



Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 3136 Wolf Hole Lateral

Submitted by
Olsson Associates

To
Missouri Department of Natural Resources
Water Protection Program

On
October 14, 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): Wolf Hole Lateral
Missouri Water Body Identification (WBID) Number: 3136
8-digit HUC: 08020201
County(ies), Listed Upstream to Downstream: Mississippi
Upstream Legal Description (from Table H): Mouth
Downstream Legal Description (from Table H): 29, 26N, 16E
Number of sites evaluated: 6
List all site numbers, <u>consecutively upstream to downstream</u> : 3136-1, 3136-2, 3136-3, 3136-4, 3136-5, 3136-6
Include a Site Location Map(s). The map must include all requirements detailed in the <i>Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol</i> (Section IV.D.8.a).

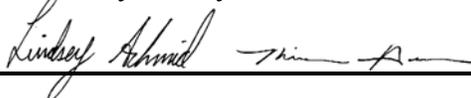
II. Facility Information (list all permitted discharges to this water body segment)

Facility Name(s) and Permit Number(s): Rolling Meadow MHP MO0091936
--

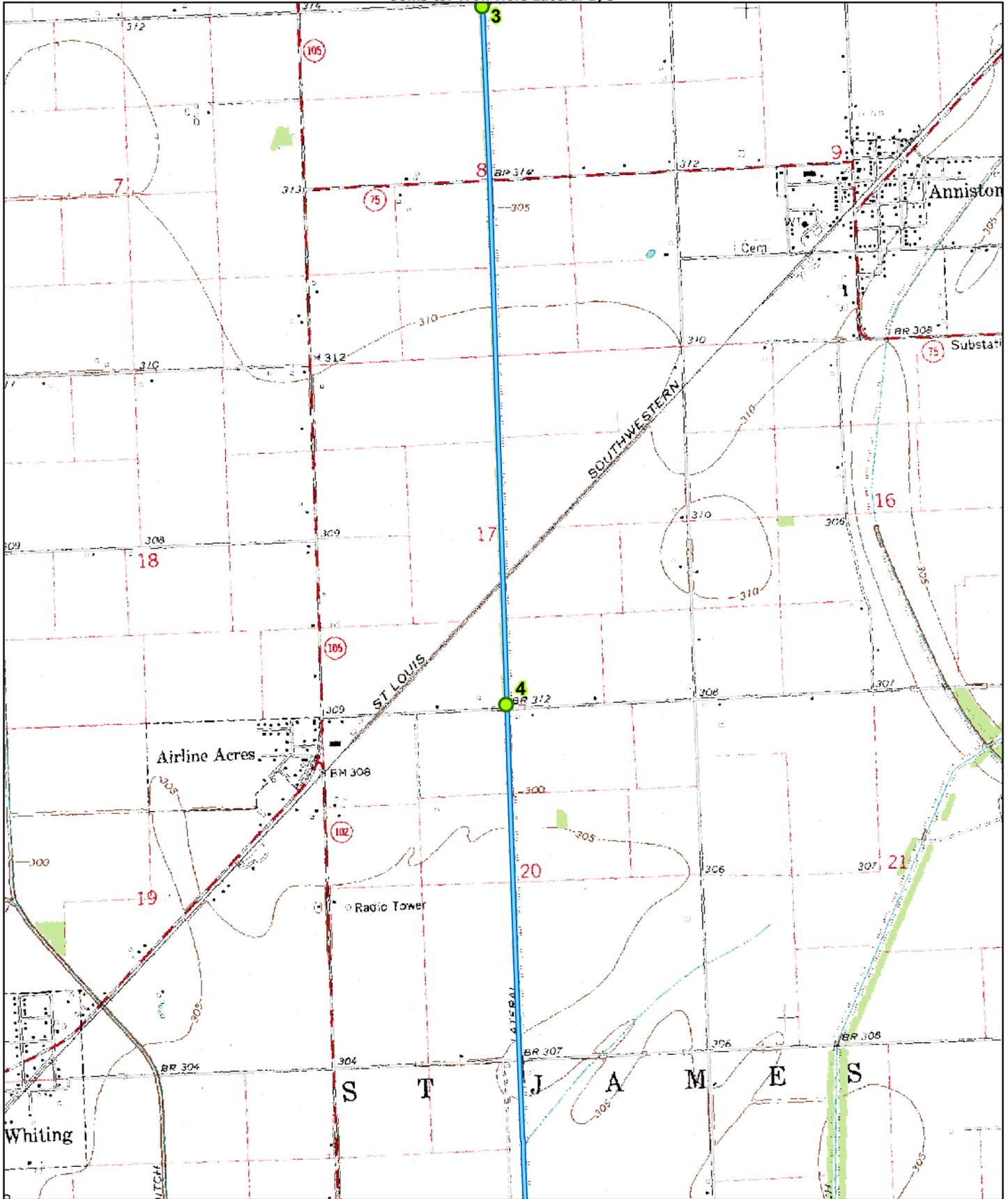
III. UAA Surveyor (please **PRINT** legibly)

Name of Surveyor: Lindsey Schmid/Micah Hamer	Telephone Number: 417-890-8802
Organization/Employer: Olsson Associates	

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

Signed:  **Date:** 08-29-08

Joins to: Wolf Hole Lateral 1/3

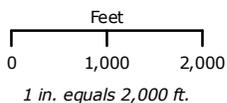


Joins to: Wolf Hole Lateral 3/3

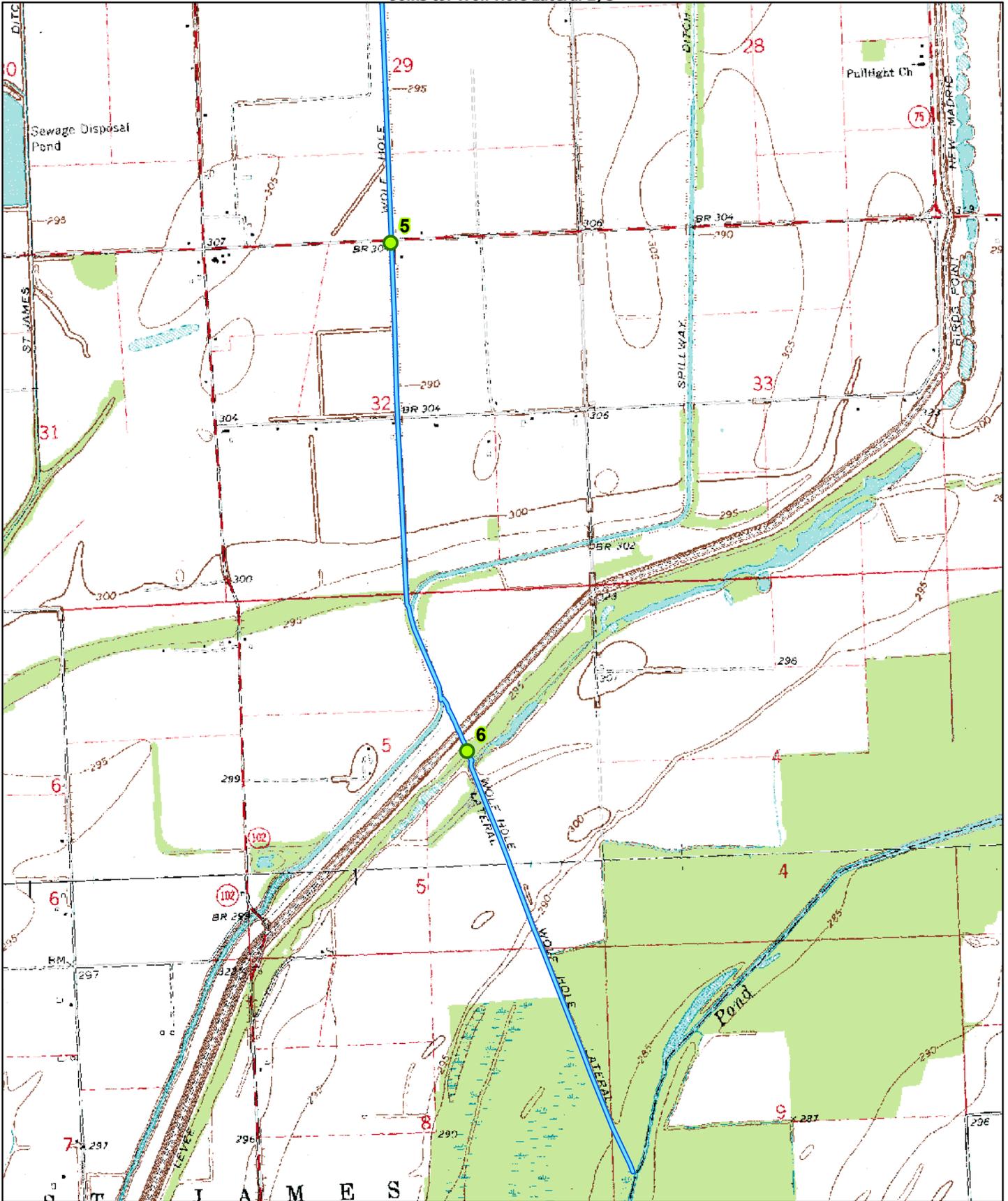
MISSOURI RECREATIONAL USE ATTAINABILITY ANALYSIS

Stream: Wolf Hole Lateral
WBID: 3136

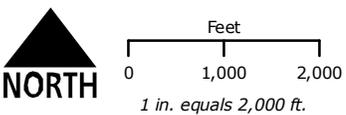
Map Sheet: 2/3
County: Mississippi



Project No. 008-1298



MISSOURI RECREATIONAL USE ATTAINABILITY ANALYSIS



Stream: Wolf Hole Lateral
WBID: 3136

Map Sheet: 3/3
County: Mississippi

WBID # 3136

Site # 1

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: 08-27-08 5:30 p.m.	Location Description (e.g., road crossing):
Stream Name: Wolf Hole Lateral	Road crossing CR 324
Current Weather Conditions: Hot & humid	Facility Name(s): Rolling Meadows MHP
Weather Conditions for Past 10 days: 3.37" @ Cape Girardeau	Permit Number(s): MO 0091936
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 290842	Northing (UTM Y): 4084027	Horizontal Accuracy: (EPE / FOM / PDOP) 68 ft. Meters
Site 11	Easting (UTM X): 290837	Northing (UTM Y): 4083819	Horizontal Accuracy: (EPE / FOM / PDOP) 29 ft. Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3136-1-A	Downstream looking up	3136-1-B	Bridge	3136-1-C	Upstream looking down
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.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				

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.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input checked="" type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: farm land
Comments:				

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

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
<input type="checkbox"/> None of the above	Comments / Other:			

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

% Cobble	% Gravel	40% Sand	60% Silt	% Mud/Clay	% Bedrock
----------	----------	----------	----------	------------	-----------

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

Green algae on bottom in large growths.

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> 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.

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.)

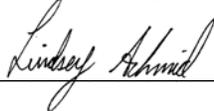
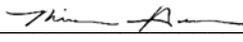
Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Moved .3 miles upstream to access point.

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

Printed Names of Personnel Collecting Data: Lindsey Schmid / Micah Hamer

Surveyor's Signature:   Date of Survey: 08-27-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: <u>Wolf Hole Lateral</u> Waterbody ID: <u>3136</u> Site #: <u>1</u> Estimated Channel Incision: <u>0-6</u> (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: <u>290842</u> UTM Y: <u>4084027</u> +/- <u>68 ft.</u> (meters) 11 UTM X: <u>290837</u> UTM Y: <u>4083819</u> +/- <u>29 ft.</u> (meters) Average Stream Width: _____ (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Micah Hamer</u>	Dissolved Oxygen Date: <u>8/27/2008</u> Time: <u>5:35 p.m.</u> Dissolved Oxygen: <u>7.44</u> (mg/L) Dissolved Oxygen: <u>104.8</u> (% sat) Specific Cond: <u>273</u> (µS/cm) Water Temperature: <u>30.6</u> (°C)
--	--

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	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	0.58	0.15	0.62	0.08	0.65	0.18	0.69	0.41	0.73	0.23	0.78	0.12	0.72	0.21	0.63	0.12	0.68	0.19	0.43	0.31
2	1.44	0.25	1.16	0.21	1.24	0.14	1.30	0.19	1.38	0.53	1.46	0.28	1.56	0.23	1.44	0.32	1.26	0.14	1.36	0.27	0.86	0.46
3	2.16	0.26	1.74	0.30	1.86	0.18	1.95	0.19	2.07	0.52	2.19	0.32	2.34	0.37	2.16	0.47	1.89	0.11	2.04	0.39	1.29	0.50
4	2.88	0.48	2.32	0.41	2.48	0.38	2.60	0.23	2.76	0.56	2.92	0.39	3.12	0.48	2.88	0.50	2.52	0.29	2.72	0.46	1.72	0.57
5	3.60	0.49	2.90	0.50	3.10	0.27	3.25	0.26	3.45	0.59	3.65	0.37	3.90	0.50	3.60	0.53	3.15	0.31	3.40	0.41	2.15	0.58
6	4.32	0.46	3.48	0.48	3.72	0.28	3.90	0.24	4.14	0.64	4.38	0.37	4.68	0.46	4.32	0.46	3.78	0.30	4.08	0.42	2.58	0.56
7	5.04	0.32	4.06	0.35	4.34	0.25	4.55	0.17	4.83	0.58	5.11	0.29	5.46	0.43	5.04	0.40	4.41	0.24	4.76	0.35	3.01	0.49
8	5.76	0.31	4.64	0.32	4.96	0.20	5.20	0.14	5.52	0.43	5.84	0.25	6.24	0.38	5.76	0.32	5.04	0.19	5.44	0.30	3.44	0.38
9	6.48	0.25	5.22	0.26	5.58	0.16	5.85	0.11	6.21	0.40	6.57	0.22	7.02	0.21	6.48	0.18	5.67	0.09	6.12	0.21	3.87	0.26
Right Bank	7.20	0.00	5.80	0.00	6.20	0.00	6.50	0.00	6.90	0.00	7.30	0.00	7.80	0.00	7.20	0.00	6.30	0.00	6.80	0.00	4.30	0.00
Feature Type <small>(riffle, run, or pool)</small>	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 by 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.

MAXIMUM 0.64

MEDIAN 0.32

<-- Located on Unclas

Surveyor's Signature:



Date: 8/27/2008

WBID # 3136

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: 08-27-08 6:40 pm	Location Description (e.g., road crossing):
Stream Name: Wolf Hole Lateral	Road crossing Hwy D
Current Weather Conditions: Clear, warm	Facility Name(s): Rolling Meadows MHP
Weather Conditions for Past 10 days: 3.37" @ Cape Girardeau	Permit Number(s): MO: 0091936
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 290750	Northing (UTM Y): 4080590	Horizontal Accuracy: (EPE / FOM / PDOP) 30 ft. Meters
Site 11	Easting (UTM X): 290747	Northing (UTM Y): 4080366	Horizontal Accuracy: (EPE / FOM / PDOP) 27 ft. Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3136-2-A	Upstream looking down	3136-2-B	Downstream looking up		
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.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				

Site # 2

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.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: farming land
Comments:				

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

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
<input checked="" type="checkbox"/> None of the above	Comments / Other:			

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

% Cobble	% Gravel	40% Sand	30% Silt	30% Mud/Clay	% Bedrock
----------	----------	----------	----------	--------------	-----------

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

Lilies, algae covering sand in long strings, 30% coverage

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input checked="" type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input type="checkbox"/> Clear	<input checked="" type="checkbox"/> Green light	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> 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.

Site # 2

Field Data Sheets for Recreational Use Stream Surveys

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

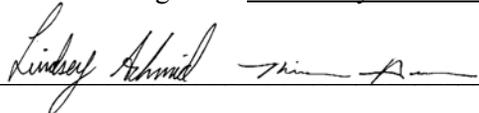
Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses.)

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

Comments: (Please record any additional comments here.)

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

Printed Names of Personnel Collecting Data: Lindsey Schmid / Micah Hamer

Surveyor's Signature:  Date of Survey: 08-27-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: <u>Wolf Hole Lateral</u> Waterbody ID: <u>3136</u> Site #: <u>2</u> Estimated Channel Incision: <u>2-6</u> (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: <u>290750</u> UTM Y: <u>4080590</u> +/- <u>30</u> ft. (meters) 11 UTM X: <u>290747</u> UTM Y: <u>4080366</u> +/- <u>27</u> ft. (meters) Average Stream Width: _____ (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Micah Hamer</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>08-27-08</u> Time: <u>6:40 p.m.</u> Dissolved Oxygen: <u>7.28</u> (mg/L) Dissolved Oxygen: <u>98.9</u> (% sat) Specific Cond: <u>294</u> (µS/cm) Water Temperature: <u>31.8</u> (°C)
--	--

Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		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	
	1	0.36	0.05	0.15	0.07	0.23	0.11	0.11	0.05	0.13	0.05	0.14	0.05	0.09	0.05	0.10	0.07	0.18	0.18	0.22	0.05	0.16	0.11
	2	0.72	0.05	0.30	0.13	0.46	0.21	0.22	0.05	0.26	0.11	0.28	0.07	0.18	0.06	0.20	0.05	0.36	0.29	0.44	0.05	0.32	0.18
	3	1.08	0.05	0.45	0.24	0.69	0.30	0.33	0.05	0.39	0.13	0.42	0.07	0.27	0.08	0.30	0.08	0.54	0.33	0.66	0.09	0.48	0.18
	4	1.44	0.05	0.60	0.18	0.92	0.27	0.44	0.05	0.52	0.18	0.56	0.09	0.36	0.09	0.40	0.14	0.72	0.32	0.88	0.07	0.64	0.24
	5	1.80	0.05	0.75	0.21	1.15	0.31	0.55	0.05	0.65	0.24	0.70	0.13	0.45	0.11	0.50	0.21	0.90	0.34	1.10	0.13	0.80	0.21
	6	2.16	0.05	0.90	0.20	1.38	0.24	0.66	0.07	0.78	0.21	0.84	0.18	0.54	0.06	0.60	0.18	1.08	0.31	1.32	0.17	0.96	0.26
	7	2.52	0.05	1.05	0.14	1.61	0.18	0.77	0.11	0.91	0.16	0.98	0.16	0.63	0.05	0.70	0.12	1.26	0.24	1.54	0.21	1.12	0.17
	8	2.88	0.24	1.20	0.08	1.84	0.12	0.88	0.09	1.04	0.15	1.12	0.09	0.72	0.09	0.80	0.09	1.44	0.13	1.76	0.22	1.28	0.12
9	3.24	0.19	1.35	0.11	2.07	0.08	0.99	0.07	1.17	0.09	1.26	0.05	0.81	0.07	0.90	0.06	1.62	0.09	1.98	0.18	1.44	0.08	
Right Bank		3.60	0.00	1.50	0.00	2.30	0.00	1.10	0.00	1.30	0.00	1.40	0.00	0.90	0.00	1.00	0.00	1.80	0.00	2.20	0.00	1.60	0.00
Feature Type <small>(riffle, run, or pool)</small>		Run		Run		Run		Run		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 by 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.

MAXIMUM 0.34
 MEDIAN 0.11

Surveyor's Signature:

Date: 8/27/2008

WBID # 3136

Site # 3

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: 08-28-08 6:00 p.m.	Location Description (e.g., road crossing):
Stream Name: Wolf Hole Lateral	Road Crossing CR 314
Current Weather Conditions: Clear	Facility Name(s): Rolling Meadows MHO
Weather Conditions for Past 10 days: 3.37" @ Cape Girardeau	Permit Number(s): MO 0091936
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 290716	Northing (UTM Y): 4079025	Horizontal Accuracy: (EPE / FOM / PDOP) 42 ft. Meters
Site 11	Easting (UTM X): 290703	Northing (UTM Y): 4078871	Horizontal Accuracy: (EPE / FOM / PDOP) 60 ft. Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3136-3-A	Upstream looking down	3136-3-B	Downstream looking up		
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.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				

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.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: crops
Comments:				

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

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
<input type="checkbox"/> None of the above	Comments / Other:			

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

% Cobble	% Gravel	% Sand	% Silt	100% Mud/Clay	% Bedrock
----------	----------	--------	--------	---------------	-----------

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

Green algae 60% Floating aquatic plants and grasses in shallow areas.
--

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear/brn	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input checked="" type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> 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.

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)

Comments: (Please record any additional comments here.)

This is an irrigation ditch for crops.

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

Printed Names of Personnel Collecting Data: Lindsey Schmid / Micah Hamer

Surveyor's Signature:  Date of Survey: 08-28-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: <u>Wolf Hole Lateral</u> Waterbody ID: <u>3136</u> Site #: <u>3</u> Estimated Channel Incision: <u>0.3</u> (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: <u>290716</u> UTM Y: <u>4079025</u> +/- <u>42</u> ft. (meters) 11 UTM X: <u>290703</u> UTM Y: <u>4078871</u> +/- <u>60</u> ft. (meters) Average Stream Width: <u>2.5</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Micah Hamer</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>8/28/2008</u> Time: <u>6:00 p.m.</u> Dissolved Oxygen: <u>4.89</u> (mg/L) Dissolved Oxygen: <u>62.8</u> (% sat) Specific Cond: <u>304</u> (µS/cm) Water Temperature: <u>30.9</u> (°C)
---	---

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	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	0.22	0.32	0.24	0.18	0.18	0.21	0.34	0.19	0.31	0.19	0.24	0.18	0.34	0.09	0.29	0.30	0.33	0.19	0.39	0.16	0.34	0.30
2	0.44	0.47	0.48	0.21	0.36	0.35	0.68	0.23	0.62	0.22	0.48	0.29	0.68	0.13	0.58	0.24	0.66	0.23	0.78	0.18	0.68	0.29
3	0.66	0.45	0.72	0.26	0.54	0.34	1.02	0.20	0.93	0.27	0.72	0.37	1.02	0.16	0.87	0.35	0.99	0.28	1.17	0.23	1.02	0.31
4	0.88	0.55	0.96	0.39	0.72	0.35	1.36	0.35	1.24	0.21	0.96	0.39	1.36	0.26	1.16	0.38	1.32	0.31	1.56	0.24	1.36	0.36
5	1.10	0.53	1.20	0.38	0.90	0.34	1.70	0.42	1.55	0.18	1.20	0.42	1.70	0.21	1.45	0.46	1.65	0.34	1.95	0.20	1.70	0.41
6	1.32	0.50	1.44	0.31	1.08	0.31	2.04	0.46	1.86	0.13	1.44	0.38	2.04	0.23	1.74	0.51	1.98	0.30	2.34	0.18	2.04	0.45
7	1.54	0.52	1.68	0.39	1.26	0.36	2.38	0.51	2.17	0.15	1.68	0.33	2.38	0.20	2.03	0.48	2.31	0.24	2.73	0.21	2.38	0.39
8	1.76	0.46	1.92	0.24	1.44	0.30	2.72	0.47	2.48	0.12	1.92	0.32	2.72	0.17	2.32	0.41	2.64	0.27	3.12	0.14	2.72	0.34
9	1.98	0.38	2.16	0.20	1.62	0.28	3.06	0.41	2.79	0.11	2.16	0.26	3.06	0.14	2.61	0.32	2.97	0.21	3.51	0.09	3.06	0.35
Right Bank	2.20	0.00	2.40	0.00	1.80	0.00	3.40	0.00	3.10	0.00	2.40	0.00	3.40	0.00	2.90	0.00	3.30	0.00	3.90	0.00	3.40	0.00
Feature Type <small>(riffle, run, or pool)</small>	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 by 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.

MAXIMUM 0.55
 MEDIAN 0.31

Surveyor's Signature:

Date: 8/28/2008

WBID # 3136

Site # 4

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: 08-28-08 6:40 pm	Location Description (e.g., road crossing):
Stream Name: Wolf Hole Lateral	
Current Weather Conditions: Hot & humid	Facility Name(s): Rolling Meadow MHP
Weather Conditions for Past 10 days: 3.37" @ Cape Girardeau	Permit Number(s): MO: 0091936
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 290625	Northing (UTM Y): 4075800	Horizontal Accuracy: (EPE / FOM / PDOP) 52 ft. Meters
Site 11	Easting (UTM X): 290627	Northing (UTM Y): 4075634	Horizontal Accuracy: (EPE / FOM / PDOP) 60 ft. Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3136-4-A	Upstream looking down	3136-4-B	Bridge		
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.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				

Site # 4

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.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: crops
Comments:				

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

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
<input type="checkbox"/> None of the above	Comments / Other:			

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

% Cobble	% Gravel	40% Sand	60% Silt	% Mud/Clay	% Bedrock
----------	----------	----------	----------	------------	-----------

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

Dark green algae on sandy bottom areas.

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> 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.

Site # 4

Field Data Sheets for Recreational Use Stream Surveys

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

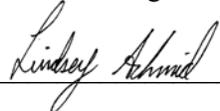
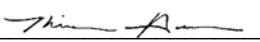
Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses.)

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

Comments: (Please record any additional comments here.)

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

Printed Names of Personnel Collecting Data: Lindsey Schmid / Micah Hamer

Surveyor's Signature:   Date of Survey: 08-28-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: <u>Wolf Hole Lateral</u> Waterbody ID: <u>3136</u> Site #: <u>4</u> Estimated Channel Incision: <u>0.2</u> (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: <u>290625</u> UTM Y: <u>4075800</u> +/- <u>52</u> ft. (meters) 11 UTM X: <u>290627</u> UTM Y: <u>4075634</u> +/- <u>60</u> ft. (meters) Average Stream Width: <u>2</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Micah Hamer</u>	Dissolved Oxygen Date: <u>08-28-08</u> Time: <u>6:30 p.m.</u> Dissolved Oxygen: <u>2.5</u> (mg/L) Dissolved Oxygen: <u>43.2</u> (% sat) Specific Cond: <u>309</u> (µS/cm) Water Temperature: <u>27.7</u> (°C)
---	---

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	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	0.10	0.08	0.19	0.12	0.24	0.19	0.11	0.26	0.13	0.05	0.18	0.35	0.18	0.12	0.12	0.35	0.17	0.12	0.18	0.29	0.15	0.20
2	0.20	0.09	0.38	0.14	0.48	0.14	0.22	0.26	0.26	0.05	0.36	0.36	0.36	0.11	0.24	0.39	0.34	0.17	0.36	0.31	0.30	0.24
3	0.30	0.11	0.57	0.20	0.72	0.09	0.33	0.24	0.39	0.05	0.54	0.32	0.54	0.09	0.36	0.38	0.51	0.21	0.54	0.22	0.45	0.26
4	0.40	0.11	0.76	0.23	0.96	0.07	0.44	0.23	0.52	0.05	0.72	0.29	0.72	0.08	0.48	0.36	0.68	0.18	0.72	0.16	0.60	0.31
5	0.50	0.12	0.95	0.21	1.20	0.08	0.55	0.22	0.65	0.05	0.90	0.29	0.90	0.05	0.60	0.31	0.85	0.14	0.90	0.09	0.75	0.34
6	0.60	0.10	1.14	0.19	1.44	0.11	0.66	0.20	0.78	0.24	1.08	0.30	1.08	0.06	0.72	0.29	1.02	0.12	1.08	0.05	0.90	0.26
7	0.70	0.09	1.33	0.14	1.68	0.13	0.77	0.18	0.91	0.36	1.26	0.26	1.26	0.07	0.84	0.30	1.19	0.09	1.26	0.05	1.05	0.28
8	0.80	0.05	1.52	0.08	1.92	0.16	0.88	0.18	1.04	0.39	1.44	0.23	1.44	0.06	0.96	0.26	1.36	0.11	1.44	0.05	1.20	0.21
9	0.90	0.07	1.71	0.05	2.16	0.08	0.99	0.19	1.17	0.37	1.62	0.24	1.62	0.05	1.08	0.24	1.53	0.08	1.62	0.06	1.35	0.14
Right Bank	1.00	0.00	1.90	0.00	2.40	0.00	1.10	0.00	1.30	0.00	1.80	0.00	1.80	0.00	1.20	0.00	1.70	0.00	1.80	0.00	1.50	0.00
Feature Type <small>(riffle, run, or pool)</small>	Riffle		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 by 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.

MAXIMUM 0.39

MEDIAN 0.13

Surveyor's Signature:

Date: 8/28/2008

WBID # 3136

Site # 5

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: 08-28-08 7:07 p.m.	Location Description (e.g., road crossing):
Stream Name: Wolf Hole Lateral	Road crossing Hwy 80
Current Weather Conditions: warm & humid	Facility Name(s): Rolling Meadow MHP
Weather Conditions for Past 10 days: 3.37" @ Cape Girardeau	Permit Number(s): MO 0091936
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 290544	Northing (UTM Y): 4072581	Horizontal Accuracy: (EPE / FOM / PDOP) 48 ft. Meters
Site 11	Easting (UTM X): 290543	Northing (UTM Y): 4072360	Horizontal Accuracy: (EPE / FOM / PDOP) 40 ft. Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3136-5-A	Upstream looking down	3136-5-B	Bridge	3136-5-C	Downstream looking up
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.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				

Site # 5

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.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input checked="" type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: farm land
Comments:				

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

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
<input type="checkbox"/> None of the above	Comments / Other:			

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

% Cobble	% Gravel	40% Sand	60% Silt	% Mud/Clay	% Bedrock
----------	----------	----------	----------	------------	-----------

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

Dark green algae on sand bottom areas.

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> 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.

Site # 5

Field Data Sheets for Recreational Use Stream Surveys

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

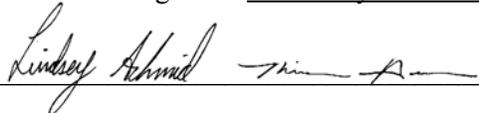
Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses.)

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

Comments: (Please record any additional comments here.)

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

Printed Names of Personnel Collecting Data: Lindsey Schmid / Micah Hamer

Surveyor's Signature:  Date of Survey: 08-28-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: <u>Wolf Hole Lateral</u> Waterbody ID: <u>3136</u> Site #: <u>5</u> Estimated Channel Incision: <u>0.3</u> (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: <u>290544</u> UTM Y: <u>4072581</u> +/- <u>48</u> ft. (meters) 11 UTM X: <u>290543</u> UTM Y: <u>4072360</u> +/- <u>40</u> ft. (meters) Average Stream Width: <u>4</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Micah Hamer</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>8/28/2008</u> Time: <u>7:05 p.m.</u> Dissolved Oxygen: <u>4.7</u> (mg/L) Dissolved Oxygen: <u>60.9</u> (% sat) Specific Cond: <u>331</u> (µS/cm) Water Temperature: <u>28.9</u> (°C)
---	--

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	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	0.29	0.20	0.16	0.06	0.36	0.13	0.54	0.21	0.47	0.24	0.23	0.05	0.61	0.31	0.49	0.41	0.41	0.22	0.25	0.18	0.43	0.21
2	0.58	0.19	0.32	0.09	0.72	0.21	1.08	0.27	0.94	0.31	0.46	0.07	1.22	0.32	0.98	0.47	0.82	0.35	0.50	0.21	0.86	0.38
3	0.87	0.21	0.48	0.11	1.08	0.08	1.62	0.29	1.41	0.37	0.69	0.08	1.83	0.46	1.47	0.53	1.23	0.39	0.75	0.24	1.29	0.54
4	1.16	0.27	0.64	0.12	1.44	0.07	2.16	0.30	1.88	0.40	0.92	0.13	2.44	0.49	1.96	0.62	1.64	0.46	1.00	0.27	1.72	0.57
5	1.45	0.24	0.80	0.19	1.80	0.05	2.70	0.33	2.35	0.32	1.15	0.21	3.05	0.53	2.45	0.60	2.05	0.44	1.25	0.19	2.15	0.62
6	1.74	0.26	0.96	0.17	2.16	0.09	3.24	0.36	2.82	0.30	1.38	0.24	3.66	0.46	2.94	0.54	2.46	0.39	1.50	0.11	2.58	0.46
7	2.03	0.21	1.12	0.23	2.52	0.10	3.78	0.26	3.29	0.27	1.61	0.21	4.27	0.50	3.43	0.39	2.87	0.41	1.75	0.06	3.01	0.33
8	2.32	0.18	1.28	0.24	2.88	0.12	4.32	0.18	3.76	0.16	1.84	0.09	4.88	0.43	3.92	0.36	3.28	0.36	2.00	0.07	3.44	0.31
9	2.61	0.14	1.44	0.20	3.24	0.07	4.86	0.19	4.23	0.12	2.07	0.10	5.49	0.39	4.41	0.21	3.69	0.29	2.25	0.05	3.87	0.24
Right Bank	2.90	0.00	1.60	0.00	3.60	0.00	5.40	0.00	4.70	0.00	2.30	0.00	6.10	0.00	4.90	0.00	4.10	0.00	2.50	0.00	4.30	0.00
Feature Type <small>(riffle, run, or pool)</small>	Run		Run		Riffle		Run		Riffle		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 by 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.

MAXIMUM 0.62

MEDIAN 0.24

Surveyor's Signature:

Date: 8/28/2008

WBID # 3136

Site # 6

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: 08-29-08 9:30 a.m.	Location Description (e.g., road crossing): In farm field (private property)
Stream Name: Wolf Hole Lateral	
Current Weather Conditions: Clear, hot	Facility Name(s): Rolling Meadows MHP
Weather Conditions for Past 10 days: 3.37" @ Cape Girardeau	Permit Number(s): MO 0091936
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 290735	Northing (UTM Y): 4070231	Horizontal Accuracy: (EPE / FOM / PDOP) 80 ft. Meters
Site 11	Easting (UTM X): 290771	Northing (UTM Y): 4070102	Horizontal Accuracy: (EPE / FOM / PDOP) 118 ft. Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3136-6-A	Upstream looking down	3136-6-B	Downstream looking up		
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.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				

Site # 6

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.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input checked="" type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: crops nearby
Comments:				

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

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
<input type="checkbox"/> None of the above	Comments / Other:			

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

% Cobble	% Gravel	% Sand	% Silt	100% Mud/Clay	% Bedrock
----------	----------	--------	--------	---------------	-----------

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

Trees/shrubs and small plants overgrown in stream bed.
--

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other: DRY
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> 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.

Site # 6

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.)

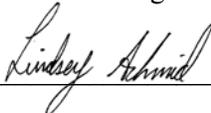
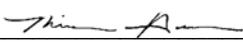
Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Moved segment upstream to an access point via a private farm. Original location inaccessible.

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

Printed Names of Personnel Collecting Data: Lindsey Schmid / Micah Hamer

Surveyor's Signature:   Date of Survey: 08-29-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: <u>Wolf Hole Lateral</u> Waterbody ID: <u>3136</u> Site #: <u>6</u> Estimated Channel Incision: <u>2</u> (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: <u>290735</u> UTM Y: <u>4070231</u> +/- <u>80 ft. (meters)</u> 11 UTM X: <u>290771</u> UTM Y: <u>4070102</u> +/- <u>118 ft. (meters)</u> Average Stream Width: <u>4</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Micah Hamer</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>8/29/2008</u> Time: <u>9:30 a.m.</u> Dissolved Oxygen: <u>N/A</u> (mg/L) Dissolved Oxygen: <u>N/A</u> (% sat) Specific Cond: <u>N/A</u> (µS/cm) Water Temperature: <u>N/A</u> (°C) *DRY CREEK
--	--

Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		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	
	1	0.53	0.00	0.39	0.00	0.46	0.00	0.42	0.00	0.52	0.00	0.25	0.00	0.26	0.00	0.31	0.00	0.17	0.00	0.16	0.00	0.23	0.00
	2	1.06	0.00	0.78	0.00	0.92	0.00	0.84	0.00	1.04	0.00	0.50	0.00	0.52	0.00	0.62	0.00	0.34	0.00	0.32	0.00	0.46	0.00
	3	1.59	0.00	1.17	0.00	1.38	0.00	1.26	0.00	1.56	0.00	0.75	0.00	0.78	0.00	0.93	0.00	0.51	0.00	0.48	0.00	0.69	0.00
	4	2.12	0.00	1.56	0.00	1.84	0.00	1.68	0.00	2.08	0.00	1.00	0.00	1.04	0.00	1.24	0.00	0.68	0.00	0.64	0.00	0.92	0.00
	5	2.65	0.00	1.95	0.00	2.30	0.00	2.10	0.00	2.60	0.00	1.25	0.00	1.30	0.00	1.55	0.00	0.85	0.00	0.80	0.00	1.15	0.00
	6	3.18	0.00	2.34	0.00	2.76	0.00	2.52	0.00	3.12	0.00	1.50	0.00	1.56	0.00	1.86	0.00	1.02	0.00	0.96	0.00	1.38	0.00
	7	3.71	0.00	2.73	0.00	3.22	0.00	2.94	0.00	3.64	0.00	1.75	0.00	1.82	0.00	2.17	0.00	1.19	0.00	1.12	0.00	1.61	0.00
	8	4.24	0.00	3.12	0.00	3.68	0.00	3.36	0.00	4.16	0.00	2.00	0.00	2.08	0.00	2.48	0.00	1.36	0.00	1.28	0.00	1.84	0.00
9	4.77	0.00	3.51	0.00	4.14	0.00	3.78	0.00	4.68	0.00	2.25	0.00	2.34	0.00	2.79	0.00	1.53	0.00	1.44	0.00	2.07	0.00	
Right Bank		5.30	0.00	3.90	0.00	4.60	0.00	4.20	0.00	5.20	0.00	2.50	0.00	2.60	0.00	3.10	0.00	1.70	0.00	1.60	0.00	2.30	0.00
Feature Type <small>(riffle, run, or pool)</small>		DRY		DRY		DRY		DRY		DRY		DRY		DRY		DRY		DRY		DRY		DRY	

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 by 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.

MAXIMUM 0.00
 MEDIAN 0.00

Surveyor's Signature:

Date: 8/29/2008

WBID: 3136-1B
Bridge
8/27/08 5:35pm



WBID: 3136-2A
ULD
8/27/08 6:40pm



WBID: 3136-1A
DLU
8/27/08 5:30pm



WBID: 3136-1C
ULD
8/27/08 6:00pm







