Missouri
Department of
Natural Resources

# Use Attainability Analysis

for

WBID 2029 Boone Creek

Submitted by
SES, Inc.

To
Missouri Department of Natural Resources
Water Protection Program

On

November 4, 2008

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet A – Water Body Identification

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

| |
|---|
| Water Body Name (from USGS 7.5' quad): Boone Creek |
| Missouri Water Body Identification (WBID) Number: 2069 |
| 8-digit HUC: 07140103 |
| County(ies), Listed Upstream to Downstream: Franklin |
| Upstream Legal Description (from Table H): T41N R3W Sec. 29 |
| Downstream Legal Description (from Table H): T40N R3W Sec. 15 |
| Number of sites evaluated: 5 |
| List all site numbers, consecutively upstream to downstream:<br>1, 2, 3, 4, 5 |
| **Include a Site Location Map(s)**. The map must include all requirements detailed in the *Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol* (Section IV.D.8.a). |

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

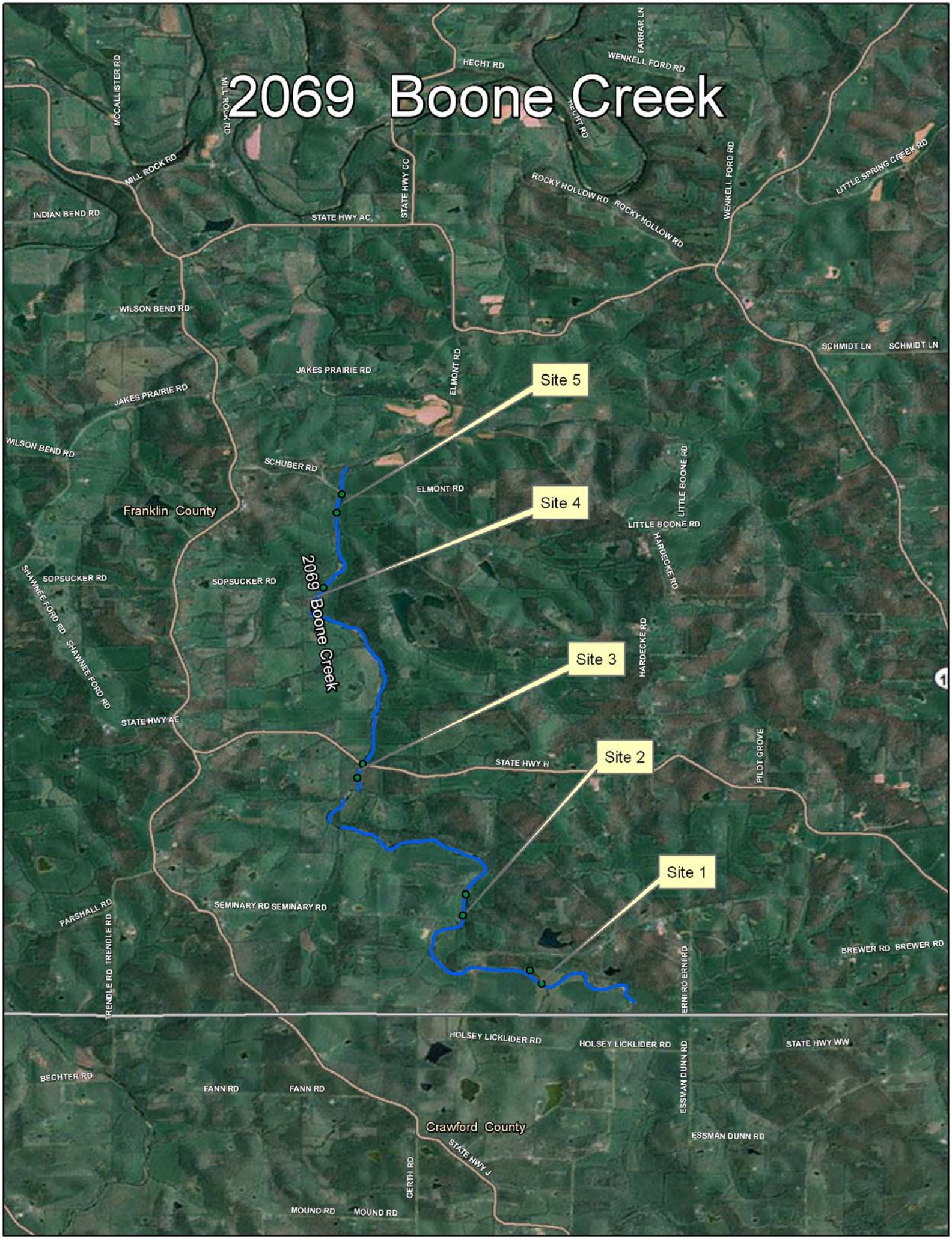
| |
|---|
| Facility Name(s) and Permit Number(s): Lakewood Mobile Home Park<br>MO0085341 |

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

| | |
|---|---|
| Name of Surveyor: David Bender | Telephone Number: 913-307-0046 |
| Organization/Employer: SES, Inc. | |

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

**Signed:** David Bender **Date:** 10-02-08


2069 Boone Creek
Site 5
Site 4
Site 3
Site 2
Site 1
2069 Boone Creek
Franklin County
Crawford County
HECHT RD
WENKELL FORD RD
FARRAR LN
MCCALLISTER RD
MILL ROCK RD
STATE HWY CC
ROCKY HOLLOW RD
WENKELL FORD RD
LITTLE SPRING CREEK RD
INDIAN BEND RD
STATE HWY AC
WILSON BEND RD
SCHMIDT LN
JAKES PRAIRIE RD
ELMONT RD
SCHUBER RD
LITTLE BOONE RD
HARDECKE RD
SOPSUCKER RD
SHAWNEE FORD RD
STATE HWY AE
STATE HWY H
PILOT GROVE
SEMINARY RD
PARSHALL RD
TRENDLE RD
BREWER RD
ERNI RD
HOLSEY LICKLIDER RD
STATE HWY WW
BECHTER RD
FANN RD
ESSMAN DUNN RD
STATE HWY J
GERTH RD
MOUND RD

WBID # __2069___

Site # _____1____

# Field Data Sheets for Recreational Use Stream Surveys

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

(must be completed for each site)

| | |
|---|---|
| **Date & Time**: 10/02/08 16:45 | Location Description (e.g., road crossing): Seminary Rd. |
| **Stream Name:** Boone Cr. | |
| Current Weather Conditions: Clear | Facility Name(s): Lakewood Mobile Home Park |
| Weather Conditions for Past 10 days: 0.06 in | Permit Number(s): MO 0085341 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐ | |

### Site Location:

| LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS) | | | | |
|---|---|---|---|---|
| Site 01 | Easting (UTM X): 0652392 | Northing (UTM Y): 4230311 | Horizontal Accuracy: (EPE / FOM / PDOP) | 5 Meters |
| Site 11 | Easting (UTM X): 0652263 | Northing (UTM Y): 4230492 | Horizontal Accuracy: (EPE / FOM / PDOP) | 5 Meters |

### Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|---|---|---|---|---|---|
| 33 | upstream | 34 | downstream | | |
| | | | | | |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| | | | | | |
| | | | | | |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| | | | | | |

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

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

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

Stream Name & WBID # __Boone Cr._____2069_____ Date of Survey _10/02/08_____

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.)

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

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

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

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

| | | | | | |
|---|---|---|---|---|---|
| % Cobble | 70% Gravel | % Sand | % Silt | % Mud/Clay | 30% Bedrock |

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

Emergent smartweed family in stream. Algae on 100% of substrate.

### Water Characteristics*: (Mark all that apply.)

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

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

Stream Name & WBID # __Boone Cr._____2069_____ Date of Survey _10/02/08_____

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) |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

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

Moved site downstream due to permission and access to stream.

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

Printed Names of Personnel Collecting Data: David Bender, Chris Schuler _____

Surveyor's Signature: David Bender_____ Date of Survey: 10/02/08_____

Organization: SES, Inc._____ Position: Field Team Leader_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

Stream Name: Boone Cr. Waterbody ID: 2069 Site #: 1

Estimated Channel Incision: 2 (m) (height between low bank width and water)

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

**01** UTM X: 0652392 UTM Y: 4230311 +/- 5 (meters)

**11** UTM X: 0652263 UTM Y: 4230492 +/- 5 (meters)

Average Stream Width: 7 (meters) Length of Survey Segment: 150 (meters)

(To determne Length of Reach) (20x average stream width)

Field Staff: David Bender, Chris Schuler

### Dissolved Oxygen

Date: 10/2/2008 Time: 16:45

Dissolved Oxygen: 10.7 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 16.8 (°C)

### Transect Cross-Section

| Station | 01 | | 02 | | 03 | | 04 | | 05 | | 06 | | 07 | | 08 | | 09 | | 10 | | 11 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) |
| **Left Bank** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **1** | 0.60 | 0.10 | 0.50 | 0.05 | 0.50 | 0.01 | 0.70 | 0.15 | 0.70 | 0.10 | 0.80 | 0.20 | 0.90 | 0.15 | 0.90 | 0.20 | 0.80 | 0.25 | 0.60 | 0.10 | 0.60 | 0.05 |
| **2** | 1.20 | 0.25 | 1.00 | 0.05 | 1.00 | 0.10 | 1.40 | 0.25 | 1.40 | 0.30 | 1.60 | 0.35 | 1.80 | 0.35 | 1.80 | 0.45 | 1.60 | 0.30 | 1.20 | 0.20 | 1.20 | 0.05 |
| **3** | 1.80 | 0.35 | 1.50 | 0.10 | 1.50 | 0.15 | 2.10 | 0.35 | 2.10 | 0.50 | 2.40 | 0.50 | 2.70 | 0.35 | 2.70 | 0.40 | 2.40 | 0.25 | 1.80 | 0.20 | 1.80 | 0.05 |
| **4** | 2.40 | 0.35 | 2.00 | 0.05 | 2.00 | 0.15 | 2.80 | 0.35 | 2.80 | 0.65 | 3.20 | 0.40 | 3.60 | 0.35 | 3.60 | 0.30 | 3.20 | 0.25 | 2.40 | 0.15 | 2.40 | 0.05 |
| **5** | 3.00 | 0.20 | 2.50 | 0.05 | 2.50 | 0.10 | 3.50 | 0.40 | 3.50 | 0.60 | 4.00 | 0.45 | 4.50 | 0.45 | 4.50 | 0.15 | 4.00 | 0.25 | 3.00 | 0.15 | 3.00 | 0.05 |
| **6** | 3.60 | 0.15 | 3.00 | 0.05 | 3.00 | 0.10 | 4.20 | 0.35 | 4.20 | 0.55 | 4.80 | 0.45 | 5.40 | 0.30 | 5.40 | 0.20 | 4.80 | 0.20 | 3.60 | 0.10 | 3.60 | 0.05 |
| **7** | 4.20 | 0.10 | 3.50 | 0.05 | 3.50 | 0.10 | 4.90 | 0.25 | 4.90 | 0.40 | 5.60 | 0.25 | 6.30 | 0.15 | 6.30 | 0.35 | 5.60 | 0.10 | 4.20 | 0.05 | 4.20 | 0.05 |
| **8** | 4.80 | 0.05 | 4.00 | 0.05 | 4.00 | 0.10 | 5.60 | 0.10 | 5.60 | 0.25 | 6.40 | 0.25 | 7.20 | 0.15 | 7.20 | 0.20 | 6.40 | 0.05 | 4.80 | 0.05 | 4.80 | 0.05 |
| **9** | 5.40 | 0.05 | 4.50 | 0.05 | 4.50 | 0.05 | 6.30 | 0.05 | 6.30 | 0.15 | 7.20 | 0.15 | 8.10 | 0.15 | 8.10 | 0.15 | 7.20 | 0.05 | 5.40 | 0.05 | 5.40 | 0.05 |
| **Right Bank** | 6.00 | 0.00 | 5.00 | 0.00 | 5.00 | 0.00 | 7.00 | 0.00 | 7.00 | 0.00 | 8.00 | 0.00 | 9.00 | 0.00 | 9.00 | 0.00 | 8.00 | 0.00 | 6.00 | 0.00 | 6.00 | 0.00 |
| **Feature Type** (riffle, run, or pool) | pool | | riffle | | riffle | | pool | | pool | | pool | | pool | | pool | | pool | | riffle | | riffle | |

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

GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine bv dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.1 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: David Bender Date: 10/2/2008

WBID # __2069___

Site # _____2____

# Field Data Sheets for Recreational Use Stream Surveys

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

(must be completed for each site)

| | |
|---|---|
| **Date & Time**: 10/03/08 8:05 | Location Description (e.g., road crossing): Seminary Rd. |
| **Stream Name:** Boone Cr. | |
| Current Weather Conditions: Clear | Facility Name(s): Lakewood Mobile Home Park |
| Weather Conditions for Past 10 days: 0.06 in | Permit Number(s): MO 0085341 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐ | |

### Site Location:

| LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS) | | | | |
|---|---|---|---|---|
| Site 01 | Easting (UTM X): 0651547 | Northing (UTM Y): 4237224 | Horizontal Accuracy: (EPE / FOM / PDOP) | 4 Meters |
| Site 11 | Easting (UTM X): 0651557 | Northing (UTM Y): 4231505 | Horizontal Accuracy: (EPE / FOM / PDOP) | 4 Meters |

### Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|---|---|---|---|---|---|
| 35 | Downstream | 36 | upstream | | |
| | | | | | |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| | | | | | |
| | | | | | |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| | | | | | |

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

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

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

Stream Name & WBID # __Boone Cr._____2069_____ Date of Survey _10/03/08_____

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.)

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

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

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

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

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

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

None

### Water Characteristics*: (Mark all that apply.)

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

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

Stream Name & WBID # __Boone Cr._____2069_____ Date of Survey _10/03/08_____

Site # ___2_____

# Field Data Sheets for Recreational Use Stream Surveys

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

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

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

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

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

Printed Names of Personnel Collecting Data: David Bender, Chris Schuler _____

Surveyor's Signature: David Bender_____ Date of Survey: 10/03/08_____

Organization: SES, Inc._____ Position: Field Team Leader_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

Stream Name: Boone Cr. Waterbody ID: 2069 Site #: 2

Estimated Channel Incision: 4 (m) (height between low bank width and water)

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

**01** UTM X: 0651547 UTM Y: 4231224 +/- 4 (meters)

**11** UTM X: 0651557 UTM Y: 4231505 +/- 4 (meters)

Average Stream Width: 9 (meters) Length of Survey Segment: 180 (meters)

(To determne Length of Reach) (20x average stream width)

Field Staff: David Bender, Chris Schuler

### Dissolved Oxygen

Date: 10/2/2008 Time: 8:05

Dissolved Oxygen: 7.5 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 12.9 (°C)

### Transect Cross-Section

| Station | 01 | | 02 | | 03 | | 04 | | 05 | | 06 | | 07 | | 08 | | 09 | | 10 | | 11 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) |
| **Left Bank** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **1** | 0.70 | 0.50 | 0.80 | 0.20 | 1.10 | 0.70 | 1.10 | 0.35 | 1.20 | 0.45 | 1.40 | 0.50 | 0.60 | 0.05 | 0.50 | 0.05 | 1.00 | 0.05 | 0.30 | 0.15 | 0.20 | 0.01 |
| **2** | 1.40 | 0.60 | 1.60 | 0.35 | 2.20 | 0.90 | 2.20 | 0.45 | 2.40 | 0.90 | 2.80 | 0.60 | 1.20 | 0.15 | 1.00 | 0.20 | 2.00 | 0.15 | 0.60 | 0.20 | 0.40 | 0.05 |
| **3** | 2.10 | 0.65 | 2.40 | 0.50 | 3.30 | 0.70 | 3.30 | 0.40 | 3.60 | 0.90 | 4.20 | 0.65 | 1.80 | 0.30 | 1.50 | 0.25 | 3.00 | 0.15 | 0.90 | 0.25 | 0.60 | 0.10 |
| **4** | 2.80 | 0.55 | 3.20 | 0.50 | 4.40 | 0.45 | 4.40 | 0.40 | 4.80 | 1.00 | 5.60 | 0.75 | 2.40 | 0.30 | 2.00 | 0.25 | 4.00 | 0.15 | 1.20 | 0.25 | 0.80 | 0.10 |
| **5** | 3.50 | 0.45 | 4.00 | 0.40 | 5.50 | 0.50 | 5.50 | 0.50 | 6.00 | 0.75 | 7.00 | 0.65 | 3.00 | 0.30 | 2.50 | 0.25 | 5.00 | 0.20 | 1.50 | 0.20 | 1.00 | 0.05 |
| **6** | 4.20 | 0.40 | 4.80 | 0.35 | 6.60 | 0.30 | 6.60 | 0.60 | 7.20 | 0.55 | 8.40 | 0.65 | 3.60 | 0.25 | 3.00 | 0.20 | 6.00 | 0.20 | 1.80 | 0.15 | 1.20 | 0.05 |
| **7** | 4.90 | 0.35 | 5.60 | 0.30 | 7.70 | 0.35 | 7.70 | 0.80 | 8.40 | 0.35 | 9.80 | 0.55 | 4.20 | 0.25 | 3.50 | 0.15 | 7.00 | 0.15 | 2.10 | 0.05 | 1.40 | 0.05 |
| **8** | 5.60 | 0.25 | 6.40 | 0.25 | 8.80 | 0.30 | 8.80 | 0.65 | 9.60 | 0.25 | 11.20 | 0.50 | 4.80 | 0.15 | 4.00 | 0.15 | 8.00 | 0.10 | 2.40 | 0.05 | 1.60 | 0.05 |
| **9** | 6.30 | 0.05 | 7.20 | 0.15 | 9.90 | 0.10 | 9.90 | 0.50 | 10.80 | 0.15 | 12.60 | 0.15 | 5.40 | 0.05 | 4.50 | 0.05 | 9.00 | 0.05 | 2.70 | 0.05 | 1.80 | 0.05 |
| **Right Bank** | 7.00 | 0.00 | 8.00 | 0.00 | 11.00 | 0.00 | 11.00 | 0.00 | 12.00 | 0.00 | 14.00 | 0.00 | 6.00 | 0.00 | 5.00 | 0.00 | 10.00 | 0.00 | 3.00 | 0.00 | 2.00 | 0.00 |
| **Feature Type** (riffle, run, or pool) | pool | | pool | | pool | | pool | | pool | | pool | | pool | | pool | | pool | | riffle | | riffle | |

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

GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine bv dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.1 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: David Bender Date: 10/3/2008

WBID # __2069___

Site # _____3____

# Field Data Sheets for Recreational Use Stream Surveys

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

(must be completed for each site)

| | |
|---|---|
| **Date & Time**: 10/03/08 8:50 | Location Description (e.g., road crossing): State Hwy H |
| **Stream Name:** Boone Cr. | |
| Current Weather Conditions: Clear | Facility Name(s): Lakewood Mobile Home Park |
| Weather Conditions for Past 10 days: 0.06 in | Permit Number(s): MO 0085341 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐ | |

### Site Location:

| LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS) | | | | |
|---|---|---|---|---|
| Site 01 | Easting (UTM X): 0650386 | Northing (UTM Y): 4233044 | Horizontal Accuracy: (EPE / FOM / PDOP) | 3 Meters |
| Site 11 | Easting (UTM X): 0650437 | Northing (UTM Y): 4233240 | Horizontal Accuracy: (EPE / FOM / PDOP) | 1 Meters |

### Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|---|---|---|---|---|---|
| 37 | upstream | 38 | Human footprints | 39 | downstream |
| | | | | | |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| | | | | | |
| | | | | | |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| | | | | | |

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

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

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

Stream Name & WBID # __Boone Cr._____2069_____ Date of Survey _10/03/08_____

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.)

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

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

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

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

| | | | | | |
|---|---|---|---|---|---|
| 10% Cobble | 40% Gravel | 50% Sand | % Silt | % Mud/Clay | % Bedrock |

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

Emergent smartweed family along edge of stream

### Water Characteristics*: (Mark all that apply.)

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

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

Stream Name & WBID # __Boone Cr._____2069_____ Date of Survey _10/03/08_____

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.)

Footprints along sandbar

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

Printed Names of Personnel Collecting Data: David Bender, Chris Schuler _____

Surveyor's Signature: David Bender_____ Date of Survey: 10/03/08_____

Organization: SES, Inc._____ Position: Field Team Leader_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

Stream Name: Boone Cr. Waterbody ID: 2069 Site #: 3

Estimated Channel Incision: 3 (m) (height between low bank width and water)

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

**01** UTM X: 0650386 UTM Y: 4233044 +/- 3 (meters)

**11** UTM X: 0650437 UTM Y: 4233240 +/- 1 (meters)

Average Stream Width: 6 (meters) Length of Survey Segment: 150 (meters)

(To determne Length of Reach) (20x average stream width)

Field Staff: David Bender, Chris Schuler

### Dissolved Oxygen

Date: 10/2/2008 Time: 8:50

Dissolved Oxygen: 8.9 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 13.5 (°C)

### Transect Cross-Section

| Station | 01 | | 02 | | 03 | | 04 | | 05 | | 06 | | 07 | | 08 | | 09 | | 10 | | 11 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) |
| **Left Bank** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **1** | 0.30 | 0.10 | 0.60 | 0.35 | 0.50 | 0.15 | 0.70 | 0.15 | 0.70 | 0.15 | 0.70 | 0.15 | 0.60 | 0.15 | 0.50 | 0.30 | 0.20 | 0.05 | 0.40 | 0.05 | 0.20 | 0.01 |
| **2** | 0.60 | 0.25 | 1.20 | 0.90 | 1.00 | 0.25 | 1.40 | 0.35 | 1.40 | 0.35 | 1.40 | 0.55 | 1.20 | 0.65 | 1.00 | 0.50 | 0.40 | 0.15 | 0.80 | 0.15 | 0.40 | 0.05 |
| **3** | 0.90 | 0.25 | 1.80 | 0.95 | 1.50 | 0.40 | 2.10 | 0.30 | 2.10 | 0.40 | 2.10 | 0.60 | 1.80 | 0.60 | 1.50 | 0.55 | 0.60 | 0.15 | 1.20 | 0.15 | 0.60 | 0.05 |
| **4** | 1.20 | 0.25 | 2.40 | 0.65 | 2.00 | 0.25 | 2.80 | 0.25 | 2.80 | 0.35 | 2.80 | 0.60 | 2.40 | 0.55 | 2.00 | 0.60 | 0.80 | 0.10 | 1.60 | 0.20 | 0.80 | 0.10 |
| **5** | 1.50 | 0.25 | 3.00 | 0.35 | 2.50 | 0.15 | 3.50 | 0.25 | 3.50 | 0.50 | 3.50 | 0.50 | 3.00 | 0.60 | 2.50 | 0.60 | 1.00 | 0.15 | 2.00 | 0.20 | 1.00 | 0.05 |
| **6** | 1.80 | 0.20 | 3.60 | 0.15 | 3.00 | 0.20 | 4.20 | 0.25 | 4.20 | 0.40 | 4.20 | 0.50 | 3.60 | 0.40 | 3.00 | 0.50 | 1.20 | 0.15 | 2.40 | 0.15 | 1.20 | 0.05 |
| **7** | 2.10 | 0.15 | 4.20 | 0.20 | 3.50 | 0.25 | 4.90 | 0.20 | 4.90 | 0.30 | 4.90 | 0.35 | 4.20 | 0.35 | 3.50 | 0.45 | 1.40 | 0.10 | 2.80 | 0.15 | 1.40 | 0.05 |
| **8** | 2.40 | 0.05 | 4.80 | 0.15 | 4.00 | 0.15 | 5.60 | 0.20 | 5.60 | 0.20 | 5.60 | 0.20 | 4.80 | 0.30 | 4.00 | 0.35 | 1.60 | 0.05 | 3.20 | 0.20 | 1.60 | 0.01 |
| **9** | 2.70 | 0.01 | 5.40 | 0.05 | 4.50 | 0.05 | 6.30 | 0.10 | 6.30 | 0.10 | 6.30 | 0.10 | 5.40 | 0.15 | 4.50 | 0.10 | 1.80 | 0.05 | 3.60 | 0.05 | 1.80 | 0.01 |
| **Right Bank** | 3.00 | 0.00 | 6.00 | 0.00 | 5.00 | 0.00 | 7.00 | 0.00 | 7.00 | 0.00 | 7.00 | 0.00 | 6.00 | 0.00 | 5.00 | 0.00 | 2.00 | 0.00 | 4.00 | 0.00 | 2.00 | 0.00 |
| **Feature Type** (riffle, run, or pool) | run | | pool | | pool | | pool | | pool | | pool | | pool | | pool | | riffle | | 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 bv dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.1 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: David Bender Date: 10/3/2008

WBID # __2069___

Site # _____4____

# Field Data Sheets for Recreational Use Stream Surveys

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

(must be completed for each site)

| | |
|---|---|
| **Date & Time**: 10/03/08 9:30 | Location Description (e.g., road crossing): Sopsucker Rd. |
| **Stream Name:** Boone Cr. | |
| Current Weather Conditions: Clear | Facility Name(s): Lakewood Mobile Home Park |
| Weather Conditions for Past 10 days: 0.06 in | Permit Number(s): MO 0085341 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐ | |

### Site Location:

| LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS) | | | | |
|---|---|---|---|---|
| Site 01 | Easting (UTM X): 0649882 | Northing (UTM Y): 4235317 | Horizontal Accuracy: (EPE / FOM / PDOP) | 4 Meters |
| Site 11 | Easting (UTM X): 0649976 | Northing (UTM Y): 4235603 | Horizontal Accuracy: (EPE / FOM / PDOP) | 7 Meters |

### Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|---|---|---|---|---|---|
| 40 | upstream | 41 | downstream | | |
| | | | | | |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| | | | | | |
| | | | | | |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| | | | | | |

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

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

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

Stream Name & WBID # __Boone Cr._____2069_____ Date of Survey _10/03/08_____

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.)

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

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

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

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

| | | | | | |
|---|---|---|---|---|---|
| 10% Cobble | 30% Gravel | 20% Sand | % Silt | % Mud/Clay | 40% Bedrock |

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

None

### Water Characteristics*: (Mark all that apply.)

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

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

Stream Name & WBID # __Boone Cr._____2069_____ Date of Survey _10/03/08_____

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: David Bender, Chris Schuler _____

Surveyor's Signature: David Bender_____ Date of Survey: 10/03/08_____

Organization: SES, Inc._____ Position: Field Team Leader_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

Stream Name: Boone Cr. Waterbody ID: 2069 Site #: 4

Estimated Channel Incision: 2 (m) (height between low bank width and water)

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

**01** UTM X: 0649882 UTM Y: 4235317 +/- 4 (meters)

**11** UTM X: 0649976 UTM Y: 4235603 +/- 7 (meters)

Average Stream Width: 10 (meters) Length of Survey Segment: 200 (meters)

(To determne Length of Reach) (20x average stream width)

Field Staff: David Bender, Chris Schuler

### Dissolved Oxygen

Date: 10/2/2008 Time: 9:30

Dissolved Oxygen: 8.7 (mg/L)

Dissolved Oxygen: (% sat)

Specific Cond: (µS/cm)

Water Temperature: 14.4 (°C)

### Transect Cross-Section

| Station | 01 | | 02 | | 03 | | 04 | | 05 | | 06 | | 07 | | 08 | | 09 | | 10 | | 11 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) |
| **Left Bank** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **1** | 0.60 | 0.05 | 0.80 | 0.05 | 1.00 | 0.05 | 0.90 | 0.40 | 1.00 | 0.35 | 0.50 | 0.05 | 1.00 | 0.10 | 1.00 | 0.20 | 1.10 | 0.30 | 1.40 | 0.55 | 1.50 | 0.15 |
| **2** | 1.20 | 0.10 | 1.60 | 0.25 | 2.00 | 0.15 | 1.80 | 0.55 | 2.00 | 0.20 | 1.00 | 0.05 | 2.00 | 0.40 | 2.00 | 0.35 | 2.20 | 0.70 | 2.80 | 0.75 | 3.00 | 0.75 |
| **3** | 1.80 | 0.25 | 2.40 | 0.35 | 3.00 | 0.30 | 2.70 | 0.55 | 3.00 | 0.20 | 1.50 | 0.05 | 3.00 | 0.60 | 3.00 | 0.75 | 3.30 | 0.65 | 4.20 | 0.85 | 4.50 | 0.75 |
| **4** | 2.40 | 0.55 | 3.20 | 0.30 | 4.00 | 0.45 | 3.60 | 0.55 | 4.00 | 0.35 | 2.00 | 0.10 | 4.00 | 0.60 | 4.00 | 1.00 | 4.40 | 0.70 | 5.60 | 0.95 | 6.00 | 0.90 |
| **5** | 3.00 | 0.50 | 4.00 | 0.40 | 5.00 | 0.50 | 4.50 | 0.55 | 5.00 | 0.25 | 2.50 | 0.10 | 5.00 | 0.60 | 5.00 | 1.00 | 5.50 | 0.55 | 7.00 | 1.00 | 7.50 | 0.85 |
| **6** | 3.60 | 0.55 | 4.80 | 0.30 | 6.00 | 0.60 | 5.40 | 0.55 | 6.00 | 0.15 | 3.00 | 0.20 | 6.00 | 0.55 | 6.00 | 1.00 | 6.60 | 0.45 | 8.40 | 1.00 | 9.00 | 1.00 |
| **7** | 4.20 | 0.50 | 5.60 | 0.15 | 7.00 | 0.55 | 6.30 | 0.55 | 7.00 | 0.10 | 3.50 | 0.15 | 7.00 | 0.35 | 7.00 | 0.85 | 7.70 | 0.35 | 9.80 | 0.85 | 10.50 | 0.70 |
| **8** | 4.80 | 0.30 | 6.40 | 0.05 | 8.00 | 0.35 | 7.20 | 0.40 | 8.00 | 0.05 | 4.00 | 0.20 | 8.00 | 0.25 | 8.00 | 0.65 | 8.80 | 0.50 | 11.20 | 1.00 | 12.00 | 0.75 |
| **9** | 5.40 | 0.15 | 7.20 | 0.01 | 9.00 | 0.10 | 8.10 | 0.30 | 9.00 | 0.20 | 4.50 | 0.15 | 9.00 | 0.10 | 9.00 | 0.40 | 9.90 | 0.35 | 12.60 | 0.60 | 13.50 | 0.50 |
| **Right Bank** | 6.00 | 0.00 | 8.00 | 0.00 | 10.00 | 0.00 | 9.00 | 0.00 | 10.00 | 0.00 | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 0.00 | 11.00 | 0.00 | 14.00 | 0.00 | 15.00 | 0.00 |
| **Feature Type** (riffle, run, or pool) | pool | | pool | | pool | | pool | | pool | | riffle | | pool | | pool | | pool | | pool | | pool | |

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

GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine bv dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.1 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: David Bender Date: 10/3/2008

WBID # __2069___

Site # _____5____

# Field Data Sheets for Recreational Use Stream Surveys

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

(must be completed for each site)

| | |
|---|---|
| **Date & Time**: 10/03/08 10:15 | Location Description (e.g., road crossing): Schuber Rd. |
| **Stream Name:** Boone Cr. | |
| Current Weather Conditions: Clear | Facility Name(s): Lakewood Mobile Home Park |
| Weather Conditions for Past 10 days: 0.06 in | Permit Number(s): MO 0085341 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐ | |

### Site Location:

| LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS) | | | | |
|---|---|---|---|---|
| Site 01 | Easting (UTM X): 06501020 | Northing (UTM Y): 4236615 | Horizontal Accuracy: (EPE / FOM / PDOP) | 3 Meters |
| Site 11 | Easting (UTM X): 0650146 | Northing (UTM Y): 4236863 | Horizontal Accuracy: (EPE / FOM / PDOP) | 4 Meters |

### Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|---|---|---|---|---|---|
| 42 | upstream | 43 | downstream | | |
| | | | | | |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| | | | | | |
| | | | | | |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| | | | | | |

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

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

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

Stream Name & WBID # __Boone Cr._____2069_____ Date of Survey _10/03/08_____

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.)

| | | | | |
|---|---|---|---|---|
| ☐ City/county parks | ☐ Playgrounds | ☐ MDC conservation lands | ☐ Urban areas | ☐ Rural Residential |
| ☐ Campgrounds | ☐ State parks | ☐ National forests | ☐ Nature trails | ☐ Stairs/walkway |
| ☐ Boating accesses | ☐ Fence | ☐ No trespass sign | ☐ Steep slopes | ☑ Other: |
| Comments:<br>none | | | | |

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

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

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

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

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

Algae on 100% of substrate.

### Water Characteristics*: (Mark all that apply.)

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

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

Stream Name & WBID # __Boone Cr._____2069_____ Date of Survey _10/03/08_____

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: David Bender, Chris Schuler _____

Surveyor's Signature: David Bender_____ Date of Survey: 10/03/08_____

Organization: SES, Inc._____ Position: Field Team Leader_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

Stream Name: Boone Cr. Waterbody ID: 2069 Site #: 5

Estimated Channel Incision: 3 (m) (height between low bank width and water)

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

**01** UTM X: 0650102 UTM Y: 4236615 +/- 3 (meters)

**11** UTM X: 0650146 UTM Y: 4236863 +/- 4 (meters)

Average Stream Width: 8 (meters) Length of Survey Segment: 160 (meters)

(To determne Length of Reach) (20x average stream width)

Field Staff: David Bender, Chris Schuler

### Dissolved Oxygen

Date: 10/2/2008 Time: 10:15

Dissolved Oxygen: 9.9 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 14.1 (°C)

### Transect Cross-Section

| Station | 01 | | 02 | | 03 | | 04 | | 05 | | 06 | | 07 | | 08 | | 09 | | 10 | | 11 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) | Distance (m) | Depth (m) |
| **Left Bank** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **1** | 0.90 | 0.15 | 0.70 | 0.10 | 0.90 | 0.25 | 0.60 | 0.05 | 0.80 | 0.10 | 1.00 | 0.20 | 1.00 | 0.20 | 1.00 | 0.15 | 1.00 | 0.10 | 0.80 | 0.10 | 0.40 | 0.05 |
| **2** | 1.80 | 0.20 | 1.40 | 0.15 | 1.80 | 0.30 | 1.20 | 0.05 | 1.60 | 0.25 | 2.00 | 0.45 | 2.00 | 0.30 | 2.00 | 0.35 | 2.00 | 0.45 | 1.60 | 0.25 | 0.80 | 0.15 |
| **3** | 2.70 | 0.15 | 2.10 | 0.15 | 2.70 | 0.25 | 1.80 | 0.20 | 2.40 | 0.30 | 3.00 | 0.80 | 3.00 | 0.35 | 3.00 | 0.40 | 3.00 | 0.50 | 2.40 | 0.25 | 1.20 | 0.15 |
| **4** | 3.60 | 0.15 | 2.80 | 0.15 | 3.60 | 0.20 | 2.40 | 0.15 | 3.20 | 0.35 | 4.00 | 0.85 | 4.00 | 0.30 | 4.00 | 0.55 | 4.00 | 0.45 | 3.20 | 0.25 | 1.60 | 0.05 |
| **5** | 4.50 | 0.15 | 3.50 | 0.10 | 4.50 | 0.30 | 3.00 | 0.20 | 4.00 | 0.40 | 5.00 | 0.75 | 5.00 | 0.45 | 5.00 | 0.55 | 5.00 | 0.60 | 4.00 | 0.10 | 2.00 | 0.05 |
| **6** | 5.40 | 0.15 | 4.20 | 0.10 | 5.40 | 0.25 | 3.60 | 0.15 | 4.80 | 0.25 | 6.00 | 0.70 | 6.00 | 0.40 | 6.00 | 0.65 | 6.00 | 0.60 | 4.80 | 0.10 | 2.40 | 0.10 |
| **7** | 6.30 | 0.15 | 4.90 | 0.20 | 6.30 | 0.10 | 4.20 | 0.05 | 5.60 | 0.20 | 7.00 | 0.50 | 7.00 | 0.25 | 7.00 | 0.55 | 7.00 | 0.55 | 5.60 | 0.05 | 2.80 | 0.10 |
| **8** | 7.20 | 0.15 | 5.60 | 0.15 | 7.20 | 0.10 | 4.80 | 0.20 | 6.40 | 0.15 | 8.00 | 0.30 | 8.00 | 0.20 | 8.00 | 0.20 | 8.00 | 0.25 | 6.40 | 0.05 | 3.20 | 0.05 |
| **9** | 8.10 | 0.10 | 6.30 | 0.05 | 8.10 | 0.05 | 5.40 | 0.05 | 7.20 | 0.05 | 9.00 | 0.10 | 9.00 | 0.10 | 9.00 | 0.05 | 9.00 | 0.25 | 7.20 | 0.05 | 3.60 | 0.05 |
| **Right Bank** | 9.00 | 0.00 | 7.00 | 0.00 | 9.00 | 0.00 | 6.00 | 0.00 | 8.00 | 0.00 | 10.00 | 0.00 | 10.00 | 0.00 | 10.00 | 0.00 | 10.00 | 0.00 | 8.00 | 0.00 | 4.00 | 0.00 |
| **Feature Type** (riffle, run, or pool) | pool | | pool | | pool | | run | | pool | | pool | | pool | | pool | | pool | | pool | | riffle | |

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

GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine bv dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.1 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: David Bender Date: 10/3/2008