Use Attainability Analysis

for

WBID 0287 Elkhorn Creek

Submitted by
Tetra Tech, Inc

To
Missouri Department of Natural Resources
Water Protection Program

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WATER PROTECTION PROGRAM

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet A - Water Body Identification

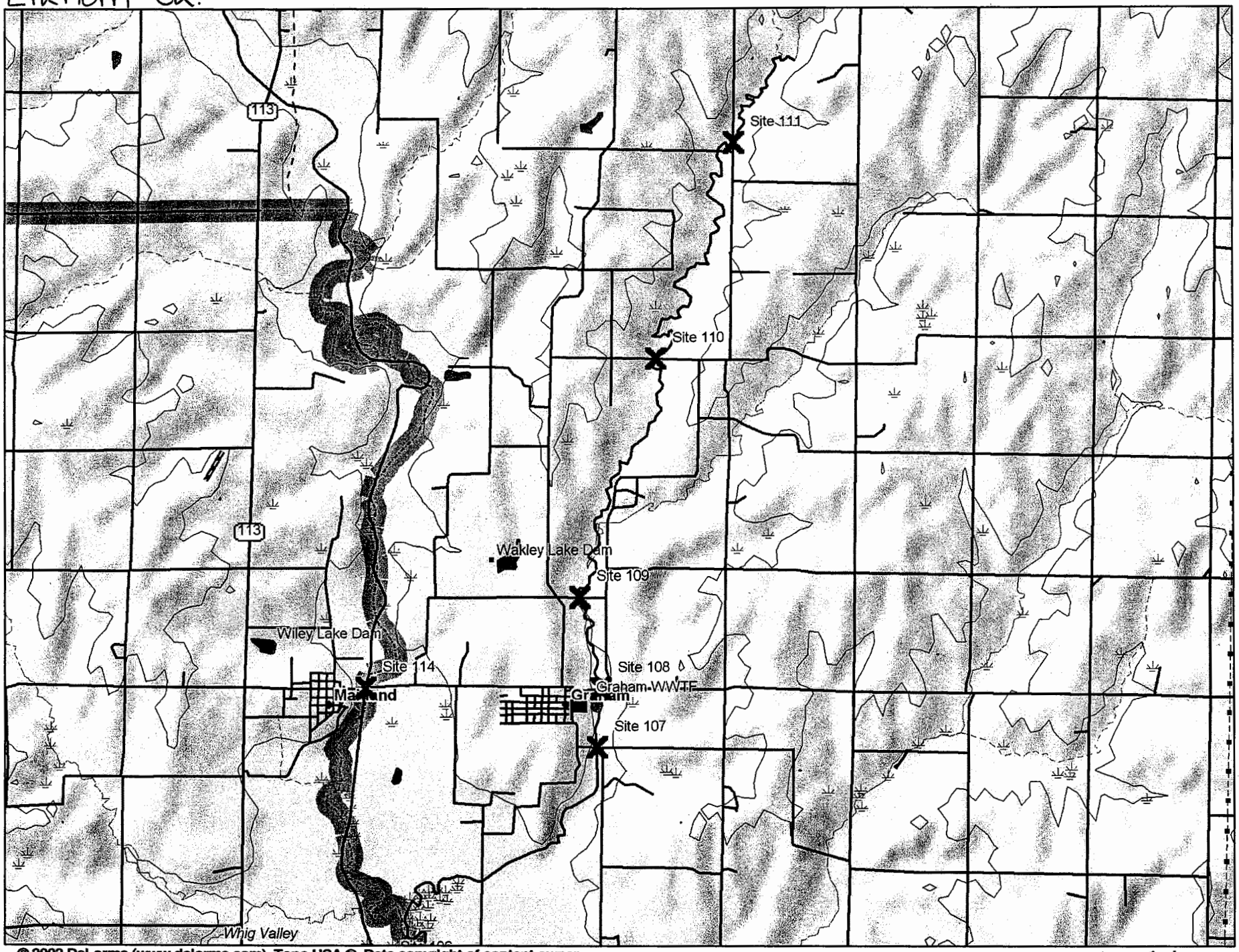
Water Body Name: (from USGS 7.5' quad)	Ellchorn Cr.
8-digit HUC:	10240010
Missouri WBID #:	0287
County:	Nodaway
Upstream Legal Description:	NA
Downstream Legal Description:	NA
Upstream Coordinates: (UGS 84, ddd.ddddd)	40.26858°N, 95.01008°W
Downstream Coordinates: (UGS 84, ddd.ddddd)	40.19552°N, 95.03202°W
Discharger Facility Name(s):	Graham WWTF
Discharger Permit Number(s):	NA
Number of Sites Evaluated:	6
Name of Surveyor and Telephone Number:	Shannon Prendergast 703-385-6000
Organization:	Tetra Tech
Position:	Scientist

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

Signed: Shannon Prendergast **Date:** 7/14/05

JR 7/14/05

Elkhorn Ck.



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Scale: 1 : 68,750 Map Rotation: 0° Magnetic Declination: 3.8°E

106

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: 0287		Site Location Description: #111 On Fairway Rd	
Site GPS Coordinates: 40.26858°N, 95.01008°W			
Date & Time: 7/10/05 6:30 p		Facility Name: Graham WWTF	
Personnel: SP, YR		Permit Number: NA	
Current Weather Conditions: Sunny hot		Weather Conditions for Past 7 days: Sunny, hot	
Photo Ids: Upstream: 162	Downstream: 161	Other: NA	

Uses Observed*:

☐ 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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

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 tough to climb down in	☒ Other: Agriculture, forest	

Evidence of Human Use*:

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

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

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Page Two – Data Sheet B for WBID # 0287 : site # 10 111

Stream Morphology:

Upstream View Physical Dimensions:

☐ Riffle	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
☒ Run	Width (ft): 12	Length (ft): 75	Avg. Depth (ft): 1.5	Max. Depth (ft): ~~80~~ 70 cm 7/10/05
☐ Pool	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
☒ Flow	Present? ☐ Yes	☒ No	Estimated (ft³/sec):	

Downstream View Physical Dimensions:

☐ Riffle	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft): ~~80~~ 7-10-05
☒ Run	Width (ft): 15	Length (ft): 150	Avg. Depth (ft): 1.5	Max. Depth (ft): ~~80~~ 80 cm
☐ Pool	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
☒ Flow	Present? ☒ Yes	☐ No	Estimated (ft³/sec): Not measured	

Substrate*: (These values should add up to 100%.) SP 7/10/05

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
30	~~60~~ 50		20		

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: brown/green
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☒ Scum (just downstream from site could be algae)	☐ Foam	☐ None	☐ Other:

Comments: Please attach additional comments (including information from interviews) to this form.

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

Signed: Shannon Bromley **Date:** 7/10/05

Organization: Tetra Tech Position: Scientist

SP 9/6/05

0287-111-US

0287-111-DS

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: 0287		Site Location Description: #110 on 330 St.	
Site GPS Coordinates: 40.24258			
Date & Time: 7/10/05 6:04 pm		Facility Name: Graham WWTF	
Personnel: SP, YR		Permit Number: NA	
Current Weather Conditions: Sunny, hot		Weather Conditions for Past 7 days: Sunny, hot	
Photo Ids: Upstream: 160	Downstream: 159	Other: NA	

Uses Observed*:

☐ 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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

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	☒ Other: Agriculture w/ forest buffer	

Evidence of Human Use*:

☒ Roads/bridge	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Rope swings	☐ Camping Sites	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle
☒ Other: Some garbage dumped in stream				

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

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Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: 0287	Site Location Description: #109
Site GPS Coordinates: 40.21392°N 95.03482°W	
Date & Time: 7/10/05	Facility Name: Graham WWTF
Personnel: SR, YR	Permit Number: NA
Current Weather Conditions: Sunny, hot	Weather Conditions for Past 7 days: Sunny, hot
Photo Ids: Upstream: 156 / Downstream: 155	Other: 157 (cattle in stream) 158 (concrete cobble)

Uses Observed*:

☐ 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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

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 (barb-wire for cattle across stream)	☐ Steep slopes	☐ Other:	

Evidence of Human Use*:

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

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

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0287-109-US

0287-109-DS

Page Two – Data Sheet B for WBID # 0287 :

Site # 109

Stream Morphology:

Upstream View Physical Dimensions:

☒ Riffle	Width (ft): 20	Length (ft): 40	Avg. Depth (ft): 0.05	Max. Depth (ft): 0.5
☐ Run	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
☐ Pool	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
☒ Flow	Present? ☒ Yes ☐ No		Estimated (~~ft³/sec~~): 1ft/sec	

Downstream View Physical Dimensions:

☒ Riffle	Width (ft): 8	Length (ft): 100	Avg. Depth (ft): 0.25	Max. Depth (ft): 0.5
☐ Run	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
☐ Pool	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
☒ Flow	Present? ☒ Yes ☐ No		Estimated (~~ft³/sec~~): 2 ft/second	

Pools under the bridge SP 7/10/05

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

	% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
up:	20	60		20		
down:	80%	10 %	10 %	most of cobble is broken concrete		

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

20% cobbles algae covered

Water Characteristics*: (Mark all that apply.)

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

Comments: Please attach additional comments (including information from interviews) to this form.

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

Signed: Shane Prendergast **Date:** 7/10/05

Organization: Tetra Tech Position: Scientist

J.R. 7/10/05

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: 0287	Site Location Description: #108 Just past Elkhorn Trail on St. HW. A
Site GPS Coordinates: 40.20258'N, 95.0311'W	
Date & Time: 7/10/05 4:18 pm	Facility Name: Graham WWTP
Personnel: SP YR	Permit Number: NA
Current Weather Conditions: Hot, Sunny	Weather Conditions for Past 7 days: Sunny, Hot
Photo Ids: Upstream: 148 Downstream: 147	Other: NA

Uses Observed*:

☐ 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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

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	☒ Other: Cropland, forest	

Evidence of Human Use*: None

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

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

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0287-108-US

0287-108-DS

Page Two – Data Sheet B for WBID # 0287 :

Stream Morphology: site #108

Upstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):	Avg. Depth (ft):		Max. Depth (ft):	
☒ Run	Width (ft):	15	Length (ft): 150	Avg. Depth (ft):	0.75	Max. Depth (ft):	1.5
☐ Pool	Width (ft):		Length (ft):	Avg. Depth (ft):		Max. Depth (ft):	
☒ Flow	Present?	☒ Yes	☐ No	Estimated (~~ft³/sec~~):	5 ft / 18 sec SP 7-10-05		

Downstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):	Avg. Depth (ft):		Max. Depth (ft):	
☒ Run	Width (ft):	15	Length (ft): 200	Avg. Depth (ft):	1.0	Max. Depth (ft):	2.0
☐ Pool	Width (ft):		Length (ft):	Avg. Depth (ft):		Max. Depth (ft):	
☒ Flow	Present?	☒ Yes	☐ No	Estimated (~~ft³/sec~~):	5 ft / 16 sec SP 7/10/05		

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

10	% Cobble	10	% Gravel	60	% Sand		% Silt	20	% Mud/Clay		% Bedrock

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

brownish substance on sediment could be algae? or just clay mud or other sediment deposit

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear Partially	☐ Green	☐ Gray	☒ Some Milky/cloudy	☒ Other: brown
Bottom Deposit:	☐ Sludge	☐ Solids	☒ Fine sediments could be algae brown	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach additional comments (including information from interviews) to this form.

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

Signed: Shawn Pendergast **Date:** 7/6/05

Organization: Tetra Tech Position: Scientist

J.B. 7/6/05

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: 0287		Site Location Description: #107
Site GPS Coordinates: 40.19545°N, 95.03167°W		
Date & Time: 7/10/05 5:05 pm		Facility Name: Graham WWTF
Personnel: SP, YR		Permit Number: NA
Current Weather Conditions: Sunny, hot		Weather Conditions for Past 7 days: Sunny, warm
Photo Ids: Upstream: 150	Downstream: 151	Other: 149 (old bridge/road)

Uses Observed*:

☐ 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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

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	☒ Other: Agriculture/cropland/forest buffer	

Evidence of Human Use*:

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

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

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0287-107-US

0287-107-DS

Page Two – Data Sheet B for WBID # 0287 : Site # 107

Stream Morphology:

Upstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):
☒ Run	Width (ft):	12	Length (ft):	100	Avg. Depth (ft):	0.5	Max. Depth (ft): 1.0
☐ Pool	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):
☒ Flow	Present?	☒ Yes	☐ No		Estimated (~~ft³/sec~~):	5 ft/7 sec	

SP 7/14/05

Downstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):
☒ Run	Width (ft):	10	Length (ft):	75	Avg. Depth (ft):	0.5	Max. Depth (ft): 1.0
☐ Pool	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):
☒ Flow	Present?	☒ Yes	☐ No		Estimated (~~ft³/sec~~):	1 ft/sec	

SP 7/14/05

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

0	% Cobble		% Gravel	70	% Sand		% Silt	20	% Mud/Clay		% Bedrock

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

algae on 10% of cobble

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear (mostly)	☐ Green	☐ Gray	☒ Milky (slightly)	☒ Other: brown
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☒ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach additional comments (including information from interviews) to this form.

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

Signed: Shannon Pendergast **Date:** 7/10/05

Organization: Tetra Tech Position: Scientist

SP R. 7/18/05

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: 0287	Site Location Description: #106 alt ~ 150m downstream of site #107
Site GPS Coordinates: 40.19552°N, 95.03202°W	
Date & Time: 7/10/05 5:20 pm	Facility Name: Graham WWTF
Personnel: SP, YR	Permit Number: NA
Current Weather Conditions: Sunny, hot	Weather Conditions for Past 7 days: Sunny, warm
Photo Ids: Upstream: 153 Downstream: 152	Other: ~~NA~~ SP 7/10/05 154 = garbage, foamy sludge

Uses Observed*:

☐ 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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

Some

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	☒ Other: forest buffer, Agriculture/cropland	

Evidence of Human Use*:

☒ Roads SP 7-10-05	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Rope swings	☐ Camping Sites	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle
☒ Other: Some garbage, may have floated downstream				

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

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0287-106-US

0287-106-DS

Page Two – Data Sheet B for WBID # 0287 : site # 106 alt

Stream Morphology:

Upstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Run	Width (ft):	10	Length (ft):	50	Avg. Depth (ft):	0.5	Max. Depth (ft):	1.0
☐ Pool	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Flow	Present?	☒ Yes	☐ No		Estimated ~~(ft³/sec)~~:	5ft/8sec SP 7/10/05		

Downstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☐ Run	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Pool	Width (ft):	12	Length (ft):	75	Avg. Depth (ft):	1.0	Max. Depth (ft):	70cm SP 7/10/05
☒ Flow	Present?	☒ Yes	☐ No		Estimated ~~(ft³/sec)~~:	5ft/12sec SP 7/10/05		

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

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
10	60			30	

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

Some algae on debris/wood

Water Characteristics*: (Mark all that apply.)

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

Comments: Please attach additional comments (including information from interviews) to this form.

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

Signed: Shannon Pendergast **Date:** 7/10/05

Organization: Tetra Tech **Position:** Scientist

SP 7/10/05

Page Two – Data Sheet B for WBID # 287 :

Site #110

Stream Morphology:

Upstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):	Avg. Depth (ft):		Max. Depth (ft):	
☒ Run	Width (ft):	12	Length (ft):	Avg. Depth (ft):	0.5	Max. Depth (ft):	1.0
☐ Pool	Width (ft):		Length (ft):	Avg. Depth (ft):		Max. Depth (ft):	
☒ Flow	Present?	☐ Yes	☒ No	Estimated (ft^3/sec):			

Downstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):	Avg. Depth (ft):		Max. Depth (ft):	
☒ Run	Width (ft):	6	Length (ft): 75	Avg. Depth (ft):	0.25	Max. Depth (ft):	0.5
☐ Pool	Width (ft):		Length (ft):	Avg. Depth (ft):		Max. Depth (ft):	
☒ Flow	Present?	☒ Yes	☐ No	Estimated (ft^3/sec):	1 ft/sec		

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

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
	80%	20%			

up: town

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

NON

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☐ Clear	☐ Green	☐ Gray	☒ Milky (1:44)	☒ Other: brown
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☒ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach additional comments (including information from interviews) to this form.

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

Signed: [signature] **Date:** 7/10/05

Organization: Tetra Tech Position: Scientist

[signature] 7/10/05

0287-110-US

0287-110-DS

REVISIT

Field Data Sheets for Recreational Use Stream Surveys

RECEIVED
2005 JUL 14 PM 2:53
WATER PROTECTION PROGRAM

Data Sheet A - Water Body Identification

Water Body Name: (from USGS 7.5' quad)	Elkhorn. Cr.
8-digit HUC:	10240010
Missouri WBID #:	287
County:	Nodaway
Upstream Legal Description:	NA
Downstream Legal Description:	NA
Upstream Coordinates: (UGS 84, ddd.ddddd)	40.26558°N, 95.01008°W
Downstream Coordinates: (UGS 84, ddd.ddddd)	40.19545°N, 95.03167°W
Discharger Facility Name(s):	Graham WWTF
Discharger Permit Number(s):	NA
Number of Sites Evaluated:	5
Name of Surveyor and Telephone Number:	Shannon Prendergast 703-385-6000
Organization:	Tetra Tech, Inc.
Position:	Scientist

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

Signed: Sha Prendergast **Date:** 7/12/05

SP. 7/12/05

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: 0287	Site Location Description: #107 duplicate off of Echo Rd.
Site GPS Coordinates: 40.19545°N, 95.03167°W	
Date & Time: 7/12/05	Facility Name: Graham WWTF
Personnel: SP, VR	Permit Number: NA
Current Weather Conditions: Sunny, hot	Weather Conditions for Past 7 days: Sunny, hot
Photo Ids: Upstream: 216 / Downstream: 215	Other: 217 (remains of old bridge, possibly)

Uses Observed*:

☐ 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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

Talked to a man who lives nearby said no one recreates in the stream here.

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	☒ Other: Agriculture/cropland, forest buffer	

Evidence of Human Use*:

☒ Roads/Bridge	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Rope swings	☐ Camping Sites	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle
☒ Other: Possible old bridge, small amount of garbage under bridge				

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

*Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

Page Two – Data Sheet B for WBID # 287 : site 107 duplicate

Stream Morphology:

Upstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):
☒ Run	Width (ft):	12	Length (ft):	50	Avg. Depth (ft):	0.5	Max. Depth (ft): 1.0
☐ Pool	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):
☒ Flow	Present?	☒ Yes	☐ No		Estimated (ft/sec):	5 ft / 14.3 seconds	

SP 7/11/05

Downstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):
☒ Run	Width (ft):	10	Length (ft):	30	Avg. Depth (ft):	0.5	Max. Depth (ft): 1.0
☐ Pool	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):
☒ Flow	Present?	☒ Yes	☐ No		Estimated (ft/sec):	5 ft / 5.8 sec.	

SP 7/12/05

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

10 % Cobble	30 % Gravel	60 % Sand	% Silt	% Mud/Clay	% Bedrock

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

slight amount of algae on cobbles

Water Characteristics*: (Mark all that apply.)

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

Comments: Please attach additional comments (including information from interviews) to this form.

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

Signed: [signature] **Date:** 7/12/05

Organization: Tetra Tech Position: Scientist

[signature] 7/12/05

0287-107-US-Revisited

0287-107-DS-Revisited

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: 287	Site Location Description: 108 duplicate on Rd. A in Graham
Site GPS Coordinates: 40.20234°N 95.03137°W	
Date & Time: 7/12/05 10:20 am	Facility Name: Graham WWTF
Personnel: SP, YR	Permit Number: NA
Current Weather Conditions: Sunny, hot	Weather Conditions for Past 7 days: Sunny, hot
Photo Ids: Upstream: 228 Downstream: 227	Other: 229 (construction) 230 (remains of wooden Pillars, old bridge?)

Uses Observed*:

☐ 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, frequency of use, photo-documentation of evidence of recreational uses, etc.)
Construction going on on the bridge today

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	☒ Other: Agriculture	

Evidence of Human Use*:

☒ Roads/bridge	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Rope swings	☐ Camping Sites	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle
☒ Other: Concrete slabs dumped, old wooden pillars				

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

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Page Two – Data Sheet B for WBID # 237 : site 108 duplicate

Stream Morphology:

Upstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Run	Width (ft):	20	Length (ft):	75	Avg. Depth (ft):	0.5	Max. Depth (ft):	1.0
☐ Pool	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Flow	Present?	☒ Yes	☐ No	but not measurable	Estimated (ft^3/sec):			

Downstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Run	Width (ft):	SP 7-12-05 15 17	Length (ft):	150	Avg. Depth (ft):	0.5	Max. Depth (ft):	1.5
☐ Pool	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Flow	Present?	☒ Yes	☐ No		Estimated (ft^3/sec):	5 ft / 23.3 sec		

SP 7-12-05

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

10	% Cobble	30	% Gravel	40	% Sand		% Silt	20	% 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/brown	☒ Milky/cloudy	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☒ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach additional comments (including information from interviews) to this form.

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

Signed: Shawn Peaslee **Date:** 7/12/05

Organization: Tetra Tech Position: Scientist

SP 7/12/05

0287-108-US-Revisited

0287-108-DS-Revisited

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site) SP 7-12-05

Missouri WBID #: 287	Site Location Description: site ~~2~~ duplicate III
Site GPS Coordinates: 40.26858°N, 95.01008°W	
Date & Time: 7/12/05	Facility Name: Graham WWTF
Personnel: SP, YR	Permit Number: NA
Current Weather Conditions: Sunny, hot	Weather Conditions for Past 7 days: Sunny, hot
Photo Ids: Upstream: 226	Downstream: 225 Other: NA

Uses Observed*:

☐ 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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

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	☒ Other: forest area w/ some agriculture / cropland	

Evidence of Human Use*:

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

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

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Page Two – Data Sheet B for WBID # 287 : site III duplicate

Stream Morphology:

Upstream View Physical Dimensions:

☐ Riffle	Width (ft):	Length (ft):	Avg. Depth (ft): SP 7-12-05	Max. Depth (ft): SP 7/12/05
☒ Run	Width (ft): 12	Length (ft): 50	Avg. Depth (ft): 50 cm	Max. Depth (ft): 90 cm
☐ Pool	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
☒ Flow	Present? ☐ Yes	☒ No	Estimated (ft^3/sec):	

Downstream View Physical Dimensions:

☐ Riffle	Width (ft):	Length (ft):	Avg. Depth (ft): SP 7-12-05	Max. Depth (ft): SP 7-12-05
☒ Run	Width (ft): 15	Length (ft): 75	Avg. Depth (ft): 50 cm	Max. Depth (ft): 70 cm
☐ Pool	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
☒ Flow	Present? ☐ Yes	☒ No	Estimated (ft^3/sec):	

Substrate*: (These values should add up to 100%.) SP 7-12-05

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
50	25			25	

SP 7-12-05

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 very cloudy	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☒ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach additional comments (including information from interviews) to this form.

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

Signed: Shen Pardee **Date:** 7/12/05

Organization: Tetra Tech Position: Scientist

S.P. 7/12/05

0287-111-US-Revisited

0287-111-DS-Revisited

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: 287	Site Location Description: 110 duplicate on CR 330 on wooden bridge
Site GPS Coordinates: 40.24258°N, 95.02247°W	
Date & Time: 7/12/05 9:30 am	Facility Name: Graham WWTF
Personnel: SP, YR	Permit Number: NA
Current Weather Conditions: Sunny, Warm	Weather Conditions for Past 7 days: Sunny, hot
Photo Ids: Upstream: 222 Downstream: 223	Other: 224 (garbage)

Uses Observed*:

☐ 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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

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	☒ Other: Agriculture/cropland w/ some forest area & forest buffer	

Evidence of Human Use*:

☒ Roads/bridge	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Rope swings	☐ Camping Sites	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle
☒ Other: Some trash, probably thrown from bridge				

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

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Page Two – Data Sheet B for WBID # 287 : site 110 duplicate

Stream Morphology:

Upstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Run	Width (ft):	15	Length (ft):	50	Avg. Depth (ft):	0.5	Max. Depth (ft):	1.0
☐ Pool	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Flow	Present?	☒ Yes	☐ No		Estimated (ft³/sec):	5ft / 38.2 sec		

SP 7/12

Downstream View Physical Dimensions:

☐ Riffle	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Run	Width (ft):	5	Length (ft):	30	Avg. Depth (ft):	0.25	Max. Depth (ft):	0.5
☐ Pool	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Flow	Present?	☒ Yes	☐ No		Estimated (ft³/sec):	5ft/7 sec		

SP 7/11/05

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

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
up: 10% cobble	40% gravel	50 25% sand		50 25% mud	
down:					

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: brown
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☒ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach additional comments (including information from interviews) to this form.

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

Signed: [signature] **Date:** 7/12/05

Organization: Tetra Tech Position: Scientist

JR 7/12/05

0287-110-US-Revisited

0287-110-DS-Revisited

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

109 DUP

Missouri WBID #: 0287	Site Location Description: Bridge on CR353
Site GPS Coordinates: 40.21356 N 95.03485 W	
Date & Time: 7/12 0900	Facility Name: Graham WWTF
Personnel: DW GB	Permit Number: N/A
Current Weather Conditions: Warm Dry	Weather Conditions for Past 7 days: Warm Dry
Photo Ids: Upstream: 220 Downstream: 218	Other: 219 (Fence) 221 (Livestock path)

Uses Observed*:

☐ 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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

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	☒ Other: Ag Fields E & W of Stream	

↳ Crosses stream under Bridge E

Evidence of Human Use*:

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

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

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Page Two – Data Sheet B for WBID # 0287 :

Stream Morphology:

Upstream View Physical Dimensions: 109 DUP

☐ Riffle	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Run	Width (ft):	20	Length (ft):	10	Avg. Depth (ft):	0.25	Max. Depth (ft):	0.5
☐ Pool	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Flow	Present?	☒ Yes	☐ No		Estimated ~~(ft³/sec)~~:		1 ft/sec	

dw 7/12

Downstream View Physical Dimensions:

☒ Riffle	Width (ft):	10	Length (ft):	10	Avg. Depth (ft):	0.25	Max. Depth (ft):	0.5
☐ Run	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☐ Pool	Width (ft):		Length (ft):		Avg. Depth (ft):		Max. Depth (ft):	
☒ Flow	Present?	☒ Yes	☐ No		Estimated ~~(ft³/sec)~~:		5/5 = 1 ft/sec	

dw 7/12

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

	% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
U		10	70		20	
D	30	20	50			

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: Brown
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☒ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach additional comments (including information from interviews) to this form.

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

Signed: [signature] **Date:** 7/12/05

Organization: TT, EMC. Position: SCIENTIST

DW 7/12/05

0287-109-US-Revisited

0287-109-DS-Revisited