Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 0287 Elkhorn Creek

Submitted by
BWR

to
Missouri Department of Natural Resources
Water Protection Program

Date received: June 1, 2007

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):	Elknorn Creek
Missouri Water Body Identification (WBID) Number:	287
8-digit HUC: 10240010	County: Nodaway
Upstream Legal Description (from Table H):	Mouth
Downstream Legal Description(from Table H):	13, 63N, 37W
Number of sites evaluated	5
List all sites numbers, listed consequently upstream to downstream:	1, 2, 3, 4, 5

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

II. Subegmentation (fill this section out only in cases where subesgmentation is being proposed)

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Upstream Coordinates: UTM X Y		Downstream Coordinates: UTM X Y	
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	±_____Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	±_____Feet or ±_____Meters		
PDOP		±_____Feet or ±_____Meters	

III. Discharger Facility Information (list all permitted dischargers on the stream)

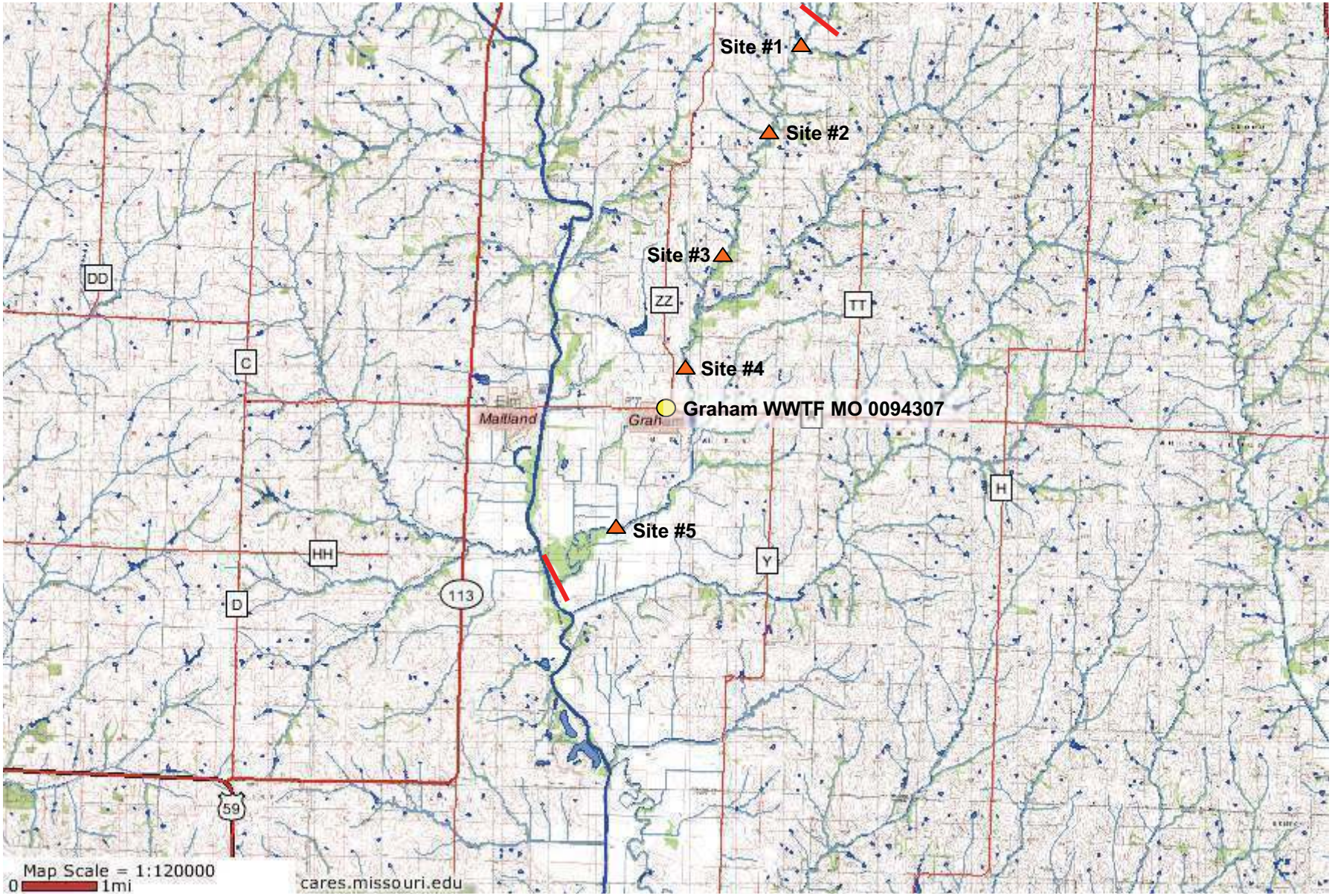
Discharger Facility Name(s):	Graham WWTF
Discharger Permit Number(s):	MO 0094387

IV. UAA Surveyor (please print legibly)

Name of Surveyor Ryan Lunt	Telephone Number: 620-474-2494
Organization/Employer: Seagull Environmental Technologies	
Position: Environmental Technologies	

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

Signed: Ryan M. Lunt **Date:** 05-22-07



BWR

Elkhorn Creek

WBID #287

N

WBID# 287
Site# 1

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B - Site Characterization
(must be completed for each site)

Date & Time: 5/27/07	Site Location Description (e.g., road crossing): Road Crossing @ Fortune Rd Hwy V ~100 m
Personnel (Data Collectors): Ryan Lutt	
Current Weather Conditions: Sunny 80°	Facility Name: Graham WWTF
Weather Conditions for Past 10 days: rain	Permit Number: MO0094307

Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 094.98894°W Y: 40.28924°N

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± _____ Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP		

Photos:

Upstream Photos		Downstream Photos		Other Photos	
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
52	J-K	51	Trans, B to A	47-50	Trans. A 360° → upstream, R, downstream, L

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☑ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☐ Steep slopes	☐ None of the above	☐ Other:

Comments: Footpath for people to lay on slabs of bedrock (but not for swimming)

Indications of Human Use*: (attach photos)

☑ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:

Comments: [Hwy V ~ 100 m away]

% CHANNEL FEATURES
RUN - 5
RIFFLE - 5
POOL - 90

*** Page Two – Data Sheet B for WBID #** 287 : SITE # 1
Stream Morphology:

Upstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Downstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

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

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

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

none in channel. riparian had root wads + floating detritus.

Water Characteristics*: (Mark all that apply.)

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

Comments: Please attach any additional comments () to this form.

*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.

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

Surveyor's Signature: Ryan M. Lunt Date of Survey: 05-

Organization: SETI Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 1

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 1	wetted width	.2			1 Channel Feature:	
2	11 m	.2			2 Riffle	
3		.2			3	
4	measurements	.2			4 Dissolved Oxygen	
5	.11 m	.1			5	
6	apart	.1			6 8.7	ppm
7		.1			7 97	%
8		.1			8	
9		.2			9	
10		.1			10	
					11	
Transect B 1	wetted width	.1			12 Channel Feature:	
2	9 m	.1			13 Run	
3		.1			14	
4	measurements	.1			15 Dissolved Oxygen:	
5	.9 m	.1			16	
6	apart	.2			17 8.7	ppm
7		.1			18 93	%
8		.3			19	
9		.1			20	
10		.1			21	
					22	
Transect C 1	wetted width	.2			23 Channel Feature:	
2	.95 m	.5			24 Pool	
3		.6			25	
4	measurements	.7			26 Dissolved Oxygen	
5	.95 m	.9			.	
6	apart	.9			. 8.0	ppm
7		.8			. 84	%
8		.7			n	
9		.4				
10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UA datasheet is true and accurate.

Signed: Ryan M. Lust **Date:** 05-27-07

Organization: SET I Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 1

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 1	wetted width	.1			1 Channel Feature:	
2	9.5 m	.3			2 ~~Run~~ POOL	
3		.10			3	
4	measurements	.8			4 Dissolved Oxygen	
5	.95 m	.8			5	
6	apart	.8			6 8.0 ppm	
7		.7			7 84 %	
8		.3			8	
9		.3			9	
10		.2			10	
					11	
Transect E 1	wetted width	.1			12 Channel Feature:	
2	11 m	.5			13 POOL	
3		>1			14	
4	measurements	>1			15 Dissolved Oxygen:	
5	.11 m	.9			16	
6	apart	1			17 8.0 ppm	
7		.9			18 84 %	
8		.9			19	
9		.7			20	
10		.4			21	
					22	
Transect F 1	wetted width	.2			23 Channel Feature:	
2	9 m	.4			24 POOL	
3		.6			25	
4	measurements	.8			26 Dissolved Oxygen	
5	.9 m	.9			.	
6	apart	.9			. 8.0 ppm	
7		.7			. 85 %	
8		.3			n	
9		.3				
10		.2				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth i the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the twc depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UA datasheet is true and accurate.

Signed: Ryan M. [illegible] **Date:** 05-27-07

Organization: SETX **Position:** Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 1

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G 1	wetted width	.2			1 Channel Feature:	
2	10 m	.4			2 POOL	
3		.6			3	
4	measurements	.8			4 Dissolved Oxygen	
5	.1 m	.9			5	
6	apart	.9			6 8.1	ppm
7		.8			7 86	%
8		.7			8	
9		.4			9	
10		.2			10	
Transect H 1	wetted width	.1			11	
2	11 m	.8			12 Channel Feature:	
3		>1			13 POOL	
4	measurements	>1			14	
5	.11 m	>1			15 Dissolved Oxygen:	
6	apart	>1			16	
7		>1			17 8.1	ppm
8		.8			18 85	%
9		.8			19	
10		.6			20	
Transect I 1	wetted width	.4			21	
2	9.5 m	.10			22	
3		.9			23 Channel Feature:	
4	measurements	>1			24 POOL	
5	.95 m	>1			25	
6	apart	.9			26 Dissolved Oxygen	
7		.5			.	
8		.3			. 7.7	ppm
9		.3			. 83	%
10		.1			n	

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Ryan M. Lunt **Date:** 05-27-07

Organization: SETE **Position:** Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 1

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect J 1	wetted width	.2				
2	10 m	.4			1 Channel Feature:	
3		.8			2 pool	
4	measurements	1.0			3	
5	1.0 m	>1			4 Dissolved Oxygen	
6	apart	>1			5	
7		1			6 7.8	ppm
8		.9			7 82	%
9		.9			8	
10		.7			9	
					10	
					11	
Transect K 1	wetted width	.3			12 Channel Feature:	
2	10 m	.6			13 pool	
3		>1			14	
4	measurements	>1			15 Dissolved Oxygen:	
5	1 m	>1			16	
6	apart	>1			17 7.9	ppm
7		1			18 85	%
8		.8			19	
9		.6			20	
10		.3			21	
					22	
Transect 1	wetted width				23 Channel Feature:	
2	m				24	
3					25	
4	measurements				26 Dissolved Oxygen	
5	m				.	
6	apart				.	ppm
7					.	%
8					n	
9						
10						

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Ryan M. Lent **Date:** 05-27-07

Organization: SETI Position: Environmental Scientist

WBID# 287
Site# 2

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B - Site Characterization
(must be completed for each site)

Date & Time: 5/27/07	Site Location Description (e.g., road crossing): crossing @ Fairview Rd.
Personnel (Data Collectors): Ryan Lunt	
Current Weather Conditions: sunny	Facility Name: Graham WWTF
Weather Conditions for Past 10 days: rain	Permit Number: MO 0094307

Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 095.00977°W Y: 40.26875°N

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± 15 Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP		

Photos:

Upstream Photos		Downstream Photos		Other Photos	
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
58	Trans H to J	57	Tr. B to A	53-56	photo 300. @ A: upstream, R, down, L

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☐ Steep slopes	☑ None of the above	☐ Other:

Comments:

Indications of Human Use*: (attach photos)

☑ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:

Comments:

% CHANNEL FEATURES
RUN - 95
RIFFLE - 5
POOL - 0

*** Page Two – Data Sheet B for WBID #** 287 : SITE # 2
Stream Morphology:

Upstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Downstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

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

50 % Cobble	10 % Gravel	0 % Sand	0 % Silt	40 % Mud/Clay	0 % Bedrock

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

none. → woody debris in riparian from flood.
detritus in channel; no algal growth

Water Characteristics*: (Mark all that apply.)

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

Comments: Please attach any additional comments () to this form.

*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.

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

Surveyor's Signature: Ryan M. Lunt Date of Survey: 05-27-07

Organization: SETI Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 2

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 1	wetted width	.1			1 Channel Feature:	
2	8 m	.2			2 Run	
3		.2			3	
4	measurements	.3			4 Dissolved Oxygen	
5	.8 m	.3			5	
6	apart	.5			6 7.9	
7		.5			7 88	ppm %
8		.5			8	
9		.10			9	
10		.10			10	
					11	
Transect B 1	wetted width	.4			12 Channel Feature:	
2	10 m	.4			13 Run	
3		.4			14	
4	measurements	.4			15 Dissolved Oxygen:	
5	.10 m	.3			16	
6	apart	.2			17 8.0	
7		.2			18 89	ppm %
8		.2			19	
9		.1			20	
10		.1			21	
					22	
Transect C 1	wetted width	.1			23 Channel Feature:	
2	10 m	.4			24 Run	
3		.10			25	
4	measurements	.10			26 Dissolved Oxygen	
5	1.0 m	.6			.	
6	apart	.3			. 7.9	
7		.3			. 87	ppm %
8		.3			n	
9		.5				
10		.2				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UA datasheet is true and accurate.

Signed: Ryan M. Hunt **Date:** 05-27-07

Organization: SETI **Position:** Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 2

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 1	wetted width	.1			1 Channel Feature:	
2	10 m	.2			2 Run	
3		.3			3	
4	measurements	.3			4 Dissolved Oxygen	
5	.1 m	.4			5	
6	apart	.4			6 7.9	ppm
7		.4			7 87	%
8		.4			8	
9		.2			9	
10		.1			10	
					11	
Transect E 1	wetted width	.1			12 Channel Feature:	
2	9 m	.4			13 Run	
3		.4			14	
4	measurements	.5			15 Dissolved Oxygen:	
5	.9 m	.5			16	
6	apart	.5			17 7.9	ppm
7		.5			18 87	%
8		.3			19	
9		.3			20	
10		.1			21	
					22	
Transect F 1	wetted width	.2			23 Channel Feature:	
2	8 m	.6			24 Run	
3		.9			25	
4	measurements	.9			26 Dissolved Oxygen	
5	.8 m	.5			.	
6	apart	.3			. 7.9	ppm
7		.2			. 87	%
8		.1			n	
9		.1				
10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UA datasheet is true and accurate.

Signed: Ryan M. Lunt **Date:** 05-27-07

Organization: SETI Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 2

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G 1	wetted width	.3			1 Channel Feature:	
2	6 m	.6			2 Run	
3		.5			3	
4	measurements	.5			4 Dissolved Oxygen	
5	.6 m	.4			5	
6	apart	.2			6 8.0	ppm
7		.4			7 88	%
8		.2			8	
9		.1			9	
10		.2			10	
					11	
Transect H 1	wetted width	.1			12 Channel Feature:	
2	9 m	.2			13 Run	
3		.2			14	
4	measurements	.2			15 Dissolved Oxygen:	
5	.9 m	.2			16	
6	apart	.2			17 7.9	ppm
7		.3			18 88	%
8		.3			19	
9		.4			20	
10		.1			21	
					22	
Transect I 1	wetted width	.4			23 Channel Feature:	
2	4 m	.5			24 Run	
3		.6			25	
4	measurements	.6			26 Dissolved Oxygen	
5	.4 m	.5			.	
6	apart	.4			. 8.0	ppm
7		.2			. 88	%
8		.2			n	
9		.1				
10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Ryan M. Lunt **Date:** 05-22-07

Organization: SBTI **Position:** Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 2

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect 1	wetted width	.1			1 Channel Feature:	
2	3 m	.1			2 Run	
3		.1			3	
4	measurements	.3			4 Dissolved Oxygen	
5	.3 m	.4			5	
6	apart	.6			6 7.9	ppm
7		.7			7 87	%
8		.8			8	
9		.7			9	
10		.3			10	
					11	
Transect 2 1	wetted width	.5			12 Channel Feature:	
2	4.5 m	.6			13	
3		.6			14	
4	measurements	.7			15 Dissolved Oxygen:	
5	.45 m	.6			16	
6	apart	.4			17 7.9	ppm
7		.2			18 88	%
8		.2			19	
9		.2			20	
10		.1			21	
					22	
Transect 1	wetted width				23 Channel Feature:	
2	m				24	
3					25	
4	measurements				26 Dissolved Oxygen	
5	m				.	
6	apart				.	
7					.	ppm
8					n	%
9						
10						

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Ryan M. Lunt **Date:** 05-27-07

Organization: SOTI **Position:** Environmental Scientist

WBID# 287
Site# 3

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B - Site Characterization
(must be completed for each site)

Date & Time: 5/27/07	Site Location Description (e.g., road crossing): Road crossing - 330th St.
Personnel (Data Collectors): Ryan Lutt	
Current Weather Conditions: sunny	Facility Name: Graham WWTF
Weather Conditions for Past 10 days: rainy	Permit Number: MO 0094307

Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 095.02177°W Y: 40.24079°N

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± 15 Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP		

Photos: *No Photo taken for Downstream & Transect A, Camera fell in Water

Upstream Photos		Downstream Photos		Other Photos	
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
59	-K→J				

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☑ Steep slopes	☐ None of the above	☐ Other:

Comments:

Indications of Human Use*: (attach photos)

☑ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:

Comments:

% CHANNEL FEATURES

RUN - 95
RIFFLE - 5
POOL - 0

*** Page Two – Data Sheet B for WBID #** 287 : SITE # 3
Stream Morphology:

Upstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Downstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

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

35 % Cobble	5 % Gravel	15 % Sand	10 % Silt	40 % Mud/Clay	0 % Bedrock

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

none in channel. woody debris in stream from previous flooding. ND algal growth.

Water Characteristics*: (Mark all that apply.)

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

Comments: Please attach any additional comments () to this form.

*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.

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

Surveyor's Signature: Ryan M. Smit Date of Survey: 05-27-07

Organization: SOTI Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 3

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 1	wetted width	.1			1 Channel Feature:	
2	8 m	.1			2 RUN	
3		.2			3	
4	measurements	.2			4 Dissolved Oxygen	
5	.8 m	.4			5	
6	apart	.5			6 7.3	ppm
7		.2			7 83	%
8		.1			8	
9		.1			9	
10		.1			10	
					11	
Transect B 1	wetted width	.5			12 Channel Feature:	
2	7.5 m	.4			13 RUN	
3		.6			14	
4	measurements	.6			15 Dissolved Oxygen:	
5	.75 m	.6			16	
6	apart	.4			17 7.6	ppm
7		.3			18 85	%
8		.2			19	
9		.1			20	
10					21	
					22	
Transect C 1	wetted width	.4			23 Channel Feature:	
2	7 m	.6			24 RUN	
3		.6			25	
4	measurements	.5			26 Dissolved Oxygen	
5	.7 m	.4			.	
6	apart	.3			. 7.7	ppm
7		.2			. 86	%
8		.2			n	
9		.1				
10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Ryan M. Hunt **Date:** 05-27-07

Organization: SBTI **Position:** Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 3

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 1	wetted width	.2			1 Channel Feature:	
2	9 m	.3			2 Run	
3		.3			3	
4	measurements	.2			4 Dissolved Oxygen	
5	.9 m	.3			5	
6	apart	.4			6 7.7	ppm
7		.3			7 86	%
8		.2			8	
9		.2			9	
10		.2			10	
					11	
Transect E 1	wetted width	.2	dropped camera in water when I FELL		12 Channel Feature:	
2	m	.3			13 Run	
3		.4			14	
4	measurements	.10			15 Dissolved Oxygen:	
5	.1 m	.6			16	
6	apart	.6			17 7.4	ppm
7		.5			18 83	%
8		.3			19	
9		.3			20	
10		.3			21	
					22	
Transect F 1	wetted width	.2			23 Channel Feature:	
2	6 m	.4			24 Run!	
3		.5			25	
4	measurements	.5			26 Dissolved Oxygen	
5	.6 m	.4			.	
6	apart	.3			. 7.8	ppm
7		.3			. 87	%
8		.3			n	
9		.3				
10		.2				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UA datasheet is true and accurate.

Signed: Ryan M. Lent **Date:** 05-27-07

Organization: SETI Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 3

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G 1	wetted width	.2			1 Channel Feature:	
2	7 m	.4			2 Run	
3		.5			3	
4	measurements	.5			4 Dissolved Oxygen	
5	.7 m	.4			5	
6	apart	.4			6 7.8	ppm
7		.4			7 80	%
8		.3			8	
9		.2			9	
10		.2			10	
					11	
Transect H 1	wetted width	.2			12 Channel Feature:	
2	1 m	.3			13 Run	
3		.2			14	
4	measurements	.3			15 Dissolved Oxygen:	
5	.7 m	.4			16	
6	apart	.3			17 8.0	ppm
7		.3			18 90	%
8		.2			19	
9		.2			20	
10		.3			21	
					22	
Transect I 1	wetted width	.2			23 Channel Feature:	
2	9.5 m	.5			24 Run	
3		.6			25	
4	measurements	.6			26 Dissolved Oxygen	
5	.5 m	.5			.	
6	apart	.5			. 7.6	ppm
7		.4			. 80	%
8		.2			n	
9		.2				
10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Ryan M. Lunt **Date:** 05-27-07

Organization: SBTI **Position:** Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 3

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect 1	wetted width	.2			1 Channel Feature:	
2	4 m	.4			2 Run	
3		.5			3	
4	measurements	.5			4 Dissolved Oxygen	
5	.4 m	.10			5	
6	apart	.6			6 7.8	ppm
7		.7			7 87	%
8		.7			8	
9		.5			9	
10		.4			10	
					11	
Transect 2	wetted width	.1			12 Channel Feature:	
2	10 m	.2			13 Run	
3		.2			14	
4	measurements	.3			15 Dissolved Oxygen:	
5	.10 m	.5			16	
6	apart	.5			17 8.1	ppm
7		.5			18 89	%
8		.4			19	
9		.2			20	
10		.2			21	
					22	
Transect	wetted width				23 Channel Feature:	
2	m				24	
3					25	
4	measurements				26 Dissolved Oxygen	
5	m				.	
6	apart				.	
7					.	ppm
8					.	%
9					n	
10						

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UA datasheet is true and accurate.

Signed: Ryan McLeod **Date:** 05-27-07

Organization: SCTI **Position:** Environmental Scientist

WBID# 287
Site# 4

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B - Site Characterization
(must be completed for each site)

Date & Time: 5/27/07	Site Location Description (e.g., road crossing): RL - 353rd St.
Personnel (Data Collectors): Ryan Hunt	
Current Weather Conditions:	Facility Name: Graham WWTF
Weather Conditions for Past 10 days:	Permit Number: MO0094307
Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 095.03355° W Y: 40.21179 °N

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± _____ Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP		

Photos:

camera not working)

Upstream Photos		Downstream Photos		Transect A ~~Other Photos~~	
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
GPS:	40.21335°N 095.03400° W	B to A	40.21194°N 095.03345°W		40.21179°N 095.03355°W

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☐ Steep slopes	☐ None of the above	☑ Other:

Comments: Possible point source → pipe. 75 m downstream from 353rd. Between Transects B and H. 40.21254°N, 095.0343°W

Indications of Human Use*: (attach photos)

☑ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:

Comments: St. Hwy A

R.L. % CHANNEL FEATURES

RIFFLE - 100
RUN - 0
Pool - 0

*** Page Two – Data Sheet B for WBID #** 287 : SITE # 4
Stream Morphology:

Upstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Downstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

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

% Cobble	5 % Gravel	5 % Sand	% Silt	90 % Mud/Clay	% Bedrock

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

NONE

Water Characteristics*: (Mark all that apply.)

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

Comments: Please attach any additional comments () to this form.

*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.

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

Surveyor's Signature: Regan M. Lunt Date of Survey: 05-27-07

Organization: SETI Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 4

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 1	wetted width	.1			1 Channel Feature:	
2	4.5 m	.2			2 Run	
3		.5			3	
4	measurements	.10			4 Dissolved Oxygen	
5	.45 m	.10			5	
6	apart	.10			6 7.8 ppm	
7		.5			7 86 %	
8		.3			8	
9		.2			9	
10		.2			10	
					11	
Transect B 1	wetted width	.10			12 Channel Feature:	
2	4 m	.8			13 Run	
3		.8			14	
4	measurements	.9			15 Dissolved Oxygen:	
5	.4 m	.9			16	
6	apart	.9			17 7.9 ppm	
7		.7			18 87 %	
8		.6			19	
9		.3			20	
10		.2			21	
					22	
Transect C 1	wetted width	.3			23 Channel Feature:	
2	5 m	.4			24 Run	
3		.8			25	
4	measurements	.8			26 Dissolved Oxygen	
5	.5 m	.10			.	
6	apart	.5			. 7.1 ppm	
7		.5			. 86 %	
8		.3			n	
9		.1				
10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UA datasheet is true and accurate.

Signed: Ryan Mc Hurt **Date:** 05-27-07

Organization: SETX **Position:** Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 4

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 1	wetted width	.2			1 Channel Feature:	
2	12 m	.6			2 Run	
3		.6			3	
4	measurements	.5			4 Dissolved Oxygen	
5	1.2 m	.5			5	
6	apart	.6			6 7.6	ppm
7		.6			7 84	%
8		.6			8	
9		.5			9	
10		.2			10	
					11	
Transect E 1	wetted width	.2			12 Channel Feature:	
2	5 m	.5			13 Run	
3		.7			14	
4	measurements	.7			15 Dissolved Oxygen:	
5	.5 m	.7			16	
6	apart	.7			17 7.8	ppm
7		.6			18 87	%
8		.6			19	
9		.4			20	
10		.3			21	
					22	
Transect F 1	wetted width	.2			23 Channel Feature:	
2	8 m	.2			24 Run	
3		.3			25	
4	measurements	.5			26 Dissolved Oxygen	
5	.8 m	.5			.	
6	apart	.6			. 7.6	ppm
7		.6			. 84	%
8		.5			n	
9		.5				
10		.3				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the tw depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UA datasheet is true and accurate.

Signed: Ryan M. Lunt **Date:** 05-27-07

Organization: SETI Position: Environmental ~~Scientist~~

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 4

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G 1	wetted width	.1				
2	10 m	.3			1 Channel Feature:	
3		.4			2 Run	
4	measurements	.5			3	
5	1.0 m	.5			4 Dissolved Oxygen	
6	apart	.4			5	
7		.4			6 7.7	ppm
8		.2			7 86	%
9		.2			8	
10		.2			9	
					10	
Transect H 1	wetted width	.2			11	
2	9 m	.6			12 Channel Feature:	
3		.5			13 Run	
4	measurements	.4			14	
5	.9 m	.4			15 Dissolved Oxygen:	
6	apart	.4			16	
7		.3			17 7.6	ppm
8		.3			18 86	%
9		.2			19	
10		.2			20	
					21	
Transect I 1	wetted width	.2			22	
2	8 m	.3			23 Channel Feature:	
3		.4			24 Run	
4	measurements	.4			25	
5	.8 m	.4			26 Dissolved Oxygen	
6	apart	.5			.	
7		.6			. 7.6	ppm
8		.6			. 86	%
9		.5			n	
10		.2				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Ryan McLuist **Date:** 05-27-07

Organization: SETI Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 4

		Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect 1	1	wetted width	.1			1 Channel Feature:	
	2	8 m	.3			2 Run	
	3		.3			3	
	4	measurements	.4			4 Dissolved Oxygen	
	5	.8 m	.4			5	
	6	apart	.5			6 7.9	ppm
	7		.5			7 87	%
	8		.7			8	
	9		.5			9	
	10		.4			10	
Transect 2	1	wetted width				11	
	2	.10 m	.1			12 Channel Feature:	
	3		.3			13 riffle	
	4	measurements	.4			14	
	5	.10 m	.3			15 Dissolved Oxygen:	
	6	apart	.4			16	
	7		.4			17 7.9	ppm
	8		.4			18 87	%
	9		.3			19	
	10		.3			20	
			.2			21	
Transect	1	wetted width				22	
	2	m				23 Channel Feature:	
	3					24	
	4	measurements				25	
	5	m				26 Dissolved Oxygen	
	6	apart				.	
	7					.	ppm
	8					.	%
	9					n	
	10						

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Ryan M. Lunt **Date:** 05-22-07

Organization: SETI **Position:** Environmental Scientist

WBID# 287
Site# 5

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B - Site Characterization
(must be completed for each site)

Date & Time: 5/27/07	Site Location Description (e.g., road crossing): Crossing - Eagle Rd
Personnel (Data Collectors): Ryan Lunt, and SAR	
Current Weather Conditions: sunny	Facility Name: Graham WWTF
Weather Conditions for Past 10 days: rainy	Permit Number: MO 0094307

Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 095.04995°W Y: 40.17894°N

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± 20 Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP		

Photos:

Upstream Photos		Downstream Photos		Other Photos	
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
J-K	40.18013°W 093.04710°W	B→A	40.17908°N 095.04999°W		

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☑ Steep slopes	☐ None of the above	☐ Other:

Comments:

Indications of Human Use*: (attach photos)

☑ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:

Comments:

% CHANNEL FEATURES
RUN - 100
RIFFLE - 0
POOL - 0

*** Page Two – Data Sheet B for WBID #** 287 : SITE # 5

Stream Morphology:

Upstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Downstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

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

% Cobble	10 % Gravel	5 % Sand	% Silt	85 % Mud/Clay	% Bedroc

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

none in channel, no algal growth, detritus in water column, woody debris in bank

Water Characteristics*: (Mark all that apply.)

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

Comments: Please attach any additional comments () to this form.

*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.

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

Surveyor's Signature: Ryan M. Lunt Date of Survey: 05-27-07

Organization: SETI Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 5

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 1	wetted width	.3			1 Channel Feature:	
2	6 m	.6			2 Run	
3		.6			3	
4	measurements	.6			4 Dissolved Oxygen	
5	.6 m	.5			5	
6	apart	.5			6 7.6	ppm
7		.4			7 85.	%
8		.5			8	
9		.2			9	
10		.2			10	
					11	
Transect B 1	wetted width	.6			12 Channel Feature:	
2	6.5 m	.7			13 Run	
3		.7			14	
4	measurements	.8			15 Dissolved Oxygen:	
5	.65 m	.7			16	
6	apart	.4			17 7.7	ppm
7		.6			18 85	%
8		.6			19	
9		.3			20	
10		.1			21	
					22	
Transect C 1	wetted width	.1			23 Channel Feature:	
2	.8 m	.6			24 Run	
3		.5			25	
4	measurements	.6			26 Dissolved Oxygen	
5	.8 m	.6			.	
6	apart	.9			. 8.0	ppm
7		.8			. 88	%
8		.2			n	
9		.2				
10		.2				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Ryan M. Lunt **Date:** 05-27-07

Organization: SETR Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 5

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 1	wetted width	>1			1 Channel Feature:	
2	7 m	>1			2 Run	
3		.8			3	
4	measurements	.8			4 Dissolved Oxygen	
5	.7 m	.6			5	
6	apart	.6			6 7.6	ppm
7		.6			7 85	%
8		.6			8	
9		.5			9	
10		.6			10	
					11	
Transect E 1	wetted width	.6			12 Channel Feature:	
2	9 m	.7			13 Run	
3		.7			14	
4	measurements	.6			15 Dissolved Oxygen:	
5	.9 m	.7			16	
6	apart	.6			17 7.1	ppm
7		.5			18 80	%
8		.6			19	
9		.6			20	
10		.6			21	
					22	
Transect F 1	wetted width	1			23 Channel Feature:	
2	8.5 m	1			24 Run	
3		1			25	
4	measurements	.9			26 Dissolved Oxygen	
5	.85 m	.7			.	
6	apart	.7			. 7.1	ppm
7		.7			. 80	%
8		.4			n	
9		.3				
10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth i the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UA datasheet is true and accurate.

Signed: Ryan M. [illegible] **Date:** 05-27-07

Organization: SBTR **Position:** Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 5

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G 1	wetted width	.7				
2	.7 m	.7			1 Channel Feature:	
3		.5			2 Run	
4	measurements	.5			3	
5	.7 m	.5			4 Dissolved Oxygen	
6	apart	.5			5	
7		.5			6 7.5	ppm
8		.5			7 85	%
9		.3			8	
10		.3			9	
					10	
Transect H 1	wetted width	.2			11	
2	.6 m	.3			12 Channel Feature:	
3		.6			13 Run	
4	measurements	.7			14	
5	.6 m	.7			15 Dissolved Oxygen:	
6	apart	.4			16	
7		.6			17 7.6	ppm
8		.5			18 85	%
9		.4			19	
10		.3			20	
					21	
Transect I 1	wetted width	.1			22	
2	5.5 m	.4			23 Channel Feature:	
3		.4			24 Run	
4	measurements	.3			25	
5	.5 m	.5			26 Dissolved Oxygen	
6	apart	.4			.	
7		.4			. 7.6	ppm
8		.5			. 85	%
9		.4			n	
10		.3				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Ryan Mc Hunt **Date:** 05-27-07

Organization: SETI Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 287 Site # 5

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect 1	wetted width	.9			1 Channel Feature:	
2	8 m	.8			2 Run	
3		>1			3	
4	measurements	>1			4 Dissolved Oxygen	
5	.8 m	>1			5	
6	apart	.7			6 7.4 ppm	
7		.5			7 83 %	
8		.1			8	
9		.5			9	
10		.5			10	
					11	
Transect 2	wetted width	.2			12 Channel Feature:	
2	10 m	.7			13 Run	
3		.7			14	
4	measurements	.8			15 Dissolved Oxygen:	
5	.10 m	.8			16	
6	apart	.6			17 7.5 ppm	
7		.6			18 84 %	
8		.5			19	
9		.5			20	
10		.4			21	
					22	
Transect	wetted width				23 Channel Feature:	
2	m				24	
3					25	
4	measurements				26 Dissolved Oxygen	
5	m				.	
6	apart				. ppm	
7					. %	
8					n	
9						
10						

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Ryan M. Lent **Date:** 05-22-07

Organization: SETE **Position:** Environmental Scientist

Transect A (Site #1) of Elkhorn Creek.

Transect A (Site #1) of Elkhorn Creek.

Transect A (Site #1) of Elkhorn Creek.

Transect A (Site #1) of Elkhorn Creek.

Downstream (Site #1) of Elkhorn Creek.

Upstream (Site #1) of Elkhorn Creek.

Transect A (Site #2) of Elkhorn Creek.

Transect A (Site #2) of Elkhorn Creek.

Transect A (Site #2) of Elkhorn Creek.

Transect A (Site #2) of Elkhorn Creek.

Downstream (Site #2) of Elkhorn Creek.

Upstream (Site #2) of Elkhorn Creek.

Upstream (Site #3) of Elkhorn Creek.

Additional Comments

Stream Name: Elkhorn Creek
WBID:287

1. The photo log does not include photos: downstream at Site #3, up and downstream at Site #4, and up and downstream at Site #5. Camera went into the water.