Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 0747 Fowler Creek

Submitted by
MEC Water Resources

To
Missouri Department of Natural Resources
Water Protection Program

On
October 17, 2008

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet A – Water Body Identification

I. Water Body Information (for water body being surveyed)

Water Body Name (from USGS 7.5' quad):	Fowler Creek
Missouri Water Body Identification (WBID) Number:	0747
8-digit HUC:	10300102
County(ies), Listed Upstream to Downstream:	Boone
Upstream Legal Description (from Table H):	13, 46N, 12W
Downstream Legal Description (from Table H):	Mouth
Number of sites evaluated:	4
List all site numbers, consecutively upstream to downstream:	Site 1, Site 2, Site 3, Site 4 site 1: 350m upstream of Cedar Hills Rd Crossing site 2: ~0.3 miles dnstream of Cedar Hills Rd Crossing Site 3: ~0.5 miles upstream of Gilmore Rd crossing site 4: 150 m upstream of Gilmore Rd crossing

Include a Site Location Map(s). The map must include all requirements detailed in the *Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol* (Section IV.D.8.a).

II. Facility Information (list all permitted discharges to this water body segment)

Facility Name(s) and Permit Number(s): Adventures in Learning – MO 0117366
Ashland Lagoons – MO 0106844
Columbia Regional Airport – MO 0092924

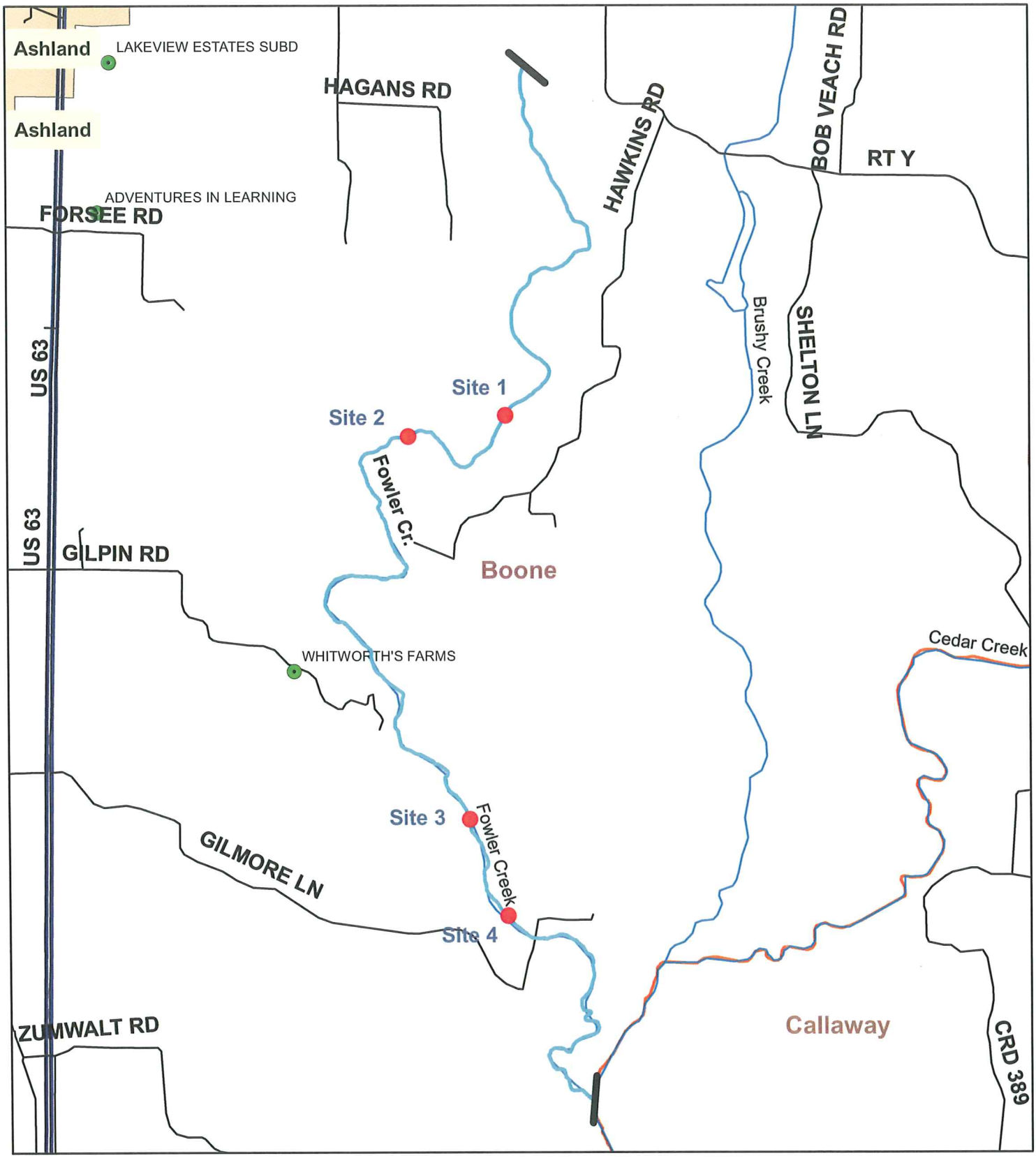
III. UAA Surveyor (please **PRINT** legibly) Cody Luebbering +

Name of Surveyor: Jennifer Hrabik	Telephone Number: (573) 443-4100
Organization/Employer: MEC Water Resources Inc. / Applied Environmental Solutions	

Please verify that you have completed all sections of all data sheets, checked all applicable boxes, provided a map (that includes all requirments listed in the *Missouri Recreational Use Attainability Analysies: Water Body Survey and Assessment Protocol*) and that this form is complete.

Signed: Cody Luebbering, Jennifer Hrabik **Date:** 9-22-08

SRW 10-14-08



Fowler Creek
WBID 0747
Boone County

Meters
0 350 700 1,400 2,100

N
W E
S

WBID # 0747

Site # 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (Page 1 of 3)

(must be completed for each site)

Date & Time: 9-22-08 10:45	Location Description (e.g., road crossing): 350 m upstream of Cedar Hills Rd. crossing
Stream Name: Fowler Creek	
Current Weather Conditions: Sunny & clear	Facility Name(s): Adventures in Learning, Ashland Lagoons, Columbia Regional Airport
Weather Conditions for Past 10 days: 4.0 in/rainfall	Permit Number(s): MO 0117366 MO 0106844 MO 0092924
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 0567583	Northing (UTM Y): 4289277	Horizontal Accuracy: (EPE / FOM / PDOP) 24 ~~Meters~~ JRH ft
Site 11	Easting (UTM X): 0567509	Northing (UTM Y): 4289122	Horizontal Accuracy: (EPE / FOM / PDOP) 19 ~~Meters~~ JRH ft

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
0747-01-003	Trail to Creek at Transect 3	0747-01-004	~~dn~~ up stream JRH	0747-01-005	dnstream
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at the time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

N/A

JRH

Stream Name & WBID # Fowler Creek 0747 Date of Survey 9-22-08

Site # 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (Page 2 of 3)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☒ Steep slopes	☐ Other:

Comments:
private property

Evidence of Human Use*: (Attach photos and reference in "Photos" section.)

☒ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
☐ None of the above	Comments / Other:			

Trail @ Transect 3

Substrate*: (These values should add up to 100%.)

25 % Cobble	20 % Gravel	5 % Sand	— % Silt	— % Mud/Clay	50 % Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

very sparse benthic algae on bedrock

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

ARH

Stream Name & WBID # Fowler Cr. #0747 Date of Survey 9-22-08

Site # 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (Page 3 of 3)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses.)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)
		N/A			

Comments: (Please record any additional comments here.)

Forest riparian on both sides of stream

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Printed Names of Personnel Collecting Data: Jennifer Hrabik, Cody Luebbering

Surveyor's Signature: Jennifer Hrabik Date of Survey: 9-22-08

Organization: MEC Water Resources Inc. Applied Environmental Solutions Position: Water Quality Scientist I Environmental Specialist

SRW 10-14-08

JRH

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: Fowler Creek Waterbody ID: 0747 Site #: 0747_01

Estimated Channel Incision: 0.10 (m) (height between low bank width and water)

GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)

01	UTM X: 567583	UTM Y: 4289277	+/-	24	(feet)
11	UTM X: 567509	UTM Y: 4289122	+/-	19	(feet)

Average Stream Width: 7.0 (meters)
(To determne Length of Reach)

Length of Survey Segment: 150 (meters)
(20x average stream width)

Field Staff: JH, CL

Dissolved Oxygen

Date: 9/22/2008 Time: 10:45

Dissolved Oxygen: 7.95 (mg/L)

Dissolved Oxygen: 85.2 (% sat)

Specific Cond: 425 (µS/cm)

Water Temperature: 18.1 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.89	0.22	1.22	0.15	0.88	0.18	1.06	0.03	0.35	0.05	0.59	0.05	0.39	0.07	0.51	0.10	0.79	0.06	0.78	0.06	0.34	0.06
2	1.78	0.24	2.44	0.19	1.76	0.28	2.12	0.02	0.70	0.06	1.18	0.20	0.78	0.11	1.02	0.11	1.58	0.07	1.56	0.06	0.68	0.11
3	2.67	0.35	3.66	0.00	2.64	0.17	3.18	0.03	1.05	0.09	1.77	0.21	1.17	0.15	1.53	0.10	2.37	0.05	2.34	0.07	1.02	0.14
4	3.56	0.25	4.88	0.00	3.52	0.02	4.24	0.00	1.40	0.12	2.36	0.20	1.56	0.15	2.04	0.12	3.16	0.06	3.12	0.08	1.36	0.12
5	4.45	0.26	6.10	0.00	4.40	0.07	5.30	0.07	1.75	0.13	2.95	0.21	1.95	0.12	2.55	0.18	3.95	0.01	3.90	0.17	1.70	0.13
6	5.34	0.08	7.32	0.00	5.28	0.04	6.36	0.05	2.10	0.10	3.54	0.22	2.34	0.24	3.06	0.23	4.74	0.00	4.68	0.12	2.04	0.15
7	6.23	0.20	8.54	0.12	6.16	0.01	7.42	0.10	2.45	0.14	4.13	0.16	2.73	0.22	3.57	0.22	5.53	0.13	5.46	0.18	2.38	0.15
8	7.12	0.23	9.76	0.21	7.04	0.04	8.48	0.12	2.80	0.12	4.72	0.08	3.12	0.17	4.08	0.24	6.32	0.10	6.24	0.15	2.72	0.13
9	8.01	0.19	10.98	0.14	7.92	0.13	9.54	0.11	3.15	0.02	5.31	0.02	3.51	0.06	4.59	0.13	7.11	0.10	7.02	0.17	3.06	0.09
Right Bank	8.90	0.00	12.25	0.00	8.80	0.00	10.60	0.00	3.50	0.00	5.90	0.00	3.95	0.00	5.10	0.00	7.90	0.00	7.80	0.00	3.40	0.00
Feature Type (riffle, run, or pool)	Run		Riffle		Run		Riffle		Run		Run		Run		Run		Run		Run		Run	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine bv dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.1 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: _____ Date: 9/22/2008

WBID # 0747

Site # 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (Page 1 of 3)

(must be completed for each site)

Date & Time: 9-22-08 11:45	Location Description (e.g., road crossing): No. 30 miles dnstream of Cedar Hills Rd. Crossing
Stream Name: Fowler Creek	
Current Weather Conditions: Sunny & clear	Facility Name(s): Adventures in Learning Ashland lagoons, Columbia Regional Airport
Weather Conditions for Past 10 days: 4.0in/rainfall	Permit Number(s): MO 0117366 MO 0106844 MO 0092924
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 0566988	Northing (UTM Y): 4289151	Horizontal Accuracy: (EPE / FOM / PDOP)	19 ~~Meters~~ ft
Site 11	Easting (UTM X): 0566783	Northing (UTM Y): 4289053	Horizontal Accuracy: (EPE / FOM / PDOP)	14 ~~Meters~~ ft

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
0747-02-006	~~up~~ dn upstream	0747-02-007	upstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at the time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

N/A

Stream Name & WBID # Fowler Creek #747 Date of Survey 9-22-08

Site # 02

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (Page 2 of 3)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☒ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☒ Steep slopes	☐ Other:

Comments:

private property

Evidence of Human Use*: (Attach photos and reference in "Photos" section.)

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
☒ None of the above	Comments / Other: N/A			

Substrate*: (These values should add up to 100%.)

40 % Cobble	45 % Gravel	15 % Sand	— % Silt	— % Mud/Clay	— % Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

sparse benthic algae

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

JRH

Stream Name & WBID # Fowler Creek #0747 Date of Survey 9-22-08

Site # 02

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (Page 3 of 3)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses.)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)
		N/A			

Comments: (Please record any additional comments here.)

Riparian on both sides of stream was hardwood forest.

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Printed Names of Personnel Collecting Data: Jennifer Hrabik, Cody Luebbering

Surveyor's Signature: Jennifer Hrabik Date of Survey: 9-22-08

Organization: MEC Water Resources Inc. Applied Environmental Solution Position: Water Quality Scientist I Environmental Specialist

SRW 10-14-08

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: Fowler Creek Waterbody ID: 0747 Site #: 0747_02

Estimated Channel Incision: 0.10 (m) (height between low bank width and water)

GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)

01 UTM X: 566988 UTM Y: 4289151 +/- 19 (feet)

11 UTM X: 566783 UTM Y: 4289053 +/- 14 (feet)

Average Stream Width: 8.0 (meters)
(To determne Length of Reach)

Length of Survey Segment: 160 (meters)
(20x average stream width)

Field Staff: JH, CL

Dissolved Oxygen

Date: 9/22/2008 Time: 11:45

Dissolved Oxygen: 3.47 (mg/L)

Dissolved Oxygen: 36.8 (% sat)

Specific Cond: 431 (µS/cm)

Water Temperature: 18.2 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.72	0.12	0.79	0.07	1.08	0.07	0.86	0.25	0.40	0.04	1.00	>1.00	0.69	0.12	0.27	0.03	0.93	0.11	0.92	0.06	0.23	0.03
2	1.44	0.15	1.58	0.16	2.16	0.04	1.72	0.26	0.80	0.02	2.00	>1.00	1.38	0.10	0.54	0.12	1.86	0.21	1.84	0.12	0.46	0.01
3	2.16	0.00	2.37	0.29	3.24	0.12	2.58	0.09	1.20	0.01	3.00	>1.00	2.07	0.11	0.81	0.21	2.79	0.33	2.76	0.19	0.69	0.06
4	2.88	0.00	3.16	0.34	4.32	0.03	3.44	0.02	1.60	0.12	4.00	>1.00	2.76	0.13	1.08	0.22	3.72	0.60	3.68	0.16	0.92	0.10
5	3.60	0.04	3.95	0.19	5.40	0.05	4.30	0.02	2.00	0.08	5.00	>1.00	3.45	0.15	1.35	0.25	4.65	0.77	4.60	0.23	1.15	0.12
6	4.32	0.27	4.74	0.18	6.48	0.00	5.16	0.03	2.40	0.05	6.00	>1.00	4.14	0.31	1.62	0.32	5.58	0.93	5.52	0.23	1.38	0.11
7	5.04	0.35	5.53	0.39	7.56	0.02	6.02	0.11	2.80	0.06	7.00	>1.00	4.83	0.39	1.89	0.35	6.51	0.65	6.44	0.46	1.61	0.10
8	5.76	0.24	6.32	0.23	8.64	0.20	6.88	0.03	3.20	0.06	8.00	0.95	5.52	0.45	2.16	0.44	7.44	0.95	7.36	0.57	1.84	0.13
9	6.48	0.05	7.11	0.18	9.72	0.33	7.74	0.01	3.60	0.02	9.00	0.64	6.21	0.12	2.43	0.26	8.37	0.78	8.28	0.38	2.07	0.13
Right Bank	7.20	0.00	7.90	0.00	10.80	0.00	8.60	0.00	4.00	0.00	10.00	0.00	6.95	0.00	2.70	0.00	9.30	0.00	9.20	0.00	2.35	0.00
Feature Type (riffle, run, or pool)	Pool		Run		Run		Run		Riffle		Pool		Run		Run		Pool		Pool		Riffle	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine bv dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.1 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: _____ Date: 9/22/2008

WBID # 0747

Site # 03

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (Page 1 of 3)

(must be completed for each site)

Date & Time: 9-22-08 12:45	Location Description (e.g., road crossing): ~0.5 miles upstream Gilmore Rd crossing
Stream Name: Fowler Creek	
Current Weather Conditions: Sunny & clear	Facility Name(s): Adventures in Learning, Ashland Lagoons, Columbia Regional Airport
Weather Conditions for Past 10 days: 4.0 in / rainfall	Permit Number(s): MO 0117366, MO 0106844, MO 0092924
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 0567358	Northing (UTM Y): 4286883	Horizontal Accuracy: (EPE / FOM / PDOP) 25 ~~Meters~~ ft
Site 11	Easting (UTM X): 0567450	Northing (UTM Y): 4286687	Horizontal Accuracy: (EPE / FOM / PDOP) 18 ~~Meters~~ ft

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
0747_03_008	dnstream	0747_03_009	upstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at the time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

N/A

Stream Name & WBID # Fowler Creek #0747 Date of Survey 9-22-08

Site # 03

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (Page 2 of 3)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☒ Fence	☐ No trespass sign	☐ Steep slopes	☒ Other: Pasture

Comments:

private property — pasture

Evidence of Human Use*: (Attach photos and reference in "Photos" section.)

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
☒ None of the above	Comments / Other: N/A			

Substrate*: (These values should add up to 100%.)

20 % Cobble	70 % Gravel	10 % Sand	— % Silt	— % Mud/Clay	— % Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

Sparse benthic algae

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

ARH

Stream Name & WBID # Fowler Creek #0747 Date of Survey 9-22-08

Site # 03

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (Page 3 of 3)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses.)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)
		N/A			

Comments: (Please record any additional comments here.)

N/A

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Printed Names of Personnel Collecting Data: Jennifer Hrabik, Cody Luebbering

Surveyor's Signature: Jennifer Hrabik Date of Survey: 9-22-08

Organization: MEC Water Resources Inc. Applied Environmental Solutions Position: Water Quality Scientist I Environmental Specialist

SRW 10-14-08

JRH

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: Fowler Creek Waterbody ID: 0747 Site #: 0747_03

Estimated Channel Incision: 0.20 (m) (height between low bank width and water)

GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)

01 UTM X: 567358 UTM Y: 4286883 +/- 25 (feet)

11 UTM X: 567450 UTM Y: 4286687 +/- 18 (feet)

Average Stream Width: 10.0 (meters)
(To determne Length of Reach)

Length of Survey Segment: 200 (meters)
(20x average stream width)

Field Staff: JH, CL

Dissolved Oxygen

Date: 9/22/2008 Time: 12:45

Dissolved Oxygen: 7.84 (mg/L)

Dissolved Oxygen: 88.9 (% sat)

Specific Cond: 564 (µS/cm)

Water Temperature: 22.4 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1.04	0.07	1.04	0.06	1.26	0.01	0.79	0.04	1.48	0.26	0.93	0.35	0.89	0.23	1.06	0.06	0.73	0.32	1.17	0.42	0.88	0.07
2	2.08	0.11	2.08	0.09	2.52	0.02	1.58	0.03	2.96	0.10	1.86	0.54	1.78	0.45	2.12	0.21	1.46	0.32	2.34	0.54	1.76	0.19
3	3.12	0.11	3.12	0.09	3.78	0.08	2.37	0.05	4.44	0.00	2.79	0.42	2.67	0.65	3.18	0.25	2.19	0.18	3.51	0.38	2.64	0.36
4	4.16	0.10	4.16	0.10	5.04	0.12	3.16	0.07	5.92	0.11	3.72	0.36	3.56	0.71	4.24	0.40	2.92	0.17	4.68	0.24	3.52	0.43
5	5.20	0.12	5.20	0.10	6.30	0.13	3.95	0.11	7.40	0.02	4.65	0.26	4.45	0.77	5.30	0.29	3.65	0.17	5.85	0.30	4.40	0.52
6	6.24	0.24	6.24	0.13	7.56	0.08	4.74	0.15	8.88	0.03	5.58	0.24	5.34	0.56	6.36	0.27	4.38	0.16	7.02	0.25	5.28	0.64
7	7.28	0.31	7.28	0.21	8.82	0.11	5.53	0.10	10.36	0.06	6.51	0.20	6.23	0.41	7.42	0.31	5.11	0.15	8.19	0.20	6.16	0.66
8	8.32	0.44	8.32	0.12	10.08	0.19	6.32	0.06	11.84	0.07	7.44	0.17	7.12	0.24	8.48	0.40	5.84	0.12	9.36	0.11	7.04	0.65
9	9.36	0.35	9.36	0.07	11.34	0.20	7.11	0.03	13.32	0.06	8.37	0.11	8.01	0.15	9.54	0.46	6.57	0.04	10.53	0.02	7.92	0.46
Right Bank	10.45	0.00	10.40	0.00	12.60	0.00	7.90	0.00	14.80	0.00	9.35	0.00	8.90	0.00	10.60	0.00	7.35	0.00	11.70	0.00	8.80	0.47
Feature Type (riffle, run, or pool)	Run		Run		Run		Riffle		Riffle		Pool		Run		Run		Run		Pool		Pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine bv dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.1 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: _____ Date: 9/22/2008

WBID # 0747

Site # 04

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (Page 1 of 3)

(must be completed for each site)

Date & Time: 9-22-08 9:45	Location Description (e.g., road crossing): at Gilmore Rd. crossing upstream 150m.
Stream Name: Fowler Creek	
Current Weather Conditions: 75°, Partly Sunny	Facility Name(s): Adventures in Learning, Ashland Lagoons, Columbia Regional Airport
Weather Conditions for Past 10 days: 4.0in/rainfall	Permit Number(s): MO 0117366 MO 0106844 MO 0092924
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 0567597	Northing (UTM Y): 4286318	Horizontal Accuracy: (EPE / FOM / PDOP) 21 ~~Meters~~ ft. JRH
Site 11	Easting (UTM X): 0567738	Northing (UTM Y): 4286175	Horizontal Accuracy: (EPE / FOM / PDOP) 19 ~~Meters~~ ft. JRH

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
0747-04-001	DNstream	0747-04-002	UPstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at the time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

N/A

JRH

Stream Name & WBID # Fowler Creek #0747 Date of Survey 9-22-08

Site # 04

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (Page 2 of 3)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☒ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☒ No trespass sign	☐ Steep slopes	☒ Other: Pasture

Comments: N/A

Evidence of Human Use*: (Attach photos and reference in "Photos" section.)

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
☒ None of the above	Comments / Other: N/A			

Substrate*: (These values should add up to 100%.)

5 % Cobble	60 % Gravel	JRH ~~15~~ 30 % Sand	JRH ~~10~~ – % Silt	5 % Mud/Clay	0 % Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

-algal growth uncommon
-minimal amounts of aquatic grasses and willows on gravel bars.

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☒ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

JRH

Stream Name & WBID # Fowler Creek # 0747 Date of Survey 9-22-08

Site # 04

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (Page 3 of 3)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses.)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)
		N/A			

Comments: (Please record any additional comments here.)

Riparian avg. width of 20m. except at Transect 1.

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Printed Names of Personnel Collecting Data: Jennifer Hrabik, Cody Luebbering

Surveyor's Signature: Jennifer Hrabik Date of Survey: 9-22-08

Organization: MEC Water Resources Inc. Applied Environmental Solutions Position: Water Quality Scientist I Environmental Specialist

SRW 10-14-08

JRH

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: Fowler Creek Waterbody ID: 0747 Site #: 0747_04

Estimated Channel Incision: 0.00 (m) (height between low bank width and water)

GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)

01 UTM X: 567597 UTM Y: 4286318 +/- 21 (feet)

11 UTM X: 567738 UTM Y: 4286175 +/- 19 (feet)

Average Stream Width: 10.0 (meters)
(To determne Length of Reach)

Length of Survey Segment: 200 (meters)
(20x average stream width)

Field Staff: JH, CL

Dissolved Oxygen

Date: 9/22/2008 Time: 9:45

Dissolved Oxygen: 5.84 (mg/L)

Dissolved Oxygen: 63.3 (% sat)

Specific Cond: 530 (µS/cm)

Water Temperature: 19.3 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1.70	0.17	1.96	0.16	0.93	0.02	0.74	0.05	0.72	0.04	0.61	0.03	0.37	0.03	0.67	0.03	1.13	0.30	1.16	0.62	0.43	0.02
2	3.40	0.02	3.92	0.00	1.86	0.00	1.48	0.12	1.44	0.10	1.22	0.10	0.74	0.05	1.34	0.04	2.26	0.62	2.32	0.84	0.86	0.02
3	5.10	0.00	5.88	0.00	2.79	0.00	2.22	0.19	2.16	0.15	1.83	0.14	1.11	0.11	2.01	0.06	3.39	0.63	3.48	0.75	1.29	0.04
4	6.80	0.00	7.84	0.00	3.72	0.00	2.96	0.28	2.88	0.18	2.44	0.18	1.48	0.17	2.68	0.08	4.52	0.72	4.64	0.68	1.72	0.06
5	8.50	0.00	9.80	0.00	4.65	0.00	3.70	0.39	3.60	0.20	3.05	0.13	1.85	0.19	3.35	0.10	5.65	0.86	5.80	0.57	2.15	0.07
6	10.20	0.00	11.76	0.02	5.58	0.27	4.44	0.46	4.32	0.22	3.66	0.14	2.22	0.13	4.02	0.14	6.78	>1.00	6.96	0.57	2.58	0.08
7	11.90	0.00	13.72	0.00	6.51	0.07	5.18	0.47	5.04	0.16	4.27	0.15	2.59	0.16	4.69	0.12	7.91	>1.00	8.12	0.53	3.01	0.10
8	13.60	0.04	15.68	0.03	7.44	0.21	5.92	0.46	5.76	0.23	4.88	0.21	2.96	0.15	5.36	0.11	9.04	>1.00	9.28	0.42	3.44	0.18
9	15.30	0.19	17.64	0.09	8.37	0.19	6.66	0.15	6.48	0.16	5.49	0.13	3.33	0.06	6.03	0.09	10.17	0.79	10.44	0.19	3.87	0.15
Right Bank	17.00	0.00	19.60	0.00	9.30	0.00	7.35	0.00	7.20	0.00	6.10	0.00	3.65	0.00	6.70	0.00	11.30	0.00	11.55	0.00	4.30	0.00
Feature Type (riffle, run, or pool)	Run		Riffle		Riffle		Run		Run		Run		Riffle		Riffle		Pool		Pool		Riffle	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine bv dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.1 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: _____ Date: 9/22/2008

WBID# 0747
Site # 01
UPstream

WBID# 0747
Site # 02
DNstream

WBID# 0747
Site # 01
Transect # 03
Trail to Creek

WBID# 0747
Site # 01
DNstream

WBID# 0747
Site # 03
DnStream

WBID# 0747
Site # 04
DNstream

WBID# 0747
Site # 02
UPstream

WBID# 0747
Site # 03
Up Stream

WBID# 0747
Site # 04
Upstream
AES