



Use Attainability Analysis

for

WBID 1786 Steins Creek

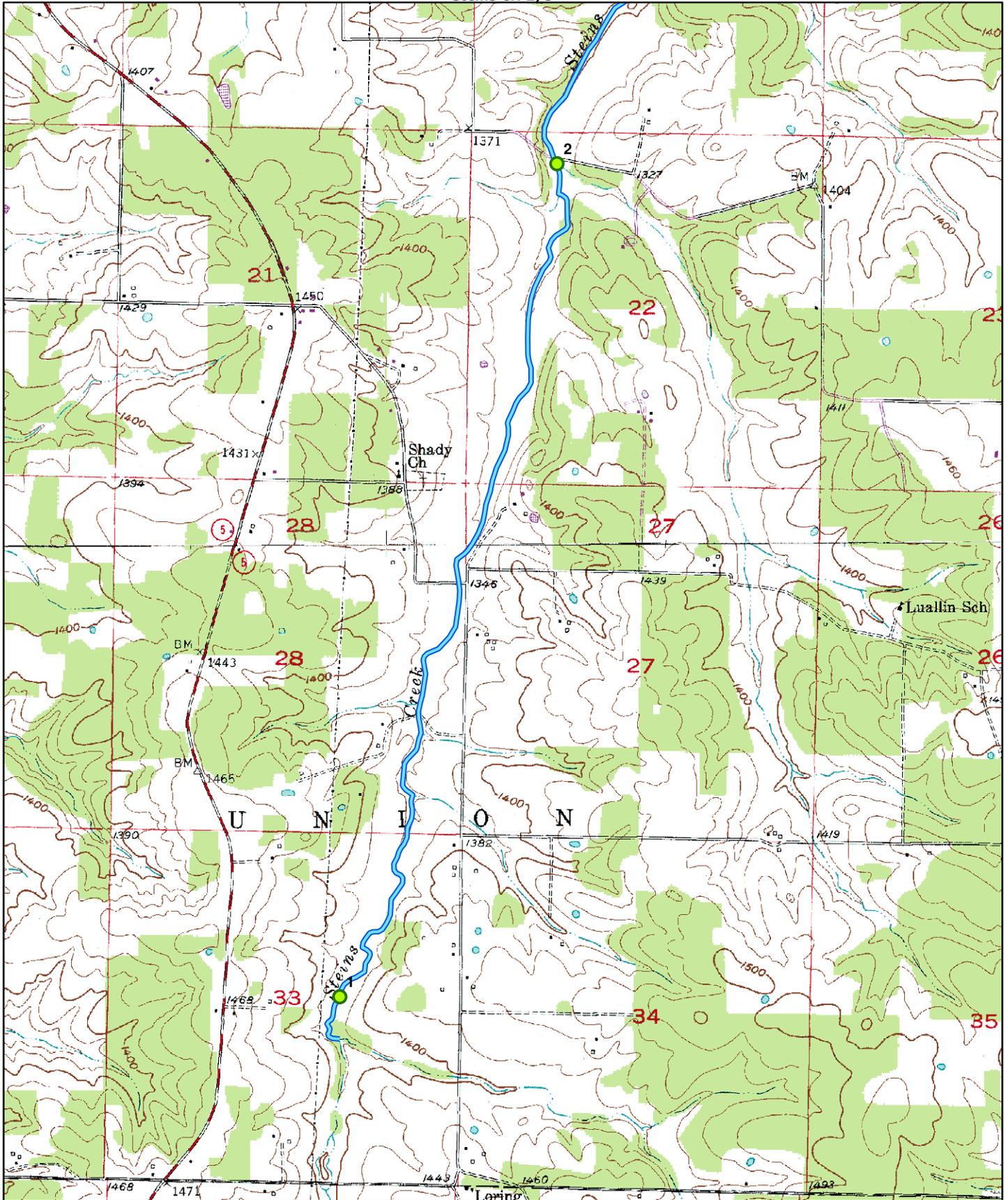
Submitted by  
Olsson Associates

To  
Missouri Department of Natural Resources  
Water Protection Program

On

October 14, 2008





**MISSOURI RECREATIONAL  
USE ATTAINABILITY ANALYSIS**



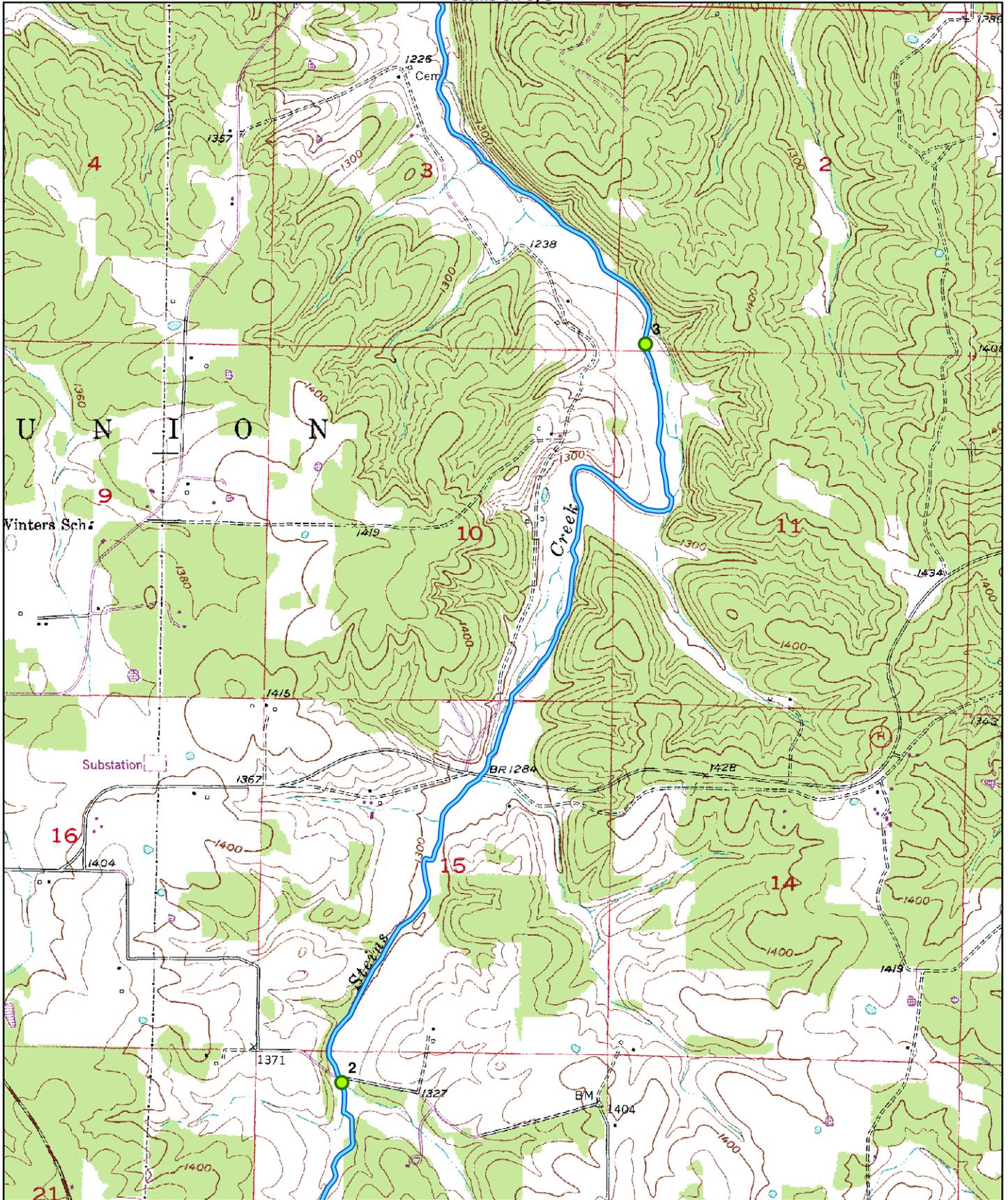
Feet  
0 1,000 2,000  
1 in. equals 2,000 ft.

**Stream:** Steins Cr.  
**WBID:** 1486

**Map Sheet:** 1/5  
**County:** Wright



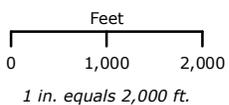
Project No. 008-1298



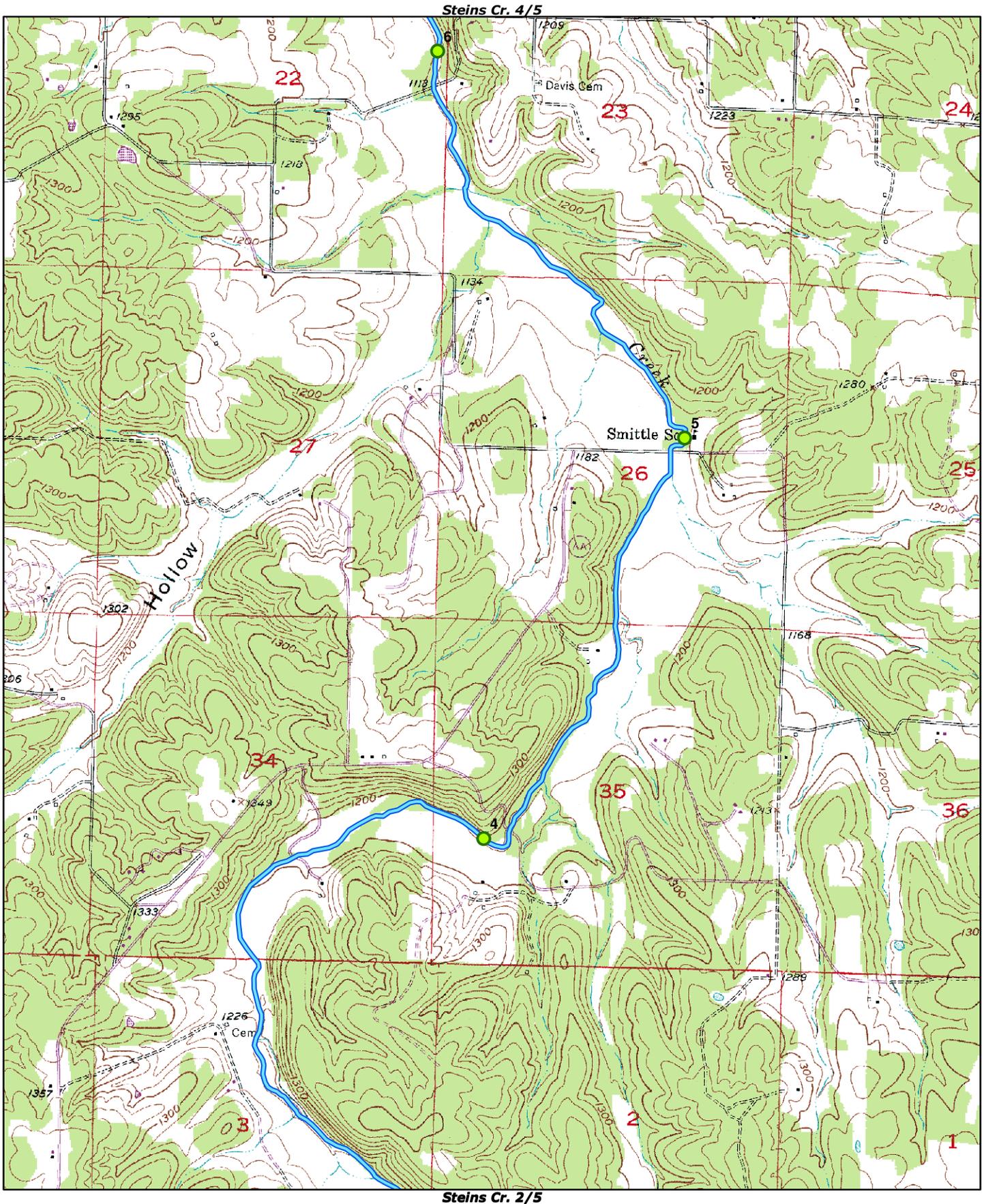
### MISSOURI RECREATIONAL USE ATTAINABILITY ANALYSIS

**Stream:** Steins Cr.  
**WBID:** 1486

**Map Sheet:** 2/5  
**County:** Wright



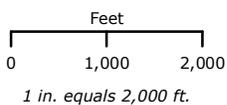
Project No. 008-1298

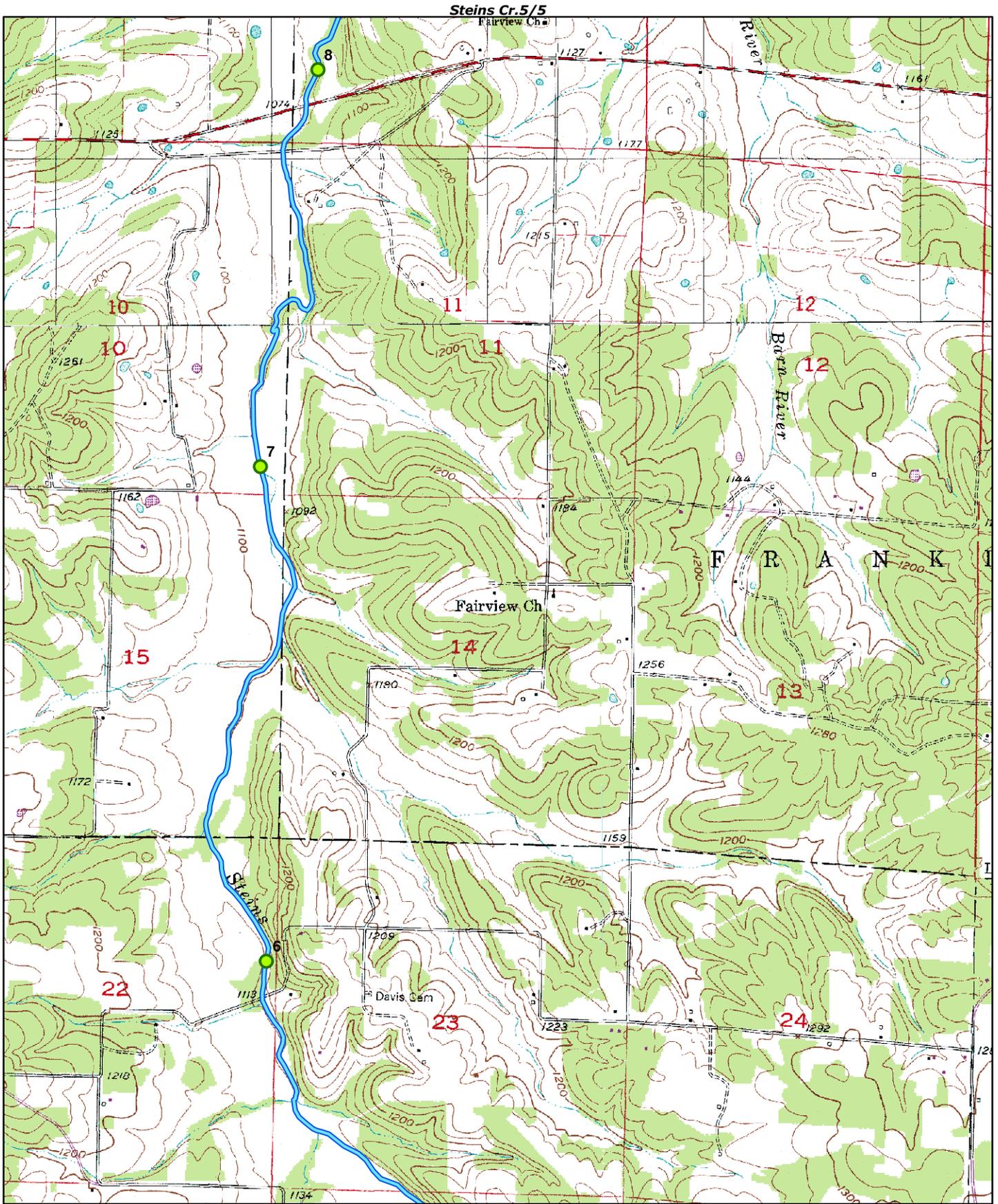


**MISSOURI RECREATIONAL  
USE ATTAINABILITY ANALYSIS**

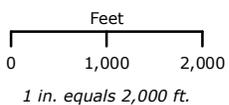
**Stream:** Steins Cr.  
**WBID:** 1486

**Map Sheet:** 3/5  
**County:** Wright





**MISSOURI RECREATIONAL  
USE ATTAINABILITY ANALYSIS**

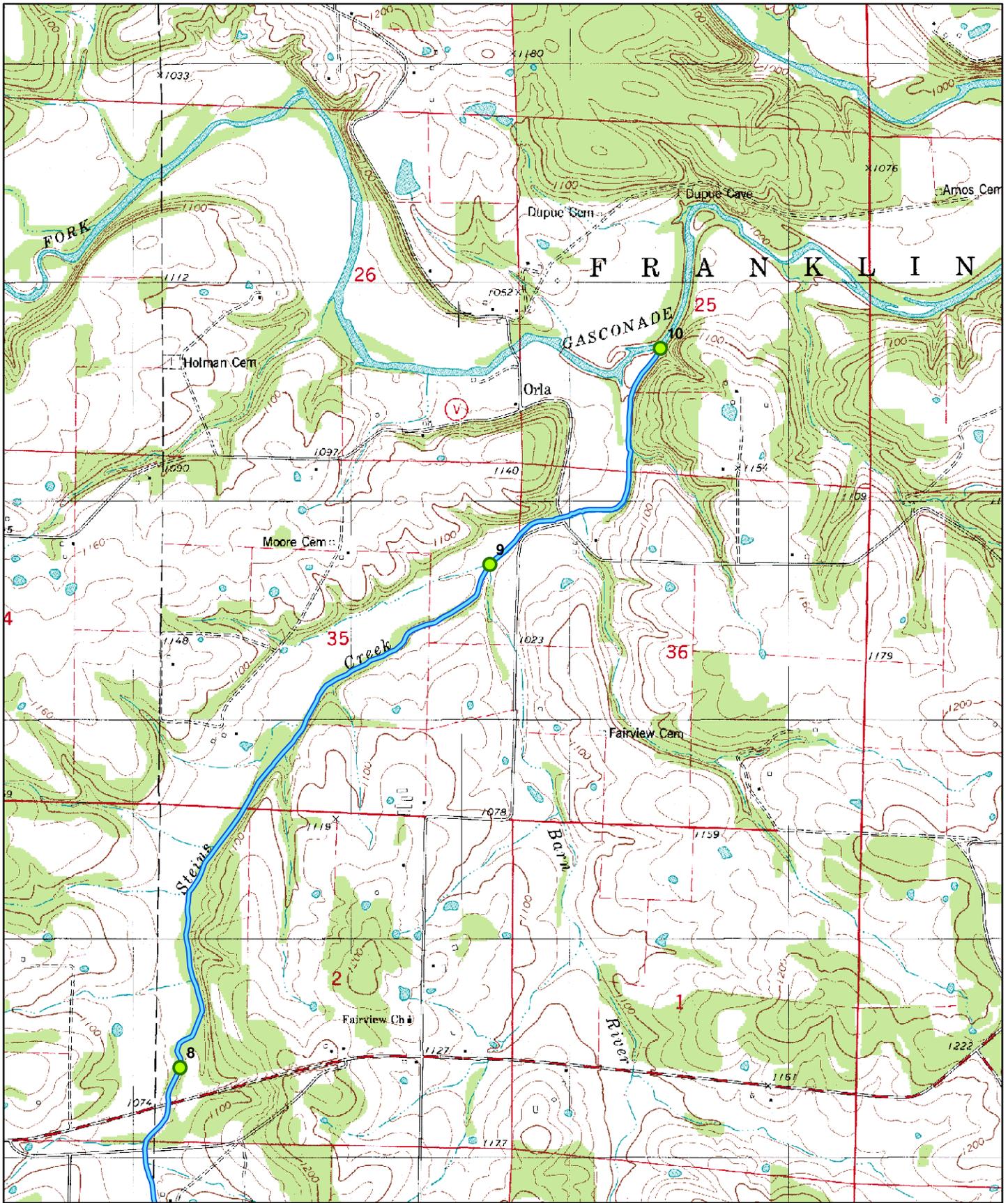


**Stream:** Steins Cr.  
**WBID:** 1486

**Map Sheet:** 4/5  
**County:** Laclede

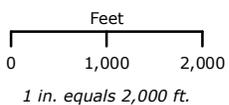


Project No. 008-1298



Steins Cr. 4/5

**MISSOURI RECREATIONAL  
USE ATTAINABILITY ANALYSIS**



**Stream:** Steins Cr.  
**WBID:** 1486

**Map Sheet:** 5/5  
**County:** Laclede



Project No. 008-1298

WBID # 1486

Site # 1

**Field Data Sheets for Recreational Use Stream Surveys**

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

(must be completed for each site)

<b>Date &amp; Time:</b> 08-07-08 9:00am	Location Description (e.g., road crossing):
<b>Stream Name:</b> Steins Creek	Farm Road off of Hwy 5
Current Weather Conditions: Partly sunny	Facility Name(s): Onondaga Cave State Park WWTF
Weather Conditions for Past 10 days: 2" @ Mt. Grove	Permit Number(s): MO-0134511
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 536650	Northing (UTM Y): 4134479	Horizontal Accuracy: (EPE / FOM / PDOP) 49 ft. <del>Meters</del>
Site 11	Easting (UTM X): 536711	Northing (UTM Y): 4134559	Horizontal Accuracy: (EPE / FOM / PDOP) 667 ft. <del>Meters</del>

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-1-A	Upstream looking down				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-1-B	Downstream looking up				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-1-C	Pool used for livestock 15m from site				

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

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

Site # 1

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

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

**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
<input type="checkbox"/> None of the above	Comments / Other:			

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

% Cobble	80% Gravel	10% Sand	% Silt	10% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

NONE
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**Water Characteristics\*:** (Mark all that apply.)

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

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

Site # 1

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

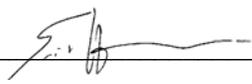
Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)
Pool	15m	12	60	.75	<1m

**Comments:** (Please record any additional comments here.)

Pool used for livestock purposes

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

Printed Names of Personnel Collecting Data: Eric Hertzler / Austin Lohkamp

Surveyor's Signature:   Date of Survey: 08-07-08

Organization: Olsson Associates Position: Field Service

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Steins Creek</u> Waterbody ID: <u>1486</u> Site #: <u>1</u>  Estimated Channel Incision: <u>1.75</u> (m) (height between low bank width and water)  GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) <b>01</b> UTM X: <u>536650</u> UTM Y: <u>4134479</u> +/- <u>49</u> ft. (meters) <b>11</b> UTM X: <u>536711</u> UTM Y: <u>4134559</u> +/- <u>667</u> ft. (meters)  Average Stream Width: <u>3</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Eric Hertzler / Austin Lohkamp</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>8/7/2008</u> Time: <u>9:05 a.m.</u>  Dissolved Oxygen: <u>N/A</u> (mg/L)  Dissolved Oxygen: <u>N/A</u> (% sat)  Specific Cond: <u>N/A</u> (µS/cm)  Water Temperature: <u>N/A</u> (°C)
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#### Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)																				
<b>Left Bank</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.63	0.00	0.34	0.00	0.29	0.00	0.41	0.00	0.43	0.00	0.67	0.00	0.20	0.00	0.55	0.00	0.41	0.00	0.51	0.00	0.56	0.00
2	1.26	0.00	0.68	0.00	0.58	0.00	0.82	0.00	0.86	0.00	1.34	0.00	0.40	0.00	1.10	0.00	0.82	0.00	1.02	0.00	1.12	0.00
3	1.89	0.00	1.02	0.00	0.87	0.00	1.23	0.00	1.29	0.00	2.01	0.00	0.60	0.00	1.65	0.00	1.23	0.00	1.53	0.00	1.68	0.00
4	2.52	0.00	1.36	0.00	1.16	0.00	1.64	0.00	1.72	0.00	2.68	0.00	0.80	0.00	2.20	0.00	1.64	0.00	2.04	0.00	2.24	0.00
5	3.15	0.00	1.70	0.00	1.45	0.00	2.05	0.00	2.15	0.00	3.35	0.00	1.00	0.00	2.75	0.00	2.05	0.00	2.55	0.00	2.80	0.00
6	3.78	0.00	2.04	0.00	1.74	0.00	2.46	0.00	2.58	0.00	4.02	0.00	1.20	0.00	3.30	0.00	2.46	0.00	3.06	0.00	3.36	0.00
7	4.41	0.00	2.38	0.00	2.03	0.00	2.87	0.00	3.01	0.00	4.69	0.00	1.40	0.00	3.85	0.00	2.87	0.00	3.57	0.00	3.92	0.00
8	5.04	0.00	2.72	0.00	2.32	0.00	3.28	0.00	3.44	0.00	5.36	0.00	1.60	0.00	4.40	0.00	3.28	0.00	4.08	0.00	4.48	0.00
9	5.67	0.00	3.06	0.00	2.61	0.00	3.69	0.00	3.87	0.00	6.03	0.00	1.80	0.00	4.95	0.00	3.69	0.00	4.59	0.00	5.04	0.00
<b>Right Bank</b>	6.30	0.00	3.40	0.00	2.90	0.00	4.10	0.00	4.30	0.00	6.70	0.00	2.00	0.00	5.50	0.00	4.10	0.00	5.10	0.00	5.60	0.00
<b>Feature Type</b> <small>(riffle, run, or pool)</small>	Dry																					

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

MAXIMUM      0.00

MEDIAN      0.00

Surveyor's Signature: \_\_\_\_\_

Date: 8/7/2008

WBID # 1486

Site # 2

**Field Data Sheets for Recreational Use Stream Surveys**

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

(must be completed for each site)

<b>Date &amp; Time:</b> 08-07-08                      9:44 a.m.	Location Description (e.g., road crossing):
<b>Stream Name:</b> Steins Creek	Robertson Road Bridge -100 meters upstream of bridge (lower end of survey)
Current Weather Conditions: Mostly sunny	Facility Name(s): Onondaga Cave State Park WWTF
Weather Conditions for Past 10 days: 2" @ Mt. Grove	Permit Number(s):MO-0134511
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 537661	Northing (UTM Y): 4138296	Horizontal Accuracy: (EPE / FOM / PDOP)    412 ft. <del>Meters</del>
Site 11	Easting (UTM X): 537616	Northing (UTM Y): 4138398	Horizontal Accuracy: (EPE / FOM / PDOP)    169 ft. <del>Meters</del>

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-2-A	Upstream looking down (Water)				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-2-B	Bridge in transect area				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-2-C	Downstream looking up				

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

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

Site # 2

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments: NONE				

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

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

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

% Cobble	80% Gravel	20% Sand	% Silt	% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

NONE
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**Water Characteristics\*:** (Mark all that apply.)

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

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

Site # 2

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

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

**Comments:** (Please record any additional comments here.)

Bridge for Robertson Road located within transect – See photo 1486-2-B

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

Printed Names of Personnel Collecting Data: Eric Hertzler / Austin Lohkamp

Surveyor's Signature:  Date of Survey: 08-07-08

Organization: Olsson Associates Position: Field Service

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Steins Creek</u> Waterbody ID: <u>1486</u> Site #: <u>2</u>  Estimated Channel Incision: <u>1.75</u> (m) (height between low bank width and water)  GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) <b>01</b> UTM X: <u>537661</u> UTM Y: <u>4138296</u> +/- <u>412</u> ft. (meters) <b>11</b> UTM X: <u>537616</u> UTM Y: <u>4138398</u> +/- <u>169</u> ft. (meters)  Average Stream Width: <u>4</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Eric Hertzler / Austin Lohkamp</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>8/7/2008</u> Time: <u>9:50 a.m.</u>  Dissolved Oxygen: <u>N/A</u> (mg/L)  Dissolved Oxygen: <u>N/A</u> (% sat)  Specific Cond: <u>N/A</u> (µS/cm)  Water Temperature: <u>N/A</u> (°C)
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#### Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
<b>Left Bank</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	0.32	0.00	0.57	0.00	0.62	0.00	0.55	0.00	1.20	0.00	0.64	0.00	0.37	0.00	0.30	0.00	0.36	0.00	0.42	0.00	0.55	0.00
	2	0.64	0.00	1.14	0.00	1.24	0.00	1.10	0.00	2.40	0.00	1.28	0.00	0.74	0.00	0.60	0.00	0.72	0.00	0.84	0.00	1.10	0.00
	3	0.96	0.00	1.71	0.00	1.86	0.00	1.65	0.00	3.60	0.00	1.92	0.00	1.11	0.00	0.90	0.00	1.08	0.00	1.26	0.00	1.65	0.00
	4	1.28	0.00	2.28	0.00	2.48	0.00	2.20	0.00	4.80	0.00	2.56	0.00	1.48	0.00	1.20	0.00	1.44	0.00	1.68	0.00	2.20	0.00
	5	1.60	0.00	2.85	0.00	3.10	0.00	2.75	0.00	6.00	0.00	3.20	0.00	1.85	0.00	1.50	0.00	1.80	0.00	2.10	0.00	2.75	0.00
	6	1.92	0.00	3.42	0.00	3.72	0.00	3.30	0.00	7.20	0.00	3.84	0.00	2.22	0.00	1.80	0.00	2.16	0.00	2.52	0.00	3.30	0.00
	7	2.24	0.00	3.99	0.00	4.34	0.00	3.85	0.00	8.40	0.00	4.48	0.00	2.59	0.00	2.10	0.00	2.52	0.00	2.94	0.00	3.85	0.00
	8	2.56	0.00	4.56	0.00	4.96	0.00	4.40	0.00	9.60	0.00	5.12	0.00	2.96	0.00	2.40	0.00	2.88	0.00	3.36	0.00	4.40	0.00
<b>Right Bank</b>	9	2.88	0.00	5.13	0.00	5.58	0.00	4.95	0.00	10.80	0.00	5.76	0.00	3.33	0.00	2.70	0.00	3.24	0.00	3.78	0.00	4.95	0.00
		3.20	0.00	5.70	0.00	6.20	0.00	5.50	0.00	12.00	0.00	6.40	0.00	3.70	0.00	3.00	0.00	3.60	0.00	4.20	0.00	5.50	0.00
<b>Feature Type</b> <small>(riffle, run, or pool)</small>		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry	

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

MAXIMUM      0.00

MEDIAN      0.00

Surveyor's Signature: \_\_\_\_\_

Date: 8/7/2008

WBID # 1486

Site # 3

**Field Data Sheets for Recreational Use Stream Surveys**

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

(must be completed for each site)

<b>Date &amp; Time:</b> 08-07-08	10:50 a.m.	Location Description (e.g., road crossing):
<b>Stream Name:</b> Steins Creek		On a farm about 1000 m East of ward drive
Current Weather Conditions: Sunny		Facility Name(s): Onondaga Cave State Park WWTF
Weather Conditions for Past 10 days: 2" @ Mt. Grove		Permit Number(s): MO-0134511
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>		

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 539097	Northing (UTM Y): 4141509	Horizontal Accuracy: (EPE / FOM / PDOP)	116 ft.	<del>Meters</del>
Site 11	Easting (UTM X): 539074	Northing (UTM Y): 4141622	Horizontal Accuracy: (EPE / FOM / PDOP)	55 ft.	<del>Meters</del>

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-3-A	Upstream looking down				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-3-B	Downstream looking up				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

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

Site # 3

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input checked="" type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments: Several property gates to pass through to access creek.				

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

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

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

% Cobble	80% Gravel	20% Sand	% Silt	% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

NONE (dry)
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**Water Characteristics\*:** (Mark all that apply.)

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

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

Site # 3

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

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

**Comments:** (Please record any additional comments here.)

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

Printed Names of Personnel Collecting Data: Eric Hertzler / Austin Lohkamp

Surveyor's Signature:   Date of Survey: 08-07-08

Organization: Olsson Associates Position: Field Service

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Steins Creek</u> Waterbody ID: <u>1486</u> Site #: <u>3</u> Estimated Channel Incision: <u>2</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) <b>01</b> UTM X: <u>539097</u> UTM Y: <u>4141509</u> +/- <u>116 ft.</u> (meters) <b>11</b> UTM X: <u>539074</u> UTM Y: <u>4141622</u> +/- <u>55 ft.</u> (meters) Average Stream Width: <u>6.5</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width) Field Staff: <u>Eric Hertzler / Austin Lohkamp</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>8/7/2008</u> Time: <u>10:54 a.m.</u> Dissolved Oxygen: <u>N/A</u> (mg/L) Dissolved Oxygen: <u>N/A</u> (% sat) Specific Cond: <u>N/A</u> (µS/cm) Water Temperature: <u>N/A</u> (°C)
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#### Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)																				
<b>Left Bank</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.53	0.00	0.53	0.00	0.62	0.00	1.05	0.00	1.24	0.00	0.84	0.00	0.63	0.00	0.61	0.00	0.34	0.00	0.27	0.00	0.77	0.00
2	1.06	0.00	1.06	0.00	1.24	0.00	2.10	0.00	2.48	0.00	1.68	0.00	1.26	0.00	1.22	0.00	0.68	0.00	0.54	0.00	1.54	0.00
3	1.59	0.00	1.59	0.00	1.86	0.00	3.15	0.00	3.72	0.00	2.52	0.00	1.89	0.00	1.83	0.00	1.02	0.00	0.81	0.00	2.31	0.00
4	2.12	0.00	2.12	0.00	2.48	0.00	4.20	0.00	4.96	0.00	3.36	0.00	2.52	0.00	2.44	0.00	1.36	0.00	1.08	0.00	3.08	0.00
5	2.65	0.00	2.65	0.00	3.10	0.00	5.25	0.00	6.20	0.00	4.20	0.00	3.15	0.00	3.05	0.00	1.70	0.00	1.35	0.00	3.85	0.00
6	3.18	0.00	3.18	0.00	3.72	0.00	6.30	0.00	7.44	0.00	5.04	0.00	3.78	0.00	3.66	0.00	2.04	0.00	1.62	0.00	4.62	0.00
7	3.71	0.00	3.71	0.00	4.34	0.00	7.35	0.00	8.68	0.00	5.88	0.00	4.41	0.00	4.27	0.00	2.38	0.00	1.89	0.00	5.39	0.00
8	4.24	0.00	4.24	0.00	4.96	0.00	8.40	0.00	9.92	0.00	6.72	0.00	5.04	0.00	4.88	0.00	2.72	0.00	2.16	0.00	6.16	0.00
9	4.77	0.00	4.77	0.00	5.58	0.00	9.45	0.00	11.16	0.00	7.56	0.00	5.67	0.00	5.49	0.00	3.06	0.00	2.43	0.00	6.93	0.00
<b>Right Bank</b>	5.30	0.00	5.30	0.00	6.20	0.00	10.50	0.00	12.40	0.00	8.40	0.00	6.30	0.00	6.10	0.00	3.40	0.00	2.70	0.00	7.70	0.00
<b>Feature Type</b> <small>(riffle, run, or pool)</small>	Dry																					

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

MAXIMUM      0.00

MEDIAN      0.00

Surveyor's Signature: \_\_\_\_\_



Date: 8/7/2008

WBID # 1486

Site # 4

**Field Data Sheets for Recreational Use Stream Surveys**

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

(must be completed for each site)

<b>Date &amp; Time:</b> 08-07-08                      12:36 p.m.	Location Description (e.g., road crossing): 200 m south of Weaver Road Bridge over Steins Creek
<b>Stream Name:</b> Steins Creek	
Current Weather Conditions: Sunny	Facility Name(s): Onondaga Cave State Park WWTF
Weather Conditions for Past 10 days: 2" @ Mt. Grove	Permit Number(s): MO-0134511
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 539208	Northing (UTM Y): 4143799	Horizontal Accuracy: (EPE / FOM / PDOP)    192 ft. <del>Meters</del>
Site 11	Easting (UTM X): 539300	Northing (UTM Y): 4143903	Horizontal Accuracy: (EPE / FOM / PDOP)    460 ft. <del>Meters</del>

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-4-A	Upstream looking down				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-4-B	Downstream looking up				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

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

Site # 4

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments: NONE				

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

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
<input type="checkbox"/> None of the above	Comments / Other: Bridge below transect area (35 meters)			

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

% Cobble	80% Gravel	20% Sand	% Silt	% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

NONE (Dry steam bed)
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**Water Characteristics\*:** (Mark all that apply.)

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

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

Site # 4

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

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

**Comments:** (Please record any additional comments here.)

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

Printed Names of Personnel Collecting Data: Eric Hertzler / Austin Lohkamp

Surveyor's Signature:   Date of Survey: 08-07-08

Organization: Olsson Associates Position: Field Service

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Steins Creek</u> Waterbody ID: <u>1486</u> Site #: <u>4</u>  Estimated Channel Incision: <u>1.5</u> (m) (height between low bank width and water)  GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) <b>01</b> UTM X: <u>539208</u> UTM Y: <u>4143799</u> +/- <u>192</u> ft. (meters) <b>11</b> UTM X: <u>539300</u> UTM Y: <u>4143803</u> +/- <u>460</u> ft. (meters)  Average Stream Width: <u>6</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Eric Hertzler / Austin Lohkamp</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>8/7/2008</u> Time: <u>12:44 p.m.</u>  Dissolved Oxygen: <u>N/A</u> (mg/L)  Dissolved Oxygen: <u>N/A</u> (% sat)  Specific Cond: <u>N/A</u> (µS/cm)  Water Temperature: <u>N/A</u> (°C)
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#### Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
<b>Left Bank</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	0.51	0.00	0.72	0.00	0.44	0.00	0.52	0.00	0.37	0.00	0.81	0.00	0.75	0.00	0.63	0.00	0.66	0.00	0.13	0.00	0.50	0.00
	2	1.02	0.00	1.44	0.00	0.88	0.00	1.04	0.00	0.74	0.00	1.62	0.00	1.50	0.00	1.26	0.00	1.32	0.00	0.26	0.00	1.00	0.00
	3	1.53	0.00	2.16	0.00	1.32	0.00	1.56	0.00	1.11	0.00	2.43	0.00	2.25	0.00	1.89	0.00	1.98	0.00	0.39	0.00	1.50	0.00
	4	2.04	0.00	2.88	0.00	1.76	0.00	2.08	0.00	1.48	0.00	3.24	0.00	3.00	0.00	2.52	0.00	2.64	0.00	0.52	0.00	2.00	0.00
	5	2.55	0.00	3.60	0.00	2.20	0.00	2.60	0.00	1.85	0.00	4.05	0.00	3.75	0.00	3.15	0.00	3.30	0.00	0.65	0.00	2.50	0.00
	6	3.06	0.00	4.32	0.00	2.64	0.00	3.12	0.00	2.22	0.00	4.86	0.00	4.50	0.00	3.78	0.00	3.96	0.00	0.78	0.00	3.00	0.00
	7	3.57	0.00	5.04	0.00	3.08	0.00	3.64	0.00	2.59	0.00	5.67	0.00	5.25	0.00	4.41	0.00	4.62	0.00	0.91	0.00	3.50	0.00
	8	4.08	0.00	5.76	0.00	3.52	0.00	4.16	0.00	2.96	0.00	6.48	0.00	6.00	0.00	5.04	0.00	5.28	0.00	1.04	0.00	4.00	0.00
9	4.59	0.00	6.48	0.00	3.96	0.00	4.68	0.00	3.33	0.00	7.29	0.00	6.75	0.00	5.67	0.00	5.94	0.00	1.17	0.00	4.50	0.00	
<b>Right Bank</b>		5.10	0.00	7.20	0.00	4.40	0.00	5.20	0.00	3.70	0.00	8.10	0.00	7.50	0.00	6.30	0.00	6.60	0.00	1.30	0.00	5.00	0.00
<b>Feature Type</b> <small>(riffle, run, or pool)</small>		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry	

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

MAXIMUM      0.00

MEDIAN      0.00

Surveyor's Signature: \_\_\_\_\_



Date: 8/7/2008

WBID # 1486

Site # 5

**Field Data Sheets for Recreational Use Stream Surveys**

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

(must be completed for each site)

<b>Date &amp; Time:</b> 08-07-08                      1:21 p.m.	Location Description (e.g., road crossing): Downstream 100 m from Persimmon Rd Bridge Crossing
<b>Stream Name:</b> Steins Creek	
Current Weather Conditions: Sunny	Facility Name(s): Onondaga Cave State Park WWTF
Weather Conditions for Past 10 days: 2" @ Mt. Grove	Permit Number(s): MO-0134511
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 540073	Northing (UTM Y): 4145714	Horizontal Accuracy: (EPE / FOM / PDOP)    231 ft. <del>Meters</del>
Site 11	Easting (UTM X): 540038	Northing (UTM Y): 4145867	Horizontal Accuracy: (EPE / FOM / PDOP)    101 ft. <del>Meters</del>

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-5-A	Upstream looking down				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-5-B	Downstream looking up				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

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

Site # 5

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input 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: NONE				

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

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
<input type="checkbox"/> None of the above	Comments / Other: Bridge – Persimmon Road Bridge 100 m south of transect area			

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

% Cobble	80% Gravel	20% Sand	% Silt	% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

NONE
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**Water Characteristics\*:** (Mark all that apply.)

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

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

Site # 5

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

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

**Comments:** (Please record any additional comments here.)

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

Printed Names of Personnel Collecting Data: Eric Hertzler / Austin Lohkamp

Surveyor's Signature:   Date of Survey: 08-07-08

Organization: Olsson Associates Position: Field Service

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Steins Creek</u> Waterbody ID: <u>1486</u> Site #: <u>5</u>  Estimated Channel Incision: <u>1.5</u> (m) (height between low bank width and water)  GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) <b>01</b> UTM X: <u>540073</u> UTM Y: <u>4145714</u> +/- <u>231</u> ft. (meters) <b>11</b> UTM X: <u>540038</u> UTM Y: <u>4145867</u> +/- <u>101</u> ft. (meters)  Average Stream Width: <u>9</u> (meters)      Length of Survey Segment: <u>180</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Eric Hertzler / Austin Lohkamp</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>8/7/2008</u> Time: <u>1:21 p.m.</u>  Dissolved Oxygen: <u>N/A</u> (mg/L)  Dissolved Oxygen: <u>N/A</u> (% sat)  Specific Cond: <u>N/A</u> (µS/cm)  Water Temperature: <u>N/A</u> (°C)
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#### Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
<b>Left Bank</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	0.95	0.00	0.68	0.00	0.97	0.00	1.26	0.00	1.04	0.00	0.86	0.00	0.92	0.00	0.98	0.00	0.86	0.00	1.04	0.00	1.36	0.00
	2	1.90	0.00	1.36	0.00	1.94	0.00	2.52	0.00	2.08	0.00	1.72	0.00	1.84	0.00	1.96	0.00	1.72	0.00	2.08	0.00	2.72	0.00
	3	2.85	0.00	2.04	0.00	2.91	0.00	3.78	0.00	3.12	0.00	2.58	0.00	2.76	0.00	2.94	0.00	2.58	0.00	3.12	0.00	4.08	0.00
	4	3.80	0.00	2.72	0.00	3.88	0.00	5.04	0.00	4.16	0.00	3.44	0.00	3.68	0.00	3.92	0.00	3.44	0.00	4.16	0.00	5.44	0.00
	5	4.75	0.00	3.40	0.00	4.85	0.00	6.30	0.00	5.20	0.00	4.30	0.00	4.60	0.00	4.90	0.00	4.30	0.00	5.20	0.00	6.80	0.00
	6	5.70	0.00	4.08	0.00	5.82	0.00	7.56	0.00	6.24	0.00	5.16	0.00	5.52	0.00	5.88	0.00	5.16	0.00	6.24	0.00	8.16	0.00
	7	6.65	0.00	4.76	0.00	6.79	0.00	8.82	0.00	7.28	0.00	6.02	0.00	6.44	0.00	6.86	0.00	6.02	0.00	7.28	0.00	9.52	0.00
	8	7.60	0.00	5.44	0.00	7.76	0.00	10.08	0.00	8.32	0.00	6.88	0.00	7.36	0.00	7.84	0.00	6.88	0.00	8.32	0.00	10.88	0.00
9	8.55	0.00	6.12	0.00	8.73	0.00	11.34	0.00	9.36	0.00	7.74	0.00	8.28	0.00	8.82	0.00	7.74	0.00	9.36	0.00	12.24	0.00	
<b>Right Bank</b>		9.50	0.00	6.80	0.00	9.70	0.00	12.60	0.00	10.40	0.00	8.60	0.00	9.20	0.00	9.80	0.00	8.60	0.00	10.40	0.00	13.60	0.00
<b>Feature Type</b> <small>(riffle, run, or pool)</small>		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry	

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

MAXIMUM      0.00

MEDIAN      0.00

Surveyor's Signature: \_\_\_\_\_

Date: 8/7/2008

WBID # 1486

Site # 6

**Field Data Sheets for Recreational Use Stream Surveys**

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

(must be completed for each site)

<b>Date &amp; Time:</b> 08-06-08 10:40 a.m.	Location Description (e.g., road crossing): Downstream of Griffin Rd. Bridge
<b>Stream Name:</b> Steins Creek	
Current Weather Conditions: Partly sunny	Facility Name(s): Onondaga Cave State Park WWTF
Weather Conditions for Past 10 days: 2" @ Mt. Grove	Permit Number(s): MO-0134511
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 538982	Northing (UTM Y): 4147472	Horizontal Accuracy: (EPE / FOM / PDOP) 42 ft. <del>Meters</del>
Site 11	Easting (UTM X): 538967	Northing (UTM Y): 4147587	Horizontal Accuracy: (EPE / FOM / PDOP) 321 ft. <del>Meters</del>

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-6-A	Upstream looking down				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-6-B	Downstream looking up				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-6-C	Pool				

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

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

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments: NONE				

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

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
<input checked="" type="checkbox"/> None of the above	Comments / Other: Needle cap – no other human activity noted. Fireworks, Beer cans			

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

% Cobble	80% Gravel	20% Sand	% Silt	% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

Small amount of algae on banks
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**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 type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

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

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)
Pool	1	12	10	.5	+1

**Comments:** (Please record any additional comments here.)

Pool found over 1 meter deep at bridge over Steins Creek on Griffin Road. 6-pack holder, Fireworks found on gravel banks.  
 See photo 1486-6-C

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

Printed Names of Personnel Collecting Data: Eric Hertzler / Austin Lohkamp

Surveyor's Signature:   - Date of Survey: 08-06-08

Organization: Olsson Associates Position: Field Service

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Steins Creek</u> Waterbody ID: <u>1486</u> Site #: <u>6</u>  Estimated Channel Incision: <u>0.55</u> (m) (height between low bank width and water)  GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) <b>01</b> UTM X: <u>538982</u> UTM Y: <u>4147472</u> +/- <u>42</u> ft. (meters) <b>11</b> UTM X: <u>538967</u> UTM Y: <u>4147587</u> +/- <u>321</u> ft. (meters)  Average Stream Width: <u>4.5</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Eric Hertzler / Austin Lohkamp</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>8/6/2008</u> Time: <u>10:40 a.m.</u>  Dissolved Oxygen: <u>2.3</u> (mg/L)  Dissolved Oxygen: <u>30</u> (% sat)  Specific Cond: <u>350</u> (µS/cm)  Water Temperature: <u>25</u> (°C)
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#### Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
<b>Left Bank</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	0.56	0.05	0.73	0.13	0.38	0.08	0.43	0.05	0.10	0.05	0.16	0.05	0.20	0.05	0.52	0.28	0.33	0.09	0.85	0.19	0.91	0.09
	2	1.12	0.05	1.46	0.16	0.76	0.05	0.86	0.05	0.20	0.05	0.32	0.05	0.40	0.05	1.04	0.67	0.66	0.15	1.70	0.15	1.82	0.11
	3	1.68	0.05	2.19	0.15	1.14	0.05	1.29	0.06	0.30	0.05	0.48	0.05	0.60	0.15	1.56	0.72	0.99	0.18	2.55	0.00	2.73	0.15
	4	2.24	0.06	2.92	0.20	1.52	0.21	1.72	0.12	0.40	0.05	0.64	0.05	0.80	0.19	2.08	0.71	1.32	0.17	3.40	0.00	3.64	0.05
	5	2.80	0.16	3.65	0.28	1.90	0.32	2.15	0.27	0.50	0.05	0.80	0.05	1.00	0.15	2.60	0.65	1.65	0.17	4.25	0.00	4.55	0.05
	6	3.36	0.18	4.38	0.32	2.28	0.39	2.58	0.32	0.60	0.05	0.96	0.06	1.20	0.13	3.12	0.58	1.98	0.19	5.10	0.00	5.46	0.05
	7	3.92	0.23	5.11	0.25	2.66	0.39	3.01	0.36	0.70	0.05	1.12	0.09	1.40	0.13	3.64	0.48	2.31	0.14	5.95	0.05	6.37	0.05
	8	4.48	0.21	5.84	0.20	3.04	0.17	3.44	0.34	0.80	0.14	1.28	0.08	1.60	0.10	4.16	0.39	2.64	0.10	6.80	0.12	7.28	0.05
9	5.04	0.15	6.57	0.08	3.42	0.18	3.87	0.38	0.90	0.17	1.44	0.05	1.80	0.06	4.68	0.24	2.97	0.07	7.65	0.25	8.19	0.05	
<b>Right Bank</b>		5.60	0.00	7.30	0.00	3.80	0.00	4.30	0.00	1.00	0.00	1.60	0.00	2.00	0.00	5.20	0.00	3.30	0.00	8.50	0.00	9.10	0.00
<b>Feature Type</b> <small>(riffle, run, or pool)</small>		Run		Run		Run		Run		Run		Riffle		Riffle		Pool		Run		Run		Run	

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

MAXIMUM      0.72

MEDIAN      0.12

Surveyor's Signature: \_\_\_\_\_

Date: 8/6/2008

WBID # 1486

Site # 7

**Field Data Sheets for Recreational Use Stream Surveys**

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

(must be completed for each site)

<b>Date &amp; Time:</b> 08-06-08 12:38 p.m.	Location Description (e.g., road crossing):
<b>Stream Name:</b> Stein Creek	Local Farm Road off of Ruby Drive that crosses Steins Creek
Current Weather Conditions: Partly sunny	Facility Name(s): Onondaga Cave State Park WWTF
Weather Conditions for Past 10 days: 2" @ Mt. Grove	Permit Number(s): MO-0134511
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 538925	Northing (UTM Y): 4149839	Horizontal Accuracy: (EPE / FOM / PDOP) 36 ft. <del>Meters</del>
Site 11	Easting (UTM X): 538907	Northing (UTM Y): 4149960	Horizontal Accuracy: (EPE / FOM / PDOP) 220 ft. <del>Meters</del>

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-7-A	Upstream looking down				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-7-B	Downstream looking up				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

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

Site # 7

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input checked="" type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input 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
<input type="checkbox"/> None of the above	Comments / Other: Stream crossing on local farm			

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

% Cobble	80% Gravel	20% Sand	% Silt	% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

Some algae on rocks
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**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 type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

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

Site # 7

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

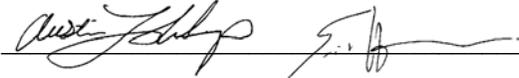
Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

**Comments:** (Please record any additional comments here.)

NONE

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

Printed Names of Personnel Collecting Data: Eric Hertzler / Austin Lohkamp

Surveyor's Signature:  Date of Survey: 08-06-08

Organization: Olsson Associates Position: Field Service

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Steins Creek</u> Waterbody ID: <u>1486</u> Site #: <u>7</u>  Estimated Channel Incision: <u>0.3</u> (m) (height between low bank width and water)  GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) <b>01</b> UTM X: <u>538925</u> UTM Y: <u>4149839</u> +/- <u>36</u> ft. (meters) <b>11</b> UTM X: <u>538907</u> UTM Y: <u>4149960</u> +/- <u>220</u> ft. (meters)  Average Stream Width: <u>5.5</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Eric Hertzler / Austin Lohkamp</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>8/6/2008</u> Time: <u>12:40 p.m.</u>  Dissolved Oxygen: <u>3.7</u> (mg/L)  Dissolved Oxygen: <u>38.6</u> (% sat)  Specific Cond: <u>346</u> (µS/cm)  Water Temperature: <u>19</u> (°C)
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#### Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
<b>Left Bank</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	0.25	0.12	0.45	0.07	0.45	0.07	0.36	0.27	0.67	0.05	0.75	0.05	0.46	0.09	0.53	0.07	0.55	0.06	0.60	0.05	0.32	0.05
	2	0.50	0.06	0.90	0.18	0.90	0.07	0.72	0.38	1.34	0.29	1.50	0.05	0.92	0.11	1.06	0.11	1.10	0.08	1.20	0.05	0.64	0.13
	3	0.75	0.09	1.35	0.19	1.35	0.11	1.08	0.41	2.01	0.43	2.25	0.00	1.38	0.13	1.59	0.17	1.65	0.14	1.80	0.08	0.96	0.09
	4	1.00	0.06	1.80	0.15	1.80	0.09	1.44	0.48	2.68	0.37	3.00	0.05	1.84	0.12	2.12	0.17	2.20	0.11	2.40	0.11	1.28	0.07
	5	1.25	0.09	2.25	0.12	2.25	0.12	1.80	0.43	3.35	0.31	3.75	0.06	2.30	0.14	2.65	0.18	2.75	0.18	3.00	0.14	1.60	0.05
	6	1.50	0.05	2.70	0.16	2.70	0.06	2.16	0.38	4.02	0.24	4.50	0.07	2.76	0.12	3.18	0.15	3.30	0.08	3.60	0.12	1.92	0.05
	7	1.75	0.05	3.15	0.08	3.15	0.10	2.52	0.23	4.69	0.23	5.25	0.07	3.22	0.21	3.71	0.21	3.85	0.17	4.20	0.13	2.24	0.05
	8	2.00	0.05	3.60	0.11	3.60	0.08	2.88	0.17	5.36	0.09	6.00	0.08	3.68	0.23	4.24	0.17	4.40	0.15	4.80	0.05	2.56	0.06
9	2.25	0.05	4.05	0.05	4.05	0.07	3.24	0.14	6.03	0.05	6.75	0.11	4.14	0.24	4.77	0.14	4.95	0.16	5.40	0.05	2.88	0.05	
<b>Right Bank</b>		2.50	0.00	4.50	0.00	4.50	0.00	3.60	0.00	6.70	0.00	7.50	0.00	4.60	0.00	5.30	0.00	5.50	0.00	6.00	0.00	3.20	0.00
<b>Feature Type</b> <small>(riffle, run, or pool)</small>		Riffle		Rin		Run		Run		Run		Riffle		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 0.1 meter unless depth is too deep to measure (then record as > 1)  
 All measurements to be taken to the nearest 0.01 meter.

MAXIMUM      0.48

MEDIAN      0.11

Surveyor's Signature: \_\_\_\_\_



Date: 8/6/2008

WBID # 1486

Site # 8

**Field Data Sheets for Recreational Use Stream Surveys**

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

(must be completed for each site)

<b>Date &amp; Time:</b> 08-06-08      1:35 p.m.	Location Description (e.g., road crossing): Downstream about 500m from <b>O</b> Highway bridge on Steins Creek
<b>Stream Name:</b> Steins Creek	
Current Weather Conditions: Partly sunny	Facility Name(s): Onondaga Cave State Park WWTF
Weather Conditions for Past 10 days: 2" @ Mt. Grove	Permit Number(s): MO-0134511
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 539199	Northing (UTM Y): 4151622	Horizontal Accuracy: (EPE / FOM / PDOP)    59 ft. <del>Meters</del>
Site 11	Easting (UTM X): 539228	Northing (UTM Y): 4151736	Horizontal Accuracy: (EPE / FOM / PDOP)    34 ft. <del>Meters</del>

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-8-A	Upstream looking down				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-8-B	Downstream looking up				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

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

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments: NONE				

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

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

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

% Cobble	80% Gravel	20% Sand	% Silt	% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

Some algae present on gravels
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**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 type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

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

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

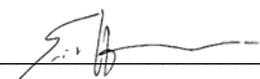
Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

**Comments:** (Please record any additional comments here.)

NONE

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

Printed Names of Personnel Collecting Data: Eric Hertzler / Austin Lohkamp

Surveyor's Signature:   Date of Survey: 08-06-08

Organization: Olsson Associates Position: Field Service

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Steins Creek</u> Waterbody ID: <u>1486</u> Site #: <u>8</u>  Estimated Channel Incision: <u>0.4</u> (m) (height between low bank width and water)  GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) <b>01</b> UTM X: <u>539199</u> UTM Y: <u>4151622</u> +/- <u>59</u> ft. (meters) <b>11</b> UTM X: <u>539228</u> UTM Y: <u>4151736</u> +/- <u>34</u> ft. (meters)  Average Stream Width: <u>7.5</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Eric Hertzler / Austin Lohkamp</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>8/6/2008</u> Time: <u>1:39 p.m.</u>  Dissolved Oxygen: <u>7.67</u> (mg/L)  Dissolved Oxygen: <u>92.7</u> (% sat)  Specific Cond: <u>336</u> (µS/cm)  Water Temperature: <u>25</u> (°C)
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#### Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
<b>Left Bank</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	0.70	0.05	0.43	0.07	0.57	0.05	0.71	0.20	0.80	0.05	0.68	0.05	1.28	0.05	1.26	0.26	1.25	0.13	1.41	0.11	1.35	0.12
	2	1.40	0.08	0.86	0.08	1.14	0.05	1.42	0.23	1.60	0.06	1.36	0.09	2.56	0.00	2.52	0.11	2.50	0.14	2.82	0.14	2.70	0.05
	3	2.10	0.06	1.29	0.13	1.71	0.05	2.13	0.32	2.40	0.11	2.04	0.13	3.84	0.00	3.78	0.19	3.75	0.05	4.23	0.08	4.05	0.05
	4	2.80	0.05	1.72	0.17	2.28	0.05	2.84	0.45	3.20	0.09	2.72	0.21	5.12	0.05	5.04	0.00	5.00	0.00	5.64	0.09	5.40	0.05
	5	3.50	0.07	2.15	0.16	2.85	0.11	3.55	0.61	4.00	0.13	3.40	0.31	6.40	0.12	6.30	0.00	6.25	0.00	7.05	0.00	6.75	0.05
	6	4.20	0.05	2.58	0.20	3.42	0.13	4.26	0.63	4.80	0.45	4.08	0.37	7.68	0.13	7.56	0.00	7.50	0.00	8.46	0.00	8.10	0.05
	7	4.90	0.09	3.01	0.17	3.99	0.09	4.97	0.54	5.60	0.43	4.76	0.41	8.96	0.06	8.82	0.00	8.75	0.00	9.87	0.00	9.45	0.05
	8	5.60	0.07	3.44	0.16	4.56	0.06	5.68	0.33	6.40	0.34	5.44	0.43	10.24	0.00	10.08	0.05	10.00	0.05	11.28	0.00	10.80	0.23
9	6.30	0.05	3.87	0.11	5.13	0.05	6.39	0.37	7.20	0.26	6.12	0.37	11.52	0.05	11.34	0.09	11.25	0.05	12.69	0.18	12.15	0.34	
<b>Right Bank</b>		7.00	0.00	4.30	0.00	5.70	0.00	7.10	0.00	8.00	0.00	6.80	0.00	12.80	0.00	12.60	0.00	12.50	0.00	14.10	0.00	13.50	0.00
<b>Feature Type</b>		Riffle		Riffle		Riffle		Pool		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 0.1 meter unless depth is too deep to measure (then record as > 1)  
 All measurements to be taken to the nearest 0.01 meter.

MAXIMUM      0.63

MEDIAN      0.06

Surveyor's Signature: \_\_\_\_\_

Date: 8/6/2008

WBID # 1486

Site # 9

**Field Data Sheets for Recreational Use Stream Surveys**

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

(must be completed for each site)

<b>Date &amp; Time:</b> 08-06-08 3:50 p.m.	Location Description (e.g., road crossing): About 500m upstream of Skyline and Redbud Bridge
<b>Stream Name:</b> Steins Creek	
Current Weather Conditions: Sunny	Facility Name(s): Onondaga Cave State Park WWTF
Weather Conditions for Past 10 days: 2" @ Mt. Grove	Permit Number(s): MO-0134511
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 540619	Northing (UTM Y): 4153924	Horizontal Accuracy: (EPE / FOM / PDOP) 87 ft. <del>Meters</del>
Site 11	Easting (UTM X): 540728	Northing (UTM Y): 4154034	Horizontal Accuracy: (EPE / FOM / PDOP) 34 ft. <del>Meters</del>

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-9-A	Upstream looking down				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-9-B	Road crossing in site				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-9-C	Downstream looking up				

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

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

Site # 9

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments: NONE				

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

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

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

% Cobble	80% Gravel	20% Sand	% Silt	% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

NONE NOTED
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**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 type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

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

Site # 9

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

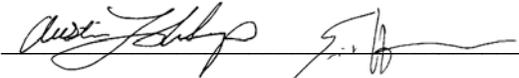
Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

**Comments:** (Please record any additional comments here.)

Road crossing (for farm use) in survey transect . See photo 1486-9-B

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

Printed Names of Personnel Collecting Data: Eric Hertzler / Austin Lohkamp

Surveyor's Signature:  Date of Survey: 08-06-08

Organization: Olsson Associates Position: Field Service

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Steins Creek</u> Waterbody ID: <u>1486</u> Site #: <u>9</u>  Estimated Channel Incision: <u>0.35</u> (m) (height between low bank width and water)  GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) <b>01</b> UTM X: <u>540619</u> UTM Y: <u>4153924</u> +/- <u>87 ft.</u> (meters) <b>11</b> UTM X: <u>540728</u> UTM Y: <u>4154034</u> +/- <u>34 ft.</u> (meters)  Average Stream Width: <u>12</u> (meters)      Length of Survey Segment: <u>240</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Eric Hertzler / Austin Lohkamp</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>8/6/2008</u> Time: <u>3:52 p.m.</u>  Dissolved Oxygen: <u>6.15</u> (mg/L)  Dissolved Oxygen: <u>76.5</u> (% sat)  Specific Cond: <u>276</u> (µS/cm)  Water Temperature: <u>27</u> (°C)
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#### Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
<b>Left Bank</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	1.00	0.05	0.97	0.38	0.65	0.47	1.08	0.50	1.42	0.11	1.95	0.08	1.88	0.06	1.69	0.05	1.54	0.05	1.18	0.05	0.73	0.05
	2	2.00	0.10	1.94	0.37	1.30	0.85	2.16	0.25	2.84	0.16	3.90	0.05	3.76	0.00	3.38	0.05	3.08	0.05	2.36	0.05	1.46	0.05
	3	3.00	0.21	2.91	0.19	1.95	0.88	3.24	0.32	4.26	0.14	5.85	0.00	5.64	0.00	5.07	0.05	4.62	0.06	3.54	0.05	2.19	0.05
	4	4.00	0.25	3.88	0.33	2.60	0.87	4.32	0.33	5.68	0.08	7.80	0.00	7.52	0.00	6.76	0.06	6.16	0.05	4.72	0.05	2.92	0.05
	5	5.00	0.24	4.85	0.39	3.25	0.73	5.40	0.32	7.10	0.07	9.75	0.05	9.40	0.05	8.45	0.05	7.70	0.05	5.90	0.05	3.65	0.08
	6	6.00	0.18	5.82	0.32	3.90	0.53	6.48	0.29	8.52	0.05	11.70	0.05	11.28	0.05	10.14	0.05	9.24	0.00	7.08	0.05	4.38	0.09
	7	7.00	0.13	6.79	0.33	4.55	0.31	7.56	0.22	9.94	0.05	13.65	0.05	13.16	0.05	11.83	0.00	10.78	0.00	8.26	0.06	5.11	0.06
	8	8.00	0.14	7.76	0.14	5.20	0.17	8.64	0.19	11.36	0.05	15.60	0.05	15.04	0.06	13.52	0.11	12.32	0.00	9.44	0.05	5.84	0.08
	9	9.00	0.17	8.73	0.09	5.85	0.07	9.72	0.08	12.78	0.05	17.55	0.17	16.92	0.07	15.21	0.05	13.86	0.09	10.62	0.05	6.57	0.09
<b>Right Bank</b>		10.00	0.00	9.70	0.00	6.50	0.00	10.80	0.00	14.20	0.00	19.50	0.00	18.80	0.00	16.90	0.00	15.40	0.00	11.80	0.00	7.30	0.00
<b>Feature Type</b>		Run		Run		Run		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 0.1 meter unless depth is too deep to measure (then record as > 1)  
 All measurements to be taken to the nearest 0.01 meter.

MAXIMUM      0.88

MEDIAN      0.06

Surveyor's Signature: \_\_\_\_\_

Date: 8/6/2008

**Field Data Sheets for Recreational Use Stream Surveys**

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

(must be completed for each site)

<b>Date &amp; Time:</b> 08-07-08	2:32 p.m.	Location Description (e.g., road crossing):
<b>Stream Name:</b> Stein’s Creek		Confluence of Osage Fork River and Stein’s Creek
Current Weather Conditions: sunny		Facility Name(s): Onondaga Cave State Park WWTF
Weather Conditions for Past 10 days: 2” at Mt. Grove		Permit Number(s): MO-0134511
Official Drought Conditions at time of this survey (search DNR home page for “drought”): No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>		

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 541318	Northing (UTM Y): 4154836	Horizontal Accuracy: (EPE / FOM / PDOP) 35 ft <del>Meters</del>
Site 11	Easting (UTM X): 541415	Northing (UTM Y): 4154931	Horizontal Accuracy: (EPE / FOM / PDOP) 100 ft <del>Meters</del>

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-10-A	Upstream looking down				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-10-B	Downstream looking up				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1486-10-C	Shows Osage Fork River downstream end of transect.				

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

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

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

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

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

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

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

% Cobble	80% Gravel	20% Sand	% Silt	% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

Some moss / algae on substrate
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**Water Characteristics\*:** (Mark all that apply.)

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

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

**Field Data Sheets for Recreational Use Stream Surveys**

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

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

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)
River confluence	50m downstream of downstream end of transect				

**Comments:** (Please record any additional comments here.)

Osage Fork River @ downstream end of transect. See photo 1486-10-C

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

Printed Names of Personnel Collecting Data: Eric Hertzler / Austin Lohkamp

Surveyor's Signature:   Date of Survey: 08-07-08

Organization: Olsson Associates Position: Field Service

**Field Data Sheets for Recreational Use Stream Surveys**

**Data Sheet C - Field Survey Results**

Stream Name: <u>Stein's Creek</u> Waterbody ID: <u>1486</u> Site #: <u>10</u>  Estimated Channel Incision: <u>0.4</u> (m) (height between low bank width and water)  GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) <b>01</b> UTM X: <u>541318</u> UTM Y: <u>4154836</u> +/- <u>35</u> ft. (meters) <b>11</b> UTM X: <u>541415</u> UTM Y: <u>4154931</u> +/- <u>100</u> ft. (meters)  Average Stream Width: <u>5</u> meters)      Length of Survey Segment: <u>150</u> meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Eric Hertzler / Austin Lohkamp</u>	<p align="center"><b>Dissolved Oxygen</b></p> Date: <u>8/7/2008</u> Time: <u>2:32 p.m.</u>  Dissolved Oxygen: <u>4.38</u> (mg/L)  Dissolved Oxygen: <u>55.4</u> (% sat)  Specific Cond: <u>296</u> (µS/cm)  Water Temperature: <u>25.3</u> (°C)
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**Transect Cross-Section**

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)																				
<b>Left Bank</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.55	0.05	0.12	0.05	0.49	0.10	0.81	0.30	0.85	0.06	0.87	0.16	0.86	0.10	0.89	0.51	0.87	0.23	0.42	0.17	0.25	0.05
2	1.10	0.08	0.24	0.05	0.98	0.05	1.62	0.12	1.70	0.05	1.74	0.25	1.72	0.00	1.78	0.52	1.74	0.33	0.84	0.26	0.50	0.19
3	1.65	0.10	0.36	0.14	1.47	0.05	2.43	0.05	2.55	0.05	2.61	0.33	2.58	0.00	2.67	0.50	2.61	0.34	1.26	0.40	0.75	0.12
4	2.20	0.14	0.48	0.19	1.96	0.05	3.24	0.05	3.40	0.05	3.48	0.33	3.44	0.00	3.56	0.49	3.48	0.32	1.68	0.43	1.00	0.11
5	2.75	0.19	0.60	0.22	2.45	0.05	4.05	0.05	4.25	0.05	4.35	0.27	4.30	0.05	4.45	0.43	4.35	0.28	2.10	0.49	1.25	0.90
6	3.30	0.20	0.72	0.13	2.94	0.05	4.86	0.05	5.10	0.05	5.22	0.18	5.16	0.05	5.34	0.39	5.22	0.23	2.52	0.46	1.50	0.06
7	3.85	0.09	0.84	0.20	3.43	0.05	5.67	0.07	5.95	0.09	6.09	0.16	6.02	0.08	6.23	0.27	6.09	0.18	2.94	0.24	1.75	0.07
8	4.40	0.05	0.96	0.13	3.92	0.05	6.48	0.06	6.80	0.08	6.96	0.05	6.88	0.09	7.12	0.19	6.96	0.14	3.36	0.07	2.00	0.06
9	4.95	0.05	1.08	0.07	4.41	0.05	7.29	0.05	7.65	0.07	7.83	0.05	7.74	0.05	8.01	0.08	7.83	0.06	3.78	0.05	2.25	0.05
<b>Right Bank</b>	5.50	0.00	1.20	0.00	4.90	0.00	8.10	0.00	8.50	0.00	8.70	0.00	8.60	0.00	8.90	0.00	8.70	0.00	4.20	0.00	2.50	0.00
<b>Feature Type</b> <small>(riffle, run, or pool)</small>	Run		Run		Riffle		Riffle		Riffle		Run		Riffle									

<-- assumed to be 0.11 instead of 11.00

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

MAXIMUM      0.90  
MEDIAN          0.07

Surveyor's Signature:











