



Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 0596 Hickory Branch

Submitted by

Pickett Ray and Silver

To

Missouri Department of Natural Resources
Water Protection Program

Date Received: October 31, 2007



Missouri
 Department of Natural Resources
Field Data Sheets for Recreational Use Stream Surveys
 Natural Resources

Data Sheet A – Water Body Identification

I. Water Body Information (For water body being surveyed)

| | |
|---|------------------|
| Water Body Name (from USGS 7.5' quad): Hickory Branch | |
| Missouri Water Body Identification (WBID) Number: 0596 | |
| 8-digit HUC: 20080529 | County: Chariton |
| Upstream Legal Description (from Table H): 12, 55N, 20W | |
| Downstream Legal Description (from Table H): Mouth | |
| Number of sites evaluated: 4 | |
| List all sites numbers, listed consequently upstream to downstream: 0596_01 Hwy C, 0596_02 Shude Rd, 0596_03 Vermont Kennedy Ave, 0596_04 Hwy 11 | |

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): Mendon WWTF – MO 0094714 |
|---|

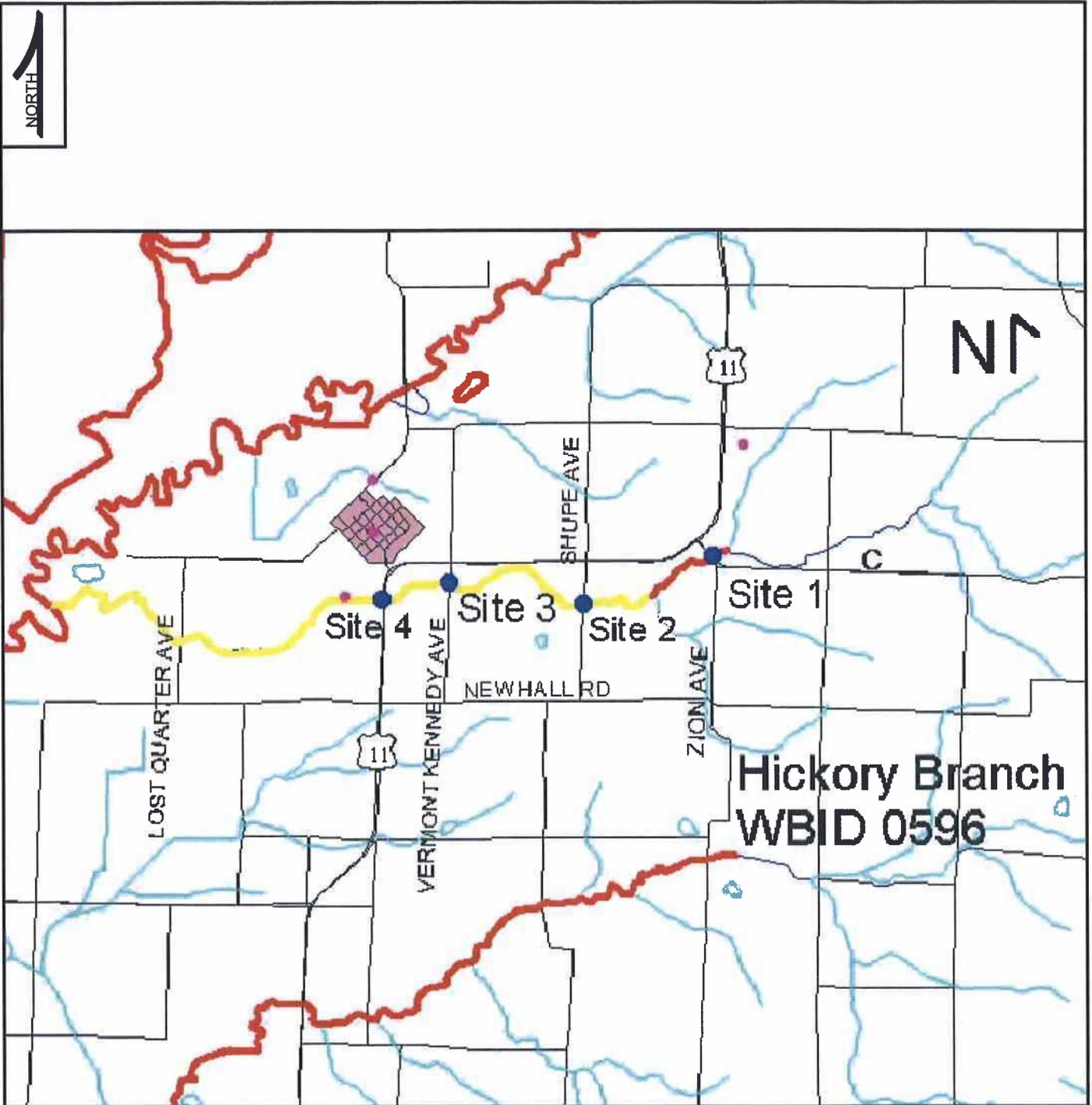
III. UAA Surveyor (please print legibly)

| | |
|--|--------------------------------|
| Name of Surveyor: Renee Martin | Telephone Number: 573-875-7844 |
| Organization/Employer: Applied Environmental Solutions | |

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

Signed: _____ **Date:** _____

\\3serverprts\Projects\07031\dwg\07031_MODN_01E\0596 Hickory Branch.dwg, 10/26/2007 2:28:51 PM, 1:2000, MATT COSBY



PICKETT RAY & SILVER

Civil Engineers Land Surveyors Natural Resources

Address: 333 Mid Rivers Mall Drive St. Peters, Missouri 63376
Phone: (636)397-1211
Fax: (636)397-1104
Website: www.prs3.com

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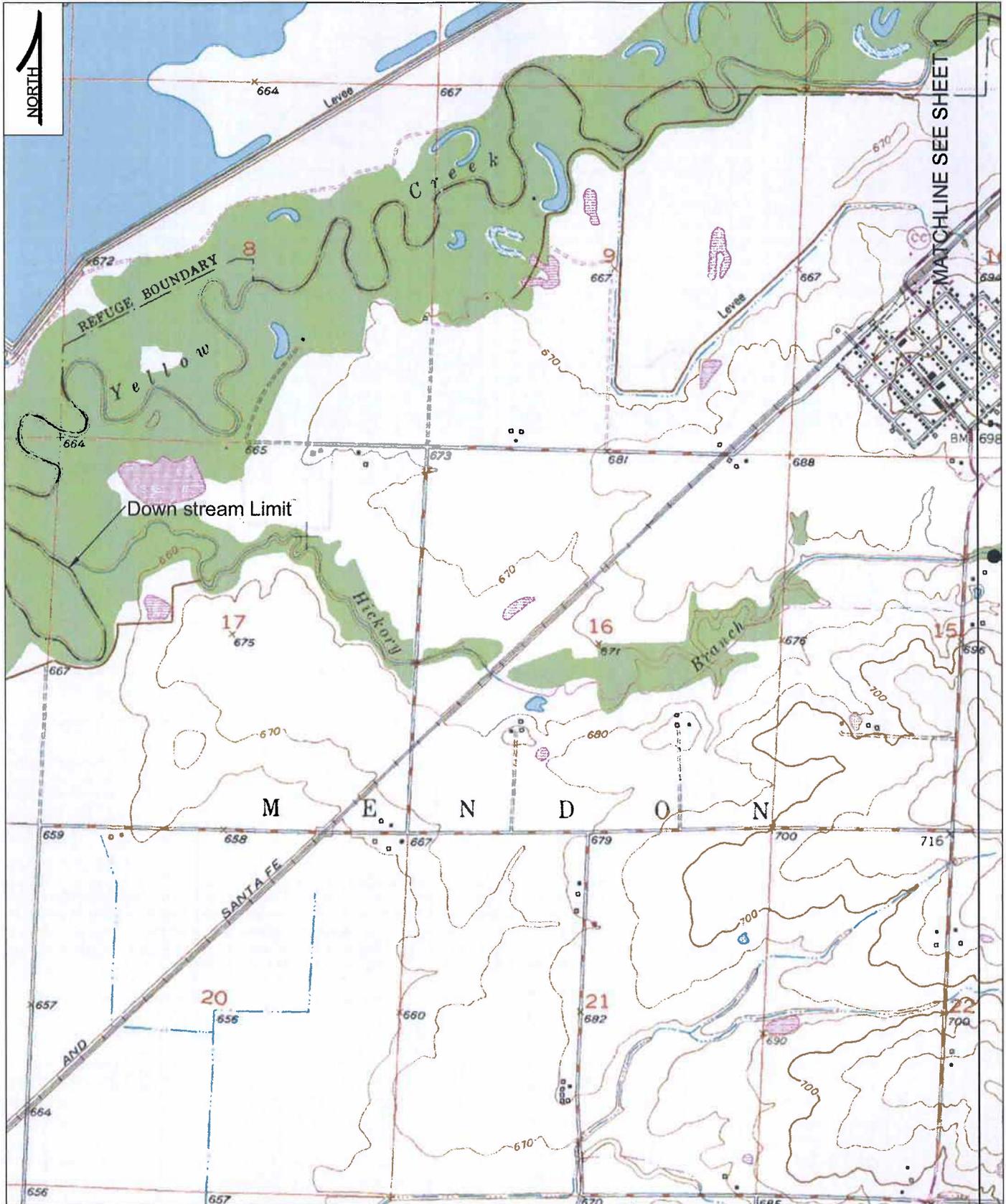
WBID #: 0596
Name: Hickory Branch
County: Chariton
GIS Location Map

Sheet 1 of 1

Map provided by AES.
Please refer to USGS for exact site location indicators.

PRS Job Number: 07031.MODN.01E
Drawn By: BLS Date: 10-12-07
Checked By: JCV Date: 10-12-07

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PICKETT RAY & SILVER

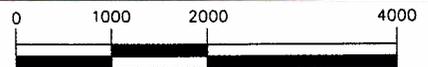
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Address: 333 Mid Rivers Mall Drive
St. Peters, Missouri 63376
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WBID #: 0596
Name: Hickory Branch
County: Chariton
USGS Location Map

Sheet 1 of 2



GRAPHIC SCALE
1 inch = 2000ft.

PRS Job Number: 07031.MODN.01E
Drawn By: BLS Date: 10-12-07
Checked By: JCV Date: 10-12-07



MATCHLINE SEE SHEET 1

\\3serverpr\Projects\07031\dwg\07031_MODN_01E\0596 Hickory Branch.dwg, 10/26/2007 2:40:55 PM, BLSTOESZ



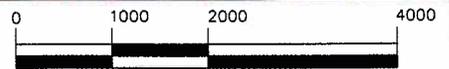
PICKETT RAY & SILVER

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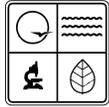
WBID #: 0596
 Name: Hickory Branch
 County: Chariton
 USGS Location Map

Sheet 2 of 2



GRAPHIC SCALE
 1 inch = 2000ft.

PRS Job Number: 07031.MODN.01E
 Drawn By: BLS Date: 10-12-07
 Checked By: JCV Date: 10-12-07



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization

(must be completed for each site)

| | |
|--|--|
| Date & Time: 9/8/07 9:42 | Site Location Description (e.g., road crossing): Hwy C Bridge |
| Personnel (Data Collectors): Tiffanie Hamilton, Justyn Foth | |
| Current Weather Conditions: partly cloudy | Facility Name: Mendon WWTF |
| Weather Conditions for Past 10 days: clear/rain | Permit Number: MO 0094714 |
| 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:

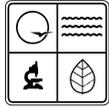
| LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS) | | | | | |
|--|--------------------------|---------------------------|---|--|--|
| Site 01 | Easting (UTM X): 4381961 | Northing (UTM Y): 0492537 | Horizontal Accuracy: (EPE / FOM / PDOP) 21 feet | | |
| Site 11 | Easting (UTM X): 4381885 | Northing (UTM Y): 0492419 | Horizontal Accuracy: (EPE / FOM / PDOP) 24 feet | | |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|-----------------------|-----------|------------------|-----------|---------------|
| 100_0037 | upstream Hwy C, fence | 100_0038 | Downstream Hwy C | | |
| 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 time of survey.)

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



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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

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

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

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

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

| | | | | | |
|----------|-----------|----------|----------|------------|-----------|
| % Cobble | 5% Gravel | 85% Sand | 10% Silt | % Mud/Clay | % Bedrock |
|----------|-----------|----------|----------|------------|-----------|

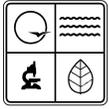
Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

| |
|------|
| none |
|------|

Water Characteristics*: (Mark all that apply.)

| | | | | | |
|------------------|---|--|--|--|---------------------------------|
| Odor: | <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 checked="" 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 effect another use.



Missouri Department of Natural Resources
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.)

Intermittent, non-flowing stream

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

Surveyor's Signature: _____ Date of Survey: _____

Organization: _____ Position: _____

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|-------------------------------------|---------------------------------------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
|  | Missouri Department of Natural Resources | Site #: <u>1</u> | Dissolved Oxygen | | | | | | | | | | | | | | | | | | | |
| | Estimated Channel Incision: <u>0.2</u> (m) (height between low bank width and water) | Date: <u>9/8/2007</u> Time: <u>9:50</u> | Dissolved Oxygen: <u>5.1</u> (mg/L) | Dissolved Oxygen: <u>57.4</u> (% sat) | | | | | | | | | | | | | | | | | | |
| GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) | Average Stream Width: <u>3</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) | 01 UTM X: <u>4381961</u> UTM Y: <u>0492537</u> +/- <u>21</u> (feet) | Specific Cond: <u>587.0</u> (µS/cm) | | | | | | | | | | | | | | | | | | | |
| 11 UTM X: <u>4381885</u> UTM Y: <u>0492419</u> +/- <u>24</u> (feet) | Field Staff: <u>Tiffanie Hamilton and Justyn Foth</u> | Water Temperature: <u>20.9</u> (°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 | 0.11 | 0.05 | 0.31 | 0.05 | 0.41 | 0.11 | 0.31 | 0.08 | 0.57 | 0.00 | 0.47 | 0.00 | 0.13 | 0.05 | 0.06 | 0.03 | 0.40 | 0.00 | 0.45 | 0.00 | 0.32 | 0.10 |
| 2 | 0.22 | 0.06 | 0.62 | 0.10 | 0.82 | 0.37 | 0.62 | 0.17 | 1.14 | 0.00 | 0.94 | 0.00 | 0.26 | 0.08 | 0.12 | 0.05 | 0.80 | 0.00 | 0.90 | 0.00 | 0.64 | 0.23 |
| 3 | 0.33 | 0.06 | 0.93 | 0.14 | 1.23 | 0.39 | 0.93 | 0.20 | 1.71 | 0.00 | 1.41 | 0.00 | 0.39 | 0.10 | 0.18 | 0.06 | 1.20 | 0.00 | 1.35 | 0.00 | 0.96 | 0.26 |
| 4 | 0.44 | 0.07 | 1.24 | 0.20 | 1.64 | 0.50 | 1.24 | 0.30 | 2.28 | 0.00 | 1.88 | 0.00 | 0.52 | 0.12 | 0.24 | 0.10 | 1.60 | 0.00 | 1.80 | 0.00 | 1.28 | 0.30 |
| 5 | 0.55 | 0.04 | 1.55 | 0.25 | 2.05 | 0.82 | 1.55 | 0.31 | 2.85 | 0.00 | 2.35 | 0.00 | 0.65 | 0.12 | 0.30 | 0.10 | 2.00 | 0.00 | 2.25 | 0.00 | 1.60 | 0.34 |
| 6 | 0.66 | 0.05 | 1.86 | 0.30 | 2.46 | 0.74 | 1.86 | 0.30 | 3.42 | 0.00 | 2.82 | 0.00 | 0.78 | 0.03 | 0.36 | 0.11 | 2.40 | 0.00 | 2.70 | 0.00 | 1.92 | 0.33 |
| 7 | 0.77 | 0.05 | 2.17 | 0.25 | 2.87 | 0.45 | 2.17 | 0.20 | 3.99 | 0.00 | 3.29 | 0.00 | 0.91 | 0.15 | 0.42 | 0.07 | 2.80 | 0.00 | 3.15 | 0.00 | 2.24 | 0.26 |
| 8 | 0.88 | 0.03 | 2.48 | 0.22 | 3.28 | 0.26 | 2.48 | 0.14 | 4.56 | 0.00 | 3.76 | 0.00 | 1.04 | 0.11 | 0.48 | 0.04 | 3.20 | 0.00 | 3.60 | 0.00 | 2.56 | 0.21 |
| 9 | 0.99 | 0.01 | 2.79 | 0.04 | 3.69 | 0.10 | 2.79 | 0.10 | 5.13 | 0.00 | 4.23 | 0.00 | 1.17 | 0.10 | 0.54 | 0.01 | 3.60 | 0.00 | 4.05 | 0.00 | 2.88 | 0.16 |
| Right Bank | 1.10 | 0.00 | 3.10 | 0.00 | 4.15 | 0.00 | 3.10 | 0.00 | 5.70 | 0.00 | 4.75 | 0.00 | 1.30 | 0.00 | 0.60 | 0.00 | 4.00 | 0.00 | 4.50 | 0.00 | 3.25 | 0.00 |
| Feature Type <small>(riffle, run, or pool)</small> | Pool | | Pool | | Pool | | Pool | | Dry | | Dry | | Pool | | Pool | | Dry | | Dry | | Pool | |

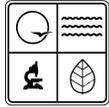
Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

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

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

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.



Missouri Department of Natural Resources
Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization
 (must be completed for each site)

| | |
|---|--|
| Date & Time: 9/8/07 10:30 | Site Location Description (e.g., road crossing): Shupe Rd. Bridge |
| Personnel (Data Collectors): Tiffanie Hamilton, Justyn Foth | |
| Current Weather Conditions: partly cloudy | Facility Name: Mendon WWTF |
| Weather Conditions for Past 10 days: clear/rain | Permit Number: MO 0094714 |
| Drought Conditions?: No drought <input 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): 4381449 | Northing (UTM Y): 0491002 | Horizontal Accuracy: (EPE / FOM / PDOP) 24 feet |
| Site 11 | Easting (UTM X): 4381376 | Northing (UTM Y): 0490951 | Horizontal Accuracy: (EPE / FOM / PDOP) 27 feet |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|-------------------------|-----------|-------------------|-----------|-----------------|
| 100_0039 | Upstream, out fall pipe | 100_0040 | Upstream, trash | 100_0041 | Upstream, trash |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| 100_0042 | Upstream, residential | 100_0043 | Downstream, trash | | |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| | | | | | |

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

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



Missouri
Department of
Field Data Sheets for Recreational Use Stream Surveys
Natural Resources

Data Sheet B – Site Characterization (continued)

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

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

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

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

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

| | | | | | |
|----------|----------|---------|----------|--------------|-----------|
| % Cobble | % Gravel | 5% Sand | 10% Silt | 85% Mud/Clay | % Bedrock |
|----------|----------|---------|----------|--------------|-----------|

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

| |
|------|
| none |
|------|

Water Characteristics*: (Mark all that apply.)

| | | | | | |
|------------------|--|---------------------------------|--|---|---------------------------------|
| Odor: | <input checked="" type="checkbox"/> Sewage | <input type="checkbox"/> Musky | <input type="checkbox"/> Chemical | <input type="checkbox"/> None | <input type="checkbox"/> Other: |
| Color: | <input type="checkbox"/> Clear | <input type="checkbox"/> Green | <input 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 effect another use.



Missouri
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 Natural Resources
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.)

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

Surveyor's Signature: _____ Date of Survey: _____

Organization: _____ Position: _____

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|-------------------------------------|---------------------------------------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
|  | Missouri Department of Natural Resources | Site #: <u>2</u> | Dissolved Oxygen | | | | | | | | | | | | | | | | | | | |
| | Estimated Channel Incision: <u>0.2</u> (m) (height between low bank width and water) | Date: <u>9/8/2007</u> Time: <u>10:30</u> | Dissolved Oxygen: <u>1.4</u> (mg/L) | Dissolved Oxygen: <u>17.5</u> (% sat) | | | | | | | | | | | | | | | | | | |
| GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) | Average Stream Width: <u>2.5</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) | 01 UTM X: <u>4381449</u> UTM Y: <u>0491002</u> +/- <u>24</u> (feet) | Specific Cond: <u>411.1</u> (µS/cm) | | | | | | | | | | | | | | | | | | | |
| 11 UTM X: <u>4381376</u> UTM Y: <u>0490951</u> +/- <u>27</u> (feet) | Field Staff: <u>Tiffanie Hamilton and Justyn Foth</u> | Water Temperature: <u>21.0</u> (°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 | 0.28 | 0.02 | 0.23 | 0.01 | 0.40 | 0.07 | 0.20 | 0.01 | 0.10 | 0.01 | 0.32 | 0.05 | 0.13 | 0.01 | 0.25 | 0.01 | 0.19 | 0.04 | 0.26 | 0.04 | 0.45 | 0.16 |
| 2 | 0.56 | 0.05 | 0.46 | 0.04 | 0.80 | 0.09 | 0.40 | 0.00 | 0.20 | 0.01 | 0.64 | 0.10 | 0.26 | 0.00 | 0.50 | 0.05 | 0.38 | 0.07 | 0.52 | 0.06 | 0.90 | 0.37 |
| 3 | 0.84 | 0.04 | 0.69 | 0.05 | 1.20 | 0.10 | 0.60 | 0.06 | 0.30 | 0.01 | 0.96 | 0.08 | 0.39 | 0.00 | 0.75 | 0.06 | 0.57 | 0.12 | 0.78 | 0.07 | 1.35 | 0.57 |
| 4 | 1.12 | 0.04 | 0.92 | 0.06 | 1.60 | 0.10 | 0.80 | 0.13 | 0.40 | 0.02 | 1.28 | 0.03 | 0.52 | 0.02 | 1.00 | 0.07 | 0.76 | 0.10 | 1.04 | 0.09 | 1.80 | 1.00 |
| 5 | 1.40 | 0.04 | 1.15 | 0.05 | 2.00 | 0.06 | 1.00 | 0.20 | 0.50 | 0.02 | 1.60 | 0.00 | 0.65 | 0.01 | 1.25 | 0.06 | 0.95 | 0.10 | 1.30 | 0.10 | 2.25 | 0.74 |
| 6 | 1.68 | 0.05 | 1.38 | 0.02 | 2.40 | 0.01 | 1.20 | 0.24 | 0.60 | 0.01 | 1.92 | 0.05 | 0.78 | 0.01 | 1.50 | 0.10 | 1.14 | 0.07 | 1.56 | 0.10 | 2.70 | 0.70 |
| 7 | 1.96 | 0.06 | 1.61 | 0.02 | 2.80 | 0.00 | 1.40 | 0.24 | 0.70 | 0.00 | 2.24 | 0.06 | 0.91 | 0.00 | 1.75 | 0.07 | 1.33 | 0.04 | 1.82 | 0.08 | 3.15 | 0.61 |
| 8 | 2.24 | 0.04 | 1.84 | 0.02 | 3.20 | 0.01 | 1.60 | 0.20 | 0.80 | 0.00 | 2.56 | 0.03 | 1.04 | 0.00 | 2.00 | 0.05 | 1.52 | 0.03 | 2.08 | 0.07 | 3.60 | 0.33 |
| 9 | 2.52 | 0.03 | 2.07 | 0.02 | 3.60 | 0.01 | 1.80 | 0.15 | 0.90 | 0.01 | 2.88 | 0.05 | 1.17 | 0.01 | 2.25 | 0.11 | 1.71 | 0.01 | 2.34 | 0.10 | 4.05 | 0.25 |
| Right Bank | 2.85 | 0.00 | 2.35 | 0.00 | 4.00 | 0.00 | 2.00 | 0.15 | 1.00 | 0.00 | 3.20 | 0.00 | 1.30 | 0.00 | 2.55 | 0.00 | 1.90 | 0.00 | 2.60 | 0.00 | 4.50 | 0.00 |
| Feature Type (riffle, run, or pool) | Pool | | Pool | | Pool | | Pool | | Run | | Pool | | Run | | Pool | | Pool | | Pool | | Pool | |

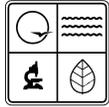
Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

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 by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization

(must be completed for each site)

| | |
|--|---|
| Date & Time: 9/8/07 11:25 | Site Location Description (e.g., road crossing): Vermont Kennedy Ave. Bridge |
| Personnel (Data Collectors): Tiffanie Hamilton, Justyn Foth | |
| Current Weather Conditions: partly cloudy | Facility Name: Mendon WWTF |
| Weather Conditions for Past 10 days: clear/rain | Permit Number: MO 0094714 |
| 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): 4381639 | Northing (UTM Y): 0489398 | Horizontal Accuracy: (EPE / FOM / PDOP) | | 19 feet |
| Site 11 | Easting (UTM X): 4381677 | Northing (UTM Y): 0489268 | Horizontal Accuracy: (EPE / FOM / PDOP) | | 31 feet |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|---------------|-----------|---------------|-----------|---------------|
| 100_0045 | Upstream | 100_0046 | 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 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.) | | | | |



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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

| | | | | |
|--|--------------------------------------|---|--|--|
| <input type="checkbox"/> City/county parks | <input type="checkbox"/> Playgrounds | <input type="checkbox"/> MDC conservation lands | <input type="checkbox"/> Urban areas | <input 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: |
| Comments: | | | | |

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

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

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

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

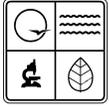
Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

| |
|---------------------|
| Surface algal bloom |
|---------------------|

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 checked="" 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 checked="" type="checkbox"/> Oil | <input type="checkbox"/> Scum | <input type="checkbox"/> Foam | <input type="checkbox"/> None | <input checked="" type="checkbox"/> Other: Algae |

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



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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

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

Comments: (Please record any additional comments here.)

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

Surveyor's Signature: _____ Date of Survey: _____

Organization: _____ Position: _____

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | | | | | | | | | | | | | | | | | | | | | | |
|---|--|------------------|--|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|------|
|  | Missouri Department of Natural Resources | Site #: <u>3</u> | Dissolved Oxygen | | | | | | | | | | | | | | | | | | | |
| | Estimated Channel Incision: <u>1.5</u> (m) (height between low bank width and water) | | Date: <u>9/8/2007</u> Time: <u>11:25</u> | | | | | | | | | | | | | | | | | | | |
| GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) | | | Dissolved Oxygen: <u>4.7</u> (mg/L) | | | | | | | | | | | | | | | | | | | |
| 01 | UTM X: <u>4381639</u> UTM Y: <u>0489398</u> +/- <u>19</u> (feet) | | Dissolved Oxygen: <u>53.6</u> (% sat) | | | | | | | | | | | | | | | | | | | |
| 11 | UTM X: <u>4381677</u> UTM Y: <u>0489268</u> +/- <u>31</u> (feet) | | Specific Cond: <u>303.9</u> (µS/cm) | | | | | | | | | | | | | | | | | | | |
| Average Stream Width: <u>2.5</u> (meters) Length of Survey Segment: <u>150</u> (meters) | | | Water Temperature: <u>21.6</u> (°C) | | | | | | | | | | | | | | | | | | | |
| (To determine Length of Reach) (20x average stream width) | | | | | | | | | | | | | | | | | | | | | | |
| Field Staff: <u>Tiffanie Hamilton and Justyn Foth</u> | | | | | | | | | | | | | | | | | | | | | | |
| Transect Cross-Section | | | | | | | | | | | | | | | | | | | | | | |
| 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) | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.50 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 1 | 0.45 | 0.10 | 0.40 | 0.24 | 0.11 | 0.04 | 0.13 | 0.01 | 0.33 | 0.15 | 0.23 | 0.18 | 0.05 | 0.01 | 0.39 | 0.22 | 0.05 | 0.01 | 0.34 | 0.05 | 0.43 | 0.10 |
| 2 | 0.90 | 0.10 | 0.80 | 0.33 | 0.22 | 0.02 | 0.26 | 0.04 | 0.66 | 0.22 | 0.46 | 0.10 | 0.10 | 0.02 | 0.78 | 0.39 | 0.10 | 0.02 | 0.68 | 0.10 | 0.86 | 0.11 |
| 3 | 1.35 | 0.05 | 1.20 | 0.40 | 0.33 | 0.04 | 0.39 | 0.05 | 0.99 | 0.25 | 0.69 | 0.09 | 0.15 | 0.02 | 1.17 | 0.39 | 0.15 | 0.04 | 1.02 | 0.14 | 1.29 | 0.13 |
| 4 | 1.80 | 0.10 | 1.60 | 0.30 | 0.44 | 0.03 | 0.52 | 0.05 | 1.32 | 0.26 | 0.92 | 0.08 | 0.20 | 0.02 | 1.56 | 0.35 | 0.20 | 0.05 | 1.36 | 0.18 | 1.72 | 0.12 |
| 5 | 2.25 | 0.25 | 2.00 | 0.35 | 0.55 | 0.01 | 0.65 | 0.06 | 1.65 | 0.24 | 1.15 | 0.07 | 0.25 | 0.02 | 1.95 | 0.33 | 0.25 | 0.05 | 1.70 | 0.20 | 2.15 | 0.20 |
| 6 | 2.70 | 0.20 | 2.40 | 0.44 | 0.66 | 0.01 | 0.78 | 0.06 | 1.98 | 0.18 | 1.38 | 0.06 | 0.30 | 0.02 | 2.34 | 0.28 | 0.30 | 0.06 | 2.04 | 0.20 | 2.58 | 0.24 |
| 7 | 3.15 | 0.17 | 2.80 | 0.51 | 0.77 | 0.01 | 0.91 | 0.07 | 2.31 | 0.10 | 1.61 | 0.03 | 0.35 | 0.02 | 2.73 | 0.25 | 0.35 | 0.08 | 2.38 | 0.26 | 3.01 | 0.27 |
| 8 | 3.60 | 0.22 | 3.20 | 0.33 | 0.88 | 0.01 | 1.04 | 0.05 | 2.64 | 0.06 | 1.84 | 0.01 | 0.40 | 0.01 | 3.12 | 0.20 | 0.40 | 0.03 | 2.72 | 0.16 | 3.44 | 0.24 |
| 9 | 4.05 | 0.15 | 3.60 | 0.22 | 0.99 | 0.01 | 1.17 | 0.03 | 2.97 | 0.03 | 2.07 | 0.01 | 0.45 | 0.01 | 3.51 | 0.10 | 0.45 | 0.01 | 3.06 | 0.05 | 3.87 | 0.10 |
| Right Bank | 4.50 | 0.00 | 4.90 | 0.00 | 1.10 | 0.00 | 1.30 | 0.00 | 3.30 | 0.00 | 2.30 | 0.00 | 0.55 | 0.00 | 3.90 | 0.00 | 0.52 | 0.00 | 3.45 | 0.00 | 4.38 | 0.00 |
| Feature Type <small>(riffle, run, or pool)</small> | Pool | Pool | | Riffle | | Run | | Pool | | Run | | Riffle | | Pool | | Run | | Pool | | Pool | | |

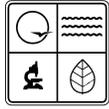
Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

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 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization

(must be completed for each site)

| | |
|--|---|
| Date & Time: 9/8/07 12:20 | Site Location Description (e.g., road crossing): Hwy 11 Bridge |
| Personnel (Data Collectors): Tiffanie Hamilton, Justyn Foth | |
| Current Weather Conditions: partly cloudy | Facility Name: Mendon WWTF |
| Weather Conditions for Past 10 days: clear/rain | Permit Number: MO 0094714 |
| 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): 4381495 | Northing (UTM Y): 0488587 | Horizontal Accuracy: (EPE / FOM / PDOP) | | 16 feet |
| Site 11 | Easting (UTM X): 4381447 | Northing (UTM Y): 0488468 | Horizontal Accuracy: (EPE / FOM / PDOP) | | 17 feet |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|-----------------------|-----------|---------------------|-----------|---------------|
| 100_0047 | Downstream transect 1 | 100_0048 | Upstream transect 1 | | |
| 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 time of survey.)

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



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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

| | | | | |
|--|--------------------------------------|---|--|--|
| <input type="checkbox"/> City/county parks | <input type="checkbox"/> Playgrounds | <input type="checkbox"/> MDC conservation lands | <input type="checkbox"/> Urban areas | <input 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: |
| Comments: | | | | |

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

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

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

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

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

| |
|------|
| none |
|------|

Water Characteristics*: (Mark all that apply.)

| | | | | | |
|------------------|---|---------------------------------|--|--|---------------------------------|
| Odor: | <input type="checkbox"/> Sewage | <input type="checkbox"/> Musky | <input type="checkbox"/> Chemical | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Other: |
| Color: | <input checked="" type="checkbox"/> Clear | <input type="checkbox"/> Green | <input type="checkbox"/> Gray | <input type="checkbox"/> Milky | <input type="checkbox"/> Other: |
| Bottom Deposit: | <input type="checkbox"/> Sludge | <input type="checkbox"/> Solids | <input 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 effect another use.



Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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

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

Comments: (Please record any additional comments here.)

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

Surveyor's Signature: _____ Date of Survey: _____

Organization: _____ Position: _____

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|---------------------------------------|--|--------------|-----------|--------------|-----------|------|------|
|  | Missouri Department of Natural Resources | | | | | | | | | | | | | | | Dissolved Oxygen | | | | | | |
| | Site #: <u>4</u> | | | | | | | | | | | | | | | Date: <u>9/8/2007</u> Time: <u>12:20</u> | | | | | | |
| Estimated Channel Incision: <u>1.5</u> (m) (height between low bank width and water) | | | | | | | | | | | | | | | Dissolved Oxygen: <u>3.37</u> (mg/L) | | | | | | | |
| GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) | | | | | | | | | | | | | | | Dissolved Oxygen: <u>38.4</u> (% sat) | | | | | | | |
| 01 UTM X: <u>4381495</u> UTM Y: <u>0488587</u> +/- <u>16</u> (feet) | | | | | | | | | | | | | | | Specific Cond: <u>346.7</u> (µS/cm) | | | | | | | |
| 11 UTM X: <u>4381447</u> UTM Y: <u>0488468</u> +/- <u>17</u> (feet) | | | | | | | | | | | | | | | Water Temperature: <u>22.6</u> (°C) | | | | | | | |
| Average Stream Width: <u>2.5</u> (meters) Length of Survey Segment: <u>150</u> (meters) | | | | | | | | | | | | | | | | | | | | | | |
| (To determine Length of Reach) (20x average stream width) | | | | | | | | | | | | | | | | | | | | | | |
| Field Staff: <u>Tiffanie Hamilton and Justyn Foth</u> | | | | | | | | | | | | | | | | | | | | | | |
| Transect Cross-Section | | | | | | | | | | | | | | | | | | | | | | |
| 01 | | 02 | | 03 | | 04 | | 05 | | 06 | | 07 | | 08 | | 09 | | 10 | | 11 | | |
| Station | 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 | 0.09 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 1 | 0.13 | 0.01 | 0.30 | 0.14 | 0.38 | 0.10 | 0.49 | 0.11 | 0.48 | 0.08 | 0.21 | 0.02 | 0.18 | 0.01 | 0.25 | 0.03 | 0.40 | 0.08 | 0.41 | 0.05 | 0.30 | 0.03 |
| 2 | 0.26 | 0.01 | 0.60 | 0.12 | 0.76 | 0.21 | 0.98 | 0.30 | 0.96 | 0.09 | 0.42 | 0.05 | 0.36 | 0.05 | 0.50 | 0.04 | 0.80 | 0.08 | 0.82 | 0.04 | 0.60 | 0.04 |
| 3 | 0.39 | 0.01 | 0.90 | 0.12 | 1.14 | 0.20 | 1.47 | 0.50 | 1.44 | 0.15 | 0.63 | 0.03 | 0.54 | 0.03 | 0.75 | 0.07 | 1.20 | 0.10 | 1.23 | 0.03 | 0.90 | 0.09 |
| 4 | 0.52 | 0.01 | 1.20 | 0.12 | 1.52 | 0.10 | 1.96 | 0.53 | 1.92 | 0.17 | 0.84 | 0.00 | 0.72 | 0.02 | 1.00 | 0.05 | 1.60 | 0.10 | 1.64 | 0.06 | 1.20 | 0.10 |
| 5 | 0.65 | 0.01 | 1.50 | 0.11 | 1.90 | 0.13 | 2.45 | 0.58 | 2.40 | 0.19 | 1.05 | 0.00 | 0.90 | 0.02 | 1.25 | 0.04 | 2.00 | 0.10 | 2.05 | 0.08 | 1.50 | 0.15 |
| 6 | 0.78 | 0.01 | 1.80 | 0.16 | 2.28 | 0.23 | 2.94 | 0.36 | 2.88 | 0.14 | 1.26 | 0.00 | 1.08 | 0.01 | 1.50 | 0.03 | 2.40 | 0.06 | 2.46 | 0.09 | 1.80 | 0.15 |
| 7 | 0.91 | 0.01 | 2.10 | 0.14 | 2.66 | 0.15 | 3.43 | 0.30 | 3.36 | 0.18 | 1.47 | 0.01 | 1.26 | <0.01 | 1.75 | 0.06 | 2.80 | 0.05 | 2.87 | 0.08 | 2.10 | 0.19 |
| 8 | 1.04 | 0.01 | 2.40 | 0.11 | 3.04 | 0.16 | 3.92 | 0.15 | 3.84 | 0.13 | 1.68 | 0.01 | 1.44 | <0.01 | 2.00 | 0.04 | 3.20 | 0.03 | 3.28 | 0.08 | 2.40 | 0.16 |
| 9 | 1.17 | 0.01 | 2.70 | 0.08 | 3.42 | 0.25 | 4.41 | 0.05 | 4.32 | 0.10 | 1.89 | 0.01 | 1.62 | <0.01 | 2.25 | 0.02 | 3.60 | 0.03 | 3.69 | 0.05 | 2.70 | 0.10 |
| Right Bank | 1.39 | 0.00 | 3.02 | 0.00 | 3.83 | 0.00 | 4.93 | 0.00 | 4.87 | 0.00 | 2.13 | 0.00 | 1.86 | 0.00 | 2.50 | 0.00 | 4.07 | 0.00 | 4.18 | 0.00 | 3.07 | 0.00 |
| Feature Type | Riffle | | Run | | Pool | | Pool | | Pool | | Run | | Riffle | | Run | | Pool | | Pool | | Run | |
| (riffle, run, or 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.

WBID# 0596



Site# 1 Photo ID# 100-0037, Upstream / Fence



Site# 1 Photo ID# 100-0038, Downstream Hwy C



Site# 2 Photo ID# 100-0039, Upstream / Pipe



Site# 2 Photo ID# 100-40, Upstream / Trash

WBID# 0596



Site# 2 Photo ID# 100-0041, Upstream / Trash



Site# 2 Photo ID# 100-0042, Upstream / Residential



Site# 2 Photo ID# 100-0043, Downstream / Trash



Site# 3 Photo ID# 100-45, Upstream

WBID# 0596



Site# 3 Photo ID# 100-0046, Downstream



Site# 4 Photo ID# 100-0047, Downstream Transect 1



Site# 4 Photo ID# 100-0048, Upstream Transect 1