

Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 3488 Tributary to Muddy Creek

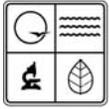
Submitted by

Pickett Ray and Silver

To

Missouri Department of Natural Resources
Water Protection Program

Date Received: October 31, 2007



Missouri
 Department of Natural Resources
 Permit 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): Tributary to Muddy Creek	
Missouri Water Body Identification (WBID) Number: 3488	
8-digit HUC: 20080821	County: Pettis
Upstream Legal Description (from Table H): 10, 46N, 21W	
Downstream Legal Description (from Table H): Mouth	
Number of sites evaluated: 3	
List all sites numbers, listed consequently upstream to downstream: 3488-1, 3488-2, 3488-3	

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)

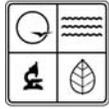
Facility Name(s) and Permit Number(s): Stoney Ridge Village MO 0118621
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III. UAA Surveyor (please print legibly)

Name of Surveyor	Matt Cosby	Telephone Number:	636-397-1211
Organization/Employer: Pickett, Ray & Silver, Inc.			

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

Signed: _____ **Date:** _____



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: 10/12/07 9:00 am	Site Location Description (e.g., road crossing): Off Mt. Herman Road
Personnel (Data Collectors): Lauren Strange, Matt Cosby	
Current Weather Conditions: Partly Cloudy, 50°	Facility Name: Stoney Ridge Village
Weather Conditions for Past 10 days: .78" rain	Permit Number: MO 0118621
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input checked="" type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

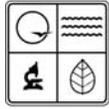
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 481523 m	Northing (UTM Y): 4292224 m	Horizontal Accuracy: (PDOP) 5.5
Site 11	Easting (UTM X): 481381 m	Northing (UTM Y): 4292292 m	Horizontal Accuracy: (PDOP) 6.4

Photos: See attached photos and descriptions.

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.)				



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: N/A				

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

60 % Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	40 % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

None

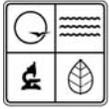
Water Characteristics*: (Mark all that apply.)

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 type="checkbox"/> Fine sediments	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input checked="" type="checkbox"/> Oil	<input checked="" type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input 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 # 3488

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: 10/12/07

Organization: Pickett, Ray & Silver, Inc.

Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

<p> Missouri Department of Natural Resources </p> <p> Waterbody ID: <u>2844</u> Site #: <u>1</u> Estimated Channel Incision: <u>1.3</u> (m) (height between low bank width and water) </p> <p> GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (PDOP) </p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">01</td> <td style="width: 20%;">UTM X: <u>481523 m</u></td> <td style="width: 20%;">UTM Y: <u>4292224 m</u></td> <td style="width: 10%;">PDOP <u>5.5</u></td> </tr> <tr> <td>11</td> <td>UTM X: <u>481381 m</u></td> <td>UTM Y: <u>4292292 m</u></td> <td>PDOP <u>6.4</u></td> </tr> </table> <p> Average Stream Width: <u>2</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) </p> <p>Field Staff: <u>Matt Cosby and Lauren Strange</u></p>	01	UTM X: <u>481523 m</u>	UTM Y: <u>4292224 m</u>	PDOP <u>5.5</u>	11	UTM X: <u>481381 m</u>	UTM Y: <u>4292292 m</u>	PDOP <u>6.4</u>	<p style="text-align: center; margin: 0;">Dissolved Oxygen</p> <p>Date: <u>10/12/2007</u> Time: <u>9:00 AM</u></p> <p>Dissolved Oxygen: <u>5.49</u> (mg/L)</p> <p>Dissolved Oxygen: _____ (% sat)</p> <p>Specific Cond: _____ (µS/cm)</p> <p>Water Temperature: <u>12.1</u> (°C)</p>
01	UTM X: <u>481523 m</u>	UTM Y: <u>4292224 m</u>	PDOP <u>5.5</u>						
11	UTM X: <u>481381 m</u>	UTM Y: <u>4292292 m</u>	PDOP <u>6.4</u>						

Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
Left Bank		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	0.27	0.08	0.26	0.03	0	0	0	0	0.34	0.18	0.28	0.09	0.15	0.05	0.11	0.01	0.39	0.13	0.43	0.03	0.30	0.01
	2	0.54	0.05	0.52	0.08					0.68	0.26	0.56	0.08	0.30	0.14	0.22	0.02	0.80	0.20	0.86	0.02	0.60	0.01
	3	0.87	0.02	0.78	0.10					1.0	0.2	0.84	0.08	0.45	0.10	0.33	0.06	1.2	0.29	1.3	0.04	0.90	0.01
	4	1.1	0.03	1.0	0.13					1.4	0.22	1.1	0.09	0.60	0.13	0.44	0.08	1.6	0.28	1.7	0.01	1.2	0.01
	5	1.4	0.02	1.3	0.10					1.7	0.14	1.4	0.12	0.75	0.05	0.55	0.10	2.0	0.25	2.2	0	1.5	0
	6	1.6	0.08	1.6	0.11					2.0	0.18	1.7	0.14	0.90	0.04	0.66	0.10	2.4	0.13	2.6	0	1.8	0
	7	1.9	0.14	1.8	0.12					2.4	0.25	2.0	0.10	1.1	0.06	0.77	0.13	2.8	0.14	3.0	0.02	2.1	0.01
	8	2.2	0.15	2.1	0.07					2.7	0.27	2.2	0.07	1.2	0.06	0.88	0.09	3.2	0.10	3.4	0.01	2.4	0.01
	9	2.4	0.11	2.3	0.09					3.1	0.24	2.5	0.04	1.4	0.02	0.99	0.12	3.6	0.03	4.0	0.01	2.7	0.01
Right Bank		2.7	0	2.6	0	0	0	0	0	3.4	0	2.8	0	1.5	0	1.1	0	3.9	0	4.3	0	3.00	0
Feature Type		Pool		Pool		Losing		Losing		Pool		Run		Pool		Pool		Pool		Riffle		Riffle	

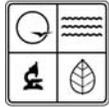
Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

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.



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: 10/12/07 10:00 am	Site Location Description (e.g., road crossing): Off Taney Road at Bothwell State Park
Personnel (Data Collectors): Matt Cosby, Lauren Strange	
Current Weather Conditions: Partly Cloudy, 60°	Facility Name: Stoney Ridge Village
Weather Conditions for Past 10 days: .78" of rain	Permit Number: MO 0118621
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input checked="" type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

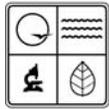
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 480631 m	Northing (UTM Y): 4292672 m	Horizontal Accuracy: 4.8 (PDOP)
Site 11	Easting (UTM X): 480609 m	Northing (UTM Y): 4292814 m	Horizontal Accuracy: 6.2 (PDOP)

Photos: See attached photos and descriptions.

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.)				



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 checked="" 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%.)

60% Cobble	30 % Gravel	% Sand	% Silt	% Mud/Clay	10 % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

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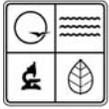
Water Characteristics*: (Mark all that apply.)

Odor:	<input checked="" type="checkbox"/> Sewage	<input checked="" type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input checked="" type="checkbox"/> Gray	<input checked="" 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 checked="" type="checkbox"/> Oil	<input checked="" type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input 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 # 3488

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: 10/12/07

Organization: Pickett, Ray & Silver, Inc.

Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

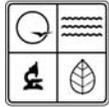
Data Sheet C - Field Survey Results

 <p> Missouri Department of Natural Resources </p> <p> Waterbody ID: <u>2488</u> Site #: <u>2</u> Estimated Channel Incision: <u>0</u> (m) (height between low bank width and water) </p> <p> GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (PDOP) 01 UTM X: <u>480631 m</u> UTM Y: <u>4292672 m</u> PDOP <u>4.8</u> 11 UTM X: <u>480609 m</u> UTM Y: <u>4292814 m</u> PDOP <u>6.2</u> </p> <p> Average Stream Width: <u>2</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) </p> <p> Field Staff: <u>Matt Cosby and Lauren Strange</u> </p>	<p style="text-align: center;">Dissolved Oxygen</p> <p> Date: <u>10/12/2007</u> Time: <u>10:00 AM</u> </p> <p> Dissolved Oxygen: <u>6.54</u> (mg/L) </p> <p> Dissolved Oxygen: _____ (% sat) </p> <p> Specific Cond: _____ (µS/cm) </p> <p> Water Temperature: <u>12.8</u> (°C) </p>
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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	0.21	0.03	0	0	0.30	0.16	0.43	0.32	0.13	0.02	0	0	0	0	0	0	0.17	0.03	0	0	0.43	0.06
	2	0.40	0.04			0.60	0.32	0.86	0.36	0.26	0.02							0.34	0.10			0.86	0.10
	3	0.60	0.07			0.90	0.48	1.3	0.37	0.39	0.04							0.51	0.15			1.3	0.16
	4	0.80	0.11			1.2	0.64	1.7	0.34	0.52	0.09							0.68	0.18			1.7	0.31
	5	1.0	0.15			1.5	0.80	2.2	0.32	0.65	0.12							0.85	0.14			2.2	0.35
	6	1.2	0.16			1.8	0.96	2.6	0.37	0.78	0.13							1.0	0.12			2.6	0.34
	7	1.4	0.18			2.1	1.1	3.0	0.38	0.91	0.15							1.2	0.10			3.0	0.30
	8	1.6	0.17			2.4	1.3	3.4	0.15	1.0	0.14							1.4	0.07			3.4	0.24
	9	1.8	0.11			2.7	1.4	3.9	0.06	1.2	0.07							1.5	0.04			3.9	0.2
Right Bank		2.1	0		0	3.0	0	4.3	0	1.3	0		0		0		0	1.7	0		0	4.3	0
Feature Type		Pool		Losing		Pool		Pool		Pool		Losing		Losing		Losijng		Pool		Losing		Pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
 GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
 Depth measurements taken at 10 equally spaced locations along transect (determine 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.



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: 10/12/07 11:00 am	Site Location Description (e.g., road crossing): Off Highway 65
Personnel (Data Collectors): Matt Cosby, Lauren Strange	
Current Weather Conditions: Partly Cloudy, 65°	Facility Name: Stoney Ridge Village
Weather Conditions for Past 10 days: .78" of rain	Permit Number: MO 0118621
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input checked="" type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

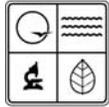
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 480337 m	Northing (UTM Y): 4292818 m	Horizontal Accuracy: (PDOP) 3.6
Site 11	Easting (UTM X): 480215 m	Northing (UTM Y): 4292840 m	Horizontal Accuracy: (PDOP) 3.7

Photos: See attached photos and descriptions.

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.)				



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 checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input checked="" type="checkbox"/> Livestock Watering
Comments / Other:				

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

60% Cobble	20 % Gravel	% Sand	% Silt	% Mud/Clay	20 % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

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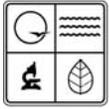
Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input checked="" type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input type="checkbox"/> None	<input 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 type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input checked="" type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input 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 # 3488

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.)

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

Surveyor's Signature: _____ Date of Survey: 10/12/07

Organization: Pickett, Ray & Silver, Inc.

Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

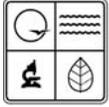
Data Sheet C - Field Survey Results

Missouri Department of Natural Resources Waterbody ID: <u>2488</u> Site #: <u>3</u> Estimated Channel Incision: _____ (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (PDOP) <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">01</td> <td style="width: 30%;">UTM X: <u>480337 m</u></td> <td style="width: 30%;">UTM Y: <u>4292818 m</u></td> <td style="width: 30%;">PDOP <u>3.6</u></td> </tr> <tr> <td>11</td> <td>UTM X: <u>480215 m</u></td> <td>UTM Y: <u>4292840</u></td> <td>PDOP <u>3.7</u></td> </tr> </table> Average Stream Width: <u>2</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Matt Cosby and Lauren Strange</u>	01	UTM X: <u>480337 m</u>	UTM Y: <u>4292818 m</u>	PDOP <u>3.6</u>	11	UTM X: <u>480215 m</u>	UTM Y: <u>4292840</u>	PDOP <u>3.7</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>10/12/2007</u> Time: <u>11:00 AM</u> Dissolved Oxygen: <u>2.70</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (µS/cm) Water Temperature: <u>15.4</u> (°C)
01	UTM X: <u>480337 m</u>	UTM Y: <u>4292818 m</u>	PDOP <u>3.6</u>						
11	UTM X: <u>480215 m</u>	UTM Y: <u>4292840</u>	PDOP <u>3.7</u>						

Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
Left Bank		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	0.11	0.01	0.20	0.03	0.16	0.01	0.18	0.21	0.33	0.01	0	0	0.11	0.10	0	0	0.10	0.01	0	0	0.46	0.23
	2	0.22	0.01	0.40	0.04	0.32	0.06	0.36	0.20	0.66	0.01			0.22	0.09			0.20	0.05			0.92	0.24
	3	0.33	0.02	0.60	0.09	0.48	0.01	0.54	0.18	1.0	0			0.33	0.07			0.30	0.03			1.4	0.35
	4	0.44	0.03	0.80	0.12	0.64	0	0.72	0.16	1.3	0.01			0.44	0.07			0.40	0.06			1.8	0.54
	5	0.55	0.02	1.0	0.13	0.80	0.02	0.90	0.11	1.6	0			0.55	0.05			0.50	0.06			2.3	0.66
	6	0.66	0.02	1.2	0.17	0.96	0.01	1.1	0.08	2.0	0.05			0.66	0.06			0.60	0.02			2.8	0.54
	7	0.77	0.01	1.4	0.16	1.1	0.04	1.3	0.05	2.3	0.04			0.77	0.02			0.70	0.04			3.2	0.45
	8	0.88	0.01	1.6	0.14	1.3	0.04	1.4	0.02	2.6	0.06			0.88	0.01			0.80	0.02			3.7	0.31
	9	0.99	0.01	1.8	0.08	1.4	0.02	1.6	0.04	3.0	0.01			0.99	0.01			0.90	0.01			4.1	0.13
Right Bank		1.1	0	2.0	0	1.6	0	1.8	0	3.3	0	0	0	1.1	0	0	0	1.0	0	0	0	4.6	0
Feature Type		Riffle		Pool		Run		Pool		Run		Losing		Pool		Losing		Pool		Losing		Pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
 GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
 Depth measurements taken at 10 equally spaced locations along transect (determine 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.



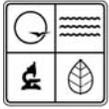
MODN



WBID 3488, Site 1, Transect 1, Downstream.



WBID 3488, Site 1, Transect 1, Upstream.



MODN



WBID 3488, Site 1, Transect 11, Downstream.



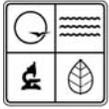
WBID 3488, Site 1, Transect 11, Upstream.



WBID 3488, Site 2, Transect 1, Downstream.



WBID 3488, Site 2, Transect 1, Upstream.



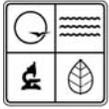
Missouri
Department of
Natural Resou



WBID 3488, Site 2, Transect 8, Concrete overflow into creek from a pond.



WBID 3488, Site 2, Transect 11, Downstream.



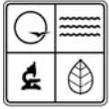
MODN



WBID 3488, Site 2, Transect 11, Upstream.



WBID 3488, Site 3, Transect 1, Downstream.



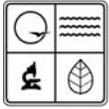
MODN



WBID 3488, Site 3, Transect 1, Upstream.



WBID 3488, Site 3, Transect 11, Downstream.

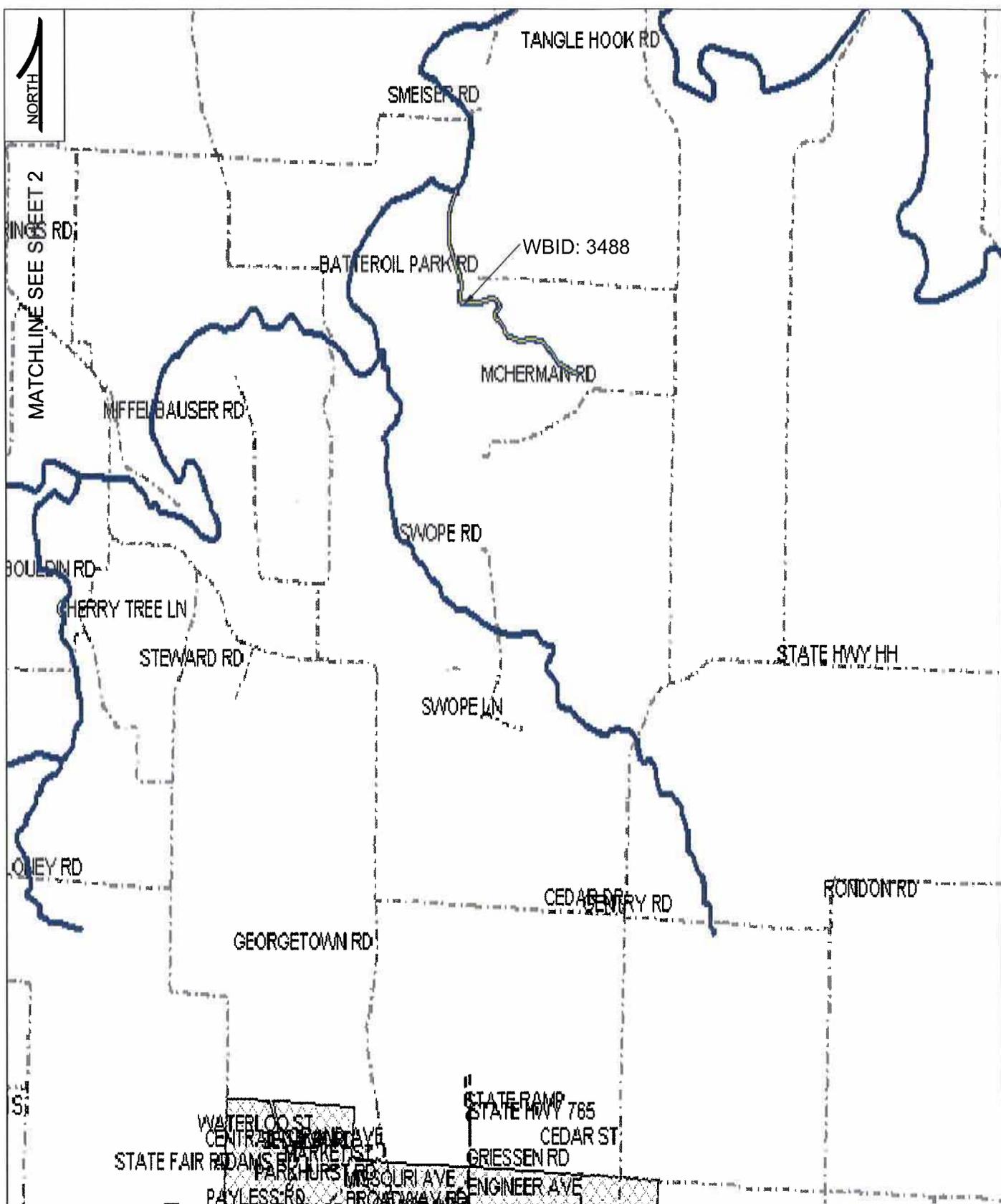


MODN



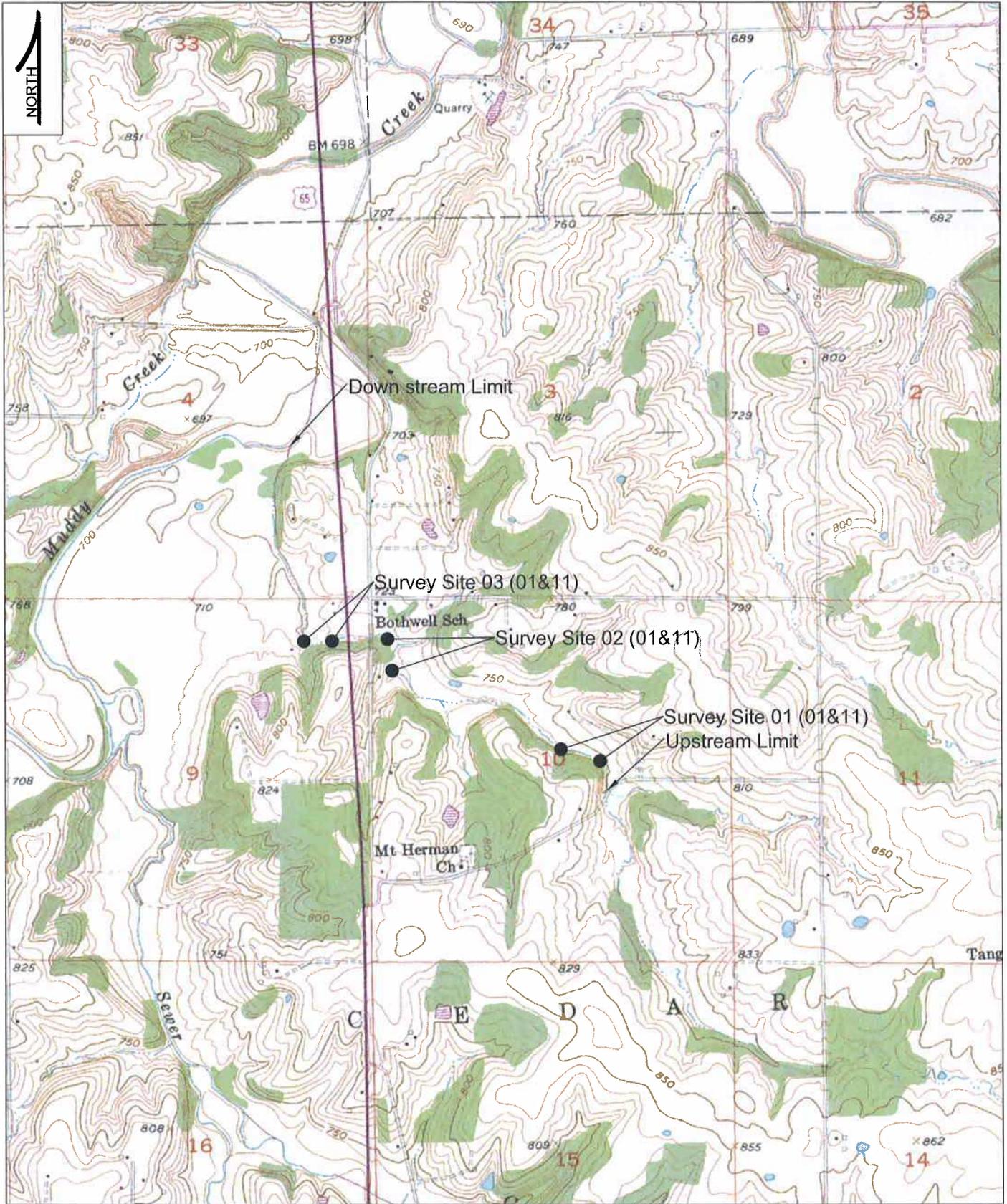
WBID 3488, Site 3, Transect 11, Upstream.

\\3serverprp\Projects\07031\dwg\07031_MODN_01E\3488 Tributary to Muddy Creek.dwg, 10/26/2007 9:04:16 AM, 1:2000, MATT COSBY



<p>PICKETT RAY & SILVER Civil Engineers Land Surveyors Natural Resources Address: 333 Mid Rivers Mall Drive Phone: (636)397-1211 Fax: (636)397-1104 St. Peters, Missouri 63376 Website: www.prs3.com</p>	<p>WBID #: 3488 Name: Tributary to Muddy Creek County: Pettis GIS Location Map Sheet 1 of 1</p>	<p>PRs Job Number: 07031.MODN.01E Drawn By: BLS Date: 10-15-07 Checked By: JCV Date: 10-15-07</p>
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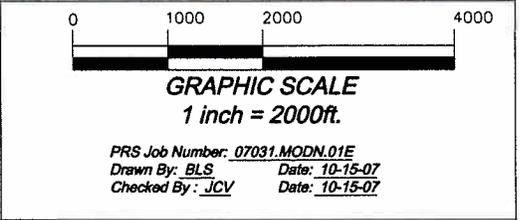
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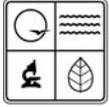


PICKETT RAY & SILVER
 Civil Engineers Land Surveyors Natural Resources
 Address: 333 Mid Rivers Mall Drive St. Peters, Missouri 63376
 Phone: (636)397-1211 Fax: (636)397-1104
 Website: www.prs3.com

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WBID #: 3488
 Name: Tributary to Muddy Creek
 County: Pettis
 USGS Location Map
 Sheet 1 of 1





Missouri **3488 Depth Measurement Summary**
Department of
Natural Resources

	Site 1	Site 2	Site 3
Maximum	0.29	1.40	0.66
Median	0.08	0.14	0.04