



Missouri  
Department of  
Natural Resources

Use Attainability Analysis

for

WBID 1306 Walnut Creek

Submitted by  
SES, Inc.

To  
Missouri Department of Natural Resources  
Water Protection Program

On  
May 28, 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): Walnut Creek
Missouri Water Body Identification (WBID) Number: 1306
8-digit HUC: 10290102
County(ies), Listed Upstream to Downstream: Bates
Upstream Legal Description (from Table H): 39N 33W section33
Downstream Legal Description (from Table H): 39N 32W section6
Number of sites evaluated: 6
List all site numbers, <u>consecutively upstream to downstream</u> :  1, 2, 3, 4, 5, 6
<b>Include a Site Location Map(s).</b> The map must include all requirements detailed in the <i>Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol</i> (Section IV.D.8.a).

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

Facility Name(s) and Permit Number(s): Hume Wastewater Collection MO0114715
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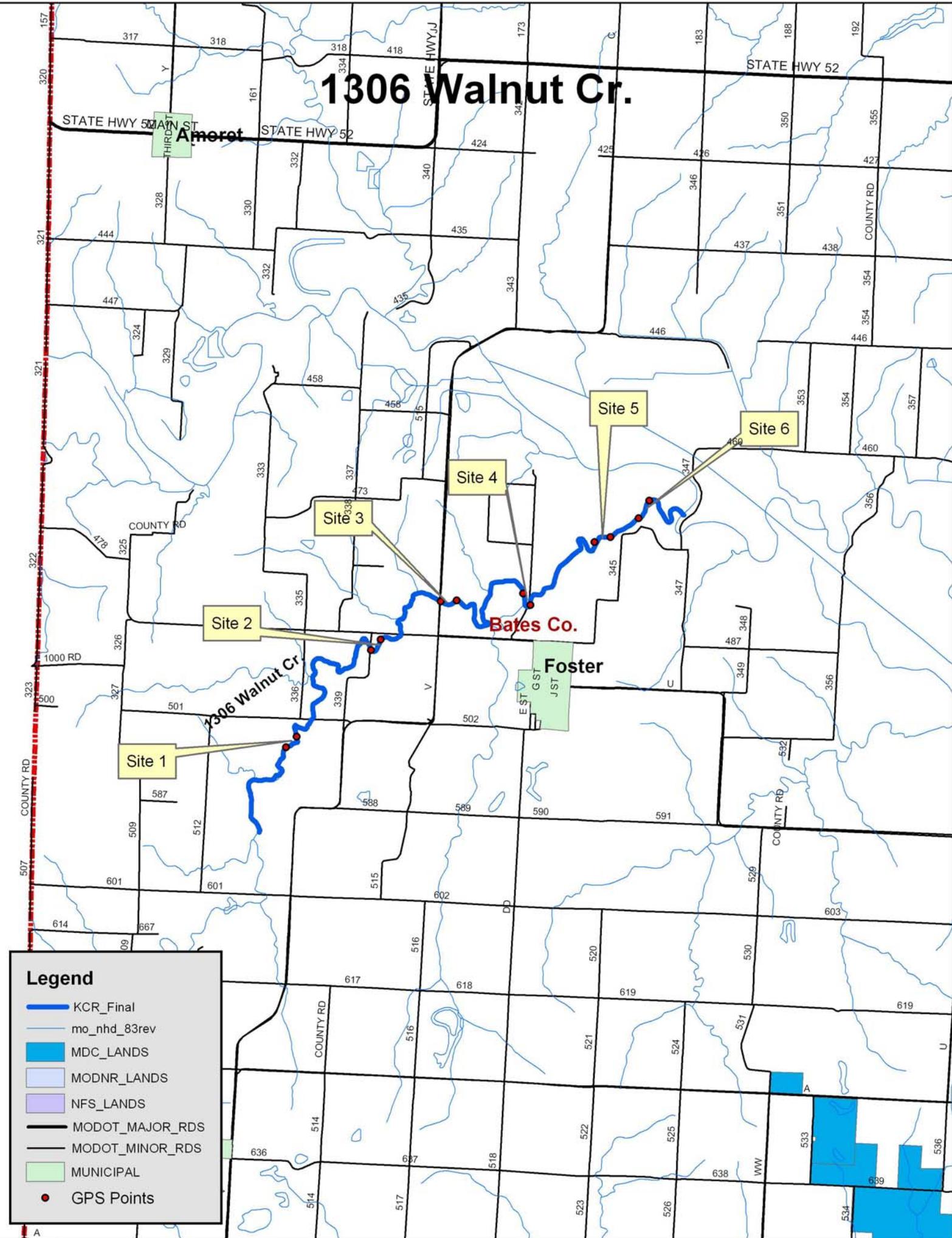
#### III. UAA Surveyor (please PRINT legibly)

Name of Surveyor: Aaron Ball	Telephone Number: 913.307.0046 Ext.14
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 requirements listed in the *Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol*) and that this form is complete.**

**Signed:** Aaron Ball **Date:** 5.23.08

# 1306 Walnut Cr.



**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> 5.13.08 11:50	Location Description (e.g., road crossing): South of 4508 Road and 11517 Road intersection
<b>Stream Name:</b> Walnut Cr.	
Current Weather Conditions: overcast	Facility Name(s): Hume Wastewater Collection
Weather Conditions for Past 10 days: 3.02	Permit Number(s): MO0114715
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): 0363172	Northing (UTM Y): 4224216	Horizontal Accuracy: (EPE / FOM / PDOP) 4 Meters
Site 11	Easting (UTM X): 0363364	Northing (UTM Y): 4224405	Horizontal Accuracy: (EPE / FOM / PDOP) 7 Meters

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
22	downstream, T1	23	upstream, T11		
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.)

<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 checked="" type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other:
Comments: Crop fields				

**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%.)

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

smart/pig weed on 20% of substrate (at riffles, etc. where substrate is above water level)

**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 checked="" 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)

**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: Gilisa Gould and Aaron Ball

Surveyor’s Signature: Aaron Ball                      Date of Survey: 5.13.08

Organization: SES, Inc.                                      Position: Field Team Leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Walnut Cr.</u> Waterbody ID: <u>1306</u> Site #: <u>1</u>  Estimated Channel Incision: <u>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>0363172</u> UTM Y: <u>4224216</u> +/- <u>4</u> (meters) <b>11</b> UTM X: <u>0363364</u> UTM Y: <u>4224405</u> +/- <u>7</u> (meters)  Average Stream Width: <u>7</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Gilisa Gould and Aaron Ball</u>	<b>Dissolved Oxygen</b>
	Date: <u>5.13.08</u> Time: <u>11:50</u>  Dissolved Oxygen: <u>9.4</u> (mg/L)  Dissolved Oxygen: _____ (% sat)  Specific Cond: _____ (µS/cm)  Water Temperature: <u>17.2</u> (°C)

#### Transect Cross-Section

		01		02		03		04		05		06		07		08		09		10		11	
Station		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
	<b>1</b>	0.60	0.20	0.50	0.15	0.40	0.25	0.70	0.30	0.70	0.10	0.90	0.45	0.80	0.40	0.80	0.50	0.80	0.20	0.60	0.45	0.50	0.25
	<b>2</b>	1.20	0.30	1.00	0.30	0.80	0.20	1.40	0.50	1.40	0.20	1.80	0.60	1.60	0.60	1.60	0.85	1.60	0.10	1.20	0.70	1.00	0.40
	<b>3</b>	1.80	0.40	1.50	0.30	1.20	0.20	2.10	0.50	2.10	0.30	2.70	0.65	2.40	0.70	2.40	1.00	2.40	0.10	1.80	0.70	1.50	0.60
	<b>4</b>	2.40	0.40	2.00	0.30	1.60	0.20	2.80	0.60	2.80	0.30	3.60	0.60	3.20	0.65	3.20	1.00	3.20	0.20	2.40	0.85	2.00	0.60
	<b>5</b>	3.00	0.40	2.50	0.10	2.00	0.20	3.50	0.60	3.50	0.30	4.50	0.50	4.00	0.65	4.00	1.00	4.00	0.50	3.00	0.95	2.50	0.70
	<b>6</b>	3.60	0.45	3.00	0.20	2.40	0.20	4.20	0.55	4.20	0.30	5.40	0.40	4.80	0.60	4.80	0.80	4.80	0.65	3.60	0.80	3.00	0.50
	<b>7</b>	4.20	0.40	3.50	0.40	2.80	0.20	4.90	0.60	4.90	0.30	6.30	0.30	5.60	0.50	5.60	0.65	5.60	0.70	4.20	0.45	3.50	0.25
	<b>8</b>	4.80	0.30	4.00	0.30	3.20	0.10	5.60	0.40	5.60	0.20	7.20	0.30	6.40	0.50	6.40	0.60	6.40	0.55	4.80	0.25	4.00	0.20
	<b>9</b>	5.40	0.15	4.50	0.20	3.60	0.10	6.30	0.30	6.30	0.10	8.10	0.20	7.20	0.40	7.20	0.60	7.20	0.45	5.40	0.10	4.50	0.10
<b>Right Bank</b>		6.00	0.00	5.00	0.00	4.00	0.00	7.00	0.00	7.00	0.00	9.00	0.00	8.00	0.00	8.00	0.00	8.00	0.00	6.00	0.00	5.00	0.00
<b>Feature Type</b>		pool		run		run		pool		run		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 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.

Surveyor's Signature: Aaron Ball      Date: 5.23.08

**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> 5.13.08 11:00	Location Description (e.g., road crossing):
<b>Stream Name:</b> Walnut Cr.	CR 339
Current Weather Conditions: overcast	Facility Name(s): Hume Wastewater Collection
Weather Conditions for Past 10 days: 3.02 inches	Permit Number(s): MO0114715
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): 0364706	Northing (UTM Y): 4225974	Horizontal Accuracy: (EPE / FOM / PDOP) 6 Meters
Site 11	Easting (UTM X): 0364882	Northing (UTM Y): 4226166	Horizontal Accuracy: (EPE / FOM / PDOP) 6 Meters

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
20	downstream, T1	21	upstream, T11		
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.)

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

**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%.)

50% Cobble	20% Gravel	% Sand	% Silt	% Mud/Clay	30% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

smartweed and duckweed on/along 10% of substrate which lie above water level, like at riffles, etc.
algae on 30% of substrate in water

**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 checked="" type="checkbox"/> Gray	<input checked="" type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

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

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

Printed Names of Personnel Collecting Data: Gilisa Gould and Aaron Ball

Surveyor’s Signature: Aaron Ball Date of Survey: 5.13.08

Organization: SES, Inc. Position: Field Team Leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Walnut Cr.</u> Waterbody ID: <u>1306</u> Site #: <u>2</u> Estimated Channel Incision: <u>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>0364706</u> UTM Y: <u>4225974</u> +/- <u>6</u> (meters) <b>11</b> UTM X: <u>0364882</u> UTM Y: <u>4226166</u> +/- <u>6</u> (meters) Average Stream Width: <u>7</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width) Field Staff: <u>Gilisa Gould and Aaron Ball</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>5.13.08</u> Time: <u>11:00</u> Dissolved Oxygen: <u>8.5</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (µS/cm) Water Temperature: <u>16.2</u> (°C)
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#### Transect Cross-Section

		01		02		03		04		05		06		07		08		09		10		11	
Station		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	0.90	0.50	0.50	0.30	0.70	0.10	0.60	0.15	0.60	0.05	0.80	0.15	0.70	0.10	0.60	0.25	0.70	0.15	0.50	0.10	0.70	0.80
	2	1.80	0.60	1.00	0.25	1.40	0.20	1.20	0.20	1.20	0.10	1.60	0.20	1.40	0.10	1.20	0.25	1.40	0.20	1.00	0.10	1.40	0.50
	3	2.70	0.60	1.50	0.30	2.10	0.20	1.80	0.30	1.80	0.05	2.40	0.20	2.10	0.15	1.80	0.30	2.10	0.20	1.50	0.15	2.10	0.25
	4	3.60	0.55	2.00	0.20	2.80	0.10	2.40	0.30	2.40	0.05	3.20	0.20	2.80	0.10	2.40	0.30	2.80	0.20	2.00	0.10	2.80	0.15
	5	4.50	0.50	2.50	0.20	3.50	0.20	3.00	0.25	3.00	0.10	4.00	0.20	3.50	0.10	3.00	0.30	3.50	0.20	2.50	0.30	3.50	0.10
	6	5.40	0.40	3.00	0.20	4.20	0.15	3.60	0.25	3.60	0.25	4.80	0.10	4.20	0.10	3.60	0.30	4.20	0.20	3.00	0.40	4.20	0.15
	7	6.30	0.40	3.50	0.10	4.90	0.20	4.20	0.30	4.20	0.25	5.60	0.01	4.90	0.10	4.20	0.30	4.90	0.20	3.50	0.60	4.90	0.20
	8	7.20	0.35	4.00	0.20	5.60	0.20	4.80	0.20	4.80	0.20	6.40	0.05	5.60	0.15	4.80	0.20	5.60	0.20	4.00	0.40	5.60	0.35
	9	8.10	0.20	4.50	0.15	6.30	0.10	5.40	0.20	5.40	0.15	7.20	0.20	6.30	0.30	5.40	0.10	6.30	0.15	4.50	0.20	6.30	0.25
<b>Right Bank</b>		9.00	0.00	5.00	0.00	7.00	0.00	6.00	0.00	6.00	0.00	8.00	0.00	7.00	0.00	6.00	0.00	7.00	0.00	5.00	0.00	7.00	0.00
<b>Feature Type</b>		pool		run		riffle		run		riffle		riffle		riffle		run		run		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 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.

Surveyor's Signature: Aaron Ball      Date: 5.23.08

**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> 5.13.08 10:30	Location Description (e.g., road crossing):
<b>Stream Name:</b> Walnut Cr.	Highway V
Current Weather Conditions: overcast	Facility Name(s): Hume Wastewater Collection
Weather Conditions for Past 10 days: 3.02 inches	Permit Number(s): MO0114715
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): 0365969	Northing (UTM Y): 4226857	Horizontal Accuracy: (EPE / FOM / PDOP)	3 Meters
Site 11	Easting (UTM X): 0366257	Northing (UTM Y): 4226863	Horizontal Accuracy: (EPE / FOM / PDOP)	6 Meters

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
18	downstream, T1	19	upstream, T11		
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.)

<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 checked="" type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: crop fields
Comments:				

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

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

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

% Cobble	20% Gravel	70% Sand	% Silt	10% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

none in water
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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 checked="" type="checkbox"/> Gray	<input checked="" type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input 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: Gilisa Gould and Aaron Ball

Surveyor’s Signature: Aaron Ball                      Date of Survey: 5.13.08

Organization: SES, Inc.                                      Position: Field Team Leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Walnut Cr.</u> Waterbody ID: <u>1306</u> Site #: <u>3</u> Estimated Channel Incision: <u>6</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>0365969</u> UTM Y: <u>4226857</u> +/- <u>3</u> (meters) <b>11</b> UTM X: <u>0366257</u> UTM Y: <u>4226863</u> +/- <u>6</u> (meters) Average Stream Width: <u>7</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width) Field Staff: <u>Gilisa Gould and Aaron Ball</u>	<b>Dissolved Oxygen</b> Date: <u>5.13.08</u> Time: <u>10:30</u> Dissolved Oxygen: <u>9.8</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (µS/cm) Water Temperature: <u>16</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	0.50	0.10	0.70	0.35	0.90	0.50	0.60	0.25	0.70	0.30	0.50	0.20	0.60	0.30	0.60	0.20	0.70	0.30	0.60	0.20	0.50	0.30
2	1.00	0.15	1.40	0.40	1.80	0.55	1.20	0.30	1.40	0.20	1.00	0.30	1.20	0.40	1.20	0.30	1.40	0.65	1.20	0.45	1.00	0.40
3	1.50	0.20	2.10	0.55	2.70	0.40	1.80	0.20	2.10	0.25	1.50	0.55	1.80	0.60	1.80	0.50	2.10	0.60	1.80	0.50	1.50	0.65
4	2.00	0.20	2.80	0.70	3.60	0.30	2.40	0.20	2.80	0.25	2.00	0.70	2.40	0.70	2.40	0.75	2.80	0.65	2.40	0.60	2.00	0.70
5	2.50	0.30	3.50	0.80	4.50	0.45	3.00	0.20	3.50	0.25	2.50	0.70	3.00	0.90	3.00	0.90	3.50	0.50	3.00	0.65	2.50	0.50
6	3.00	0.25	4.20	0.80	5.40	0.45	3.60	0.15	4.20	0.30	3.00	0.70	3.60	1.00	3.60	1.00	4.20	0.45	3.60	0.50	3.00	0.40
7	3.50	0.25	4.90	0.70	6.30	0.40	4.20	0.20	4.90	0.35	3.50	0.50	4.20	1.00	4.20	0.85	4.90	0.20	4.20	0.50	3.50	0.35
8	4.00	0.15	5.60	0.50	7.20	0.45	4.80	0.35	5.60	0.50	4.00	0.40	4.80	0.60	4.80	0.70	5.60	0.10	4.80	0.40	4.00	0.20
9	4.50	0.05	6.30	0.35	8.10	0.30	5.40	0.40	6.30	0.40	4.50	0.30	5.40	0.55	5.40	0.55	6.30	0.10	5.40	0.20	4.50	0.10
<b>Right Bank</b>	5.00	0.00	7.00	0.00	9.00	0.00	6.00	0.00	7.00	0.00	5.00	0.00	6.00	0.00	6.00	0.00	7.00	0.00	6.00	0.00	5.00	0.00
<b>Feature Type</b> <small>(riffle, run, or pool)</small>	run		pool		pool		pool		pool		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.

Surveyor's Signature: Aaron Ball      Date: 5.23.08

**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> 5.13.08 14:45	Location Description (e.g., road crossing):
<b>Stream Name:</b> Walnut Cr.	8707 Road
Current Weather Conditions: cloudy	Facility Name(s): Hume Wastewater Collection
Weather Conditions for Past 10 days: 3.02 inches	Permit Number(s): MO0114715
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): 0367057	Northing (UTM Y): 4227000	Horizontal Accuracy: (EPE / FOM / PDOP) 8 Meters
Site 11	Easting (UTM X): 0367586	Northing (UTM Y): 4226791	Horizontal Accuracy: (EPE / FOM / PDOP) 5 Meters

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
24	upstream, T11	25	downstream, T1		
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.)

<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 checked="" type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments:				

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

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

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

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

algae on 60% of substrate

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

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Other: fishy
Color:	<input type="checkbox"/> Clear	<input checked="" type="checkbox"/> Green	<input type="checkbox"/> Gray	<input checked="" type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input 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: Gilisa Gould and Aaron Ball

Surveyor’s Signature: Aaron Ball                      Date of Survey: 5.13.08

Organization: SES, Inc.                                      Position: Field Team Leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Walnut Cr.</u> Waterbody ID: <u>1306</u> Site #: <u>4</u> Estimated Channel Incision: <u>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>0367057</u> UTM Y: <u>422700</u> +/- <u>8</u> (meters) <b>11</b> UTM X: <u>0367586</u> UTM Y: <u>4226791</u> +/- <u>5</u> (meters) Average Stream Width: <u>7</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width) Field Staff: <u>Gilisa Gould and Aaron Ball</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>5.13.08</u> Time: <u>14:45</u> Dissolved Oxygen: <u>8.1</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (µS/cm) Water Temperature: <u>17</u> (°C)
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#### Transect Cross-Section

		01		02		03		04		05		06		07		08		09		10		11	
Station		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
	<b>1</b>	0.70	0.30	0.70	0.25	0.80	0.60	0.70	0.70	0.70	0.40	0.80	0.40	0.70	0.60	0.90	0.50	0.80	0.20	0.70	0.20	0.80	0.10
	<b>2</b>	1.40	0.60	1.40	0.30	1.60	1.00	1.40	0.95	1.40	0.60	1.60	0.50	1.40	0.80	1.80	0.60	1.60	0.35	1.40	0.45	1.60	0.20
	<b>3</b>	2.10	0.80	2.10	0.55	2.40	1.00	2.10	1.00	2.10	0.60	2.40	0.70	2.10	0.80	2.70	0.70	2.40	0.40	2.10	0.45	2.40	0.30
	<b>4</b>	2.80	0.90	2.80	0.70	3.20	1.00	2.80	1.00	2.80	0.55	3.20	0.90	2.80	0.80	3.60	0.65	3.20	0.50	2.80	0.50	3.20	0.40
	<b>5</b>	3.50	0.95	3.50	0.85	4.00	1.00	3.50	0.95	3.50	0.60	4.00	0.80	3.50	0.75	4.50	0.65	4.00	0.45	3.50	0.45	4.00	0.40
	<b>6</b>	4.20	0.65	4.20	0.80	4.80	0.80	4.20	0.95	4.20	0.50	4.80	0.80	4.20	0.75	5.40	0.50	4.80	0.40	4.20	0.40	4.80	0.40
	<b>7</b>	4.90	0.50	4.90	0.65	5.60	0.70	4.90	0.95	4.90	0.40	5.60	0.90	4.90	0.80	6.30	0.40	5.60	0.35	4.90	0.30	5.60	0.45
	<b>8</b>	5.60	0.70	5.60	0.60	6.40	0.60	5.60	0.80	5.60	0.30	6.40	0.75	5.60	0.70	7.20	0.25	6.40	0.35	5.60	0.30	6.40	0.30
	<b>9</b>	6.30	0.40	6.30	0.50	7.20	0.45	6.30	0.55	6.30	0.20	7.20	0.30	6.30	0.45	8.10	0.20	7.20	0.30	6.30	0.20	7.20	0.10
<b>Right Bank</b>		7.00	0.00	7.00	0.00	8.00	0.00	7.00	0.00	7.00	0.00	8.00	0.00	7.00	0.00	9.00	0.00	8.00	0.00	7.00	0.00	8.00	0.00
<b>Feature Type</b>		pool		pool		pool		poo		pool		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.

Surveyor's Signature: Aaron Ball      Date: 5.23.08

**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> 5.13.08 16:15	Location Description (e.g., road crossing):
<b>Stream Name:</b> Walnut Cr.	between Site 4 and Site 6
Current Weather Conditions: cloudy	Facility Name(s): Hume Wastewater Collection
Weather Conditions for Past 10 days: 3.02 inches	Permit Number(s): MO0114715
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): 0368745	Northing (UTM Y): 4227928	Horizontal Accuracy: (EPE / FOM / PDOP) 9 Meters
Site 11	Easting (UTM X): 0369032	Northing (UTM Y): 4228016	Horizontal Accuracy: (EPE / FOM / PDOP) 6 Meters

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
26	upstream, T11	31	downstream, T1		
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.)

<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 checked="" type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: pasture
Comments: Pasture				

**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%.)

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

algae covers 40% of the substrate

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

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input checked="" type="checkbox"/> Green	<input type="checkbox"/> Gray	<input checked="" 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 #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: Gilisa Gould and Aaron Ball

Surveyor's Signature: Aaron Ball                      Date of Survey: 5.13.08

Organization: SES, Inc.                                      Position: Field Team Leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Walnut Cr.</u> Waterbody ID: <u>1306</u> Site #: <u>5</u> Estimated Channel Incision: <u>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>0368745</u> UTM Y: <u>4227928</u> +/- <u>9</u> (meters) <b>11</b> UTM X: <u>0369032</u> UTM Y: <u>4228016</u> +/- <u>6</u> (meters) Average Stream Width: <u>7</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width) Field Staff: <u>Gilisa Gould and Aaron Ball</u>	<b>Dissolved Oxygen</b>
	Date: <u>5.13.08</u> Time: <u>16:15</u>
	Dissolved Oxygen: <u>8.8</u> (mg/L)
	Dissolved Oxygen: _____ (% sat)
	Specific Cond: _____ (µS/cm)
	Water Temperature: <u>17.1</u> (°C)

#### 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	0.80	0.25	0.70	0.30	0.80	0.40	0.70	0.70	0.80	0.60	0.70	0.60	0.70	0.60	0.70	0.45	0.80	0.40	0.80	0.40	0.60	0.30
2	1.60	0.45	1.40	0.70	1.60	0.75	1.40	0.85	1.60	1.00	1.40	0.70	1.40	0.65	1.40	0.60	1.60	0.80	1.60	0.80	1.20	0.35
3	2.40	0.60	2.10	0.85	2.40	1.00	2.10	1.00	2.40	1.00	2.10	0.90	2.10	0.75	2.10	0.70	2.40	0.80	2.40	0.95	1.80	0.35
4	3.20	0.90	2.80	1.00	3.20	1.00	2.80	1.00	3.20	1.00	2.80	1.00	2.80	0.75	2.80	1.00	3.20	0.90	3.20	1.00	2.40	0.30
5	4.00	1.00	3.50	1.00	4.00	1.00	3.50	1.00	4.00	1.00	3.50	1.00	3.50	0.80	3.50	1.00	4.00	1.00	4.00	1.00	3.00	0.20
6	4.80	1.00	4.20	1.00	4.80	1.00	4.20	1.00	4.80	0.95	4.20	1.00	4.20	0.65	4.20	1.00	4.80	1.00	4.80	1.00	3.60	0.10
7	5.60	1.00	4.90	1.00	5.60	0.80	4.90	0.80	5.60	0.70	4.90	0.80	4.90	0.40	4.90	0.80	5.60	1.00	5.60	0.90	4.20	0.10
8	6.40	1.00	5.60	0.70	6.40	0.60	5.60	0.70	6.40	0.70	5.60	0.70	5.60	0.25	5.60	0.80	6.40	1.00	6.40	0.80	4.80	0.10
9	7.20	0.80	6.30	0.40	7.20	0.30	6.30	0.60	7.20	0.45	6.30	0.70	6.30	0.20	6.30	0.65	7.20	0.30	7.20	0.70	5.40	0.10
<b>Right Bank</b>	8.00	0.00	7.00	0.00	8.00	0.00	7.00	0.00	8.00	0.00	7.00	0.00	7.00	0.00	7.00	0.00	8.00	0.00	8.00	0.00	6.00	0.00
<b>Feature Type</b> <small>(riffle, run, or pool)</small>	pool		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.

Surveyor's Signature: Aaron Ball      Date: 5.23.08

**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> 5.13.08 17:00	Location Description (e.g., road crossing):
<b>Stream Name:</b> Walnut Cr.	upstream confluence with the Marais des Cygnes River
Current Weather Conditions: raining	Facility Name(s):Hume Wastewater Collection
Weather Conditions for Past 10 days: 3.02 inches	Permit Number(s): MO0114715
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): 0369545	Northing (UTM Y): 4228363	Horizontal Accuracy: (EPE / FOM / PDOP) 4 Meters
Site 11	Easting (UTM X): 0369733	Northing (UTM Y): 4228680	Horizontal Accuracy: (EPE / FOM / PDOP) 6 Meters

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
33	downstream, T1	34	upstream, T11		
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.)

<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 checked="" type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: pasture, woods
Comments: Pasture, woods.				

**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%.)

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

algae on 40 % of the substrate

**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 checked="" type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

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

Site #6

**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: Gilisa Gould and Aaron Ball

Surveyor's Signature: Aaron Ball                      Date of Survey: 5.13.08

Organization: SES, Inc.                                      Position: Field Team Leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Walnut Cr.</u> Waterbody ID: <u>1306</u> Site #: <u>6</u> Estimated Channel Incision: <u>6</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>0369545</u> UTM Y: <u>4228363</u> +/- <u>4</u> (meters) <b>11</b> UTM X: <u>0369733</u> UTM Y: <u>4228680</u> +/- <u>6</u> (meters) Average Stream Width: <u>8</u> (meters)      Length of Survey Segment: <u>160</u> (meters) (To determine Length of Reach)      (20x average stream width) Field Staff: <u>Gilisa Gould and Aaron Ball</u>	<b>Dissolved Oxygen</b> Date: <u>5.13.08</u> Time: <u>17:00</u> Dissolved Oxygen: <u>8.1</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (µS/cm) Water Temperature: <u>22.8</u> (°C)
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#### Transect Cross-Section

	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	0.70	0.15	0.60	0.20	0.50	0.20	0.60	0.10	0.40	0.25	0.60	0.10	0.70	0.25	0.80	0.20	0.80	0.40	0.90	0.35	0.80	0.30
2	1.40	0.25	1.20	0.20	1.00	0.20	1.20	0.10	0.80	0.35	1.20	0.10	1.40	0.40	1.60	0.25	1.60	0.30	1.80	0.45	1.60	0.50
3	2.10	0.40	1.80	0.20	1.50	0.25	1.80	0.10	1.20	0.40	1.80	0.05	2.10	0.40	2.40	0.00	2.40	0.40	2.70	0.60	2.40	0.45
4	2.80	0.40	2.40	0.25	2.00	0.20	2.40	0.15	1.60	0.30	2.40	0.10	2.80	0.60	3.20	0.00	3.20	0.40	3.60	0.60	3.20	0.55
5	3.50	0.45	3.00	0.25	2.50	0.20	3.00	0.10	2.00	0.45	3.00	0.15	3.50	0.30	4.00	0.00	4.00	0.50	4.50	0.55	4.00	0.60
6	4.20	0.50	3.60	0.20	3.00	0.25	3.60	0.20	2.40	0.40	3.60	0.40	4.20	0.35	4.80	0.00	4.80	0.60	5.40	0.40	4.80	0.60
7	4.90	0.50	4.20	0.20	3.50	0.25	4.20	0.30	2.80	0.35	4.20	0.40	4.90	0.30	5.60	0.00	5.60	0.60	6.30	0.30	5.60	0.55
8	5.60	0.45	4.80	0.10	4.00	0.25	4.80	0.40	3.20	0.35	4.80	0.25	5.60	0.40	6.40	0.10	6.40	0.50	7.20	0.20	6.40	0.15
9	6.30	0.30	5.40	0.05	4.50	0.10	5.40	0.20	3.60	0.30	5.40	0.30	6.30	0.30	7.20	0.20	7.20	0.40	8.10	0.25	7.20	0.10
<b>Right Bank</b>	7.00	0.10	6.00	0.00	5.00	0.00	6.00	0.00	4.00	0.00	6.00	0.00	7.00	0.00	8.00	0.00	8.00	0.00	9.00	0.00	8.00	0.00
<b>Feature Type</b> <small>(riffle, run, or pool)</small>	run		riffle		run		riffle		pool		riffle/pool		run		riffle		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 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.

Surveyor's Signature: Aaron Ball      Date: 5.23.08

**WBID# 1306 Walnut Creek**



**Site# 1 Photo ID# 22, Downstream, T1**



**Site# 1 Photo ID# 23, Upstream, T11**



**Site# 2 Photo ID# 20, Downstream, T1**



**Site# 2 Photo ID# 21, Upstream, T11**

**WBID# 1306 Walnut Creek**



**Site# 3 Photo ID# 18, Downstream, T1**



**Site# 3 Photo ID# 19, Upstream, T11**



**Site# 4 Photo ID# 25, Downstream, T1**



**Site# 4 Photo ID# 24, Upstream, T11**

**WBID# 1306 Walnut Creek**



**Site# 5 Photo ID# 31, Downstream, T1**



**Site# 5 Photo ID# 26, Upstream, T11**



**Site# 6 Photo ID# 33, Downstream, T1**



**Site# 6 Photo ID# 34, Upstream, T11**