WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S7AMC001**

Stream/Waterbody Name (if known): MISSOURI RIVER

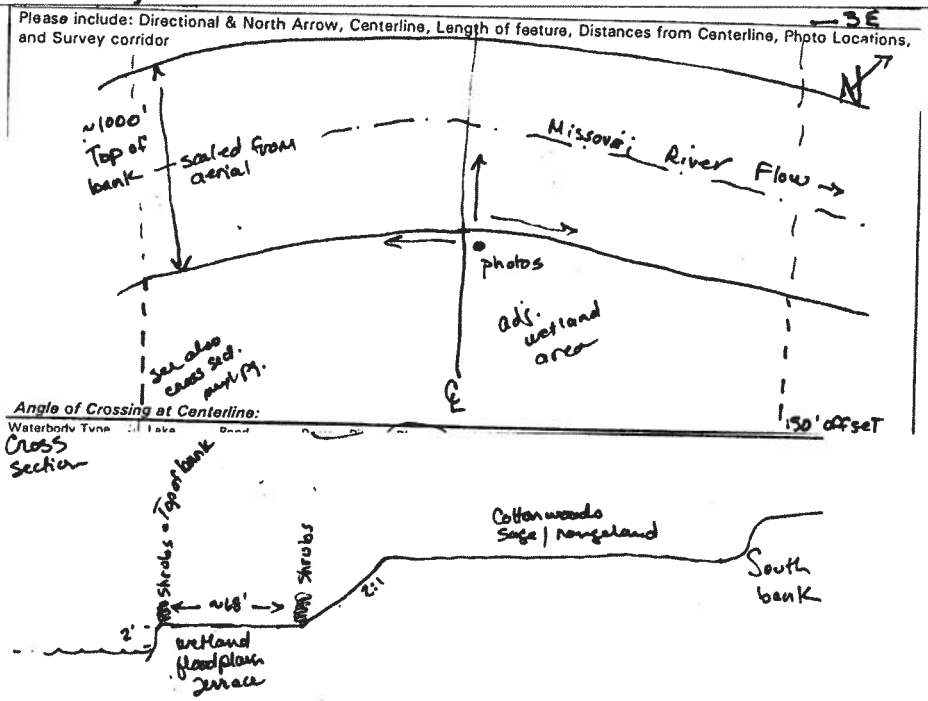
Associated Wetland ID #:W7AMC001

Date: 6/5/08	**Project Name & No.:** Keystone XL-10623-007-803A	**Milepost:** 88.88
Investigators: NOVAK	**State/County:** MT/ MC	**Quad Name:** MILK RIVER HILLS
Logbook No.: 7A-1	**Logbook Page No.:** 5	**Tract No.:** ML-MT-VA-00900.000, 905
Picture No.: S7AMC001_1W,2N,3E		

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Waterbody Type	☐ Lake	☐ Pond	☐ Borrow Pit	☒ River	☐ Stream	☐ Ag. Ditch	Other:		
Stream Flow	☐ Fast	☐ Moderate	☒ Slow	☐ Very Slow	☐ None				
Subsurface Flow?	☐ Yes	☐ No	☒ Unknown						
Flow type	☒ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)								
Direction of Flow where it crosses CL: **N** (N, NE, E, SE, S, SW, W, NW)									
OHWM Width (ft.):	~1000 FT								
Sinuosity	☐ Straight	☒ Meandering							
Stream Width (ft.)	Top of Bank (at crossing location): ~1000FT								
Water Surface (at crossing location): ~1000FT									
Stream Depth (in.)	☐ 0-3	☐ 3-6	☐ 6-12	☐ 12-18	☐ 18-24	☐ 24-36	☐ 36-48	☐ 48-60	☒ 60+
OHWM Indicator	☒ Clear natural line on bank	☐ Wrack line	☐ Shelving	☐ Scour					
	☒ Abrupt plant community change	☐ Bent, matted or missing vegetation	☐ Wrested vegetation	☐ Water staining					
	☐ Soil character changes	☐ Sediment deposition	☐ Sediment sorting						
	☐ Litter and debris	☐ Leaf litter disturbed	☐ Other:						

Bank Height (ft.) (looking downstream)	Left:	☐ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical
	Right:	☐ 4:1	☐ 3:1	☐ 2:1	☒ 1:1	☐ Vertical

Feature ID #: S7AMC001

Date: 6/5/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 88.88

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Slightly Turbid ☒ Other:	Turbid ☐ Very Turbid ☐	Sheen on surface ☐ Greenish color ☐	Floating algal mats ☐ Obvious surface scum ☐	Water Color: TEA
Stream Substrate %	Silts 40% Concrete Other:	Cobbles Muck Explain:	Bedrock Vegetation:	Sands 40%	Gravel 20%
Aquatic Habitats (check all that apply)	Sand Bar ☒ Gravel Bar ☒ Mud Bar ☐ Undercut Banks ☐	Gravel Riffles ☐ Deep Pools ☐ Bank root systems ☒ Overhanging trees/shrubs ☒	In-stream emergent plants: ☐ In-stream submerged plants: ☐ Fringing Wetlands: ☒		
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Snakes ☐ Invertebrates:	Fish (adult) ☐ Fish (juvenile) ☐	Turtles ☐ Frogs ☐	Other:	
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 1 ST TERRACE =~ 68FT Circle vegetative layers: trees ☐ shrubs ☒ herbs ☒ ☐Significant bare areas within riparian zone ☐Evidence of non-buffered concentrated flows				
Tributary is	☒Natural	☐Artificial (Man-Made)	☐Manipulated		
Channel Condition:	Channelization or Braiding ☒	Unnatural straightening ☐	Downcutting ☐	Dikes/Berms ☐	Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Waste discharge pipes present ☐		Manure in stream or on banks ☒ Other:		

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

ON SOUTH BANK, LOW FLOOD PLAIN TERRACE COMPILED OF A FEW SCATTERED SHRUBS & HERBACEOUS- GOOD SPECIES DIVERSITY ON HERBACEOUS. HEARD SONG BIRDS, HAWKS OVERHEAD. THOUGHT WE WOULD SEE MORE WATER FOUL OR SHORE BIRDS, BUT NONE. SAW A SPOTTED FAWN TRYING TO HIDE IN THE UPLAND GRASS. LOTS OF AQUATIC INSECTS FLYING ABOVE THE WATER SURFACE. NO FISH BITES THOUGH.

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**

STREAM QUALITY High ☐ Moderate ☒ Low ☐

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S8ADA001**

Stream/Waterbody Name (if known): UPPER SEVENMILE CREEK

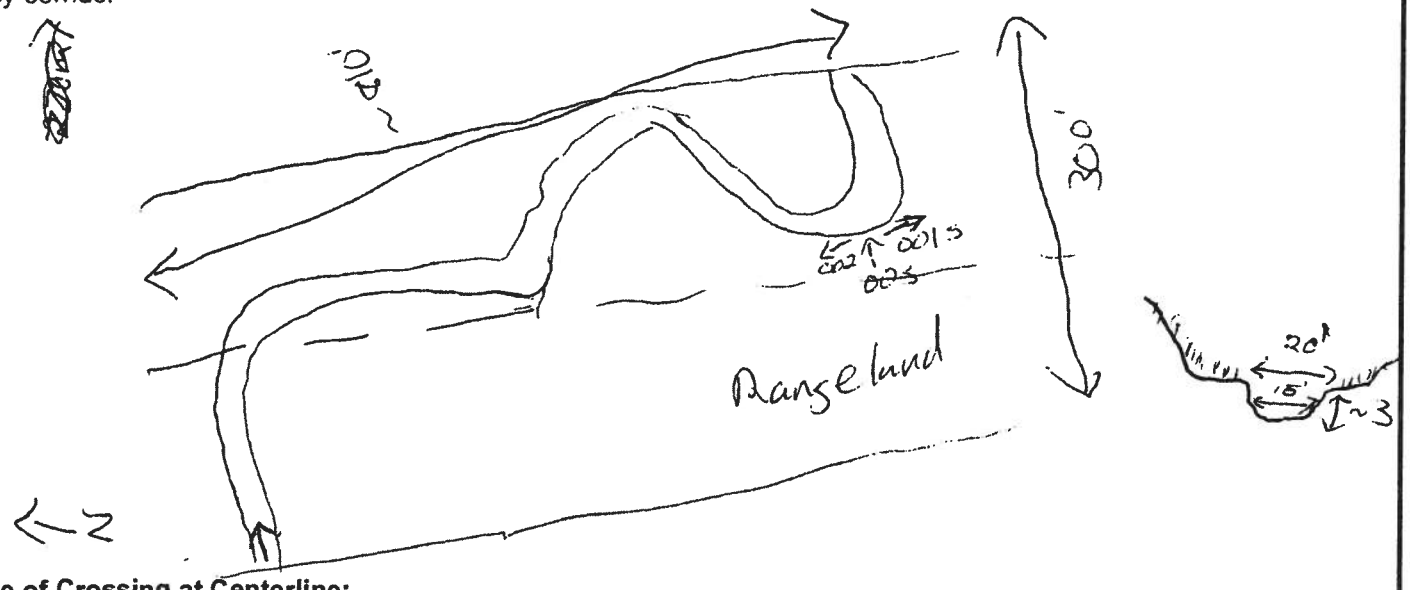
Associated Wetland ID #:

Date: 6/3/08	**Project Name & No.:** Keystone XL-10623-007-803A	**Milepost:** 166.11
Investigators: 8A	**State/County:** DAWSON CO, MT	**Quad Name:** UNION SCHOOL
Logbook No.: 1	**Logbook Page No.:** 3&4	**Tract No.:** ML-MT-DA-00095.000	**Picture No.:** S8ADA001_E3,N1,S2

PHYSICAL ATTRIBUTES VEGETATION GROWING IN BED

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Angle of Crossing at Centerline: _____

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None	Flow type	☐ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL: **E** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	15	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 20	Water Surface (at crossing location): NONE AT CROSSING	
Stream Depth (in.)	☐ 0-3 ☒ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☐ Clear natural line on bank ☐ Wrack line ☐ Shelving ☒ Scour ☐ Abrupt plant community change ☐ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining ☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting ☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☒ 3:1	☐ 2:1	☐ 1:1	☐ Vertical
	Right:	☐ 4:1	☒ 3:1	☐ 2:1	☐ 1:1	☐ Vertical

Feature ID #: S8ADA001

Date: 6/3/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 166.11

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Turbid ☐ Sheen on surface ☐ Floating algal mats ☐ Water Color: SLIGHTLY BROWN Slightly Turbid ☒ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other:
Stream Substrate %	Silts 50% Cobbles Bedrock Sands Gravel Concrete Muck Vegetation: Other: X Explain: CLAY 50
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☐ BLUNT SPIKE RUSH Gravel Bar ☐ Deep Pools ☐ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☐ Fringing Wetlands: ☒ PEM WEST OF ALIGNMENT Undercut Banks ☐ Overhanging trees/shrubs ☐
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: Snakes ☐ Fish (juvenile) ☐ Frogs ☒ HEARD FROGS Invertebrates:
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): MIDDLE OF RANGELAND Circle vegetative layers: trees ☐ shrubs ☐ herbs ☒ ☐Significant bare areas within riparian zone ☐Evidence of non-buffered concentrated flows
Tributary Is	☒Natural ☐Artificial (Man-Made) ☐Manipulated
Channel Condition:	Channelization or Braiding ☒ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ RANGELAND MANURE EVIDENT IN FIELD AROUND STREAM Waste discharge pipes present ☐ Manure in stream or on banks ☐ Other: IN SURROUNDING FIELD

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

APPEARS TO PROVIDE HABITAT FOR FROGS, BUT LITTLE TO NO DIVERSITY

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**

PIPELINE CROSSES AT A SLIGHT ANGLE

STREAM QUALITY High ☐ Moderate ☒ Low ☐

ENSR
1601 Prospect Parkway
Ft. Collins, CO 80525

Waterbody Data Form

Feature ID: S23DA001
YELLOWSTONE RIVER

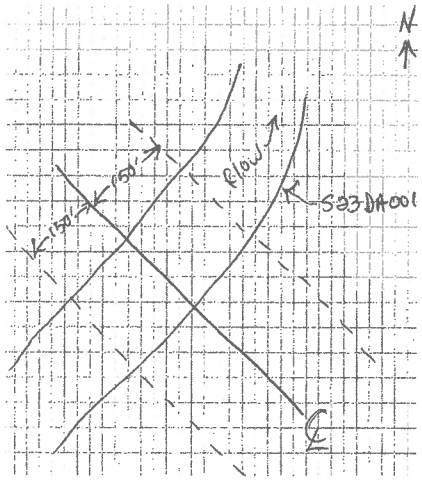
☑ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other

Date:	Client/Project Name:	Milepost Enter/Exit:
2008/10/07	Keystone XL- 10623-007-800D	195.92

Team:	State/County:	Quad Name:
23	MT - FA	Marsh SW

Logbook No.:	Logbook Page No.:	Tract No.:	Photo:
1	73	MLMTDA00437.0	S23DA001_S.jpg

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☑ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☑ Moderate ☐ Slow ☐ Very Slow ☐ None
Subsurface Flow:	☐ Yes ☑ No ☐ Unknown
Flow Type:	☑ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☒ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW
OHWM Width (ft.):	800
Sinuosity:	☐ Braided ☐ Meandering ☑ Straight ☐ N/A
Stream Width (ft.):	800 — **Water Surface (At Crossing Location)** 300
Stream Depth (ft.):	☐ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☑ 60+

OHWM Indicators:

CLEAR NATURAL LINE ON BANK
SHELVING
SEDIMENT SORTING
SEDIMENT DEPOSITION
LITTER AND DEBRIS

Bank Height (ft.): ooking Downstream)	Left:	☐ 0-2	☐ 2-4	☐ 4-6	☑ 6-8	☐ 8+
	Right:	☐ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☑ 8+
Bank Slope: (Looking Downstream)	Left:	☐ 4:1	☑ 3:1	☐ 2:1	☐ 1:1	☐ Vertical
	Right:	☐ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☑ Vertical

ENSR
1601 Prospect Parkway
Ft. Collins, CO 80525

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
Water Color: ☐ Other:

Stream Substrate %:

20% SILTS
40% COBBLES
40% GRAVEL

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☑ In-stream Emergent Plant % Cover: 10
☑ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover: 0
☐ Mud Bar ☑ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs

Aquatic Organisms Observed:

☐ Waterfowl ☐ Fish (Adult) ☐ Turtles ☐ Other:
☐ Snakes ☐ Fish (Juvenile) ☐ Frogs
☐ Invertebrate

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out onto Flood Plain (ft): 100

Vegetative Layers: ☐ Herbs ☐ Shrubs ☐ Trees

☐ Significant Bare Areas Within Riparian Zone ☐ Evidence Of Non-Buffered Concentrated Flows

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☑ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☑ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

RIGHT BANK HIGH 10-15FT VEGETATION NATIVE GRASSES SILVER SAGEBRUSH. LEFT BANK FLOODPLAIN CHARACTERIZED BY OLD COTTONWOODS AND WILLOWS

Comments:

WILL TRIGGER PCN

ENSR
1601 Prospect Parkway
Ft. Collins, CO 80525

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
Water Color: ☐ Other:

Stream Substrate %:

60% SILTS
20% COBBLES
20% GRAVEL

Aquatic Habitats:

☑ Sand Bar ☐ Gravel Riffle ☑ In-stream Emergent Plant % Cover: 20
☐ Gravel Bar ☑ Deep Pools ☑ In-stream Submerged Plant % Cover: 5
☐ Mud Bar ☑ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☑ Overhanging Trees/Shrubs

Aquatic Organisms Observed:

☐ Waterfowl ☐ Fish (Adult) ☐ Turtles ☑ Other: NONE OBSERVED
☐ Snakes ☐ Fish (Juvenile) ☐ Frogs
☐ Invertebrate

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out onto Flood Plain (ft) 100

Vegetative Layers: ☐ Herbs ☐ Shrubs ☐ Tree

☐ Significant Bare Areas Within Riparian Zone ☐ Evidence Of Non-Buffered Concentrated Flows

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☑ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☑ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number

OLD GROWTH COTTONWOODS AND SILVER SAGEBRUSH ON RIGHT FLOODPLAIN. LEFT FLOODPLAIN HAS OLD GROWTH COTTONWOODS IN FARM FIELD

Comments:

BANK SLOPES ARE WELL VEGETATED. PIPELINE CROSSES AT APPROXIMATELY 90 DEGREE ANGLE

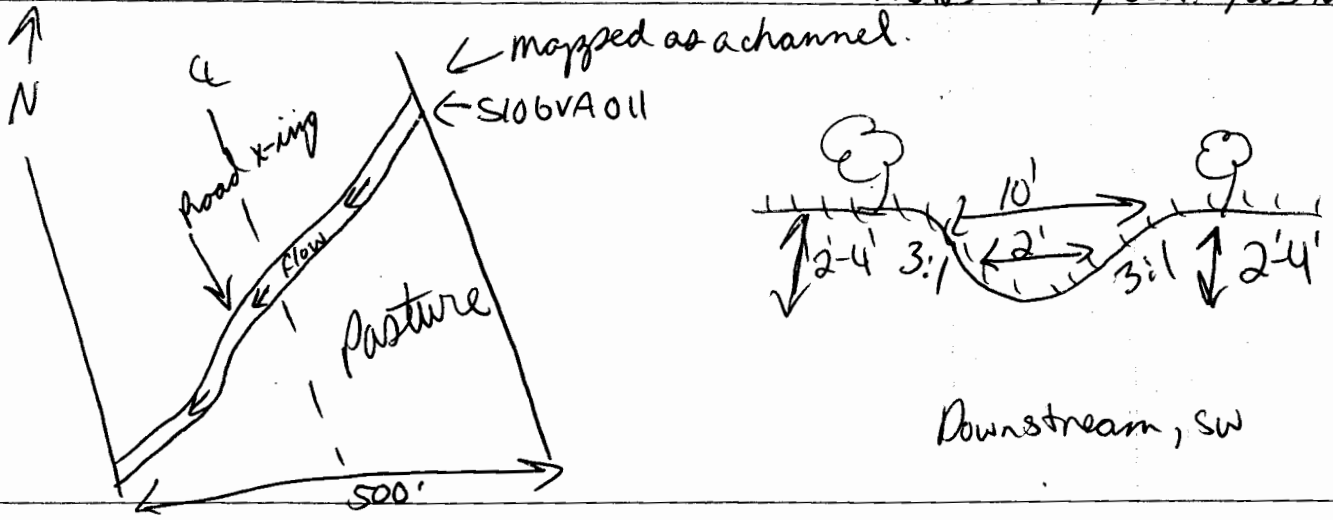
Stream Quality: ☑ Hig ☐ Moderate ☐ Low

Waterbody Data Form S106VA011 – Stream
East Fork Cherry Creek

☐ Centerline ☒ CL Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID: 3/26/10		Project Designated Name: Keystone XL - Phase ~~IV~~	
Date: 7/7/10	Client/Project Name: TransCanada-Trow-KXL		Milepost Enter/Exit: x71
Team: B106	State/County: MT – Valley		Quad Name: NA
Logbook No.: 2	Logbook Page No.: —	Tract No.: T29N, R40E, Sec21	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.) Photos: 001SW, 002N, 003NE



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ~~☒ None~~ ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☒ No Flow
OHWM Width (ft.):	≈2'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	TOB ≈ 10' **Water Surface (At Crossing Location)** NONE
Stream Depth (ft.):	☒ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Bent veg, Scour
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☒ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☒ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

S106VA011-

Qualitative Attributes

Water Appearance:

- [ ] Clear
- [ ] Slightly Turbid
- [x] No Flow
- [ ] Turbid
- [ ] Very Turbid
- [ ] Other: No H_2O
- [ ] Sheen on Surfac
- [ ] Greenish Color
- [ ] Floating Algalmats
- [ ] Obvious Surface Scum

Stream Substrate %: Cobble / silt

Aquatic Habitats:

- [ ] Sand Bar
- [ ] Gravel Bar
- [ ] Mud Bar
- [ ] Undercut Banks
- [ ] Gravel Riffle
- [ ] Deep Pools
- [ ] Bank Root Systems
- [x] Overhanging Trees/Shrubs
- [x] In-stream ~~Emergent~~ Plants % Cover: 60% grasses
- [ ] In-stream Submerged Plant % Cover:
- [ ] Fringing Wetlands Characteristics:
- [ ] None

Aquatic Organisms Observed: None

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 10' Right - 10'

Vegetative Layers: [x] Herbs [ ] Shrubs [x] Trees [ ] Multiple

Significant Bare Areas Within Riparian Zone [ ] Yes [x] No [ ] Unknown

Evidence Of Non-Buffered Concentrated Flows: [ ] Yes [x] No [ ] Unknown

Tributary Condition: [ ] Natural [ ] Artificial (Man-Made) [x] Manipulated — Road x-ing

Channel Condition: Road x-ing →

- [ ] Channelization/Braiding
- [x] Dikes/Berms
- [ ] Unnatural Straightening
- [ ] Excessive Bank Erosion
- [ ] Downcutting
- [ ] N/A

Disturbances:

- [x] Livestock Access to Riparian Zone
- [x] Manure In Stream or On Banks
- [ ] Waste Discharge Pipes Present
- [ ] Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: NA

Pasture

Comments: Willow/Cottonwood, sage, wheatgrass, brome, alfalfa

* Road x-ing does not have a culvert to allow water flow

Stream Quality: [ ] High [ ] Moderate [x] Low — No H_2O, Road x-ing, cattle.

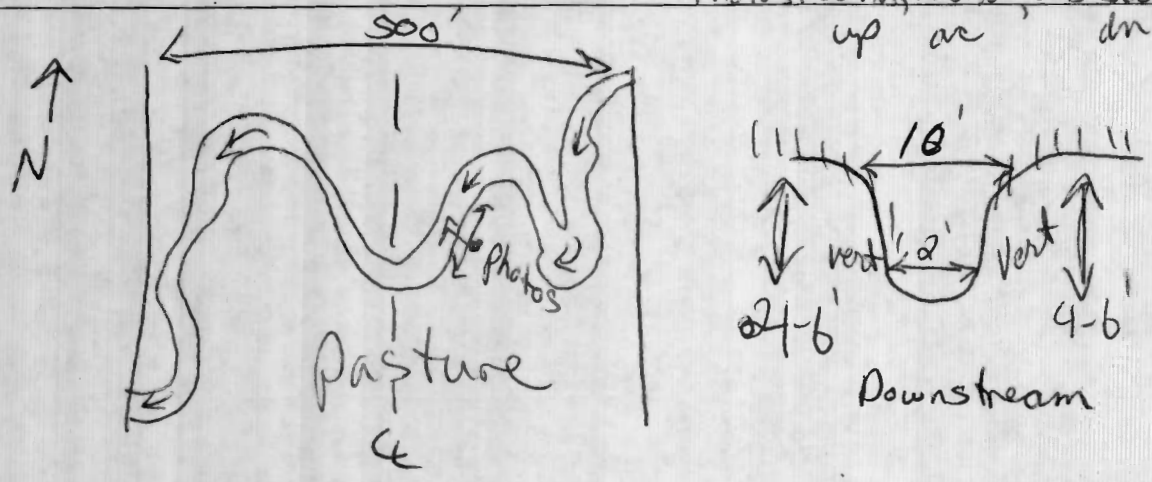
Waterbody Data Form

S110 MC ~~AA~~ 002

☐ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☒ Other Butte Reroute

Centerline ID: 3/26/10	Project Designated Name: Keystone XL Phase IV	
Date: 8/26/10	Client/Project Name: TransCanada - Trow	Milepost Enter/Exit: ≈115.9
Team: B110	State/County: MT - McCone	Quad Name: NA
Logbook No.: 1	Logbook Page No.: 38	Tract No.: ML-MT-MC-00265

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.) Photos: 001 NE, 002 N, 003 SW



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☒ No Flow
OHWM Width (ft.):	2'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.): TOB = 10'	Water Surface (At Crossing Location) WW ≈ 1'
Stream Depth (ft.):	☐ 0 ☐ 0.5 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Bentreg, scour
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☐ 2-4 ☒ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☐ 2-4 ☒ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☒ Vertical Right: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☒ Vertical

S110MC002

Qualitative Attributes

Water Appearance:
☐ Clear ☒ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☒ No Flow ☐ Other: Brown

Stream Substrate %: Clay

Aquatic Habitats:
☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover:
☒ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed: None

Riparian Zone:
Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 10' Right - 10'
Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple
Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown
Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☒ No ☐ Unknown

Tributary Condition: ☐ Natural ☐ Artificial (Man-Made) ☒ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☒ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☒ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☒ Other: Low Water crossing

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:
Habitat ID Number: NA

Comments: Within cattle pasture, cattle have degraded and so has low H_2O x-ing.
Sages, wheatgrasses, needlegrass, white/snowberry.

Stream Quality: ☐ High ☐ Moderate ☒ Low

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S5AMC001**

Stream/Waterbody Name (if known): FIGURE EIGHT CREEK

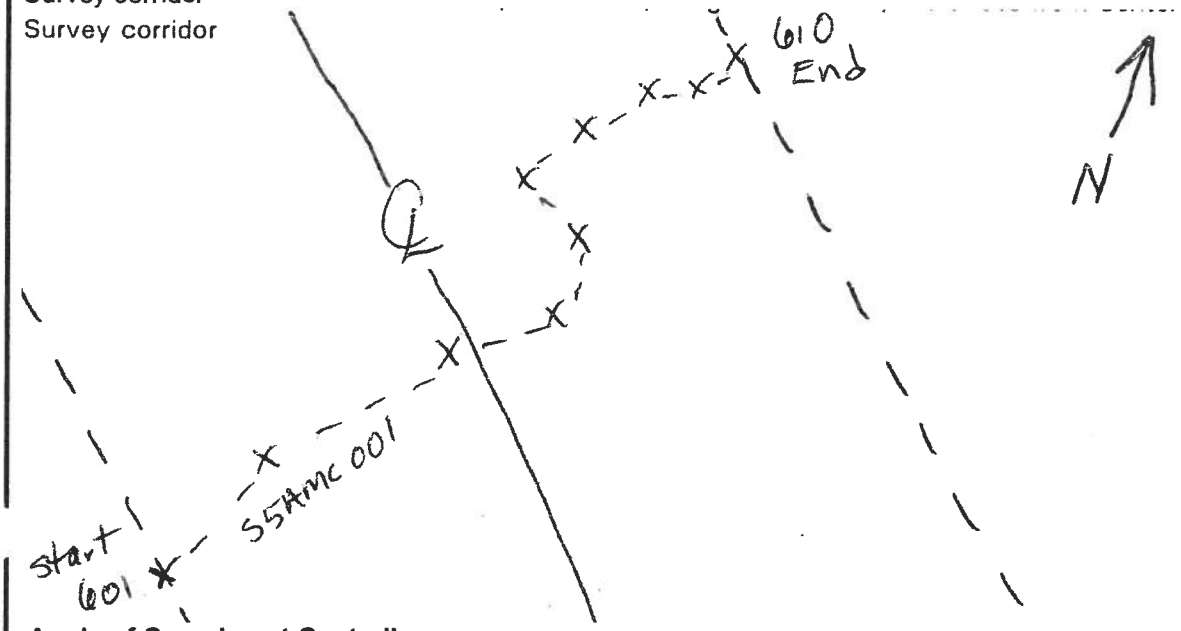
Associated Wetland ID #:

Date: 6/11/08	**Project Name & No.:** Keystone XL-10623-007-803A		**Milepost: 122.33**
Investigators: ROBSON/SMITH	**State/County: MT/ MCCONE**		**Quad Name: BOBCAT CREEK**
Logbook No.: 1	**Logbook Page No.: 37**	**Tract No.:** ML-MT-MC-00340.000	**Picture No.:** S5AMC001_NE,W2,SW3

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Angle of Crossing at Centerline:

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☐ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None	Flow type	☐ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL: (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	2.5 FT	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 3'	Water Surface (at crossing location): 1.5	
Stream Depth (in.)	☐ 0-3 ☒ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Wrack line ☐ Shelving ☐ Scour ☐ Abrupt plant community change ☐ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining ☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting ☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☒ Vertical
	Right:	☐ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☒ Vertical

Feature ID #: S5AMC001

Date: 6/11/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 122.33

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Slightly Turbid ☐ Other:	Turbid ☒ Very Turbid ☐	Sheen on surface ☐ Greenish color ☐	Floating algal mats ☐ Obvious surface scum ☐	Water Color: BROWN
Stream Substrate %	Silts **X** Concrete Other: CLAY	Cobbles Muck Explain:	Bedrock Vegetation:	Sands	Gravel
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Bar ☐ Mud Bar ☐ Undercut Banks ☐	Gravel Riffles ☐ Deep Pools ☐ Bank root systems ☐ Overhanging trees/shrubs ☒	In-stream emergent plants: ☐ In-stream submerged plants: ☐ Fringing Wetlands: ☐		
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Snakes ☐ Invertebrates:	Fish (adult) ☐ Fish (juvenile) ☐	Turtles ☐ Frogs ☒	Other:	
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 25 Circle vegetative layers: trees ☐ shrubs ☒ herbs ☐ ☐Significant bare areas within riparian zone ☐Evidence of non-buffered concentrated flows				
Tributary is	☒Natural	☐Artificial (Man-Made)	☐Manipulated		
Channel Condition:	Channelization or Braiding ☒ *Deeply incised*	Unnatural straightening ☐	Downcutting ☐	Dikes/Berms ☐	Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Waste discharge pipes present ☐		Manure in stream or on banks ☐ Other: NONE OBSERVED		

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

WOODY VEGETATION: SHRUBS/ WILD ROSE, SILVER SAGE, SNOWBERRY

Comments (**e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders**)

APPROXIMATELY 45 DEGREES

STREAM QUALITY High ☐ Moderate ☐ Low ☒

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S5AVA004**

Stream/Waterbody Name (if known): BRUSH FORK

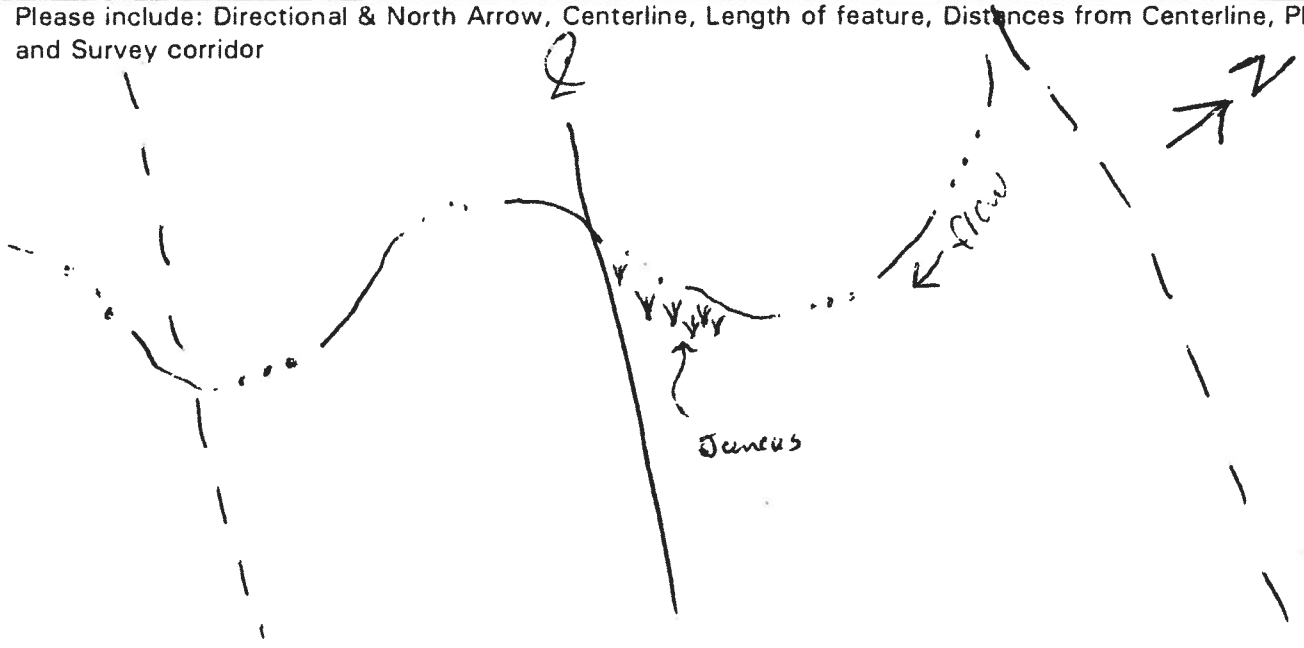
Associated Wetland ID #:

Date: 6/15/08	**Project Name & No.:** Keystone XL-10623-007-803A		**Milepost: 51.12**
Investigators: ROBSON/SMITH	**State/County: MT/ VALLEY**		**Quad Name: TAMPICO NE**
Logbook No.: 1	**Logbook Page No.: 55**	**Tract No.:** ML-MT-VA-00321.000	**Picture No.: S5AVA004_E,W2,N3**

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations and Survey corridor



Angle of Crossing at Centerline: _____

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☐ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☒ Moderate ☐ Slow ☐ Very Slow ☐ None	Flow type	☐ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL: (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	3-5'	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 3-5'	Water Surface (at crossing location): 3-5'	
Stream Depth (in.)	☐ 0-3 ☐ 3-6 ☒ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Wrack line ☐ Shelving ☐ Scour ☐ Abrupt plant community change ☐ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining ☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting ☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☐ 2:1	☒ 1:1	☐ Vertical
	Right:	☐ 4:1	☒ 3:1	☐ 2:1	☐ 1:1	☐ Vertical

Feature ID #: S5AVA004

Date: 6/15/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 51.12

QUALITATIVE ATTRIBUTES

Water Appearance (check all that appiy)	Clear ☐ Slightly Turbid ☐ Other:	Turbid ☒ Very Turbid ☐	Sheen on surface ☐ Greenish color ☐	Floating algal mats ☐ Obvious surface scum ☐	Water Color: LT. BROWN
Stream Substrate %	Silts **X** Concrete Other: CLAY	Cobbles Muck Explain:	Bedrock Vegetation:	Sands	Gravel
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Bar ☐ Mud Bar ☐ Undercut Banks ☐	Gravel Riffles ☐ Deep Pools ☐ Bank root systems ☒ Overhanging trees/shrubs ☐	In-stream emergent plants: ☐ In-stream submerged plants: ☐ Fringing Wetlands: ☐		
Aquatic Organisms Observed (check all that appiy)	Waterfowl ☐ Snakes ☐ Invertebrates:	Fish (adult) ☐ Fish (juvenile) ☐	Turtles ☐ Frogs ☒ *Heard not seen*	Other:	
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): Circle vegetative layers: trees ☐ shrubs ☒ herbs ☐ *Silver sage, wild rose* ☐Significant bare areas within riparian zone ☐Evidence of non-buffered concentrated flows				
Tributary is	☒Natural ☐Artificial (Man-Made) ☐Manipulated				
Channel Condition:	Channelization or Braiding ☐	Unnatural straightening ☐	Downcutting ☐	Dikes/Berms ☐	Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Waste discharge pipes present ☐	Manure in stream or on banks ☒ Other:			

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

VERY LITTLE AQUATIC VEGETATION. SOME JUNCUS ALONG LEFT BANK NEAR CL- 0-3' WIDE STRIP FOR ABOUT 50' IN LENGTH. NO WOODY VEGETATION ADJACENT TO BANKS. WILD ROSE AND SILVER SAGE ON SLOPES ON EITHER SIDE OF STREAM

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**

STREAM QUALITY High ☐ Moderate ☐ Low ☒

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S7AMC002**

Stream/Waterbody Name (if known): UT TO STRUPLE COULEE

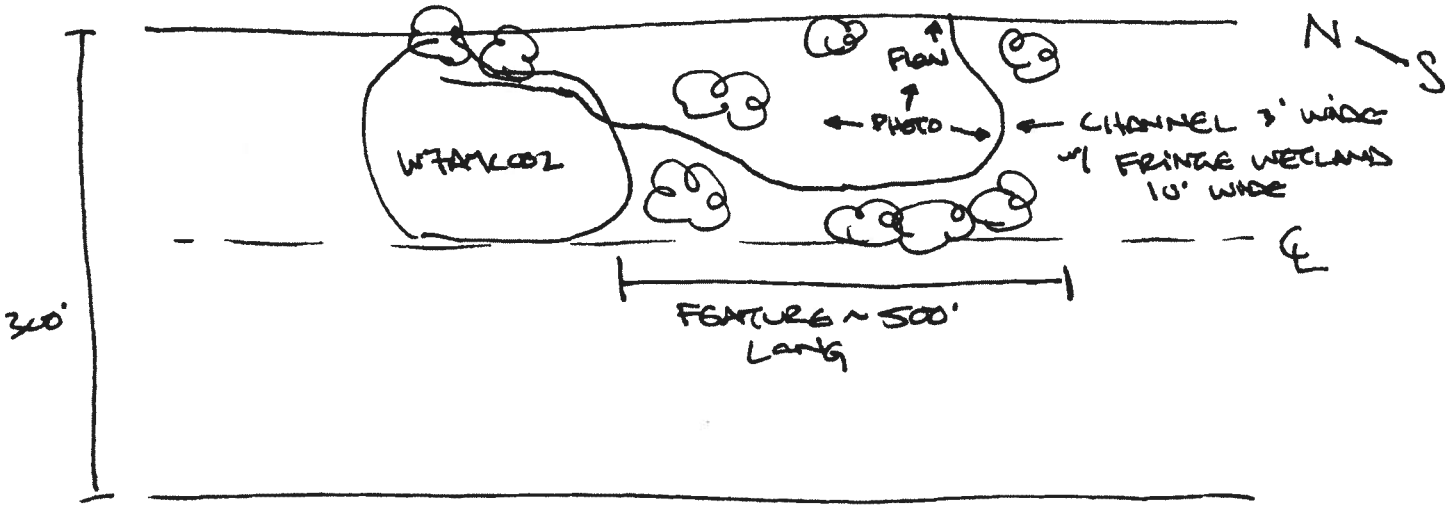
Associated Wetland ID #: W7AMC002

Date: 6/7/08	**Project Name & No.:** Keystone XL-10623-007-803A		**Milepost: 93.58**
Investigators: 7A	**State/County: MT/ MC**		**Quad Name: BOBCAT CREEK**
Logbook No.: 1	**Logbook Page No.: 21**	**Tract No.: ML-MT-MC-00040.000**	**Picture No.: S7AMC002_N,S,E**

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Angle of Crossing at Centerline: NOT CROSSING ℄

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☒ Very Slow ☐ None	Flow type	☒ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL: (N, NE, E, SE, S, SW, W, NW) *DOES NOT CROSS*
OHWM Width (ft.):	6	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 6	Water Surface (at crossing location): 3	
Stream Depth (in.)	☒ 0-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Wrack line ☐ Shelving ☐ Scour		
	☒ Abrupt plant community change ☐ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining		
	☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting		
	☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☒ 3:1	☐ 2:1	☐ 1:1	☐ Vertical
	Right:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S7AMC004**

Stream/Waterbody Name (if known): UNKNOWN

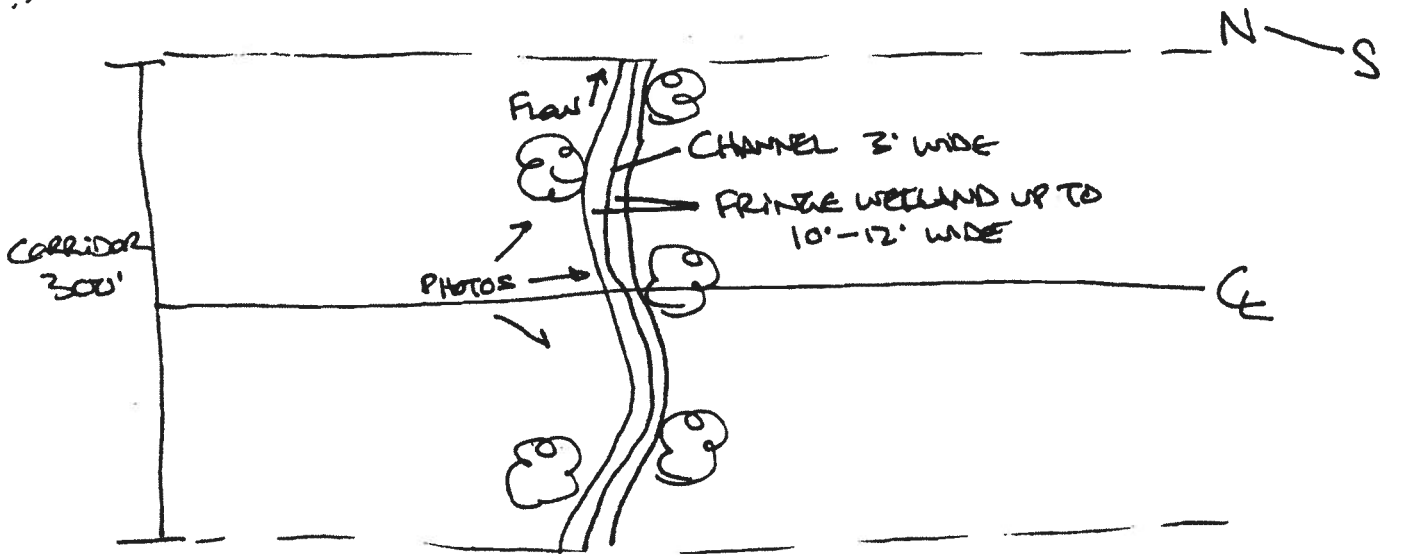
Associated Wetland ID #: N/A

Date: 6/7/08	**Project Name & No.:** Keystone XL-10623-007-803A	**Milepost: 94.60**
Investigators: 7A	**State/County: MT/ MC**	**Quad Name: BOBCAT CREEK**
Logbook No.: 1	**Logbook Page No.: 28**	**Tract No.:** ML-MT-MC-00055.000	**Picture No.: S7AMC004_SW,S,SE**

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Angle of Crossing at Centerline: 90°

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☒ Very Slow ☐ None	Flow type	☒ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL: **NE** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	6'	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 8'	Water Surface (at crossing location): 3'	
Stream Depth (in.)	☐ 0-3 ☒ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☐ Clear natural line on bank ☐ Wrack line ☐ Shelving ☐ Scour ☒ Abrupt plant community change ☐ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining ☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting ☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical
	Right:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical

Feature ID #: S7AMC004

Date: 6/7/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 94.60

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☒ Turbid ☐ Sheen on surface ☐ Floating algal mats ☐ Water Color: Slightly Turbid ☐ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other: SOME ALGAL GROWTH
Stream Substrate %	Silts 10% Cobbles Bedrock Sands Gravel 5% Concrete Muck 85% Vegetation: Other: Explain:
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☐ Gravel Bar ☐ Deep Pools ☐ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☐ Fringing Wetlands: ☒ Undercut Banks ☐ Overhanging trees/shrubs ☒
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: Snakes ☐ Fish (juvenile) ☐ Frogs ☐ Invertebrates: **X**
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 10' Circle vegetative layers: trees ☒ shrubs ☒ herbs ☒ ☐ Significant bare areas within riparian zone ☐ Evidence of non-buffered concentrated flows
Tributary is	☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated
Channel Condition:	Channelization or Braiding ☐ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Manure in stream or on banks ☒ Waste discharge pipes present ☐ Other: HEAVY TRAMPLING IN CREEK

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity:	**Habitat ID No.:**
MODERATE HIGH HABITAT QUALITY	

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**
STREAM QUALITY High ☐ Moderate ☒ Low ☐

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S7AMC005**

Stream/Waterbody Name (if known): UNKNOWN

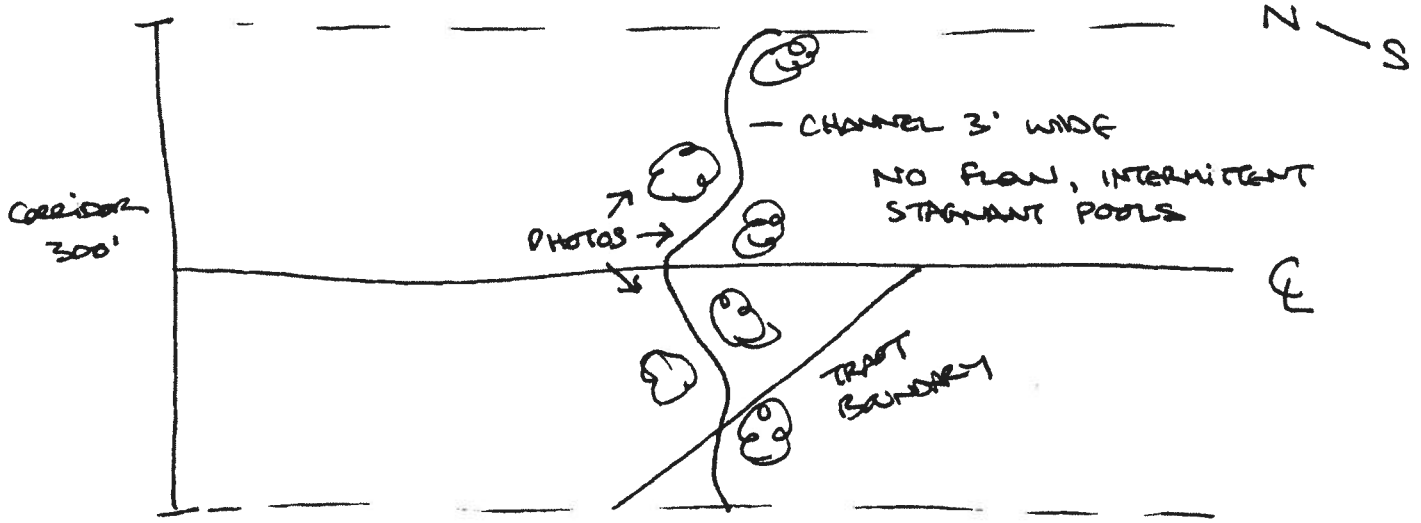
Associated Wetland ID #: NA

Date: 6/7/08	**Project Name & No.:** Keystone XL-10623-007-803A		**Milepost: 94.83**
Investigators: 7A	**State/County: MT/MC**		**Quad Name: BOBCAT CREEK**
Logbook No.: 1	**Logbook Page No.: 31**	**Tract No.:** ML-MT-MC-00060.000	**Picture No.: S7AMC005_S,SE,E**

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Angle of Crossing at Centerline: 90°

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None	Flow type	☐ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL: **NE** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	3'	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 3'	Water Surface (at crossing location): NA	
Stream Depth (in.)	☒ 0-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☐ Clear natural line on bank ☐ Wrack line ☐ Shelving ☐ Scour ☐ Abrupt plant community change ☐ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining ☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting ☒ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☒ 3:1	☐ 2:1	☐ 1:1	☐ Vertical
	Right:	☐ 4:1	☒ 3:1	☐ 2:1	☐ 1:1	☐ Vertical

Feature ID #: S7AMC005

Date: 6/7/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 94.83

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Turbid ☐ Sheen on surface ☐ Floating algal mats ☐ Water Color: Slightly Turbid ☐ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other: NO FLOW
Stream Substrate %	Silts Cobbles Bedrock Sands Gravel Concrete Muck 100 Vegetation: Other: Explain:
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☐ Gravel Bar ☐ Deep Pools ☐ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☐ Fringing Wetlands: ☐ Undercut Banks ☐ Overhanging trees/shrubs ☐
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: Snakes ☐ Fish (juvenile) ☐ Frogs ☐ Invertebrates:
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 3 Circle vegetative layers: trees ☐ shrubs ☐ herbs ☒ ☐Significant bare areas within riparian zone ☐Evidence of non-buffered concentrated flows
Tributary is	☒Natural ☐Artificial (Man-Made) ☐Manipulated
Channel Condition:	Channelization or Braiding ☐ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Manure in stream or on banks ☒ Waste discharge pipes present ☐ Other:

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

MODERATE HABITAT QUALITY, HIGH RIPARIAN, LOW STREAM

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**

STREAM QUALITY High ☐ Moderate ☐ Low ☒ → NO FLOW

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S7AMC008**

Stream/Waterbody Name (if known): E. FORK PRARIE ELK CREEK

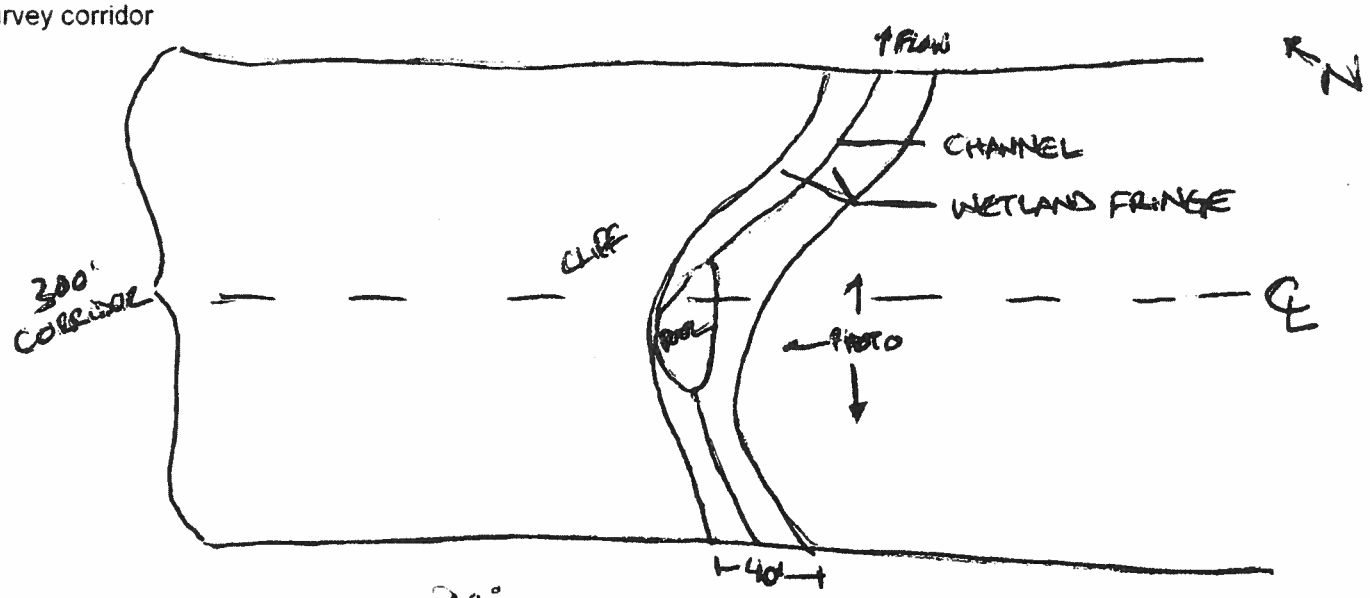
Associated Wetland ID #:

Date: 6/11/08	**Project Name & No.:** Keystone XL-10623-007-803A	**Milepost:** 127.56
Investigators: 7A	**State/County:** MT/ MC	**Quad Name:** PEDIGO COULEE
Logbook No.: 1	**Logbook Page No.:**	**Tract No.:** ML-MT-MC-00400.000 / **Picture No.:** S7AMC008_SW,W,NE

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Angle of Crossing at Centerline: 90°

Waterbody Type	☐ Lake	☐ Pond	☐ Borrow Pit	☐ River	☒ Stream	☐ Ag. Ditch	Other:		
Stream Flow	☐ Fast	☐ Moderate	☒ Slow	☐ Very Slow	☐ None				
Subsurface Flow?	☐ Yes	☐ No	☒ Unknown						
Flow type	☒ Perennial (Flows year round)	☐ Seasonal (Continuous flow ≥ 3 months)	☐ Intermittent (Flows <3 months)	☐ Ephemeral (Flows only in response to rainfall)					
Direction of Flow where it crosses CL: **NE** (N, NE, E, SE, S, SW, W, NW)									
OHWM Width (ft.):	20	Sinuosity	☐ Straight	☒ Meandering					
Stream Width (ft.)	Top of Bank (at crossing location): 40	Water Surface (at crossing location): 8-25							
Stream Depth (in.)	☐ 0-3	☒ 3-6	☐ 6-12	☐ 12-18	☐ 18-24	☐ 24-36	☐ 36-48	☐ 48-60	☐ 60+
OHWM Indicator	☐ Clear natural line on bank	☐ Wrack line	☐ Shelving	☐ Scour					
	☒ Abrupt plant community change	☐ Bent, matted or missing vegetation	☐ Wrested vegetation	☐ Water staining					
	☐ Soil character changes	☐ Sediment deposition	☐ Sediment sorting						
	☐ Litter and debris	☐ Leaf litter disturbed	☐ Other:						

Bank Height (ft.) (looking downstream)	Left:	☐ 0-2	☐ 2-4	☐ 4-6	☒ 6-8	☐ 8+
	Right:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical
	Right:	☒ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical

WATERBODY DATA FORM

ENSR | AECC

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S8AFA006**

Stream/Waterbody Name (if known):

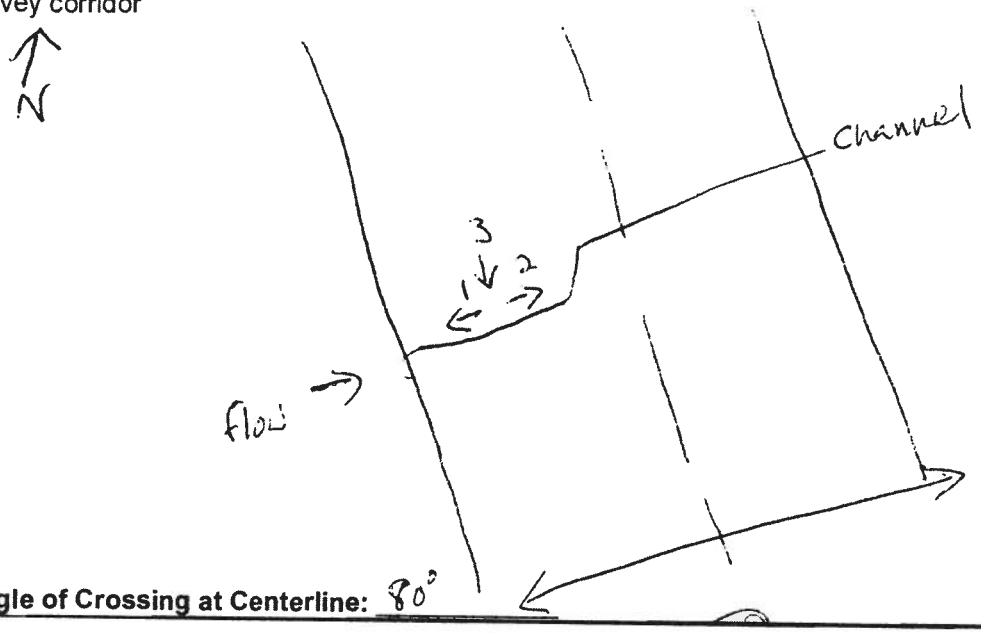
Associated Wetland ID #:

Date: 6/15/08	**Project Name & No.:** Keystone XL-10623-007-803A	**Milepost: 258.38**
Investigators: 8A	**State/County: MT/ FALLON**	**Quad Name: WEBSTER NW**
Logbook No.: 1	**Logbook Page No.: 110&111** / **Tract No.:** ML-MT-FA-00630.000	**Picture No.: S8AFA006_SW,NE,SE**

PHYSICAL ATTRIBUTES- SLIGHTLY MEANDERING, WITHIN STREAM EMERGENT VEGETATION

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Angle of Crossing at Centerline: 80°

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☒ Slow ☐ Very Slow ☐ None	Flow type	☐ Perennial (Flows year round) ☒ Seasonal (Continuous flow ≥ 3 months) ☐ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL:**NE** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	5'	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 10	Water Surface (at crossing location): 6	
Stream Depth (in.)	☐ 0-3 ☐ 3-6 ☒ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Wrack line ☐ Shelving ☒ Scour ☐ Abrupt plant community change ☐ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining ☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting ☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical
	Right:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical

 Feature ID #: S8AFA006

Date: 6/15/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 258.38

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Slightly Turbid ☐ Other:	Turbid ☒ Very Turbid ☐	Sheen on surface ☐ Greenish color ☐	Floating algal mats ☐ Obvious surface scum ☐	Water Color: BROWN- RECENT HEAVY RAINS
Stream Substrate %	Silts 20% Concrete Other:	Cobbles Muck Explain:	Bedrock Vegetation:	Sands 60%	Gravel 20%
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Bar ☐ Mud Bar ☐ Undercut Banks ☐	Gravel Riffles ☐ Deep Pools ☐ Bank root systems ☐ Overhanging trees/shrubs ☐	In-stream emergent plants: ☒ In-stream submerged plants: ☐ Fringing Wetlands: ☒ W8AFA004		
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Snakes ☐ Invertebrates: NONE	Fish (adult) ☐ Fish (juvenile) ☐	Turtles ☐ Frogs ☐	Other:	
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): Circle vegetative layers: trees ☐ shrubs ☐ herbs ☒ EXISTS IN GRASSLAND FIELD ☐Significant bare areas within riparian zone ☐Evidence of non-buffered concentrated flows				
Tributary Is	☒Natural	☐Artificial (Man-Made)	☐Manipulated		
Channel Condition:	Channelization or Braiding ☐	Unnatural straightening ☐	Downcutting ☐	Dikes/Berms ☐	Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Waste discharge pipes present ☐		Manure in stream or on banks ☒ Other:		

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

AREA HAS COMBO OF ABUTTING WETALND, GRASSLAND AND IN STREAM EMERGENT VEGETATION, WHICH CREATES A DIVERSE HABITAT AREA.

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**

90 DEGREE ANGLE AT CROSSING SLIGHTLY EROSIONAL DUE TO SANDY SOIL TYPE.

STREAM QUALITY High ☐ Moderate ☒ Low ☐

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S8AFA007**

Stream/Waterbody Name (if known): SANDSTONE CREEK

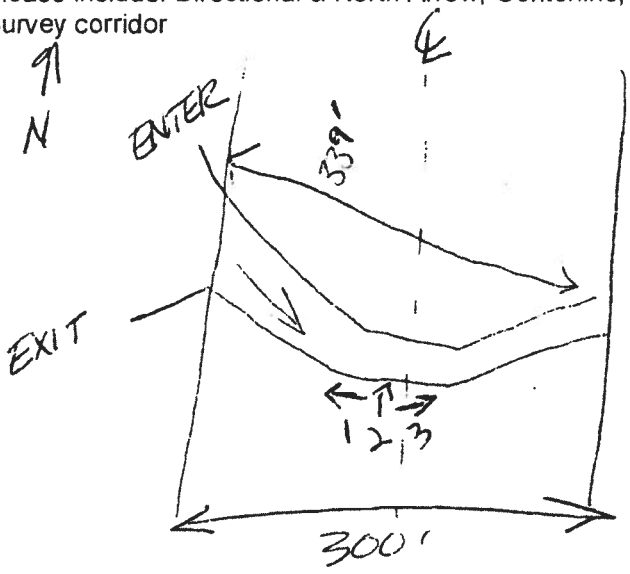
Associated Wetland ID #: N/A

Date: 6/18/08	**Project Name & No.:** Keystone XL-10623-007-803A		**Milepost: 244.31**
Investigators: 8A	**State/County: MT/FALLON**		**Quad Name: BAKER**
Logbook No.: 1	**Logbook Page No.: 123-124**	**Tract No.:** ML-MT-FA-00410.000	**Picture No.: S8AFA007_W1,N2,E3**

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Angle of Crossing at Centerline: 90°

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☒ Slow ☐ Very Slow ☐ None	Flow type	☐ Perennial (Flows year round) ☒ Seasonal (Continuous flow ≥ 3 months) ☐ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL:**E** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	12	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 30	Water Surface (at crossing location): 8-10	
Stream Depth (in.)	☐ 0-3 ☐ 3-6 ☐ 6-12 ☒ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Wrack line ☐ Shelving ☒ Scour ☐ Abrupt plant community change ☐ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining ☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting ☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☐ 0-2	☐ 2-4	☒ 4-6	☐ 6-8	☐ 8+
	Right:	☐ 0-2	☐ 2-4	☒ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical
	Right:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical

 Feature ID #: S8AFA007

Date: 6/18/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 244.31

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Turbid ☒ Sheen on surface ☐ Floating algal mats ☒ Water Color: BROWN Slightly Turbid ☐ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other:
Stream Substrate %	Silts 30% Cobbles Bedrock Sands 30% Gravel Concrete Muck 10% Vegetation: Other: X Explain: 30% CLAY
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☒ Gravel Bar ☐ Deep Pools ☐ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☐ Fringing Wetlands: ☐ Undercut Banks ☐ Overhanging trees/shrubs ☐
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: *NONE* Snakes ☐ Fish (juvenile) ☐ Frogs ☐ Invertebrates:
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): LOCATED IN GRASSLAND FIELD Circle vegetative layers: trees ☐ shrubs ☐ herbs ☒ ☐Significant bare areas within riparian zone ☐Evidence of non-buffered concentrated flows
Tributary Is	☐Natural ☐Artificial (Man-Made) ☐Manipulated
Channel Condition:	Channelization or Braiding ☐ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Manure in stream or on banks ☐ N/A Waste discharge pipes present ☐ Other:

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

MIXED SAGEBRUSH/ GRASSLAND VEG. COMMUNITY BIRDS OBSERVED

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**

PIPELINE CROSSING ANGLE~ 90 DEGREES, STEEP STREAM BANKS ARE ALREADY SLIGHTLY EROSIONAL

STREAM QUALITY High ☐ Moderate ☒ Low ☐

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S9AFA003**

Stream/Waterbody Name (if known): RED BUTTE

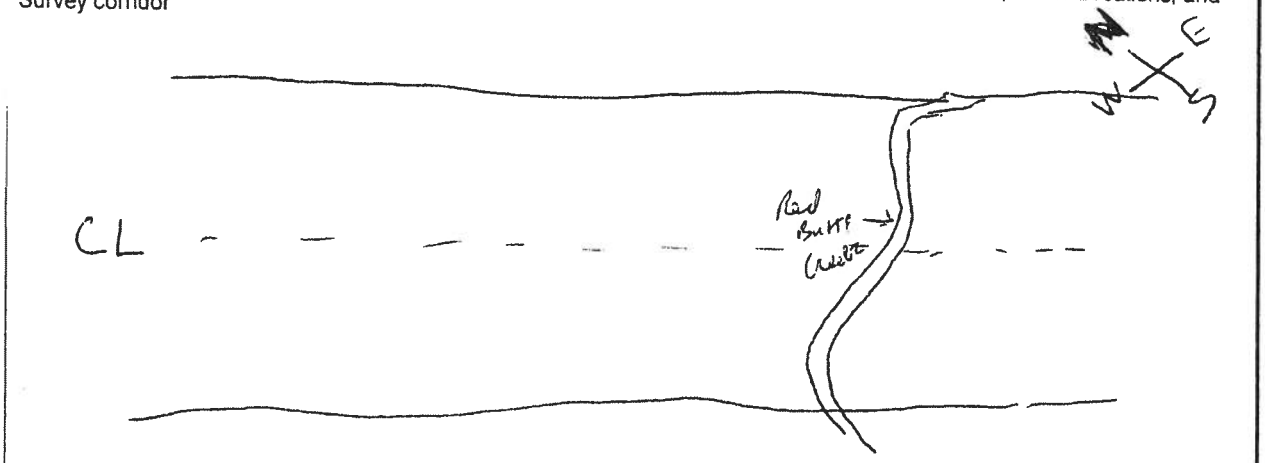
Associated Wetland ID #:

Date: 9/11/08	**Project Name & No.:** Keystone XL-10623-007-803A		**Milepost: 246.24**
Investigators: ROB K/ LAURA V	**State/County: MT/ FA**		**Quad Name: BAKER**
Logbook No.:9A-1	**Logbook Page No.:25-26**	**Tract No.:** ML-MT-FA-00440.000	**Picture No.: S9AFA003_W,S,E**

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Angle of Crossing at Centerline: _____

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☒ Slow ☐ Very Slow ☐ None	Flow type	☐ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL: **W** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	12	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 18	Water Surface (at crossing location): 10	
Stream Depth (in.)	☐ 0-3 ☐ 3-6 ☐ 6-12 ☒ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Wrack line ☐ Shelving ☐ Scour ☐ Abrupt plant community change ☐ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining ☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting ☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☐ 0-2	☐ 2-4	☐ 4-6	☒ 6-8	☐ 8+
	Right:	☐ 0-2	☐ 2-4	☐ 4-6	☒ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical
	Right:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical

Feature ID #: S9AFA003

Date: 6/11/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 246.24

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☒ Turbid ☐ Sheen on surface ☐ Floating algal mats ☐ Water Color: Slightly Turbid ☐ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other:
Stream Substrate %	Silts 10% Cobbles Bedrock Sands Gravel Concrete Muck 90% Vegetation: Other: Explain:
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☐ Gravel Bar ☐ Deep Pools ☒ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☐ Fringing Wetlands: ☐ Undercut Banks ☐ Overhanging trees/shrubs ☐
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: *NONE OBS.* Snakes ☐ Fish (juvenile) ☐ Frogs ☐ Invertebrates:
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 100 Circle vegetative layers: trees ☐ shrubs ☐ herbs ☒ ☐Significant bare areas within riparian zone ☐Evidence of non-buffered concentrated flows
Tributary Is	☒Natural ☐Artificial (Man-Made) ☐Manipulated
Channel Condition:	Channelization or Braiding ☒ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Manure in stream or on banks ☐ Waste discharge pipes present ☐ Other: N/A

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

STREAM LOCATED WITHIN RANGELAND WITH LIVE STOCK ACCESS
RIP ZONE VEGETATED IN GRASSES

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**

STREAM QUALITY High ☐ Moderate ☒ LIVESTOCK ACCESS Low ☐

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S14MC001**

Stream/Waterbody Name (if known): JOGVENSEN COULEE

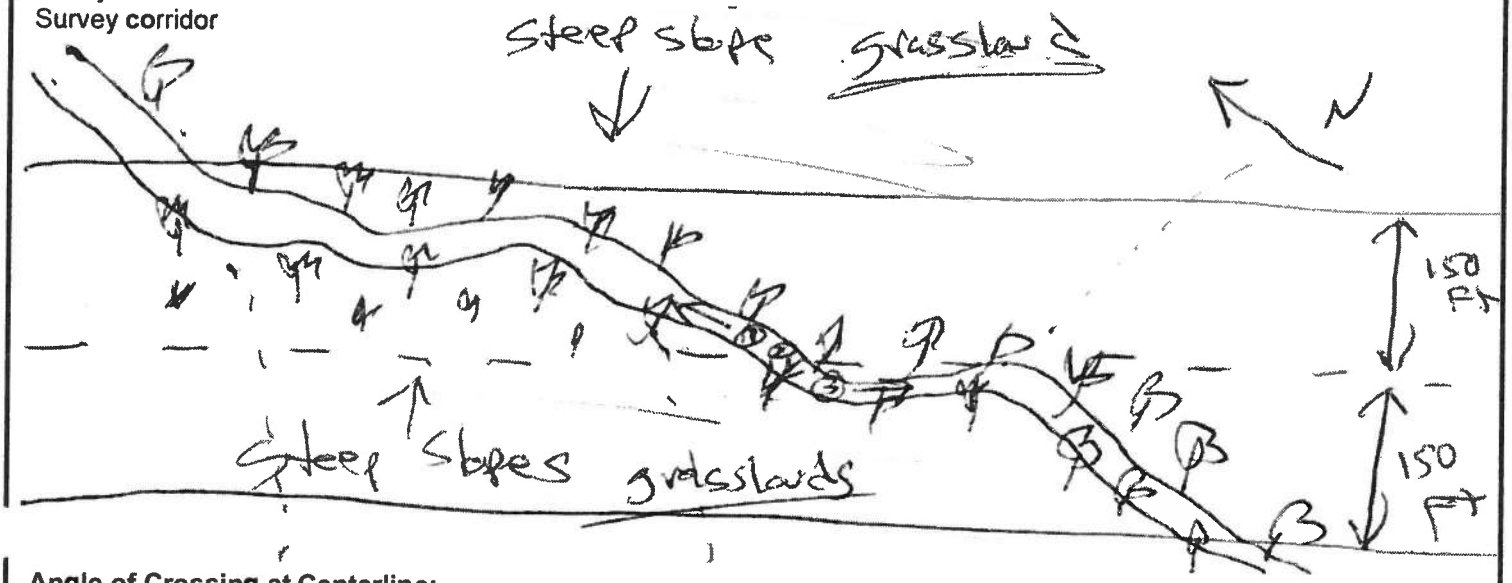
Associated Wetland ID #:

Date: 8/8/08	**Project Name & No.:** Keystone XL-10623-007-803A	**Milepost: 95.27**
Investigators: SWARTZINSKI/ GINSBERG	**State/County: MT/ MCCONE**	**Quad Name:** BOBCAT CREEK
Logbook No.: 1	**Logbook Page No.:**	**Tract No.:** ML-MT-MC-00070.000 / **Picture No.: S14MC001_N,E,S**

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Angle of Crossing at Centerline:

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☐ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None	Flow type	☐ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Intermittent (Flows <3 months) ☒ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL: **S** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	8	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 14	Water Surface (at crossing location):	
Stream Depth (in.)	☒ 0-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Wrack line ☐ Shelving ☒ Scour ☐ Abrupt plant community change ☒ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining ☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting ☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☐ 0-2	☐ 2-4	☒ 4-6	☐ 6-8	☐ 8+
	Right:	☐ 0-2	☐ 2-4	☒ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☒ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical
	Right:	☒ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical

Feature ID #: S14MC001

Date: 8/8/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 95.27

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Turbid ☐ Sheen on surface ☐ Floating algal mats ☐ Water Color: Slightly Turbid ☐ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other: NO FLOW
Stream Substrate %	Silts Cobbles Bedrock Sands Gravel Concrete Muck Vegetation: Other: 100 Explain: CLAY
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☒ JUNRUS Gravel Bar ☐ Deep Pools ☐ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☒ Fringing Wetlands: ☐ Undercut Banks ☒ Overhanging trees/shrubs ☒
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: Snakes ☐ Fish (juvenile) ☐ Frogs ☐ Invertebrates:
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 50 Circle vegetative layers: trees ☒ shrubs ☒ herbs ☒ ☐Significant bare areas within riparian zone NO ☐Evidence of non-buffered concentrated flows NO
Tributary Is	☐Natural ☐Artificial (Man-Made) ☐Manipulated
Channel Condition:	Channelization or Braiding ☐ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Manure in stream or on banks ☒ Waste discharge pipes present ☐ Other:

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity:	**Habitat ID No.:**
RIPARIAN ZONE CONSISTS OF GREEN ASH, SERVICE BERRY, SNOW BERRY, CHOKE CHERRY, BUFFALO BERRY JUNIPER, SILVER SAGE BRUSH, WESTERN WHEAT GRASS, LITTLE BLUESTEM, MANY SONG BIRDS OBSERVED, CEDAR WAXWING, GNAT CATCHER, DOVES, SHARP-TAIL GROUSE. DEER ALSO PRESENT	

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**
STREAM QUALITY High ☒ Moderate ☐ Low ☐

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S14MC003**

Stream/Waterbody Name (if known): BEAR CREEK

Associated Wetland ID #:

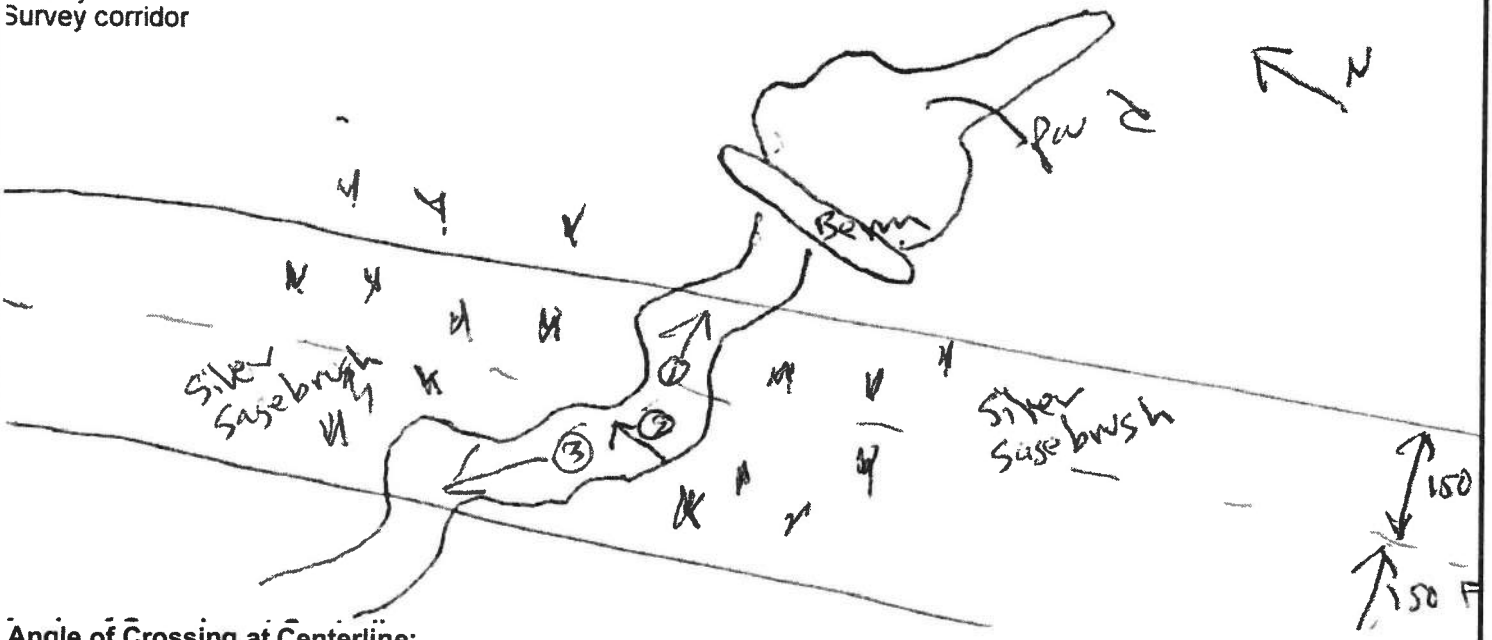
Date: 8/8/08	**Project Name & No.:** Keystone XL-10623-007-803A		**Milepost: 105.28**
Investigators: SWARTZINSKI/GINSBERG	**State/County: MT/ MCCONE**		**Quad Name:** PASTURE CREEK
Logbook No.: 1	**Logbook Page No.:**	**Tract No.:** ML-MT-MC-00158.000	**Picture No.:** S14MC003_E,S,W

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor

Survey corridor



Angle of Crossing at Centerline:

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None	Flow type	☐ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Intermittent (Flows <3 months) ☒ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL:**W** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	7	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 12	Water Surface (at crossing location): NO FLOW	
Stream Depth (in.)	☒ 0-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Wrack line ☐ Shelving ☐ Scour ☐ Abrupt plant community change ☒ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining ☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting ☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical
	Right:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical

 Feature ID #: S14MC003

Date: 8/8/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 105.28

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Turbid ☐ Sheen on surface ☐ Floating algal mats ☐ Water Color: Slightly Turbid ☐ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other: NO FLOW
Stream Substrate %	Silts Cobbles Bedrock Sands Gravel Concrete Muck Vegetation: Other: 100 Explain: CLAY
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☐ Gravel Bar ☐ Deep Pools ☐ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☐ Fringing Wetlands: ☐ Undercut Banks ☐ Overhanging trees/shrubs ☐
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: Snakes ☐ Fish (juvenile) ☐ Frogs ☐ Invertebrates:
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 30 Circle vegetative layers: trees ☐ shrubs ☒ herbs ☒ ☐Significant bare areas within riparian zone NO ☐Evidence of non-buffered concentrated flows NO
Tributary is	☒Natural ☐Artificial (Man-Made) ☐Manipulated
Channel Condition:	Channelization or Braiding ☐ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Manure in stream or on banks ☒ Waste discharge pipes present ☐ Other:

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

RIPARIAN ZONE CONSISTS OF SILVER SAGEBRUSH, BUFFALO GRASS, BLUE GRAMA, WESTERN WHEAT GRASS ECHNIUACEA, ROSA SIP, FOX TAIL BARLEY, RUMEX, AND GUMWEED. CHANNEL IS HEADWATERS OF BEAR CREEK WITH NO FLOW. BERMED AREA ABOVE (NE) OF ROW WITH A SMALL POND

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**

STREAM QUALITY High ☐ Moderate ☒ Low ☐

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S14PR001**

Stream/Waterbody Name (if known): Hay Creek

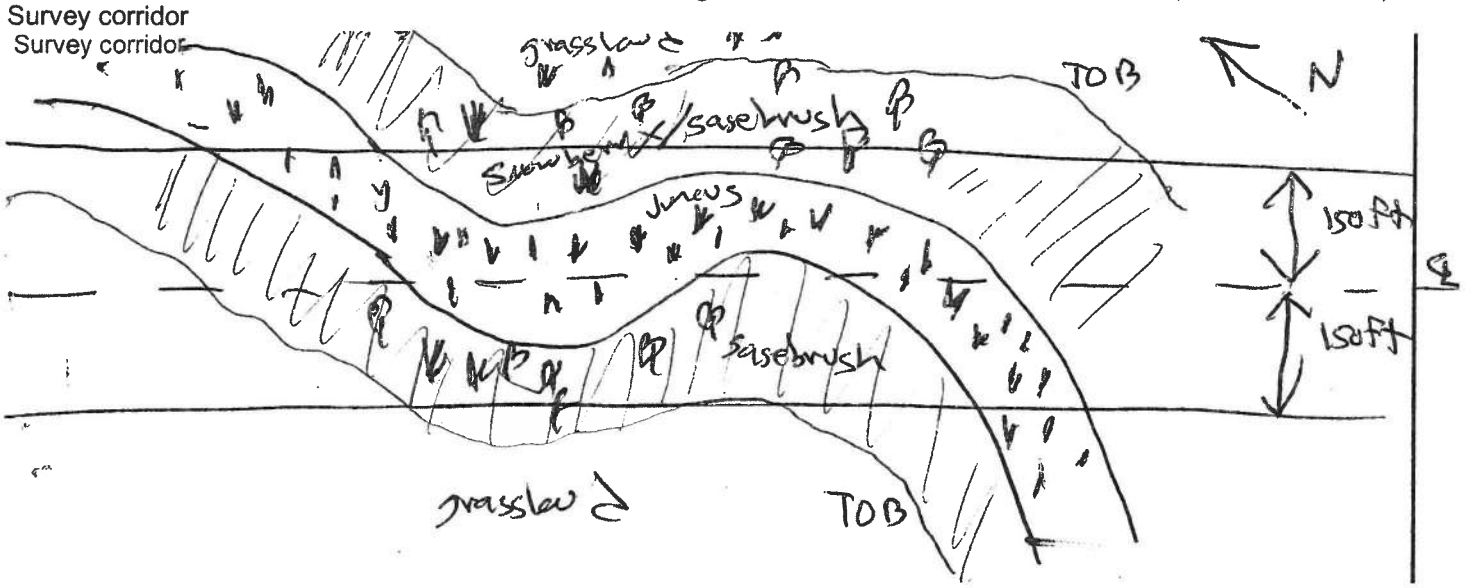
Associated Wetland ID #:

Date: 8/13/2008	**Project Name & No.:** Keystone XL-10623-007-803A		**Milepost:** 209.04
Investigators: Swartzinki, Ginsberg	**State/County:** MT/Prairie		**Quad Name:** Mildred NE
Logbook No.: 1	**Logbook Page No.:** 48-49	**Tract No:** ML-MT-PR-00115.000	**Picture No.:** S14PR001_S, E, NE

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Angle of Crossing at Centerline:

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None	Flow type	Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Intermittent (Flows <3 months) ☒ Ephemeral (Flows only in response to rainfall) ☐
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL: North
OHWM Width (ft.):	9	Sinuosity	Straight ☐ Meandering ☒
Stream Width (ft.)	Top of Bank (at crossing location): 80 FT		Water Surface (at crossing location): No flow
Stream Depth (in.)	0-3 ☒ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+ ☐		
OHWM Indicator	Clear natural line on bank ☒	Wrack line ☐	Shelving ☐ Scour ☐
	Abrupt plant community change ☒	Bent, matted or missing vegetation ☐	Wrested vegetation ☐ Water staining ☐
	Soil character changes ☐	Sediment deposition ☐	Sediment sorting ☐
	Litter and debris ☐	Leaf litter disturbed ☐	Other:

Bank Height (ft.) (looking downstream)	Left:	0-2 ☐	2-4 ☐	4-6 ☐	6-8 ☐	8+ ☒
	Right:	0-2 ☐	2-4 ☐	4-6 ☐	6-8 ☐	8+ ☒
Bank Slope (looking downstream)	Left:	4:1 ☒	3:1 ☐	2:1 ☐	1:1 ☐	Vertical ☐
	Right:	4:1 ☒	3:1 ☐	2:1 ☐	1:1 ☐	Vertical ☐

Feature ID #: S14PR001

Date: 8/13/2008	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 209.04

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Turbid ☐ Sheen on surface ☐ Floating algal mats ☐ Water Color: Slightly Turbid ☐ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other: NO FLOW
Stream Substrate %	Silts Cobbles Bedrock Sands Gravel Concrete Muck Vegetation: Other: CLAY Explain:100%
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☐ Gravel Bar ☐ Deep Pools ☐ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☒ Fringing Wetlands: ☐ Undercut Banks ☐ Overhanging trees/shrubs ☐
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: Snakes ☐ Fish (juvenile) ☐ Frogs ☐ Invertebrates:
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 200FT Circle vegetative layers: trees ☐ shrubs ☒ herbs ☒ ☐Significant bare areas within riparian zone ☐Evidence of non-buffered concentrated flows
Tributary is	☒Natural ☐Artificial (Man-Made) ☐Manipulated
Channel Condition:	Channelization or Braiding ☐ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Manure in stream or on banks ☒ Waste discharge pipes present ☐ Other:

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

Salt leaches evident within stream channel with Junevis spp. Cover throughout channel. Riparian zone consists of silver sagebrush, snowberry, crested wheatgrass, western wheatgrass.

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**

STREAM QUALITY High ☐ Moderate ☒ Low ☐

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S14VA002**

Stream/Waterbody Name (if known): BEAR CREEK

Associated Wetland ID #:

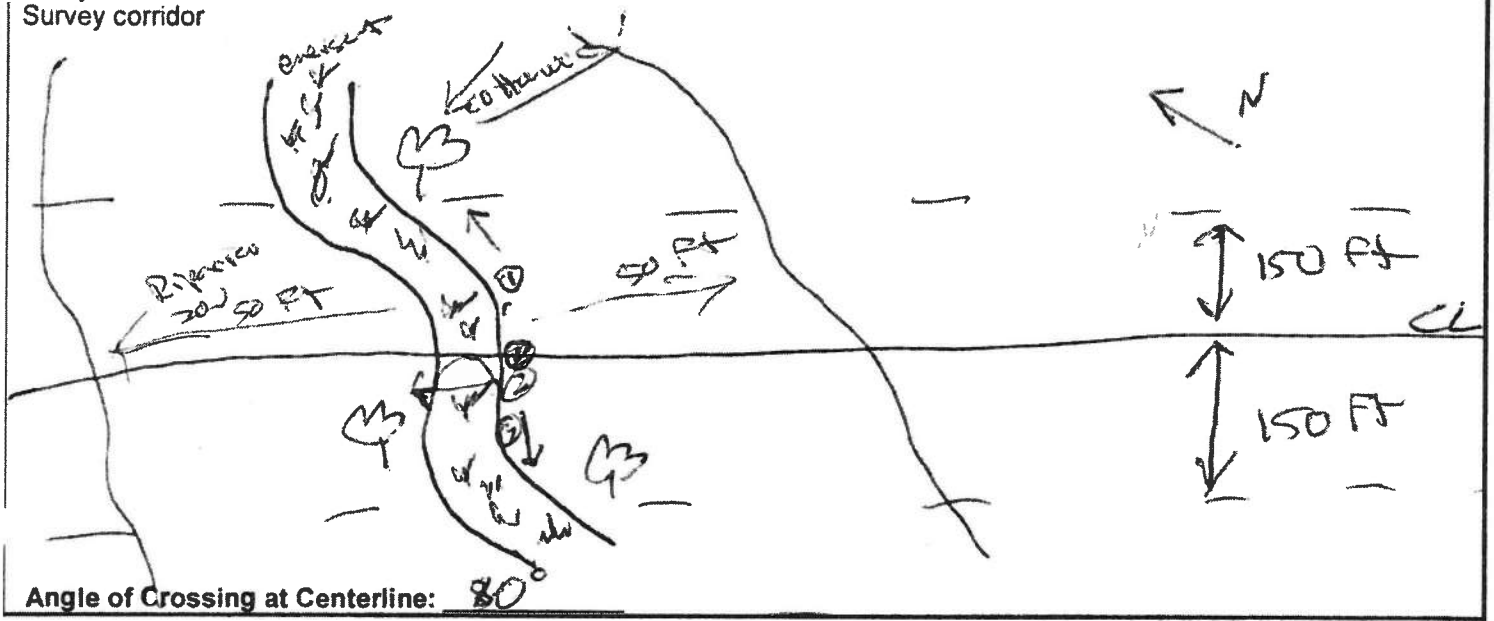
Date: 8/6/08	**Project Name & No.:** Keystone XL-10623-007-803A	**Milepost: 52.30**
Investigators: SWARTZINSKI/ GINSBERG	**State/County: MT/ VALLEY**	**Quad Name: TAMPICO NE**
Logbook No.: 1	**Logbook Page No.: 10-11**	**Tract No.:** ML-MT-VA-00335.000	**Picture No.:S14VA002_NE,SE,SW**

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor

Survey corridor



Angle of Crossing at Centerline: 80

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None	Flow type	☐ Perennial (Flows year round) ☒ Seasonal (Continuous flow ≥ 3 months) ☐ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL:**SW** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	9	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 80FT	Water Surface (at crossing location): NO FLOW	
Stream Depth (in.)	☒ 0-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Wrack line ☐ Shelving ☒ Scour ☐ Abrupt plant community change ☐ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining ☐ Soil character changes ☒ Sediment deposition ☐ Sediment sorting ☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☒ Vertical
	Right:	☐ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☒ Vertical

 Feature ID #: S14VA002

Date: 8/6/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 52.30

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Turbid ☐ Sheen on surface ☐ Floating algal mats ☐ Water Color: Slightly Turbid ☐ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other: NO FLOW
Stream Substrate %	Silts Cobbles 20 Bedrock Sands Gravel 30 Concrete Muck Vegetation: Other: 50 Explain: CLAY
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☒ SEE BLOW IN HABITAT CHAR. Gravel Bar ☒ Deep Pools ☐ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☒ Fringing Wetlands: ☐ Undercut Banks ☒ Overhanging trees/shrubs ☐
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: Snakes ☐ Fish (juvenile) ☐ Frogs ☐ Invertebrates:
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 150FT Circle vegetative layers: trees ☒ shrubs ☒ herbs ☒ ☐Significant bare areas within riparian zone NO ☐Evidence of non-buffered concentrated flows NO
Tributary is	☐Natural ☐Artificial (Man-Made) ☐Manipulated
Channel Condition:	Channelization or Braiding ☐ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Manure in stream or on banks ☐ Waste discharge pipes present ☐ Other:

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

RANGELAND RIPARIAN ZONE WITH SILVER SAGE & WESTERN WHEAT GRASS AND SCATTERED PLAINS COTTONWOOD. WITHIN CHANNEL EMERGENT PLANTS INCLUDE SMARTWEED, CAREX, CATTAILS, WETLAND PLANTS WITHIN STREAM CHANNEL INDICATE SEASONAL FLOW.
SPARTUMA, COCKLEBUR, BURDOCK AND KUCHNA ALSO OCCUR ALONG STREAM BANK

Comments (**e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders**)

STREAM QUALITY High ☒ Moderate ☐ Low ☐

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S14VA003**

Stream/Waterbody Name (if known): UNGER COULEE

Associated Wetland ID #:

Date: 8/6/08	**Project Name & No.:** Keystone XL-10623-007-803A		**Milepost: 53.32**
Investigators: SWARTZWINSKI/ GINSBERG	**State/County: MT/ VALLEY**		**Quad Name: TAMPICO NE**
Logbook No.: 1	**Logbook Page No.: 10-1**	**Tract No.:** VA355	**Picture No.:** S14VA003_SE,S,NW

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor

Angle of Crossing at Centerline:

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None	Flow type	☐ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL:**S** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	8	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 25	Water Surface (at crossing location): NO FLOW	
Stream Depth (in.)	☒ 0-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Wrack line ☐ Shelving ☒ Scour		
	☐ Abrupt plant community change ☒ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining		
	☐ Soil character changes ☒ Sediment deposition ☒ Sediment sorting		
	☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☒ Vertical
	Right:	☐ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☒ Vertical

 Feature ID #: S14VA003

Date: 8/6/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 53.32

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Turbid ☐ Sheen on surface ☐ Floating algal mats ☐ Water Color: Slightly Turbid ☐ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other: NO FLOW
Stream Substrate %	Silts Cobbles 20 Bedrock Sands Gravel 30 Concrete Muck Vegetation: Other: 50 Explain: CLAY
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☐ Gravel Bar ☒ Deep Pools ☐ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☒ Fringing Wetlands: ☐ Undercut Banks ☒ Overhanging trees/shrubs ☐
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: Snakes ☐ Fish (juvenile) ☐ Frogs ☐ Invertebrates:
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 200 FT Circle vegetative layers: trees ☒ shrubs ☒ herbs ☒ ☐Significant bare areas within riparian zone NO ☐Evidence of non-buffered concentrated flows NO
Tributary is	☒Natural ☐Artificial (Man-Made) ☐Manipulated
Channel Condition:	Channelization or Braiding ☐ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Manure in stream or on banks ☒ Waste discharge pipes present ☐ Other:

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

RANGELAND/ GRASSLAND RIPARIAN ZONE WITH SCATTERED PLAINS COTTONWOOD, BUFFALO BERRY, PEACH LEAF WILLOW, SILVER SAGEBRUSH & WESTERN WHEATGRASS. COCKLEBUR AND BURDOCK OBSERVED IN STREAM BANK

Comments (e.g. **pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders**)

STREAM QUALITY High ☒ Moderate ☐ Low ☐

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S14VA004**

Stream/Waterbody Name (if known): BUGGY CREEK

Associated Wetland ID #:

Date: 8/6/08	**Project Name & No.:** Keystone XL-10623-007-803A	**Milepost: 55.25**
Investigators: SWARTZINSKI/ GINSBERG	**State/County: MT/ VALLEY**	**Quad Name: TAMPICO NE**
Logbook No.: 1	**Logbook Page No.: 13-14** / **Tract No.:** VA-370.000	**Picture No.: S14VA004_N,E,S**

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor

Angle of Crossing at Centerline:

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None	Flow type	☐ Perennial (Flows year round) ☒ Seasonal (Continuous flow ≥ 3 months) ☐ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☐ Unknown		Direction of Flow where it crosses CL: **S** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	20	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 200	Water Surface (at crossing location): NO FLOW	
Stream Depth (in.)	☒ 0-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Abrupt plant community change ☐ Soil character changes ☐ Litter and debris	☒ Wrack line ☒ Bent, matted or missing vegetation ☐ Sediment deposition ☐ Leaf litter disturbed	☐ Shelving ☐ Wrested vegetation ☐ Sediment sorting ☐ Other: ☒ Scour ☐ Water staining

Bank Height (ft.) (looking downstream)	Left:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☒ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical
	Right:	☒ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical

Feature ID #: S14VA004

Date: 8/6/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 55.25

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Turbid ☐ Sheen on surface ☐ Floating algal mats ☐ Water Color: Slightly Turbid ☐ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other: NO FLOW
Stream Substrate %	Silts Cobbles 30 Bedrock Sands Gravel Concrete Muck Vegetation: Other: 40 Explain: CLAY/SILT
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☐ Gravel Bar ☒ Deep Pools ☐ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☒ Fringing Wetlands: ☐ Undercut Banks ☒ Overhanging trees/shrubs ☒
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: PORCUPINES, DEER Snakes ☐ Fish (juvenile) ☐ Frogs ☐ SONGBIRDS Invertebrates:
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 200FT Circle vegetative layers: trees ☒ shrubs ☒ herbs ☒ ☐Significant bare areas within riparian zone NO ☐Evidence of non-buffered concentrated flows NO
Tributary is	☒Natural ☐Artificial (Man-Made) ☐Manipulated
Channel Condition:	Channelization or Braiding ☐ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Manure in stream or on banks ☒ Waste discharge pipes present ☐ Other:

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

RIPARIAN HABITAT INCLUDES MANY LARGE PLAINS COTTONWOOD, PEACH LEAF WILLOWS AND GREEN ASH. UNDERSTORYOF SILVER SAGEBRUSH AND BUFFALO BERRY, WESTERN WHEAT GRASS. STREAM CHANNEL CONSISTS OF IN STREAM PLANTS ALONG DRY CREEK BED OF SPARTUNA, FOXTAIL BARLEY, COMMON BURDOCK AND COCKLEBUR.

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**

STREAM QUALITY High ☒ Moderate ☐ Low ☐

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S14VA005**

Stream/Waterbody Name (if known): ALKALAI CREEK

Associated Wetland ID #:

Date: 8/7/08	**Project Name & No.:** Keystone XL-10623-007-803A	**Milepost:** 56.95
Investigators: 14	**State/County:** MT/ VA	**Quad Name:** CORNWELL RESERVOIR
Logbook No.: 1	**Logbook Page No.:** 16-17	**Tract No.:** ML-MT-VA-00385.000	**Picture No.:** S14VA005_SW,NE,SE

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor

Angle of Crossing at Centerline:

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None	Flow type	☐ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Intermittent (Flows <3 months) ☒ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL: **S** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	6	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 8	Water Surface (at crossing location): NO FLOW	
Stream Depth (in.)	☒ 0-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Wrack line ☐ Shelving ☒ Scour ☐ Abrupt plant community change ☒ Bent, matted or missing vegetation ☒ Wrested vegetation ☐ Water staining ☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting ☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☒ Vertical
	Right:	☐ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☒ Vertical

 Feature ID #: S14VA005

Date: 8/7/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: **56.95**

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Turbid ☐ Sheen on surface ☐ Floating algal mats ☐ Water Color: Slightly Turbid ☐ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other: NO FLOW
Stream Substrate %	Silts Cobbles Bedrock Sands Gravel Concrete Muck Vegetation: Other: 100 Explain: CLAY
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☐ Gravel Bar ☐ Deep Pools ☐ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☒ Fringing Wetlands: ☐ Undercut Banks ☒ Overhanging trees/shrubs ☒
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: Snakes ☐ Fish (juvenile) ☐ Frogs ☐ Invertebrates:
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 50 Circle vegetative layers: trees ☒ shrubs ☒ herbs ☒ ☐Significant bare areas within riparian zone ☐Evidence of non-buffered concentrated flows
Tributary is	☒Natural ☐Artificial (Man-Made) ☐Manipulated
Channel Condition:	Channelization or Braiding ☐ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Manure in stream or on banks ☒ Waste discharge pipes present ☐ Other:

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

RANGELAND/ GRASSLAND RIPARIAN ZONE CONSISTING OF SILVER SAGEBRUSH, WESTERN WHEATGRASS. IN STREAM PLANTS INCLUDE JUNCUS, COCKLEBUR, AND BURDOCK. LIVESTOCK ACCESS AND DISTURBANCE IS EVIDENT. MUD FLATS ARE EVIDENT THROUGHOUT RIPARIAN ZONE

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**

STREAM QUALITY High ☐ Moderate ☐ Low ☒

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S14VA006**

Stream/Waterbody Name (if known): WINE GRASS COULEE

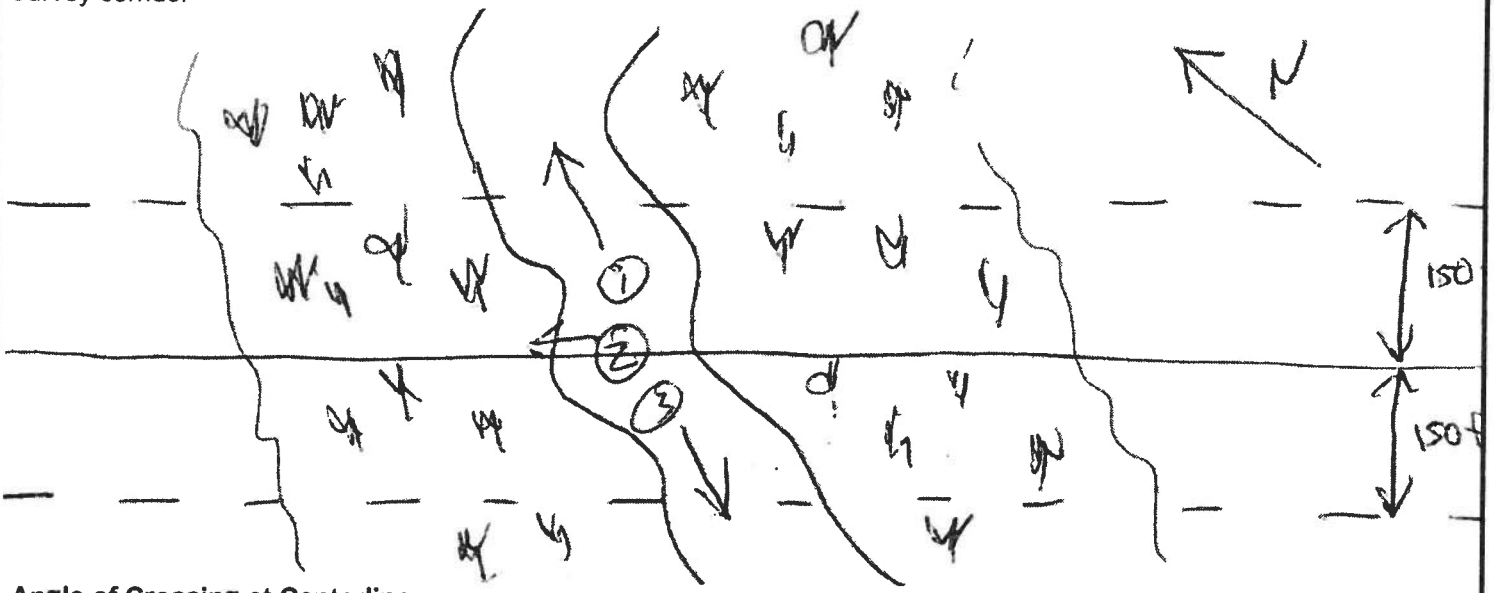
Associated Wetland ID #:

Date: 8/7/08	**Project Name & No.:** Keystone XL-10623-007-803A		**Milepost:** 59.31
Investigators: SWARTZINSKI/ GINSBERG	**State/County: MT/ VALLEY**		**Quad Name:** CHAPMAN COULEE
Logbook No.: 1	**Logbook Page No.:**	**Tract No.:** ML-MT-VA-00430.000	**Picture No.: S14VA006_N,S,E**

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Angle of Crossing at Centerline:

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☐ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None	Flow type	☐ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Intermittent (Flows <3 months) ☒ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL: **S** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	4	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 9	Water Surface (at crossing location): NO FLOW	
Stream Depth (in.)	☒ 0-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Wrack line ☐ Shelving ☒ Scour ☐ Abrupt plant community change ☒ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining ☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting ☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☐ 2:1	☒ 1:1	☐ Vertical
	Right:	☐ 4:1	☐ 3:1	☐ 2:1	☒ 1:1	☐ Vertical

Feature ID #: S14VA006

Date: 8/7/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 59.31

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Turbid ☐ Sheen on surface ☐ Floating algal mats ☐ Water Color: Slightly Turbid ☐ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other: NO FLOW
Stream Substrate %	Silts Cobbles Bedrock Sands Gravel Concrete Muck Vegetation: Other: CLAY Explain: 100%
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☐ Gravel Bar ☐ Deep Pools ☐ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☒ Fringing Wetlands: ☐ Undercut Banks ☐ Overhanging trees/shrubs ☐
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: Snakes ☐ Fish (juvenile) ☐ Frogs ☐ Invertebrates:
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 200FT Circle vegetative layers: trees ☒ shrubs ☐ herbs ☒ ☐Significant bare areas within riparian zone NO ☐Evidence of non-buffered concentrated flows NO
Tributary is	☒Natural ☐Artificial (Man-Made) ☐Manipulated
Channel Condition:	Channelization or Braiding ☐ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Manure in stream or on banks ☒ Waste discharge pipes present ☐ Other:

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

SILVER SAGEBRUSH RIPARIAN ZONE WITH WESTERN WHEATGRASS, RABBIBRUSH. IN STREAM PLANTS INCLUDE WESTERN WHEATGRASS, COCKLEBUR & BURDOCK, CRESTED WHEATGRASS

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**

STREAM QUALITY High ☐ Moderate ☒ Low ☐

WATERBODY DATA FORM

ENSR | AECOM

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other: **Feature ID #: S14VA007**

Stream/Waterbody Name (if known): SPRING CREEK

Associated Wetland ID #:

Date: 8/7/08	**Project Name & No.:** Keystone XL-10623-007-803A	**Milepost: 59.82**
Investigators: SWARTZINSKI/ GINSBERG	**State/County: MT/ VALLEY**	**Quad Name:** CHAPMAN COULEE
Logbook No.: 1	**Logbook Page No.:**	**Tract No.:** ML-MT-VA-00430.000 / Picture No.: S14VA007_S,SE,NW

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor

Angle of Crossing at Centerline:

Waterbody Type	☐ Lake ☐ Pond ☐ Borrow Pit ☐ River ☒ Stream ☐ Ag. Ditch Other:		
Stream Flow	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None	Flow type	☐ Perennial (Flows year round) ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Intermittent (Flows <3 months) ☐ Ephemeral (Flows only in response to rainfall)
Subsurface Flow?	☐ Yes ☐ No ☒ Unknown		Direction of Flow where it crosses CL: **S** (N, NE, E, SE, S, SW, W, NW)
OHWM Width (ft.):	9	Sinuosity	☐ Straight ☒ Meandering
Stream Width (ft.)	Top of Bank (at crossing location): 12	Water Surface (at crossing location):	
Stream Depth (in.)	☒ 0-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+		
OHWM Indicator	☒ Clear natural line on bank ☐ Wrack line ☐ Shelving ☒ Scour		
	☐ Abrupt plant community change ☒ Bent, matted or missing vegetation ☐ Wrested vegetation ☐ Water staining		
	☐ Soil character changes ☐ Sediment deposition ☐ Sediment sorting		
	☐ Litter and debris ☐ Leaf litter disturbed ☐ Other:		

Bank Height (ft.) (looking downstream)	Left:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope (looking downstream)	Left:	☐ 4:1	☐ 3:1	☐ 2:1	☒ 1:1	☐ Vertical
	Right:	☐ 4:1	☐ 3:1	☐ 2:1	☒ 1:1	☐ Vertical

 Feature ID #: S14VA007

Date: 8/7/08	Project Name & No.: Keystone XL-10623-007-803A	Milepost: 59.82

QUALITATIVE ATTRIBUTES

Water Appearance (check all that apply)	Clear ☐ Turbid ☐ Sheen on surface ☐ Floating algal mats ☐ Water Color: Slightly Turbid ☐ Very Turbid ☐ Greenish color ☐ Obvious surface scum ☐ Other: NO FLOW
Stream Substrate %	Silts Cobbles 20 Bedrock Sands Gravel 20 Concrete Muck Vegetation: Other: 60 Explain: CLAY
Aquatic Habitats (check all that apply)	Sand Bar ☐ Gravel Riffles ☐ In-stream emergent plants: ☐ Gravel Bar ☒ Deep Pools ☐ In-stream submerged plants: ☐ Mud Bar ☐ Bank root systems ☒ Fringing Wetlands: ☐ Undercut Banks ☒ Overhanging trees/shrubs ☒
Aquatic Organisms Observed (check all that apply)	Waterfowl ☐ Fish (adult) ☐ Turtles ☐ Other: Snakes ☐ Fish (juvenile) ☐ Frogs ☐ Invertebrates:
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain (FT): 50 Circle vegetative layers: trees ☒ shrubs ☒ herbs ☒ ☐Significant bare areas within riparian zone NO ☐Evidence of non-buffered concentrated flows NO
Tributary is	☒Natural ☐Artificial (Man-Made) ☐Manipulated
Channel Condition:	Channelization or Braiding ☐ Unnatural straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive bank erosion ☐ Other
Disturbances	Livestock access to riparian zone ☒ Manure in stream or on banks ☒ Waste discharge pipes present ☐ Other:

Describe Habitat Characteristics, Aquatic & Terrestrial Diversity: **Habitat ID No.:**

SILVER SAGEBRUSH, ROSA SPP. RIPARIAN ZONE WITH LARGE PLAINS COTTONWOOD. COCKLEBUR AND BURDOCK ARE SCATTERED WITH STREAM CHANNEL. SNOW BERRY, WESTERN WHEAT, PURPLE THREE AWN. ALKALAI MUD FLATS THROUGHOUT RIPARIAN ZONE.

Comments **(e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)**

STREAM QUALITY High ☐ Moderate ☒ Low ☐

ENSR
1601 Prospect Parkway
Ft. Collins, CO 80525

ENSR | AECOM

Waterbody Data Form

Feature ID: S23FA001

NORT FORK COAL BANK CREEK

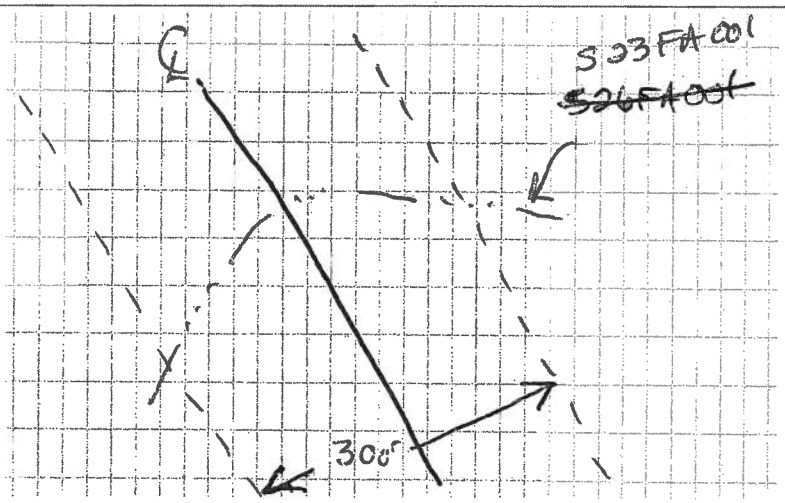
☑ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other

Date:	Client/Project Name:	Milepost Enter/Exit:
2008/10/06	KEYSTONE XL- 10623-007-803D	276.06

Team:	State/County:	Quad Name:
23	MT - FA	Snider Hill

Logbook No.:	Logbook Page No.:	Tract No.:	Photo:
1	64	MLMTFA00930.0	S23FA001_N,S,W

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☑ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☑ None
Subsurface Flow:	☐ Yes ☑ No ☐ Unknown
Flow Type:	☐ Perennial (Flows year round) ☑ Intermittent (Flows <3 month ☑ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☒ SE ☐ S ☐ SW ☐ W ☐ NW
OHWM Width (ft.):	7
Sinuosity:	☐ Braided ☑ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	7 **Water Surface (At Crossing Location)** 5
Stream Depth (ft.):	☐ 0 ☑ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+

OHWM Indicators:
CLEAR NATURAL LINE ON BANK

Bank Height (ft.): (Looking Downstream)	Left:	☐ 0-2 ☑ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
	Right:	☐ 0-2 ☑ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left:	☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☑ Vertical
	Right:	☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☑ Vertical

ENSR
1601 Prospect Parkway
Ft. Collins, CO 80525

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
Water Color: ☐ Other:

Stream Substrate %:

100% OTHER - CLAY

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover: 0
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover: 0
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☑ Undercut Banks ☐ Overhanging Trees/Shrubs

Aquatic Organisms Observed:

☐ Waterfowl ☐ Fish (Adult) ☐ Turtles ☑ Other: NONE
☐ Snakes ☐ Fish (Juvenile) ☐ Frogs
☐ Invertebrate

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out onto Flood Plain (ft): 8

Vegetative Layers: ☐ Herbs ☐ Shrubs ☐ Trees

☐ Significant Bare Areas Within Riparian Zone ☐ Evidence Of Non-Buffered Concentrated Flows

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☑ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☑ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:
GRAZED

Comments:

Stream Quality: ☐ High ☐ Moderate ☑ Low

ENSR
1601 Prospect Parkway
Ft. Collins, CO 80525

Waterbody Data Form

Feature ID: S31FA001
SODA CREEK

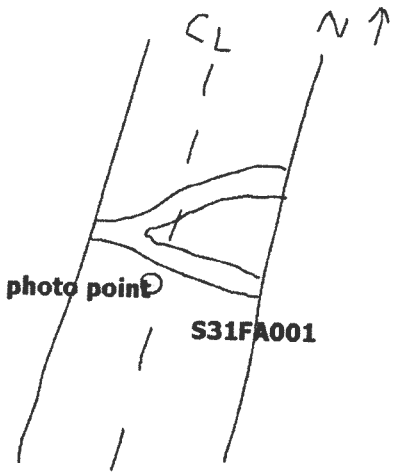
☐ Centerline ☑ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other

Date:	Client/Project Name:	Milepost Enter/Exit:
2008/11/03	Keystone XL-10623-007-803D	272.12

Team:	State/County:	Quad Name:
31	MT - Fallon	MT, Scole School

Logbook No.:	Logbook Page No.:	Tract No.:	Photo:
2	52	ML_MT_FA_850	S31FA001_E, S, W.jpg

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type: ☐ Lak ☐ Pond ☐ Borrow Pi ☑ Stream ☐ Ag. Ditch ☐ Other

Stream Flow: ☐ Fast ☐ Moderat ☐ Slow ☐ Very Slow ☑ None

Subsurface Flow: ☐ Yes ☑ No ☐ Unknown

Flow Type: ☐ Perennial (Flows year round) ☑ Intermittent (Flows <3 month ☑ None
☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)

Direction of Flow: ☐ N ☐ NE ☑ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow

OHWM Width (ft.): 20

Sinuosity: ☐ Braided ☑ Meandering ☐ Straight ☐ N/A

Stream Width (ft.): 30 **Water Surface (At Crossing Location)** 2

Stream Depth (ft.): ☐ 0 ☐ 1-3 ☑ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+

OHWM Indicators:

ABRUPT PLANT COMMUNITY CHANGE
BENT, MATTED OR MISSING VEGETATION
SCOUR
SOIL CHARACTER CHANGES

Bank Height (ft.): (Looking Downstream)	Left:	☐ 0-2	☑ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☐ 0-2	☐ 2-4	☑ 4-6	☐ 6-8	☐ 8+
Bank Slope: king Downstream)	Left:	☐ 4:1	☐ 3:1	☑ 2:1	☐ 1:1	☐ Vertical
	Right:	☐ 4:1	☑ 3:1	☐ 2:1	☐ 1:1	☐ Vertical

ENSR
1601 Prospect Parkway
Ft. Collins, CO 80525

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
Water Color: ☐ Other:

Stream Substrate %:

30% VEGETATION
40% SILTS
30% OTHER - CLAY

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☑ In-stream Emergent Plant % Cover: 10
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover: 0
☑ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs

Aquatic Organisms Observed:

☐ Waterfowl ☐ Fish (Adult) ☐ Turtles ☑ Other: NONE
☐ Snakes ☐ Fish (Juvenile) ☐ Frogs
☐ Invertebrate

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out onto Flood Plain (ft) 0

Vegetative Layers: ☑ Herbs ☐ Shrubs ☐ Tree ☐ Multiple

☐ Significant Bare Areas Within Riparian Zone ☐ Evidence Of Non-Buffered Concentrated Flows

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☑ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☑ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number
CHANNEL DEGREDATION DUE TO LIVESTOCK ACCESS. GRASSLAND ABUTTS STREAM.

Comments:

Stream Quality: ☐ Hig ☑ Moderate ☐ Low

ENSR
1601 Prospect Parkway
Ft. Collins, CO 80525

Waterbody Data Form

Feature ID: S31MC001
CHEER CREEK

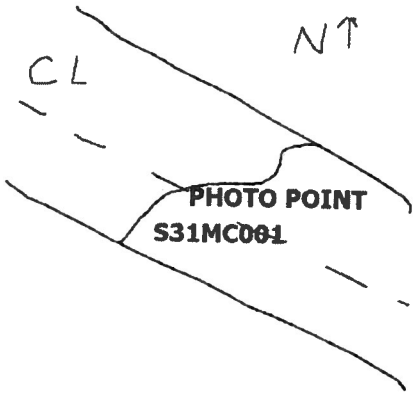
☐ Centerline ☑ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other

Date:	Client/Project Name:	Milepost Enter/Exit:
2008/10/30	Keystone XL- 10623-007-803D	101.32

Team:	State/County:	Quad Name:
31	MT - McCone	MT, McRae Springs

Logbook No.:	Logbook Page No.:	Tract No.:	Photo:
2	37	ML_MT_MC_00115.0	S31MC001_E, S, W.jpg

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lak ☐ Pond ☐ Borrow Pi ☑ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderat ☐ Slow ☐ Very Slow ☑ None
Subsurface Flow:	☐ Yes ☑ No ☐ Unknown
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☑ None ☐ Seasonal (Continuous flow ≥ 3 months) ☑ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☑ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	2
Sinuosity:	☐ Braided ☑ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	10 **Water Surface (At Crossing Location)** 0
Stream Depth (ft.):	☑ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	BENT, MATTED OR MISSING VEGETATION
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☑ 8+ Right: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☑ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☑ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☑ 2:1 ☐ 1:1 ☐ Vertical

ENSR
1601 Prospect Parkway
Ft. Collins, CO 80525

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
Water Color: ☐ Other:

Stream Substrate %:

60% SILTS
30% VEGETATION
10% GRAVEL

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover: 0
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover: 0
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☑ Overhanging Trees/Shrubs

Aquatic Organisms Observed:

☐ Waterfowl ☐ Fish (Adult) ☐ Turtles ☑ Other: NONE
☐ Snakes ☐ Fish (Juvenile) ☐ Frogs
☐ Invertebrate

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out onto Flood Plain (ft) 0

Vegetative Layers: ☑ Herbs ☑ Shrubs ☐ Tree ☐ Multiple

☐ Significant Bare Areas Within Riparian Zone ☐ Evidence Of Non-Buffered Concentrated Flows

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☑ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☐ Livestock Access to Riparian Zone ☑ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number

SOME BANK EROSION DUE TO LIVESTOCK ACCESS. GRASSLAND ABUTTS CHANNEL. CHANNEL LOCATED HIGH IN WATERSHED

Comments:

Stream Quality: ☐ Hig ☐ Moderate ☑ Low

ENSR
1601 Prospect Parkway
Ft. Collins, CO 80525

Waterbody Data Form

Feature ID: S31MC002
WEST FORK LOST CREEK

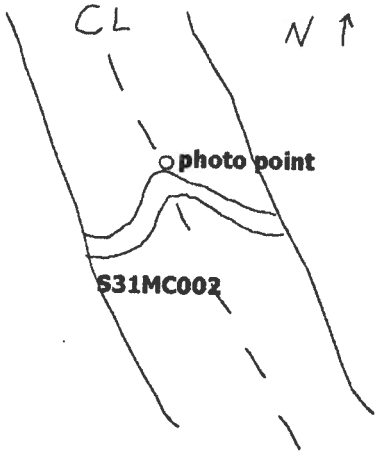
☐ Centerline ☑ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other

Date:	Client/Project Name:	Milepost Enter/Exit:
2008/10/30	Keystone XL-10623-007-803D	0.458 - 0.46

Team:	State/County:	Quad Name:
31	MT - McCone	MT, Bobcat Creek

Logbook No.:	Logbook Page No.:	Tract No.:	Photo:
2	40	ML_MT_MC_00040.0	S31MC002_E, S, SW.jpg

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type: ☐ Lak ☐ Pond ☐ Borrow Pi ☑ Stream ☐ Ag. Ditch ☐ Other

Stream Flow: ☐ Fast ☐ Moderat ☐ Slow ☐ Very Slow ☑ None

Subsurface Flow: ☐ Yes ☑ No ☐ Unknown

Flow Type: ☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☑ None
☑ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)

Direction of Flow: ☐ N ☐ NE ☑ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow

OHWM Width (ft.): 3

Sinuosity: ☐ Braided ☑ Meandering ☐ Straight ☐ N/A

Stream Width (ft.): 20 **Water Surface (At Crossing Location)** 0

Stream Depth (ft.): ☑ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+

OHWM Indicators:
BENT, MATTED OR MISSING VEGETATION
ABRUPT PLANT COMMUNITY CHANGE

Bank Height (ft.): (Looking Downstream)	Left:	☐ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☑ 8+
	Right:	☐ 0-2	☐ 2-4	☑ 4-6	☐ 6-8	☐ 8+
Bank Slope: (Looking Downstream)	Left:	☐ 4:1	☐ 3:1	☑ 2:1	☐ 1:1	☐ Vertical
	Right:	☐ 4:1	☑ 3:1	☐ 2:1	☐ 1:1	☐ Vertical

ENSR
1601 Prospect Parkway
Ft. Collins, CO 80525

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☒ Greenish Color ☐ Obvious Surface Scum
Water Color: ☐ Other:

Stream Substrate %:

70% SILTS
20% VEGETATION
10% GRAVEL

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☑ In-stream Emergent Plant % Cover: 5
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover: 0
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☑ Undercut Banks ☑ Overhanging Trees/Shrubs

Aquatic Organisms Observed:

☐ Waterfowl ☐ Fish (Adult) ☐ Turtles ☐ Other:
☑ Snakes ☐ Fish (Juvenile) ☐ Frogs
☐ Invertebrate

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out onto Flood Plain (ft) 10

Vegetative Layers: ☑ Herbs ☑ Shrubs ☑ Tree ☐ Multiple

☐ Significant Bare Areas Within Riparian Zone ☐ Evidence Of Non-Buffered Concentrated Flows

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☑ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☐ Livestock Access to Riparian Zone ☑ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number
SOME BANK EROSION DUE TO LIVESTOCK. DEPRESSIONAL POOLS WITHIN CHANNEL FROM LIVESTOCK. channel has dam and pond down stream.

Comments:

Stream Quality: ☐ Hig ☑ Moderate ☐ Low

ENSR
1601 Prospect Parkway
Ft. Collins, CO 80525

Waterbody Data Form

Feature ID: S31MC003
LOST CREEK

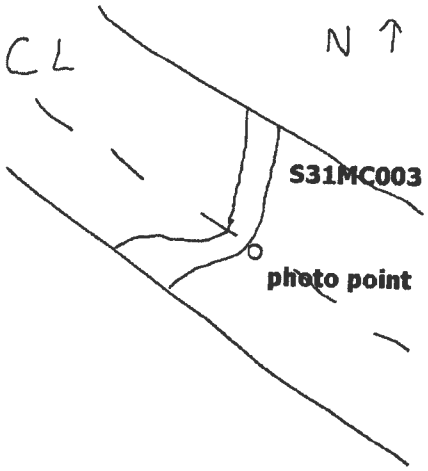
☐ Centerline ☑ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other

Date:	Client/Project Name:	Milepost Enter/Exit:
2008/11/01	Keystone XL-10623-007-803D	96.65

Team:	State/County:	Quad Name:
31	MT - McCone	MT, McRae Springs

Logbook No.:	Logbook Page No.:	Tract No.:	Photo:
2	45	ML_MT_MC_00080.0	S31MC003_N, S, W

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type: ☐ Lake ☐ Pond ☐ Borrow Pit ☑ Stream ☐ Ag. Ditch ☐ Other

Stream Flow: ☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☑ None

Subsurface Flow: ☐ Yes ☑ No ☐ Unknown

Flow Type: ☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☑ None
☐ Seasonal (Continuous flow ≥ 3 months) ☑ Ephemeral (Flows only in response to rainfall)

Direction of Flow: ☑ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow

OHWM Width (ft.): 15

Sinuosity: ☐ Braided ☑ Meandering ☐ Straight ☐ N/A

Stream Width (ft.): 20 **Water Surface (At Crossing Location)** 0

Stream Depth (ft.): ☑ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+

OHWM Indicators:
ABRUPT PLANT COMMUNITY CHANGE

Bank Height (ft.): (Looking Downstream)
Left: ☐ 0-2 ☑ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Right: ☐ 0-2 ☑ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+

Bank Slope: (Looking Downstream)
Left: ☐ 4:1 ☑ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical
Right: ☐ 4:1 ☑ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

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1601 Prospect Parkway
Ft. Collins, CO 80525

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
Water Color: ☐ Other:

Stream Substrate %:

80% VEGETATION
20% SILTS

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover: 0
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover: 0
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☑ Overhanging Trees/Shrubs

Aquatic Organisms Observed:

☐ Waterfowl ☐ Fish (Adult) ☐ Turtles ☑ Other: NONE
☐ Snakes ☐ Fish (Juvenile) ☐ Frogs
☐ Invertebrate

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out onto Flood Plain (ft): 0

Vegetative Layers: ☑ Herbs ☑ Shrubs ☐ Trees ☐ Multiple

☐ Significant Bare Areas Within Riparian Zone ☐ Evidence Of Non-Buffered Concentrated Flows

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☑ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☐ Livestock Access to Riparian Zone ☑ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:
GRASSLAND ABUTTS CHANNEL. LIVESTOCK ACCESS HAS ALTERED CHANNEL BED.

Comments:

Stream Quality: ☐ High ☑ Moderate ☐ Low

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Waterbody Data Form

Feature ID: S31VA002

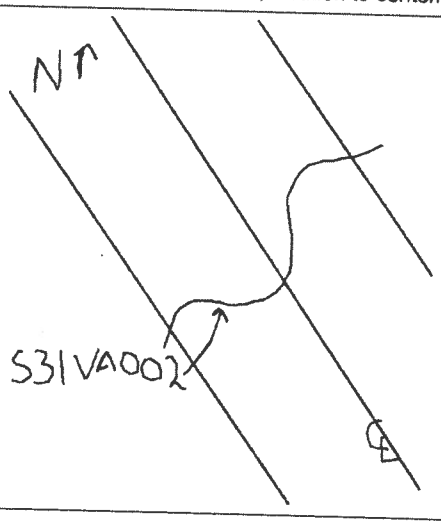
☐ Centerline ☑ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Other

Date:	Client/Project Name:	Milepost Enter/Exit:
2008/11/14	Keystone XL 10623-007-803D	49.72

Team:	State/County:	Quad Name:
31	MT - Valley	MT, Tampico NE

Logbook No.:	Logbook Page No.:	Tract No.:	Photo:
2	96	ML-MT-VA-00305.000	S31VA002_N, NW, SE.JPG

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type: ☐ Lake ☐ Pond ☐ Borrow Pit ☑ Stream ☐ Ag. Ditch ☐ Other

Stream Flow: ☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☑ None

Subsurface Flow: ☐ Yes ☑ No ☐ Unknown

Flow Type: ☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☑ None
☐ Seasonal (Continuous flow ≥ 3 months) ☑ Ephemeral (Flows only in response to rainfall)

Direction of Flow: ☐ N ☐ NE ☐ E ☑ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow

OHWM Width (ft.): 6

Sinuosity: ☐ Braided ☑ Meandering ☐ Straight ☐ N/A

Stream Width (ft.): 10 **Water Surface (At Crossing Location)** 0

Stream Depth (ft.): ☑ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+

OHWM Indicators:
SCOUR

Bank Height (ft.): (Looking Downstream)
Left: ☑ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Right: ☐ 0-2 ☑ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+

Bank Slope: (Looking Downstream)
Left: ☑ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical
Right: ☐ 4:1 ☑ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

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1601 Prospect Parkway
Ft. Collins, CO 80525

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ Other:

Stream Substrate %:

50% SILTS
50% VEGETATION

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover: 0
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover: 0
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs

Aquatic Organisms Observed:

☐ Waterfowl ☐ Fish (Adult) ☐ Turtles ☐ Other:
☐ Snakes ☐ Fish (Juvenile) ☐ Frogs
☐ Invertebrate

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out onto Flood Plain (ft): 0

Vegetative Layers: ☑ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

☐ Significant Bare Areas Within Riparian Zone ☐ Evidence Of Non-Buffered Concentrated Flows

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☑ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☑ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:
RANGELAND ABUTTS STREAM

Comments:

Stream Quality: ☐ High ☑ Moderate ☐ Low

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Waterbody Data Form

Feature ID: S32MC001
NA

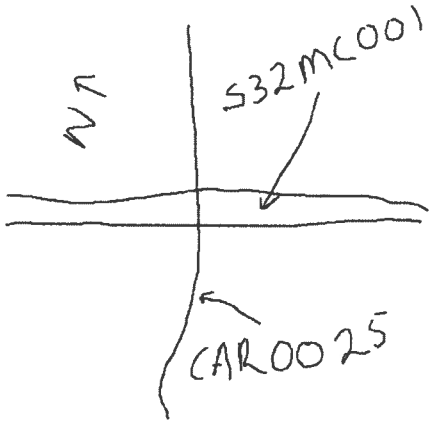
☐ Centerline ☐ Re-Route ☑ Access Road ☐ Ancillary Facility ☐ Other

Date:	Client/Project Name:	Milepost Enter/Exit:
2008/11/10	Keystone XL-10623-007-803D	0.599 - 0.613

Team:	State/County:	Quad Name:
32	MT - McCone	North Fork Horse Creek

Logbook No.:	Logbook Page No.:	Tract No.:	Photo:
2	82	MC426	S32MC001_E.JPG

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lak ☐ Pond ☐ Borrow Pi ☑ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderat ☐ Slow ☑ Very Slow ☐ None
Subsurface Flow:	☐ Yes ☑ No ☐ Unknown
Flow Type:	☐ Perennial (Flows year round) ☑ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☑ NW ☐ No Flow
OHWM Width (ft.):	25
Sinuosity:	☐ Braided ☑ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	40 **Water Surface (At Crossing Location)** 15
Stream Depth (ft.):	☐ 0 ☐ 1-3 ☑ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+

OHWM Indicators:
ABRUPT PLANT COMMUNITY CHANGE
CLEAR NATURAL LINE ON BANK

Bank Height (ft.): (Looking Downstream)	Left:	☐ 0-2 ☑ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
	Right:	☐ 0-2 ☑ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left:	☐ 4:1 ☑ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical
	Right:	☐ 4:1 ☐ 3:1 ☑ 2:1 ☐ 1:1 ☐ Vertical

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Ft. Collins, CO 80525

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
Water Color: ☐ Other:

Stream Substrate %:

30% SILTS
20% VEGETATION
50% OTHER - CLAY

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☑ In-stream Emergent Plant % Cover: 15
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover: 0
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs

Aquatic Organisms Observed:

☑ Waterfowl ☐ Fish (Adult) ☐ Turtles ☐ Other:
☐ Snakes ☐ Fish (Juvenile) ☐ Frogs
☐ Invertebrate

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out onto Flood Plain (ft) 20

Vegetative Layers: ☑ Herbs ☐ Shrubs ☐ Tree ☐ Multiple

☑ Significant Bare Areas Within Riparian Zone ☐ Evidence Of Non-Buffered Concentrated Flows

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☑ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☐ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☑ Other: ROAD CROSSING & NO CULVERT

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number
RANGELAND ABUTTS CHANNEL

Comments:

ROAD CROSSING IS PERPENDICULAR

Stream Quality: ☐ Hig ☑ Moderate ☐ Low

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ENSR | AECOM

Waterbody Data Form

Feature ID: S32MC002

E. FORK PRARIRIE ELK CREEK

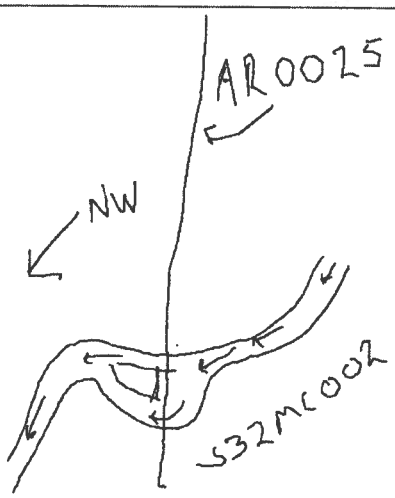
☐ Centerline ☐ Re-Route ☑ Access Road ☐ Ancillary Facility ☐ Other

Date:	Client/Project Name:	Milepost Enter/Exit:
2008/11/10	Keystone XL-10623-007-803D	0.873 - 0.879

Team:	State/County:	Quad Name:
32	MT - McCone	North Fork Horse Creek

Logbook No.:	Logbook Page No.:	Tract No.:	Photo:
2	84		S32MC002_S, N, NW.JPG

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lak ☐ Pond ☐ Borrow Pi ☑ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderat ☐ Slow ☐ Very Slow ☑ None
Subsurface Flow:	☐ Yes ☑ No ☐ Unknown
Flow Type:	☐ Perennial (Flows year round) ☑ Intermittent (Flows <3 month ☑ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☑ NW ☐ No Flow
OHWM Width (ft.):	20
Sinuosity:	☐ Braided ☑ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	30 **Water Surface (At Crossing Location)** 0
Stream Depth (ft.):	☑ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+

OHWM Indicators:

ABRUPT PLANT COMMUNITY CHANGE
CLEAR NATURAL LINE ON BANK

Bank Height (ft.): (Looking Downstream)	Left:	☐ 0-2 ☐ 2-4 ☐ 4-6 ☑ 6-8 ☐ 8+
	Right:	☐ 0-2 ☐ 2-4 ☐ 4-6 ☑ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left:	☐ 4:1 ☐ 3:1 ☑ 2:1 ☐ 1:1 ☐ Vertical
	Right:	☐ 4:1 ☐ 3:1 ☑ 2:1 ☐ 1:1 ☐ Vertical

ENSR
1601 Prospect Parkway
Ft. Collins, CO 80525

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
Water Color: ☐ Other:

Stream Substrate %:

20% VEGETATION
40% SILTS
40% OTHER - CLAY

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☑ In-stream Emergent Plant % Cover: 15
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover: 0
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs

Aquatic Organisms Observed:

☑ Waterfowl ☐ Fish (Adult) ☐ Turtles ☐ Other:
☐ Snakes ☐ Fish (Juvenile) ☐ Frogs
☐ Invertebrate

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out onto Flood Plain (ft) 20

Vegetative Layers: ☑ Herbs ☐ Shrubs ☐ Tree ☐ Multiple

☑ Significant Bare Areas Within Riparian Zone ☐ Evidence Of Non-Buffered Concentrated Flows

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☑ N/A

Disturbances: ☑ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number
RANGELAND ABUTTS STREAM

Comments:

ROAD CROSSING & NO EXISTING CULVERT 8' PIPE PRESENT

Stream Quality: ☐ Hig ☑ Moderate ☐ Low

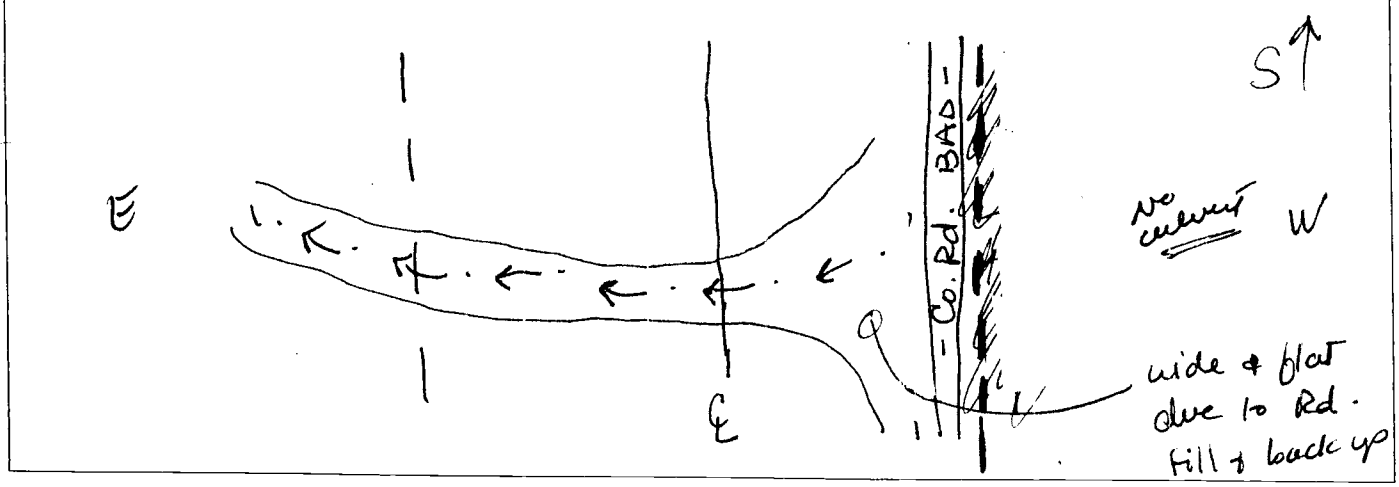
Waterbody Data Form

Cracker Box Creek
S105DA002 intermittent

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☒ Other MTV 9

Centerline ID:		Project Designated Name: KXL Phase IV	
Date: 5/29/10	Client/Project Name: Now/Trans Canada	Milepost Enter/Exit: ~MP	MTV9-23.55
Team: Bio 105a	State/County: Dawson Co., MT	Quad Name:	
Logbook No.: 105a	Logbook Page No.: 4	Tract No.: MTV8-MT-DA-00250.000	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None – dry
Flow Type:	☐ Perennial (Flows year round) ☒ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☒ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	hard to distinguish; there is scour + lack of veg in certain places
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	~2' → 5' **Water Surface (At Crossing Location)** NONE – dry
Stream Depth (ft.):	☐ 0 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	NONE
Bank Height (ft.): (Looking Downstream)	Left: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☒ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☒ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

photos: S105DA002 – S (across)
– W (upquad)
– E (downquad)

S105DA002 (cont.)

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☐ Other:

Stream Substrate %: Cobbles, Sand + Veg NA DRY

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover:
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☒ None

Aquatic Organisms Observed: NONE

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 10' Right - 10'

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☒ No ☐ Unknown

Tributary Condition: ☐ Natural ☐ Artificial (Man-Made) ☒ Manipulated Rd. built over trib. w no culvert

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☒ Dikes/Berms - Rd. ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☒ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other: ~~No cattle~~

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

very low diversity / dry / next to Rd

Comments:

Stream Quality: ☐ High ☐ Moderate ☒ Low

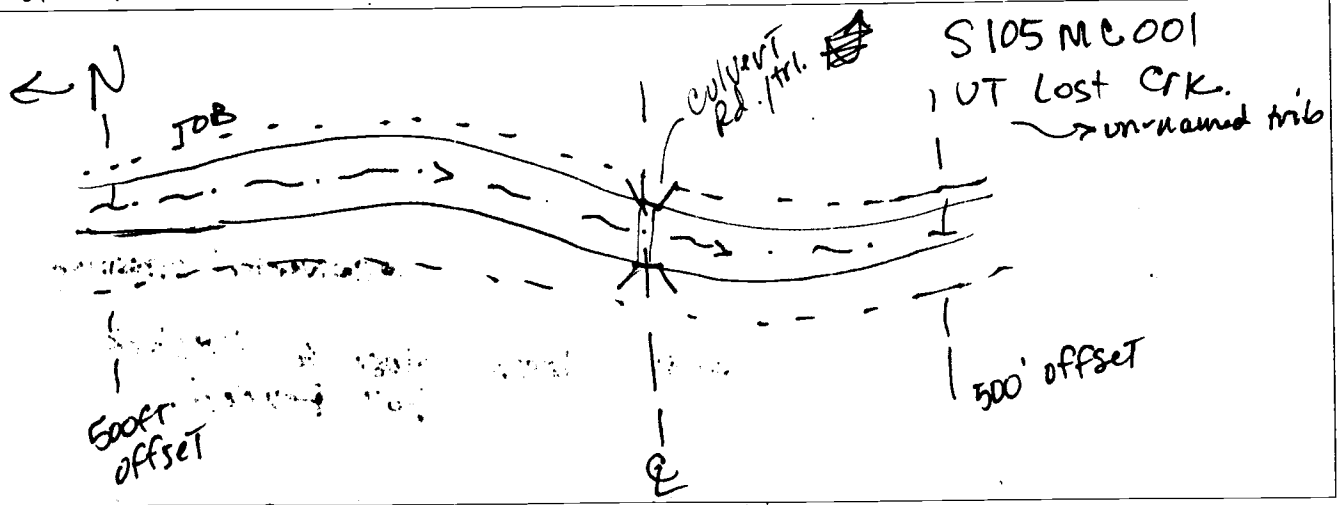
Waterbody Data Form

S105MC001
un-named trib Lost Crk.

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☒ Other MTV6

Centerline ID: MTV6	Project Designated Name: KXL Phase 4	
Date: 5/18/10	Client/Project Name:	Milepost Enter/Exit:
Team: BLD 105	State/County: MT / MC	Quad Name:
Logbook No.: 105	Logbook Page No.: 1	Tract No.: MTV6-MT-MC-00060.000

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake	☐ Pond	☐ Borrow Pit	☒ Stream	☐ Ag. Ditch	☐ Other				
Stream Flow:	☐ Fast	☐ Moderate	☒ Slow	☐ Very Slow	☐ None					
Flow Type:	☒ Perennial (Flows year round)			☐ Intermittent (Flows <3 month					☐ None	
	☐ Seasonal (Continuous flow ≥ 3 months)			☐ Ephemeral (Flows only in response to rainfall)						
Direction of Flow:	☒ N	☐ NE	☐ E	☐ SE	☐ S	☐ SW	☐ W	☐ NW	☐ No Flow	
OHWM Width (ft.):	15									
Sinuosity:	☐ Braided	☒ Meandering	☐ Straight	☐ N/A						
Stream Width (ft.):	25' - TOB to TOB			**Water Surface (At Crossing Location)**	15'					
Stream Depth (ft.):	☐ 0	☐ 1-3	☐ 3-6	☒ 6-12	☐ 12-18	☐ 18-24	☐ 24-36	☐ 36-48	☐ 48-60	☐ 60+
OHWM Indicators:	inches	clear natural line on bank								
Bank Height (ft.): (Looking Downstream)	Left:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+				
	Right:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+				
Bank Slope: (Looking Downstream)	Left:	☐ 4:1	☒ 3:1	☐ 2:1	☐ 1:1	☐ Vertical				
	Right:	☒ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical				

Qualitative Attributes

Water Appearance:

- ☐ Clear
- ☒ Slightly Turbid
- ☐ No Flow
- ☐ Turbid
- ☐ Very Turbid
- ☐ Other:
- ☐ Sheen on Surfac
- ☐ Greenish Color
- ☐ Floating Algalmats
- ☐ Obvious Surface Scum

Stream Substrate %: 50% clay 50% silt

Aquatic Habitats:

- ☐ Sand Bar
- ☐ Gravel Bar
- ☐ Mud Bar
- ☐ Undercut Banks
- ☐ Gravel Riffle
- ☐ Deep Pools
- ☐ Bank Root Systems
- ☒ Overhanging Trees/Shrubs few
- ☐ In-stream Emergent Plant % Cover:
- ☐ In-stream Submerged Plant % Cover:
- ☐ Fringing Wetlands, Characteristics:
- ☐ None

Aquatic Organisms Observed: None

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - Right -

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☐ No ☒ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition:

- ☐ Channelization/Braiding
- ☒ Dikes/Berms
- ☐ Unnatural Straightening
- ☐ Excessive Bank Erosion
- ☐ Downcutting
- ☐ N/A @ converted crossing

Disturbances:

- ☐ Livestock Access to Riparian Zone
- ☐ Waste Discharge Pipes Present
- ☐ Other:
- ☐ Manure In Stream or On Banks

~~does~~ close to livestock, but fenced.

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

low structural + spp diversity; yet perennial stream in arid grassland.

Comments:

Nice small perennial stream - appears that livestock are fenced off.

Stream Quality: ☐ High ☒ Moderate ☐ Low

low structural + spp. diversity

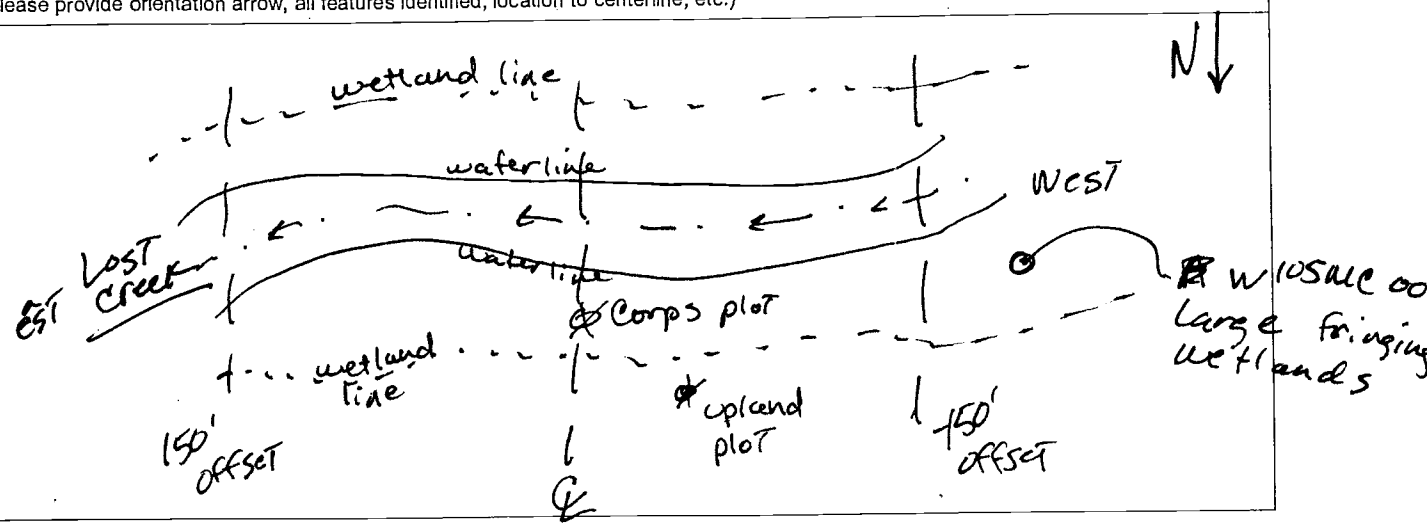
Waterbody Data Form

LOST CREEK
~~S105MC002~~ S105MC002
W105MC001

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☒ Other MTV6

Centerline ID: MTV6	Project Designated Name: KXL Phase 4	
Date: 5/10/10	Client/Project Name:	Milepost Enter/Exit:
Team: 105	State/County: MT / MC	Quad Name:
Logbook No.: 105	Logbook Page No.: 3	Tract No.: MTV6 - MT - MC - 00060.0

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☒ Slow ☐ Very Slow ☐ None
Flow Type:	☒ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☒ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	5' avg.
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	20' - wetlands abut **Water Surface (At Crossing Location)** 5'
Stream Depth (ft.):	☐ 0 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	clear natural line on bank - salt crusts
Bank Height (ft.): (Looking Downstream)	Left: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☒ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical Right: ☒ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

photos: S105MC002 - ~~up~~ upstream
or - across
- downstream

Qualitative Attributes

Water Appearance:
☐ Clear ☐ Turbid ☐ Sheen on Surfac ☒ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☒ Obvious Surface Scum
☐ No Flow ☐ Other:

Stream Substrate %: Clay. submergent ~ emergent veg.

Aquatic Habitats:
☐ Sand Bar ☐ Gravel Riffle ☒ In-stream Emergent Plant % Cover: MOSAICS - 5% - 100% pockets
☐ Gravel Bar ☐ Deep Pools ☒ In-stream Submerged Plant % Cover: Mosaics - 5%
☐ Mud Bar ☐ Bank Root Systems ☒ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☐ None wetlands ABUT - W105MC001

Aquatic Organisms Observed: NONE

Riparian Zone:
Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 50' Right - 50'
Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple
Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown
Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☐ No ☒ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting grazed
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☒ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:
Habitat ID Number: Meadowlarks - ~~[illegible]~~ good vegetative diversity & + redwing blackbirds observed but no woody/tree riparian area.

Comments: Stream/wetland Complex w in perennial, slow-flowing stream

Stream Quality: ☐ High ☒ Moderate ☐ Low
relatively isolated perennial water source
wetland veg monoculture of J. Balticus. + S. pectinata

Waterbody Data Form

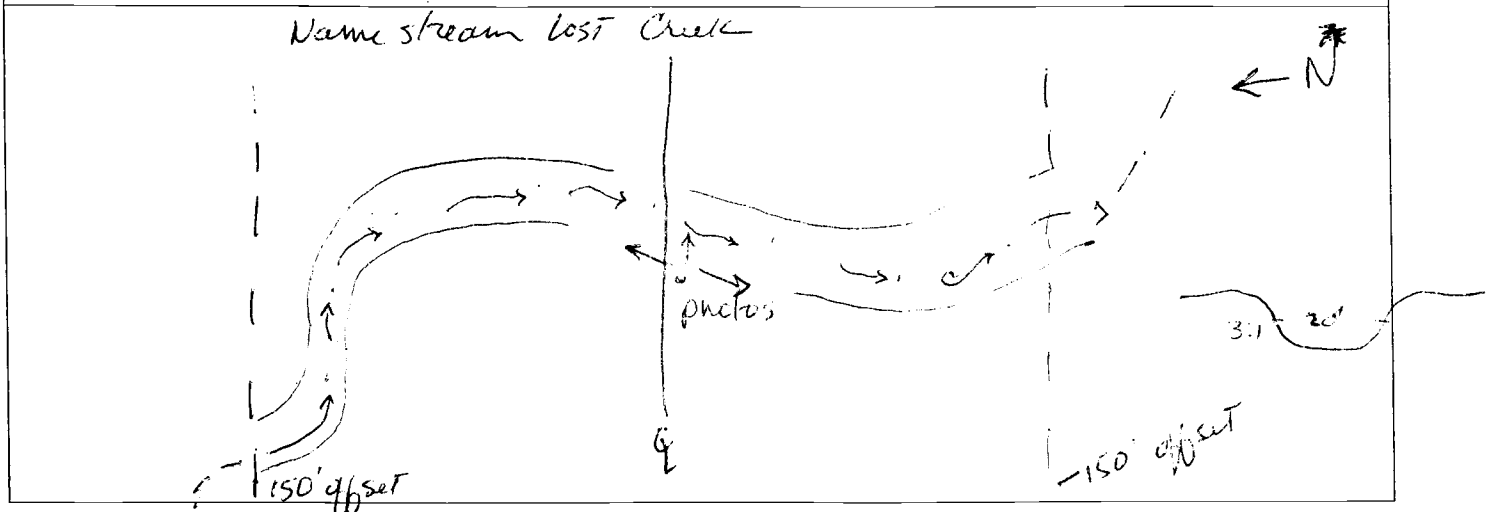
named Stream Lost Creek

S105MC004

☐ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☒ Other MTV6

Centerline ID: MTV6	Project Designated Name: KXL Phase 4	
Date: 5/21/10	Client/Project Name: Dow / TransCanada	Milepost Enter/Exit: ~MTV-6-2.5
Team: Bill 105 · J. Novak	State/County: McCone Co. MT	Quad Name:
Logbook No.: 105	Logbook Page No.: 13	Tract No.: MTV6-MT-MC-00020.000

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☒ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall) @ west
Direction of Flow:	☐ N ☐ NE ☐ E ☒ SE ↔ ☒ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	20'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	20' — **Water Surface (At Crossing Location)** NA - NONE
Stream Depth (ft.):	☐ 0 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	~~clear natural line impressed on the bank~~, bent / matted vegetation, scour
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☒ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☒ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

photos: S105MC004_1SE (across)
-2S (downstream)
-3N (upstream)

Qualitative Attributes S105 MC 004 (cont.)

Water Appearance:

☐ Clear	☐ Turbid	☐ Sheen on Surfac	☐ Floating Algalmats
☐ Slightly Turbid	☐ Very Turbid	☐ Greenish Color	☐ Obvious Surface Scum
☒ No Flow	☐ Other:		

Stream Substrate %:

Aquatic Habitats:

☐ Sand Bar	☐ Gravel Riffle	☐ In-stream Emergent Plant	% Cover:
☐ Gravel Bar	☐ Deep Pools	☐ In-stream Submerged Plant	% Cover:
☐ Mud Bar	☐ Bank Root Systems	☐ Fringing Wetlands	Characteristics:
☐ Undercut Banks	☐ Overhanging Trees/Shrubs	☒ None	

Aquatic Organisms Observed: Mosquitos. Rabid today —

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 15' Right - 15'

Vegetative Layers: ☒ Herbs ☒ Shrubs ☐ Trees ☐ Multiple - Snowberry (Symphiocarpos spp) - A. constatum)

Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☐ No ☒ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition:

☐ Channelization/Braiding	☐ Unnatural Straightening	☐ Downcutting
☐ Dikes/Berms	☐ Excessive Bank Erosion	☐ N/A

Disturbances:

☐ Livestock Access to Riparian Zone	☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present	
☐ Other:	☒ looks to be undisturbed

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: Some Symphiocarpos spp in drainage for cover mostly Agropyron cristatum.

Comments:

Stream Quality: ☐ High ☐ Moderate ☐ Low . NA - no flow

This section of lost creek is ephemeral @ best ... see scoured banks when it does flow only in response to heavy rain, etc.

^ some matted vegetation

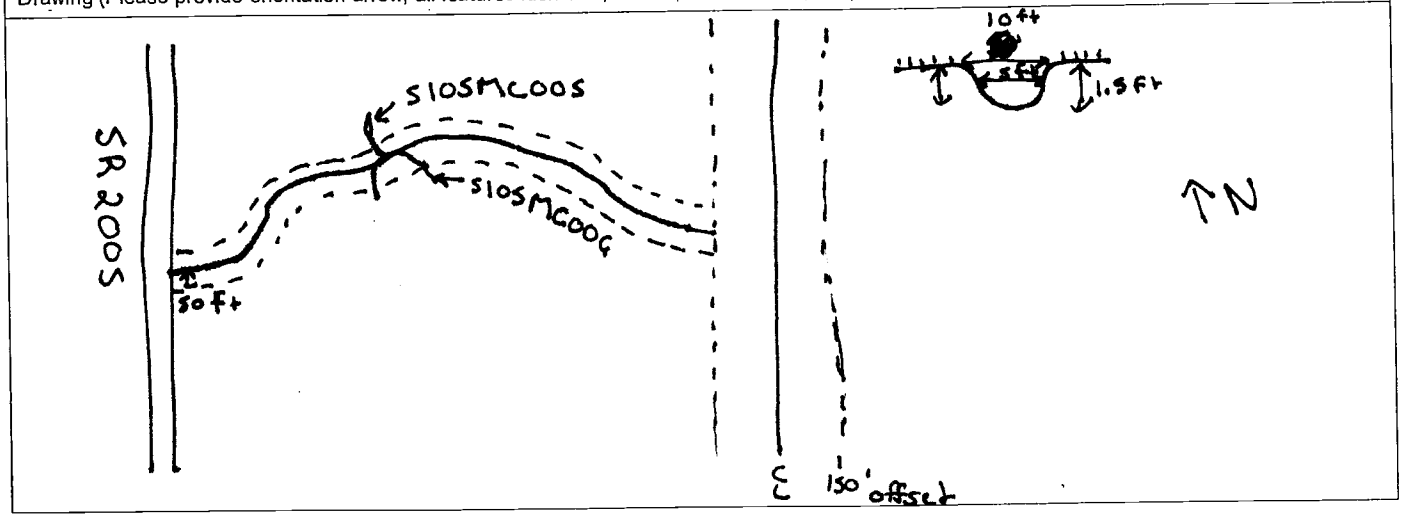
CAR 109
S105MC005
intermittent Stream

Waterbody Data Form

☒ Centerline ☐ Re-Route ☒ Access Road ☐ Ancillary Facility ☐ Transmission Line ☒ Other MTV 6

Centerline ID:	Project Designated Name:	
Date: 5/26/10	Client/Project Name: Trow / TransCanada	Milepost Enter/Exit: ~~Enter~~ CAR 109 ~~Exit~~ No MP's given
Team: Bio 105	State/County: McCone Co., MT	Quad Name:
Logbook No.: 105	Logbook Page No.:	Tract No.: Buffalo Spgs.

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☒ Very Slow ☒ None ponded @ culvert outlets, but this is dry
Flow Type:	☐ Perennial (Flows year round) ☒ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☒ NW ☒ No Flow this runs NW, but No flow
OHWM Width (ft.):	5'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	TOB - TOB = 10' **Water Surface (At Crossing Location)** 2'
Stream Depth (ft.):	☐ 0 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	SCOUR / Beat Matted Vegetation
Bank Height (ft.): (Looking Downstream)	Left: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☒ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical

photos: S105MC005_001SE (up)
_002N (across)
_003NW (down)

S105MC005 (cont)

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☒ Obvious Surface Scum
☒ No Flow ☐ Other: ponded water @ culvert outlet - otherwise No flow in trib.

Stream Substrate %: 75% clay 25% veg

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☒ In-stream Emergent Plant % Cover: 5% small pockets in scour holes
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed: NONE

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 5' Right - 5'

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☐ No ☒ Unknown

Tributary Condition: ☐ Natural ☐ Artificial (Man-Made) ☒ Manipulated - Culverted / Bermed

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☒ Downcutting
☒ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☒ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: this small int. stream has low value - yet is assoc. w bermed open water "pond" ~~w~~ & the upgradient.

Comments:

Stream Quality: ☐ High ☐ Moderate ☒ Low - see above

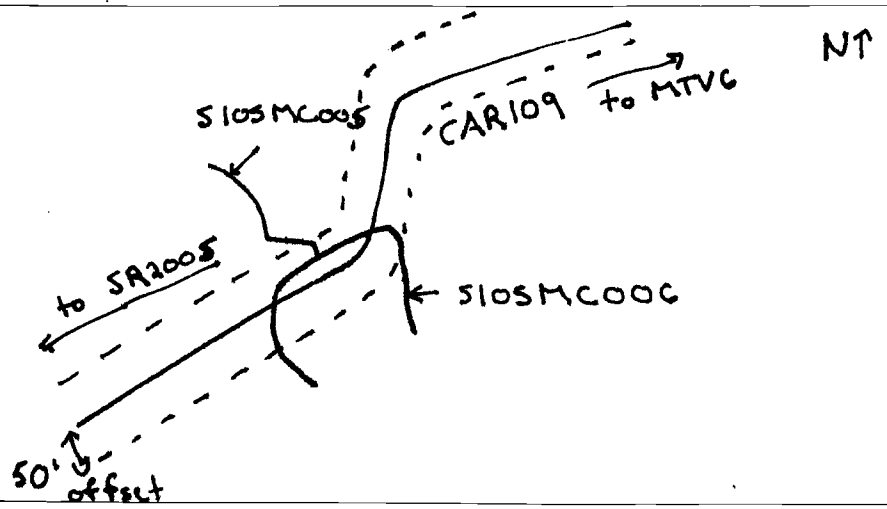
CAR 109
S105MC006
Bermed stock pond

Waterbody Data Form

☐ Centerline ☐ Re-Route ☒ Access Road ☐ Ancillary Facility ☐ Transmission Line ☒ Other MTV 6

Centerline ID:		Project Designated Name:
Date: 5/26/10	Client/Project Name: Trow/ Trans Canada	Milepost Enter/Exit:
Team: Bio 105	State/County: MT / McCone Co.	Quad Name:
Logbook No.: 105	Logbook Page No.:	Tract No.: Buffalo Spgs, Inc.

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake	☒ Pond	☐ Borrow Pit	☐ Stream	☐ Ag. Ditch	☐ Other					
Stream Flow:	☐ Fast	☐ Moderate	☐ Slow	☐ Very Slow	☒ None						
~~Flow Type:~~ int-dries ☐ Perennial (Flows year round)				☐ Intermittent (Flows <3 month N/A					☐ None		
in-flows ☐ Seasonal (Continuous flow ≥ 3 months)				☐ Ephemeral (Flows only in response to rainfall)							
Direction of Flow:	☐ N	☐ NE	☐ E	☐ SE	☐ S	☐ SW	☐ W	☐ NW	☐ No Flow	NA	
OHWM Width (ft.):	NA										
Sinuosity:	☐ Braided	☐ Meandering	☐ Straight	☐ N/A	NA						
Stream Width (ft.):	NA	**Water Surface (At Crossing Location)**	NA								
~~Stream~~ Depth (ft.): pond depth	☐ 0	☐ 1-3	☒ 3-6	☐ 6-12	☐ 12-18	☐ 18-24	☐ 24-36	☐ 36-48	☐ 48-60	☐ 60+	
OHWM Indicators:	NA										
Bank Height (ft.): (Looking Downstream)	Left:	☐ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+	NA				
	Right:	☐ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+	NA				
Bank Slope: (Looking Downstream)	Left:	☐ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical	NA				
	Right:	☐ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical	NA				

photo: S105MC006_0015E

S10SMC006 (cont.)

Qualitative Attributes

Water Appearance:
- ☐ Clear
- ☒ Turbid
- ☐ Sheen on Surface
- ☐ Floating Algalmats
- ☐ Slightly Turbid
- ☐ Very Turbid
- ☐ Greenish Color
- ☐ Obvious Surface Scum
- ☐ No Flow
- ☐ Other: H. choc. brown color

Stream Substrate %: can't see - likely clay

Aquatic Habitats:
- ☐ Sand Bar
- ☐ Gravel Riffle
- ☒ In-stream Emergent Plant 5 % Cover: small pockets of eleocharis spp.
- ☐ Gravel Bar
- ☐ Deep Pools
- ☐ In-stream Submerged Plant % Cover:
- ☐ Mud Bar
- ☐ Bank Root Systems
- ☒ Fringing Wetlands Characteristics: narrow fringe of Distichlis stricta + eleocharis
- ☐ Undercut Banks
- ☐ Overhanging Trees/Shrubs
- ☐ None

Aquatic Organisms Observed: NONE

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 40 Right - NA

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☐ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☐ No ☐ Unknown

Tributary Condition: ☐ Natural ☐ Artificial (Man-Made) ☒ Manipulated Bermed / Dikes

Channel Condition:
- ☐ Channelization/Braiding
- ☐ Unnatural Straightening
- ☐ Downcutting
- ☒ Dikes/Berms
- ☐ Excessive Bank Erosion
- ☐ N/A

Disturbances:
- ☒ Livestock Access to Riparian Zone
- ☐ Manure In Stream or On Banks
- ☐ Waste Discharge Pipes Present
- ☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

Bermed stock pond w ~ 5' water now.. likely dries out completely in Aug.

Comments:

Stream Quality: ☐ High ☒ Moderate ☐ Low

pond

pond likely dries out during July/Aug.

pond supports songbirds - obs. killdeer + meadowlark. other songbirds heard.

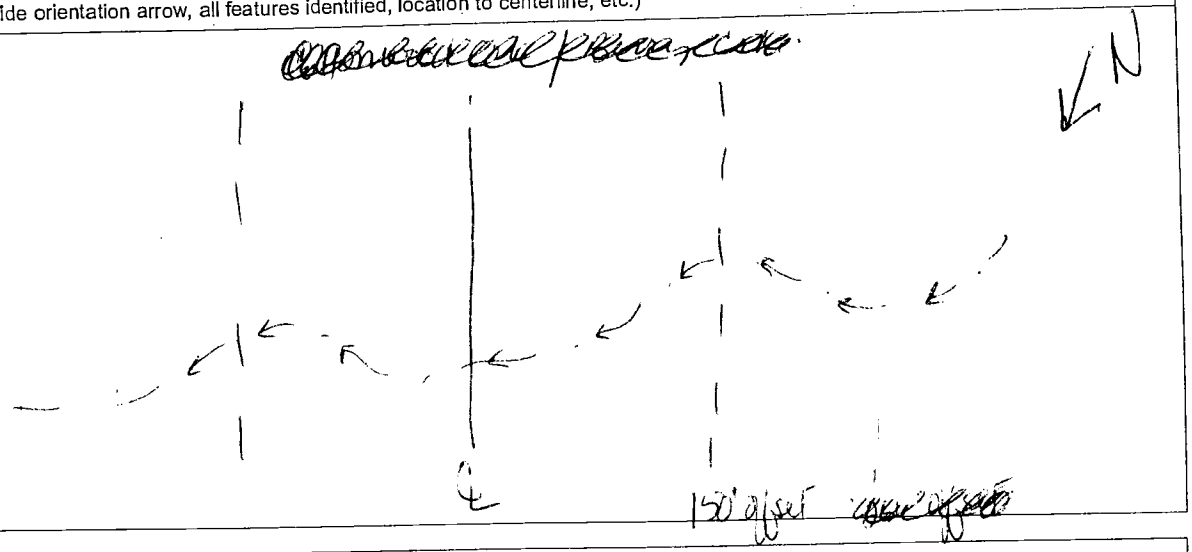
Waterbody Data Form

S105MC007
ephemeral drainage

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☒ Other MTV6

Centerline ID:	Project Designated Name: KXL Phase IV	
Date: 5/28/10	Client/Project Name: Now / TransCanada	Milepost Enter/Exit: ~MPMTV6-24.65
Team: Bio 105	State/County: MC Cone Co., MT	Quad Name:
Logbook No.: 105	Logbook Page No.:	Tract No.: ML-MT-MC-008020.000

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☒ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	No OHWM identifiable
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	TOB → TOB = 20' — **Water Surface (At Crossing Location)** NONE
Stream Depth (ft.):	☐ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+ NONE
OHWM Indicators:	No OHWM
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☐ 2-4 ☒ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☒ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical

photos: S105MC007_SE
_SW
_NE

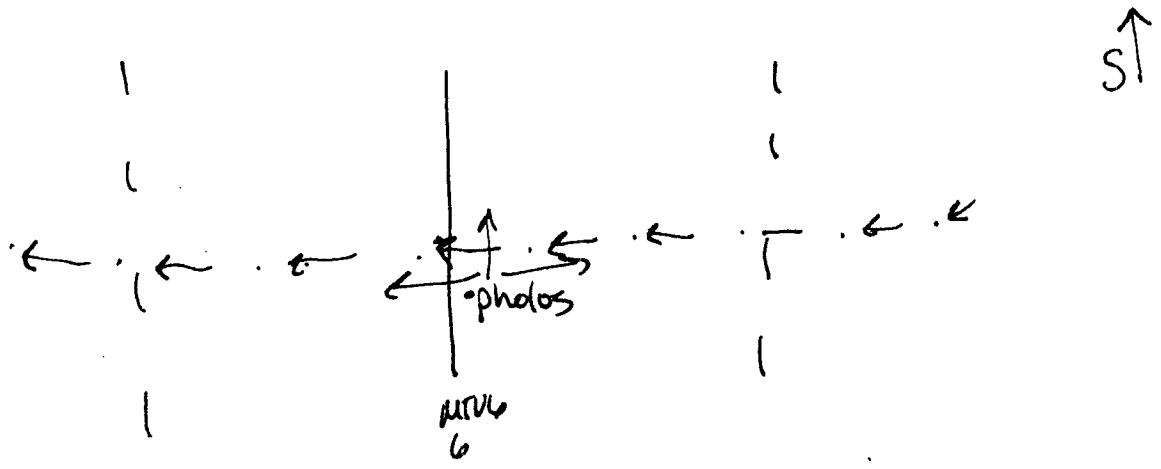
Waterbody Data Form

S105MC010
eph. drainage way

☐ Centerline ☒ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☒ Other MTV6

Centerline ID:		Project Designated Name: KXL phase IV Steele City Seg.	
Date: 6/4/10	Client/Project Name: now/TransCanada		Milepost Enter/Exit: vMP MTV6 11.15
Team: Bio 105	State/County: McCone Co., MT		Quad Name:
Logbook No.: 105a	Logbook Page No.:	Tract No.: ML-MT-MC-00535.000	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☒ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow W→E
OHWM Width (ft.):	-No continuous OHWM - Scour lines on outer banks; grassy swale
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	15' **Water Surface (At Crossing Location)** NONE - dry
Stream Depth (ft.):	☒ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+ dry
OHWM Indicators:	NONE

Bank Height (ft.): (Looking Downstream)	Left:	☐ 0-2	☐ 2-4	☒ 4-6	☐ 6-8	☐ 8+
	Right:	☐ 0-2	☐ 2-4	☒ 4-6	☐ 6-8	☐ 8+
Bank Slope: (Looking Downstream)	Left:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical
	Right:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical

photos: S105MC010 - S (across)
- W (upgrad)
- (down)

S105MC010 (cont.)

Qualitative Attributes

Water Appearance:

- [ ] Clear
- [ ] Turbid
- [ ] Sheen on Surfac
- [ ] Floating Algalmats
- [ ] Slightly Turbid
- [ ] Very Turbid
- [ ] Greenish Color
- [ ] Obvious Surface Scum
- [x] No Flow
- [ ] Other:

Stream Substrate %: grass - upland rangeland grasses

Aquatic Habitats:

- [ ] Sand Bar
- [ ] Gravel Riffle
- [ ] In-stream Emergent Plant % Cover:
- [ ] Gravel Bar
- [ ] Deep Pools
- [ ] In-stream Submerged Plant % Cover:
- [ ] Mud Bar
- [ ] Bank Root Systems
- [ ] Fringing Wetlands Characteristics:
- [ ] Undercut Banks
- [ ] Overhanging Trees/Shrubs
- [x] None

Aquatic Organisms Observed: NONE

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 25' Right - 25'

Vegetative Layers: [x] Herbs [ ] Shrubs [ ] Trees [ ] Multiple

Significant Bare Areas Within Riparian Zone [ ] Yes [x] No [ ] Unknown

Evidence Of Non-Buffered Concentrated Flows: [ ] Yes [x] No [ ] Unknown

Tributary Condition: [x] Natural [ ] Artificial (Man-Made) [ ] Manipulated

Channel Condition:

- [ ] Channelization/Braiding
- [ ] Unnatural Straightening
- [ ] Downcutting
- [ ] Dikes/Berms
- [ ] Excessive Bank Erosion
- [ ] N/A NONE of these

Disturbances:

- [ ] Livestock Access to Riparian Zone
- [ ] Manure In Stream or On Banks
- [ ] Waste Discharge Pipes Present
- [ ] Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

Very low spp. + structural diversity.

Comments:

Stream Quality: [ ] High [ ] Moderate [x] Low

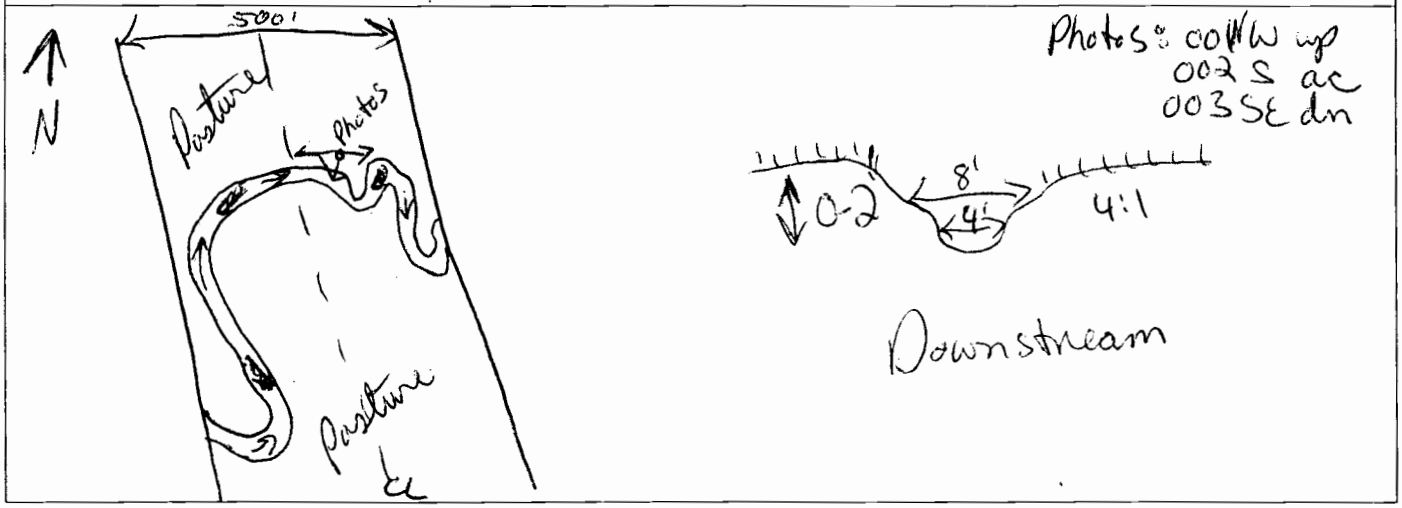
ephemeral @ best - steep erosional banks

Waterbody Data Form S106FA006 - South Fork Coal Bank Creek

☐ Centerline ☒ CL Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID: 3/26/10	Project Designated Name: KXL Pipeline - Phase IV	
Date: 6/12/10	Client/Project Name: TransCanada - Trow - KXL	Milepost Enter/Exit: ≈279.5
Team: B106	State/County: MT - Fallon	Quad Name: NA
Logbook No.: 2	Logbook Page No.: —	Tract No.: ML-MT-FA-00966

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☒ Very Slow ☐ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☒ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☒ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	4'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	TOB = 8' **Water Surface (At Crossing Location)** 4'
Stream Depth (ft.):	☐ 0 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Scour, Bent veg.
Bank Height (ft.): (Looking Downstream)	Left: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☒ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical Right: ☒ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

S106FA006

Qualitative Attributes

Water Appearance:

- [X] Clear
- [ ] Turbid
- [ ] Sheen on Surfac
- [ ] Floating Algalmats
- [ ] Slightly Turbid
- [ ] Very Turbid
- [ ] Greenish Color
- [ ] Obvious Surface Scum
- [ ] No Flow
- [ ] Other:

Stream Substrate %: clay loam

Aquatic Habitats:

- [ ] Sand Bar
- [ ] Gravel Riffle
- [X] In-stream Emergent Plant % Cover: 15% Juncus
- [ ] Gravel Bar
- [ ] Deep Pools
- [ ] In-stream Submerged Plant % Cover:
- [ ] Mud Bar
- [ ] Bank Root Systems
- [ ] Fringing Wetlands Characteristics:
- [ ] Undercut Banks
- [ ] Overhanging Trees/Shrubs
- [ ] None

Aquatic Organisms Observed: NA

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 5' Right - 5'

Vegetative Layers: [X] Herbs [ ] Shrubs [ ] Trees [ ] Multiple

Significant Bare Areas Within Riparian Zone [ ] Yes [X] No [ ] Unknown

Evidence Of Non-Buffered Concentrated Flows: [ ] Yes [X] No [ ] Unknown

Tributary Condition: [X] Natural [ ] Artificial (Man-Made) [ ] Manipulated

Channel Condition:

- [ ] Channelization/Braiding
- [ ] Unnatural Straightening
- [ ] Downcutting
- [ ] Dikes/Berms
- [ ] Excessive Bank Erosion
- [X] N/A

Disturbances:

- [X] Livestock Access to Riparian Zone
- [X] Manure In Stream or On Banks
- [ ] Waste Discharge Pipes Present
- [ ] Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: NA

Comments: Crested/western wheatgrass, Bluegrass, Sagebrush.

Rangland/Pasture. Birds in area, pronghorn.

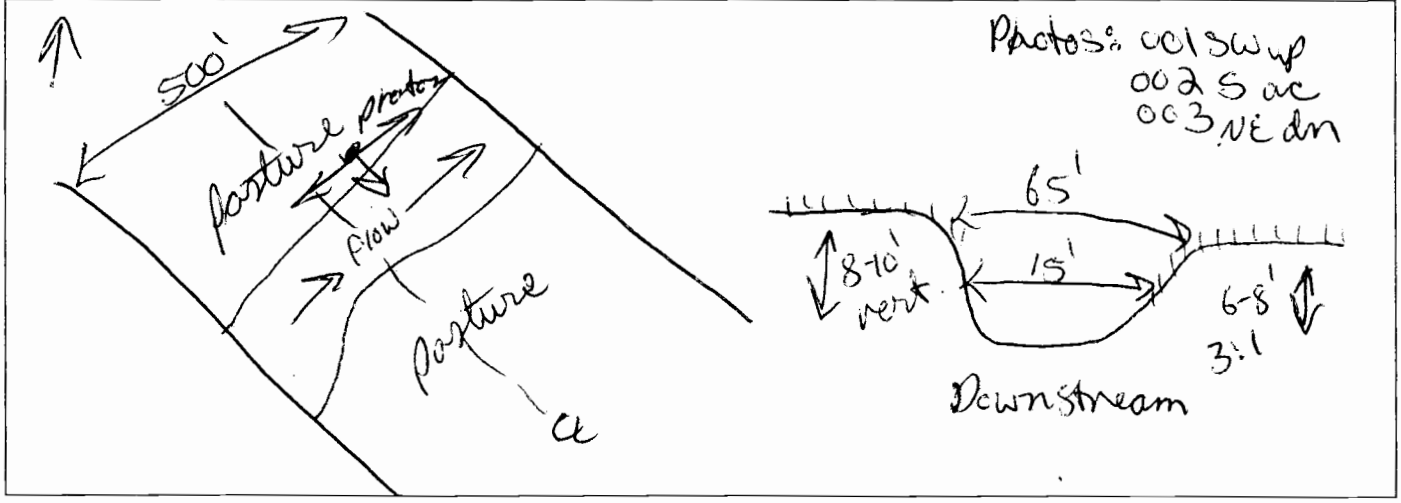
Stream Quality: [ ] High [X] Moderate [ ] Low Cattle access.

Waterbody Data Form S106FA007 - Boxelder Creek

☐ Centerline ☒ Re-Route (CL) ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID: 3/26/10		Project Designated Name: KXL Pipeline - Phase IV	
Date: 6/12/10	Client/Project Name: TransCanada - Trow - KXL		Milepost Enter/Exit:
Team: B106	State/County: MT - Fallon		Quad Name: NA
Logbook No.: 2	Logbook Page No.: —	Tract No.: ML-MT-PA-01030	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake	☐ Pond	☐ Borrow Pit	☒ Stream	☐ Ag. Ditch	☐ Other					
Stream Flow:	☐ Fast	☒ Moderate	☐ Slow	☐ Very Slow	☐ None						
Flow Type:	☒ Perennial (Flows year round)			☐ Intermittent (Flows <3 month						☐ None	
	☐ Seasonal (Continuous flow ≥ 3 months)			☐ Ephemeral (Flows only in response to rainfall)							
Direction of Flow:	☐ N	☒ NE	☐ E	☐ SE	☐ S	☐ SW	☐ W	☐ NW	☐ No Flow		
OHWM Width (ft.):	15'										
Sinuosity:	☐ Braided	☒ Meandering	☒ Straight	☐ N/A							
Stream Width (ft.):	TOB 65'			**Water Surface (At Crossing Location)**		12'					
Stream Depth (ft.):	☐ 0	☒ 1-3	☐ 3-6	☐ 6-12	☐ 12-18	☐ 18-24	☐ 24-36	☐ 36-48	☐ 48-60	☐ 60+	
OHWM Indicators:	wrack line, sediment sorting, bent veg										
Bank Height (ft.): (Looking Downstream)	Left:	☐ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☒ 8+					
	Right:	☐ 0-2	☐ 2-4	☐ 4-6	☒ 6-8	☐ 8+					
Bank Slope: (Looking Downstream)	Left:	☐ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☒ Vertical					
	Right:	☒ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical					

S106FA007

Qualitative Attributes

Water Appearance:

☐ Clear	☐ Turbid	☐ Sheen on Surfac	☐ Floating Algalmats
☒ Slightly Turbid	☐ Very Turbid	☐ Greenish Color	☐ Obvious Surface Scum
☐ No Flow	☐ Other:		

Stream Substrate %: Gravel 50% , clay 50%

Aquatic Habitats:

☐ Sand Bar	☐ Gravel Riffle	☐ In-stream Emergent Plant	% Cover:
☒ Gravel Bar	☐ Deep Pools	☐ In-stream Submerged Plant	% Cover:
☒ Mud Bar	☐ Bank Root Systems	☐ Fringing Wetlands	Characteristics:
☐ Undercut Banks	☐ Overhanging Trees/Shrubs	☐ None	

Aquatic Organisms Observed: NA

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 5' Right - 15'

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☒ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition:

☐ Channelization/Braiding	☐ Unnatural Straightening	☐ Downcutting
☐ Dikes/Berms	☒ Excessive Bank Erosion	☒ N/A

Disturbances:

☒ Livestock Access to Riparian Zone ☒ Manure In Stream or On Banks

☐ Waste Discharge Pipes Present

☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: NA

Birds/Pronghorn around area.

Comments: Pasture/Rangeland → alfalfa, Brome, bluegrass, sages, Wheatgrasses.

Stream Quality: ☐ High ☒ Moderate ☐ Low

No Riparian zone or

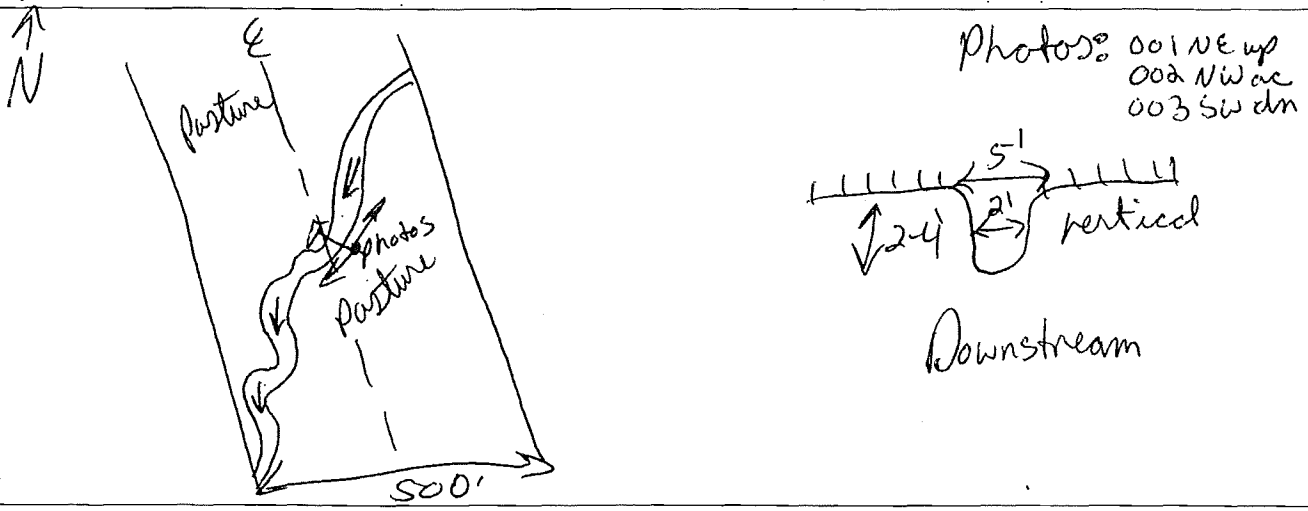
S106FA007

Waterbody Data Form ~~S106FA007~~ - Stream

☐ Centerline ☒ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID: 3/26/10		Project Designated Name: KXL Pipeline-Phase IV	
Date: 6/11/10	Client/Project Name: TransCanada-Trow-KXL		Milepost Enter/Exit: 255/256
Team: B106	State/County: MT- Fallon		Quad Name: NA
Logbook No.: 2	Logbook Page No.: X	Tract No.: CL ML Reroute 255/256	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☒ No Flow
OHWM Width (ft.):	2'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	Tob ≈ 5' **Water Surface (At Crossing Location)** NA
Stream Depth (ft.):	☒ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Scour, bent veg
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☒ Vertical Right: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☒ Vertical

S106FA007
~~S106FA005~~

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☒ No Flow ☐ Other: No water

Stream Substrate %: ~~NA~~ Sandy Clay loam

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☒ In-stream Emergent Plant 30% % Cover: Grasses, carex, bluegrass
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed: NA

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 5' Right - 5'

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☒ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☒ Downcutting
☐ Dikes/Berms ☒ Excessive Bank Erosion ☐ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☒ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: NA.

Rangeland- Wheatgrass, Bluegrass, Sagebrush, Sagewort.

Comments: This is the head waters of the stream, there is a sink hole @ where the headcut is and starts w/in the survey corridor. Banks are sloughing off.

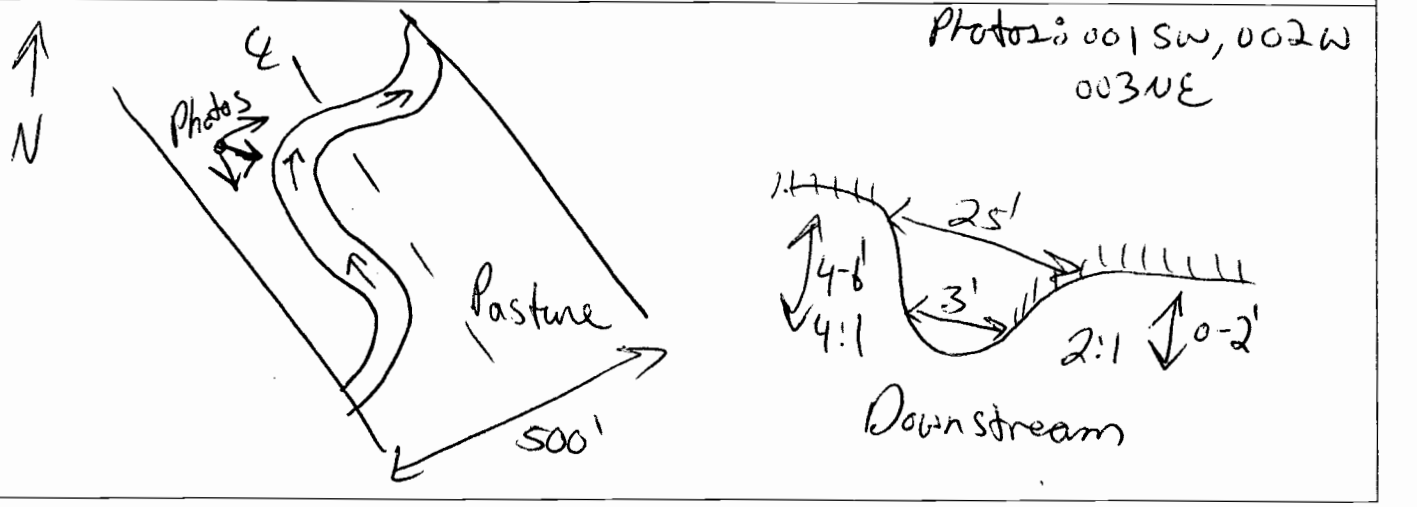
Stream Quality: ☐ High ☐ Moderate ☒ Low

Waterbody Data Form S106MC003 Gyp Creek

☐ Centerline ☒ Re-Route (℄) ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID: 3/26/10		Project Designated Name: KXL Phase IV	
Date: 6/14/10	Client/Project Name: TransCanada - Trow - KXL		Milepost Enter/Exit: MTV6 ~ 20.2
Team: B106	State/County: MT - McCone		Quad Name: NA
Logbook No.: 2	Logbook Page No.: —	Tract No.: MTV6-MT-MC-00200	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☒ No Flow
OHWM Width (ft.):	3'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	TOB ≈ 25' **Water Surface (At Crossing Location)** Pools ≈ 2'
Stream Depth (ft.):	☐ 0 Pools ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Scour, Bent veg.
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☐ 2-4 ☒ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☒ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical

Qualitative Attributes S106 mcdds

Water Appearance:
- [x] Clear
- [ ] Turbid
- [ ] Sheen on Surfac
- [ ] Floating Algalmats
- [ ] Slightly Turbid
- [ ] Very Turbid
- [ ] Greenish Color
- [ ] Obvious Surface Scum
- [ ] No Flow
- [ ] Other: Pools - Shallow

Stream Substrate %: Silty clay loam

Aquatic Habitats:
- [ ] Sand Bar
- [ ] Gravel Riffle
- [x] In-stream Emergent Plant % Cover: 25%
- [ ] Gravel Bar
- [x] ~~Deep~~ Pools Shallow
- [ ] In-stream Submerged Plant % Cover:
- [ ] Mud Bar
- [ ] Bank Root Systems
- [x] Fringing Wetlands Characteristics: Juncus, Carex, Salt grass, Soils hydric ~2' from channel.
- [ ] Undercut Banks
- [ ] Overhanging Trees/Shrubs
- [ ] None

Aquatic Organisms Observed: NA

Riparian Zone:
Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 5' Right - 5'

Vegetative Layers: [x] Herbs [ ] Shrubs [ ] Trees [ ] Multiple

Significant Bare Areas Within Riparian Zone [ ] Yes [x] No [ ] Unknown

Evidence Of Non-Buffered Concentrated Flows: [ ] Yes [x] No [ ] Unknown

Tributary Condition: [x] Natural [ ] Artificial (Man-Made) [ ] Manipulated

Channel Condition:
- [ ] Channelization/Braiding
- [ ] Unnatural Straightening
- [ ] Downcutting
- [ ] Dikes/Berms
- [ ] Excessive Bank Erosion
- [x] N/A

Disturbances:
- [x] Livestock Access to Riparian Zone
- [x] Manure In Stream or On Banks
- [ ] Waste Discharge Pipes Present
- [ ] Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:
Habitat ID Number: NA

Comments: Pasture → reedlegrass, three awn, wheatgrass, bluegrass, cheatgrass.

Stream Quality: [ ] High [x] Moderate [ ] Low

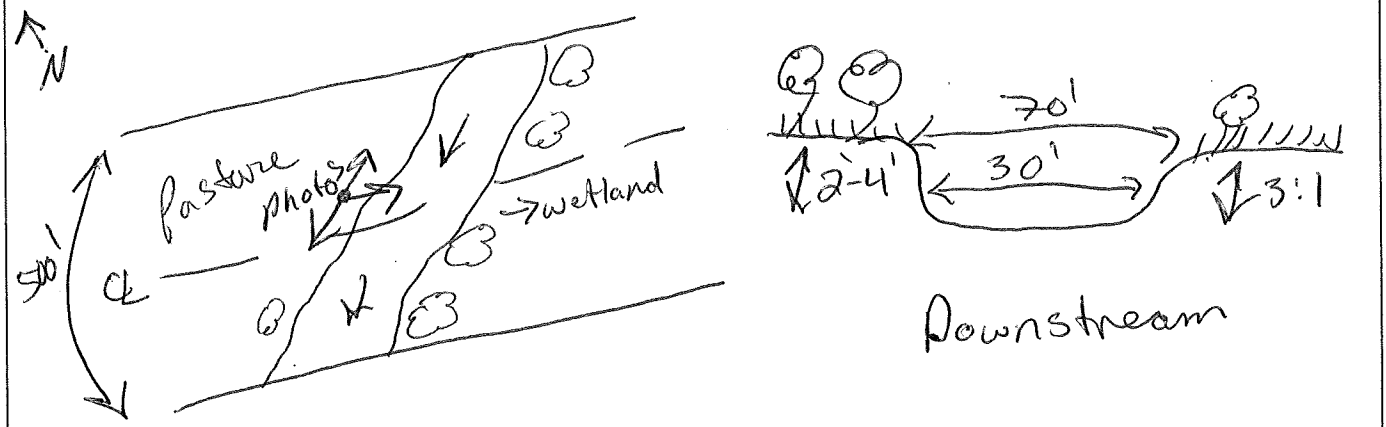
Cattle access.

Waterbody Data Form Frenchman Creek - ~~MT06WA002~~ MT06PA013

☐ Centerline ☒ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID: 3/26/10		Project Designated Name: KXL - Phase IV	
Date: 5/31/10	Client/Project Name: TransCanada - Trow - KXL		Milepost Enter/Exit: ≈25.4
Team: B106	State/County: MT - Valley - Phillips		Quad Name: NA
Logbook No.: 1	Logbook Page No.: —	Tract No.: ML-MT-pit-1023 4	Photos: 001 NE, 002E, 003SW

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☒ Moderate ☐ Slow ☐ Very Slow ☐ None
Flow Type:	☒ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☒ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	30'
Sinuosity:	☐ Braided ☐ Meandering ☒ Straight ☐ N/A
Stream Width (ft.):	ToB = 70' **Water Surface (At Crossing Location)** 25'
Stream Depth (ft.):	☐ 0 ☐ 1-3 ☒ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Scour, Bent veg
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☒ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☒ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

S106PH013

Qualitative Attributes

Water Appearance:

- [ ] Clear
- [x] Turbid
- [ ] Sheen on Surface
- [ ] Floating Algalmats
- [ ] Slightly Turbid
- [ ] Very Turbid
- [ ] Greenish Color
- [ ] Obvious Surface Scum
- [ ] No Flow
- [ ] Other: Brown

Stream Substrate %: Silty Clay 100%

Aquatic Habitats:

- [ ] Sand Bar
- [ ] Gravel Riffle
- [ ] In-stream Emergent Plant % Cover:
- [ ] Gravel Bar
- [ ] Deep Pools
- [ ] In-stream Submerged Plant % Cover:
- [ ] Mud Bar
- [ ] Bank Root Systems
- [ ] Fringing Wetlands Characteristics:
- [ ] Undercut Banks
- [x] Overhanging Trees/Shrubs
- [ ] None

Aquatic Organisms Observed: NA

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 50' Right - 5'

Vegetative Layers: [x] Herbs [x] Shrubs [x] Trees [ ] Multiple

Significant Bare Areas Within Riparian Zone [ ] Yes [x] No [ ] Unknown

Evidence Of Non-Buffered Concentrated Flows: [ ] Yes [ ] No [x] Unknown

Tributary Condition: [x] Natural [ ] Artificial (Man-Made) [ ] Manipulated

Channel Condition:

- [ ] Channelization/Braiding
- [ ] Unnatural Straightening
- [ ] Downcutting
- [ ] Dikes/Berms
- [ ] Excessive Bank Erosion
- [x] N/A

Disturbances:

- [x] Livestock Access to Riparian Zone
- [x] Manure In Stream or On Banks
- [ ] Waste Discharge Pipes Present
- [ ] Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: NA

Abutts Wetland on left bank - W106VA002

Comments: Willows, sagebrush, sloughgrass. Waterfowl. Coyote.

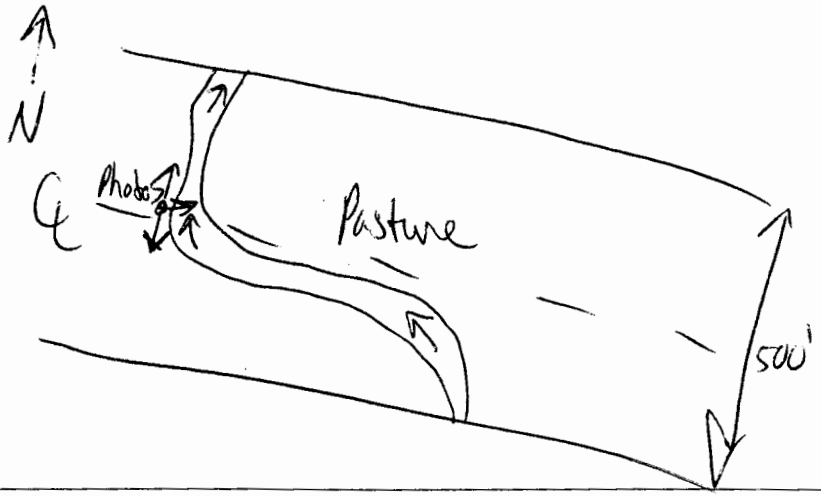
Stream Quality: [ ] High [x] Moderate [ ] Low Cattle degradation

Waterbody Data Form S106PR001 - Stream

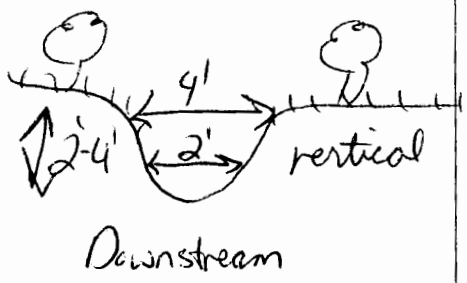
☐ Centerline ☒ Re-Route (CL) ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID: 3/26/10		Project Designated Name: KXL Phase IV	
Date: 6/14/10	Client/Project Name: TransCanada Trow - KXL		Milepost Enter/Exit: ~215.2
Team: B106	State/County: MT-Prairie		Quad Name: NA
Logbook No.: 2	Logbook Page No.: —	Tract No.: ML-MT-PR-00167	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Photos: 001 S, 002W, 003N
up nc dn



Downstream

Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☒ No Flow
OHWM Width (ft.):	2'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	~~6'~~ TOB — **Water Surface (At Crossing Location)**
Stream Depth (ft.):	☐ 0 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+ Pools
OHWM Indicators:	Scour, Bentveg
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☒ Vertical Right: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☒ Vertical

Qualitative Attributes

S106PR001

Water Appearance:

- [ ] Clear
- [x] Turbid
- [ ] Sheen on Surfac
- [ ] Floating Algalmats
- [ ] Slightly Turbid
- [ ] Very Turbid
- [ ] Greenish Color
- [ ] Obvious Surface Scum
- [ ] No Flow
- [ ] Other: Pools

Stream Substrate %: Clay loam

Aquatic Habitats:

- [ ] Sand Bar
- [ ] Gravel Riffle
- [x] In-stream Emergent Plant % Cover: 10%
- [ ] Gravel Bar
- [x] ~~Deep~~ Pools Shallow
- [ ] In-stream Submerged Plant % Cover:
- [ ] Mud Bar
- [ ] Bank Root Systems
- [ ] Fringing Wetlands Characteristics:
- [ ] Undercut Banks
- [x] Overhanging Trees/Shrubs
- [ ] None

Aquatic Organisms Observed: NA

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 20' Right - 20'

Vegetative Layers: [x] Herbs [ ] Shrubs [x] Trees [ ] Multiple

Significant Bare Areas Within Riparian Zone [ ] Yes [x] No [ ] Unknown

Evidence Of Non-Buffered Concentrated Flows: [ ] Yes [x] No [ ] Unknown

Tributary Condition: [x] Natural [ ] Artificial (Man-Made) [ ] Manipulated

Channel Condition:

- [ ] Channelization/Braiding
- [ ] Unnatural Straightening
- [ ] Downcutting
- [ ] Dikes/Berms
- [ ] Excessive Bank Erosion
- [x] N/A

Disturbances:

- [x] Livestock Access to Riparian Zone
- [x] Manure In Stream or On Banks
- [ ] Waste Discharge Pipes Present
- [ ] Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: NA

Comments: Poor Pasture-Range- Silver sage, cottonwoods, ash, Snowberry, wheatgrass. Leafy Spurge-N106PR001.

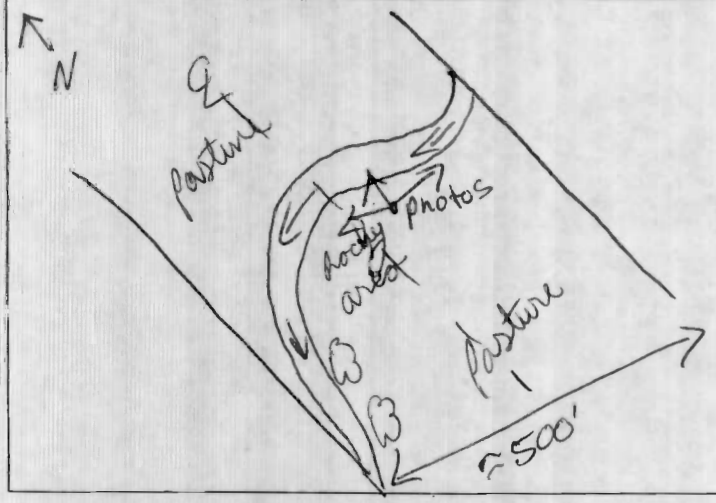
Stream Quality: [ ] High [x] Moderate [ ] Low

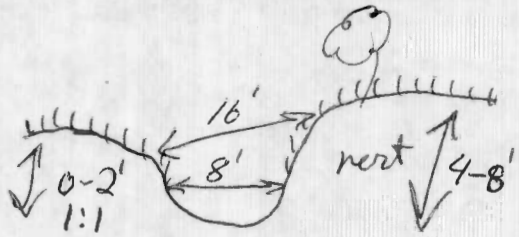
Waterbody Data Form S106 VA009 - Rock Creek

☐ Centerline ☒ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID: 3/26/10		Project Designated Name: KXL Pipeline - Phase IV	
Date: 6/3/10	Client/Project Name: TransCanada - Trow - KXL		Milepost Enter/Exit: ≈39.15
Team: B106	State/County: MT - Valley		Quad Name: NA
Logbook No.: 1	Logbook Page No.: —	Tract No.: ML-MT-VA	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.) Photos 2 & 001E, 002N, 003W





Downstream

*only mapped the enter line, the creek was flooded and we couldn't cross for exit.

Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☒ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☐ None Recent rain
Flow Type:	☒ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☒ W ☐ NW ☐ No Flow
OHWM Width (ft.):	8'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	TOB' = 16' **Water Surface (At Crossing Location)** ≈8'
Stream Depth (ft.):	☐ 0 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Scour, sediment sorting, bent veg.
Bank Height (ft.): (Looking Downstream)	Left: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☐ 2-4 ☒ 4-6 ☒ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☒ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☒ Vertical

Qualitative Attributes S106VA009

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☒ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☐ Other: Brown - Recent rain

Stream Substrate %: Cobble/gravel, silty clay

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover:
☒ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☒ Mud Bar ☒ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☒ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed: ~~NA~~ Mussel shells

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 15' Right - 15'

Vegetative Layers: ☒ Herbs ☐ Shrubs ☒ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☒ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☒ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☒ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: NA. * Leafy Spurge @ the banks, N106VA002.

Pasture - native cottonwood. Sagebrush (Banks-juncus), sagewort, leafy spurge, crested wheatgrass.

Comments:

RDB is steep while LDB is shallow.

Stream Quality: ☐ High ☒ Moderate ☐ Low

Cattle access.

Waterbody Data Form

S109 VA002

☐ Centerline ☐ Re-Route ☒ Access Road (CAR123) ☐ Ancillary Facility ☐ Transmission Line ☐ Other

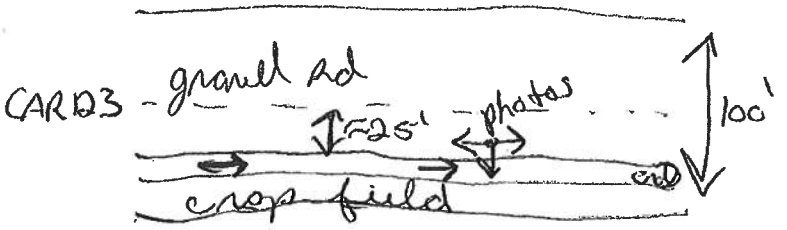
Centerline ID: 5/26/10	Project Designated Name: Keystone XL - Phase IV	
Date: 8/3/10	Client/Project Name: TransCanada - Trow	Milepost Enter/Exit: CL23.1 CAR123 ≈ 1.25
Team: B109	State/County: MT - Valley	Quad Name:
Logbook No.: 1	Logbook Page No.: —	Tract No.: ML-MT-VA-00805

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)

Photos: 1E, 2S, 3W

N

Downstream



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☐ Stream ☒ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☒ Very Slow ☐ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall) Irrigation
Direction of Flow:	☐ N ☐ NE ☒ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	1'
Sinuosity:	☐ Braided ☐ Meandering ☒ Straight ☐ N/A
Stream Width (ft.):	TOB = 4' — Water Surface (At Crossing Location) ≈ 1'
Stream Depth (ft.):	☐ 0 ☐ 0.5 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Bed/veg. scour.
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☒ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☒ 1:1 ☐ Vertical

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☒ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☐ Other: Slow flow

Stream Substrate %: Clay

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover:
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☒ None

Aquatic Organisms Observed: None

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - NA Right - NA
Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple
Significant Bare Areas Within Riparian Zone ☐ Yes ☐ No ☐ Unknown
Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☐ No ☐ Unknown

Tributary Condition: ☐ Natural ☒ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☒ N/A

Disturbances: ☐ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other: NA

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: NA

Comments: Surrounded by grasses to the North & crops to the South.

Stream Quality: ☐ High ☐ Moderate ☒ Low

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

Waterbody Data Form

Feature ID: S109VA002
ROCK CREEK

☐ Centerline ☐ Re-Route ☑ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

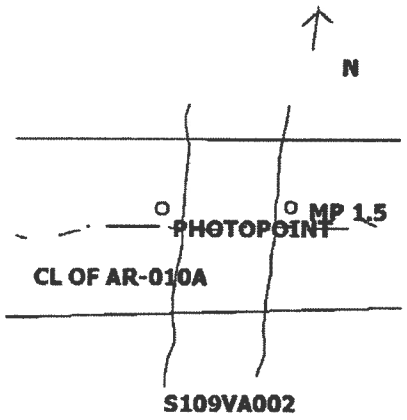
Centerline ID:	Project Designated Name:
CAR-010A	CAR-VA-010A

Date:	Client/Project Name:	Milepost Enter/Exit:
2009/05/11	Keystone XL- 10623-007	1.35 - 1.37

Team:	State/County:	Quad Name:
109	MT - Valley	Jones Coulee

Logbook No.:	Logbook Page No.:	Tract No.:
1	42	AR-MT-VA-02010.000

Sketch



Waterbody Type: ☐ Lake ☐ Pond ☐ Borrow Pit ☑ Stream ☐ Ag. Ditch ☐ Other

Stream Flow: ☑ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☐ None

Flow Type: ☑ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None
☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)

Direction of Flow: ☐ N ☐ NE ☐ E ☐ SE ☑ S ☐ SW ☐ W ☐ NW ☐ No Flow

OHWM Width (ft.): 15

Sinuosity: ☐ Braided ☑ Meandering ☐ Straight ☐ N/A

Stream Width (ft.): 80 **Water Surface (At Crossing Location):** 15

Stream Depth (in.): ☐ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☑ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+

OHWM Indicators:
BENT, MATTED OR MISSING VEGETATION
CLEAR NATURAL LINE ON BANK

Bank Height (ft.): (Looking Downstream)	Left:	☐ 0-2	☑ 2-4	☐ 4-6	☐ 6-8	☐ 8+
	Right:	☐ 0-2	☑ 2-4	☐ 4-6	☐ 6-8	☐ 8+
Bank Slope: (Looking Downstream)	Left:	☐ 4:1	☐ 3:1	☐ 2:1	☑ 1:1	☐ Vertical
	Right:	☑ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

Qualitative Attributes

Water Appearance:

☐ Clear ☑ Turbid ☐ Sheen on Surface ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☐ Other:

Stream Substrate %:

50% GRAVEL
50% COBBLES

Aquatic Habitats:

☐ Sand Bar ☑ Gravel Riffle ☐ In-stream Emergent Plant % Cover: 0
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plants % Cover: 0
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed:

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 0 Right - 0

Vegetative Layers: ☑ Herbs ☐ Shrubs ☑ Trees ☐ Multiple
Significant Bare Areas Within Riparian Zone: ☐ Yes ☑ No ☐ Unknown
Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☑ No ☐ Unknown

Tributary Condition: ☐ Natural ☐ Artificial (Man-Made) ☑ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☑ N/A

Disturbances: ☐ Livestock Access to Riparian Zone ☑ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number

Comments:

LOW WATER VEHICLE CROSSING

Stream Quality: ☐ High ☑ Moderate ☐ Low

Waterbody Data Form

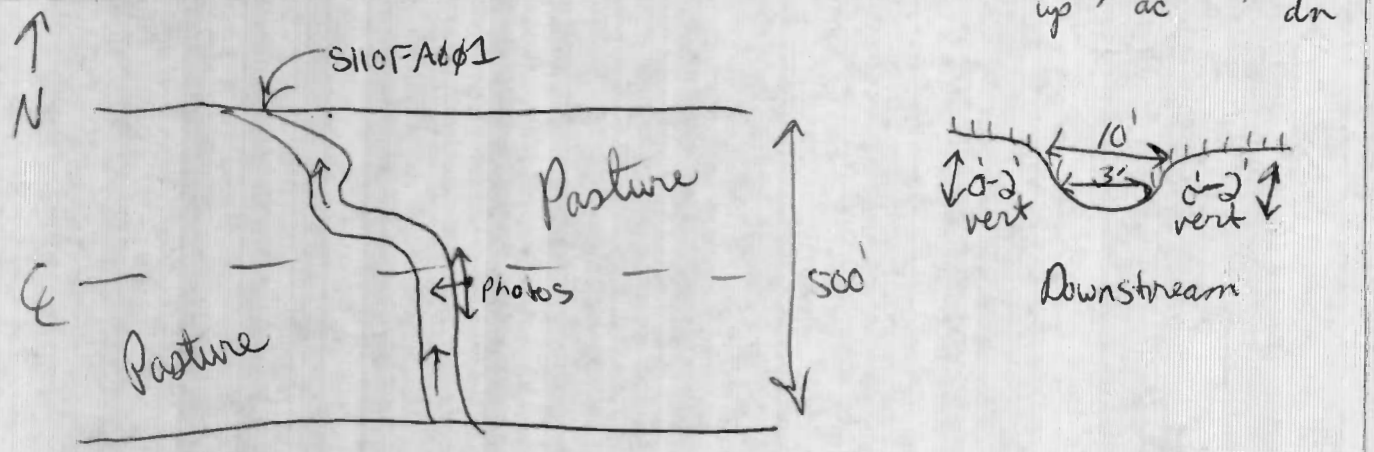
S110FA00 1

Threlen ML

☐ Centerline ☒ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID: 3/26/10		Project Designated Name: KeystoneXL-PhaseIV	
Date: 8/27/10	Client/Project Name: TransCanada-Trow		Milepost Enter/Exit: ≈235.7
Team: B110	State/County: MT-Fallon		Quad Name: NA
Logbook No.: 1	Logbook Page No.: 40	Tract No.: ML-MT-FA-00270 & 00280	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.) Photos: 001 S, 002 W, 003 N (up, ac, dn)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☒ No Flow
OHWM Width (ft.):	≈3'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	TOB ≈10' — Water Surface (At Crossing Location) 0'
Stream Depth (ft.):	☒ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Bent Veg / Scour.
Bank Height (ft.): (Looking Downstream)	Left: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☒ Vertical Right: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☒ Vertical

S110FA001

Qualitative Attributes

Water Appearance:

☐ Clear	☐ Turbid	☐ Sheen on Surfac	☐ Floating Algalmats
☐ Slightly Turbid	☐ Very Turbid	☐ Greenish Color	☐ Obvious Surface Scum
☒ No Flow	☐ Other: No H2O		

Stream Substrate %: Clay/Silt

Aquatic Habitats:

☐ Sand Bar	☐ Gravel Riffle	☒ In-stream Emergent Plant	% Cover: 60% carex
☐ Gravel Bar	☐ Deep Pools	☐ In-stream Submerged Plant	% Cover:
☐ Mud Bar	☐ Bank Root Systems	☐ Fringing Wetlands	Characteristics:
☐ Undercut Banks	☐ Overhanging Trees/Shrubs	☐ None	

Aquatic Organisms Observed: NONE

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 10' Right - 10'

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☒ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition:

☐ Channelization/Braiding	☐ Unnatural Straightening	☐ Downcutting
☐ Dikes/Berms	☐ Excessive Bank Erosion	☒ N/A

Disturbances:

☒ Livestock Access to Riparian Zone ☒ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: NA

Comments: Tributary surrounded by cattle pasture. No water flow @ time of survey. Collects rainwater/overland flow- Snowberry, Wheatgrass, Sagebrush.

Stream Quality: ☐ High ☐ Moderate ☒ Low

Waterbody Data Form

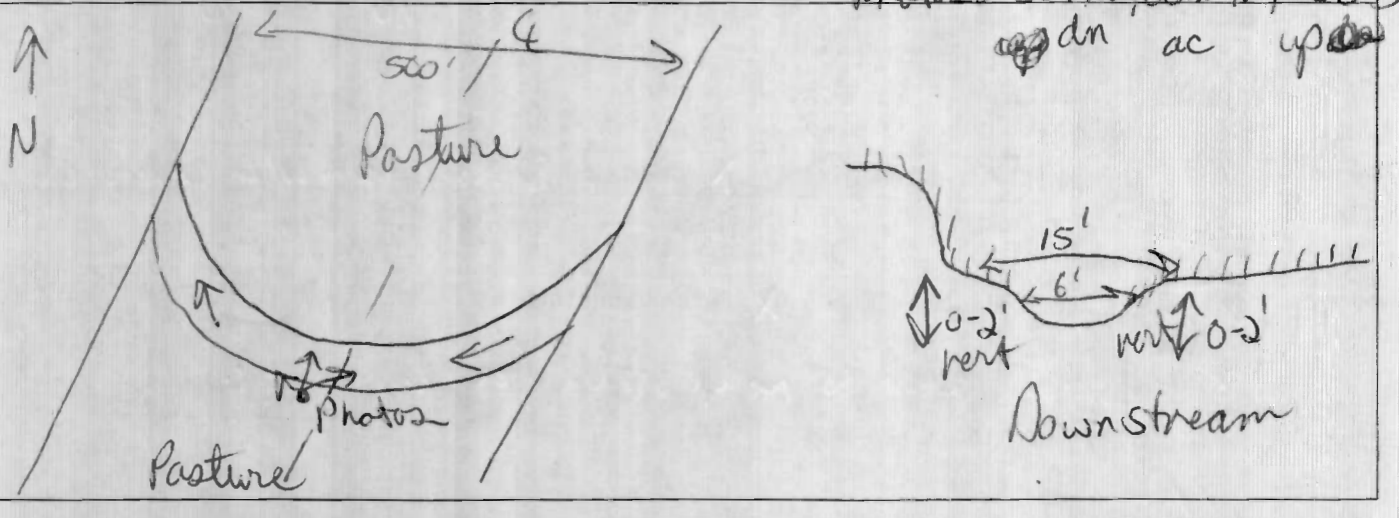
S110FA002
Pennel Creek

Thielen ML

☐ Centerline ☒ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID: 3/26/10		Project Designated Name: Keystone XL - Phase IV	
Date: 8/27/10	Client/Project Name: TransCanada Trow		Milepost Enter/Exit: ≈233.5
Team: B110	State/County: MT-Fallon		Quad Name: NA
Logbook No.: 1	Logbook Page No.: 41	Tract No.: ML-MT-FA-00210 & 00220	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.) Photos: 001 NW, 002 N, 003 NE dn ac up



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☒ Slow ☐ Very Slow ☐ None
Flow Type:	☒ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☒ NW ☐ No Flow
OHWM Width (ft.):	6'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	TOB ≈15' **Water Surface (At Crossing Location)** ≈5'
Stream Depth (ft.):	☐ 0 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Bent veg, scour - flow
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ ~~☒ 0-1'~~ W Right: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☒ Vertical Right: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☒ Vertical

S1OFA002
Pennel Creek

Qualitative Attributes

Water Appearance:
☐ Clear ☐ Turbid ☐ Sheen on Surfac ☒ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☒ Other: Cloudy to clear

Stream Substrate %: Clay

Aquatic Habitats:
☐ Sand Bar ☐ Gravel Riffle ☒ In-stream Emergent Plant % Cover: Carex/Juncus 30%
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☒ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed: None

Riparian Zone:
Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 10' Right - 10'
Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple
Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown
Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☒ No ☐ Unknown

Tributary Condition: ☐ Natural ☐ Artificial (Man-Made) ☒ Manipulated Small dam w/in channel

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☒ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☒ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☒ Other: Small dam to hold water for livestock.

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:
Habitat ID Number: NA

Comments: Surrounded by cattle pasture & is dammed.
Carex/Juncus/Barnyard grass/sages/Spartina

Stream Quality: ☐ High ☒ Moderate ☐ Low
See above.

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

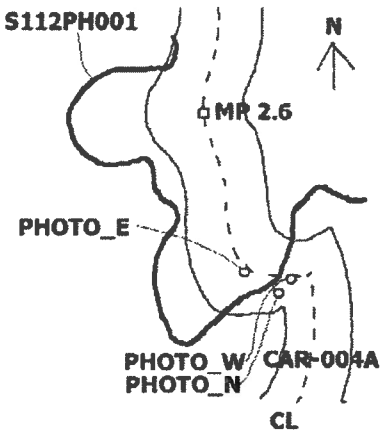
Waterbody Data Form

Feature ID: S112PH001
Corral Coulee

☐ Centerline ☐ Re-Route ☑ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:	Project Designated Name:	
20090331AR	CAR-004A	
Date: 2009/05/07	**Client/Project Name:** Keystone XL- 10623-007	**Milepost Enter/Exit:** 2.52 - 2.64
Team: 112	**State/County:** MT - Phillips	**Quad Name:** Dead Horse Coulee
Logbook No.: 1	**Logbook Page No.:** 9	**Tract No.:** ML-MT-PH-00185.000

Sketch



Waterbody Type: ☐ Lake ☐ Pond ☐ Borrow Pit ☑ Stream ☐ Ag. Ditch ☐ Other

Stream Flow: ☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☑ None

Flow Type: ☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None
☐ Seasonal (Continuous flow ≥ 3 months) ☑ Ephemeral (Flows only in response to rainfall)

Direction of Flow: ☐ N ☐ NE ☑ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow

OHWM Width (ft.): 4

Sinuosity: ☐ Braided ☑ Meandering ☐ Straight ☐ N/A

Stream Width (ft.): 10 **Water Surface (At Crossing Location):** 2

Stream Depth (in.): ☐ 0 ☑ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+

OHWM Indicators:
CLEAR NATURAL LINE ON BANK

Bank Height (ft.): (Looking Downstream)
Left: ☐ 0-2 ☑ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Right: ☐ 0-2 ☑ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+

Bank Slope: (Looking Downstream)
Left: ☑ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical
Right: ☑ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

Waterbody Data Form

Feature ID: S113MC001
Shade Creek

☑ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

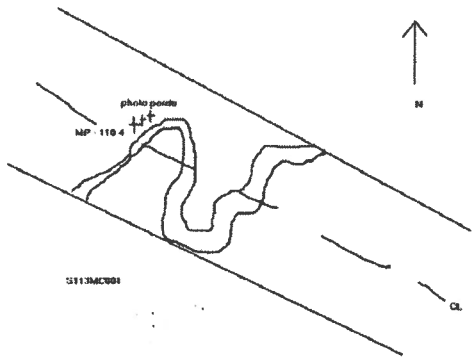
Centerline ID:	Project Designated Name:
2009215CL	N/A

Date:	Client/Project Name:	Milepost Enter/Exit:
2009/05/07	Keystone XL- 10623-007	110.41 - 110.49

Team:	State/County:	Quad Name:
113	MT - McCone	Willis Buttes

Logbook No.:	Logbook Page No.:	Tract No.:
1	12	ML-MT-MC-00215.00

Sketch



Waterbody Type: ☐ Lake ☐ Pond ☐ Borrow Pit ☑ Stream ☐ Ag. Ditch ☐ Other

Stream Flow: ☐ Fast ☐ Moderate ☑ Slow ☐ Very Slow ☐ None

Flow Type: ☐ Perennial (Flows year round) ☑ Intermittent (Flows <3 month ☐ None
☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)

Direction of Flow: ☐ N ☐ NE ☐ E ☑ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow

OHWM Width (ft.): 7

Sinuosity: ☐ Braided ☑ Meandering ☐ Straight ☐ N/A

Stream Width (ft.): 15 **Water Surface (At Crossing Location):** 4

Stream Depth (in.): ☐ 0 ☑ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+

OHWM Indicators:
BENT, MATTED OR MISSING VEGETATION
LITTER AND DEBRIS
SHELVING

Bank Height (ft.): (Looking Downstream)
Left: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☑ 6-8 ☐ 8+
Right: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☑ 6-8 ☐ 8+

Bank Slope: (Looking Downstream)
Left: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☑ 1:1 ☐ Vertical
Right: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☑ 1:1 ☐ Vertical

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surface ☐ Floating Algalmats
☐ Slightly Turbid ☑ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☐ Other:

Stream Substrate %:

85% SILTS
15% COBBLES

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover: 0
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plants % Cover: 0
☑ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☑ Undercut Banks ☑ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed:

NONE

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 10 Right - 10

Vegetative Layers: ☑ Herbs ☑ Shrubs ☑ Trees ☐ Multiple
Significant Bare Areas Within Riparian Zone: ☐ Yes ☑ No ☐ Unknown
Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☑ No ☐ Unknown

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☑ Downcutting
☐ Dikes/Berms ☑ Excessive Bank Erosion ☐ N/A

Disturbances: ☑ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number NA

meandering stream w/ deep cut banks w/ moderate undercutting and bank errosion. no aquitic life observed. Riparian Zone diversity includes native vegetation in addition to scattered stunted Populus deltoides

Comments:

Stream Quality: ☐ High ☑ Moderate ☐ Low

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

Waterbody Data Form

Feature ID: S113MC002
Tributary of Shade Creek

☑ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

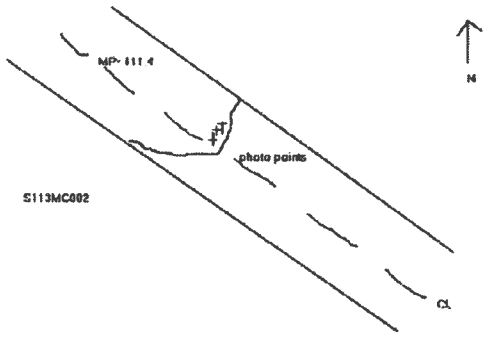
Centerline ID:	Project Designated Name:
2009215CL	N/A

Date:	Client/Project Name:	Milepost Enter/Exit:
2009/05/07	Keystone XL- 10623-007	111.4 - 111.42

Team:	State/County:	Quad Name:
113	MT - McCone	Willis Buttes

Logbook No.:	Logbook Page No.:	Tract No.:
1	16	ML-MT-MC-00225.000

Sketch



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☑ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☑ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☑ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☑ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	2.5
Sinuosity:	☐ Braided ☑ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	5 **Water Surface (At Crossing Location):** 0
Stream Depth (in.):	☑ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	BENT, MATTED OR MISSING VEGETATION LITTER AND DEBRIS SEDIMENT DEPOSITION
Bank Height (ft.): (Looking Downstream)	Left: ☑ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☑ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☑ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☑ 2:1 ☐ 1:1 ☐ Vertical

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surface ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☑ No Flow ☐ Other:

Stream Substrate %:

100% SILTS

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover: 0
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plants % Cover: 0
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☑ None

Aquatic Organisms Observed:

NONE

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 10 Right - 10

Vegetative Layers: ☑ Herbs ☑ Shrubs ☐ Trees ☐ Multiple
Significant Bare Areas Within Riparian Zone: ☑ Yes ☐ No ☐ Unknown
Evidence Of Non-Buffered Concentrated Flows: ☑ Yes ☐ No ☐ Unknown

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☑ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☑ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number

no aquatic organisims obsefved. terrestrial vegetation is spare (including glassland species. no flow evidence bed and bank and high water mark

Comments:

Stream Quality: ☐ High ☐ Moderate ☑ Low

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

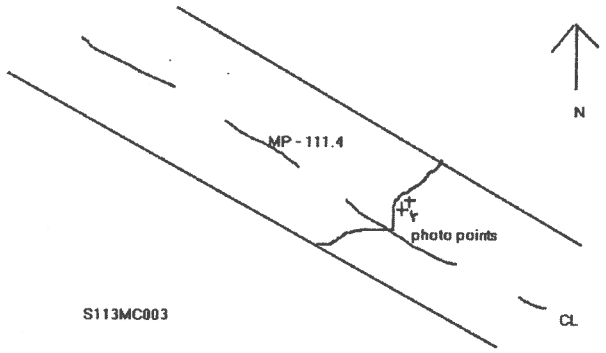
Waterbody Data Form

Feature ID: S113MC003
Tributary of Shade Creek

☑ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID: 2009215CL	Project Designated Name: N/A	
Date: 2009/05/07	Client/Project Name: Keystone XL- 10623-007	Milepost Enter/Exit: 111.42 - 111.43
Team: 113	State/County: MT - McCone	Quad Name: Willis Buttes
Logbook No.: 1	Logbook Page No.: 18	Tract No.: ML-MT-MC-00225.000

Sketch



Waterbody Type: ☐ Lake ☐ Pond ☐ Borrow Pit ☑ Stream ☐ Ag. Ditch ☐ Other

Stream Flow: ☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☑ None

Flow Type: ☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☑ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)

Direction of Flow: ☐ N ☑ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow

OHWM Width (ft.): 2.5

Sinuosity: ☐ Braided ☑ Meandering ☐ Straight ☐ N/A

Stream Width (ft.): 5 **Water Surface (At Crossing Location):** 0

Stream Depth (in.): ☑ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+

OHWM Indicators:

BENT, MATTED OR MISSING VEGETATION
LITTER AND DEBRIS
SEDIMENT DEPOSITION

Bank Height (ft.): (Looking Downstream)
Left: ☑ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Right: ☑ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+

Bank Slope: (Looking Downstream)
Left: ☐ 4:1 ☐ 3:1 ☑ 2:1 ☐ 1:1 ☐ Vertical
Right: ☐ 4:1 ☐ 3:1 ☑ 2:1 ☐ 1:1 ☐ Vertical

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surface ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☑ No Flow ☐ Other:

Stream Substrate %:

100% SILTS

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover: 0
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plants % Cover: 0
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☑ None

Aquatic Organisms Observed:

NONE

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 10 Right - 10

Vegetative Layers: ☑ Herbs ☑ Shrubs ☐ Trees ☐ Multiple
Significant Bare Areas Within Riparian Zone: ☑ Yes ☐ No ☐ Unknown
Evidence Of Non-Buffered Concentrated Flows: ☑ Yes ☐ No ☐ Unknown

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☑ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☑ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number

no aquatic organisims observed. terrestrial vegetation is spare (including glassland species. no flow evidence bed and bank and high water mark

Comments:

stream also flows into tract ML-MT-MC-00230.000

Stream Quality: ☐ High ☐ Moderate ☑ Low

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

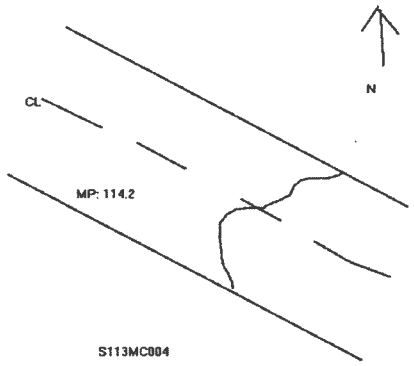
Waterbody Data Form

Feature ID: S113MC004
South Fork Shade Creek

☑ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:	Project Designated Name:	
2009215CL	N/A	
Date: 2009/05/11	**Client/Project Name:** Keystone XL- 10623-007	**Milepost Enter/Exit:** 114.23 - 114.24
Team: 113	**State/County:** MT - McCone	**Quad Name:** Shade Creek
Logbook No.: 1	**Logbook Page No.:** 44	**Tract No.:** ML MT MC 00250.000

Sketch



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☑ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☑ Very Slow ☐ None
Flow Type:	☐ Perennial (Flows year round) ☑ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☑ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	3
Sinuosity:	☐ Braided ☑ Meandering ☐ Straight ☐ N/A
Stream Width (ft.): 10	**Water Surface (At Crossing Location):** 2
Stream Depth (in.):	☐ 0 ☑ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	BENT, MATTED OR MISSING VEGETATION
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☑ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☑ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☑ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☑ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surface ☐ Floating Algalmats
☐ Slightly Turbid ☑ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☐ Other:

Stream Substrate %:

100% SILTS

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover: 0
☐ Gravel Bar ☑ Deep Pools ☐ In-stream Submerged Plants % Cover: 0
☐ Mud Bar ☑ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☑ Undercut Banks ☑ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed:

NONE

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 10 Right - 10

Vegetative Layers: ☑ Herbs ☑ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone: ☐ Yes ☑ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☑ No ☐ Unknown

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☑ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☑ Excessive Bank Erosion ☐ N/A

Disturbances: ☑ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number

meandering stream with eroded banks and very little flow volume. very turbid due to excessive sediment

Comments:

ripain zone consists of native grassland species

Stream Quality: ☐ High ☑ Moderate ☐ Low

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

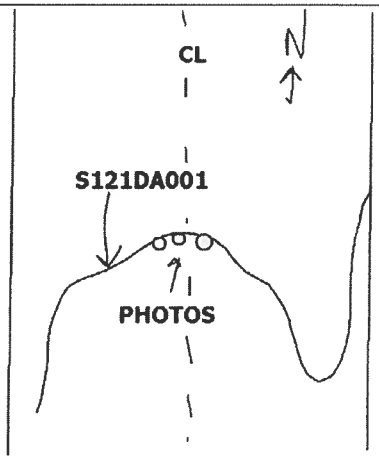
Waterbody Data Form

Feature ID: S121DA001
HAY CK

☐ Centerline ☑ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:	Project Designated Name:	
20091019		
Date: 2009/09/01	**Client/Project Name:** 10623-016	**Milepost Enter/Exit:** 0 - 0
Team: 121	**State/County:** MT - Dawson	**Quad Name:** Olson Coulee South
Logbook No.: 1	**Logbook Page No.:** 25	**Tract No.:** ML-MT-DA-00065.000

Sketch



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☑ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☑ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☑ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☑ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	1
Sinuosity:	☐ Braided ☑ Meandering ☐ Straight ☐ N/A
Stream Width (ft.): 6	**Water Surface (At Crossing Location):** 0
Stream Depth (in.):	☑ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	CLEAR NATURAL LINE ON BANK
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☑ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☑ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☑ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☑ 2:1 ☐ 1:1 ☐ Vertical

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

Qualitative Attributes

Water Appearance:
☐ Clear ☐ Turbid ☐ Sheen on Surface ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☑ No Flow ☐ Other:

Stream Substrate %:
100% VEGETATION

Aquatic Habitats:
☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover: 0
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plants % Cover: 0
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☑ None

Aquatic Organisms Observed:

Riparian Zone:
Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 200 Right - 100
Vegetative Layers: ☑ Herbs ☑ Shrubs ☑ Trees ☐ Multiple
Significant Bare Areas Within Riparian Zone: ☐ Yes ☑ No ☐ Unknown
Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☑ No ☐ Unknown

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☑ N/A

Disturbances: ☑ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:
Habitat ID Number:

Comments:
ROAD GOES THROUGH IT

Stream Quality: ☐ High ☑ Moderate ☐ Low

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

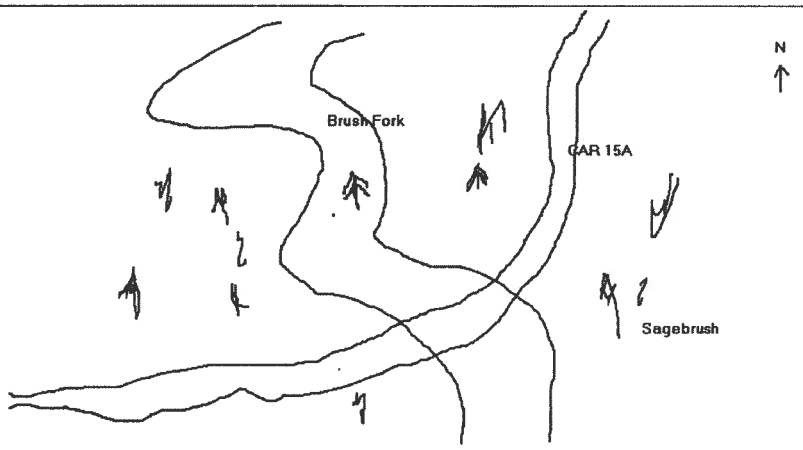
Waterbody Data Form

Feature ID: S126VA001
Brush Fork

☐ Centerline ☐ Re-Route ☑ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:	Project Designated Name: CAR 15A	
Date: 2009/09/10	Client/Project Name: 10623-016	Milepost Enter/Exit: 0 - 0
Team: 126	State/County: MT - Valley	Quad Name: Tampico NE
Logbook No.: 1	Logbook Page No.: 7	Tract No.: ML-MT-VA-00321.000

Sketch



Waterbody Type: ☐ Lake ☐ Pond ☐ Borrow Pit ☑ Stream ☐ Ag. Ditch ☐ Other

Stream Flow: ☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☑ None

Flow Type: ☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☑ None
☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)

Direction of Flow: ☐ N ☐ NE ☐ E ☐ SE ☑ S ☐ SW ☐ W ☐ NW ☐ No Flow

OHWM Width (ft.): 12

Sinuosity: ☐ Braided ☑ Meandering ☐ Straight ☐ N/A

Stream Width (ft.): 120 **Water Surface (At Crossing Location):** 0

Stream Depth (in.): ☑ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+

OHWM Indicators:
ABRUPT PLANT COMMUNITY CHANGE
CLEAR NATURAL LINE ON BANK
SCOUR
SEDIMENT DEPOSITION

Bank Height (ft.): (Looking Downstream)	Left:	☐ 0-2	☐ 2-4	☐ 4-6	☑ 6-8	☐ 8+
	Right:	☐ 0-2	☐ 2-4	☐ 4-6	☑ 6-8	☐ 8+
Bank Slope: (Looking Downstream)	Left:	☐ 4:1	☐ 3:1	☐ 2:1	☑ 1:1	☐ Vertical
	Right:	☐ 4:1	☐ 3:1	☐ 2:1	☑ 1:1	☐ Vertical

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

Qualitative Attributes

Water Appearance:

- ☐ Clear
- ☐ Turbid
- ☐ Sheen on Surface
- ☐ Floating Algalmats
- ☐ Slightly Turbid
- ☐ Very Turbid
- ☐ Greenish Color
- ☐ Obvious Surface Scum
- ☑ No Flow
- ☐ Other:

Stream Substrate %:

50% VEGETATION
20% COBBLES
30% CLAY

Aquatic Habitats:

- ☐ Sand Bar
- ☐ Gravel Riffle
- ☐ In-stream Emergent Plant % Cover: 40
- ☑ Gravel Bar
- ☐ Deep Pools
- ☐ In-stream Submerged Plants % Cover: 0
- ☐ Mud Bar
- ☑ Bank Root Systems
- ☐ Fringing Wetlands Characteristics:
- ☐ Undercut Banks
- ☐ Overhanging Trees/Shrubs
- ☐ None

Aquatic Organisms Observed:

NONE

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 60 Right - 60
Vegetative Layers: ☑ Herbs ☑ Shrubs ☑ Trees ☐ Multiple
Significant Bare Areas Within Riparian Zone: ☐ Yes ☑ No ☐ Unknown
Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☑ No ☐ Unknown

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting ☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances:

- ☐ Livestock Access to Riparian Zone
- ☐ Manure In Stream or On Banks
- ☐ Waste Discharge Pipes Present
- ☑ Other: Road built through stream bed

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:
Sharptail and deer habitat

Comments:

Highly disturbed at road crossing

Stream Quality: ☐ High ☐ Moderate ☐ Low

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

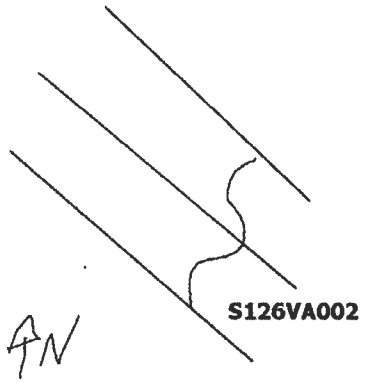
Waterbody Data Form

Feature ID: S126VA002
LIME CREEK

☑ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:	Project Designated Name:	
20091019		
Date: 2009/09/14	**Client/Project Name:** 10623-016	**Milepost Enter/Exit:** 45.088 - 45.134
Team: 126	**State/County:** MT - Valley	**Quad Name:** Miller Springs
Logbook No.: 1	**Logbook Page No.:** 20	**Tract No.:** ML-MT-VA-00250.000

Sketch



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☑ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☑ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☑ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☑ No Flow
OHWM Width (ft.):	6
Sinuosity:	☐ Braided ☑ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	25 — **Water Surface (At Crossing Location):** 0
Stream Depth (in.):	☑ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	CLEAR NATURAL LINE ON BANK SCOUR
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☑ 6-8 ☐ 8+ Right: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☑ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☑ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical Right: ☑ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

AECOM Environment
1601 PROSPECT PKWY
FORT COLLINS CO 80525-9992

Qualitative Attributes

Water Appearance:
☐ Clear ☐ Turbid ☐ Sheen on Surface ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☑ No Flow ☐ Other:

Stream Substrate %:
50% CLAY
50% VEGETATION

Aquatic Habitats:
☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover: 0
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plants % Cover: 0
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☑ None

Aquatic Organisms Observed:
NONE

Riparian Zone:
Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 40 Right - 40
Vegetative Layers: ☑ Herbs ☑ Shrubs ☑ Trees ☐ Multiple
Significant Bare Areas Within Riparian Zone: ☐ Yes ☑ No ☐ Unknown
Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☑ No ☐ Unknown

Tributary Condition: ☑ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☑ Downcutting
☐ Dikes/Berms ☑ Excessive Bank Erosion ☐ N/A

Disturbances: ☑ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:
Habitat ID Number:

Comments:

Stream Quality: ☐ High ☑ Moderate ☐ Low

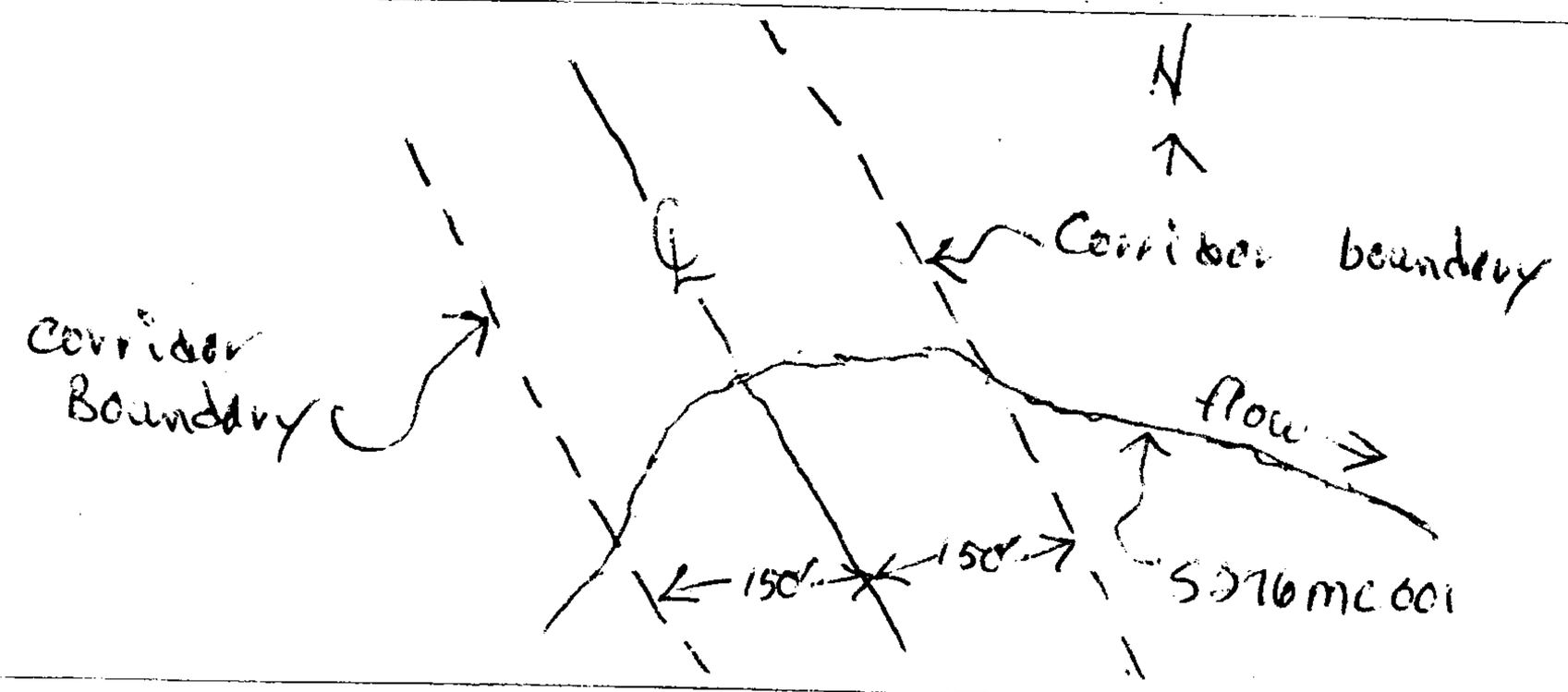
Waterbody Data Form

Redwater River 5976MC001

☐ Centerline ☒ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:		Project Designated Name: LO-11	
Date: 6/18/11	Client/Project Name: Keystone XL, Phase IV		Milepost Enter/Exit: 147.57
Team: 576	State/County: MT/McCone		Quad Name: unknown
Logbook No.: 1	Logbook Page No.: 44	Tract No.: PS12-MT-MC-10010.000	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake	☐ Pond	☐ Borrow Pit	☒ Stream	☐ Ag. Ditch	☐ Other				
Stream Flow:	☐ Fast	☒ Moderate	☐ Slow	☐ Very Slow	☐ None					
Flow Type:	☒ Perennial (Flows year round)			☐ Intermittent (Flows <3 month					☐ None	
	☐ Seasonal (Continuous flow ≥ 3 months)			☐ Ephemeral (Flows only in response to rainfall)						
Direction of Flow:	☐ N	☐ NE	☒ E	☐ SE	☐ S	☐ SW	☐ W	☐ NW	☐ No Flow	
OHWM Width (ft.):	60' (approx)									
Sinuosity:	☐ Braided	☒ Meandering	☐ Straight	☐ N/A						
Stream Width (ft.):	60' (approx)			Water Surface (At Crossing Location)	60' (approx.)					
Stream Depth (ft.):	☐ 0	☒ 1-3	☐ 3-6	☐ 6-12	☐ 12-18	☐ 18-24	☐ 24-36	☐ 36-48	☐ 48-60	☐ 60+
OHWM Indicators:	Vegetation, Flow									
Bank Height (ft.): (Looking Downstream)	Left:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+				
	Right:	☐ 0-2	☒ 2-4	☐ 4-6	☐ 6-8	☐ 8+				
Bank Slope: (Looking Downstream)	Left:	☒ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical				
	Right:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical				

Qualitative Attributes

Water Appearance:

- [ ] Clear
- [ ] Turbid
- [ ] Sheen on Surfac
- [ ] Floating Algalmats
- [x] Slightly Turbid
- [ ] Very Turbid
- [ ] Greenish Color
- [ ] Obvious Surface Scum
- [ ] No Flow
- [ ] Other:

Stream Substrate %: Unknown

Aquatic Habitats:

- [ ] Sand Bar
- [ ] Gravel Riffle
- [x] In-stream Emergent Plant % Cover: < 5%
- [ ] Gravel Bar
- [ ] Deep Pools
- [ ] In-stream Submerged Plant % Cover:
- [ ] Mud Bar
- [ ] Bank Root Systems
- [ ] Fringing Wetlands Characteristics:
- [ ] Undercut Banks
- [ ] Overhanging Trees/Shrubs
- [ ] None

Aquatic Organisms Observed: None

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 10' Right - 10'

Vegetative Layers: [x] Herbs [ ] Shrubs [ ] Trees [ ] Multiple

Significant Bare Areas Within Riparian Zone [ ] Yes [x] No [ ] Unknown

Evidence Of Non-Buffered Concentrated Flows: [ ] Yes [x] No [ ] Unknown

Tributary Condition: [x] Natural [ ] Artificial (Man-Made) [ ] Manipulated

Channel Condition:

- [ ] Channelization/Braiding
- [ ] Unnatural Straightening
- [ ] Downcutting
- [ ] Dikes/Berms
- [ ] Excessive Bank Erosion
- [x] N/A

Disturbances:

- [x] Livestock Access to Riparian Zone
- [ ] Manure In Stream or On Banks
- [ ] Waste Discharge Pipes Present
- [ ] Other: No livestock observed at time of survey

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

Comments:

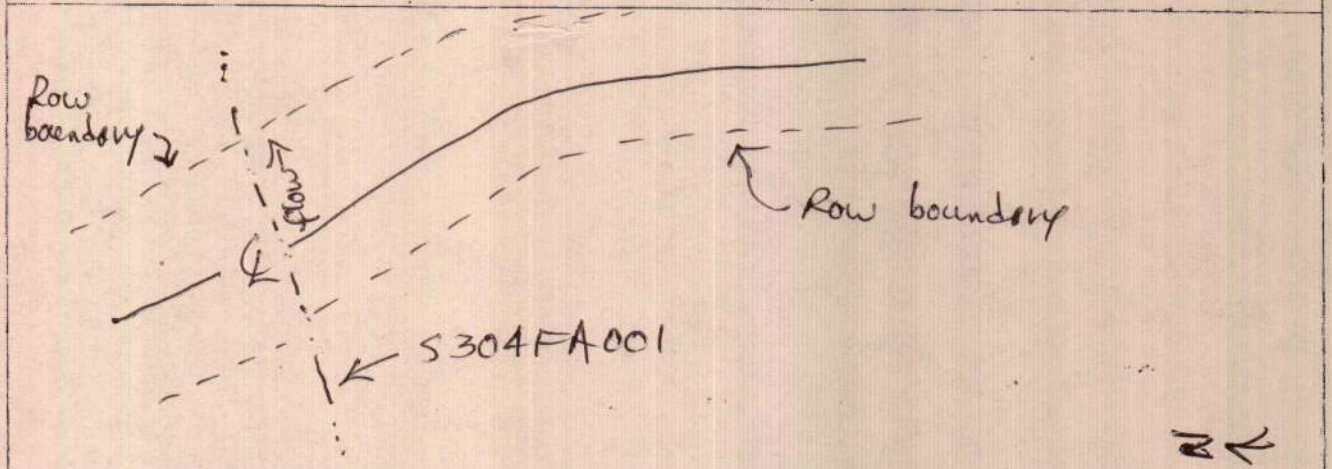
Stream Quality: [x] High [ ] Moderate [ ] Low

Waterbody Data Form

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:		Project Designated Name: S304FA001
Date: 7/30/12	Client/Project Name: Keystone XL pipeline	Milepost Enter/Exit: 365.31
Team: 304	State/County: MT/ Fallon	Quad Name:
Logbook No.: 1	Logbook Page No.: 41	Tract No.: ML-MT-FA-00690.000

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☒ Very Slow ☐ None
Flow Type:	☒ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☒ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	10'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	10' **Water Surface (At Crossing Location)** 15'
Stream Depth (ft.):	☐ 0 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Vegetation line
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☒ 8+ Right: ☐ 0-2 ☐ 2-4 ☒ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☒ Vertical Right: ☐ 4:1 ☐ 3:1 ☐ 2:1 ☒ 1:1 ☐ Vertical

Qualitative Attributes

Water Appearance:

- [ ] Clear
- [x] Turbid
- [ ] Sheen on Surface
- [ ] Floating Algalmats
- [ ] Slightly Turbid
- [ ] Very Turbid
- [ ] Greenish Color
- [ ] Obvious Surface Scum
- [ ] No Flow
- [ ] Other:

Stream Substrate %:

Aquatic Habitats:

- [ ] Sand Bar
- [ ] Gravel Riffle
- [ ] In-stream Emergent Plant % Cover:
- [x] Gravel Bar
- [x] Deep Pools
- [ ] In-stream Submerged Plant % Cover:
- [ ] Mud Bar
- [ ] Bank Root Systems
- [ ] Fringing Wetlands Characteristics:
- [ ] Undercut Banks
- [ ] Overhanging Trees/Shrubs
- [ ] None

Aquatic Organisms Observed: Fish (carp)

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 4' Right - 4'

Vegetative Layers: [x] Herbs [ ] Shrubs [ ] Trees [ ] Multiple

Significant Bare Areas Within Riparian Zone [ ] Yes [x] No [ ] Unknown

Evidence Of Non-Buffered Concentrated Flows: [ ] Yes [x] No [ ] Unknown

Tributary Condition: [x] Natural [ ] Artificial (Man-Made) [ ] Manipulated

Channel Condition:

- [ ] Channelization/Braiding
- [ ] Unnatural Straightening
- [ ] Downcutting
- [ ] Dikes/Berms
- [ ] Excessive Bank Erosion
- [x] N/A

Disturbances:

- [x] Livestock Access to Riparian Zone
- [ ] Manure In Stream or On Banks
- [ ] Waste Discharge Pipes Present
- [ ] Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

Comments:

Stream Quality: [ ] High [x] Moderate [ ] Low

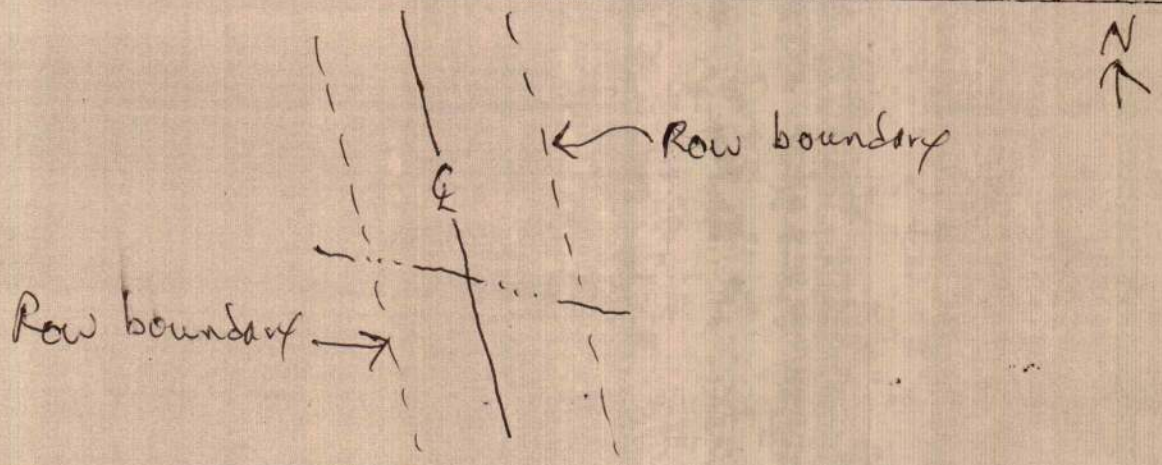
Waterbody Data Form

S304MC001

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:		Project Designated Name:	
Date: 8/8/12	Client/Project Name: Keystone XL Pipeline		Milepost Enter/Exit: 108.46
Team: 304	State/County: MT / McCone		Quad Name:
Logbook No.: 1	Logbook Page No.: 75	Tract No.: ML-MT-MC-00180,000	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☒ No Flow
OHWM Width (ft.):	N/A
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	N/A — Water Surface (At Crossing Location): N/A No water present
Stream Depth (ft.):	☒ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	None
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☒ 8+ Right: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☒ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical

photos:

S304mc001_001S
S304mc001_002W
S304mc001_003E
S304mc001_004N

Qualitative Attributes

Water Appearance:

- [ ] Clear
- [ ] Turbid
- [ ] Sheen on Surfac
- [ ] Floating Algalmats
- [ ] Slightly Turbid
- [ ] Very Turbid
- [ ] Greenish Color
- [ ] Obvious Surface Scum
- [x] No Flow
- [ ] Other:

Stream Substrate %:

Aquatic Habitats:

- [ ] Sand Bar
- [ ] Gravel Riffle
- [ ] In-stream Emergent Plant % Cover:
- [ ] Gravel Bar
- [ ] Deep Pools
- [ ] In-stream Submerged Plant % Cover:
- [ ] Mud Bar
- [ ] Bank Root Systems
- [ ] Fringing Wetlands Characteristics:
- [ ] Undercut Banks
- [ ] Overhanging Trees/Shrubs
- [x] None

Aquatic Organisms Observed: None

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 10' Right - 10'

Vegetative Layers: [x] Herbs [x] Shrubs [x] Trees [ ] Multiple

Significant Bare Areas Within Riparian Zone [ ] Yes [x] No [ ] Unknown

Evidence Of Non-Buffered Concentrated Flows: [ ] Yes [x] No [ ] Unknown

Tributary Condition: [x] Natural [ ] Artificial (Man-Made) [ ] Manipulated

Channel Condition:

- [ ] Channelization/Braiding
- [ ] Unnatural Straightening
- [ ] Downcutting
- [ ] Dikes/Berms
- [ ] Excessive Bank Erosion
- [x] N/A

Disturbances:

- [x] Livestock Access to Riparian Zone
- [ ] Manure In Stream or On Banks
- [ ] Waste Discharge Pipes Present
- [ ] Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

Comments:

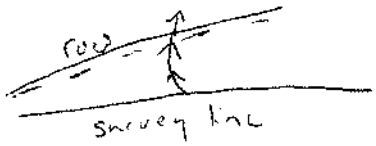
Stream Quality: [ ] High [ ] Moderate [x] Low

Waterbody Data Form

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:	Project Designated Name:
S567DA001	Interm. Hent tr. b – Berry Creek
Date:	**Client/Project Name:**	**Milepost Enter/Exit:**
10/10/11	KXL Phase IV	
Team:	**State/County:**	**Quad Name:**
B567	MT, Dawson	
Logbook No.:	**Logbook Page No.:**	**Tract No.:**
		ML - MT - DA - 200.10.000

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



NW

Waterbody Type:	☐ Lake	☐ Pond	☐ Borrow Pit	☒ Stream	☐ Ag. Ditch	☐ Other				
Stream Flow:	☐ Fast	☐ Moderate	☒ Slow	☐ Very Slow	☐ None					
Flow Type:	☐ Perennial (Flows year round)			☒ Intermittent (Flows <3 month					☐ None	
	☐ Seasonal (Continuous flow ≥ 3 months)			☐ Ephemeral (Flows only in response to rainfall)						
Direction of Flow:	☒ N	☐ NE	☐ E	☐ SE	☐ S	☐ SW	☐ W	☐ NW	☐ No Flow	
OHWM Width (ft.):	2'									
Sinuosity:	☐ Braided	☒ Meandering	☐ Straight	☐ N/A						
Stream Width (ft.):	2'			**Water Surface (At Crossing Location)**		2'				
Stream Depth (ft.):	☐ 0	☒ 1-3	☐ 3-6	☐ 6-12	☐ 12-18	☐ 18-24	☐ 24-36	☐ 36-48	☐ 48-60	☐ 60+
OHWM Indicators:	beat vegetation									
Bank Height (ft.): (Looking Downstream)	Left:	☐ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☒ 8+				
	Right:	☐ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☒ 8+				
Bank Slope: (Looking Downstream)	Left:	☐ 4:1	☒ 3:1	☐ 2:1	☐ 1:1	☐ Vertical				
	Right:	☐ 4:1	☒ 3:1	☐ 2:1	☐ 1:1	☐ Vertical				

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☐ Other:

Stream Substrate %:

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover:
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed:

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - Right -

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☐ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☐ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

rangeland

Comments:

cattle access to stream

Stream Quality: ☐ High ☒ Moderate ☐ Low

Waterbody Data Form

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

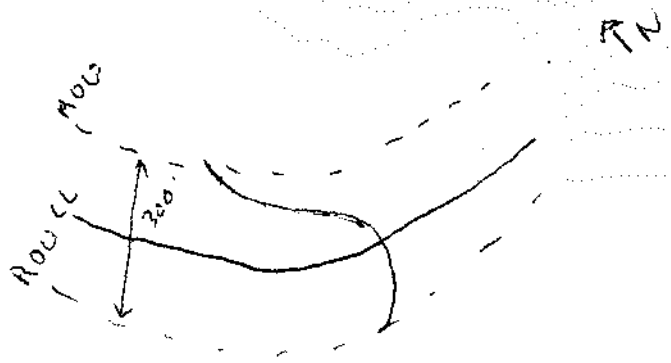
Centerline ID:	Project Designated Name:
S5C7DA002	intermittent tributary

Date:	Client/Project Name:	Milepost Enter/Exit:
10/11/11	KXL Phase IV	

Team:	State/County:	Quad Name:
B567	MT, Dawson	

Logbook No.:	Logbook Page No.:	Tract No.:
		ML-MT-DA-00265.000

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☒ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☐ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☒ W ☐ NW ☒ No Flow
OHWM Width (ft.):	5'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	20' — Water Surface (At Crossing Location)
Stream Depth (ft.):	☒ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	beat vegetation & debris
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☒ 8+ Right: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☒ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☐ Other:

Stream Substrate %:

Aquatic Habitats:

☐ Sand Bar ☒ Gravel Riffle ☐ In-stream Emergent Plant % Cover:
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed:

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - Right -

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☐ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☐ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: mowed pasture/hayfield

Comments:

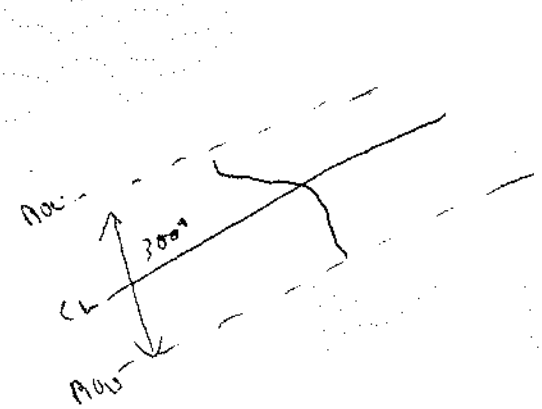
Stream Quality: ☐ High ☐ Moderate ☒ Low

Waterbody Data Form

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:	Project Designated Name:	
SSC7DA003	ephemeral tributary	
Date: 10/11/11	Client/Project Name: KXL Phase IV	Milepost Enter/Exit:
Team: BSC7	State/County: MT, Dawson	Quad Name:
Logbook No.:	Logbook Page No.:	Tract No.: ML-MT-DA-00205.000

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☒ No Flow
OHWM Width (ft.):	3'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.): 20'	Water Surface (At Crossing Location)
Stream Depth (ft.):	☐ 0 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	beat vegetation
Bank Height (ft.): (Looking Downstream)	Left: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☒ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical Right: ☒ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

Qualitative Attributes

Water Appearance:

- ☐ Clear
- ☒ Turbid
- ☐ Sheen on Surface
- ☐ Floating Algalmats
- ☐ Slightly Turbid
- ☐ Very Turbid
- ☐ Greenish Color
- ☐ Obvious Surface Scum
- ☐ No Flow
- ☐ Other:

Stream Substrate %:

Aquatic Habitats:

- ☐ Sand Bar
- ☒ Gravel Riffle
- ☐ In-stream Emergent Plant % Cover:
- ☐ Gravel Bar
- ☐ Deep Pools
- ☐ In-stream Submerged Plant % Cover:
- ☐ Mud Bar
- ☐ Bank Root Systems
- ☐ Fringing Wetlands Characteristics:
- ☐ Undercut Banks
- ☐ Overhanging Trees/Shrubs
- ☐ None

Aquatic Organisms Observed:

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - Right -

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☐ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☐ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition:

- ☐ Channelization/Braiding
- ☐ Unnatural Straightening
- ☐ Downcutting
- ☐ Dikes/Berms
- ☐ Excessive Bank Erosion
- ☐ N/A

Disturbances:

- ☒ Livestock Access to Riparian Zone
- ☐ Manure In Stream or On Banks
- ☐ Waste Discharge Pipes Present
- ☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

mowed pasture / hayfield

Comments:

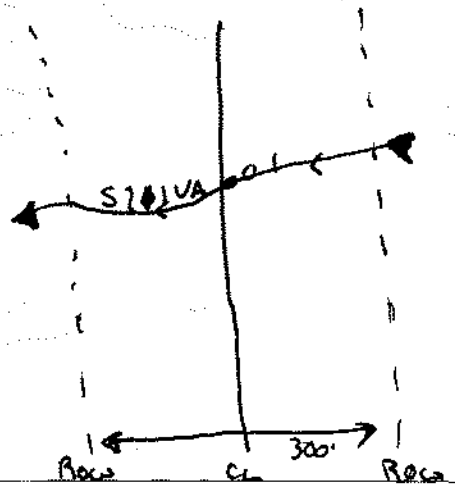
Stream Quality: ☐ High ☐ Moderate ☒ Low

Waterbody Data Form

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☒ Other RV

Centerline ID:	Project Designated Name:	
S711VA001	ephemeral stream	
Date: 7/7/11	**Client/Project Name:** KXL BLM RV	**Milepost Enter/Exit:** 33.82
Team: B711	**State/County:** MT / Valley	**Quad Name:**
Logbook No.:	**Logbook Page No.:**	**Tract No.:** ML-MT-VA - 00127.000

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake	☐ Pond	☐ Borrow Pit	☒ Stream	☐ Ag. Ditch	☐ Other				
Stream Flow:	☐ Fast	☐ Moderate	☐ Slow	☐ Very Slow	☒ None					
Flow Type:	☐ Perennial (Flows year round)			☐ Intermittent (Flows <3 month				☐ None		
	☐ Seasonal (Continuous flow ≥ 3 months)			☒ Ephemeral (Flows only in response to rainfall)						
Direction of Flow:	☐ N	☐ NE	☐ E	☐ SE	☐ S	☐ SW	☒ W	☐ NW	☐ No Flow	
OHWM Width (ft.):	1.5 ft									
Sinuosity:	☐ Braided		☒ Meandering		☐ Straight		☐ N/A			
Stream Width (ft.):	10 ft (TOB-TOB)			**Water Surface (At Crossing Location)**	None					
Stream Depth (ft.):	☒ 0	☐ 1-3	☐ 3-6	☐ 6-12	☐ 12-18	☐ 18-24	☐ 24-36	☐ 36-48	☐ 48-60	☐ 60+
OHWM Indicators:	water stains									
Bank Height (ft.): (Looking Downstream)	Left:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+				
	Right:	☒ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☐ 8+				
Bank Slope: (Looking Downstream)	Left:	☒ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical				
	Right:	☒ 4:1	☐ 3:1	☐ 2:1	☐ 1:1	☐ Vertical				

Qualitative Attributes

Water Appearance: none

- ☐ Clear
- ☐ Turbid
- ☐ Sheen on Surfac
- ☐ Floating Algalmats
- ☐ Slightly Turbid
- ☐ Very Turbid
- ☐ Greenish Color
- ☐ Obvious Surface Scum
- ☐ No Flow
- ☐ Other:

Stream Substrate %:

Aquatic Habitats:

- ☐ Sand Bar
- ☐ Gravel Riffle
- ☐ In-stream Emergent Plant % Cover:
- ☐ Gravel Bar
- ☐ Deep Pools
- ☐ In-stream Submerged Plant % Cover:
- ☐ Mud Bar
- ☐ Bank Root Systems
- ☐ Fringing Wetlands Characteristics:
- ☐ Undercut Banks
- ☐ Overhanging Trees/Shrubs
- ☐ None

Aquatic Organisms Observed:

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - Right -

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☐ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☐ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition:

- ☐ Channelization/Braiding
- ☐ Unnatural Straightening
- ☐ Downcutting
- ☐ Dikes/Berms
- ☐ Excessive Bank Erosion
- ☐ N/A

Disturbances:

- ☐ Livestock Access to Riparian Zone
- ☐ Manure In Stream or On Banks
- ☐ Waste Discharge Pipes Present
- ☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: pasture

Comments: cobble substrate

Stream Quality: ☐ High ☐ Moderate ☒ Low

no water present

S_UTM13_06335

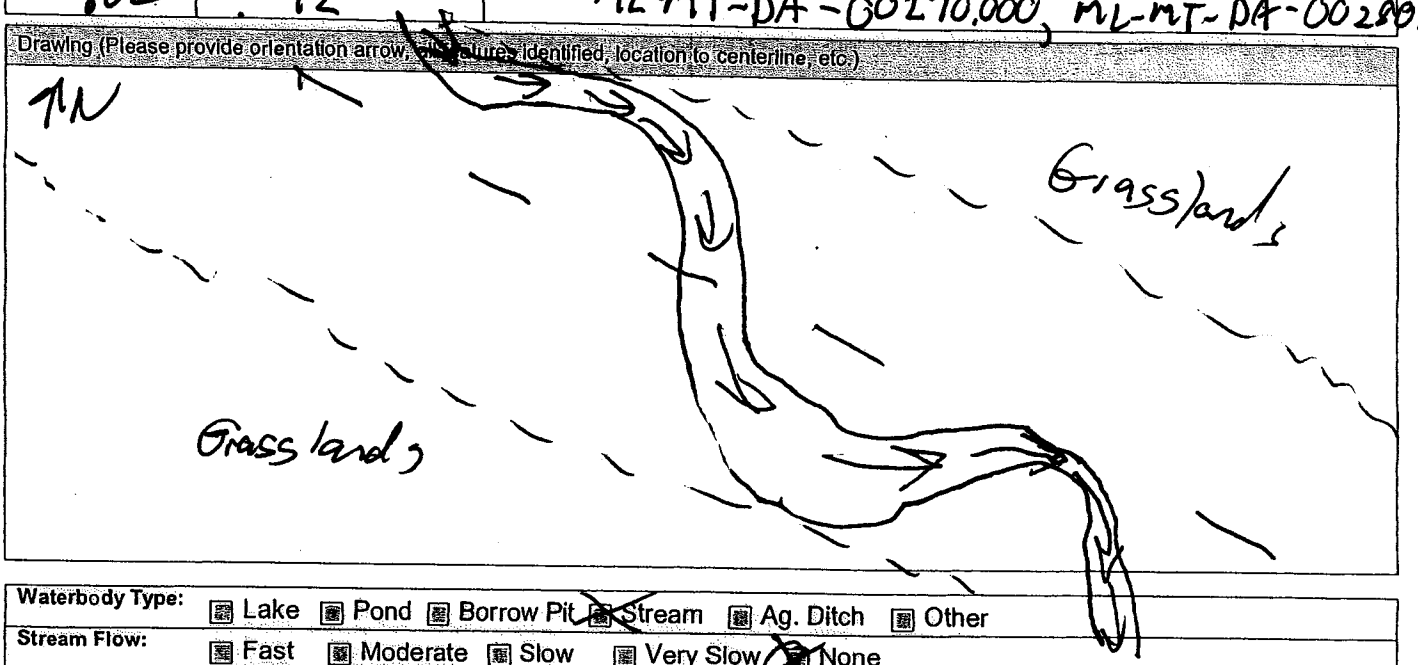
Waterbody Data Form

S802DA001

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:		Project Designated Name:	
Date: 8/26/13	Client/Project Name: Exp		Milepost Enter/Exit: 182,83
Team: 802	State/County: MT / Dawson		Quad Name:
Logbook No.: 802	Logbook Page No.: 12	Tract No.: ML-MT-DA-00270.000, ML-MT-DA-00280.000	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake	☐ Pond	☐ Borrow Pit	☒ Stream	☐ Ag. Ditch	☐ Other			
Stream Flow:	☐ Fast	☐ Moderate	☐ Slow	☐ Very Slow	☒ None				
Flow Type:	☐ Perennial (Flows year round)			☒ Intermittent (Flows <3 month		☐ None			
	☐ Seasonal (Continuous flow ≥ 3 months)			☒ Ephemeral (Flows only in response to rainfall)					
Direction of Flow:	☐ N	☐ NE	☐ E	☒ SE	☐ S	☐ SW	☐ W	☐ NW	☐ No Flow
OHWM Width (ft.):	15'								
Sinuosity:	☐ Braided	☒ Meandering	☐ Straight	☐ N/A					
Stream Width (ft.):	30'	**Water Surface (At Crossing Location)**	12						
Stream Depth (ft.):	☐ 0	☒ 1-3	☒ 3-6	☐ 6-12	☐ 12-18	☐ 18-24	☐ 24-36	☐ 36-48	☐ 48-60 ☐ 60+
OHWM Indicators:	Defined Bed + Bank								
Bank Height (ft.): (Looking Downstream)	Left:	☐ 0-2	☐ 2-4	☐ 4-6	☒ 6-8	☒ 8+			
	Right:	☐ 0-2	☐ 2-4	☐ 4-6	☐ 6-8	☒ 8+			
Bank Slope: (Looking Downstream)	Left:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical			
	Right:	☐ 4:1	☐ 3:1	☒ 2:1	☐ 1:1	☐ Vertical			

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☒ Other: Dry

Stream Substrate %:

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover:
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☒ None

Aquatic Organisms Observed:

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - Right -

Vegetative Layers: ☐ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☐ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☐ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☒ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☒ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

None

Comments:

None

Stream Quality: ☐ High ☐ Moderate ☒ Low

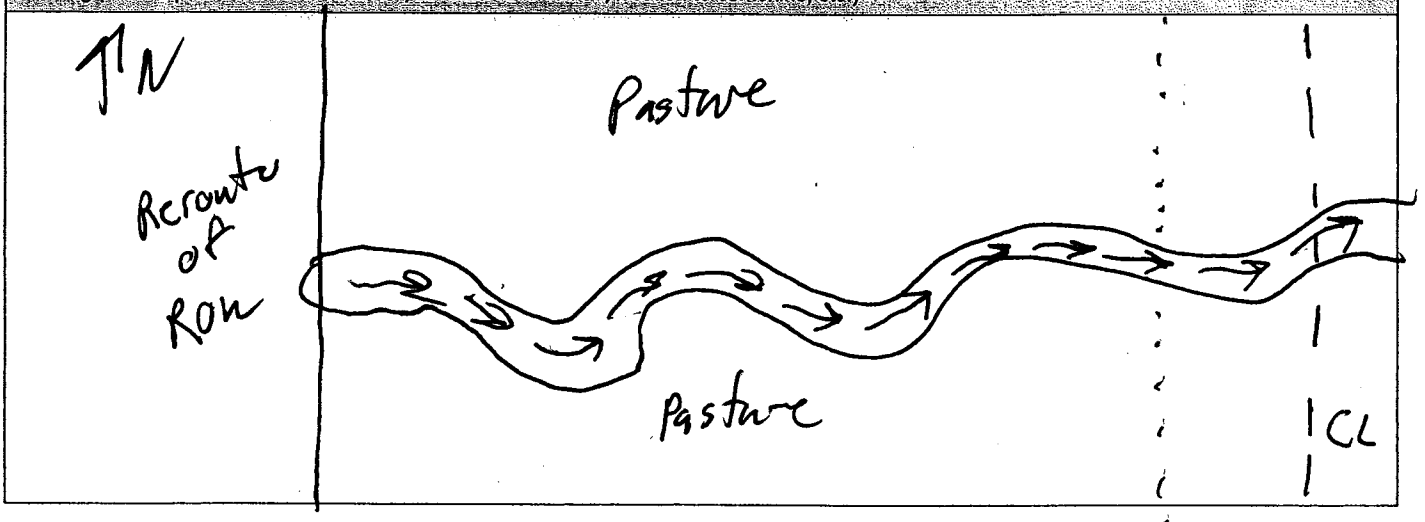
Waterbody Data Form

S802MC001

☒ Centerline ☒ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:	Project Designated Name:	
Date: 8/23/13	Client/Project Name:	Milepost Enter/Exit: 108.21
Team: 802	State/County: MT / McCone	Quad Name:
Logbook No.: 802	Logbook Page No.: 6	Tract No.: ML-MT-MC-00158.000

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other	
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None	
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)	
Direction of Flow:	☐ N ☐ NE ☒ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow	
OHWM Width (ft.):	6	
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A	
Stream Width (ft.):	8-10	Water Surface (At Crossing Location): 6
Stream Depth (ft.):	☐ 0 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+	
OHWM Indicators:	Defined Bed + Bank	
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+	
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical	

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☒ Other: Dry

Stream Substrate %:

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover:
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☒ None

Aquatic Organisms Observed:

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 100+ Right - 100+

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☒ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☒ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☒ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

None

Comments:

None

Stream Quality: ☐ High ☐ Moderate ☒ Low

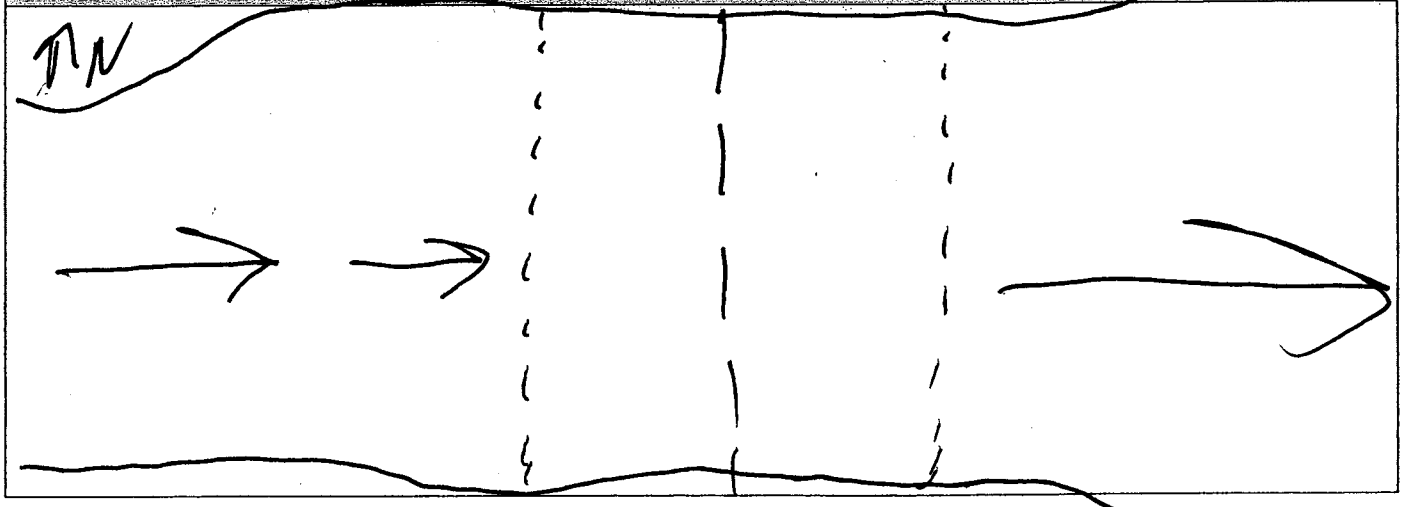
Waterbody Data Form

S802MCC003

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:	Project Designated Name:	
Date: 8/23/13	Client/Project Name:	Milepost Enter/Exit: 109.22
Team: 802	State/County: MT/McCone	Quad Name:
Logbook No.: 802	Logbook Page No.: 7	Tract No.: ML-MT-MC-00185000

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☒ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	100+
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.): 120+	Water Surface (At Crossing Location) 120
Stream Depth (ft.):	☐ 0 ☐ 1-3 ☐ 3-6 ☐ 6-12 ☒ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Defined Bed + Bank
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☒ 8+ Right: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☒ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical

Qualitative Attributes

Water Appearance:

☒ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☒ Other: Dry

Stream Substrate %:

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☒ In-stream Emergent Plant 60% Cover:
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed: N/A

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 100+ Right - 100+

Vegetative Layers: ☒ Herbs ☒ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☒ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☒ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☒ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

None

Comments:

None

Stream Quality: ☐ High ☐ Moderate ☒ Low

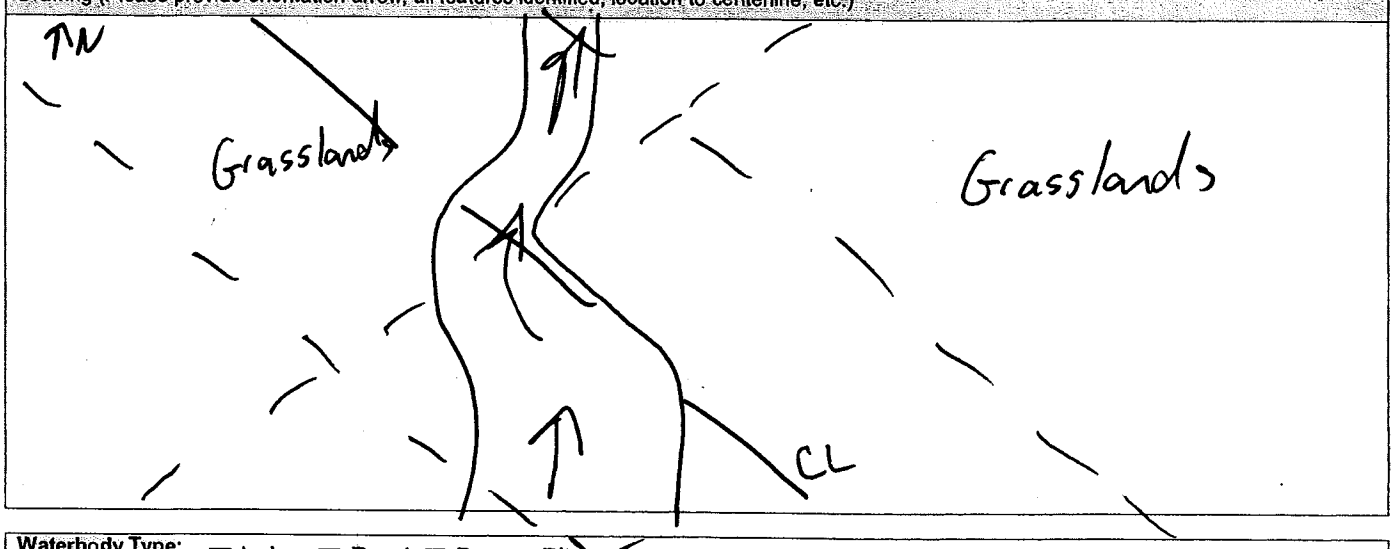
Waterbody Data Form

S802MC005

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:		Project Designated Name:
Date: 8/24/13	Client/Project Name:	Milepost Enter/Exit: 154.64
Team: 802	State/County: MT/McCone	Quad Name:
Logbook No.: 802B	Logbook Page No.: 9	Tract No.: ML-MT-MC-20715.000

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☒ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	20+
Sinuosity:	☒ Braided ☐ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	30-40 **Water Surface (At Crossing Location)** 20"
Stream Depth (ft.):	☐ 0— ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Defined Bed + Bank
Bank Height (ft.): (Looking Downstream)	Left: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☒ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☒ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical Right: ☒ 4:1 ☐ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☒ Other: Dry

Stream Substrate %:

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☒ In-stream Emergent Plant 100 % Cover:
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed:

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - Right -

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☒ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☒ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☐ N/A

Disturbances: ☐ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

Comments:

None

Stream Quality: ☐ High ☐ Moderate ☒ Low

S0242

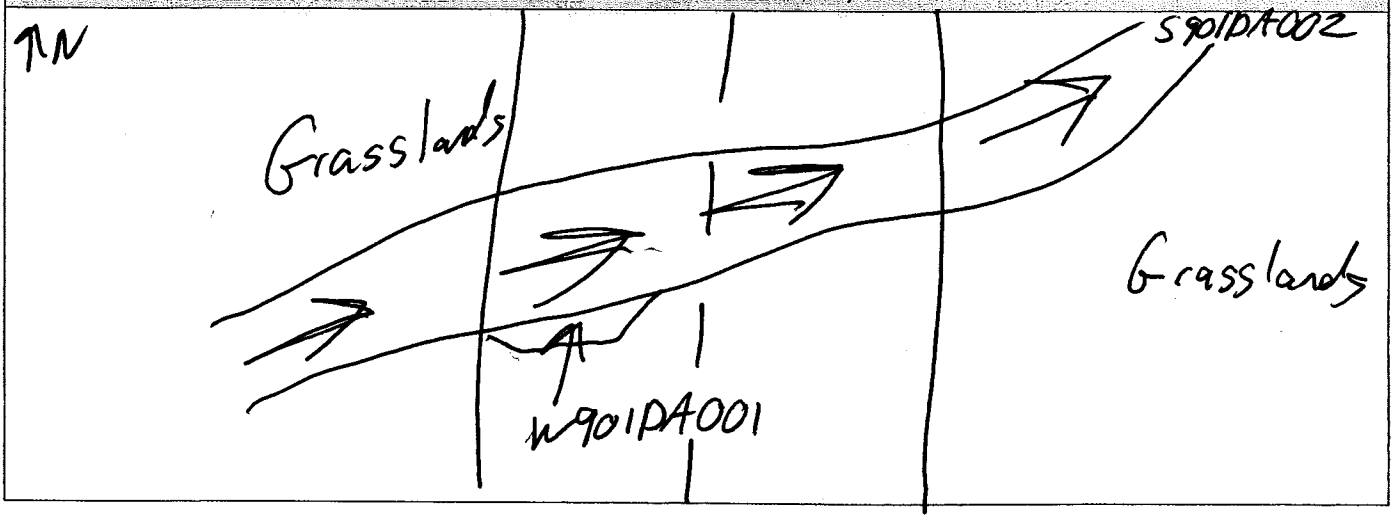
S901DA002

Waterbody Data Form

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:	Project Designated Name:	
Date: 8/28/13	Client/Project Name:	Milepost Enter/Exit: 168, 32
Team: 901	State/County: MT/Dawson	Quad Name:
Logbook No.: 901	Logbook Page No.: 18	Tract No.: ML-MT-DA-00095,000

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☒ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	5'
Sinuosity:	☐ Braided ☐ Meandering ☒ Straight ☐ N/A
Stream Width (ft.):	8-10' **Water Surface (At Crossing Location)** 5'
Stream Depth (ft.):	☐ 0 ☒ 1-3 ☐ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Defined Bed + Bank + OHWM
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☒ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☒ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☒ 3:1 ☐ 2:1 ☐ 1:1 ☐ Vertical

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☒ Other: Dry

Stream Substrate %:

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☒ In-stream Emergent Plant 100% Cover:
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☐ Undercut Banks ☐ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed:

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 100' Right - 100'

Vegetative Layers: ☒ Herbs ☐ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☒ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☒ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☒ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number:

None

Comments:

None

Stream Quality: ☐ High ☐ Moderate ☒ Low

S_UTM13_01738_1
S_UTM13_01738

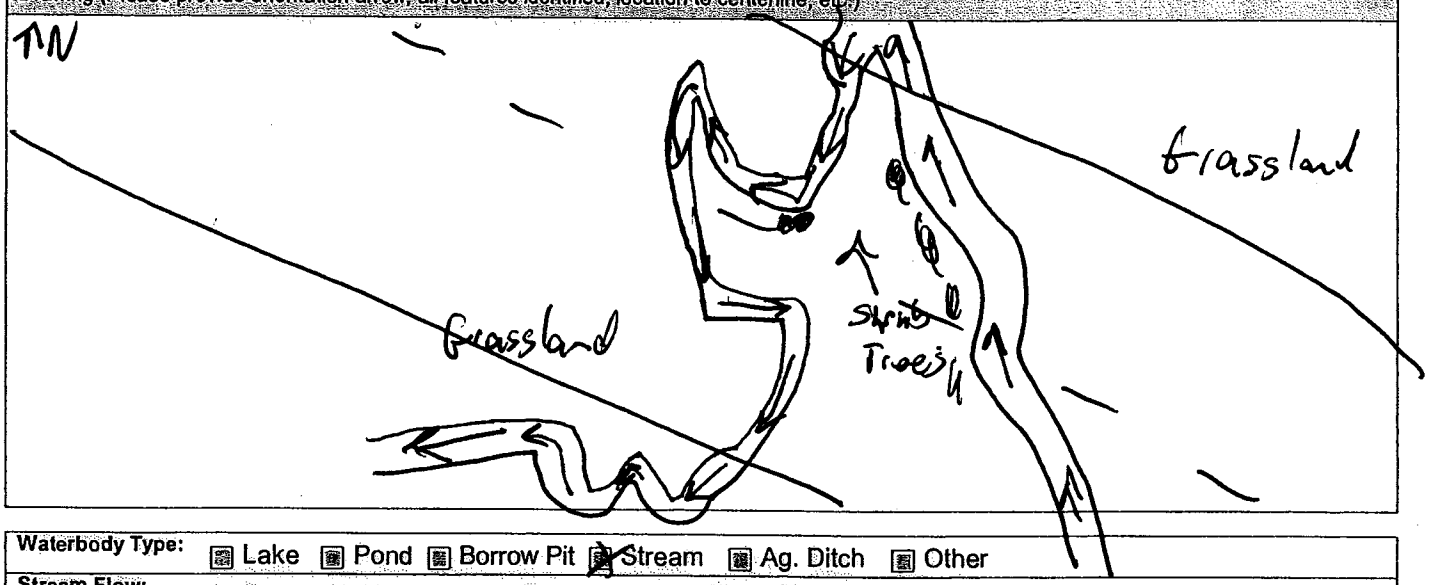
S901MC002

Waterbody Data Form

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:	Project Designated Name:	
Date: 8/27/13	Client/Project Name:	Milepost Enter/Exit: 124.37 - 129.44
Team: 901	State/County: MT/McCone	Quad Name:
Logbook No.: 901	Logbook Page No.: 16	Tract No.: ML-MT-MC-00355.000, ML-MT-MC-00350.000

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☒ W ☐ NW ☐ No Flow
OHWM Width (ft.):	3'
Sinuosity:	☐ Braided ☒ Meandering ☐ Straight ☐ N/A
Stream Width (ft.):	5' Water Surface (At Crossing Location) 3
Stream Depth (ft.):	☐ 0 ☐ 1-3 ☒ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Defined Bed + Bank
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☐ 2-4 ☒ 4-6 ☐ 6-8 ☐ 8+ Right: ☐ 0-2 ☐ 2-4 ☒ 4-6 ☐ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical

Qualitative Attributes

Water Appearance:

☐ Clear ☐ Turbid ☐ Sheen on Surfac ☐ Floating Algalmats
☐ Slightly Turbid ☐ Very Turbid ☐ Greenish Color ☐ Obvious Surface Scum
☐ No Flow ☒ Other: Dry

Stream Substrate %:

Aquatic Habitats:

☐ Sand Bar ☐ Gravel Riffle ☐ In-stream Emergent Plant % Cover:
☐ Gravel Bar ☐ Deep Pools ☐ In-stream Submerged Plant % Cover:
☐ Mud Bar ☐ Bank Root Systems ☐ Fringing Wetlands Characteristics:
☒ Undercut Banks ☒ Overhanging Trees/Shrubs ☐ None

Aquatic Organisms Observed:

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 100+ Right - 100+

Vegetative Layers: ☒ Herbs ☒ Shrubs ☐ Trees ☐ Multiple

Significant Bare Areas Within Riparian Zone ☐ Yes ☒ No ☐ Unknown

Evidence Of Non-Buffered Concentrated Flows: ☐ Yes ☒ No ☐ Unknown

Tributary Condition: ☒ Natural ☐ Artificial (Man-Made) ☐ Manipulated

Channel Condition: ☐ Channelization/Braiding ☐ Unnatural Straightening ☐ Downcutting
☐ Dikes/Berms ☐ Excessive Bank Erosion ☒ N/A

Disturbances: ☒ Livestock Access to Riparian Zone ☐ Manure In Stream or On Banks
☐ Waste Discharge Pipes Present
☐ Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: None

Comments:

None

Stream Quality: ☐ High ☐ Moderate ☒ Low

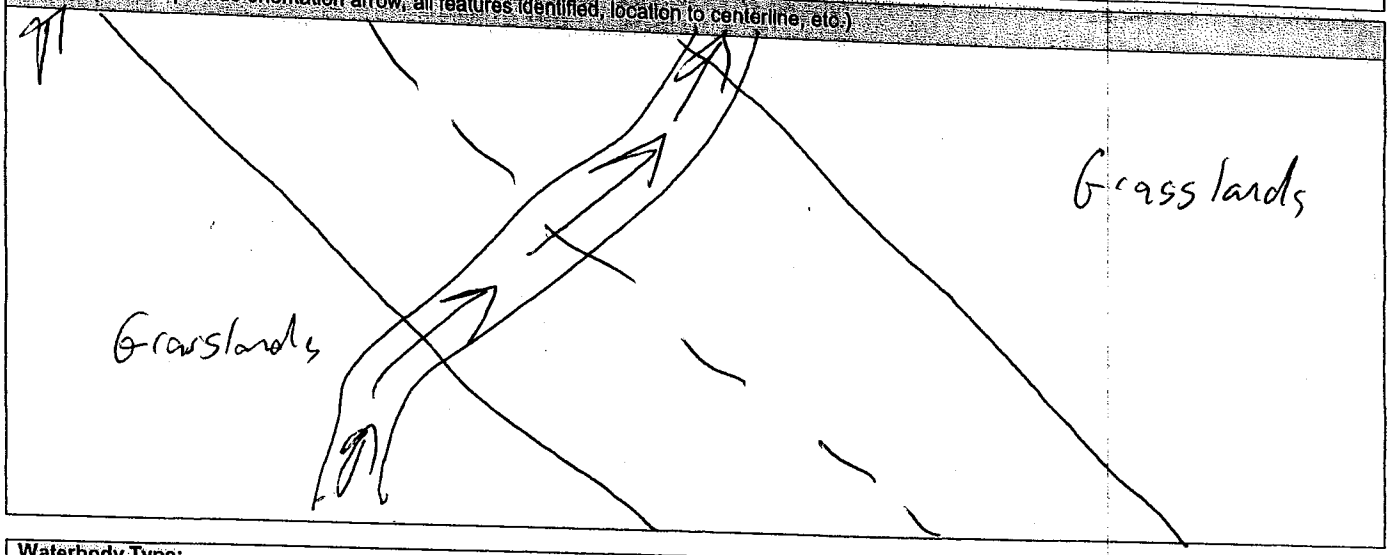
Waterbody Data Form

S901PR001

☒ Centerline ☐ Re-Route ☐ Access Road ☐ Ancillary Facility ☐ Transmission Line ☐ Other

Centerline ID:		Project Designaled Name:	
Date: 8/29/13	Client/Project Name: EXP		Milepost Enter/Exit: 21.05
Team: 901	State/County: MT/Prairie		Quad Name:
Logbook No.: 901	Logbook Page No.: 23	Tract No.: ML-MT-PR-00115.000	

Drawing (Please provide orientation arrow, all features identified, location to centerline, etc.)



Waterbody Type:	☐ Lake ☐ Pond ☐ Borrow Pit ☒ Stream ☐ Ag. Ditch ☐ Other
Stream Flow:	☐ Fast ☐ Moderate ☐ Slow ☐ Very Slow ☒ None
Flow Type:	☐ Perennial (Flows year round) ☐ Intermittent (Flows <3 month ☐ None ☐ Seasonal (Continuous flow ≥ 3 months) ☒ Ephemeral (Flows only in response to rainfall)
Direction of Flow:	☐ N ☒ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ☐ No Flow
OHWM Width (ft.):	10'
Sinuosity:	☐ Braided ☐ Meandering ☒ Straight ☐ N/A
Stream Width (ft.):	20 — Water Surface (At Crossing Location) Ø5'
Stream Depth (ft.):	☐ 0 ☐ 1-3 ☒ 3-6 ☐ 6-12 ☐ 12-18 ☐ 18-24 ☐ 24-36 ☐ 36-48 ☐ 48-60 ☐ 60+
OHWM Indicators:	Defined Bed + Bank, OHWM
Bank Height (ft.): (Looking Downstream)	Left: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☒ 6-8 ☐ 8+ Right: ☐ 0-2 ☐ 2-4 ☐ 4-6 ☒ 6-8 ☐ 8+
Bank Slope: (Looking Downstream)	Left: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical Right: ☐ 4:1 ☐ 3:1 ☒ 2:1 ☐ 1:1 ☐ Vertical

Qualitative Attributes

Water Appearance:

- [ ] Clear
- [ ] Slightly Turbid
- [ ] No Flow
- [ ] Turbid
- [ ] Very Turbid
- [x] Other: Dry
- [ ] Sheen on Surface
- [ ] Greenish Color
- [ ] Floating Algalmats
- [ ] Obvious Surface Scum

Stream Substrate %:

Aquatic Habitats:

- [x] Sand Bar
- [x] Gravel Bar
- [ ] Mud Bar
- [ ] Undercut Banks
- [ ] Gravel Riffle
- [ ] Deep Pools
- [ ] Bank Root Systems
- [ ] Overhanging Trees/Shrubs
- [x] In-stream Emergent Plant 80% Cover:
- [ ] In-stream Submerged Plant % Cover:
- [ ] Fringing Wetlands Characteristics:
- [ ] None

Aquatic Organisms Observed:

Riparian Zone:

Width of Natural Vegetation Zone from Edge of Active Channel out to Flood Plain (ft): Left - 20' Right - 30'

Vegetative Layers: [x] Herbs [ ] Shrubs [ ] Trees [ ] Multiple

Significant Bare Areas Within Riparian Zone [ ] Yes [x] No [ ] Unknown

Evidence Of Non-Buffered Concentrated Flows: [ ] Yes [x] No [ ] Unknown

Tributary Condition: [x] Natural [ ] Artificial (Man-Made) [ ] Manipulated

Channel Condition:

- [ ] Channelization/Braiding
- [ ] Dikes/Berms
- [ ] Unnatural Straightening
- [ ] Excessive Bank Erosion
- [x] Downcutting
- [x] N/A

Disturbances:

- [x] Livestock Access to Riparian Zone
- [ ] Manure In Stream or On Banks
- [ ] Waste Discharge Pipes Present
- [ ] Other:

Habitat Characteristics, Aquatic, and Terrestrial Diversity Description:

Habitat ID Number: None

Comments:

None

Stream Quality: [ ] High [ ] Moderate [x] Low

*Only Complete for Watercourse with Defined Bed and Bank

WESTECH Watercourse Survey Data Form
Keystone XL Project

Date: 10/23/2018 Field Crew: D. Hagen, P. Christensen State: MT

Site ID: S1023620DA001 Watercourse Name: Tributary to the Yellowstone River

Milepost 199.84

Photo IDs

DH03 - DH06

Adjacent Wetland

WL Plot # W1023620DA001_W1

Fringe Wetland w/in OHWM Width (ft)

Left side: 2-3

Right side: 2-3

WATERCOURSE CHARACTERISTICS

Unique Features

☑ Riparian forest ☑ Riparian shrub ☐ Gravel bars/islands ☐ Riprap ☐ Diversion/Intake ☐ Erosion/Unstable banks

☐ Cut-off channels ☐ Buildings ☐ Dam ☐ Seeps ☐ Other:

Estimated Watercourse Dimensions Within ESA (ft)

Avg Water Depth: 0.2 Avg Water Width: 1 Avg OHWM Width: 10 Avg Channel Width: 2

Stream Gradient (%): 3

Downstream Left Bank Characteristics

Avg Height (ft): 1

Avg Slope: ☑ Gentle (0-10%) ☐ Moderate (10-50%) ☐ Steep (50+%) ☐ Vertical

Dominant Vegetation by Stratum (use 6-letter code)

Tree:	Ela ang	Pop del	Sal amy
Shrub:	Ros woo	Sym occ	
Herb:	Car neb	Poa pra	Sol canl

Downstream Right Bank Characteristics

Avg Height (ft): 1

Avg Slope: ☑ Gentle (0-10%) ☐ Moderate (10-50%) ☐ Steep (50+%) ☐ Vertical

Dominant Vegetation by Stratum (use 6-letter code)

Tree:	Ela ang		
Shrub:	Ros woo		
Herb:	Car neb	Poa pra	Sol canl

Noxious Weeds Observed

Species: Species: Species:

Density*: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Density*: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Density*: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

*estimated stems per 0.01-acre: 1 = <1; 2 = 1-5; 3 = 5-10; 4 = 10-50; 5 = >50

WATERCOURSE CLASSIFICATION

Riverine

☑ 2 - Lower Perennial ◉ Unconsolidated Bottom ○ Aquatic Bed ○ Rocky Shore ○ Unconsolidated Shore

☐ 3 - Upper Perennial ○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed ○ Rocky Shore ○ Unconsolidated Shore

☐ 4 - Intermittent ○ Streambed:

☐ Ephemeral

Palustrine

○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed ○ Unconsolidated Shore

Lacustrine

☐ 1 - Limnetic ○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed

☐ 2 - Littoral ○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed ○ Rocky Shore ○ Unconsolidated Shore

Man-Made Drainage

☐ Canal ☐ Irrigation Ditch ☐ Drainage Ditch ☐ Roadside Ditch ☐ Grassed Waterway ☐ Impoundment

- ❖ situated in a channel; water, when present, usually flowing ..... RIVERINE (R)
- ❖ persistent emergents, trees, shrubs, or emergent mosses cover ≥ 30% of area ..... PALUSTRINE (P)
- ❖ persistent emergents, trees, shrubs, or emergent mosses cover < 30% of area
  - area < 20 acres
    - no wave-formed or bedrock shoreline feature present *and* water < 2 m deep..... PALUSTRINE (P)
    - wave-formed or bedrock shoreline feature present *or* water ≥ 2 m deep ..... LACUSTRINE (L)
  - area ≥ 20 acres..... LACUSTRINE (L)

*Only Complete for Watercourse with Defined Bed and Bank

WESTECH Watercourse Survey Data Form
Keystone XL Project

Site ID: S1023620DA001

FISHERIES

% Within ESA

Riffle: 50 Run: 50 Pool: 0 Other: 0

% Instream Fish Cover Within ES

Boulders: 0 Logs/Debris: 0 Undercut Banks: 0 Structures: 0

Fish Observed

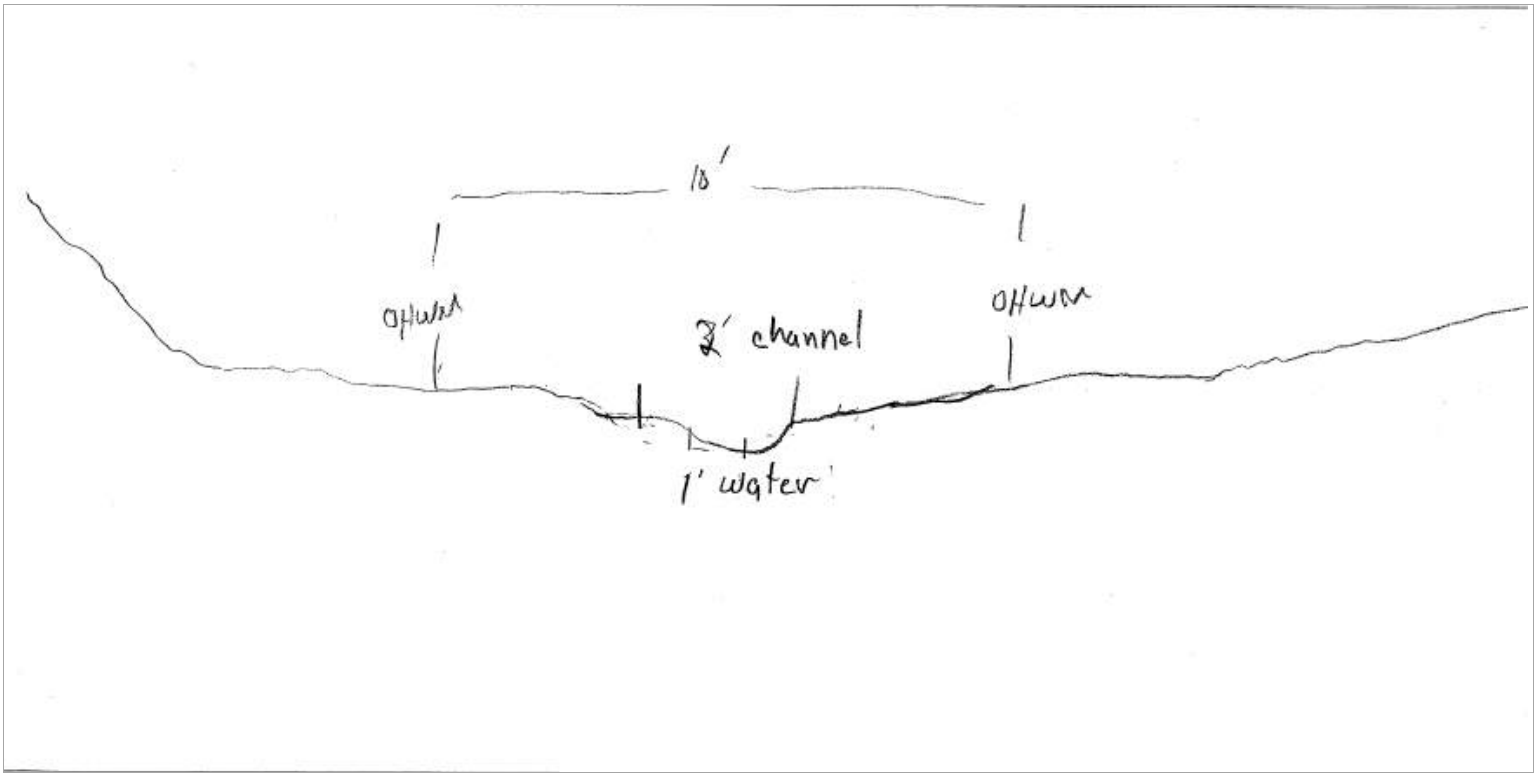
Species: Species: Species:

NOTES

Comments (notes on wildlife observed, erosion, livestock impacts, etc.)

Evidence of recent livestock use.

Cross-Section Drawing show width and depth for OHWM and channel



*Only Complete for Watercourse with Defined Bed and Bank

WESTECH Watercourse Survey Data Form
Keystone XL Project

Date: 10/23/2018 Field Crew: D. Hagen, P. Christensen State: MT

Site ID: S1023620DA002 Watercourse Name: Tributary to the Yellowstone River

Milepost 198.37

Photo IDs

DH17 - DH18

Adjacent Wetland

WL Plot # none

Fringe Wetland w/in OHWM Width (ft)

Left side: N/A

Right side: N/A

WATERCOURSE CHARACTERISTICS

Unique Features

☐ Riparian forest ☐ Riparian shrub ☐ Gravel bars/islands ☐ Riprap ☐ Diversion/Intake ☐ Erosion/Unstable banks

☐ Cut-off channels ☐ Buildings ☐ Dam ☐ Seeps ☐ Other:

Estimated Watercourse Dimensions Within ESA (ft)

Avg Water Depth: 0 Avg Water Width: 0 Avg OHWM Width: 1.5 Avg Channel Width: 1.5

Stream Gradient (%): 3

Downstream Left Bank Characteristics

Avg Height (ft): 1

Avg Slope: ☑ Gentle (0-10%) ☐ Moderate (10-50%) ☐ Steep (50+%) ☐ Vertical

Dominant Vegetation by Stratum (use 6-letter code)

Tree:	Pru vir		
Shrub:	Jun hor	Art can	
Herb:	Bou cur	Agr tra	

Downstream Right Bank Characteristics

Avg Height (ft): 1

Avg Slope: ☑ Gentle (0-10%) ☐ Moderate (10-50%) ☐ Steep (50+%) ☐ Vertical

Dominant Vegetation by Stratum (use 6-letter code)

Tree:	Pru vir		
Shrub:			
Herb:			

Noxious Weeds Observed

Species: Eup esu Species: Species:

Density*: ☐ 1 ☐ 2 ☐ 3 ☑ 4 ☐ 5 Density*: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Density*: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

*estimated stems per 0.01-acre: 1 = <1; 2 = 1-5; 3 = 5-10; 4 = 10-50; 5 = >50

WATERCOURSE CLASSIFICATION

Riverine

☐ 2 - Lower Perennial ○ Unconsolidated Bottom ○ Aquatic Bed ○ Rocky Shore ○ Unconsolidated Shore

☐ 3 - Upper Perennial ○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed ○ Rocky Shore ○ Unconsolidated Shore

☐ 4 - Intermittent ○ Streambed:

☑ Ephemeral Unconsolidated Bottom

Palustrine

○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed ○ Unconsolidated Shore

Lacustrine

☐ 1 - Limnetic ○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed

☐ 2 - Littoral ○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed ○ Rocky Shore ○ Unconsolidated Shore

Man-Made Drainage

☐ Canal ☐ Irrigation Ditch ☐ Drainage Ditch ☐ Roadside Ditch ☐ Grassed Waterway ☐ Impoundment

- ❖ situated in a channel; water, when present, usually flowing ..... RIVERINE (R)
- ❖ persistent emergents, trees, shrubs, or emergent mosses cover ≥ 30% of area ..... PALUSTRINE (P)
- ❖ persistent emergents, trees, shrubs, or emergent mosses cover < 30% of area
  - area < 20 acres
    - no wave-formed or bedrock shoreline feature present *and* water < 2 m deep..... PALUSTRINE (P)
    - wave-formed or bedrock shoreline feature present *or* water ≥ 2 m deep ..... LACUSTRINE (L)
  - area ≥ 20 acres..... LACUSTRINE (L)

*Only Complete for Watercourse with Defined Bed and Bank

WESTECH Watercourse Survey Data Form
Keystone XL Project

Site ID: S1023620DA002

FISHERIES

% Within ESA

Riffle: 0 Run: 0 Pool: 0 Other: 0

% Instream Fish Cover Within ES

Boulders: 0 Logs/Debris: 0 Undercut Banks: 0 Structures: 0

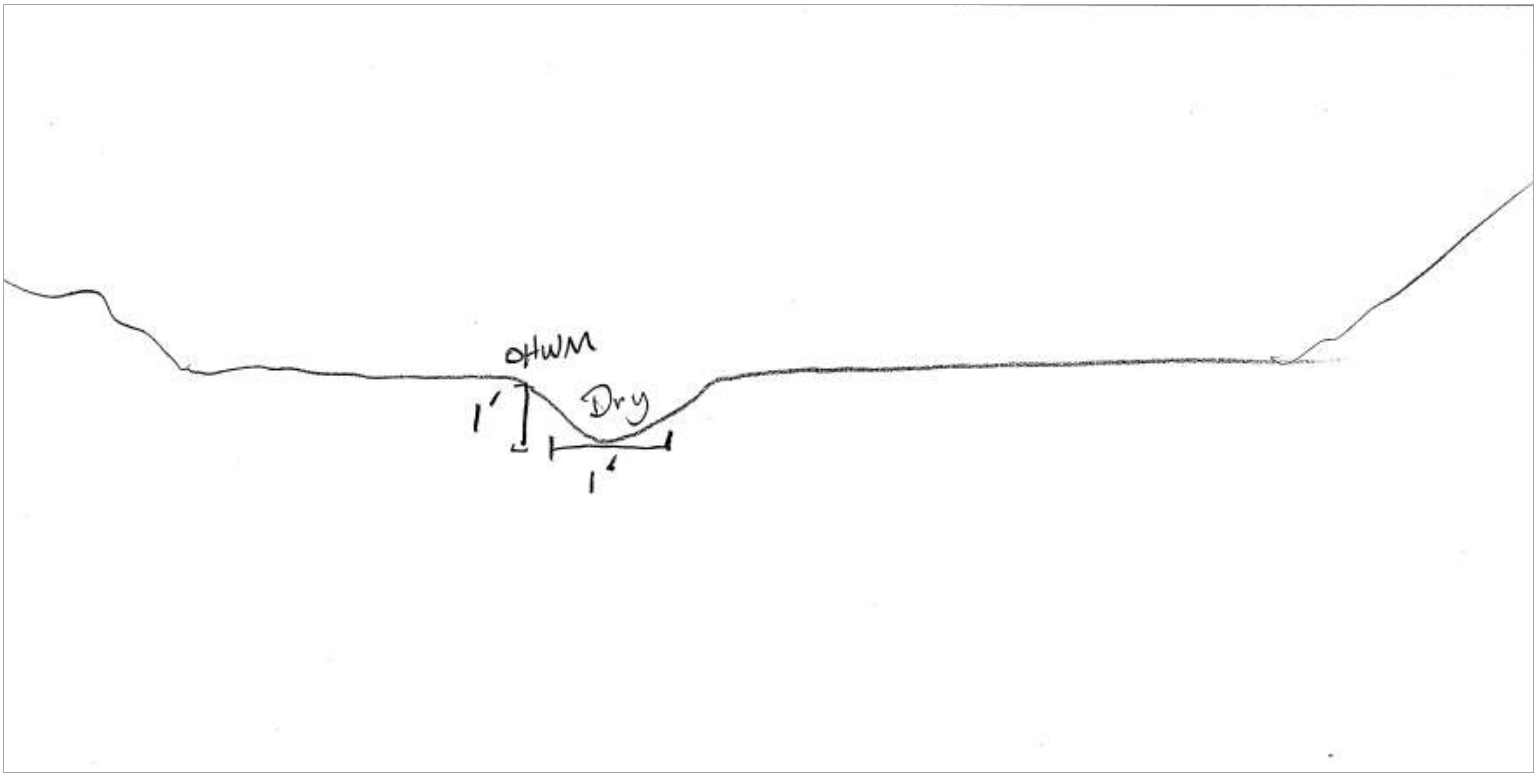
Fish Observed

Species: Species: Species:

NOTES

Comments (notes on wildlife observed, erosion, livestock impacts, etc.)

Cross-Section Drawing show width and depth for OHWM and channel



*Only Complete for Watercourse with Defined Bed and Bank

WESTECH Watercourse Survey Data Form
Keystone XL Project

Date: 10/23/2018 Field Crew: D. Hagen, P. Christensen State: MT

Site ID: S1023620DA003 Watercourse Name: Tributary to the Yellowstone River

Milepost 198.37

Photo IDs

DH13 - DH14

Adjacent Wetland

WL Plot # none

Fringe Wetland w/in OHWM Width (ft)

Left side: N/A

Right side: N/A

WATERCOURSE CHARACTERISTICS

Unique Features

☐ Riparian forest ☐ Riparian shrub ☐ Gravel bars/islands ☐ Riprap ☐ Diversion/Intake ☐ Erosion/Unstable banks

☐ Cut-off channels ☐ Buildings ☐ Dam ☐ Seeps ☐ Other:

Estimated Watercourse Dimensions Within ESA (ft)

Avg Water Depth: 0 Avg Water Width: 0 Avg OHWM Width: 4 Avg Channel Width: 1

Stream Gradient (%): 3

Downstream Left Bank Characteristics

Avg Height (ft): 2

Avg Slope: ☑ Gentle (0-10%) ☐ Moderate (10-50%) ☐ Steep (50+%) ☐ Vertical

Dominant Vegetation by Stratum (use 6-letter code)

Tree:			
Shrub:	Ros woo	She arg	
Herb:	Poa pra	Agr smi	

Downstream Right Bank Characteristics

Avg Height (ft): 2

Avg Slope: ☑ Gentle (0-10%) ☐ Moderate (10-50%) ☐ Steep (50+%) ☐ Vertical

Dominant Vegetation by Stratum (use 6-letter code)

Tree:			
Shrub:	Ros woo	She arg	
Herb:	Poa pra	Agr smi	

Noxious Weeds Observed

Species: Eup esu Species: Species:

Density*: ☐ 1 ☐ 2 ☑ 3 ☐ 4 ☐ 5 Density*: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Density*: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

*estimated stems per 0.01-acre: 1 = <1; 2 = 1-5; 3 = 5-10; 4 = 10-50; 5 = >50

WATERCOURSE CLASSIFICATION

Riverine

☐ 2 - Lower Perennial ○ Unconsolidated Bottom ○ Aquatic Bed ○ Rocky Shore ○ Unconsolidated Shore

☐ 3 - Upper Perennial ○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed ○ Rocky Shore ○ Unconsolidated Shore

☐ 4 - Intermittent ○ Streambed:

☑ Ephemeral Unconsolidated Bottom

Palustrine

○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed ○ Unconsolidated Shore

Lacustrine

☐ 1 - Limnetic ○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed

☐ 2 - Littoral ○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed ○ Rocky Shore ○ Unconsolidated Shore

Man-Made Drainage

☐ Canal ☐ Irrigation Ditch ☐ Drainage Ditch ☐ Roadside Ditch ☐ Grassed Waterway ☐ Impoundment

- ❖ situated in a channel; water, when present, usually flowing ..... RIVERINE (R)
- ❖ persistent emergents, trees, shrubs, or emergent mosses cover ≥ 30% of area ..... PALUSTRINE (P)
- ❖ persistent emergents, trees, shrubs, or emergent mosses cover < 30% of area
  - area < 20 acres
    - no wave-formed or bedrock shoreline feature present *and* water < 2 m deep..... PALUSTRINE (P)
    - wave-formed or bedrock shoreline feature present *or* water ≥ 2 m deep ..... LACUSTRINE (L)
  - area ≥ 20 acres..... LACUSTRINE (L)

*Only Complete for Watercourse with Defined Bed and Bank

WESTECH Watercourse Survey Data Form
Keystone XL Project

Site ID: S1023620DA003

FISHERIES

% Within ESA

Riffle: 0 Run: 0 Pool: 0 Other: 0

% Instream Fish Cover Within ES

Boulders: 0 Logs/Debris: 0 Undercut Banks: 0 Structures: 0

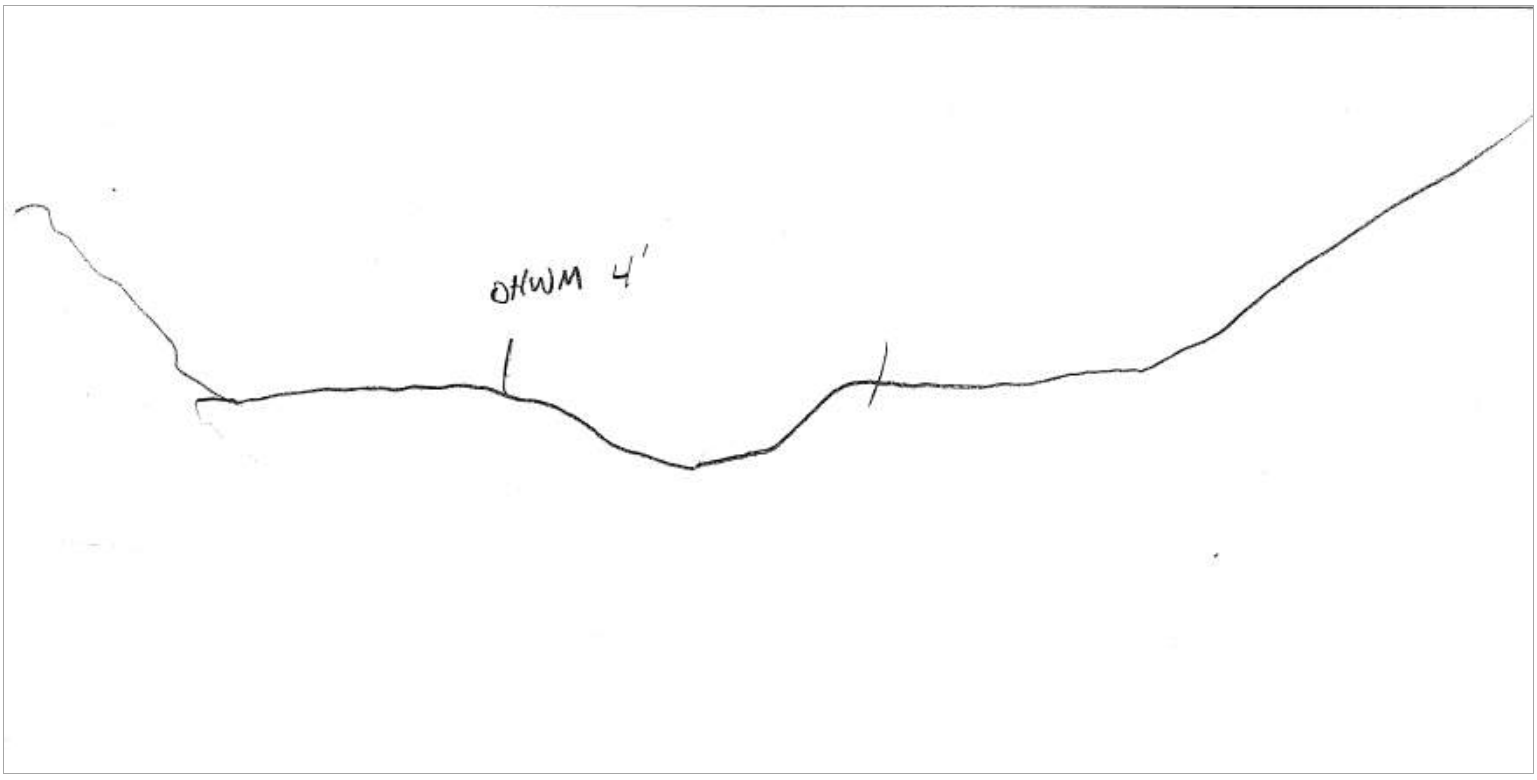
Fish Observed

Species: Species: Species:

NOTES

Comments (notes on wildlife observed, erosion, livestock impacts, etc.)

Cross-Section Drawing show width and depth for OHWM and channel



*Only Complete for Watercourse with Defined Bed and Bank

WESTECH Watercourse Survey Data Form
Keystone XL Project

Date: 10/23/2018 Field Crew: D. Hagen, P. Christensen State: MT

Site ID: S1023620DA004 Watercourse Name: Tributary to the Yellowstone River

Milepost 198.37

Photo IDs

DH23 - DH24

Adjacent Wetland

WL Plot # W1023620DA002_W1

Fringe Wetland w/in OHWM Width (ft)

Left side: N/A

Right side: N/A

WATERCOURSE CHARACTERISTICS

Unique Features

☐ Riparian forest ☐ Riparian shrub ☐ Gravel bars/islands ☐ Riprap ☐ Diversion/Intake ☐ Erosion/Unstable banks

☐ Cut-off channels ☐ Buildings ☐ Dam ☐ Seeps ☐ Other:

Estimated Watercourse Dimensions Within ESA (ft)

Avg Water Depth: 0.3 Avg Water Width: 3 Avg OHWM Width: 8 Avg Channel Width: 5

Stream Gradient (%): 3

Downstream Left Bank Characteristics

Avg Height (ft): 1

Avg Slope: ☑ Gentle (0-10%) ☐ Moderate (10-50%) ☐ Steep (50+%) ☐ Vertical

Dominant Vegetation by Stratum (use 6-letter code)

Tree:	Ela ang	Pru vir	
Shrub:	Art arb		
Herb:	Poa pra	Car neb	Sol canl

Downstream Right Bank Characteristics

Avg Height (ft): 1

Avg Slope: ☑ Gentle (0-10%) ☐ Moderate (10-50%) ☐ Steep (50+%) ☐ Vertical

Dominant Vegetation by Stratum (use 6-letter code)

Tree:	Pop del		
Shrub:	Art arb		
Herb:	Poa pra	Car neb	

Noxious Weeds Observed

Species: Eup esu Species: Species:

Density*: ☐ 1 ☑ 2 ☐ 3 ☐ 4 ☐ 5 Density*: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Density*: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

*estimated stems per 0.01-acre: 1 = <1; 2 = 1-5; 3 = 5-10; 4 = 10-50; 5 = >50

WATERCOURSE CLASSIFICATION

Riverine

☑ 2 - Lower Perennial ◉ Unconsolidated Bottom ○ Aquatic Bed ○ Rocky Shore ○ Unconsolidated Shore

☐ 3 - Upper Perennial ○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed ○ Rocky Shore ○ Unconsolidated Shore

☐ 4 - Intermittent ○ Streambed:

☐ Ephemeral

Palustrine

○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed ○ Unconsolidated Shore

Lacustrine

☐ 1 - Limnetic ○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed

☐ 2 - Littoral ○ Rock Bottom ○ Unconsolidated Bottom ○ Aquatic Bed ○ Rocky Shore ○ Unconsolidated Shore

Man-Made Drainage

☐ Canal ☐ Irrigation Ditch ☐ Drainage Ditch ☐ Roadside Ditch ☐ Grassed Waterway ☐ Impoundment

- ❖ situated in a channel; water, when present, usually flowing ..... RIVERINE (R)
- ❖ persistent emergents, trees, shrubs, or emergent mosses cover ≥ 30% of area ..... PALUSTRINE (P)
- ❖ persistent emergents, trees, shrubs, or emergent mosses cover < 30% of area
  - area < 20 acres
    - no wave-formed or bedrock shoreline feature present *and* water < 2 m deep..... PALUSTRINE (P)
    - wave-formed or bedrock shoreline feature present *or* water ≥ 2 m deep ..... LACUSTRINE (L)
  - area ≥ 20 acres..... LACUSTRINE (L)

*Only Complete for Watercourse with Defined Bed and Bank

WESTECH Watercourse Survey Data Form
Keystone XL Project

Site ID: S1023620DA004

FISHERIES

% Within ESA

Riffle: 50 Run: 50 Pool: 0 Other: 0

% Instream Fish Cover Within ES

Boulders: 0 Logs/Debris: 5 Undercut Banks: 0 Structures: 0

Fish Observed

Species: Species: Species:

NOTES

Comments (notes on wildlife observed, erosion, livestock impacts, etc.)

Mule deer and rams observed. Heavy cattle disturbance of stream channel and adjacent bottomland.

Cross-Section Drawing show width and depth for OHWM and channel