Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 0956 Tributary to Willow Fork

Submitted by
SES, Inc.

To
Missouri Department of Natural Resources
Water Protection Program

Date Received: June 3, 2007

Field Data Sheets for Recreation Use Stream Surveys
Data Sheet A - Water Body Identification
(For water body being surveyed)

Water Body Information

Water Body Name:	Tributary of Willow	WBID:	956
8 digit HUC code:	10300102	County:	Moniteau
Upstream Legal Description	45N 17W 26		
Downstream Legal Description	45N 17W 26		
Number of Sites Evaluated	3		
List all site numbers, listed upstream to downstream		3,2,1	

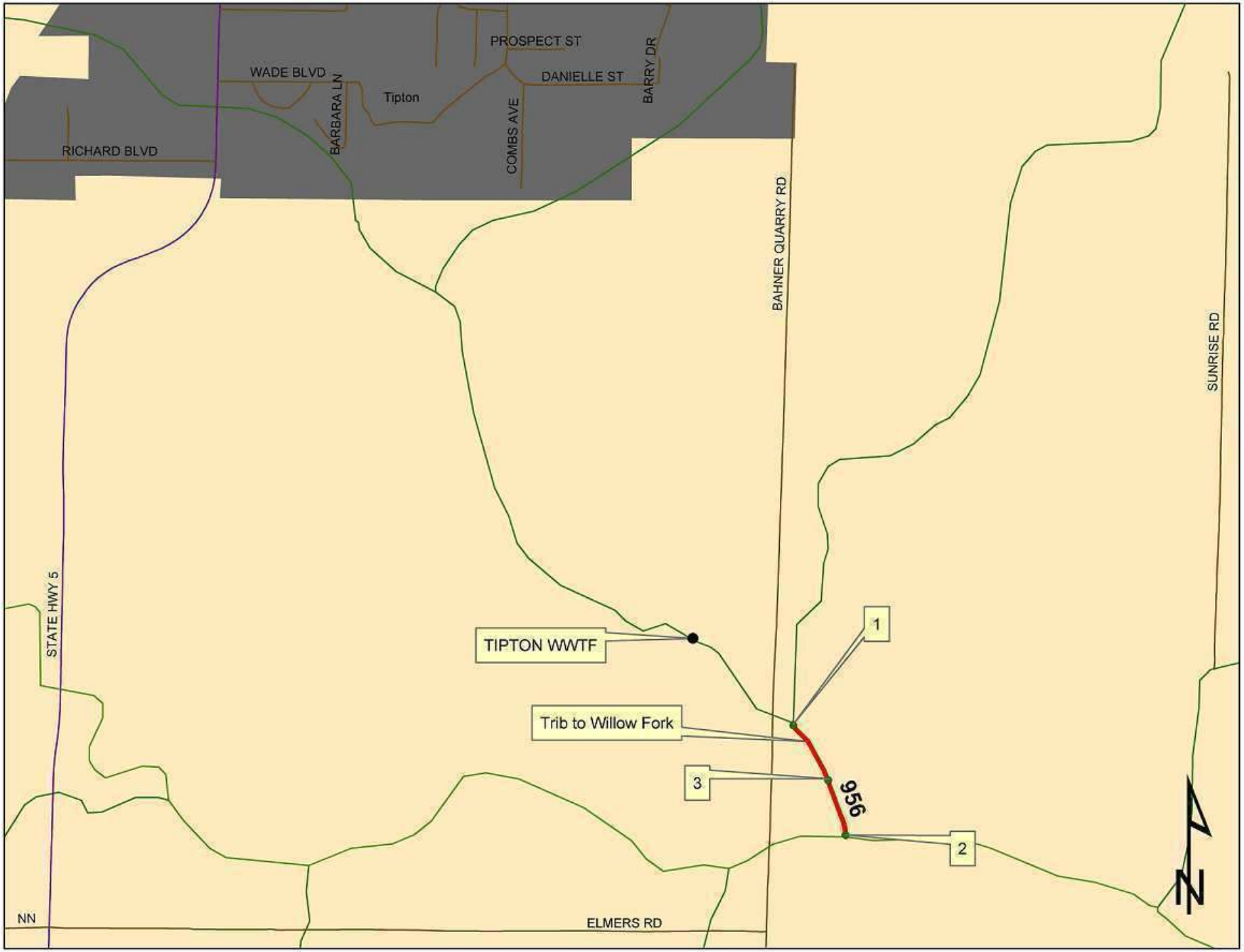
Discharger Facility Information

Discharger Facility Name(s):	Tipton WWTF
Discharger Permit Number(s):	MO0094188

UAA Surveyor

Name of Surveyor:	Gilisa Gould	Telephone Number:	(913)307-0054 Ext. 19
Organization/Employer:	SES, Inc.		
Position:	Field Team Leader		

Signed:_____Date:_____


PROSPECT ST
WADE BLVD
DANIELLE ST
BARRY DR
BARBARA LN
Tipton
COMBS AVE
RICHARD BLVD
BAHNER QUARRY RD
SUNRISE RD
STATE HWY 5
TIPTON WWTF
1
Trib to Willow Fork
3
956
2
NN
ELMERS RD

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

WBID 956
Site # 1

Date and Time: 5/15/2007 9:30

Current Weather Conditions cloudy, soon to rain

Weather Conditions for Past 10 days: Rained a total of 1.5 inches in the area

Drought Conditions? No

Site Location (e.g. road crossing) before junction with Willow

GPS Mark: 23

Upstream Photo 43 Downstream Photo 42

Uses Observed (Uses actually observed at time of survey) Circle

Swimming	Skin Diving	SCUBA diving	Tubing
Water Skiing	Wind Surfing	Kayaking	Boating
Wading	Rafting	Hunting	Trapping
Fishing	***None of the Above***	Other	

Surrounding Conditions

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	

Indications of Human Use

Roads	Rope swings	Foot paths/prints	Dock/platform
Livestock Watering Pic 44	RV/ATV Tracks	Camping Sites	Fire pit/ring
NPDES Discharge	Fishing Tackle	Other:	

WBID # 956 **Site #** 1
Mark # 22 **Dissolved Oxygen (ppm)** 3.9
Upstream Views Physical Dimensions: Is there any water present at this view?

If so, is there an obvious current?

Select one of the following channel features:

	% of Channel Feature				
Riffle	45				
Run	0				
Pool	55				

Downstream View's Physical Dimensions: Is there any water present at this view?

If so, is there an obvious current?

Substrate:

% Cobble	% Gravel	% Sand	% Silt
14	48	0	38

% Mud/Clay	% Bedrock
0	0

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

Water Characteristics

Odor	Sewage	Musky	Chemical	***None***	Other
Color	Clear	Green	Gray	Milky	***Other: murky***
Bottom Deposit	Sludge	Solids	Fine Sed.	***None***	Other
Surface Deposit	Oil	Scum	Foam	***None***	Other

Data Sheet C: Cross-Sectional Depth Measurements (for estimation of median depth)
(Median Depth Shown in Bold)

Site # 1 Mark # 22

	Depth (m)		Depth (m)		Depth (m)
Transect 1	0.00	**Transect 5**	0.05	**Transect 9**	0.05
Substrate:	0.00	Substrate:	0.10	Substrate:	0.15
silt/gravel	0.00	silt/gravel	0.15	silt/gravel	0.25
Water Clarity:	0.05	Water Clarity:	0.25	Water Clarity:	0.30
clear	0.05	murky	0.35	murky	0.30
Channel Feature:	0.00	Channel Feature:	0.35	Channel Feature:	0.35
riffle	0.00	pool	0.35	pool	0.30
Channel Width:	0.00	Channel Width:	0.35	Channel Width:	0.25
3 yards	0.10	6 yards	0.35	8 yards	0.25
0.00	0.10	**0.33**	0.30	**0.25**	0.25
Transect 2	0.00	**Transect 6**	0.05	**Transect 10**	0.05
Substrate:	0.05	Substrate:	0.20	Substrate:	0.05
silt/gravel	0.05	silt/gravel	0.25	cobble/gravel	0.05
Water Clarity:	0.10	Water Clarity:	0.35	Water Clarity:	0.05
murky	0.10	murky	0.35	murky	0.05
Channel Feature:	0.05	Channel Feature:	0.35	Channel Feature:	0.00
riffle	0.05	pool	0.30	pool	0.05
Channel Width:	0.00	Channel Width:	0.25	Channel Width:	0.20
4 yards	0.00	5 yards	0.20	5 yards	0.15
0.05	0.00	**0.25**	0.10	**0.05**	0.10
Transect 3	0.05	**Transect 7**	0.00	**Transect 11**	0.00
Substrate:	0.15	Substrate:	0.00	Substrate:	0.05
silt/gravel	0.20	gravel/cobble	0.00	cobble/gravel	0.05
Water Clarity:	0.30	Water Clarity:	0.00	Water Clarity:	0.00
murky	0.35	murky	0.00	murky	0.10
Channel Feature:	0.35	Channel Feature:	0.00	Channel Feature:	0.00
pool	0.35	riffle	0.05	riffle	0.05
Channel Width:	0.35	Channel Width:	0.10	Channel Width:	0.10
8 yards	0.30	6 yards	0.15	8 yards	0.05
0.30	0.20	**0.00**	0.05	**0.05**	0.00
Transect 4	0.00	**Transect 8**	0.05		
Substrate:	0.05	Substrate:	0.10		
silt	0.05	gravel/silt	0.15	**Site Median**	**Site Maximum**
Water Clarity:	0.05	Water Clarity:	0.15	**0.10**	**0.35**
murky	0.00	murky	0.10		
Channel Feature:	0.00	Channel Feature:	0.15		
riffle	0.00	pool	0.15		
Channel Width:	0.05	Channel Width:	0.10		
5 yards	0.05	6 yards	0.10		
0.05	0.05	**0.10**	0.10		

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

WBID 956
Site # 2

Date and Time: 5/15/2007 18:30

Current Weather Conditions clouds

Weather Conditions for Past 10 days: Rained a total of 1.5 inches in the area

Drought Conditions? No

Site Location (e.g. road crossing) most upstream

GPS Mark: 25

Upstream Photo 51 Downstream Photo 50

Uses Observed (Uses actually observed at time of survey) Circle

Swimming	Skin Diving	SCUBA diving	Tubing
Water Skiing	Wind Surfing	Kayaking	Boating
Wading	Rafting	Hunting	Trapping
Fishing	***None of the Above***	Other	

Surrounding Conditions

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	

Indications of Human Use

Roads	Rope swings	Foot paths/prints	Dock/platform
Livestock Watering Pic 52	RV/ATV Tracks	Camping Sites	Fire pit/ring
NPDES Discharge	Fishing Tackle	Other:	

WBID # 956 **Site #** 2
Mark # 25 **Dissolved Oxygen (ppm)** 8.6
Upstream Views Physical Dimensions: Is there any water present at this view?

If so, is there an obvious current?

Select one of the following channel features:

	% of Channel Feature				
Riffle	30				
Run	0				
Pool	70				

Downstream View's Physical Dimensions: Is there any water present at this view?

If so, is there an obvious current?

Substrate:

% Cobble	% Gravel	% Sand	% Silt
6	38	0	56

% Mud/Clay	% Bedrock
0	0

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

Water Characteristics

Odor	Sewage	Musky	Chemical	***None***	Other
Color	Clear	Green	Gray	Milky	***Other: murky***
Bottom Deposit	Sludge	Solids	Fine Sed.	None	***Other: cow manure***
Surface Deposit	Oil	Scum	***Foam***	None	Other

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

(Median Depth Shown in Bold)

Site # 2 Mark # 25

	Depth (m)		Depth (m)		Depth (m)
Transect 1	0.10	**Transect 5**	0.00	**Transect 9**	0.05
Substrate:	0.25	Substrate:	0.15	Substrate:	0.20
	0.40	gravel/silt	0.20	silt	0.25
Water Clarity:	0.50	Water Clarity:	0.20	Water Clarity:	0.20
	0.60	clear	0.20	murky	0.25
Channel Feature:	0.65	Channel Feature:	0.15	Channel Feature:	0.20
	0.50	riffle	0.15	pool	0.15
Channel Width:	0.35	Channel Width:	0.10	Channel Width:	0.15
7 yards	0.30	5 yards	0.05	8 yards	0.15
0.38	0.25	**0.15**	0.00	**0.18**	0.05
Transect 2	0.05	**Transect 6**	0.20	**Transect 10**	0.40
Substrate:	0.20	Substrate:	0.25	Substrate:	0.50
gravel/silt	0.25	silt	0.30	silt	0.50
Water Clarity:	0.35	Water Clarity:	0.40	Water Clarity:	0.40
murky	0.35	murky	0.50	murky	0.40
Channel Feature:	0.40	Channel Feature:	0.50	Channel Feature:	0.40
pool	0.40	pool	0.40	pool	0.45
Channel Width:	0.45	Channel Width:	0.40	Channel Width:	0.45
5 yards	0.50	3 yards	0.25	8 yards	0.45
0.38	0.65	**0.35**	0.15	**0.45**	0.50
Transect 3	0.00	**Transect 7**	0.00	**Transect 11**	0.10
Substrate:	0.00	Substrate:	0.10	Substrate:	0.40
gravel	0.00	gravel/silt	0.10	cobble/silt	0.50
Water Clarity:	0.05	Water Clarity:	0.10	Water Clarity:	0.65
murky	0.10	clear	0.10	murky	0.60
Channel Feature:	0.10	Channel Feature:	0.15	Channel Feature:	0.60
pool	0.10	pool	0.15	pool	0.60
Channel Width:	0.10	Channel Width:	0.15	Channel Width:	0.60
5 yards	0.05	2 yards	0.10	8 yards	0.60
0.05	0.05	**0.10**	0.05	**0.60**	0.55
Transect 4	0.00	**Transect 8**	0.00		
Substrate:	0.05	Substrate:	0.00	**Site Median**	**Site Maximum**
gravel/silt	0.00	gravel/silt	0.00	**0.20**	**0.65**
Water Clarity:	0.00	Water Clarity:	0.00		
clear	0.00	clear	0.05		
Channel Feature:	0.00	Channel Feature:	0.00		
riffle	0.05	riffle	0.00		
Channel Width:	0.25	Channel Width:	0.00		
5 yards	0.30	8 yards	0.10		
0.03	0.30	**0.00**	0.20		

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

WBID 956
Site # 3

Date and Time: 5/15/2007 10:35

Current Weather Conditions cloudy

Weather Conditions for Past 10 days: Rained a total of 1.5 inches in the area

Drought Conditions? No

Site Location (e.g. road crossing) Midway between 1 & 2

GPS Mark: 24

Upstream Photo 45 Downstream Photo 46

Uses Observed (Uses actually observed at time of survey) Circle

Swimming	Skin Diving	SCUBA diving	Tubing
Water Skiing	Wind Surfing	Kayaking	Boating
Wading	Rafting	Hunting	Trapping
Fishing	***None of the Above***	Other	

Surrounding Conditions

City/county parks	Playgrounds	MDC conservation lands	Urban areas
Campgrounds	Boating accesses	State parks	National Forests
Nature trails	Stairs/walkway	No trespass sign	***Fence: Pic #49***
Steep slopes	None of the Above	***Other: cattle access pic # 47***	

Indications of Human Use

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

WBID # 956 **Site #** 3
Mark # 24 **Dissolved Oxygen (ppm)** 8.6
Upstream Views Physical Dimensions: Is there any water present at this view?

If so, is there an obvious current?

Select one of the following channel features:

	% of Channel Feature				
Riffle	36				
Run	0				
Pool	64				

Downstream View's Physical Dimensions: Is there any water present at this view?

If so, is there an obvious current?

Substrate:

% Cobble	% Gravel	% Sand	% Silt
14	14	0	36

% Mud/Clay	% Bedrock
0	36

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

Water Characteristics

Odor	Sewage	Musky	Chemical	None	***Other: cattle***
Color	Clear	***Green***	Gray	Milky	Other
Bottom Deposit	Sludge	Solids	Fine Sed.	***None***	Other
Surface Deposit	***Oil***	***Scum***	Foam	None	Other

Data Sheet C: Cross-Sectional Depth Measurements (for estimation of median depth)
(Median Depth Shown in Bold)

Site # 3 Mark # 24

	Depth (m)		Depth (m)		Depth (m)
Transect 1	0.10	**Transect 5**	0.00	**Transect 9**	0.10
Substrate:	0.80	Substrate:	0.00	Substrate:	0.30
silt	0.85	silt/gravel	0.00	bedrock	0.30
Water Clarity:	0.85	Water Clarity:	0.00	Water Clarity:	0.20
murky	0.80	clear	0.00	murky	0.15
Channel Feature:	0.70	Channel Feature:	0.00	Channel Feature:	0.25
pool	0.70	riffle	0.00	pool	0.25
Channel Width:	0.70	Channel Width:	0.05	Channel Width:	0.10
8 yards	0.50	6 yards	0.05	9 yards	0.10
0.70	0.30	**0.00**	0.00	**0.18**	0.15
Transect 2	0.10	**Transect 6**	0.00	**Transect 10**	0.20
Substrate:	0.30	Substrate:	0.00	Substrate:	0.35
silt	0.30	cobble	0.00	bedrock	0.50
Water Clarity:	0.40	Water Clarity:	0.50	Water Clarity:	0.35
murky	0.50	murky	0.50	murky	0.35
Channel Feature:	0.65	Channel Feature:	0.10	Channel Feature:	0.30
pool	0.55	riffle	0.10	pool	0.30
Channel Width:	0.50	Channel Width:	0.50	Channel Width:	0.35
8 yards	0.40	8 yards	0.00	7 yards	0.30
0.40	0.05	**0.05**	0.00	**0.33**	0.25
Transect 3	0.05	**Transect 7**	0.10	**Transect 11**	0.10
Substrate:	0.15	Substrate:	0.30	Substrate:	0.05
cobble/silt	0.25	bedrock	0.35	bedrock	0.00
Water Clarity:	0.35	Water Clarity:	0.30	Water Clarity:	0.00
murky	0.35	murky	0.35	murky	0.00
Channel Feature:	0.35	Channel Feature:	0.40	Channel Feature:	0.00
pool	0.30	pool	0.35	riffle	0.00
Channel Width:	0.25	Channel Width:	0.40	Channel Width:	0.05
8 yards	0.15	8 yards	0.45	7 yards	0.10
0.25	0.20	**0.35**	0.60	**0.03**	0.15
Transect 4	0.00	**Transect 8**	0.30		
Substrate:	0.00	Substrate:	0.30	**Site Median**	**Site Maximum**
silt/gravel	0.00	bedrock	0.35	**0.25**	**0.85**
Water Clarity:	0.00	Water Clarity:	0.40		
clear	0.00	murky	0.50		
Channel Feature:	0.00	Channel Feature:	0.55		
riffle	0.05	pool	0.45		
Channel Width:	0.05	Channel Width:	0.45		
4 yards	0.05	8 yards	0.40		
0.00	0.05	**0.40**	0.30		

WBID# 956

Site# 1 Photo ID# 43, Upstream

Site# 1 Photo ID# 42, Downstream

Site# 1 Photo ID# 44, Livestock watering

WBID# 956

Site# 2 Photo ID# 51, Upstream

Site# 2 Photo ID# 50, Downstream

Site# 2 Photo ID# 52, Livestock watering

WBID# 956

Site# 3 Photo ID# 45, Upstream

Site# 3 Photo ID# 46, Downstream

Site# 3 Photo ID# 49, Fence

Site# 3 Photo ID# 47, Cattle access