

Use Attainability Analysis

for

WBID 2385 Little Cane Creek

Submitted by

SES, Inc.

to

Missouri Department of Natural Resources
Water Protection Program

Date received: October 26, 2007

Field Data Sheets for Recreation 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): Little Crane Creek	
Missouri Water Body Identification (WBID) Number: 2385	
8 digit HUC code: 11010002	County: Stone
Upstream Legal Description (from Table H): T25N R25W 4	
Downstream Legal Description (from Table H): T26N R24W 29	
Number of sites evaluated: 4	
List all site numbers, listed consequently upstream to downstream: 1,2,3,4	

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

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

Facility Name(s) and Permit Number(s): Nupetra LLC MO 0129224

III. UAA Surveyor (please print legibly)

Name of Surveyor: Aaron Ball	Telephone Number: (913)307-0046
Organization/Employer: SES, Inc.	

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

Signed: Aaron Ball **Date:** 10/23/2007

WBID # 2385
 Site # 1

Field Data Sheets For Recreational Use Stream Surveys

Data Sheet B-Site Characterization

Date & Time: 10/10/07 15:24	Site Location Description (e.g. road crossing):
Personnel: Aaron Ball, Drew Dodson	CR 13110
Current Weather Conditions: clear	Facility Name: Nupetra LLC
Weather conditions for the past 10 days: 0.74 inches	Permit Number: MO 0129224
Drought conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

Location Coordinates (Universal Transverse Mercator Projection, In Meters)					
Site 01	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0447379	4086487		5.1	
Site 11	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0447209	4086398		5.7	

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
56	Downstream	57	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:

<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:				

WBID # 2385
 Site # 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B- Site Characterization (Continued)

Surrounding Conditions:

<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/walkways
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep Slopes	<input checked="" type="checkbox"/> Other:

Comments: railroad

Evidence of Human Use:

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

comments/other:

Substrate:

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
50	50				

Aquatic Vegetation:

N/A

Water Characteristics:

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:
					N/A
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:

WBID # 2385
Site # 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization (continued)

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

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

Comments: (Please record any additional comments here.)

none

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

Surveyor's Signature: Aaron Ball Date of Survey: 10/10/2007

Organization: SES, Inc. Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: <u>2385</u> Site #: <u>1</u> Estimated Channel Incision: <u>3.0</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u>0447379</u> UTM Y: <u>4086487</u> +/- <u>5.1</u> (meters) 11 UTM X: <u>0447209</u> UTM Y: <u>4086398</u> +/- <u>5.7</u> (meters) Average Stream Width: <u>N/A</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Aaron Ball, Drew Dodson</u>	Dissolved Oxygen Date: <u>10/10/07</u> Time: <u>15:20</u> Dissolved Oxygen: <u>N/A</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (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)																					
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
2	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
3	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
4	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
5	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
6	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
7	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
8	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
9	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
Right Bank	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00
Feature Type <small>(riffle, run, or pool)</small>	N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	

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

Signed: Aaron Ball Date: 10/10/07

WBID # 2385
 Site # 2

Field Data Sheets For Recreational Use Stream Surveys

Data Sheet B-Site Characterization

Date & Time: 10/10/07 15:06	Site Location Description (e.g. road crossing):
Personnel: Aaron Ball, Drew Dodson	CR 2005
Current Weather Conditions: clear	Facility Name: Nupetra LLC
Weather conditions for the past 10 days: 0.74 inches	Permit Number: MO 0129224
Drought conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

Location Coordinates (Universal Transverse Mercator Projection, In Meters)					
Site 01	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0445554	4085443		4.5	
Site 11	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0445723	4085462		4.5	

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
53	Upstream	54	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:

<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:				

WBID # 2385
 Site # 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B- Site Characterization (Continued)

Surrounding Conditions:

<input type="checkbox"/> City/County parks	<input type="checkbox"/> playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input checked="" type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National Forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkways
<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:

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

comments/other:

Substrate:

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
50	50				

Aquatic Vegetation:

N/A

Water Characteristics:

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:
					N/A
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:

WBID # 2385
Site # 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization (continued)

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

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

Comments: (Please record any additional comments here.)

none

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

Surveyor's Signature: Aaron Ball Date of Survey: 10/10/2007

Organization: SES, Inc. Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: <u>2385</u> Site #: <u>2</u> Estimated Channel Incision: <u>3.0</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u>0445554</u> UTM Y: <u>4085443</u> +/- <u>4.5</u> (meters) 11 UTM X: <u>0445723</u> UTM Y: <u>4085462</u> +/- <u>4.5</u> (meters) Average Stream Width: <u>N/A</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Aaron Ball, Drew Dodson</u>	Dissolved Oxygen Date: <u>10/10/07</u> Time: <u>15:10</u> Dissolved Oxygen: <u>N/A</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (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)																					
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
2	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
3	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
4	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
5	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
6	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
7	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
8	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
9	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00	#####	0.00
Right Bank	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00
Feature Type <small>(riffle, run, or pool)</small>	N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	

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

Signed: Aaron Ball Date: 10/10/07

WBID # 2385
 Site # 3

Field Data Sheets For Recreational Use Stream Surveys

Data Sheet B-Site Characterization

Date & Time: 10/10/07 14:31	Site Location Description (e.g. road crossing):
Personnel: Aaron Ball, Drew Dodson	St. Hwy JJ
Current Weather Conditions: clear	Facility Name: Nupetra LLC
Weather conditions for the past 10 days: 0.74 inches	Permit Number: MO 0129224
Drought conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

Location Coordinates (Universal Transverse Mercator Projection, In Meters)					
Site 01	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0443891	4085181		4.5	
Site 11	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0443655	4085227		4.2	

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
50	Downstream	51	road	52	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:

<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:				

WBID # 2385
 Site # 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B- Site Characterization (Continued)

Surrounding Conditions:

<input type="checkbox"/> City/County parks	<input type="checkbox"/> playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input checked="" type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National Forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkways
<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:

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

comments/other:

Substrate:

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

Aquatic Vegetation:

Rooted and floating aquatic vegetation (2%)

Water Characteristics:

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:

WBID # 2385
Site # 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization (continued)

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

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)
pool	50	5	10	0.8	1

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.

Surveyor's Signature: Aaron Ball Date of Survey: 10/10/2007

Organization: SES, Inc. Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: <u>2385</u> Site #: <u>3</u> Estimated Channel Incision: <u>3.0</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u>0443891</u> UTM Y: <u>4085181</u> +/- <u>4.5</u> (meters) 11 UTM X: <u>0443655</u> UTM Y: <u>4085227</u> +/- <u>4.2</u> (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>Aaron Ball, Drew Dodson</u>	Dissolved Oxygen Date: <u>10/10/07</u> Time: <u>14:35</u> Dissolved Oxygen: <u>2.8</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (µS/cm) Water Temperature: <u>21.5</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)																				
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	0.6	0.15	0.2	0.10	0.3	0.05	0.3	0.05	0.4	0.10	0.5	0.05	0.3	0.20	0.5	0.10	0.2	0.20	0.3	0.10	0.4	0.20	
2	1.2	0.15	0.4	0.10	0.6	0.10	0.6	0.05	0.8	0.20	1.0	0.05	0.6	0.30	1.0	0.10	0.4	0.25	0.6	0.15	0.8	0.25	
3	1.8	0.20	0.6	0.20	0.9	0.15	0.9	0.10	1.2	0.20	1.5	0.10	0.9	0.35	1.5	0.05	0.6	0.30	0.9	0.10	1.2	0.30	
4	2.4	0.25	0.8	0.20	1.2	0.20	1.2	0.10	1.6	0.20	2.0	0.10	1.2	0.35	2.0	0.05	0.8	0.35	1.2	0.10	1.6	0.30	
5	3.0	0.25	1.0	0.10	1.5	0.20	1.5	0.10	2.0	0.35	2.5	0.10	1.5	0.40	2.5	0.05	1	0.40	1.5	0.05	2.0	0.30	
6	3.6	0.20	1.2	0.10	1.8	0.20	1.8	0.15	2.4	0.40	3.0	0.15	1.8	0.40	3.0	0.00	1.2	0.40	1.8	0.10	2.4	0.30	
7	4.2	0.15	1.4	0.10	2.1	0.30	2.1	0.15	2.8	0.30	3.5	0.20	2.1	0.30	3.5	0.05	1.4	0.40	2.1	0.05	2.8	0.40	
8	4.8	0.20	1.6	0.05	2.4	0.20	2.4	0.15	3.2	0.20	4.0	0.20	2.4	0.35	4.0	0.05	1.6	0.25	2.4	0.05	3.2	0.40	
9	5.4	0.15	1.8	0.05	2.7	0.10	2.7	0.10	3.6	0.20	4.5	0.10	2.7	0.15	4.5	0.05	1.8	0.20	2.7	0.05	3.6	0.30	
Right Bank	6.0	0.00	2.0	0.00	3.0	0.00	3.0	0.00	4.0	0.00	5.0	0.00	3.0	0.00	5.0	0.00	2	0.00	3.0	0.00	4.0	0.00	
Feature Type <small>(riffle, run, or pool)</small>	pool		pool		pool		pool		pool		pool		pool		riffle		pool		riffle		pool		

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

Signed: Aaron Ball Date: 10/10/07

WBID # 2385
 Site # 4

Field Data Sheets For Recreational Use Stream Surveys

Data Sheet B-Site Characterization

Date & Time: 10/10/07 13:37	Site Location Description (e.g. road crossing):
Personnel: Aaron Ball, Drew Dodson	CR 2020
Current Weather Conditions: clear	Facility Name: Nupetra LLC
Weather conditions for the past 10 days: 0.74 inches	Permit Number: MO 0129224
Drought conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

Location Coordinates (Universal Transverse Mercator Projection, In Meters)					
Site 01	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0440652	4083503		4.2	
Site 11	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0440896	4083549		10.2	

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
48	Upstream	49	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:

<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:				

WBID # 2385
 Site # 4

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B- Site Characterization (Continued)

Surrounding Conditions:

<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/walkways
<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:

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

comments/other: none

Substrate:

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

Aquatic Vegetation:

none

Water Characteristics:

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:

WBID # 2385
Site # 4

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization (continued)

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

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

Comments: (Please record any additional comments here.)

none

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

Surveyor's Signature: Aaron Ball Date of Survey: 10/10/2007

Organization: SES, Inc. Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: <u>2385</u> Site #: <u>4</u> Estimated Channel Incision: <u>2.0</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u>0440652</u> UTM Y: <u>4083503</u> +/- <u>4.2</u> (meters) 11 UTM X: <u>0440896</u> UTM Y: <u>4083549</u> +/- <u>10.2</u> (meters) Average Stream Width: <u>2</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Aaron Ball, Drew Dodson</u>	Dissolved Oxygen Date: <u>10/10/07</u> Time: <u>13:40</u> Dissolved Oxygen: <u>9.1</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (µS/cm) Water Temperature: <u>16.6</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)																				
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.3	0.20	0.2	0.15	0.2	0.05	0.3	0.15	0.2	0.15	0.2	0.10	0.1	0.10	0.2	0.10	0.2	0.05	0.1	0.10	0.2	0.05	
2	0.6	0.25	0.4	0.20	0.4	0.05	0.6	0.20	0.4	0.20	0.4	0.20	0.2	0.15	0.4	0.15	0.4	0.05	0.2	0.20	0.4	0.10	
3	0.9	0.35	0.6	0.30	0.6	0.10	0.9	0.20	0.6	0.30	0.6	0.15	0.3	0.15	0.6	0.20	0.6	0.05	0.3	0.30	0.6	0.15	
4	1.2	0.35	0.8	0.40	0.8	0.10	1.2	0.20	0.8	0.30	0.8	0.10	0.4	0.15	0.8	0.20	0.8	0.05	0.4	0.40	0.8	0.15	
5	1.5	0.40	1.0	0.50	1.0	0.10	1.5	0.20	1.0	0.30	1.0	0.10	0.5	0.15	1.0	0.15	1.0	0.10	0.5	0.40	1.0	0.15	
6	1.8	0.50	1.2	0.60	1.2	0.20	1.8	0.20	1.2	0.35	1.2	0.05	0.6	0.10	1.2	0.10	1.2	0.10	0.6	0.40	1.2	0.15	
7	2.1	0.40	1.4	0.65	1.4	0.15	2.1	0.20	1.4	0.35	1.4	0.00	0.7	0.10	1.4	0.10	1.4	0.10	0.7	0.30	1.4	0.10	
8	2.4	0.30	1.6	0.10	1.6	0.10	2.4	0.10	1.6	0.30	1.6	0.05	0.8	0.05	1.6	0.05	1.6	0.10	0.8	0.20	1.6	0.10	
9	2.7	0.30	1.8	0.10	1.8	0.10	2.7	0.10	1.8	0.15	1.8	0.10	0.9	0.05	1.8	0.05	1.8	0.05	0.9	0.15	1.8	0.05	
Right Bank	3.0	0.00	2.0	0.00	2.0	0.00	3.0	0.00	2.0	0.00	2.0	0.00	1.0	0.00	2.0	0.00	2	0.00	1.0	0.00	2.0	0.00	
Feature Type <small>(riffle, run, or pool)</small>	pool		pool		pool		pool		pool		riffle		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.

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All measurements to be taken to the nearest 0.01 meter.

Signed: Aaron Ball Date: 10/10/07

WBID# 2385 Little Cane Creek



Site# 1 Photo ID# 56, Downstream



Site# 1 Photo ID# 57, Upstream



Site# 2 Photo ID# 54, Downstream



Site# 2 Photo ID# 53, Upstream

WBID# 2385 Little Cane Creek



Site# 3 Photo ID# 50, Downstream



Site# 3 Photo ID# 52, Upstream



Site# 3 Photo ID# 51, Road



Site# 4 Photo ID# 48, Upstream

WBID# 2385 Little Cane Creek



Site# 4 Photo ID# 49, Downstream