.8	pCi/g-dry					1	E903.0	08/18/08 15:15/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/18/08 15:15/eli-c
Radium 226 MDC	0.1	pCi/g-dry					1	E903.0	08/18/08 15:15/eli-c
Thorium 230	0.1	pCi/g-dry	U	0.1			1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.3	pCi/g-dry					1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES									
Uranium	0.91	mg/kg-dry		0.01			10	SW6020	08/15/08 16:46/eli-c
Uranium, Activity	0.61	pCi/g-dry		0.007			10	SW6020	08/15/08 16:46/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-036
 Client Sample ID: LAS 002A

Report Date: 09/30/08
 Collection Date: 07/19/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/	DF	Method	Analysis Date / By
					QCL			
RADIONUCLIDES - TOTAL								
Lead 210	1.4	pCi/g-dry	U			1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.2	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.7	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Radium 226 MDC	0.1	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Thorium 230	0.1	pCi/g-dry	U	0.1		1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry				1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES								
Uranium	0.71	mg/kg-dry		0.01		10	SW6020	08/15/08 16:50/eli-c
Uranium, Activity	0.48	pCi/g-dry		0.007		10	SW6020	08/15/08 16:50/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-037
Client Sample ID: LAS 002B

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By
					QCL	DF		
RADIONUCLIDES - TOTAL								
Lead 210	0.7	pCi/g-dry	U			1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.2	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.7	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Radium 226 MDC	0.1	pCi/g-dry				1	E903.0	08/18/08 15:15/eli-c
Thorium 230	0.4	pCi/g-dry	U	0.1		1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry				1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES								
Uranium	1.0	mg/kg-dry		0.01		10	SW6020	08/15/08 16:54/eli-c
Uranium, Activity	0.71	pCi/g-dry		0.007		10	SW6020	08/15/08 16:54/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-038
Client Sample ID: LAS 003C

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	0.4	pCi/g-dry	U				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.1	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.7	pCi/g-dry					1	E903.0	08/18/08 15:15/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/18/08 15:15/eli-c
Radium 226 MDC	0.1	pCi/g-dry					1	E903.0	08/18/08 15:15/eli-c
Thorium 230	0.4	pCi/g-dry	U	0.1			1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry					1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES									
Uranium	0.93	mg/kg-dry		0.01			10	SW6020	08/15/08 16:58/eli-c
Uranium, Activity	0.63	pCi/g-dry		0.007			10	SW6020	08/15/08 16:58/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-039
 Client Sample ID: LAS 003A

Report Date: 09/30/08
 Collection Date: 07/19/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	1.4	pCi/g-dry	U				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.2	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.7	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 MDC	0.1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Thorium 230	0.3	pCi/g-dry	U	0.1			1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry					1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES									
Uranium	0.74	mg/kg-dry		0.01			10	SW6020	08/15/08 17:03/eli-c
Uranium, Activity	0.50	pCi/g-dry		0.007			10	SW6020	08/15/08 17:03/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-040
Client Sample ID: LAS 003B

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	1.1	pCi/g-dry	U				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.1	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.9	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 MDC	0.1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Thorium 230	0.5	pCi/g-dry		0.1			1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry					1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES									
Uranium	1.8	mg/kg-dry		0.01			10	SW6020	08/14/08 08:12/eli-c
Uranium, Activity	1.2	pCi/g-dry		0.007			10	SW6020	08/14/08 08:12/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-041
Client Sample ID: LAS 003C

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
RADIONUCLIDES - TOTAL								
Lead 210	0.7	pCi/g-dry	U			1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.2	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.8	pCi/g-dry				1	E903.0	08/18/08 17:42/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/18/08 17:42/eli-c
Radium 226 MDC	0.1	pCi/g-dry				1	E903.0	08/18/08 17:42/eli-c
Thorium 230	1	pCi/g-dry		0.1		1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry				1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES								
Uranium	1.4	mg/kg-dry		0.01		10	SW6020	08/15/08 17:15/eli-c
Uranium, Activity	0.93	pCi/g-dry		0.007		10	SW6020	08/15/08 17:15/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-042
Client Sample ID: LAS 004A

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	1.2	pCi/g-dry	U				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.2	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.8	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 MDC	0.1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Thorium 230	0.6	pCi/g-dry		0.1			1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry					1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES									
Uranium	1.6	mg/kg-dry		0.01			10	SW6020	08/26/08 01:02/eli-c
Uranium, Activity	1.1	pCi/g-dry		0.007			10	SW6020	08/26/08 01:02/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-043
Client Sample ID: LAS 004B

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES - TOTAL							
Lead 210	1.3	pCi/g-dry	U			1 E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.2	pCi/g-dry				1 E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	2.0	pCi/g-dry				1 E909.0M	08/19/08 10:35/eli-c
Radium 226	0.8	pCi/g-dry				1 E903.0	08/18/08 17:42/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1 E903.0	08/18/08 17:42/eli-c
Radium 226 MDC	0.1	pCi/g-dry				1 E903.0	08/18/08 17:42/eli-c
Thorium 230	0.5	pCi/g-dry		0.1		1 E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry				1 E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES							
Uranium	1.4	mg/kg-dry		0.01		10 SW6020	08/15/08 17:43/eli-c
Uranium, Activity	0.95	pCi/g-dry		0.007		10 SW6020	08/15/08 17:43/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-044
Client Sample ID: LAS 004C

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/			Method	Analysis Date / By	
				RL	QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	1.2	pCi/g-dry	U				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.1	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.9	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 MDC	0.1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Thorium 230	0.5	pCi/g-dry		0.1			1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.3	pCi/g-dry					1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES									
Uranium	1.9	mg/kg-dry		0.01			10	SW6020	08/26/08 01:28/eli-c
Uranium, Activity	1.3	pCi/g-dry		0.007			10	SW6020	08/26/08 01:28/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-045
Client Sample ID: LAS 005A

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	1.6	pCi/g-dry	U				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.2	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.9	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 MDC	0.1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Thorium 230	0.4	pCi/g-dry		0.1			1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.3	pCi/g-dry					1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES									
Uranium	1.7	mg/kg-dry		0.02			10	SW6020	08/29/08 23:20/eli-c
Uranium, Activity	1.2	pCi/g-dry		0.01			10	SW6020	08/29/08 23:20/eli-c

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-046
Client Sample ID: LAS 005B

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	1.4	pCi/g-dry	U				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.1	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Radium 226	1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 precision (±)	0.2	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 MDC	0.1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Thorium 230	0.4	pCi/g-dry	U	0.1			1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry					1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES									
Uranium	2.4	mg/kg-dry		0.01			10	SW6020	08/26/08 01:32/eli-c
Uranium, Activity	1.6	pCi/g-dry		0.007			10	SW6020	08/26/08 01:32/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-047
Client Sample ID: LAS 005C

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/	DF	Method	Analysis Date / By
					QCL			
RADIONUCLIDES - TOTAL								
Lead 210	1.2	pCi/g-dry	U			1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.1	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry				1	E909.0M	08/19/08 10:35/eli-c
Radium 226	1.1	pCi/g-dry				1	E903.0	08/18/08 17:42/eli-c
Radium 226 precision (±)	0.2	pCi/g-dry				1	E903.0	08/18/08 17:42/eli-c
Radium 226 MDC	0.1	pCi/g-dry				1	E903.0	08/18/08 17:42/eli-c
Thorium 230	0.7	pCi/g-dry		0.1		1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.5	pCi/g-dry				1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES								
Uranium	1.4	mg/kg-dry		0.01		10	SW6020	08/15/08 18:00/eli-c
Uranium, Activity	0.98	pCi/g-dry		0.007		10	SW6020	08/15/08 18:00/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-048
Client Sample ID: LAS 006A

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	0.7	pCi/g-dry	U				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.1	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.7	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Radium 226 MDC	0.1	pCi/g-dry					1	E903.0	08/18/08 17:42/eli-c
Thorium 230	0.6	pCi/g-dry	U	0.1			1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.6	pCi/g-dry					1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES									
Uranium	0.55	mg/kg-dry		0.01			10	SW6020	08/15/08 18:04/eli-c
Uranium, Activity	0.37	pCi/g-dry		0.007			10	SW6020	08/15/08 18:04/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-049
Client Sample ID: LAS 006B

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	MCL/			Method	Analysis Date / By	
				RL	QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	1.4	pCi/g-dry	U				1	E909.0M	08/19/08 10:35/eli-c
Lead 210 precision (±)	1.2	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Lead 210 MDC	1.9	pCi/g-dry					1	E909.0M	08/19/08 10:35/eli-c
Radium 226	0.7	pCi/g-dry					1	E903.0	08/18/08 22:13/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/18/08 22:13/eli-c
Radium 226 MDC	0.1	pCi/g-dry					1	E903.0	08/18/08 22:13/eli-c
Thorium 230	0.3	pCi/g-dry	U	0.1			1	E907.0	09/12/08 12:30/eli-c
Thorium 230 precision (±)	0.4	pCi/g-dry					1	E907.0	09/12/08 12:30/eli-c
TOTAL METALS ANALYSES									
Uranium	0.71	mg/kg-dry		0.01			10	SW6020	08/15/08 18:08/eli-c
Uranium, Activity	0.48	pCi/g-dry		0.007			10	SW6020	08/15/08 18:08/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-050
Client Sample ID: LAS 006C

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/	DF	Method	Analysis Date / By
					QCL			
RADIONUCLIDES - TOTAL								
Lead 210	-0.3	pCi/g-dry	U			1	E909.0M	08/21/08 10:15/eli-c
Lead 210 precision (±)	1.5	pCi/g-dry				1	E909.0M	08/21/08 10:15/eli-c
Lead 210 MDC	2.6	pCi/g-dry				1	E909.0M	08/21/08 10:15/eli-c
Radium 226	0.6	pCi/g-dry				1	E903.0	08/20/08 09:10/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1	E903.0	08/20/08 09:10/eli-c
Radium 226 MDC	0.1	pCi/g-dry				1	E903.0	08/20/08 09:10/eli-c
Thorium 230	0.3	pCi/g-dry		0.1		1	E907.0	09/04/08 15:30/eli-c
Thorium 230 precision (±)	0.09	pCi/g-dry				1	E907.0	09/04/08 15:30/eli-c
TOTAL METALS ANALYSES								
Uranium	0.96	mg/kg-dry		0.01		10	SW6020	08/15/08 18:28/eli-c
Uranium, Activity	0.65	pCi/g-dry		0.007		10	SW6020	08/15/08 18:28/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: Dewey Burdock Baseline
 Lab ID: R08070420-051
 Client Sample ID: LAS 007A

Report Date: 09/30/08
 Collection Date: 07/19/08
 Date Received: 07/23/08
 Matrix: SOIL

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES - TOTAL							
Lead 210	0.6	pCi/g-dry	U			1 E909.0M	08/21/08 10:15/eli-c
Lead 210 precision (±)	1.5	pCi/g-dry				1 E909.0M	08/21/08 10:15/eli-c
Lead 210 MDC	2.5	pCi/g-dry				1 E909.0M	08/21/08 10:15/eli-c
Radium 226	0.8	pCi/g-dry				1 E903.0	08/20/08 09:10/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry				1 E903.0	08/20/08 09:10/eli-c
Radium 226 MDC	0.09	pCi/g-dry				1 E903.0	08/20/08 09:10/eli-c
Thorium 230	0.6	pCi/g-dry		0.1		1 E907.0	09/04/08 15:30/eli-c
Thorium 230 precision (±)	0.1	pCi/g-dry				1 E907.0	09/04/08 15:30/eli-c
TOTAL METALS ANALYSES							
Uranium	0.64	mg/kg-dry		0.01		10 SW6020	08/15/08 18:32/eli-c
Uranium, Activity	0.43	pCi/g-dry		0.007		10 SW6020	08/15/08 18:32/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-052
Client Sample ID: LAS 007B

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	0.6	pCi/g-dry	U				1	E909.0M	08/21/08 10:15/eli-c
Lead 210 precision (±)	1.5	pCi/g-dry					1	E909.0M	08/21/08 10:15/eli-c
Lead 210 MDC	2.5	pCi/g-dry					1	E909.0M	08/21/08 10:15/eli-c
Radium 226	0.7	pCi/g-dry					1	E903.0	08/20/08 09:10/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/20/08 09:10/eli-c
Radium 226 MDC	0.1	pCi/g-dry					1	E903.0	08/20/08 09:10/eli-c
Thorium 230	0.6	pCi/g-dry		0.1			1	E907.0	09/04/08 15:30/eli-c
Thorium 230 precision (±)	0.1	pCi/g-dry					1	E907.0	09/04/08 15:30/eli-c
TOTAL METALS ANALYSES									
Uranium	0.67	mg/kg-dry		0.01			10	SW6020	08/15/08 18:36/eli-c
Uranium, Activity	0.45	pCi/g-dry		0.007			10	SW6020	08/15/08 18:36/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Dewey Burdock Baseline
Lab ID: R08070420-053
Client Sample ID: LAS 007C

Report Date: 09/30/08
Collection Date: 07/19/08
Date Received: 07/23/08
Matrix: SOIL

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES - TOTAL									
Lead 210	-0.7	pCi/g-dry	U				1	E909.0M	08/21/08 10:15/eli-c
Lead 210 precision (±)	1.5	pCi/g-dry					1	E909.0M	08/21/08 10:15/eli-c
Lead 210 MDC	2.6	pCi/g-dry					1	E909.0M	08/21/08 10:15/eli-c
Radium 226	0.7	pCi/g-dry					1	E903.0	08/20/08 09:10/eli-c
Radium 226 precision (±)	0.1	pCi/g-dry					1	E903.0	08/20/08 09:10/eli-c
Radium 226 MDC	0.1	pCi/g-dry					1	E903.0	08/20/08 09:10/eli-c
Thorium 230	0.5	pCi/g-dry		0.1			1	E907.0	09/04/08 15:30/eli-c
Thorium 230 precision (±)	0.1	pCi/g-dry					1	E907.0	09/04/08 15:30/eli-c
TOTAL METALS ANALYSES									
Uranium	1.1	mg/kg-dry		0.01			10	SW6020	08/15/08 18:40/eli-c
Uranium, Activity	0.72	pCi/g-dry		0.007			10	SW6020	08/15/08 18:40/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



ANALYTICAL SUMMARY REPORT

October 08, 2007

Environmental Restoration Group Inc
8809 Washington St NE
Albuquerque, NM 87113

Workorder No.: C07081328

Project Name: DB Vegetation Sampling

Energy Laboratories, Inc. received the following 8 samples from Environmental Restoration Group Inc on 8/23/2007 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C07081328-001	AMS-05	08/14/07 00:00	08/23/07	Vegetation	Uranium, Total Digestion, Radiochemistry Lead 210 Polonium 210 Radium 226 Thorium, Isotopic
C07081328-002	AMS-02	08/14/07 00:00	08/23/07	Vegetation	Same As Above
C07081328-003	AMS-BKG	08/14/07 00:00	08/23/07	Vegetation	Same As Above
C07081328-004	AMS-06	08/14/07 00:00	08/23/07	Vegetation	Same As Above
C07081328-005	AMS-01	08/14/07 00:00	08/23/07	Vegetation	Same As Above
C07081328-006	AMS-07	08/14/07 00:00	08/23/07	Vegetation	Same As Above
C07081328-007	AMS-04	08/14/07 00:00	08/23/07	Vegetation	Same As Above
C07081328-008	AMS-03		08/23/07	Vegetation	Same As Above

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative or Report.

If you have any questions regarding these tests results, please call.

Report Approved By:


ROGER DARLING
LABORATORY SUPERVISOR



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc.
 Project: DB Vegetation Sampling
 Lab ID: C07081328-001
 Client Sample ID: AMS-05

Report Date: 10/08/07
 Collection Date: 08/14/07
 Date Received: 08/23/07
 Matrix: Vegetation

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	1.7E-03	uCi/kg		6.5E-06		E909.0M	09/04/07 12:50 / dm
Lead 210 precision (±)	2.1E-04	uCi/kg				E909.0M	09/04/07 12:50 / dm
Polonium 210	6.6E-05	uCi/kg		6.5E-06		RMO-3008	09/06/07 22:00 / res
Polonium 210 precision (±)	3.0E-05	uCi/kg				RMO-3008	09/06/07 22:00 / res
Radium 226	2.4E-05	uCi/kg		1.3E-06		E903.0	09/04/07 11:27 / crw
Radium 226 precision (±)	9.1E-06	uCi/kg				E903.0	09/04/07 11:27 / crw
Thorium 230	1.5E-05	uCi/kg		1.3E-06		E907.0	09/04/07 15:00 / dmf
Thorium 230 precision (±)	8.5E-06	uCi/kg				E907.0	09/04/07 15:00 / dmf
Uranium, Activity	3.7E-05	uCi/kg		1.3E-06		SW6020	09/08/07 07:16 / bws

② 20 = precision estimate

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: Environmental Restoration Group Inc
 Project: DB Vegetation Sampling
 Lab ID: C07081328-002
 Client Sample ID: AMS-02

Report Date: 10/08/07
 Collection Date: 08/14/07
 Date Received: 08/23/07
 Matrix: Vegetation

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	3.3E-04	uCi/kg		2.7E-06		E909.0M	09/04/07 12:50 / dm
Lead 210 precision (±)	7.5E-05	uCi/kg				E909.0M	09/04/07 12:50 / dm
Polonium 210	1.8E-05	uCi/kg		2.7E-06		RMO-3008	09/06/07 22:00 / res
Polonium 210 precision (±)	9.9E-06	uCi/kg				RMO-3008	09/06/07 22:00 / res
Radium 226	2.2E-05	uCi/kg		5.5E-07		E903.0	09/04/07 11:27 / crw
Radium 226 precision (±)	5.6E-06	uCi/kg				E903.0	09/04/07 11:27 / crw
Thorium 230	4.7E-06	uCi/kg		5.5E-07		E907.0	09/04/07 15:00 / dmf
Thorium 230 precision (±)	3.0E-06	uCi/kg				E907.0	09/04/07 15:00 / dmf
Uranium, Activity	1.0E-05	uCi/kg		5.5E-07		SW6020	09/08/07 07:20 / bws

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: Environmental Restoration Group Inc.
 Project: DB Vegetation Sampling
 Lab ID: C07081328-003
 Client Sample ID: AMS-BKG

Report Date: 10/08/07
 Collection Date: 08/14/07
 Date Received: 08/23/07
 Matrix: Vegetation

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	6.9E-04	uCi/kg		4.8E-06		E909.0M	09/04/07 12:50 / dm
Lead 210 precision (±)	1.4E-04	uCi/kg				E909.0M	09/04/07 12:50 / dm
Polonium 210	2.5E-05	uCi/kg		4.8E-06		RMO-3008	09/06/07 22:00 / res
Polonium 210 precision (±)	1.6E-05	uCi/kg				RMO-3008	09/06/07 22:00 / res
Radium 226	4.1E-05	uCi/kg		9.7E-07		E903.0	09/04/07 11:27 / crw
Radium 226 precision (±)	9.9E-06	uCi/kg				E903.0	09/04/07 11:27 / crw
Thorium 230	1.0E-05	uCi/kg		9.7E-07		E907.0	09/04/07 15:00 / dmf
Thorium 230 precision (±)	6.3E-06	uCi/kg				E907.0	09/04/07 15:00 / dmf
Uranium, Activity	4.0E-05	uCi/kg		9.7E-07		SW6020	09/08/07 07:24 / bws

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: Environmental Restoration Group Inc
 Project: DB Vegetation Sampling
 Lab ID: C07081328-004
 Client Sample ID: AMS-06

Report Date: 10/08/07
 Collection Date: 08/14/07
 Date Received: 08/23/07
 Matrix: Vegetation

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	1.0E-03	uCi/kg		4.1E-06		E909.0M	09/04/07 12:50 / dm
Lead 210 precision (±)	1.3E-04	uCi/kg				E909.0M	09/04/07 12:50 / dm
Polonium 210	6.0E-05	uCi/kg		4.1E-06		RMO-3008	09/06/07 22:00 / res
Polonium 210 precision (±)	2.2E-05	uCi/kg				RMO-3008	09/06/07 22:00 / res
Radium 226	3.2E-05	uCi/kg		8.2E-07		E903.0	09/04/07 11:27 / crw
Radium 226 precision (±)	8.1E-06	uCi/kg				E903.0	09/04/07 11:27 / crw
Thorium 230	1.9E-05	uCi/kg		8.2E-07		E907.0	09/04/07 15:00 / dmf
Thorium 230 precision (±)	6.6E-06	uCi/kg				E907.0	09/04/07 15:00 / dmf
Uranium, Activity	3.8E-05	uCi/kg		8.3E-07		SW6020	09/08/07 07:28 / bws

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: Environmental Restoration Group Inc
 Project: DB Vegetation Sampling
 Lab ID: C07081328-005
 Client Sample ID: AMS-01

Report Date: 10/08/07
 Collection Date: 08/14/07
 Date Received: 08/23/07
 Matrix: Vegetation

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	1.8E-03	uCi/kg		8.6E-06		E909.0M	09/04/07 12:50 / dm
Lead 210 precision (±)	2.7E-04	uCi/kg				E909.0M	09/04/07 12:50 / dm
Polonium 210	1.3E-04	uCi/kg		8.6E-06		RMO-3008	09/06/07 22:00 / res
Polonium 210 precision (±)	4.9E-05	uCi/kg				RMO-3008	09/06/07 22:00 / res
Radium 226	5.5E-05	uCi/kg		1.7E-06		E903.0	09/04/07 11:27 / crw
Radium 226 precision (±)	1.6E-05	uCi/kg				E903.0	09/04/07 11:27 / crw
Thorium 230	ND	uCi/kg		1.7E-06		E907.0	09/04/07 15:00 / dmf
Uranium, Activity	1.3E-05	uCi/kg		1.7E-06		SW6020	09/08/07 07:33 / bws

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: Environmental Restoration Group Inc
 Project: DB Vegetation Sampling
 Lab ID: C07081328-006
 Client Sample ID: AMS-07

Report Date: 10/08/07
 Collection Date: 08/14/07
 Date Received: 08/23/07
 Matrix: Vegetation

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	2.1E-03	uCi/kg		4.8E-06		E909.0M	09/04/07 12:50 / dm
Lead 210 precision (±)	1.8E-04	uCi/kg				E909.0M	09/04/07 12:50 / dm
Polonium 210	1.5E-04	uCi/kg		4.8E-06		RMO-3008	09/06/07 22:00 / res
Polonium 210 precision (±)	4.1E-05	uCi/kg				RMO-3008	09/06/07 22:00 / res
Radium 226	2.7E-05	uCi/kg		9.7E-07		E903.0	09/04/07 12:30 / crw
Radium 226 precision (±)	8.1E-06	uCi/kg				E903.0	09/04/07 12:30 / crw
Thorium 230	1.6E-05	uCi/kg		9.7E-07		E907.0	09/04/07 15:00 / dmf
Thorium 230 precision (±)	9.2E-06	uCi/kg				E907.0	09/04/07 15:00 / dmf
Uranium, Activity	1.8E-05	uCi/kg		9.7E-07		SW6020	09/08/07 07:37 / bws

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: Environmental Restoration Group Inc
 Project: DB Vegetation Sampling
 Lab ID: C07081328-007
 Client Sample ID: AMS-04

Report Date: 10/08/07
 Collection Date: 08/14/07
 Date Received: 08/23/07
 Matrix: Vegetation

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	1.5E-03	uCi/kg		4.0E-06		E909.0M	09/04/07 12:50 / dm
Lead 210 precision (±)	1.5E-04	uCi/kg				E909.0M	09/04/07 12:50 / dm
Polonium 210	9.8E-05	uCi/kg		4.0E-06		RMO-3008	09/06/07 22:00 / res
Polonium 210 precision (±)	3.2E-05	uCi/kg				RMO-3008	09/06/07 22:00 / res
Radium 226	2.3E-05	uCi/kg		8.0E-07		E903.0	09/04/07 12:30 / crw
Radium 226 precision (±)	6.8E-06	uCi/kg				E903.0	09/04/07 12:30 / crw
Thorium 230	3.6E-06	uCi/kg		8.0E-07		E907.0	09/04/07 15:00 / dmf
Thorium 230 precision (±)	2.8E-06	uCi/kg				E907.0	09/04/07 15:00 / dmf
Uranium, Activity	9.3E-06	uCi/kg		8.1E-07		SW6020	09/08/07 07:53 / bws

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: Environmental Restoration Group Inc
 Project: DB Vegetation Sampling
 Lab ID: C07081328-008
 Client Sample ID: AMS-03

Report Date: 10/08/07
 Collection Date: Not Provided
 Date Received: 08/23/07
 Matrix: Vegetation

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	9.1E-04	uCi/kg		3.2E-06		E909.0M	09/04/07 12:50 / dm
Lead 210 precision (±)	1.1E-04	uCi/kg				E909.0M	09/04/07 12:50 / dm
Polonium 210	7.8E-05	uCi/kg		3.2E-06		RMO-3008	09/06/07 22:00 / res
Polonium 210 precision (±)	2.2E-05	uCi/kg				RMO-3008	09/06/07 22:00 / res
Radium 226	7.4E-05	uCi/kg		6.4E-07		E903.0	09/04/07 12:30 / crw
Radium 226 precision (±)	1.1E-05	uCi/kg				E903.0	09/04/07 12:30 / crw
Thorium 230	2.6E-06	uCi/kg		6.4E-07		E907.0	09/04/07 15:00 / dmf
Thorium 230 precision (±)	2.2E-06	uCi/kg				E907.0	09/04/07 15:00 / dmf
Uranium, Activity	9.8E-06	uCi/kg		6.4E-07		SW6020	09/08/07 07:57 / bws

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: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08040284-001
Client Sample ID: AMS-BKG

Report Date: 06/16/08
Collection Date: 04/20/08
Date Received: 04/21/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES							
Thorium 230	3.5E-05	uCi/kg		2.0E-07		1 E907.0	05/12/08 11:30/eli-c
Thorium 230 precision (±)	0.000012	uCi/kg				1 E907.0	05/12/08 11:30/eli-c
RADIONUCLIDES - TOTAL							
Polonium 210	2.2E-04	uCi/kg		1.0E-06		1 RMO-3008	06/02/08 11:15/eli-c
Polonium 210 precision (±)	5.1E-05	uCi/kg				1 RMO-3008	06/02/08 11:15/eli-c
Lead 210	1.4E-03	uCi/kg		1.0E-06		1 E909.0M	05/19/08 07:15/eli-c
Lead 210 precision (±)	1.0E-04	uCi/kg				1 E909.0M	05/19/08 07:15/eli-c
Uranium, Activity	9.0E-02	uCi/kg	D	3.8E-06		25 SW6020	06/11/08 21:36/eli-c
RADIUM 226							
Radium 226 MDC	6.4E-06	uCi/kg				1 E903.0	05/16/08 09:56/eli-c
Radium 226	0.000083	uCi/kg				1 E903.0	05/16/08 09:56/eli-c
Radium 226 precision (±)	0.000011	uCi/kg				1 E903.0	05/16/08 09:56/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08040284-002
Client Sample ID: AMS-01

Report Date: 06/16/08
Collection Date: 04/20/08
Date Received: 04/21/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES							
Thorium 230	1.2E-05	uCi/kg		2.0E-07		1 E907.0	05/12/08 11:30/eli-c
Thorium 230 precision (±)	5.2E-06	uCi/kg				1 E907.0	05/12/08 11:30/eli-c
RADIONUCLIDES - TOTAL							
Polonium 210	4.7E-04	uCi/kg		1.0E-06		1 RMO-3008	06/02/08 11:15/eli-c
Polonium 210 precision (±)	7.2E-05	uCi/kg				1 RMO-3008	06/02/08 11:15/eli-c
Lead 210	2.9E-03	uCi/kg		1.0E-06		1 E909.0M	05/19/08 07:15/eli-c
Lead 210 precision (±)	1.1E-04	uCi/kg				1 E909.0M	05/19/08 07:15/eli-c
Uranium, Activity	2.8E-02	uCi/kg	D	2.4E-06		25 SW6020	06/11/08 21:44/eli-c
RADIUM 226							
Radium 226 MDC	3.7E-06	uCi/kg				1 E903.0	05/16/08 09:56/eli-c
Radium 226	0.000033	uCi/kg				1 E903.0	05/16/08 09:56/eli-c
Radium 226 precision (±)	5.5E-06	uCi/kg				1 E903.0	05/16/08 09:56/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08040284-003
Client Sample ID: AMS-02

Report Date: 06/16/08
Collection Date: 04/20/08
Date Received: 04/21/08
Matrix: PLANT

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
RADIONUCLIDES									
Thorium 230	1.4E-05	uCi/kg		2.0E-07			1	E907.0	05/12/08 11:30/eli-c
Thorium 230 precision (±)	4.9E-06	uCi/kg					1	E907.0	05/12/08 11:30/eli-c
RADIONUCLIDES - TOTAL									
Polonium 210	2.0E-04	uCi/kg		1.0E-06			1	RMO-3008	06/02/08 11:15/eli-c
Polonium 210 precision (±)	4.2E-05	uCi/kg					1	RMO-3008	06/02/08 11:15/eli-c
Lead 210	1.3E-03	uCi/kg		1.0E-06			1	E909.0M	05/19/08 07:15/eli-c
Lead 210 precision (±)	6.9E-05	uCi/kg					1	E909.0M	05/19/08 07:15/eli-c
Uranium, Activity	2.7E-02	uCi/kg	D	1.9E-06			25	SW6020	06/11/08 21:49/eli-c
RADIUM 226									
Radium 226 MDC	2.8E-06	uCi/kg					1	E903.0	05/16/08 09:56/eli-c
Radium 226	0.000030	uCi/kg					1	E903.0	05/16/08 09:56/eli-c
Radium 226 precision (±)	4.5E-06	uCi/kg					1	E903.0	05/16/08 09:56/eli-c

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08040284-004
Client Sample ID: AMS-03

Report Date: 06/16/08
Collection Date: 04/20/08
Date Received: 04/21/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By	
				RL	QCL			
RADIONUCLIDES								
Thorium 230	4.1E-05	uCi/kg		2.0E-07		1	E907.0	05/12/08 11:30/eli-c
Thorium 230 precision (±)	0.000011	uCi/kg				1	E907.0	05/12/08 11:30/eli-c
RADIONUCLIDES - TOTAL								
Polonium 210	2.3E-04	uCi/kg		1.0E-06		1	RMO-3008	06/02/08 11:15/eli-c
Polonium 210 precision (±)	4.4E-05	uCi/kg				1	RMO-3008	06/02/08 11:15/eli-c
Lead 210	1.4E-03	uCi/kg		1.0E-06		1	E909.0M	05/19/08 07:15/eli-c
Lead 210 precision (±)	8.2E-05	uCi/kg				1	E909.0M	05/19/08 07:15/eli-c
Uranium, Activity	1.5E-01	uCi/kg	D	2.4E-06		25	SW6020	06/11/08 21:53/eli-c
RADIUM 226								
Radium 226 MDC	3.7E-06	uCi/kg				1	E903.0	05/16/08 09:56/eli-c
Radium 226	0.00011	uCi/kg				1	E903.0	05/16/08 09:56/eli-c
Radium 226 precision (±)	9.7E-06	uCi/kg				1	E903.0	05/16/08 09:56/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08040284-005
Client Sample ID: AMS-04

Report Date: 06/16/08
Collection Date: 04/20/08
Date Received: 04/21/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES							
Thorium 230	8.3E-06	uCi/kg		2.0E-07		1 E907.0	05/12/08 11:30/eli-c
Thorium 230 precision (±)	4.2E-06	uCi/kg				1 E907.0	05/12/08 11:30/eli-c
RADIONUCLIDES - TOTAL							
Polonium 210	1.7E-04	uCi/kg		1.0E-06		1 RMO-3008	06/02/08 11:15/eli-c
Polonium 210 precision (±)	3.9E-05	uCi/kg				1 RMO-3008	06/02/08 11:15/eli-c
Lead 210	1.2E-03	uCi/kg		1.0E-06		1 E909.0M	05/19/08 07:15/eli-c
Lead 210 precision (±)	6.6E-05	uCi/kg				1 E909.0M	05/19/08 07:15/eli-c
Uranium, Activity	2.1E-02	uCi/kg	D	1.9E-06		25 SW6020	06/11/08 21:57/eli-c
RADIUM 226							
Radium 226 MDC	2.8E-06	uCi/kg				1 E903.0	05/16/08 09:56/eli-c
Radium 226	0.000031	uCi/kg				1 E903.0	05/16/08 09:56/eli-c
Radium 226 precision (±)	4.6E-06	uCi/kg				1 E903.0	05/16/08 09:56/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08040284-006
Client Sample ID: AMS-06

Report Date: 06/16/08
Collection Date: 04/20/08
Date Received: 04/21/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By	
				RL	QCL			
RADIONUCLIDES								
Thorium 230	3.9E-05	uCi/kg		2.0E-07		1	E907.0	05/12/08 11:30/eli-c
Thorium 230 precision (±)	0.000011	uCi/kg				1	E907.0	05/12/08 11:30/eli-c
RADIONUCLIDES - TOTAL								
Polonium 210	4.0E-04	uCi/kg		1.0E-06		1	RMO-3008	06/02/08 11:15/eli-c
Polonium 210 precision (±)	7.7E-05	uCi/kg				1	RMO-3008	06/02/08 11:15/eli-c
Lead 210	1.8E-03	uCi/kg		1.0E-06		1	E909.0M	05/19/08 07:15/eli-c
Lead 210 precision (±)	1.1E-04	uCi/kg				1	E909.0M	05/19/08 07:15/eli-c
Uranium, Activity	1.3E-01	uCi/kg	D	3.2E-06		25	SW6020	06/11/08 22:13/eli-c
RADIUM 226								
Radium 226 MDC	4.6E-06	uCi/kg				1	E903.0	05/16/08 09:56/eli-c
Radium 226	0.000092	uCi/kg				1	E903.0	05/16/08 09:56/eli-c
Radium 226 precision (±)	9.9E-06	uCi/kg				1	E903.0	05/16/08 09:56/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08040284-007
Client Sample ID: AMS-05

Report Date: 06/16/08
Collection Date: 04/21/08
Date Received: 04/21/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES							
Thorium 230	4.8E-05	uCi/kg		2.0E-07		1 E907.0	05/12/08 11:30/eli-c
Thorium 230 precision (±)	8.1E-06	uCi/kg				1 E907.0	05/12/08 11:30/eli-c
RADIONUCLIDES - TOTAL							
Polonium 210	1.6E-04	uCi/kg		1.0E-06		1 RMO-3008	06/02/08 11:15/eli-c
Polonium 210 precision (±)	3.1E-05	uCi/kg				1 RMO-3008	06/02/08 11:15/eli-c
Lead 210	3.3E-04	uCi/kg		1.0E-06		1 E909.0M	05/19/08 07:15/eli-c
Lead 210 precision (±)	3.0E-05	uCi/kg				1 E909.0M	05/19/08 07:15/eli-c
Uranium, Activity	2.3E-01	uCi/kg	D	1.3E-06		25 SW6020	06/11/08 22:17/eli-c
RADIUM 226							
Radium 226 MDC	1.8E-06	uCi/kg				1 E903.0	05/16/08 09:56/eli-c
Radium 226	0.000079	uCi/kg				1 E903.0	05/16/08 09:56/eli-c
Radium 226 precision (±)	5.7E-06	uCi/kg				1 E903.0	05/16/08 09:56/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08040284-008
Client Sample ID: AMS-07

Report Date: 06/16/08
Collection Date: 04/21/08
Date Received: 04/21/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES							
Thorium 230	4.0E-05	uCi/kg		2.0E-07		1 E907.0	05/12/08 11:30/eli-c
Thorium 230 precision (±)	0.000012	uCi/kg				1 E907.0	05/12/08 11:30/eli-c
RADIONUCLIDES - TOTAL							
Polonium 210	2.3E-04	uCi/kg		1.0E-06		1 RMO-3008	06/02/08 11:15/eli-c
Polonium 210 precision (±)	4.7E-05	uCi/kg				1 RMO-3008	06/02/08 11:15/eli-c
Lead 210	6.2E-04	uCi/kg		1.0E-06		1 E909.0M	05/19/08 07:15/eli-c
Lead 210 precision (±)	5.3E-05	uCi/kg				1 E909.0M	05/19/08 07:15/eli-c
Uranium, Activity	1.4E-01	uCi/kg	D	2.1E-06		25 SW6020	06/11/08 22:22/eli-c
RADIUM 226							
Radium 226 MDC	3.0E-06	uCi/kg				1 E903.0	05/16/08 11:45/eli-c
Radium 226	0.000076	uCi/kg				1 E903.0	05/16/08 11:45/eli-c
Radium 226 precision (±)	7.2E-06	uCi/kg				1 E903.0	05/16/08 11:45/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08070287-001
Client Sample ID: AMS-02

Report Date: 09/30/08
Collection Date: 07/14/08
Date Received: 07/15/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES							
Thorium 230	-9.5E-07	uCi/kg	U	4.7E-07		1 E907.0	08/06/08 11:00/eli-c
Thorium 230 precision (±)	5.0E-06	uCi/kg				1 E907.0	08/06/08 11:00/eli-c
RADIONUCLIDES - TOTAL							
Polonium 210	9.1E-06	uCi/kg	U	1.0E-06		1 RMO-3008	08/08/08 16:34/eli-c
Polonium 210 precision (±)	8.5E-06	uCi/kg				1 RMO-3008	08/08/08 16:34/eli-c
Lead 210	1.5E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Lead 210 precision (±)	7.3E-05	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Lead 210 MDC	1.2E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Uranium, Activity	3.2E-06	uCi/kg		2.0E-07		10 SW6020	08/06/08 01:53/eli-c
RADIUM 226							
Radium 226	9.3E-06	uCi/kg				1 E903.0	08/11/08 09:35/eli-c
Radium 226 precision (±)	3.6E-06	uCi/kg				1 E903.0	08/11/08 09:35/eli-c
Radium 226 MDC	4.0E-06	uCi/kg				1 E903.0	08/11/08 09:35/eli-c

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08070287-002
Client Sample ID: AMS-03

Report Date: 09/30/08
Collection Date: 07/14/08
Date Received: 07/15/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES							
Thorium 230	1.0E-05	uCi/kg		7.7E-07		1 E907.0	08/06/08 11:00/eli-c
Thorium 230 precision (±)	6.6E-06	uCi/kg				1 E907.0	08/06/08 11:00/eli-c
RADIONUCLIDES - TOTAL							
Polonium 210	9.6E-06	uCi/kg	U	1.0E-06		1 RMO-3008	08/08/08 16:34/eli-c
Polonium 210 precision (±)	1.1E-05	uCi/kg				1 RMO-3008	08/08/08 16:34/eli-c
Lead 210	3.3E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Lead 210 precision (±)	1.2E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Lead 210 MDC	1.9E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Uranium, Activity	7.7E-06	uCi/kg		2.0E-07		10 SW6020	08/06/08 01:57/eli-c
RADIUM 226							
Radium 226	7.5E-06	uCi/kg				1 E903.0	08/11/08 09:35/eli-c
Radium 226 precision (±)	4.9E-06	uCi/kg				1 E903.0	08/11/08 09:35/eli-c
Radium 226 MDC	6.6E-06	uCi/kg				1 E903.0	08/11/08 09:35/eli-c

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08070287-003
Client Sample ID: AMS-04

Report Date: 09/30/08
Collection Date: 07/14/08
Date Received: 07/15/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES							
Thorium 230	-2.7E-06	uCi/kg	U	7.7E-07		1 E907.0	08/06/08 11:00/eli-c
Thorium 230 precision (±)	4.2E-06	uCi/kg				1 E907.0	08/06/08 11:00/eli-c
RADIONUCLIDES - TOTAL							
Polonium 210	9.0E-06	uCi/kg	U	1.0E-06		1 RMO-3008	08/08/08 16:34/eli-c
Polonium 210 precision (±)	9.6E-06	uCi/kg				1 RMO-3008	08/08/08 16:34/eli-c
Lead 210	2.1E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Lead 210 precision (±)	1.2E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Lead 210 MDC	1.9E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Uranium, Activity	8.4E-06	uCi/kg		2.0E-07		10 SW6020	08/06/08 02:01/eli-c
RADIUM 226							
Radium 226	9.3E-06	uCi/kg				1 E903.0	08/11/08 09:35/eli-c
Radium 226 precision (±)	5.2E-06	uCi/kg				1 E903.0	08/11/08 09:35/eli-c
Radium 226 MDC	6.7E-06	uCi/kg				1 E903.0	08/11/08 09:35/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08070287-004
Client Sample ID: AMS-05

Report Date: 09/30/08
Collection Date: 07/14/08
Date Received: 07/15/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES							
Thorium 230	-8.8E-07	uCi/kg	U	8.8E-07		1 E907.0	08/06/08 11:00/eli-c
Thorium 230 precision (±)	5.7E-06	uCi/kg				1 E907.0	08/06/08 11:00/eli-c
RADIONUCLIDES - TOTAL							
Polonium 210	2.1E-05	uCi/kg		1.0E-06		1 RMO-3008	08/08/08 16:34/eli-c
Polonium 210 precision (±)	1.6E-05	uCi/kg				1 RMO-3008	08/08/08 16:34/eli-c
Lead 210	3.4E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Lead 210 precision (±)	1.4E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Lead 210 MDC	2.2E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Uranium, Activity	1.4E-05	uCi/kg		2.0E-07		10 SW6020	08/06/08 02:05/eli-c
RADIUM 226							
Radium 226	5.9E-06	uCi/kg	U			1 E903.0	08/11/08 09:35/eli-c
Radium 226 precision (±)	5.3E-06	uCi/kg				1 E903.0	08/11/08 09:35/eli-c
Radium 226 MDC	7.7E-06	uCi/kg				1 E903.0	08/11/08 09:35/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08070287-005
Client Sample ID: AMS-06

Report Date: 09/30/08
Collection Date: 07/14/08
Date Received: 07/15/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/			Method	Analysis Date / By
				RL	QCL	DF		
RADIONUCLIDES								
Thorium 230	2.1E-05	uCi/kg		5.7E-07		1	E907.0	08/06/08 11:00/eli-c
Thorium 230 precision (±)	7.4E-06	uCi/kg				1	E907.0	08/06/08 11:00/eli-c
RADIONUCLIDES - TOTAL								
Polonium 210	5.7E-06	uCi/kg	U	1.0E-06		1	RMO-3008	08/08/08 16:34/eli-c
Polonium 210 precision (±)	5.7E-06	uCi/kg				1	RMO-3008	08/08/08 16:34/eli-c
Lead 210	1.4E-04	uCi/kg	U			1	E909.0M	08/07/08 09:30/eli-c
Lead 210 precision (±)	8.7E-05	uCi/kg				1	E909.0M	08/07/08 09:30/eli-c
Lead 210 MDC	1.4E-04	uCi/kg				1	E909.0M	08/07/08 09:30/eli-c
Uranium, Activity	2.2E-05	uCi/kg		2.0E-07		10	SW6020	08/06/08 02:09/eli-c
RADIUM 226								
Radium 226	1.8E-05	uCi/kg				1	E903.0	08/11/08 09:35/eli-c
Radium 226 precision (±)	5.0E-06	uCi/kg				1	E903.0	08/11/08 09:35/eli-c
Radium 226 MDC	5.0E-06	uCi/kg				1	E903.0	08/11/08 09:35/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
 Project: DB Vegetation Sampling
 Lab ID: R08070287-006
 Client Sample ID: AMS-07

Report Date: 09/30/08
 Collection Date: 07/14/08
 Date Received: 07/15/08
 Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		DF	Method	Analysis Date / By
				RL	QCL			
RADIONUCLIDES								
Thorium 230	2.0E-05	uCi/kg		8.6E-07		1	E907.0	08/06/08 11:00/eli-c
Thorium 230 precision (±)	8.6E-06	uCi/kg				1	E907.0	08/06/08 11:00/eli-c
RADIONUCLIDES - TOTAL								
Polonium 210	2.0E-05	uCi/kg		1.0E-06		1	RMO-3008	08/08/08 16:34/eli-c
Polonium 210 precision (±)	1.3E-05	uCi/kg				1	RMO-3008	08/08/08 16:34/eli-c
Lead 210	-3.2E-05	uCi/kg	U			1	E909.0M	08/07/08 09:30/eli-c
Lead 210 precision (±)	1.3E-04	uCi/kg				1	E909.0M	08/07/08 09:30/eli-c
Lead 210 MDC	2.1E-04	uCi/kg				1	E909.0M	08/07/08 09:30/eli-c
Uranium, Activity	2.7E-05	uCi/kg		2.0E-07		10	SW6020	08/06/08 02:13/eli-c
RADIUM 226								
Radium 226	2.4E-05	uCi/kg				1	E903.0	08/11/08 09:35/eli-c
Radium 226 precision (±)	7.5E-06	uCi/kg				1	E903.0	08/11/08 09:35/eli-c
Radium 226 MDC	7.7E-06	uCi/kg				1	E903.0	08/11/08 09:35/eli-c

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08070287-007
Client Sample ID: AMS-BKG

Report Date: 09/30/08
Collection Date: 07/14/08
Date Received: 07/15/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES							
Thorium 230	7.3E-06	uCi/kg		5.6E-07		1 E907.0	08/06/08 11:00/eli-c
Thorium 230 precision (±)	4.2E-06	uCi/kg				1 E907.0	08/06/08 11:00/eli-c
RADIONUCLIDES - TOTAL							
Polonium 210	9.3E-06	uCi/kg		1.0E-06		1 RMO-3008	08/08/08 16:34/eli-c
Polonium 210 precision (±)	8.8E-06	uCi/kg				1 RMO-3008	08/08/08 16:34/eli-c
Lead 210	1.3E-04	uCi/kg	U			1 E909.0M	08/07/08 09:30/eli-c
Lead 210 precision (±)	8.6E-05	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Lead 210 MDC	1.4E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Uranium, Activity	1.0E-05	uCi/kg		2.0E-07		10 SW6020	08/06/08 02:17/eli-c
RADIUM 226							
Radium 226	1.3E-05	uCi/kg				1 E903.0	08/11/08 09:35/eli-c
Radium 226 precision (±)	4.6E-06	uCi/kg				1 E903.0	08/11/08 09:35/eli-c
Radium 226 MDC	5.1E-06	uCi/kg				1 E903.0	08/11/08 09:35/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: DB Vegetation Sampling
Lab ID: R08070287-008
Client Sample ID: AMS-01

Report Date: 09/30/08
Collection Date: 07/15/08
Date Received: 07/15/08
Matrix: PLANT

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
RADIONUCLIDES							
Thorium 230	1.2E-05	uCi/kg		8.4E-07		1 E907.0	08/06/08 11:00/eli-c
Thorium 230 precision (±)	8.4E-06	uCi/kg				1 E907.0	08/06/08 11:00/eli-c
RADIONUCLIDES - TOTAL							
Polonium 210	1.7E-05	uCi/kg		1.0E-06		1 RMO-3008	08/08/08 16:34/eli-c
Polonium 210 precision (±)	1.5E-05	uCi/kg				1 RMO-3008	08/08/08 16:34/eli-c
Lead 210	3.3E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Lead 210 precision (±)	1.3E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Lead 210 MDC	2.1E-04	uCi/kg				1 E909.0M	08/07/08 09:30/eli-c
Uranium, Activity	9.4E-06	uCi/kg		2.0E-07		10 SW6020	08/06/08 02:37/eli-c
RADIUM 226							
Radium 226	8.1E-05	uCi/kg				1 E903.0	08/11/08 11:26/eli-c
Radium 226 precision (±)	1.2E-05	uCi/kg				1 E903.0	08/11/08 11:26/eli-c
Radium 226 MDC	7.4E-06	uCi/kg				1 E903.0	08/11/08 11:26/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

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



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08070463-001
Client Sample ID: DBAT-01

Report Date: 09/30/08
Collection Date: 06/25/08
Date Received: 07/28/08
Matrix: SOLID

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS - TOTAL							
Uranium	ND	mg/kg-dry		0.01		10 SW6020	08/09/08 04:46/eli-c
Uranium, Activity	ND	pCi/g-dry		0.007		10 SW6020	08/09/08 04:46/eli-c
RADIONUCLIDES - TOTAL							
Polonium 210	0.0	pCi/g-dry	U	0.008		1 RMO-3008	09/03/08 17:30/eli-c
Polonium 210 precision (±)	0.1	pCi/g-dry				1 RMO-3008	09/03/08 17:30/eli-c
Lead 210	-0.007	pCi/g-dry	U			1 E909.0M	08/28/08 08:48/eli-c
Lead 210 precision (±)	0.04	pCi/g-dry				1 E909.0M	08/28/08 08:48/eli-c
Lead 210 MDC	0.08	pCi/g-dry				1 E909.0M	08/28/08 08:48/eli-c
Radium 226	0.003	pCi/g-dry	U			1 E903.0	08/20/08 16:28/eli-c
Radium 226 precision (±)	0.002	pCi/g-dry				1 E903.0	08/20/08 16:28/eli-c
Radium 226 MDC	0.003	pCi/g-dry				1 E903.0	08/20/08 16:28/eli-c
Thorium 230	0.0	pCi/g-dry	U	0.008		1 E907.0	09/04/08 15:30/eli-c
Thorium 230 precision (±)	0.02	pCi/g-dry				1 E907.0	09/04/08 15:30/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08070463-002
Client Sample ID: DBAT-02

Report Date: 09/30/08
Collection Date: 06/25/08
Date Received: 07/28/08
Matrix: SOLID

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS - TOTAL							
Uranium	ND	mg/kg-dry		0.01		10 SW6020	08/09/08 04:50/eli-c
Uranium, Activity	ND	pCi/g-dry		0.007		10 SW6020	08/09/08 04:50/eli-c
RADIONUCLIDES - TOTAL							
Polonium 210	0.0	pCi/g-dry	U	0.1		1 RMO-3008	09/03/08 17:30/eli-c
Polonium 210 precision (±)	1.2	pCi/g-dry				1 RMO-3008	09/03/08 17:30/eli-c
Lead 210	0.2	pCi/g-dry	U			1 E909.0M	08/28/08 08:48/eli-c
Lead 210 precision (±)	0.7	pCi/g-dry				1 E909.0M	08/28/08 08:48/eli-c
Lead 210 MDC	1.2	pCi/g-dry				1 E909.0M	08/28/08 08:48/eli-c
Radium 226	0.06	pCi/g-dry				1 E903.0	08/20/08 16:28/eli-c
Radium 226 precision (±)	0.03	pCi/g-dry				1 E903.0	08/20/08 16:28/eli-c
Radium 226 MDC	0.04	pCi/g-dry				1 E903.0	08/20/08 16:28/eli-c
Thorium 230	0.0	pCi/g-dry	U	0.1		1 E907.0	09/04/08 15:30/eli-c
Thorium 230 precision (±)	1.4	pCi/g-dry				1 E907.0	09/04/08 15:30/eli-c

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Environmental Restoration Group Inc
Project: Edgemont (Soils/Air filters)
Lab ID: R08070463-003
Client Sample ID: DBAT-03

Report Date: 09/30/08
Collection Date: 06/25/08
Date Received: 07/28/08
Matrix: SOLID

Analyses	Result	Units	Qual	RL	MCL/		Method	Analysis Date / By	
					QCL	DF			
METALS - TOTAL									
Uranium	ND	mg/kg-dry		0.01			10	SW6020	08/09/08 04:54/eli-c
Uranium, Activity	ND	pCi/g-dry		0.007			10	SW6020	08/09/08 04:54/eli-c
RADIONUCLIDES - TOTAL									
Polonium 210	0.02	pCi/g-dry	U	0.006			1	RMO-3008	09/03/08 17:30/eli-c
Polonium 210 precision (±)	0.2	pCi/g-dry					1	RMO-3008	09/03/08 17:30/eli-c
Lead 210	-0.007	pCi/g-dry	U				1	E909.0M	08/28/08 08:48/eli-c
Lead 210 precision (±)	0.04	pCi/g-dry					1	E909.0M	08/28/08 08:48/eli-c
Lead 210 MDC	0.06	pCi/g-dry					1	E909.0M	08/28/08 08:48/eli-c
Radium 226	0.003	pCi/g-dry					1	E903.0	08/20/08 16:28/eli-c
Radium 226 precision (±)	0.001	pCi/g-dry					1	E903.0	08/20/08 16:28/eli-c
Radium 226 MDC	0.002	pCi/g-dry					1	E903.0	08/20/08 16:28/eli-c
Thorium 230	0.0	pCi/g-dry	U	0.006			1	E907.0	09/04/08 15:30/eli-c
Thorium 230 precision (±)	0.1	pCi/g-dry					1	E907.0	09/04/08 15:30/eli-c

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.
 MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 U - Not detected at minimum detectable concentration

Radon Monitoring Report

ENVIRONMENTAL RESTORATION GRP
 ATTN: KEN BAKER
 8809 WASHINGTON NE
 SUITE 150
 ALBUQUERQUE, NM 87113

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
 Telephone: (800) 528-8327 Facsimile: (708) 755-7048

Acct. No. 0410058

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	AREA		
							GROSS COUNT	BACK COUNT (SQ MM)	LOT GRND NO.
4730145	DRNF	01-FEB-08	17-MAY-08	RN-8 1350 CALIB FACT= 37.8 STD DEV= 7.1 DAYS EXPOSED: 106	111.1	1.0	198	37.2 A 2.38	T33605
4730146	DRNF	01-FEB-08	17-MAY-08	HV-1 DANIELS W/TLD 1428 CALIB FACT= 37.8 STD DEV= 8.0 DAYS EXPOSED: 106	70.3	0.7	158	37.2 A 2.38	T33605
4730148	DRNF	01-FEB-08	17-MAY-08	HV-1 DANIELS W/TLD 1428 CALIB FACT= 37.8 STD DEV= 8.7 DAYS EXPOSED: 106	44.9	0.4	133	37.2 A 2.38	T33605
4730149	DRNF	01-FEB-08	17-MAY-08	RN-4 1528 CALIB FACT= 37.8 STD DEV= 7.3 DAYS EXPOSED: 106	102.9	1.0	190	37.2 A 2.38	T33605
4730150	DRNF	01-FEB-08	17-MAY-08	HV-2 SPENCER W/TLD 1604 CALIB FACT= 37.8 STD DEV= 7.9 DAYS EXPOSED: 106	71.3	0.7	159	37.2 A 2.38	T33605
4730169	DRNF	04-FEB-08	17-MAY-08	HV-4 DEWEY W/TLD 1630 CALIB FACT= 38.1 STD DEV= 5.1 DAYS EXPOSED: 103	298.8	2.9	381	37.2 A 2.38	T33605
4730170	DRNF	04-FEB-08	17-MAY-08	HV-3 BEAVER CREEK W/TLD 1650 CALIB FACT= 38.0 STD DEV= 5.3 DAYS EXPOSED: 103	279.2	2.7	362	37.2 A 2.38	T33605

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Q.C. Release	Process No.	Report Date	Date Received
DRB	A21453	23-JUN-08	11-JUN-08

Radon Monitoring Report

ENVIRONMENTAL RESTORATION GRP
 ATTN: KEN BAKER
 8809 WASHINGTON NE
 SUITE 150
 ALBUQUERQUE, NM 87113

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
 Telephone: (800) 528-8327 Facsimile: (708) 755-7048

Acct. No. 0410058

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	AREA		
							GROSS COUNT	COUNTED BACK (SQ MM) GRND	LOT NO.
4730199	DRNF	11-FEB-08	17-MAY-08	RN-3 1440 CALIB FACT= 38.0 STD DEV= 5.4 DAYS EXPOSED: 96	256.6	2.7	340	37.2 A 2.38	T33605
4730200	DRNF	11-FEB-08	17-MAY-08	RN-6 1452 CALIB FACT= 38.1 STD DEV= 5.2 DAYS EXPOSED: 96	283.3	3.0	366	37.2 A 2.38	T33605
4730201	DRNF	11-FEB-08	17-MAY-08	RN-1 1517 CALIB FACT= 38.0 STD DEV= 5.6 DAYS EXPOSED: 96	231.9	2.4	316	37.2 A 2.38	T33605
4730203	DRNF	12-FEB-08	17-MAY-08	RN-7 1810 CALIB FACT= 38.1 STD DEV= 5.0 DAYS EXPOSED: 95	317.4	3.3	399	37.2 A 2.38	T33605
4730204	DRNF	12-FEB-08	17-MAY-08	RN-5 1544 CALIB FACT= 38.0 STD DEV= 5.5 DAYS EXPOSED: 95	248.3	2.6	332	37.2 A 2.38	T33605
4730221	DRNF	01-FEB-08	17-MAY-08	BKGD-ANDERSEN W/TLD 1725 CALIB FACT= 37.9 STD DEV= 6.2 DAYS EXPOSED: 106	175.4	1.7	261	37.2 A 2.38	T33605
4730222	DRNF	01-FEB-08	17-MAY-08	BKGD-ANDERSEN W/TLD 1725 CALIB FACT= 37.9 STD DEV= 6.5 DAYS EXPOSED: 106	153.9	1.5	240	37.2 A 2.38	T33605

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O.G. Release DRB	Process No. A21453	Report Date 23-JUN-08	Date Received 11-JUN-08
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Radon Monitoring Report

ENVIRONMENTAL RESTORATION GRP
 ATTN: KEN BAKER
 8809 WASHINGTON NE
 SUITE 150
 ALBUQUERQUE, NM 87113

Acct. No. 0410058

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
 Telephone: (800) 528-8327 Facsimile: (708) 755-7048

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	AREA GROSS COUNT (SQ MM)	BACK COUNT (SQ MM)	LOT GRND NO.
4730223	DRNF	01-FEB-08	17-MAY-08	HV-6 SCHOOL HOUSE W/TLD 1710 CALIB FACT= 37.9 STD DEV= 6.6 DAYS EXPOSED: 106	140.7	1.3	227	37.2	A 2.38 T33605
4730224	DRNF	01-FEB-08	17-MAY-08	HV-5 ENGLEBERT W/TLD 1311 CALIB FACT= 37.9 STD DEV= 6.9 DAYS EXPOSED: 106	122.3	1.2	209	37.2	A 2.38 T33605
4730225	DRNF	01-FEB-08	17-MAY-08	HV-7 HECK W/TLD 1325 CALIB FACT= 37.8 STD DEV= 7.1 DAYS EXPOSED: 106	109.0	1.0	196	37.2	A 2.38 T33605

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O.C./Revised DRB	Process No. A21453	Report Date 23-JUN-08	Date Received 11-JUN-08
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Radon Monitoring Report

ENVIRONMENTAL RESTORATION GRP
 ATTN: KEN BAKER
 8809 WASHINGTON NE
 SUITE 150
 ALBUQUERQUE, NM 87113

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
 Telephone: (800) 528-8327 Facsimile: (708) 755-7048

Acct. No. 0410058

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	AREA GROSS COUNTED BACK LOT COUNT (SQ MM) GRND NO.
4729620	DRNM	17-MAY-08	17-JUL-08	* - LESS THAN INDICATED VALUE RN-06 CALIB FACT= 36.6 DAYS EXPOSED: 61	* 30.0	* 0.5	71 37.2 A 1.27 T33604
4729621	DRNM	17-MAY-08	17-JUL-08	RN-02 CALIB FACT= 36.6 STD DEV= 11.0 DAYS EXPOSED: 61	35.1	0.6	83 37.2 A 1.27 T33604
4729622	DRNM	17-MAY-08	17 -JUL-08 <i>17, according to radon test detector log: DRF 8/19/08</i>	RN-01 CALIB FACT= 36.6 STD DEV= 11.3 DAYS EXPOSED: 63	31.2	0.5	79 37.2 A 1.27 T33604
4729638	DRNM	17-MAY-08	17-JUL-08	* - LESS THAN INDICATED VALUE AMS-01 DANIELS CALIB FACT= 36.6 DAYS EXPOSED: 61	* 30.0	* 0.5	63 37.2 A 1.27 T33604
4729639	DRNM	17-MAY-08	17-JUL-08	* - LESS THAN INDICATED VALUE AMS-01 DANIELS CALIB FACT= 36.6 DAYS EXPOSED: 61	* 30.0	* 0.5	67 37.2 A 1.27 T33604
4729640	DRNM	17-MAY-08	17-JUL-08	* - LESS THAN INDICATED VALUE RN-03 CALIB FACT= 36.6 DAYS EXPOSED: 61	* 30.0	* 0.5	74 37.2 A 1.27 T33604

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O.C. Release:	Process No.	Report Date	Date Received
VVG	A21500	11-AUG-08	05-AUG-08

Radon Monitoring Report

ENVIRONMENTAL RESTORATION GRP
 ATTN: KEN BAKER
 8809 WASHINGTON NE
 SUITE 150
 ALBUQUERQUE, NM 87113

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
 Telephone: (800) 528-8327 Facsimile: (708) 755-7048

Acct. No. 0410058

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/d-days	Avg. Radon Conc. pCi/l	AREA		
							GROSS COUNT	COUNTED (SQ MM)	BACK GRND LOT NO.
4729647	DRNM	17-MAY-08	17-JUL-08	RN-07 CALIB FACT= 36.7 STD DEV= 10.4 DAYS EXPOSED: 61	44.0	0.7	92	37.2 A	1.27 T33604
4729648	DRNM	17-MAY-08	17-JUL-08	AMS-BKG ANDERSON CALIB FACT= 36.6 STD DEV= 11.3 DAYS EXPOSED: 61	30.2	0.5	78	37.2 A	1.27 T33604
4729649	DRNM	17-MAY-08	17-JUL-08	* - LESS THAN INDICATED VALUE AMS-BKG ANDERSON CALIB FACT= 36.6 DAYS EXPOSED: 61	* 30.0	* 0.5	68	37.2 A	1.27 T33604
4729653	DRNM	17-MAY-08	17-JUL-08	AMS-04 DEWEY CALIB FACT= 36.6 STD DEV= 11.0 DAYS EXPOSED: 61	35.1	0.6	83	37.2 A	1.27 T33604
4729654	DRNM	17-MAY-08	17-JUL-08	* - LESS THAN INDICATED VALUE AMS-03 BEAVER CREEK RANCH CALIB FACT= 36.6 DAYS EXPOSED: 61	* 30.0	* 0.5	67	37.2 A	1.27 T33604
4729655	DRNM	17-MAY-08	17-JUL-08	AMS-06 SCHOOL CALIB FACT= 36.6 STD DEV= 10.5 DAYS EXPOSED: 61	42.0	0.7	90	37.2 A	1.27 T33604

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Q.C. Release VVG	Process No. A21500	Report Date 11-AUG-08	Data Received 05-AUG-08
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Radon Monitoring Report

LANDAUER

ENVIRONMENTAL RESTORATION GRP
 ATTN: KEN BAKER
 8809 WASHINGTON NE
 SUITE 150
 ALBUQUERQUE, NM 87113

Lundauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
 Telephone: (800) 528-8327 Facsimile: (708) 755-7048

Acct. No. 0410058

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	AREA		
							GROSS COUNT	COUNTED (SQ MM)	BACK GRND LOT NO.
4729667	DRNM	17-MAY-08	17-JUL-08	* - LESS THAN INDICATED VALUE AMS-05 ENGLEBERT CALIB FACT= 36.6 DAYS EXPOSED: 61	* 30.0	* 0.5	65	37.2 A	1.27 T33604
4729668	DRNM	17-MAY-08	17-JUL-08	* - LESS THAN INDICATED VALUE AMS-07 NECK CALIB FACT= 36.6 DAYS EXPOSED: 61	* 30.0	* 0.5	67	37.2 A	1.27 T33604
4729669	DRNM	17-MAY-08	17-JUL-08	* - LESS THAN INDICATED VALUE RN-08 CALIB FACT= 36.6 DAYS EXPOSED: 61	* 30.0	* 0.5	56	37.2 A	1.27 T33604
4729673	DRNM	17-MAY-08	17-JUL-08	* - LESS THAN INDICATED VALUE RN-01 RN-04, according to radon test detector log CALIB FACT= 36.6 DAYS EXPOSED: 61	* 30.0	* 0.5	68	37.2 A	1.27 T33604
4729674	DRNM	17-MAY-08	17-JUL-08	RN-05 CALIB FACT= 36.7 STD DEV= 10.1 DAYS EXPOSED: 61	49.9	0.8	98	37.2 A	1.27 T33604
4729675	DRNM	17-MAY-08	17-JUL-08	* - LESS THAN INDICATED VALUE AMS-02 SPENCER CALIB FACT= 36.6 DAYS EXPOSED: 61	* 30.0	* 0.5	68	37.2 A	1.27 T33604

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O/C Release VVG	Process No. A21500	Report Date 11-AUG-08	Date Received 05-AUG-08
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Radon Monitoring Report

ENVIRONMENTAL RESTORATION GRP
 ATTN: KEN BAKER
 8809 WASHINGTON NE
 SUITE 150
 ALBUQUERQUE, NM 87113

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
 Telephone: (800) 528-8327 Facsimile: (708) 755-7048

Acct. No. 0410058

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l
4681411	DRNF	14-AUG-07	24-SEP-07	BACKGROUND-KEITH ANDERSON	83.6	2.0
4681412	DRNF	14-AUG-07	23-SEP-07	RADON 01-BASE WASH PILE NORTH SIDE	81.0	2.0
4681414	DRNF	14-AUG-07	23-SEP-07	RADON 02-MIDDLE OF MILE WASTE EDGE OPEN PIT	390.0	9.8
4681416	DRNF	14-AUG-07	23-SEP-07	RADON 03-SOUTH OF DARROW PIT MINE	48.8	1.2
4681417	DRNF	14-AUG-07	23-SEP-07	RADON 04-MET STATION	79.0	2.0
4681418	DRNF	14-AUG-07	23-SEP-07	RADON 05-ABANDONED MINE NEAR N BD	60.0	1.5
4681419	DRNF	14-AUG-07	24-SEP-07	LOCATION 4 DEWEY	47.5	1.2
4681421	DRNF	14-AUG-07	27-SEP-07	LOCATION 3 BEAVER CREEK RANCH (NO GOLD COVER)	50.8	1.2
4681424	DRNF	14-AUG-07	27-SEP-07	LOCATION 1-NW DANIELS RANCH	43.6	1.0
4681433	DRNF	14-AUG-07	27-SEP-07	LOCATION 1 DULICATE-NW DANIELS RANCH	44.2	1.0
4681439	DRNF	14-AUG-07	27-SEP-07	LOCATION 7 HECK'S RANCH	47.5	1.1
4681440	DRNF	14-AUG-07	27-SEP-07	BACKGROUND-KEITH ANDERSON	117.8	2.7

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O.C. Release VVG	Process No. A21305	Report Date 05-OCT-07	Date Received 01-OCT-07
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Radon Monitoring Report

ENVIRONMENTAL RESTORATION GRP
 ATTN: KEN BAKER
 8809 WASHINGTON NE
 SUITE 150
 ALBUQUERQUE, NM 87113

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
 Telephone: (800) 528-8327 Facsimile: (708) 755-7048

Acct. No. 0410058

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCiU-days	Avg. Radon Conc. pCi/l
4690837	DRNF	15-AUG-07	27-SEP-07	LOCATION 2-MRS SPENCER'S HOUSE	93.9	2.2
4690838	DRNF	15-AUG-07	23-SEP-07	RADON 07-WYOMING LINE	118.1	3.0
4690839	DRNF	16-AUG-07	23-SEP-07	MARC KOLLENBECK'S HOUSE RN-08	113.4	3.0
4690840	DRNF	19-AUG-07	23-SEP-07	RADON 06-ROLLFRONT AREA	114.8	3.3
4690841	DRNF	17-AUG-07	27-SEP-07	LOCATION 6-OLD SCHOOLHOUSE	106.7	2.6
4690842	DRNF	15-AUG-07	27-SEP-07	LOCATION 5-PINK 2-STORY HOUSE	93.2	2.2

(1) (2) (3) (4) (5) (6) (7) (8)

Q.C. Release VVG	Process No. A21305	Report Date 05-OCT-07	Date Received 01-OCT-07
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Radon Monitoring Report

ENVIRONMENTAL RESTORATION GRP
 ATTN: KEN BAKER
 8809 WASHINGTON NE
 SUITE 150
 ALBUQUERQUE, NM 87113

Acct. No. 041005B

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
 Telephone: (800) 528-8327 Facsimile: (708) 755-7048

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l
4703748	DRNF	27-SEP-07	01-FEB-08	SPENCER-LOC 2	154.8	1.2
4703749	DRNF	27-SEP-07	01-FEB-08	DANIELS-LOC 1	83.1	0.7
4703750	DRNF	27-SEP-07	01-FEB-08	DANIELS-LOC 1	44.9	0.4
4703751	DRNF	27-SEP-07	04-FEB-08	DEWEY- LOC 4	161.6	1.2
4703752	DRNF	27-SEP-07	04-FEB-08	BEAVER CREEK RANCH-LOC 3	150.5	1.2
4703765	DRNF	23-SEP-07	11-FEB-08	RN-03	126.3	0.9
4703766	DRNF	23-SEP-07	11-FEB-08	RN-01	179.6	1.3
4703768	DRNF	23-SEP-07	01-FEB-08	RN-04	183.3	1.4
4703769	DRNF	23-SEP-07	12-FEB-08	NO GOLD SEAL RN-05	157.9	1.1
4703771	DRNF	23-SEP-07	12-FEB-08	RN-07	261.7	1.8
4703797	DRNF	27-SEP-07	01-FEB-08	MECH RANCH-LOC 7	188.9	1.5
4703799	DRNF	27-SEP-07	01-FEB-08	ENGLEBERT RANCH-LOC 5	128.2	1.0
4703800	DRNF	27-SEP-07	01-FEB-08	SCHOOL-LOC 6	122.6	1.0
4703801	DRNF	27-SEP-07	01-FEB-08	ANDERSON-BKG	198.9	1.6

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O.C. Release VVG	Process No. A21380	Report Date 04-MAR-08	Date Received 15-FEB-08
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Radon Monitoring Report

ENVIRONMENTAL RESTORATION GRP
 ATTN: KEN BAKER
 8809 WASHINGTON NE
 SUITE 150
 ALBUQUERQUE, NM 87113

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
 Telephone: (800) 528-8327 Facsimile: (708) 755-7048

Acct. No. 0410058

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l
4703902	DRNF	27-SEP-07	01-FEB-08	ANDERSON-BKG	196.4	1.5
4712642	DRNF	23-SEP-07	11-FEB-08	RN-06	190.2	1.3
4712643	DRNF	23-SEP-07	01-FEB-08	RN-08	171.3	1.3
4712644	DRNF	23-SEP-07	11-FEB-08	RN-02	173.8	1.2

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O.C. Release	Process No.	Report Date	Date Received
VVE	A21380	04-MAR-08	15-FEB-08

Appendix C
Radon Flux Measurement Documentation

ERG Radon Flux Canister Data Log

Site: Dewey - Buckle

Page: 1 of 41

Location Number	Canister Number	Deployment Date (mm/dd/yy)	Deployment Time (24:00)	Retrieval Date (mm/dd/yy)	Retrieval Time (24:00)	Notes/Comments	
1	22	-	-	-	-	7218 BLANK	
2	257	07/14/08	09:24	07/15/08	10:06	RFA-B37	
3	258	}	09:27	}	10:14	RFA-B21	
4	8		08:19		08:49	RFA-B17	
5	73		08:55		09:29	RFA-B36	
6	65		09:13		09:54	RFA-B15	
7	95		09:20		10:00	RFA-B02	
8	92		08:10		08:43	RFA-B30	
9	38		08:05		08:41	RFA-B13	
10	59		07:56		08:30	RFA-B01	
11							
12							
13							
14							
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17							
18							
19							
20							
21							
22							
23							
24							
25							

ERG Radon Flux Canister Data Log

Site: Dewey - Burdette

Page: 1 of 4

Location Number	Canister Number	Deployment Date (mm/dd/yy)	Deployment Time (24:00)	Retrieval Date (mm/dd/yy)	Retrieval Time (24:00)	Notes/Comments
1	91	09/26/07	08:51	09/27/07	10:00	RFA-821
2	55	09/26/07	11:18	09/27/07	09:40	RFA-831
3	72	09/26/07	09:09	09/27/07	10:10	RFA-837
4	73	09/26/07	09:33	09/27/07	10:20	RFA-802
5	23	09/26/07	10:15	09/27/07	10:30	RFA-815
6	63	09/26/07	12:12	09/27/07	10:36	RFA-817
7	105	09/26/07	12:40	09/27/07	10:27	RFA-813
8	102	09/26/07	13:09	09/27/07	10:15	RFA-830
9	45	09/24/07	13:50	09/27/07	10:07	RFA-801
10						
11						
12						
13						
14						
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22						
23						
24						
25						

Radon-222 Canister Chain of Custody Record

Facility Dowry Durdak
 Pile or Stack Name N/A
 Area of Pile or Stack N/A
 Field Representative N. WURMEL

	Deployment	Retrieval
Date	4/20/09	4/21/09
Rel. Humid.	$\bar{x} = 39, 4-71$	$\bar{x} = 29, 44-10-68$
Bar. Press	29.50 in	30.02 in
Temp. (F)	$\bar{x} = 71, 59-81$	$\bar{x} = 40, 38-50$

Deployment/Retrieval Record

www.hundcrystal.com CHAN-KOY NG No frost observed

Item	Location ID or Description	Coordinates		Canister Number	Deployment		Retrieval		Comments
		North	East		Time	By	Time	By	
101	RFA-821	428 289 77	999245.30	48	0830	NW	0802	NW	
102	RFA-831	432201.68	1001464.24	2	0852		0825		
103	RFA-837	430298.49	1005338.17	71	0900		0838		
104	RFA-802	430887.96	1006307.78	59	0909		0846		
105	RFA-815	432487.00	1007592.62	80	0918		0854		
106	RFA-817	445319.19	989855.54	90	1010		0930		
107	RFA-801	444878.75	986206.90	254	1024		0948		
108	RFA-813	442713.12	988273.02	38	1035		1001		
109	RFA-830	443907.77	988057.01	38	1045		1009		
110	Tip Blank	-	-	255	-	-	-	-	
111									
112									
113									
114									

Custody Transfer Record

Items Nos.	Relinquished By	Date	Time	Accepted By	Date	Time / 10 AM
101-110	NWA	4/21/09	1400	K. Behm	4/21/09	11:20 AM

ROI 563-697
4/22/08

Radon Flux Measurements

Site *Dwgs-Brock*

Canister Number	Lab Date	Start Count Time	Deploy Date	Deploy Time	Retrieve Date	Retrieve Time	Collection Time (sec)	Count Time (sec)	Peak Count	Percent Error	Blk count	Percent Error	Detector Efficiency	Canister Activity (nCi)	Flux (dpm/2h)	Flux Error (1.00 S.D.)	L.L.D. (dpm/2h)	Remarks
STD 1	4/22	1720							29888	48042								
STD 3	4/22	1740							37122									
BKG1		1808							2757									
38		1840							3642									
88		1905							3848									
90		1923							3695									
256		1945							3810									
80		2010							4481									
803		2031							4374									
59		2055							5932									
2		2115							5751									
31		2137							4800									
255		2200							2863									
48		2220							3182									
BKG2		2241							2605									
STD 1		2308							48463									
STD 3		2330							38657									

Kenneth Baker

Data entered 4/23/08 by MSS

LOA = 562 - 690

Radon Flux Measurements

Site Dewey-Burdette, SD

TOTAL

Canister Number	Lab Date	Start Count Time	Deploy Date	Deploy Time	Retrieval Date	Retrieval Time	Collection Time (sec)	Count Time (sec)	Peak Counts	Percent Error	Bkg counts	Percent Error	Detection Efficiency	Canister Activity (dpm)	Flux (dpm/m ²)	Flux Error (1.00 S.D.)	LID (dpm/m ²)	Remarks
STD 1	9/24/07	1600						1200	31826	1.9				46124				
STD 3	9/24/07	1635							26724	2.2				40807				
BKG 1	9/24/07	1700							-50	482				2594				
91	9/24/07	1722	9/26/07	0851	9/27/07	1000			1220	2.1				4230				
55	9/24/07	1745	9/26/07	1118	9/27/07	0940		✓	810	31				3627				
72	9/24/07	1805	9/26/07	0925	9/27/07	1010		1200	1137	22				3972				
73	9/24/07	1830	9/26/07	0948	9/27/07	1020		"	925	28				4064				
23	9/24/07	1853	9/26/07	1015	9/27/07	1030		"	1744	14.6				4582				
63	9/24/07	1921	9/26/07	1212	9/27/07	1036			1596	16.1				4478				
105	9/24/07	1946	9/26/07	1240	9/27/07	1022			1742	16				5261				
102	9/24/07	2009	9/26/07	1304	9/27/07	1015			1986	13.3				5049				
45	9/24/07	2030	9/26/07	1350	9/27/07	1007			1672	16.2				4876				
45B	9/24/07	2100	9/26/07	1350	9/27/07	1007			1404	18.9				4824				
46	9/24/07	2121	NA	NA	NA	NA	NA		219	110				2799				TRIP BLANK
BKG 2	9/24/07	2142							279	82				2601				
STD 3	9/24/07	2204							25961	2.3				40345				
STD 1	9/24/07	2225							31277	1.9				45940				

Stream Name Cheyenne River
 Site Number CHR05

DATE					
dd-mmm-yy					
0	9	J	U	L	08

example 0 2 M A Y 9 2

Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S	M	S	Comments	Fish ID #	Pass #	Species Code	Total Length (mm)	Weight (grams)	S	M	S	Comments
1	1	R I C	415	1150				R	51	1	S A S	51					
2	1	R I C	426	1200				R	52	1	S A S	45					
3	1	R I C	405	980				R	53	1	S A S	50					
4	1	R I C	381	820				R	54	1	S A S	44					
5	1	S R S	160	46				R	55	1	S A S	60					
6	1	S R S	146	32				R	56	1	S A S	47					
7	1	C A P	135	31				R	57	1	S A S	54					
8	1	C H C	290	166				R	58	1	S A S	46					
9	1	C H C	196	50				R	59	1	S A S	52					
10	1	C H C	181	49				R	60	1	S A S	46		6			V,C(60-64)
11	1	L N D	74	4				V	61	1	S A S	45					V
12	1	P L K	72	10				R,C (#12-16)	62	1	S A S	50					V
13	1	P L K	59					R	63	1	S A S	46					V
14	1	P L K	51					R	64	1	S A S	50					V
15	1	P L K	68					R	65	1	F H M	46		7			R,C(65-74)
16	1	P L K	46					R	66	1	F H M	38					R
17	1	P L K	54	3		3		V,C(#17-18)	67	1	F H M	60					R
18	1	P L K	53					V	68	1	F H M	44					R
19	1	S A S	49	7				R,C(#19-23)	69	1	F H M	51					R
20	1	S A S	50					R	70	1	F H M	48					V
21	1	S A S	53					R	71	1	F H M	46					V
22	1	S A S	46					R	72	1	F H M	46					V
23	1	S A S	48					R	73	1	F H M	47					V
24	1	S A S	50	54				C	74	1	F H M	47					V
25	1	S A S	46						75	1							
26	1	S A S	49						76	1							
27	1	S A S	43						77	1							
28	1	S A S	47						78	1							
29	1	S A S	46						79	1							
30	1	S A S	50						80	1							
31	1	S A S	47						81	1							
32	1	S A S	45						82	1							
33	1	S A S	53						83	1							
34	1	S A S	46						84	1							
35	1	S A S	52						85	1							
36	1	S A S	52						86	1							
37	1	S A S	42						87	1							
38	1	S A S	47						88	1							
39	1	S A S	51						89	1							
40	1	S A S	49						90	1							
41	1	S A S	46						91	1							
42	1	S A S	54						92	1							
43	1	S A S	52						93	1							
44	1	S A S	46						94	1							
45	1	S A S	48						95	1							
46	1	S A S	53						96	1							
47	1	S A S	52						97	1							
48	1	S A S	54						98	1							
49	1	S A S	47						99	1							
50	1	S A S	46						00	1							

Comments: R = sample collected for radiological testing, V = voucher specimen, C = combined weight