

Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 0654 North Blackbird Creek

Submitted by

Pickett Ray & Silver Inc.

to

Missouri Department of Natural Resources
Water Protection Program

Date received: October 31, 2007



Missouri Department of Natural Resources
 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): <i>N. Blackbird Creek</i>	
Missouri Water Body Identification (WBID) Number: <i>654</i>	
8-digit HUC: <i>10280201</i>	County: <i>Putnam</i>
Upstream Legal Description (from Table H): <i>Hwy 129</i>	
Downstream Legal Description (from Table H): <i>2,64N, 17W</i>	
Number of sites evaluated: <i>10</i>	
List all sites numbers, listed consequently upstream to downstream: <i>654-1; 654-2; 654-3; 654-4; 654-8; 654-9; 654-10</i> <i>654-5; 654-7; 654-6</i>	

Site Locations Map(s): Attach a map of the entire segment with assessment sites clearly labeled. Mark any other items that may be of interest.

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

Facility Name(s) and Permit Number(s): <i>PSF, Whitetail Finishing - MO 0117421</i>
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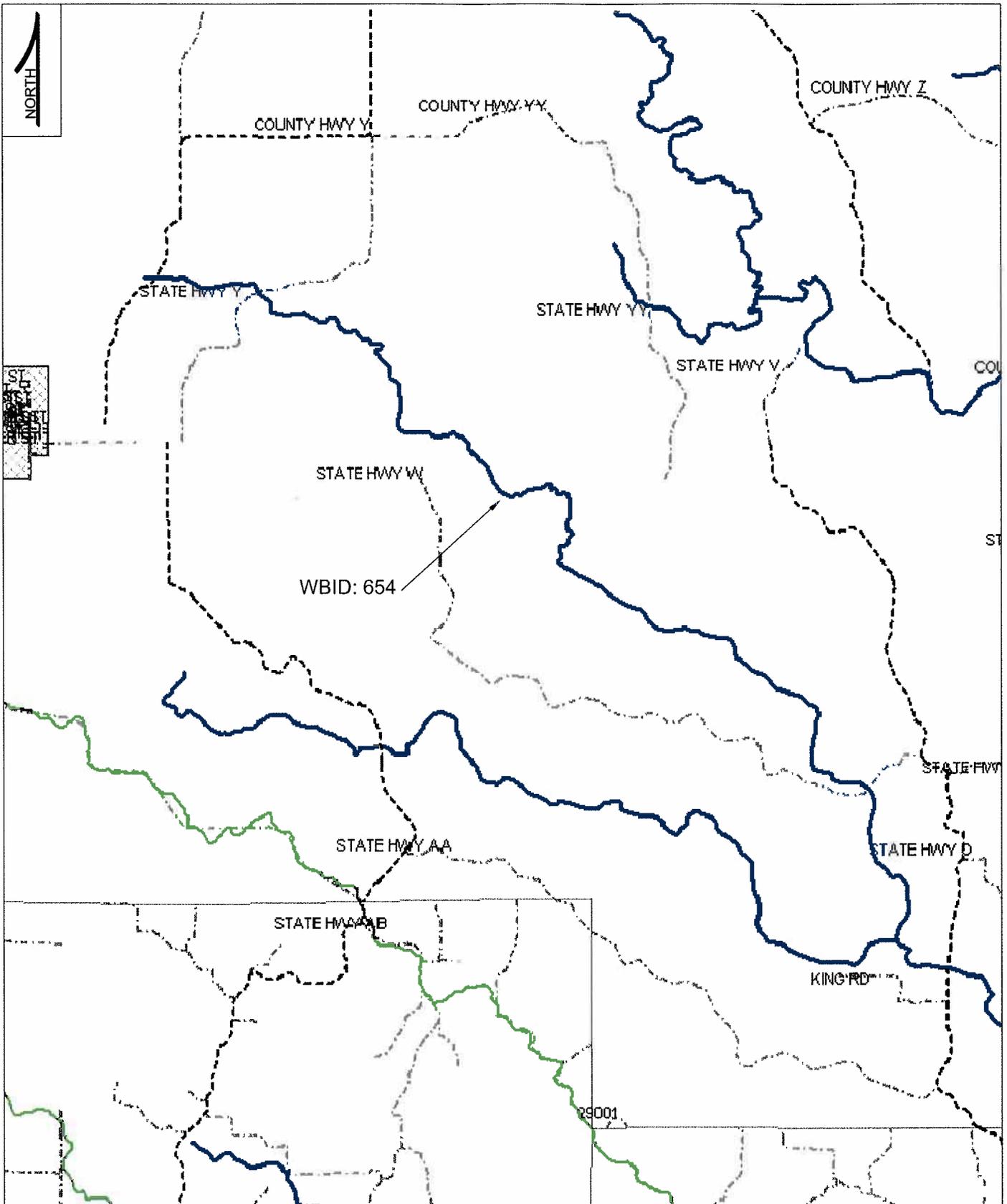
III. UAA Surveyor (please print legibly)

Name of Surveyor <i>Matt Coshy</i>	Telephone Number: <i>636 397-1211</i>
Organization/Employer: <i>PRS</i>	

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

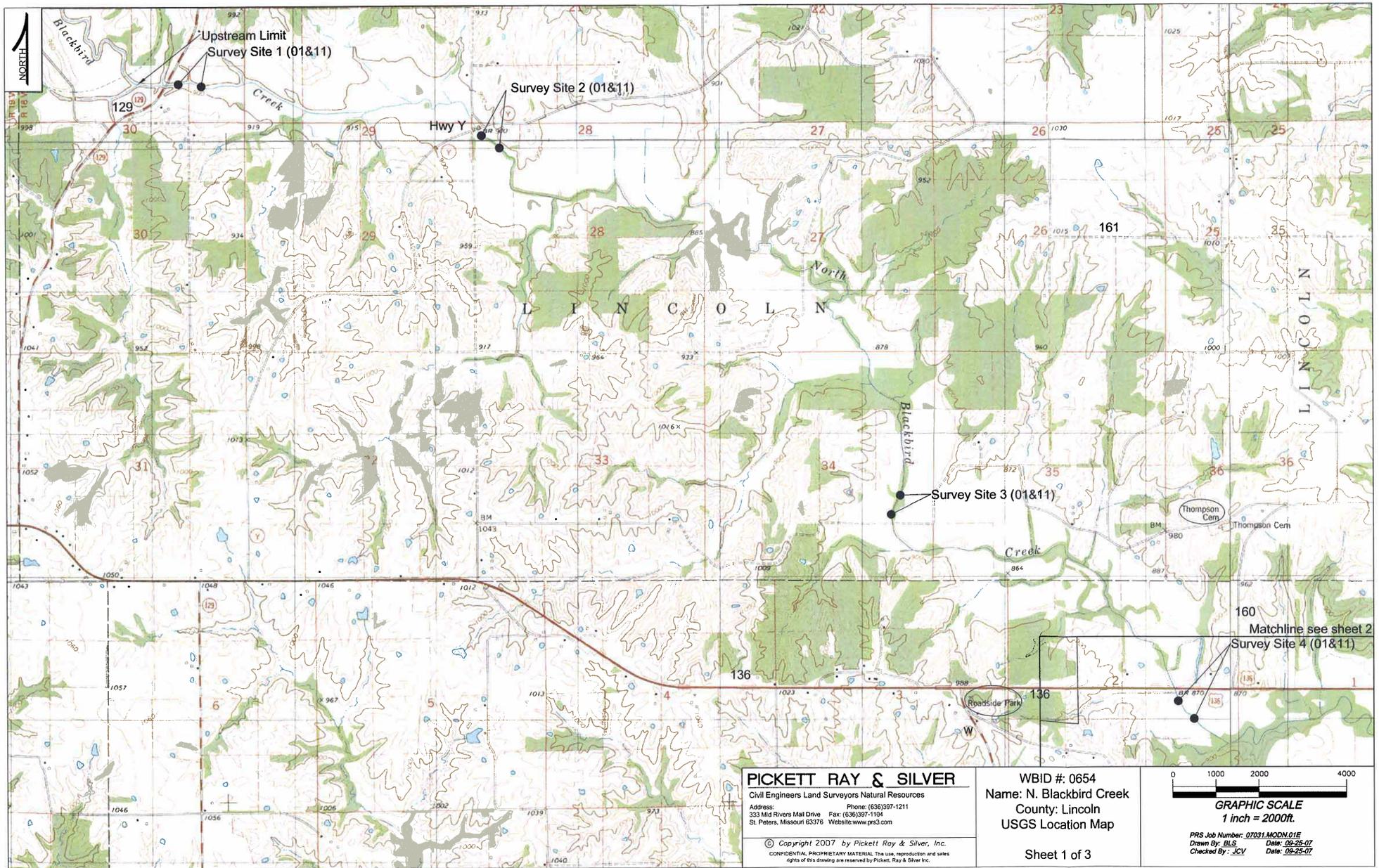
Signed: *[Signature]* Date: *9/11/07*

\\3serverpr\Projects\07031\dwg\07031_MODN_01E\0654 N Blackbird Creek.dwg, 10/29/2007 9:21:41 AM, 1:2000, MATT COSBY



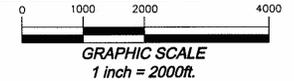
<p>PICKETT RAY & SILVER Civil Engineers Land Surveyors Natural Resources Address: 333 Mid Rivers Mall Drive St. Peters, Missouri 63376 Phone: (636)397-1211 Fax: (636)397-1104 Website: www.prs3.com</p>	<p>WBID #: 0654 Name: N Blackbird Creek County: Lincoln GIS Location Map</p>	<p><i>PRS Job Number: 07031.MODN.01E</i> <i>Drawn By: BLS Date: 10-11-07</i> <i>Checked By: JCV Date: 10-11-07</i></p>
<p>© Copyright 2007 by Pickett Ray & Silver, Inc. CONFIDENTIAL PROPRIETARY MATERIAL The use, reproduction and sales rights of this drawing are reserved by Pickett, Ray & Silver Inc.</p> <p style="text-align: center;">SHEET 1 OF 1</p>		

\\server\projects\07031\dwg\07031_MODN_01E\0654 N Blackbird Creek.dwg, 10/26/2007 2:04:29 PM, BLSTOESZ



PICKETT RAY & SILVER
 Civil Engineers Land Surveyors Natural Resources
 Address: 333 Mid Rivers Mall Drive St. Peters, Missouri 63376
 Phone: (636)397-1211 Fax: (636)397-1104
 Website: www.prs3.com

WBID #: 0654
 Name: N. Blackbird Creek
 County: Lincoln
 USGS Location Map



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PRS Job Number: 07031 MODN 01E
 Drawn By: BLS Date: 08-28-07
 Checked By: JCV Date: 09-25-07

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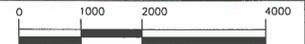
PICKETT RAY & SILVER

Civil Engineers Land Surveyors Natural Resources
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WBID #: 0654
Name: N. Blackbird Creek
County: Lincoln
USGS Location Map

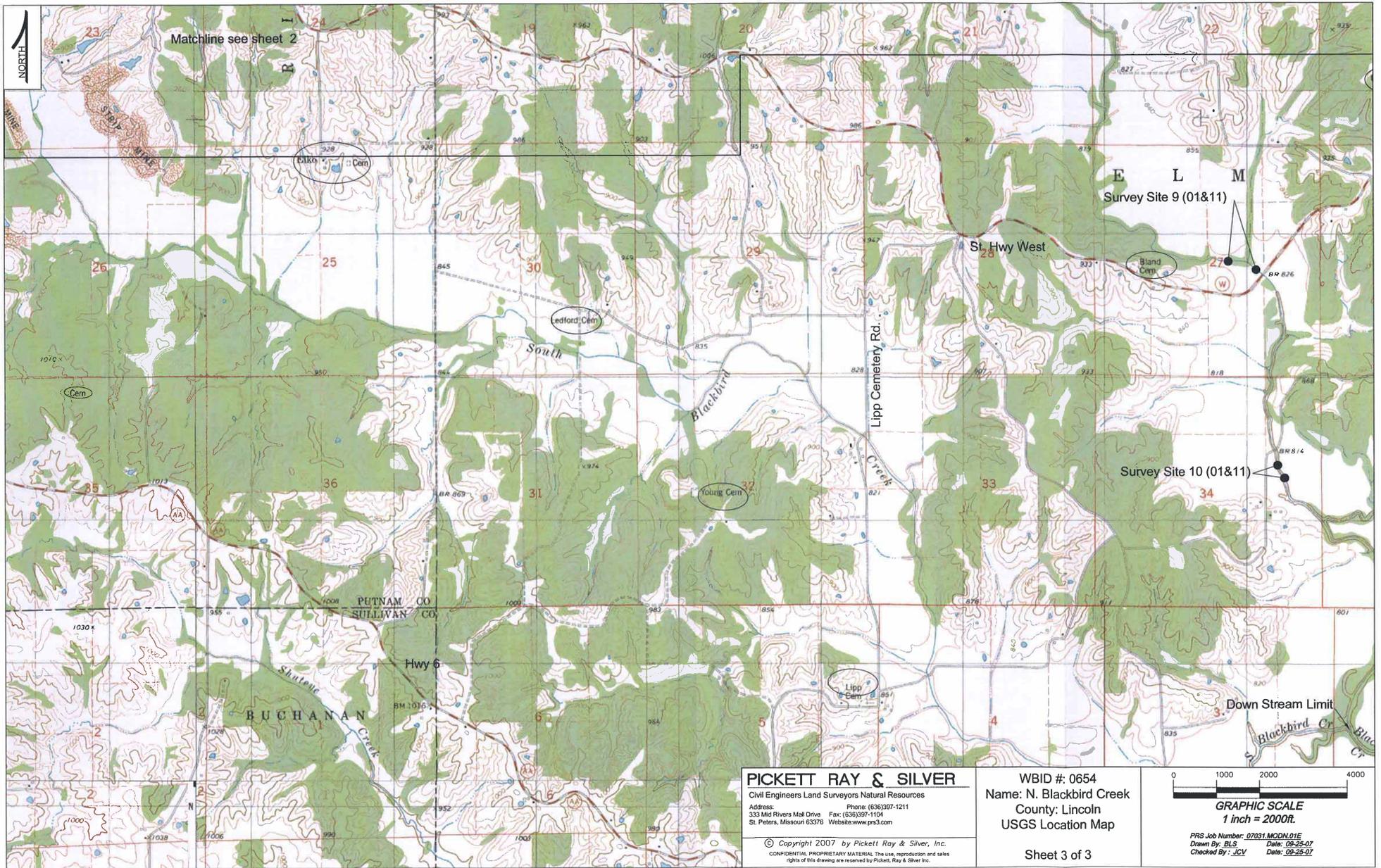
Sheet 2 of 3



GRAPHIC SCALE
1 inch = 2000ft.

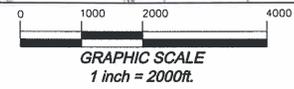
PRS Job Number: 07031.MODN.01E
Drawn By: BLS Date: 09-25-07
Checked By: JCV Date: 09-25-07

\\3server\prj\Projects\07031\dwg\07031_MODN_01E\0654 N Blackbird Creek.dwg, 10/26/2007 2:06:34 PM, BLSTOESZ



PICKETT RAY & SILVER
 Civil Engineers Land Surveyors Natural Resources
 Address: 333 Mid Rivers Mall Drive St. Peters, Missouri 63376
 Phone: (636)397-1211 Fax: (636)397-1104
 Website: www.prs3.com

WBID #: 0654
 Name: N. Blackbird Creek
 County: Lincoln
 USGS Location Map



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Sheet 3 of 3

PRS Job Number: 07031 MODN.01E
 Drawn By: BLS Date: 08-26-07
 Checked By: JCV Date: 08-26-07

WBID # 654

Site # 1



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization
 (must be completed for each site)

Date & Time: <u>9/11/07</u> <u>9:30 A</u>	Site Location Description (e.g., road crossing): <u>Downstream of road crossing @ 129</u>
Personnel (Data Collectors): <u>LS + MC</u>	Facility Name: <u>PSF Whitetail Finishing</u>
Current Weather Conditions: <u>Sunny, 50°F</u>	Permit Number: <u>MO 0117421</u>
Weather Conditions for Past 10 days: <u>1.08 in Rain</u>	
Drought Conditions?: 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): <u>503172m</u>	Northing (UTM Y): <u>4483649m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>0.2</u> Meters	
Site 11	Easting (UTM X): <u>503332m</u>	Northing (UTM Y): <u>4483643m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>1.4</u> Meters	

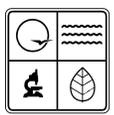
Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>See attached photos & descriptions</u>					
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 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 Data Sheet D- Recreational Use Interview when conducting interviews.)				

WBID # 654
 Site # 1



Missouri Field Data Sheets for Recreational Use Stream Surveys
 Department of Natural Resources
 Data Sheet B – Site Characterization (continued)

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 type="checkbox"/> Other:
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
Comments / Other:				

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

% Cobble	<u>10</u>	% Gravel	<u>30</u>	% Sand	<u>20</u>	% Silt	<u>40</u>	% Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

N/A

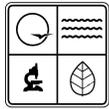
Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input checked="" type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Other: <u>low feces</u>
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input checked="" type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input 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 effect another use.

WBID # 654

Site # 1



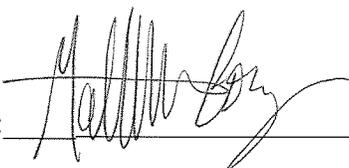
Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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.)

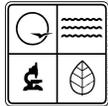
Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature:  Date of Survey: 7/11/07

Organization: PRS Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results



Waterbody ID: 654 Site #: 1

Missouri Department of Natural Resources

Estimated Channel Incision: 0.4 (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: 503172m UTM Y: 4483649m +/- 0.2 (meters)

11 UTM X: 503332m UTM Y: 4483643 +/- 1.4 (meters)

Average Stream Width: 5.2 (meters) Length of Survey Segment: 150 (meters)
(To determine Length of Reach) (20x average stream width)

Field Staff: LS + MC

Dissolved Oxygen	
Date: <u>9/11/07</u>	Time: <u>9:30</u>
Dissolved Oxygen: <u>7.27</u> (mg/L)	
Dissolved Oxygen: _____ (% sat)	
Specific Cond: _____ (µS/cm)	
Water Temperature: <u>15.4</u> (°C)	

Transect Cross-Section

		01		02		03		04		05		06		07		08		09		10		11	
Station		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		.52	.1	.51	.05	.55	.2	.49	.15	.80	.05	.66	.2	.56	.1	1.0	.16	.21	.05	.49	.11	.33	.09
2		1.0	.18	1.0	.1	1.1	.26	1.0	.25	1.6	.15	1.3	.26	1.1	.23	2.0	.0	.42	.05	1.0	.15	.66	.14
3		1.6	.17	1.5	.16	1.7	.3	1.5	.31	2.4	.16	2.0	.28	1.7	.35	3.0	.14	.84	.05	1.5	.06	1.0	.21
4		2.1	.24	2.0	.2	2.2	.32	2.0	.31	3.2	.25	2.6	.26	2.2	.35	4.0	.03	.84	.05	2.0	.06	1.3	.2
5		2.6	.33	2.5	.25	2.8	.25	2.5	.25	4.0	.29	3.3	.25	2.8	.24	5.0	.06	1.1	.11	2.5	.12	1.6	.2
6		3.1	.33	3.0	.4	3.3	.24	3.0	.22	4.8	.34	4.0	.26	3.4	.19	6.0	.07	1.3	.14	3.0	.15	2.0	.15
7		3.6	.37	3.5	.4	3.9	.2	3.5	.2	5.6	.33	4.6	.3	4.0	.19	7.0	.15	1.5	.13	3.5	.32	2.3	.13
8		4.2	.35	4.0	.45	4.4	.11	4.0	.1	6.4	.62	5.0	.31	4.5	.2	8.0	.19	1.7	.13	4.0	.3	2.6	.1
9		4.7	.22	4.5	.32	5.0	.1	4.5	.1	7.2	.5	5.3	.24	5.0	.15	9.0	.2	1.9	.1	4.5	.05	3.0	.06
Right Bank		5.2	0	5.1	0	5.5	0	4.9	0	8.0	0	6.6	0	5.6	0	10.4	0	2.1	0	4.9	0	3.3	0
Feature Type (riffle, run, or pool)		Run		Run		Run		Run		Run		Run		Run		Run		Riffle		Run		Run	

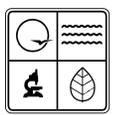
Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced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

Signed: MC

Date: 9/11/07

WBID # 65A

Site # 2



Missouri Field Data Sheets for Recreational Use Stream Surveys

Department of Natural Resources
Data Sheet B – Site Characterization
 (must be completed for each site)

Date & Time: <u>9/11/07 10:30</u>	Site Location Description (e.g., road crossing): <u>Downstream of Road crossing</u>
Personnel (Data Collectors): <u>LS+MC</u>	Facility Name: <u>PSF Whitetail Finishing</u>
Current Weather Conditions: <u>Sunny, 65°F</u>	Permit Number: <u>MO 0117421</u>
Weather Conditions for Past 10 days: <u>1.08in Rain</u>	
Drought Conditions?: 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): <u>505326m</u>	Northing (UTM Y): <u>4483287m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>0.1</u>	Meters
Site 11	Easting (UTM X): <u>505456m</u>	Northing (UTM Y): <u>4483204m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>4.4</u>	Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>See attached photos and descriptions</u>					
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

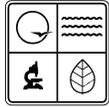
Uses Observed*: (Uses actually observed at time of survey.)

<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 Data Sheet D- Recreational Use Interview when conducting interviews.)

WBID # 654

Site # 2



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of
Natural Resources Data Sheet B – Site Characterization (continued)

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 checked="" type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
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
Comments / Other:				

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

% Cobble	<u>50</u>	% Gravel	<u>50</u>	% Sand	% Silt	% Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

<u>N/A</u>

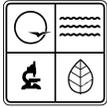
Water Characteristics*: (Mark all that apply.)

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 effect another use.

WBID # 654

Site # 2



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of
Natural Resources
Data Sheet B – Site Characterization (continued)

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.)

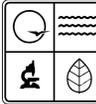
Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature:  Date of Survey: 9/11/07

Organization: PRS Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results



Waterbody ID: 654 Site #: 2

Missouri
Department of Natural Resources
 Department of Environmental Conservation

Elevation: 0.9 (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: 505326 m UTM Y: 4483287 m +/- 0.1 (meters)

11 UTM X: 505456 m UTM Y: 4483204 m +/- _____ (meters) *pdop 1.4*

Average Stream Width: 5 (meters) Length of Survey Segment: 150 (meters)
 (To determine Length of Reach) (20x average stream width)

Field Staff: LS + MC

Dissolved Oxygen	
Date: <u>9/11/07</u>	Time: <u>10:30a</u>
Dissolved Oxygen: <u>8.37</u> (mg/L)	
Dissolved Oxygen: _____ (% sat)	
Specific Cond: _____ (µS/cm)	
Water Temperature: <u>16.4</u> (°C)	

Transect Cross-Section

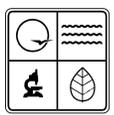
Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (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	.50	.13	.48	.10	.30	.10	.42	.04	.33	.16	.46	.23	.76	.01	.50	.01	.45	.08	.60	.10	.55	.04
2	1.0	.29	1.0	.17	.60	.13	.84	.05	.66	.13	1.0	.18	1.5	.03	1.0	.01	1.0	.10	1.2	.15	1.1	.02
3	1.5	.35	1.5	.15	.90	.12	1.3	.10	1.0	.11	1.4	.16	2.3	.02	1.5	.02	1.4	.10	1.8	.10	1.7	.09
4	2.0	.59	2.0	.23	1.2	.15	1.7	.13	1.3	.11	1.8	.15	3.0	.04	2.0	.06	1.8	.09	2.4	.10	2.2	.09
5	2.5	.65	2.5	.2	1.5	.15	2.1	.14	1.6	.10	2.3	.13	3.8	.06	2.5	.05	2.3	.10	3.0	.14	2.8	.13
6	3.0	.42	3.0	.25	1.8	.10	2.5	.13	2.0	.10	2.8	.09	4.6	.09	3.0	.08	2.7	.10	3.6	.10	3.3	.14
7	3.5	.31	3.5	.25	2.1	.10	3.0	.11	2.3	.19	3.2	.05	5.3	.10	3.5	.10	3.2	.10	4.2	.13	4.0	.05
8	4.0	.30	4.0	.23	2.4	.06	3.4	.12	2.6	.25	3.4	.01	6.1	.10	4.0	.14	3.6	.11	4.8	.05	4.5	.10
9	4.5	.20	4.5	.19	2.7	.04	3.8	.11	3.0	.20	4.1	.01	6.8	.08	4.5	.1	4.0	.10	5.4	.09	5.0	.05
Right Bank	5.0	0	4.8	0	3.0	0	4.2	0	3.3	0	4.6	0	7.6	0	5.0	0	4.5	0	6.0	0	5.5	0
Feature Type	Pool		Run		Riffle		Riffle		Riffle		Run		Run		Run		Run		Riffle		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 by dividing wetted width by ten)
 Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
 All measurements to be taken to the nearest 0.01 meter.

Signed: MC Date: 9/11/07

WBID # 654

Site # 3



Missouri Field Data Sheets for Recreational Use Stream Surveys

Department of

Natural Resources

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: <u>9/11/07 1:00 pm</u>	Site Location Description (e.g., road crossing): <u>Upstream of Road Crossing</u>
Personnel (Data Collectors): <u>LS + MC</u>	Facility Name: <u>PSF Whitetail Finishing</u>
Current Weather Conditions: <u>SUNNY, 70°F</u>	Permit Number: <u>MO 0117421</u>
Weather Conditions for Past 10 days: <u>1.68 in Rain</u>	
Drought Conditions?: 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): <u>508254m</u>	Northing (UTM Y): <u>4480802m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>0.6</u> Meters
Site 11	Easting (UTM X): <u>508206m</u>	Northing (UTM Y): <u>4480638m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>0.6</u> Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>See attached photos & descriptions</u>					
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 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 Data Sheet D- Recreational Use Interview when conducting interviews.)				

WBID # 654

Site # 3



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
 Data Sheet B – Site Characterization (continued)

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 checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
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
Comments / Other: <div style="text-align: center;">v/a</div>				

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

% Cobble	<u>50</u> % Gravel	<u>50</u> % Sand	% Silt	% Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

v/a

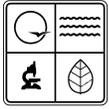
Water Characteristics*: (Mark all that apply.)

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 effect another use.

WBID # 654

Site # 3



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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.)

p/nc

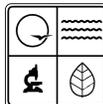
Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: *[Handwritten Signature]* Date of Survey: 9/11/07

Organization: DRS Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results



Waterbody ID: 654 Site #: 3

Missouri
Department of Natural Resources

Establishment/Institution: 0.4 (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: 508254m UTM Y: 4486802m +/- 0.6 (meters)

11 UTM X: 508206m UTM Y: 4480638m +/- 0.6 (meters)

Average Stream Width: 7 (meters) Length of Survey Segment: 150 (meters)
(To determine Length of Reach) (20x average stream width)

Field Staff: LS + MC

Dissolved Oxygen	
Date: <u>9/11/07</u>	Time: <u>1:00p</u>
Dissolved Oxygen: <u>8.29</u> (mg/L)	
Dissolved Oxygen: _____ (% sat)	
Specific Cond: _____ (µS/cm)	
Water Temperature: <u>18.0</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	.79	.10	.65	.02	.59	.03	.48	.15	.46	.13	.62	.02	.43	.01	.75	.05	.42	.09	.73	.05	.81	.02
2	1.6	0	1.3	.02	1.2	.03	1.0	.13	1.0	.11	1.2	.05	.86	.02	1.5	.05	.84	.06	1.5	.07	1.6	.04
3	2.4	0	2.0	.04	1.8	.05	1.4	.10	1.4	.11	1.8	.12	1.3	.03	2.3	.12	1.3	.11	2.2	.05	2.4	0
4	3.2	.02	2.6	.10	2.4	.10	2.0	.09	1.8	.10	2.4	.15	1.7	.05	3	.06	1.7	.14	3.0	.01	3.2	.11
5	4.0	.10	3.3	.15	3.0	.09	2.4	.06	2.3	.10	3.0	.13	2.2	.09	3.8	.03	2.1	.10	3.7	.02	4.0	.09
6	4.8	.10	4.0	.10	3.6	.06	3.0	.05	2.8	.08	3.6	.10	2.6	.10	4.5	.02	2.5	.09	4.4	.06	4.8	0
7	5.6	.08	4.5	.05	4.2	.05	3.4	.03	3.2	.03	4.2	0	3.0	.10	5.3	.09	3.0	.06	5.1	.04	5.6	.10
8	6.4	.05	5.2	.05	4.8	.11	4.0	.02	3.7	.02	4.8	0	3.4	.15	6	.05	3.4	.05	5.8	.03	6.4	.08
9	7.2	.02	6.0	.10	4.2	.10	4.4	.01	4.1	.01	5.4	.10	3.9	.20	6.8	.05	3.8	.03	6.6	.04	7.2	.03
Right Bank	7.9	0	6.5	0	5.9	0	4.8	0	4.6	0	6.2	0	4.3	0	7.5	0	4.2	0	7.3	0	8.1	0
Feature Type (riffle, run, or pool)	RUA		Riffle		RUA		RUA		RUA		RUA		RUA									

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 0.01 meter unless depth is too deep to measure (then record as > 1) All measurements to be taken to the nearest 0.01 meter.

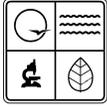
Signed: MC

Date: 9/11/07

riffle

WBID # 654

Site # 4



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization
 (must be completed for each site)

Date & Time: <u>9/11/07 2:00 pm</u>	Site Location Description (e.g., road crossing): <u>Downstream of road crossing at Hwy 136</u>
Personnel (Data Collectors): <u>LS + MC</u>	Facility Name: <u>A PSF Whitetail Finishing</u>
Current Weather Conditions: <u>Sunny, 70°F</u>	Permit Number: <u>MO 0117421</u>
Weather Conditions for Past 10 days: <u>1.08 in Rain</u>	
Drought Conditions?: 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): <u>510219 m</u>	Northing (UTM Y): <u>4479335 m</u>	Horizontal Accuracy: <u>2</u> Meters (EPE / FOM / PDOP)		
Site 11	Easting (UTM X): <u>510321 m</u>	Northing (UTM Y): <u>4479220 m</u>	Horizontal Accuracy: <u>0.6</u> Meters (EPE / FOM / PDOP)		

Photos: See attached photos and descriptions

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
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 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 Data Sheet D- Recreational Use Interview when conducting interviews.)				

WBID # 654
 Site # 4



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
 Data Sheet B – Site Characterization (continued)

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 checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
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
Comments / Other:				

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

% Cobble	<u>50</u>	% Gravel	<u>50</u>	% Sand	% Silt	% Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

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 effect another use.

WBID # 654

Site # 4



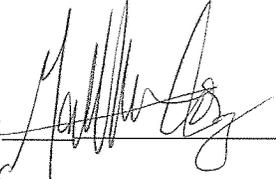
Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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.

Surveyor's Signature:  Date of Survey: 9/11/07
Organization: PRS Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results



Waterbody ID: 654 Site #: 4
 Missouri Department of Natural Resources
 Estimated Channel Incision: 1 (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: 510219 m UTM Y: 44 79335 m +/- 2 (meters)
 11 UTM X: 510321 m UTM Y: 44 79220 m +/- 0.6 (meters)
 Average Stream Width: 6 (meters) Length of Survey Segment: 150 (meters)
 (To determine Length of Reach) (20x average stream width)
 Field Staff: LS + MC

Dissolved Oxygen
 Date: 9/4/07 Time: 2 PM
 Dissolved Oxygen: 10.04 (mg/L)
 Dissolved Oxygen: _____ (% sat)
 Specific Cond: _____ (µS/cm)
 Water Temperature: 20.8 (°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	.60	.20	.70	.06	.66	.18	.58	.18	.82	.16	.99	.10	.90	.03	.55	.05	.56	.02	.70	.05	.61	.4
2	1.2	.22	1.4	.08	1.3	.22	1.2	.18	1.6	.17	2.0	.05	2.0	0	1.1	.05	1.1	.02	1.4	.05	1.2	.5
3	1.8	.26	2.1	.08	2.0	.16	1.8	.17	2.4	.13	3.0	.05	3.0	.05	1.7	.05	1.7	.03	2.1	.05	1.8	.35
4	2.4	.25	2.8	.10	2.6	.18	2.4	.20	3.2	.13	4.0	0	4.0	.03	2.2	.10	2.2	.09	2.8	.05	2.4	.35
5	3.0	.2	3.5	.11	3.3	.17	3.0	.28	4.0	.02	5.0	0	5.0	0	2.8	.10	2.8	.10	3.5	.05	3.0	.22
6	3.6	.21	4.2	.13	4.0	.13	3.6	.25	4.8	.05	6.0	0	6.0	0	3.3	.10	3.3	.12	4.2	.10	3.6	.20
7	4.2	.18	4.9	.15	4.6	.10	4.2	.25	5.4	.03	7.0	.02	7.5	.05	4.0	.08	4.0	.11	4.9	.20	4.2	.15
8	4.8	.10	5.6	.2	5.3	.01	4.8	.20	6.4	.00	8.0	.11	8.0	.11	4.5	.06	4.5	.11	5.6	.32	4.8	.10
9	5.4	.10	6.3	.2	6.0	.05	5.4	.10	7.2	.05	9.0	.10	8.5	.10	5.0	.05	5.0	.15	6.3	.21	5.4	.05
Right Bank	6.0	0	7.0	0	6.6	0	5.8	0	8.2	0	9.9	0	9.0	0	5.5	0	5.6	0	7.0	0	6.1	0
Feature Type (riffle, run, or pool)	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 0.01 meter unless depth is too deep to measure (then record as > 1)
 All measurements to be taken to the nearest 0.01 meter.

Signed: MC

Date: 9/4/07

WBID # 654

Site # 5



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources

Sheet B – Site Characterization

(must be completed for each site)

Date & Time: <u>9/11/07 3:30 PM</u>	Site Location Description (e.g., road crossing): <u>Downstream of road crossing evergreen trail</u>
Personnel (Data Collectors): <u>LS + MC</u>	Facility Name: <u>PSP Whitetail Finishing</u>
Current Weather Conditions: <u>Sunny, 70°F</u>	Permit Number: <u>MO 0117421</u>
Weather Conditions for Past 10 days: <u>1.08m Rain</u>	
Drought Conditions?: 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): <u>511779 m</u>	Northing (UTM Y): <u>4478548 m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>2.3</u> Meters
Site 11	Easting (UTM X): <u>511756 m</u>	Northing (UTM Y): <u>4478411 m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>0.6</u> Meters

Photos: See attached photos & descriptions

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
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 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 *Data Sheet D- Recreational Use Interview* when conducting interviews.)

WBID # 654

Site # 5



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Resources B – Site Characterization (continued)

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 type="checkbox"/> Other:
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
Comments / Other:				

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

% Cobble	<u>50</u> % Gravel	<u>50</u> % Sand	% Silt	% Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

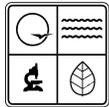
Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input checked="" type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input checked="" 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 effect another use.

WBID # 654

Site # 5



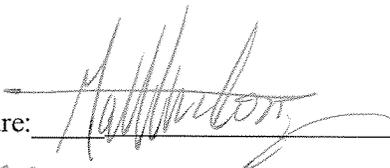
Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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)

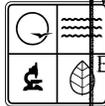
Comments: (Please record any additional comments here.)

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

Surveyor's Signature:  Date of Survey: 9/11/07
Organization: PRS Position: field team leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results



Waterbody ID: 654 Site #: 5

Missouri
Department of
Natural Resources

Estimated channel incision: 0.4 (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: 511779m UTM Y: 4478548m +/- 2.3 (meters)

11 UTM X: 511756m UTM Y: 4478411m +/- 0.6 (meters)

Average Stream Width: 6 (meters) Length of Survey Segment: 150 (meters)
(To determine Length of Reach) (20x average stream width)

Field Staff: LS + MC

Dissolved Oxygen

Date: 9/11/07 Time: 3:00

Dissolved Oxygen: 10.08 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 20.2 (°C)

Transect Cross-Section

		01		02		03		04		05		06		07		08		09		10		11	
Station		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		.78	.09	.65	.2	.43	.05	.56	.14	.39	.15	.82	.1	.59	.05	.31	.11	.30	.13	.33	.16	.74	.23
2		1.6	.1	1.3	.15	.86	.05	1.1	.35	.80	.11	1.6	.08	1.2	.13	.60	.01	.60	.25	.66	.21	1.5	.2
3		2.3	0	2.0	0	1.3	.1	1.7	.30	1.2	.05	2.4	0	1.8	.15	1.0	.08	.90	.26	1.0	.26	2.2	.14
4		3.1	0	2.6	0	1.7	.23	2.2	.38	1.6	.1	3.2	.01	2.4	.2	1.2	.16	1.2	.25	1.3	.20	3.0	.21
5		4.0	.0	3.3	0	2.2	.35	2.8	.35	2.0	.15	4.0	.03	3.0	.16	1.5	.1	1.5	.25	1.7	.15	3.7	.23
6		4.7	.19	4.0	0	2.6	.4	3.4	.15	2.4	.2	4.8	.12	3.6	.16	1.8	.05	1.8	.25	2.0	.13	4.4	.26
7		5.5	.4	4.6	.25	3.0	.25	4.0	.2	2.8	.3	5.6	.13	4.2	.29	2.1	.03	2.1	.23	2.3	.13	5.2	.3
8		6.2	.71	5.2	.18	3.4	.3	4.5	.26	3.2	.41	6.4	.19	4.8	.3	2.4	.01	2.4	.19	2.6	.11	6.0	.2
9		7.0	.5	6.0	.1	3.8	.23	5.0	.2	3.6	.55	7.2	.1	5.4	.1	2.7	.01	2.7	.1	3.0	.08	6.6	.07
Right Bank		7.8	0	6.5	0	4.3	0	5.6	0	3.9	0	8.2	0	5.9	0	3.1	0	3.0	0	3.3	0	7.4	0
Feature Type (riffle, run, or pool)		Riffle		Riffle		Riffle		Run		Run		Riffle											

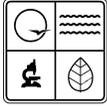
Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced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

Signed: MC

Date: 9/11/07

WBID # 654

Site # 6



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Sheet B – Site Characterization
 (must be completed for each site)

Date & Time: <u>9/11/07 4PM</u>	Site Location Description (e.g., road crossing): <u>Upstream of Road Crossing @ Orange Trail</u>
Personnel (Data Collectors): <u>MC + LS</u>	Facility Name: <u>PSF Whitetail Finishing</u>
Current Weather Conditions: <u>SUNNY 76° F</u>	Permit Number: <u>MO 017421</u>
Weather Conditions for Past 10 days: <u>1.08 in Rain</u>	
Drought Conditions?: 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): <u>513823 m</u>	Northing (UTM Y): <u>4476240</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>0.00</u> ^{1.1} Meters
Site 11	Easting (UTM X): <u>513982 m</u>	Northing (UTM Y): <u>4476241</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>0.00</u> ^{1.2} Meters

Photos:

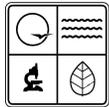
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>See attached photos & descriptions</u>					
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at 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 Data Sheet D- Recreational Use Interview when conducting interviews.)				

WBID # 654

Site # 6



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
 Data Sheet B – Site Characterization (continued)

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 type="checkbox"/> Other:
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
Comments / Other:				

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

% Cobble	<u>30</u> % Gravel	% Sand	<u>40</u> % Silt	% Mud/Clay	<u>10</u> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

very minimal amount of duckweed

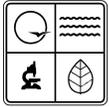
Water Characteristics*: (Mark all that apply.)

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 checked="" 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 effect another use.

WBID # 654

Site # 6



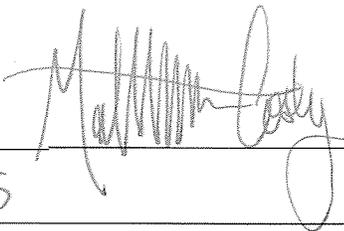
Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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)

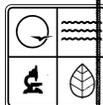
Comments: (Please record any additional comments here.)

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

Surveyor's Signature:  Date of Survey: 9/11/07
Organization: PRS Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results



Waterbody ID: 654 Site #: 6

Missouri Department of Natural Resources

Estimated Channel Incision: .3 (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: 513823m UTM Y: 4476240m +/- 0.1 (meters)

11 UTM X: 513982m UTM Y: 4476241m +/- 1.8 (meters)

Average Stream Width: 7 (meters) Length of Survey Segment: 150 (meters)
(To determine Length of Reach) (20x average stream width)

Field Staff: MC & CS

Dissolved Oxygen	
Date: <u>9/11/07</u>	Time: <u>4 PM</u>
Dissolved Oxygen: <u>8.68</u> (mg/L)	
Dissolved Oxygen: _____ (% sat)	
Specific Cond: _____ (µS/cm)	
Water Temperature: <u>20.1</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	.61	.20	.43	.40	.71	.15	.62	.03	>1m	.79	.04	.90	.24	.82	.39	.88	.10	.71	.68	.73	.15	
2	1.2	.40	.86	.40	1.4	.05	1.2	.22		1.6	.04	1.8	.20	1.6	.25	1.8	.18	1.4	.05	1.5	.32	
3	1.8	.52	1.3	.40	2.1	.04	1.8	.3		2.4	.09	2.7	.10	2.4	.13	2.7	.25	2.1	.04	2.2	.36	
4	2.4	.65	1.7	.30	2.8	.06	2.4	.44		3.2	.10	3.6	0	3.2	.20	3.6	.29	2.8	.05	3.0	.41	
5	3.0	.62	2.1	.20	3.5	.07	3.0	.45		4.0	.15	4.5	.13	4.0	.25	4.5	.22	3.5	.08	3.7	.29	
6	3.6	.54	2.6	.21	4.2	.10	3.6	.35		4.8	.15	5.4	.40	4.8	.23	5.4	.14	4.2	.10	4.4	.2	
7	4.2	.44	3.0	.16	4.9	.10	4.2	.22		5.6	.25	6.3	.42	5.6	.20	6.3	.13	4.9	.10	5.1	.15	
8	4.8	.33	3.4	.11	5.6	.10	4.8	.10		6.4	.30	7.2	.50	6.4	.14	7.2	.09	5.6	.13	5.8	.14	
9	5.4	.20	3.8	.05	6.3	.10	5.4	.10		7.2	.56	8.1	.54	7.2	.09	8.1	.04	6.3	.15	6.6	.10	
Right Bank	6.1	0	4.3	0	7.1	0	6.2	0	~9.0	7.9	0	9.0	0	8.2	0	8.8	0	7.1	0	7.3	0	
Feature Type (riffle, run, or pool)	Run		Run		Riffle		Run		Pool		Run		Pool		Run		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 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

Signed: MC

Date: 9/11/07

WBID # 654
 Site # 7



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Sheet B – Site Characterization
 (must be completed for each site)

Date & Time: <u>9/11/07 5:00 pm</u>	Site Location Description (e.g., road crossing): <u>Upstream of Road Crossing @ Nettie Tail</u>
Personnel (Data Collectors): <u>LS + MC</u>	
Current Weather Conditions: <u>Sunny, 70</u>	Facility Name: <u>PSF Whitetail Finishing</u>
Weather Conditions for Past 10 days: <u>1.08 in Rain</u>	Permit Number: <u>MO 0117421</u>
Drought Conditions?: 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): <u>51 3028 m</u>	Northing (UTM Y): <u>4476793 m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>0.6</u> Meters
Site 11	Easting (UTM X): <u>513176m</u>	Northing (UTM Y): <u>4476714m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>0.6</u> Meters

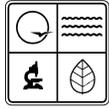
Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>See attached photos and Descriptions.</u>					
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 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 Data Sheet D- Recreational Use Interview when conducting interviews.)				

WBID # 654
 Site # 7



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Form Sheet B – Site Characterization (continued)

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 type="checkbox"/> Other:
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
Comments / Other:				

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

% Cobble	<u>50</u> % Gravel	<u>50</u> % Sand	% Silt	% Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

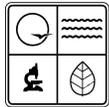
Water Characteristics*: (Mark all that apply.)

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 checked="" 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 effect another use.

WBID # 654

Site # 7



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of
Natural Resources

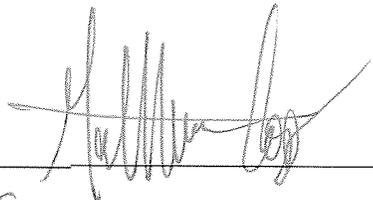
Form B - Site Characterization (continued)

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.)

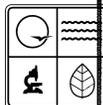
Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature:  Date of Survey: 9/11/07

Organization: PRS Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results



Waterbody ID: 654

Site #: 7

Missouri

Department of

Natural Resources

Estimated channel incision: 0.2 (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: 513028 m UTM Y: 4476793 m +/- 0.4 (meters)

11 UTM X: 513176 m UTM Y: 4476714 m +/- 0.6 (meters)

Average Stream Width: 7 (meters) Length of Survey Segment: 150 (meters)
(To determine Length of Reach) (20x average stream width)

Field Staff: LS + MC

Dissolved Oxygen

Date: 9/11/07 Time: 5:00 pm

Dissolved Oxygen: 9.13 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 21.2 (°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		.58	.13	.62	.59	1.0	.45	1.0	.45	.68	.04	.51	.05	.62	.10	.85	.31	.90	.10	.59	.10	.22	.10
2		1.2	.14	1.2	.63	2.0	.23	2.0	.36	1.4	.10	1.0	.15	1.2	.20	1.7	.50	2.0	.10	1.2	.11	.44	.11
3		1.7	.19	1.8	.55	3.0	.10	3.0	.35	2.0	.15	1.5	.23	1.8	.34	2.5	.39	.27	.19	1.8	.15	.66	.20
4		2.3	.20	2.4	.45	4.0	.09	4.0	.31	2.7	.23	2.0	.39	2.4	.36	3.4	.31	3.6	.22	2.4	.18	.88	.19
5		3.0	.22	3.0	.40	5.0	.05	5.0	.26	3.4	.31	2.5	.50	3.0	.32	4.3	.20	4.5	.21	3.0	.2	1.1	.14
6		3.5	.23	3.6	.29	6.0	.0	6.0	.32	4.1	.40	3.0	.51	3.6	.35	5.1	.18	5.4	.25	3.6	.2	1.3	.07
7		4.1	.23	4.2	.19	7.0	.12	7.0	.25	4.8	.48	3.5	.40	4.2	.25	6.0	.0	6.3	.21	4.2	.22	1.5	.05
8		4.6	.40	4.8	.10	8.0	.41	8.0	.21	5.4	.49	4.0	.35	4.8	.24	6.8	.04	7.2	.23	4.8	.23	1.8	.02
9		5.2	.45	5.4	.10	9.0	.34	9.0	.22	6.1	.26	4.5	.30	5.4	.13	7.6	.08	8.1	.3	5.4	.13	2.0	.03
Right Bank		5.8	0	6.2	0	10.0	0	10.0	0	6.8	0	5.1	0	6.2	0	8.5	0	9.0	0	5.9	0	2.2	0
Feature Type (riffle, run, or pool)		Run		Run		Run		Run		Run		Run		Run		Run		Run		Riffle		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 by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

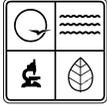
Signed:

MC

Date:

9/11/07

WBID # 654
 Site # 8



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Sheet B – Site Characterization
 (must be completed for each site)

Date & Time: <u>9/11/07 6pm</u>	Site Location Description (e.g., road crossing): <u>Downstream of Rd crossing (Okra Trl)</u>
Personnel (Data Collectors): <u>LS + MC</u>	Facility Name: <u>PSF Whitetail Finishing</u>
Current Weather Conditions: <u>Sunny, 65</u>	Permit Number: <u>MO 0117421</u>
Weather Conditions for Past 10 days: <u>1.08" Rain</u>	
Drought Conditions?: 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): <u>516334m</u>	Northing (UTM Y): <u>4475003m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>1</u> Meters
Site 11	Easting (UTM X): <u>516452m</u>	Northing (UTM Y): <u>4474933m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>0.9</u> Meters

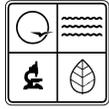
Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>See attached photos and descriptions</u>					
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 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 Data Sheet D- Recreational Use Interview when conducting interviews.)				

WBID # 654
 Site # 8



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
 Data Sheet B – Site Characterization (continued)

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 type="checkbox"/> Other:
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
Comments / Other:				

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

% Cobble	<u>50</u>	% Gravel	<u>50</u>	% Sand	% Silt	% Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

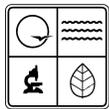
Water Characteristics*: (Mark all that apply.)

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 effect another use.

WBID # 654

Site # 8



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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)

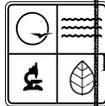
Comments: (Please record any additional comments here.)

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

Surveyor's Signature: *Malcolm King* Date of Survey: 9/11/07
Organization: PRS Position: Field Team leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results



Waterbody ID: 654

Site #: 8

Estimated Channel Incision: .5 (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: 516334m UTM Y: 4475003m +/- 1 (meters)

11 UTM X: 516452m UTM Y: 4474933m +/- 0.9 (meters)

Average Stream Width: 5 (meters) Length of Survey Segment: 150 (meters)
(To determine Length of Reach) (20x average stream width)

Field Staff: LS + MC

Dissolved Oxygen

Date: 9/11/07 Time: 6:00pm

Dissolved Oxygen: 8.28 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 19.9 (°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)										
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	.50	.13	.47	.10	.48	.15	.59	.08	.31	.18	.45	.05	.43	.02	.56	.05	.50	.05	.45	.10	.53	.10
2	1.0	.10	1.0	.10	1.0	.14	1.2	0	.60	.22	1.0	.10	.86	.10	1.1	.05	1.0	0	.90	.10	1.1	.09
3	1.5	.10	1.4	.10	1.4	.14	1.8	.02	.90	.15	1.4	.10	1.3	.09	1.7	.05	1.5	0	1.4	.12	1.6	.09
4	2.0	.19	1.9	.10	2.0	.10	2.4	.03	1.2	.11	1.8	.11	1.7	.09	2.2	.05	2.0	0	1.8	.10	2.1	.04
5	2.5	.13	2.4	.09	2.4	.10	3.0	.09	1.5	.10	2.3	.12	2.2	.06	2.8	.06	2.5	0	2.3	.06	2.7	.10
6	3.0	.10	2.8	.09	2.8	.11	3.6	.10	1.8	.13	2.7	.10	2.6	.10	3.4	.05	3.0	.10	2.7	.05	3.2	.10
7	3.5	.05	3.3	.10	3.4	.09	4.2	.09	2.1	.10	3.2	.02	3.0	.05	4.0	.13	3.5	.10	3.2	.05	3.7	.08
8	4.0	.10	3.8	.05	3.8	.05	4.8	.05	2.4	.08	3.6	.02	3.4	.05	4.5	.13	4.0	.09	3.6	.01	4.2	.02
9	4.5	.05	4.2	.02	4.3	.03	5.4	.01	2.7	.02	4.1	.04	3.9	.02	5.0	.12	4.5	.05	4.1	.05	4.8	.05
Right Bank	5.0	0	4.7	0	4.8	0	5.9	0	3.1	0	4.5	0	4.3	0	5.6	0	5.0	0	4.5	0	5.3	0
Feature Type (riffle, run, or pool)	Run		Run		Run		Run		Riffle		Run		Run Riffle									

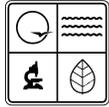
Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced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

← Run

Signed: MC

Date: 9/11/07

WBID # 654
 Site # 409



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources

Data Sheet B – Site Characterization
 (must be completed for each site)

Date & Time: <u>9/12/07 9:00 A</u>	Site Location Description (e.g., road crossing): <u>Upstream of Hwy W</u>
Personnel (Data Collectors): <u>LSTMC</u>	
Current Weather Conditions: <u>Sunny, 51°F</u>	Facility Name: <u>PSF Whitetail Fishing</u>
Weather Conditions for Past 10 days: <u>1.08 in Rain</u>	Permit Number: <u>MO 0117421</u>
Drought Conditions?: 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): <u>517906m</u>	Northing (UTM Y): <u>4473030m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>0.4</u> Meters
Site 11	Easting (UTM X): <u>518048m</u>	Northing (UTM Y): <u>4472969m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>0.1</u> Meters

Photos:

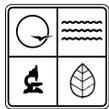
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>See attached photos & descriptions</u>					
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at 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 Data Sheet D- Recreational Use Interview when conducting interviews.)

WBID # 654
 Site # 9



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Resources B – Site Characterization (continued)

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:
Comments: <u>Coenfields / Livestock</u>				

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
Comments / Other:				

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

% Cobble	<u>10</u> % Gravel	<u>20</u> % Sand	<u>30</u> % Silt	<u>40</u> % Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

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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 checked="" type="checkbox"/> Other: <u>Cow feces</u>
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input checked="" type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input checked="" type="checkbox"/> Sludge	<input checked="" 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 effect another use.

WBID # 654

Site # 9



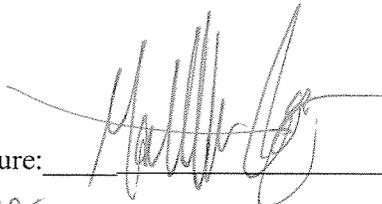
Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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.)

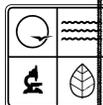
Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature:  Date of Survey: 9/12/07

Organization: PRS Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results



Waterbody ID: 654 Site #: 9

Missouri Department of Natural Resources

Estimated Channel Incision: 0.4 (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: 517906m UTM Y: 4473030m +/- 0.4 (meters)

11 UTM X: 518048m UTM Y: 4472969m +/- 0.1 (meters)

Average Stream Width: 7 (meters) Length of Survey Segment: 150 (meters)
(To determine Length of Reach) (20x average stream width)

Field Staff: LS + MC

Dissolved Oxygen	
Date: <u>9/12/07</u>	Time: <u>9:00A</u>
Dissolved Oxygen: <u>8.79</u> (mg/L)	
Dissolved Oxygen: _____ (% sat)	
Specific Cond: _____ (µS/ cm)	
Water Temperature: <u>14.1</u> (°C)	

Transect Cross-Section

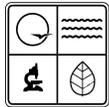
Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)																				
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	.34	.10	.57	.10	.44	.05	.49	.64	.50	.10	.59	.00	.44	.11	.74	.11	.51	.09	.66	.01	.72	.08
2	.68	.03	1.1	.08	.88	.08	1.0	.08	1.0	.09	1.2	.08	.88	.15	1.5	.15	1.0	.15	1.3	.06	1.4	.09
3	1.0	.20	1.7	.13	1.3	.10	1.5	.06	1.5	.11	1.8	.11	1.3	.15	2.2	.11	1.5	.07	2.0	.00	2.1	.10
4	1.4	.20	2.3	.15	1.8	.13	2.0	.05	2.0	.12	2.4	.09	1.8	.17	3.0	.05	2.0	.13	2.6	.09	3.0	.05
5	1.7	.20	2.9	.20	2.2	.12	2.5	.14	2.5	.15	3.0	.08	2.2	.15	3.7	.05	2.5	.12	3.3	.08	3.6	.05
6	2.0	.22	3.4	.19	2.6	.10	3.0	.28	3.0	.20	3.6	.10	2.6	.12	4.4	.01	3.0	.11	4.0	.10	4.3	.05
7	2.4	.23	4.0	.14	3.1	.10	3.5	.23	3.5	.24	4.2	.08	3.1	.09	5.2	.02	3.5	.09	4.6	.10	5.0	.03
8	2.7	.21	4.6	.09	3.5	.06	4.0	.20	4.0	.20	4.8	.05	3.5	.08	6.0	.02	4.0	.05	5.3	.10	5.8	.01
9	3.1	.20	5.1	.02	4.0	.02	4.5	.23	4.5	.13	5.4	.05	4.0	.03	6.7	.02	4.5	.03	6.0	.06	6.5	.02
Right Bank	3.4	0	5.7	0	4.4	0	4.9	0	5.0	0	5.9	0	4.4	0	7.4	0	5.1	0	6.6	0	7.2	0
Feature Type (riffle, run, or pool)	Run		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 by dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

Signed: MC Date: 9/12/07

WBID # 654

Site # 10



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: <u>9/12/07 7:30A</u>	Site Location Description (e.g., road crossing): <u>Downstream of road crossing</u>
Personnel (Data Collectors): <u>LS + MC</u>	
Current Weather Conditions: <u>sunny, 40° F</u>	Facility Name: <u>PSF Whitetail Finishing</u>
Weather Conditions for Past 10 days: <u>1.08 in Rain</u>	Permit Number: <u>MO 0117421</u>
Drought Conditions?: 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): <u>518198m</u>	Northing (UTM Y): <u>4471665m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>0.3</u> Meters
Site 11	Easting (UTM X): <u>518243m</u>	Northing (UTM Y): <u>4471510m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>1.1</u> Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>See attached photos and descriptions.</u>					
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 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 Data Sheet D- Recreational Use Interview when conducting interviews.)				

WBID # 654

Site # 10



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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 checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:

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

Comments / Other:

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

% Cobble	<u>40</u> % Gravel	<u>10</u> % Sand	<u>10</u> % Silt	<u>40</u> % Mud/Clay	% Bedrock
----------	--------------------	------------------	------------------	----------------------	-----------

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

Aquatic grasses along bank

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 effect another use.

WBID # 654

Site # 10



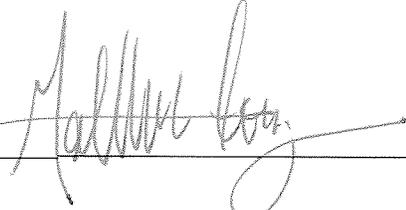
Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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)

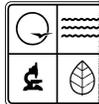
Comments: (Please record any additional comments here.)

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

Surveyor's Signature:  Date of Survey: 9/12/07
Organization: PRS Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results



Waterbody ID: 654 Site #: 10

Missouri Department of Natural Resources
 Elevation of channel section: .5 (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: 518198m UTM Y: 4471665m +/- 0.3 (meters)
 11 UTM X: 518243m UTM Y: 4471516m +/- 1.1 (meters)

Average Stream Width: 5 (meters) Length of Survey Segment: 150 (meters)
 (To determine Length of Reach) (20x average stream width)

Field Staff: LS + MC

Dissolved Oxygen	
Date: <u>9/12/07</u>	Time: <u>7:30A</u>
Dissolved Oxygen: <u>8.58</u> (mg/L)	
Dissolved Oxygen: _____ (% sat)	
Specific Cond: _____ (µS/cm)	
Water Temperature: <u>13.9</u> (°C)	

Transect Cross-Section

		01		02		03		04		05		06		07		08		09		10		11	
Station		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		.99	.20	1.0	.03	.64	.09	.39	.63	.40	.13	.38	.04	.43	.05	.52	.13	.63	.23	.47	.20	.48	.15
2		2.0	.33	2.0	.05	1.3	.05	.80	.05	.80	.16	.76	.10	.86	.09	1.0	.22	1.3	.16	1.0	.25	1.0	.14
3		3.0	.35	3.0	0	2.0	.05	1.2	.05	1.2	.18	1.1	.09	1.3	.03	1.6	.20	2.0	.15	1.4	.33	1.4	.14
4		4.0	.29	4.0	0	2.6	.13	1.6	.12	1.6	.2	1.5	.09	1.7	.15	2.1	.11	2.5	.08	2.0	.35	2.0	.18
5		5.0	.23	5.0	0	3.2	.20	2.0	.13	2.0	.15	2.0	.16	2.2	.15	2.6	.10	3.2	0	2.4	.34	2.4	.20
6		6.0	.15	6.0	0	3.8	.29	2.4	.13	2.4	.11	2.3	.20	2.6	.16	3.1	.13	3.8	0	2.8	.31	3.0	.24
7		7.0	.06	7.0	0	4.5	.24	2.8	.11	2.8	.08	2.7	.18	3.0	.10	3.6	.18	4.4	0	3.3	.26	3.4	.25
8		8.0	0	8.0	.11	5.1	.16	3.2	.05	3.2	.10	3.0	.16	3.4	.09	4.2	.20	5.0	0	4.0	.23	3.8	.23
9		9.0	.06	9.0	.07	5.8	.05	3.6	.02	3.6	.10	3.4	.13	4.0	.05	4.7	.25	5.7	.06	4.4	.14	4.3	.15
Right Bank		9.9	0	10.5	0	6.4	0	3.9	0	4.0	0	3.8	0	4.3	0	5.2	0	6.3	0	4.7	0	4.8	0
Feature Type (riffle, run, or pool)		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 0.01 meter unless depth is too deep to measure (then record as > 1)
 All measurements to be taken to the nearest 0.01 meter.

Signed: MC Date: 9/12/07

WBID# 0654



Site# 1 Photo ID# Downstream T-1



Site# 1 Photo ID# Upstream T-1



Site# 1 Photo ID# Downstream T-11



Site# 1 Photo ID# Upstream T-11

WBID# 0654



Site# 2 Photo ID# Downstream T-1



Site# 2 Photo ID# Upstream T-1



Site# 2 Photo ID# Downstream T-11



Site# 2 Photo ID# Upstream T-11

WBID# 0654



Site# 3 Photo ID# Downstream T-1



Site# 3 Photo ID# Upstream T-1



Site# 3 Photo ID# Downstream T-11



Site# 3 Photo ID# Upstream T-11

WBID# 0654



Site# 4 Photo ID# Downstream T-1



Site# 4 Photo ID# Upstream T-1



Site# 4 Photo ID# Downstream T-11



Site# 4 Photo ID# Upstream T-11

WBID# 0654



Site# 5 Photo ID# Downstream T-1



Site# 5 Photo ID# Upstream T-1



Site# 5 Photo ID# Downstream T-11



Site# 5 Photo ID# Upstream T-11

WBID# 0654



Site# 6 Photo ID# Downstream T-1



Site# 6 Photo ID# Upstream T-1



Site# 6 Photo ID# Downstream T-11



Site# 6 Photo ID# Upstream T-11

WBID# 0654



Site# 7 Photo ID# Downstream T-1



Site# 7 Photo ID# Upstream T-1



Site# 7 Photo ID# Downstream T-11



Site# 7 Photo ID# Upstream T-11

WBID# 0654



Site# 8 Photo ID# Downstream T-1



Site# 8 Photo ID# Upstream T-1



Site# 8 Photo ID# Downstream T-11



Site# 8 Photo ID# Upstream T-11

WBID# 0654



Site# 9 Photo ID# Downstream T-1



Site# 9 Photo ID# Upstream T-1



Site# 9 Photo ID# Downstream T-11



Site# 9 Photo ID# Upstream T-11

WBID# 0654



Site# 10 Photo ID# Downstream T-1



Site# 10 Photo ID# Upstream T-1



Site# 10 Photo ID# Downstream T-11



Site# 10 Photo ID# Upstream T-11

WBID # 157

Site # 10

Field Data Sheets for Recreational Use Stream Surveys



Missouri Department of Natural Resources
Data Sheet D – Recreational Use Interview
(must be completed for each interview)

I. Introduction

Date & Time (include AM or PM): 9/2/07 8:36 AM

Interviewed: In person By phone By mail

(NOTE: If you are an Interviewee filling out this form to mail back to DNR, proceed to Question #1.)

Interviewee selected because (e.g., house next to stream; standing by stream, etc.) approached on survey

Interviewer introduction to Interviewee: "My name is _____, I work for (name of your employer) _____, and I am collecting information on how people use (name of the stream) _____."

ASK:

1.) Are you willing to respond to a survey about this stream? (It will just take a few minutes.)
 Yes No If yes, list contact information for the interviewee below:

Legal name: Martin Minter
Current mailing address: 411 31-Gentian Trail, Unionville, Mo 63085
Daytime phone number: (660) 341-4226
E-mail address (optional): N/A

2.a.) Do you live in this area? Yes No
If yes, how many years? 4 yrs

2.b.) If you don't live in this area, are you still familiar with this stream? Yes No
If yes, how many years? _____
If no, thank the individual for taking the time to talk to you and conclude the interview.

3.) Are you familiar with this particular stretch of the stream? (show them the map, pointing out local landmarks such as roads, bridges, property lines) Yes No
If yes, proceed to "II. Personal Use?".
If no, proceed to Section V.

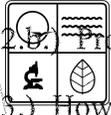
II. Personal Use?

1.) Have you or your family personally used the stream for recreation since November 28, 1975?
 Yes No
If yes, proceed to #3.
If no, proceed to #2.

2.a.) List reasons stream not used. No reason given

WBID # _____

Site # _____



Missouri Department of Natural Resources
2.b.) Proceed to "III. Witnessed Use?".
5.) How do you use the stream?

Whole Body Contact Recreation (WBCR)			
<input type="checkbox"/> Swimming	<input type="checkbox"/> Tubing	<input type="checkbox"/> Snorkeling/Skin Diving	<input type="checkbox"/> Water Skiing

If Interviewee (or family) used the stream for WBCR since Nov. 28, 1975, ask:

4.a.) When (e.g., year(s)?; season?; only after a rain?) and how often (times/year)? _____

4.b.) Where, exactly? Describe specific location *and mark on the map* (See map requirements in the protocol). _____

Secondary Contact Recreation (SCR)				
<input type="checkbox"/> Fishing	<input type="checkbox"/> Wading	<input type="checkbox"/> Boating	<input type="checkbox"/> Trapping	<input type="checkbox"/> Other:

If Interviewee (or family) used the stream for SCR since Nov. 28, 1975, ask:

4.c.) When (e.g., year(s)?; season?; only after a rain?) and how often (times/year)? _____

4.d.) Where, exactly? Describe specific location *and mark on the map* (See map requirements in the protocol). _____

III. Witnessed Use?

1.) Have you observed others using this stream for recreation since Nov. 28, 1975?

Yes No

If yes, proceed to #2.

If no, proceed to, "IV. Anecdotal Use?".

*parents looking for arrowheads in creek bed
children swimming in pools of water.*

Kids also swimming

2.) What kinds of uses have you witnessed?

Kids walking looking for Arrowheads

Whole Body Contact Recreation (WBCR)			
<input checked="" type="checkbox"/> Swimming	<input type="checkbox"/> Tubing	<input type="checkbox"/> Snorkeling/Skin Diving	<input type="checkbox"/> Water Skiing

WBID # _____

Site # _____



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Natural Resources**

If interviewee witnessed WBCR use since Nov. 28, 1975, ask the following questions:

2.a.) When (e.g., year(s)?; season?; only after a rain?) and how often (times/year)? _____

June 2007 (1X)

2.b.) Where, exactly? Describe specific location *and mark on the map* (See map requirements in the protocol). Just up stream of bridge crossing on Genevieve Trail

Secondary Contact Recreation (SCR)

<input type="checkbox"/> Fishing	<input type="checkbox"/> Wading	<input type="checkbox"/> Boating	<input type="checkbox"/> Trapping	<input type="checkbox"/> Other:
----------------------------------	---------------------------------	----------------------------------	-----------------------------------	---------------------------------

If interviewee witnessed SCR use since Nov. 28, 1975, ask the following questions:

2.c.) When (e.g., year(s)?; season?; only after a rain?) and how often (times/year)? _____

2.d.) Where, exactly? Describe specific location *and mark on the map* (See map requirements in the protocol).

IV. Anecdotal Use?

1.) Have you heard about anyone using this stream since Nov. 28, 1975 for recreation – not seen or done yourself, but just heard about it? Yes No

If yes, proceed to #2.

If no, thank the individual for taking the time to talk to you and conclude the interview.

2.) What kind of uses have you heard about?

Whole Body Contact Recreation (WBCR)

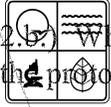
<input type="checkbox"/> Swimming	<input type="checkbox"/> Tubing	<input type="checkbox"/> Snorkeling/Skin Diving	<input type="checkbox"/> Water Skiing
-----------------------------------	---------------------------------	---	---------------------------------------

If interviewee heard of WBCR use since Nov. 28, 1975, ask the following questions:

2.a.) When did these uses take place (e.g., year(s)?; season?; only after a rain?) and how often (times/year)? _____

WBID # _____

Site # _____



**Missouri
Department of
Natural Resources**

2.b.) Where, exactly? Describe specific location *and mark on the map* (See map requirements in the protocol).

Secondary Contact Recreation (SCR)

<input type="checkbox"/> Fishing	<input type="checkbox"/> Wading	<input type="checkbox"/> Boating	<input type="checkbox"/> Trapping	<input type="checkbox"/> Other:
----------------------------------	---------------------------------	----------------------------------	-----------------------------------	---------------------------------

If interviewee heard of SCR use since Nov. 28, 1975, ask the following questions:

2.c.) When did these uses take place (e.g., year(s)?; season?; only after a rain?) and how often (times/year)?

2.d.) Where, exactly? Describe specific location *and mark on the map* (See map requirements in the protocol).

V. Others to Contact?

Can you recommend someone else we could contact that knows the stream? Yes No
If yes, that person's contact info (name, address, phone, directions?)

If no, thank the individual for taking the time to talk to you and conclude the interview.

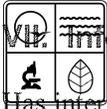
VI. Additional Comments

From the Interviewee: none

From the Interviewer: none

WBID # _____

Site # _____



**Missouri
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Natural Resources**

Has interviewer been trained by Missouri DNR to conduct UAA Interviews?

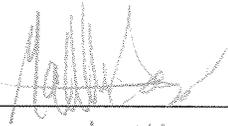
Yes No If yes, how (check all that apply):

Workshop? (if so, enter date): _____

On-line training seminar? n/a

Followed Interview Instruction Sheets? yes

Other _____

Signature: 

Printed Name: Matthew Cosby

Employer (where applicable): PRS

Interviewer's phone #: 636 3971211 E-mail: mcosby@prs3.com