

Winter 2005/2006

Colville River Ice
Bridge Monitoring

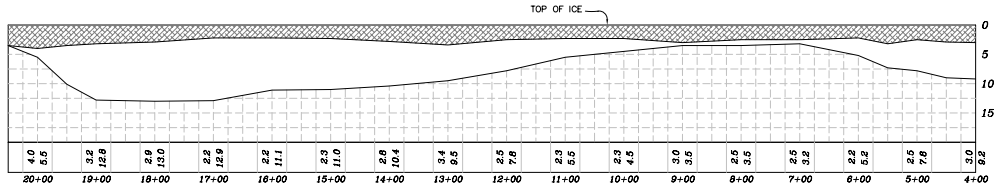
Submitted to


ConocoPhillips

Baker

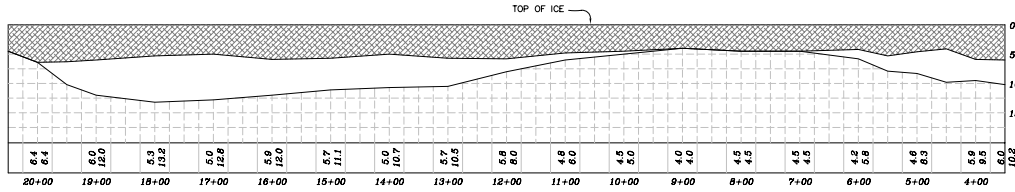
107341-MBJ-001
April 2006

Profiles



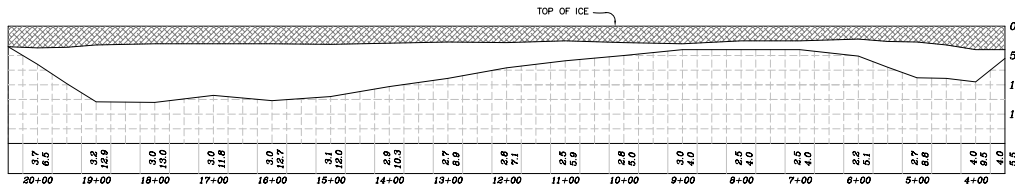
Right Shoulder (100 feet North) Profile

1"=100' Horiz
1"=10' Vertical



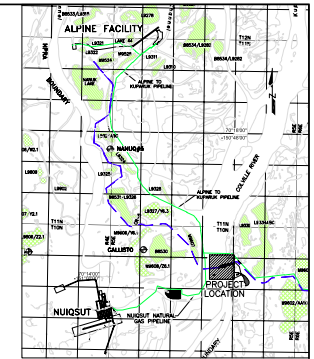
Centerline Profile

1"=100' Horiz
1"=10' Vertical



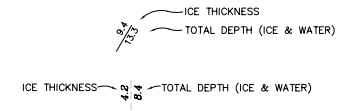
Left Shoulder (100 feet South) Profile

1"=100' Horiz
1"=10' Vertical

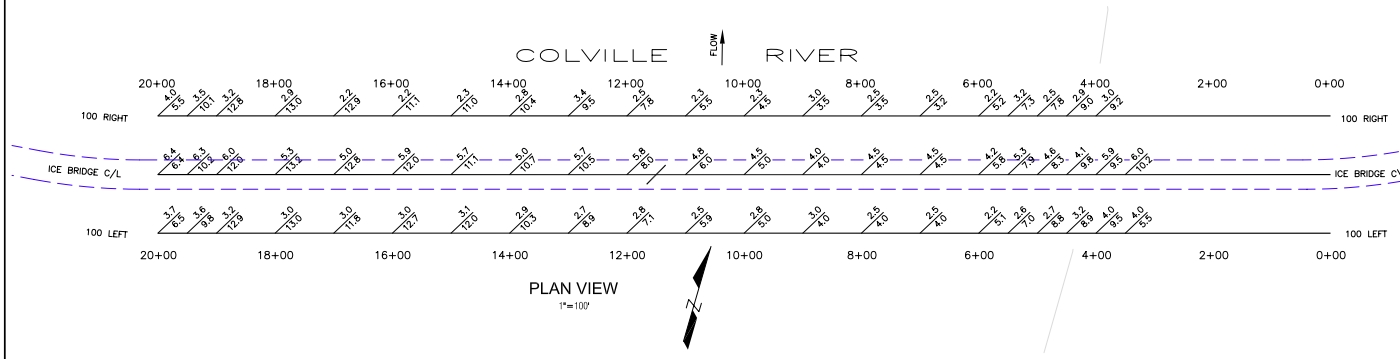


VICINITY MAP
NOT TO SCALE


LEGEND



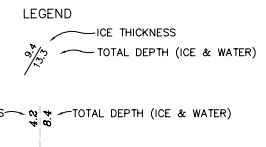
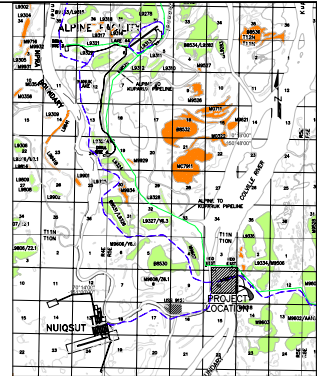
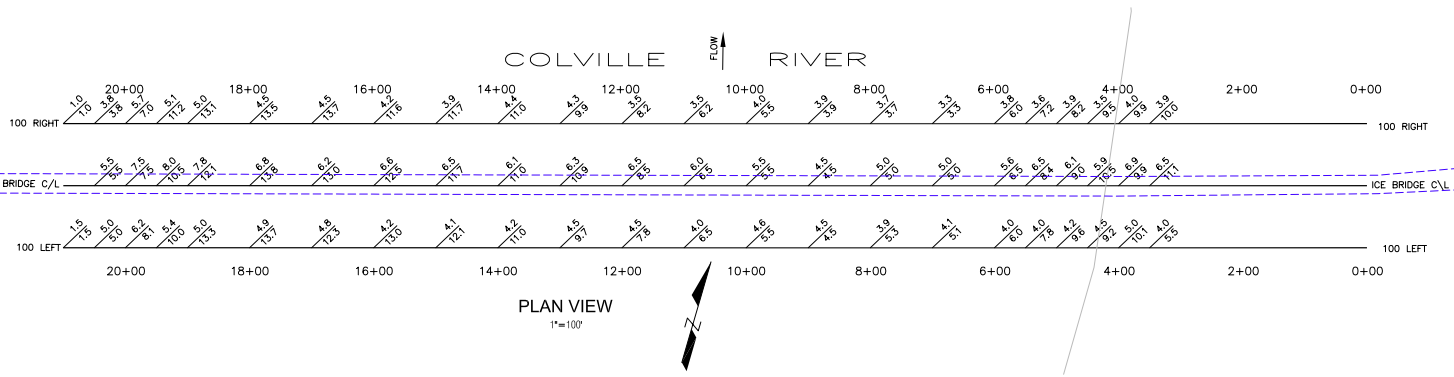
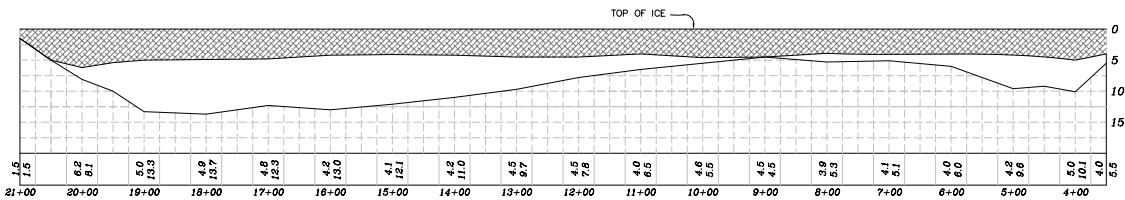
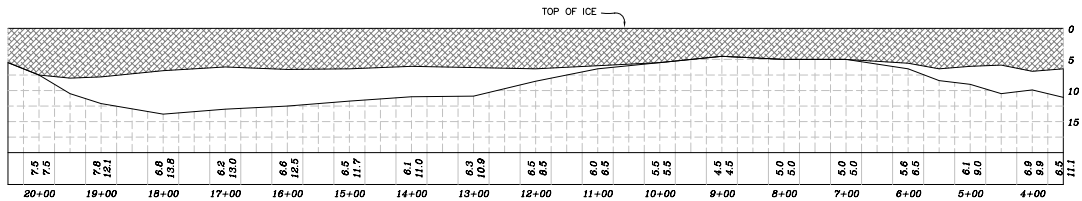
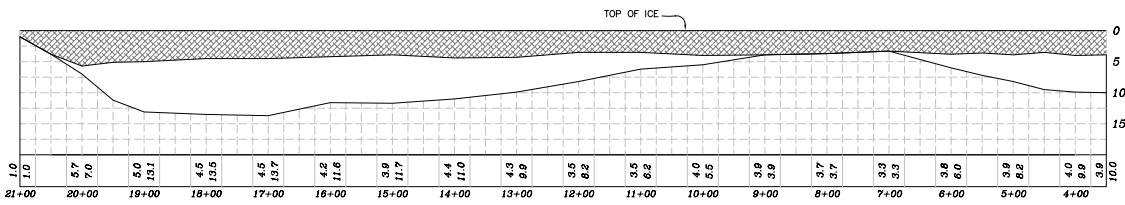
- NOTES:
1. PROFILE DATA PROVIDED BY BILL ST. LAWRENCE COMPLETED JANUARY 5, 2006
 2. TOTAL DEPTH = THE DISTANCE FROM THE TOP OF ICE TO THE BOTTOM OF THE RIVER.
 3. ALL MEASUREMENTS SHOWN HEREON ARE REFERENCED TO THE TOP OF ICE.



PLAN VIEW
1"=100'

CONOCO PHILLIPS ALASKA	
COLVILLE RIVER ICE BRIDGE PROFILE 01/05/2006	
ALPINE, ALASKA  Alpine Survey Office	
DATE: 01/08/2006	SCALE: AS SHOWN
CHECKED BY: GO	SHEET: 1/1
DRAWN BY: AG	SHR #: 05-11-02-1A
DRAWING: 05-11-02-1A-Rev1	

1



- NOTES:
 1. PROFILE DATA PROVIDED BY BILL ST. LAWRENCE COMPLETED JANUARY 11, 2006
 2. TOTAL DEPTH = THE DISTANCE FROM THE TOP OF ICE TO THE BOTTOM OF THE RIVER.
 3. ALL MEASUREMENTS SHOWN HEREON ARE REFERENCED TO THE TOP OF ICE.

CONOCO/PHILLIPS OF ALASKA

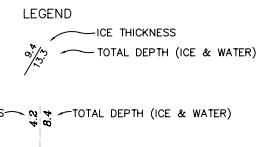
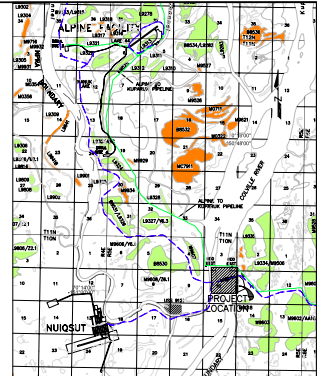
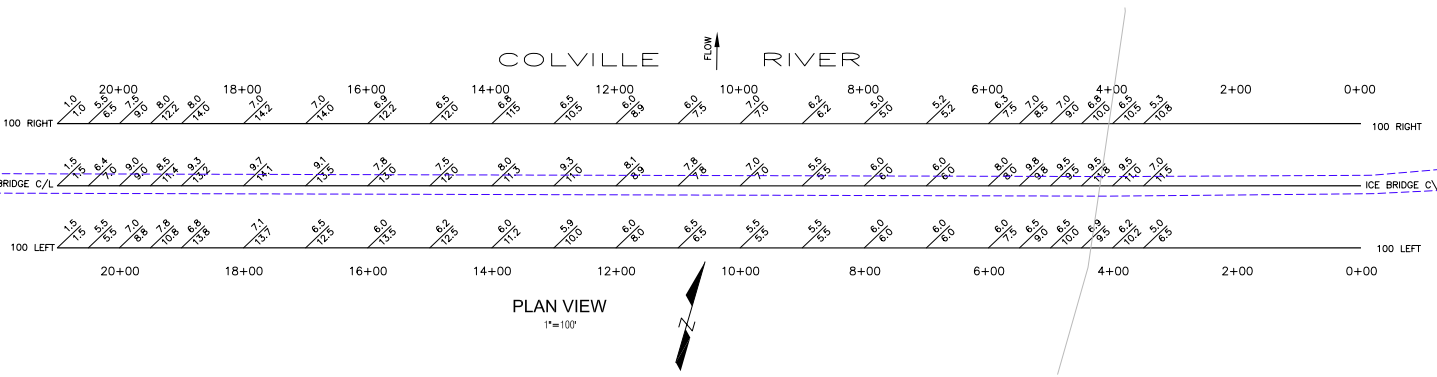
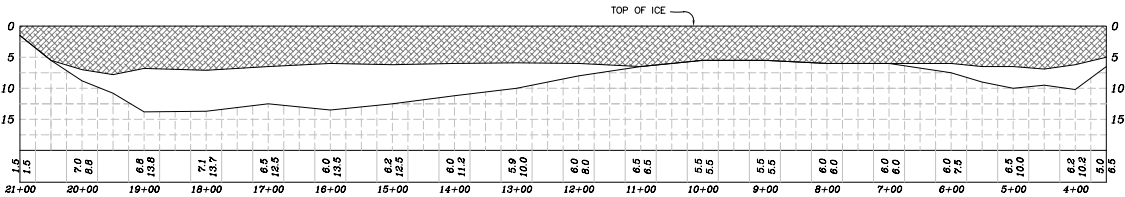
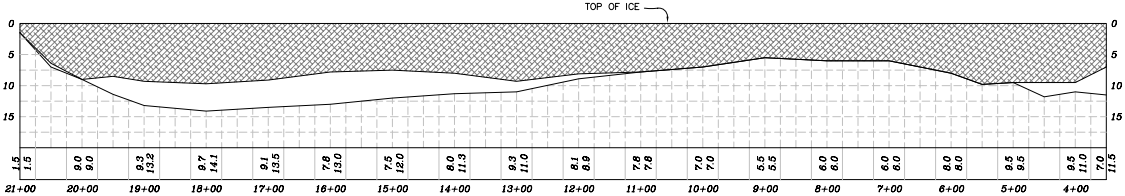
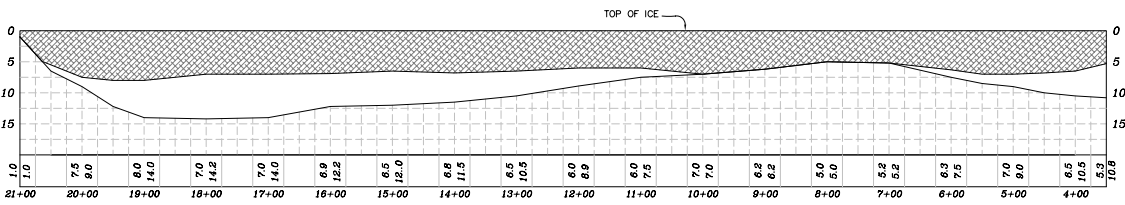
COLVILLE RIVER
 ICE BRIDGE PROFILE
 01/11/2006

ALPINE, ALASKA

DATE: 1/11/2006 SCALE: AS SHOWN
 CHECKED BY: GD SHEET: 1 OF 1
 DRAWN BY: CZ W.O. No: 05-11-02-1A

2

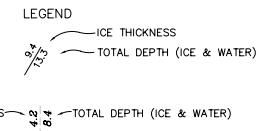
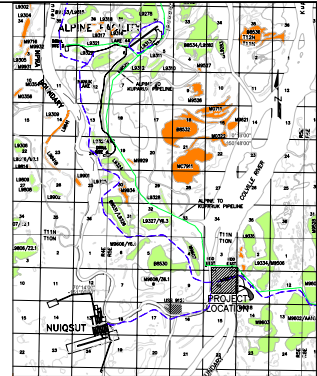
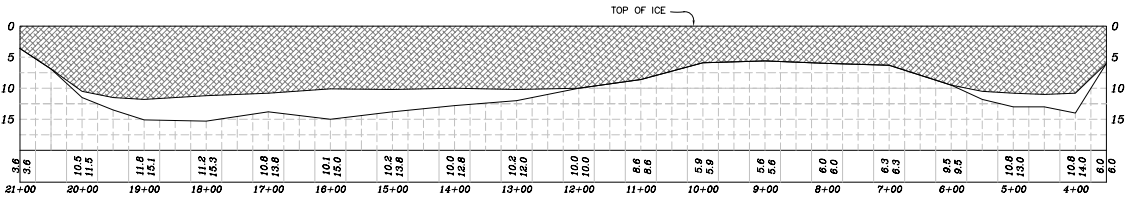
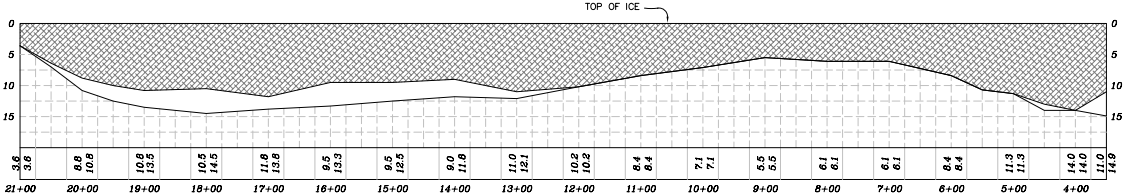
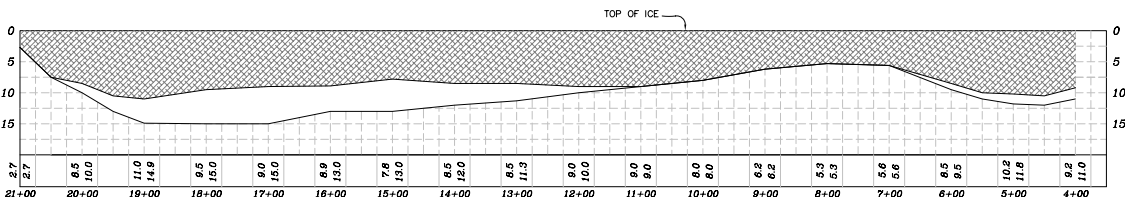
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 FIELD BOOK(S):
 AUTOCAD DRAWING NAME: 05-11-02-1A_REV2.DWG



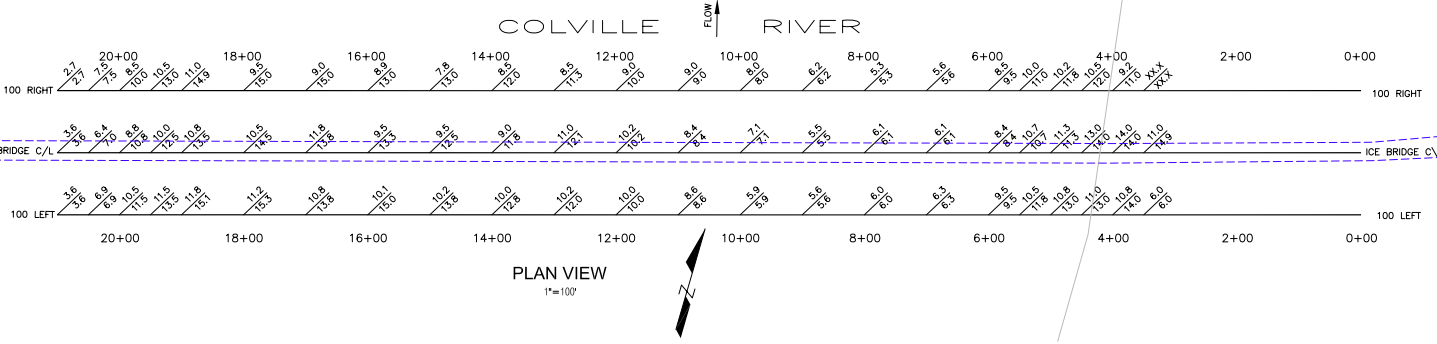
- NOTES:
1. PROFILE DATA PROVIDED BY BILL ST. LAWRENCE COMPLETED JANUARY 17, 2006
 2. TOTAL DEPTH = THE DISTANCE FROM THE TOP OF ICE TO THE BOTTOM OF THE RIVER.
 3. ALL MEASUREMENTS SHOWN HEREON ARE REFERENCED TO THE TOP OF ICE.

CONOCO/PHILLIPS OF ALASKA	
COLVILLE RIVER ICE BRIDGE PROFILE 01/17/2006 ALPINE, ALASKA	
DATE: 1/17/2006	SCALE: AS SHOWN
CHECKED BY: DB	SHEET: 1 OF 1
DRAWN BY: CZ	W.O. No: 05-11-02-1A

PLOTTING DATE: 01/20/06 (12:44)
 FIELD BOOK(S):
 AUTOCAD DRAWING NAME: 05-11-02-1A_REV3.DWG



- NOTES:
 1. PROFILE DATA PROVIDED BY BILL ST. LAWRENCE COMPLETED JANUARY 24, 2006
 2. TOTAL DEPTH = THE DISTANCE FROM THE TOP OF ICE TO THE BOTTOM OF THE RIVER.
 3. ALL MEASUREMENTS SHOWN HEREON ARE REFERENCED TO THE TOP OF ICE.



CONOCO/PHILLIPS OF ALASKA

COLVILLE RIVER
 ICE BRIDGE PROFILE
 01/24/2006

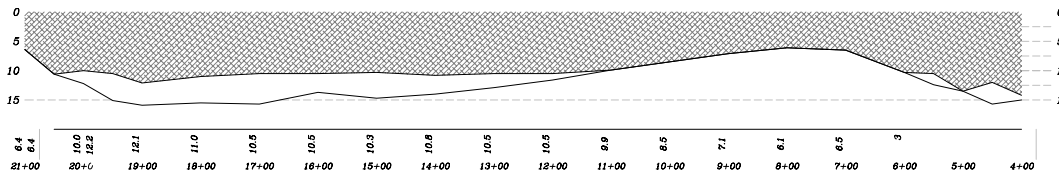
ALPINE, ALASKA

DATE: 1/26/2006 SCALE: AS SHOWN
 CHECKED BY: DB SHEET: 1 OF 1
 DRAWN BY: AG W.O. No: 05-11-02-1A

4

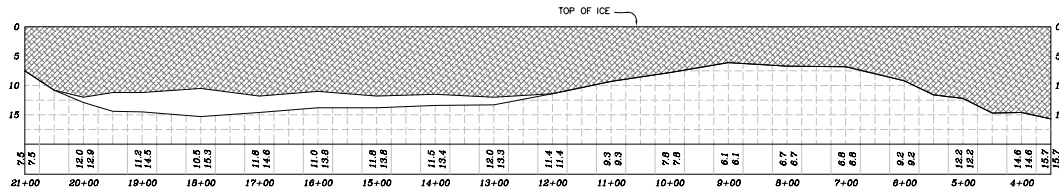
DRAWING: 05-11-02-1A-Rev4

PLOTTING DATE: 01/26/06 (18:41)
 FIELD BOOK(S):
 AUTOCAD DRAWING NAME: 05-11-02-1A_REV4.DWG



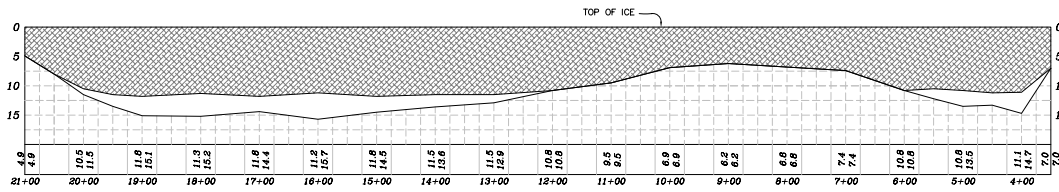
Right Shoulder (100 feet North) Profile

1"=100' Horiz
1"=10' Vertical



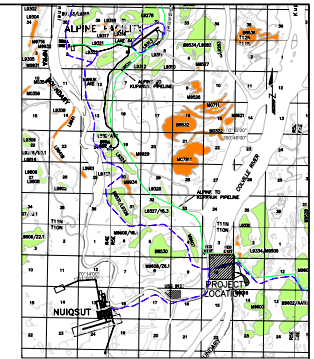
Centerline Profile

1"=100' Horiz
1"=10' Vertical



Left Shoulder (100 feet South) Profile

1"=100' Horiz
1"=10' Vertical

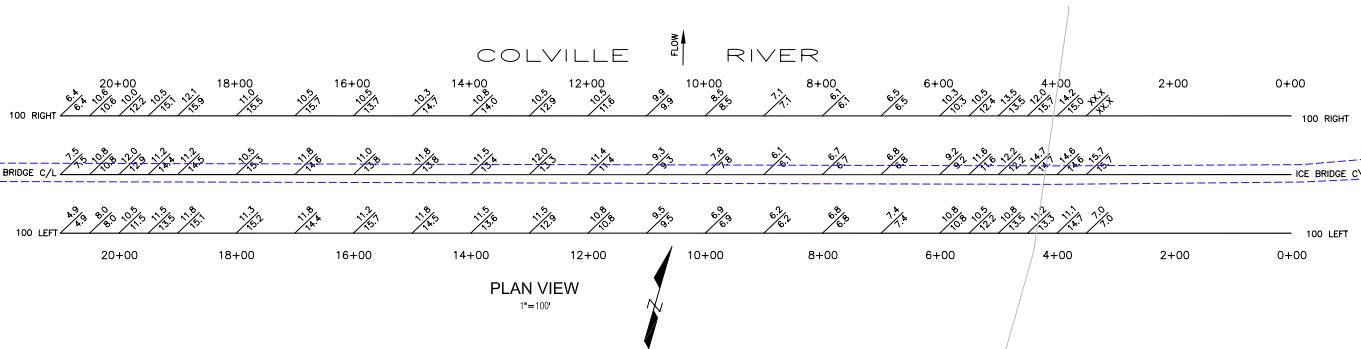


VICINITY MAP
NOT TO SCALE

LEGEND

- ICE THICKNESS
- TOTAL DEPTH (ICE & WATER)

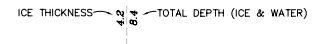
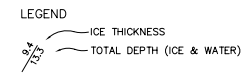
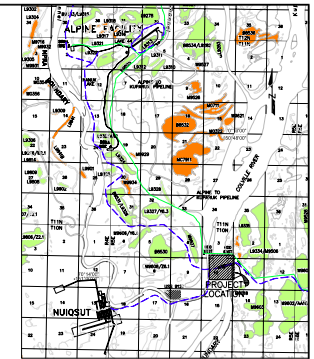
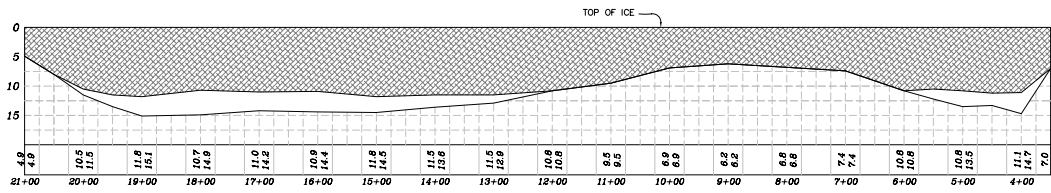
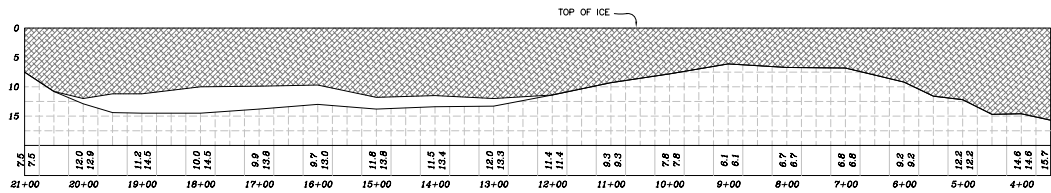
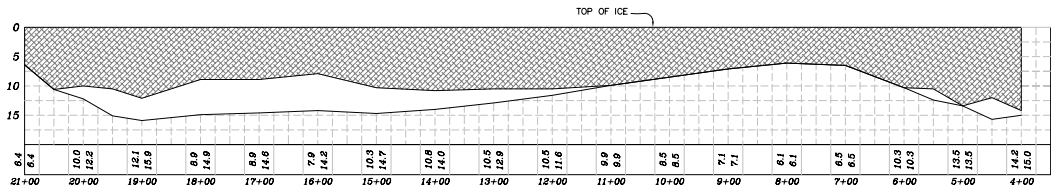
- NOTES:
1. PROFILE DATA PROVIDED BY BILL ST. LAWRENCE COMPLETED JANUARY 31, 2006
 2. TOTAL DEPTH = THE DISTANCE FROM THE TOP OF ICE TO THE BOTTOM OF THE RIVER.
 3. ALL MEASUREMENTS SHOWN HEREON ARE REFERENCED TO THE TOP OF ICE.



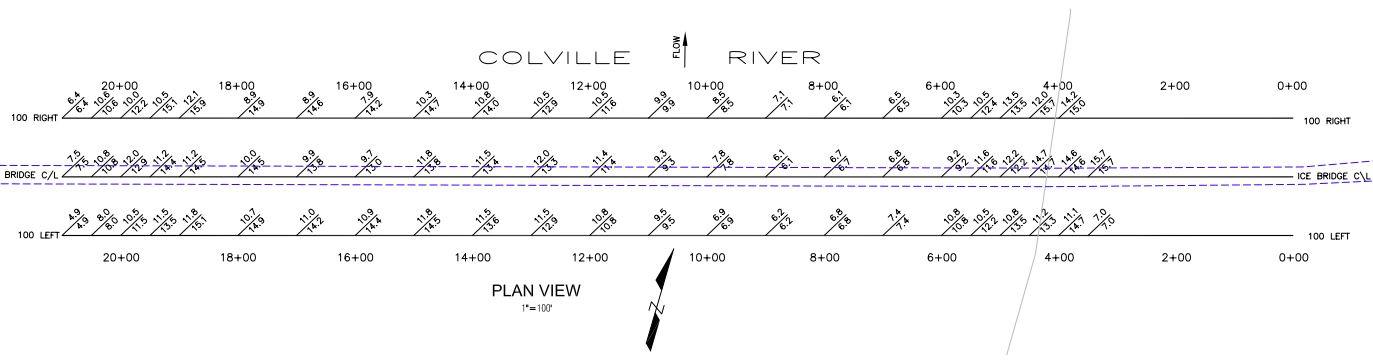
PLAN VIEW
1"=100'

CONOCO/PHILLIPS OF ALASKA			
COLVILLE RIVER ICE BRIDGE PROFILE 01/31/2006			
ALPINE, ALASKA			
DATE: 2/4/2006	SCALE: AS SHOWN		
CHECKED BY: GD	SHEET: 1 OF 1	5	
DRAWN BY: AG	W.D. No: 05-11-02-1A		
DRAWING: 05-11-02-1A-Rev5			

PLOTING DATE: 02/04/06 (18:21)
AUTOCAD DRAWING NAME: 05-11-02-1A-REV5.DWG



- NOTES:
1. PROFILE DATA PROVIDED BY BILL ST. LAWRENCE COMPLETED FEBRUARY 17, 2006
 2. TOTAL DEPTH = THE DISTANCE FROM THE TOP OF ICE TO THE BOTTOM OF THE RIVER.
 3. ALL MEASUREMENTS SHOWN HEREON ARE REFERENCED TO THE TOP OF ICE.
 4. ONLY STATIONS 16+00 THROUGH 18+00 WERE UPDATED 2/17/2006.



CONOCO/PHILLIPS OF ALASKA

COLVILLE RIVER
 ICE BRIDGE PROFILE
 02/17/2006

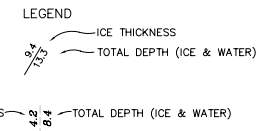
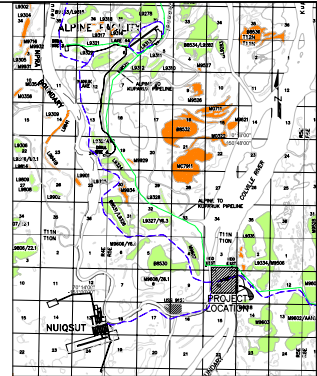
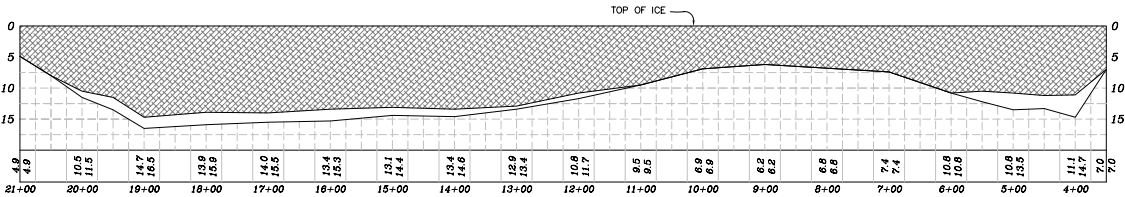
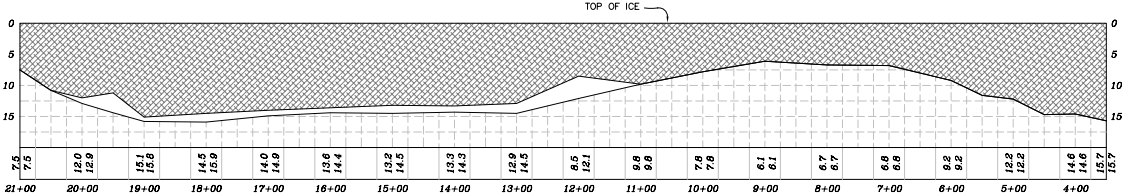
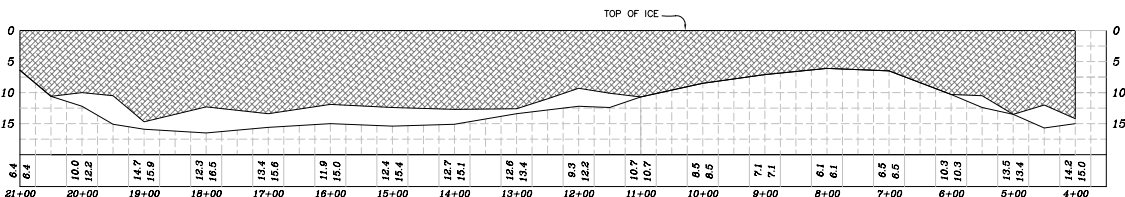
ALPINE, ALASKA

DATE: 2/17/2006 SCALE: AS SHOWN
 CHECKED BY: DB SHEET: 1 OF 1
 DRAWN BY: CZ W.D. No: 05-11-02-1A

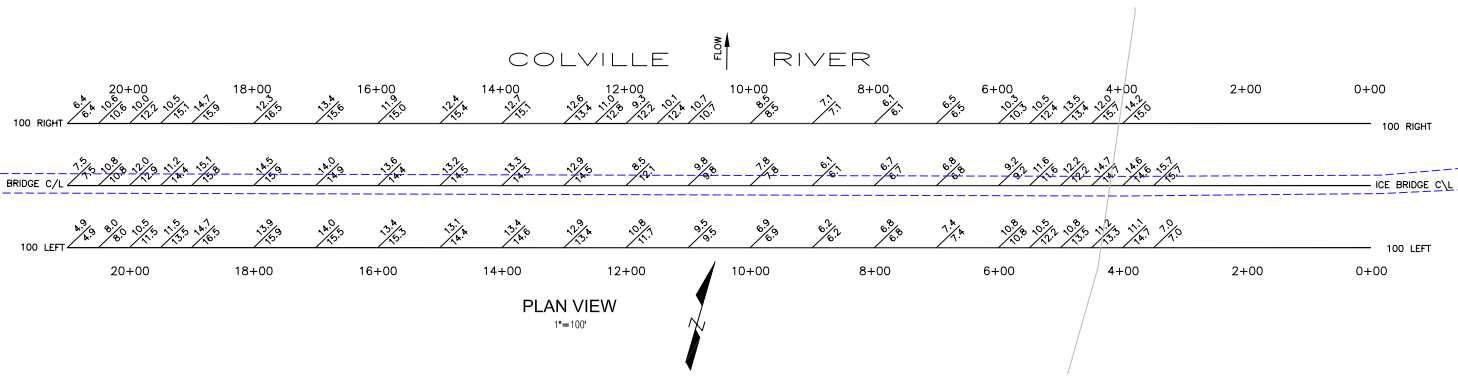
6

DRAWING: 05-11-02-1A-Rev6

PLOTTING DATE: 02/19/06 (10:45)
 AUTOCAD DRAWING NAME: 05-11-02-1A-REV6.DWG



- NOTES:
1. PROFILE DATA PROVIDED BY BILL ST. LAWRENCE COMPLETED MARCH 15, 2006
 2. TOTAL DEPTH = THE DISTANCE FROM THE TOP OF ICE TO THE BOTTOM OF THE RIVER.
 3. ALL MEASUREMENTS SHOWN HEREON ARE REFERENCED TO THE TOP OF ICE.
 4. ONLY STATIONS 11+00 THROUGH 19+00 WERE UPDATED 3/15/2006.



CONOCO/PHILLIPS OF ALASKA

**COLVILLE RIVER
 ICE BRIDGE PROFILE**
 03/15/2006

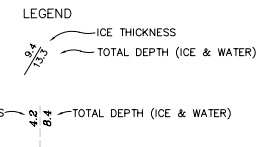
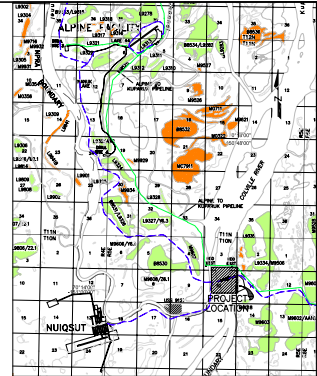
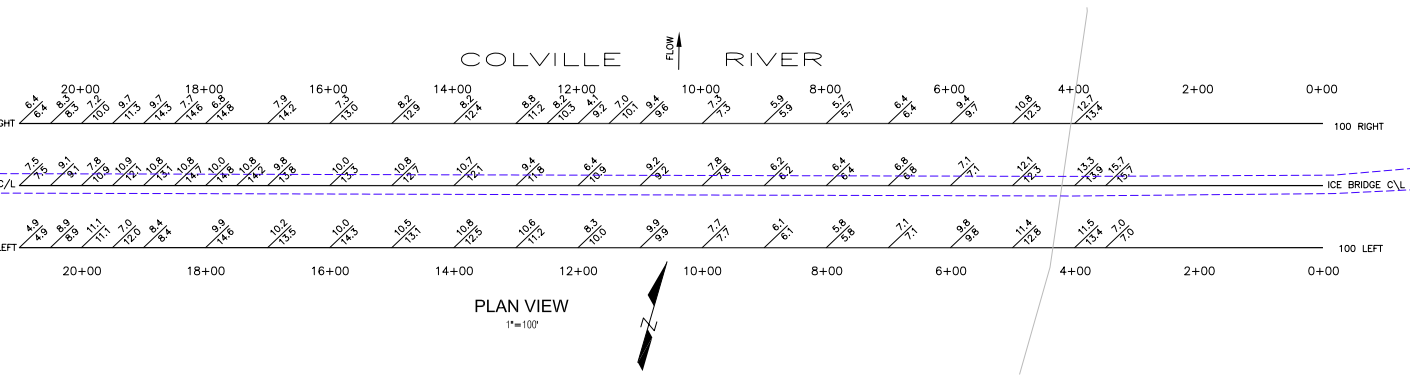
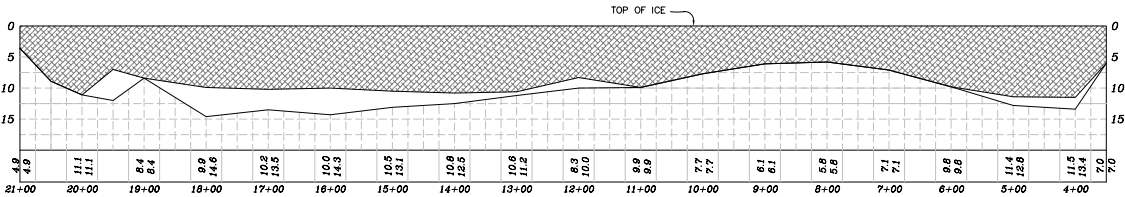
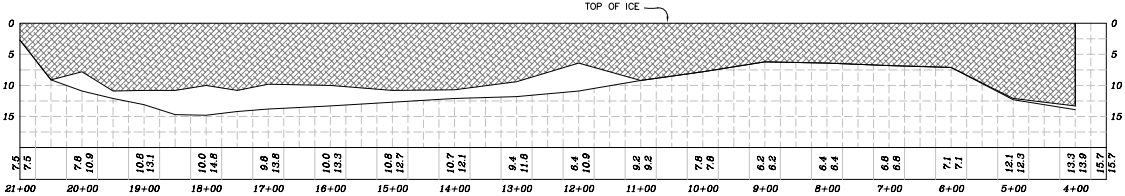
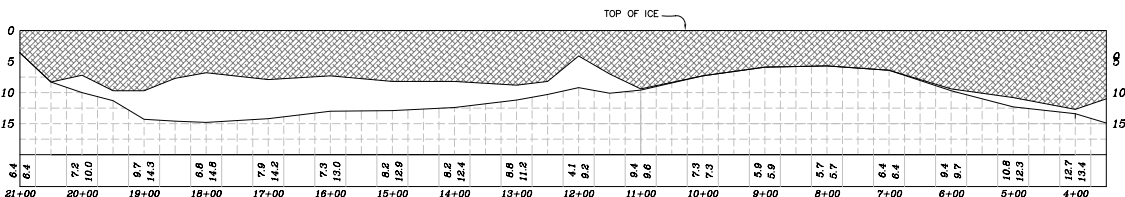
ALPINE, ALASKA

DATE:	3/15/2006	SCALE:	AS SHOWN
CHECKED BY:	DB	SHEET:	1 OF 1
DRAWN BY:	JK	W.O. No:	05-11-02-1A

7

DRAWING: 05-11-02-1A-Rev7

PLOTTING DATE: 03/20/06 (07:14)
 FIELD BOOK(S):
 AUTOCAD DRAWING NAME: 05-11-02-1A_REV7.DWG



- NOTES:
1. PROFILE DATA PROVIDED BY BILL ST. LAWRENCE COMPLETED MARCH 7-8, 2006
 2. TOTAL DEPTH = THE DISTANCE FROM THE TOP OF ICE TO THE BOTTOM OF THE RIVER.
 3. ALL MEASUREMENTS SHOWN HEREON ARE REFERENCED TO THE TOP OF ICE.

CONOCO/PHILLIPS OF ALASKA

COLVILLE RIVER
 ICE BRIDGE PROFILE
 03/08/2006

ALPINE, ALASKA

DATE: 3/08/2006 SCALE: AS SHOWN

CHECKED BY: AG SHEET: 1 OF 1

DRAWN BY: JK W.O. No: 05-11-02-1A

8

DRAWING: 05-11-02-1A-REV8

PLOTTING DATE: 03/23/06 (08:50)
 FIELD BOOK(S):
 AUTOCAD DRAWING NAME: 05-11-02-1A_REV8.DWG

Data Tables

Colville River Ice Bridge Monitoring Program
Water Quality - Upstream of Bridge

Sample Date: November 21, 2005

Upstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	Velocity (ft/sec)
400-ft Upstream N70°14'14.7" W150°50'07.1" 11:40 a.m.	11.2	1.3	0	1	-	-	-	-	-	-
				2	0.4	212	10.8	72.8%	0.2	0.04
				3	0.3	212	10.8	73.1%	0.2	0.05
				4	0.4	212	10.8	73.0%	0.2	0.05
				5	0.4	212	10.8	73.0%	0.2	0.06
				6	0.4	212	10.8	73.0%	0.2	0.06
				7	0.4	212	10.8	72.9%	0.2	0.05
				8	0.4	214	10.8	72.9%	0.2	0.05
				9	0.6	809	10.8	72.7%	1.0	-0.05
				10	0.7	1199	10.9	73.1%	1.1	-0.01
				11	1.0	3388	10.9	73.2%	3.0	-0.01
800-ft Upstream N70°14'10.7" W150°50'03.6" 11:00 a.m.	11.3	1.3	0	1	-	-	-	-	-	-
				2	0.1	212	11.4	76.8%	0.2	-0.02
				3	0.2	212	10.9	73.6%	0.2	-0.02
				4	0.2	212	10.9	73.5%	0.2	-0.02
				5	0.2	212	10.9	73.4%	0.2	-0.03
				6	0.2	212	10.9	73.3%	0.2	-0.04
				7	0.2	215	10.9	73.3%	0.2	-0.01
				8	0.3	222	10.8	72.8%	0.2	-0.01
				9	0.3	300	10.8	72.7%	0.3	-0.07
				10	0.5	1185	10.8	72.8%	1.3	-0.03
				11	0.7	3000	10.7	72.9%	3.0	0.02
1200-ft Upstream N70°14'06.9" W150°50'01.1" 10:00 p.m.	10.7	1.4	0	1	-	-	-	-	-	-
				2	0.0	213	10.8	75.0%	0.2	0.02
				3	0.0	212	11.0	75.2%	0.2	0.03
				4	0.0	212	11.1	75.2%	0.2	0.03
				5	0.0	212	11.1	75.2%	0.2	0.03
				6	0.0	212	11.1	75.3%	0.2	0.03
				7	0.0	212	11.1	75.4%	0.2	0.02
				8	0.1	213	11.1	75.4%	0.2	0.02
				9	0.1	216	11.1	75.3%	0.2	0.03
				10	0.3	1178	11.0	75.4%	1.1	0.01

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Dissolved oxygen was measured using a Hach HQ10 meter
- (6) Velocity was measured using a Marsh-McBirney

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

Colville River Ice Bridge Monitoring Program
Water Quality - Downstream of Bridge

Sample Date: November 21, 2005

Downstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	Velocity (ft/sec)
400-ft Downstream N70°14'21.8" W150°50'13.7" 1:15 p.m.	10.9	1.0	0	1	0.0	214	10.7	74.7%	0.2	0.06
				2	0.0	214	10.8	74.7%	0.2	0.08
				3	0.1	213	10.9	74.8%	0.2	0.08
				4	0.1	213	10.9	74.8%	0.2	0.06
				5	0.0	213	10.9	74.7%	0.2	0.05
				6	0.0	213	10.9	74.7%	0.2	0.05
				7	0.1	214	10.9	74.7%	0.2	0.04
				8	0.1	216	10.9	74.4%	0.2	0.05
				9	0.3	709	10.9	74.5%	0.7	0.01
				10	0.4	1120	10.6	72.8%	1.0	0.01
800-ft Downstream N70°14'24.8" W150°50'16.4" 1:45 p.m.	10.6	1.0	0.0	1	0.1	213	11.2	76.3%	0.2	0.03
				2	0.1	213	11.0	74.8%	0.2	0.02
				3	0.1	213	11.0	74.7%	0.2	0.03
				4	0.1	213	11.0	74.5%	0.2	0.03
				5	0.1	213	11.0	74.4%	0.2	0.04
				6	0.1	213	11.0	74.3%	0.2	0.03
				7	0.2	213	10.9	74.1%	0.2	0.04
				8	0.2	215	10.9	74.0%	0.2	0.01
				9	0.4	813	10.7	73.9%	0.8	-0.02
				10	0.5	1148	10.8	73.2%	1.1	-0.01
1200-ft Downstream N70°14'29.1" W150°50'20.3" 2:15 p.m.	11.4	1.2	0	1	-	-	-	-	-	-
				2	0.1	200	10.3	73.3%	0.2	0.02
				3	0.1	199	10.9	75.0%	0.2	0.03
				4	0.2	199	10.9	75.1%	0.2	0.03
				5	0.2	199	11.0	75.4%	0.2	0.03
				6	0.2	199	11.0	75.2%	0.2	0.04
				7	0.2	200	11.1	75.6%	0.2	0.04
				8	0.2	204	11.1	75.8%	0.2	0.05
				9	0.3	730	11.1	75.9%	0.7	-0.02
				10	0.6	1110	11.1	75.9%	1.0	-0.01
				11	0.7	3400	9.9	68.3%	3.3	0.00

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Dissolved oxygen was measured using a Hach HQ10 meter
- (6) Velocity was measured using a Marsh-McBirney

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

**Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Upstream of Bridge**

Sample Date: November 30, 2005

Upstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Salinity (ppt)	Velocity (ft/sec)
400-ft Upstream N70°14'14.4" W150°50'09.5" 3:40 p.m.	12.4	1.4	0	1	-	-	-	-
				2	0.3	214	0.2	0.01
				3	-	-	-	-
				4	0.3	214	0.2	0.05
				5	-	-	-	-
				6	0.3	215	0.2	0.05
				7	-	-	-	-
				8	0.4	265	0.2	0.02
				9	0.5	530	0.5	-0.04
				10	0.6	1140	1.1	-0.02
				11	0.7	2070	2.0	-0.03
				12	1.0	8940	9.4	-0.03
800-ft Upstream N70°14'10.7" W150°50'06.5" 3:20 p.m.	13.0	1.4	0	1	-	-	-	-
				2	0.3	214	0.2	-0.02
				3	-	-	-	-
				4	0.3	214	0.2	0.03
				5	-	-	-	-
				6	0.3	215	0.2	0.07
				7	-	-	-	-
				8	0.3	238	0.2	0.06
				9	0.5	533	0.5	0.06
				10	0.6	1001	0.9	0.02
				11	0.7	2335	2.3	-0.05
				12	0.9	5610	5.7	-0.10
				13	1.0	9410	9.9	-0.05
1200-ft Upstream N70°14'06.6" W150°50'03.4" 4:10 p.m.	12.7	1.4	0	1	-	-	-	-
				2	0.3	214	0.2	0.00
				3	-	-	-	-
				4	0.3	214	0.2	-0.02
				5	-	-	-	-
				6	0.3	214	0.2	0.05
				7	-	-	-	-
				8	0.3	219	0.2	0.06
				9	0.5	420	0.4	0.03
				10	0.6	983	0.9	-0.01
				11	0.7	1958	1.9	-0.03
				12	0.9	3860	3.9	-0.09

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Dissolved oxygen was not measured due to equipment limitations
- (6) Velocity was measured using a Marsh-McBirney Flow Mate 2000.

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Downstream of Bridge

Sample Date: November 30, 2005

Downstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Salinity (ppt)	Velocity (ft/sec)
400-ft Downstream N70°14'21.2" W150°50'18.9" 1:00 p.m.	13.4	1.4	0	1	-	-	-	-
				2	0.0	215	0.2	-0.13
				3	-	-	-	-
				4	0.1	215	0.2	-0.30
				5	-	-	-	-
				6	0.1	215	0.2	-0.30
				7	-	-	-	-
				8	0.2	258	0.2	-0.10
				9	0.5	503	0.5	-0.10
				10	0.6	1247	1.2	-0.01
				11	0.7	3548	3.4	-0.05
				12	0.7	9400	10.0	0.00
				13	0.6	10200	11.0	-0.02
800-ft Downstream N70°14'24.5" W150°50'19.6" 1:50 p.m.	12.8	1.1	0	1	-	-	-	-
				2	0.2	215	0.2	0.04
				3	-	-	-	-
				4	0.2	215	0.2	-0.08
				5	-	-	-	-
				6	0.2	215	0.2	0.06
				7	-	-	-	-
				8	0.5	335	0.3	0.08
				9	0.6	523	0.5	-0.02
				10	0.6	1608	1.6	-0.04
				11	0.7	3780	3.8	-0.32
				12	0.7	7280	7.8	-0.15
1200-ft Downstream N70°14'29.1" W150°50'20.3" 2:30 p.m.	12.0	1.4	0	1	-	-	-	-
				2	0.2	214	0.2	-0.09
				3	-	-	-	-
				4	0.3	215	0.2	-0.09
				5	-	-	-	-
				6	0.3	216	0.2	-0.03
				7	-	-	-	-
				8	0.5	300	0.3	0.00
				9	0.6	747	0.7	-0.02
				10	0.7	1170	1.1	-0.02
				11	0.8	4168	4.2	-0.13
				12	0.7	10300	11.0	-0.07

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Dissolved oxygen was not measured due to equipment limitations
- (6) Velocity was measured using a Marsh-McBirney Flow Mate 2000.

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

**Colville River Ice Bridge Monitoring Program
Water Quality - East Bank**

Sample Date: November 30, 2005

Upstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Salinity (ppt)	Velocity (ft/sec)
EB 400-ft Upstream N70°14'17.8" W150°49'36.5" 5:45 p.m.	7.2	1.2	0	1	-	-	-	-
				2	0.3	182	0.2	0.02
				3	-	-	-	-
				4	0.3	183	0.2	0.04
				5	-	-	-	-
				6	0.3	185	0.2	0.01
				7	0.5	186	0.2	0.03
EB Ice Bridge Centerline (4+00) N70°14'21.3" W150°49'37.0" 5:10 p.m.	9.0	1.4	0	1	-	-	-	-
				2	0.3	214	0.2	0.05
				3	-	-	-	-
				4	0.3	216	0.2	0.02
				5	-	-	-	-
				6	0.3	221	0.2	-0.02
				7	-	-	-	-
				8	0.4	233	0.2	0.00
				9	0.6	238	0.2	-0.02
EB 400-ft Downstream N70°14'24.0" W150°49'40.0" 5:30 p.m.	9.6	1.4	0	1	-	-	-	-
				2	0.3	215	0.2	0.04
				3	-	-	-	-
				4	0.3	216	0.2	0.04
				5	-	-	-	-
				6	0.4	222	0.2	0.04
				7	-	-	-	-
				8	0.4	252	0.2	0.01
				9	0.7	401	0.4	0.00

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Dissolved oxygen was not measured due to equipment limitations
- (6) Velocity was measured using a Marsh-McBirney Flow Mate 2000.

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

Colville River Ice Bridge Monitoring Program
Water Quality - East Channel

Sample Date: December 6, 2005

Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	Velocity (ft/sec)
EB 800-ft Upstream N70°14'13.9" W150°49'44.0" 4:15 p.m.	7.0	1.5	0	1	-	-	-	-	-	-
				2	0.4	170	-	-	0.1	-
				3	0.4	171	9.4	63%	0.1	-
				4	0.4	172	-	-	0.1	-
				5	0.4	170	9.3	63%	0.1	-
				6	0.4	163	-	-	0.1	-
				7	-	-	-	-	-	-
EB 400-ft Upstream N70°14'17.8" W150°49'36.5" 3:30 p.m.	6.9	2.0	0	1	-	-	-	-	-	-
				2	0.4	215	-	-	0.2	-
				3	0.4	214	9.4	63%	0.2	-
				4	0.4	214	-	-	0.2	-
				5	0.4	214	9.2	62%	0.2	-
				6	0.4	214	-	-	0.2	-
				7	-	-	-	-	-	-
EB 400-ft Downstream N70°14'24.0" W150°49'40.0" 3:00 p.m.	9.2	1.5	0	1	-	-	-	-	-	-
				2	0.4	215	-	-	0.2	-
				3	0.4	215	9.2	62%	0.2	0.03
				4	0.4	215	-	-	0.2	-
				5	0.4	215	9.1	61%	0.2	0.04
				6	0.4	216	-	-	0.2	-
				7	0.5	219	9.0	61%	0.2	0.00
				8	0.5	234	-	-	0.2	-
				9	0.6	316	8.7	59%	0.3	-0.03
EB 800-ft Downstream N70°14'27.8" W150°49'45.9" 2:00 p.m.	9.6	1.5	0	1	-	-	-	-	-	-
				2	0.3	215	9.3	63%	0.2	-
				3	0.2	216	-	-	0.2	-0.04
				4	0.2	216	9.3	63%	0.2	-
				5	0.2	218	-	-	0.2	-0.05
				6	0.3	220	9.1	62%	0.2	-
				7	0.4	230	-	-	0.2	-0.02
				8	0.6	449	8.7	59%	0.4	-
				9	0.7	638	8.3	57%	0.6	-0.01
EB 1200-ft Downstream N70°14'31.6" W150°49'46.9" 1:15 p.m.	7.9	1.4	0	1	-	-	-	-	-	-
				2	0.1	215	9.3	64%	0.2	-
				3	0.1	216	9.2	63%	0.2	-
				4	0.1	216	9.2	63%	0.2	-
				5	0.2	216	9.1	62%	0.2	-
				6	0.2	217	9.0	62%	0.2	-
				7	0.2	227	8.9	62%	0.2	-0.04
				8	0.4	256	8.9	62%	0.2	-

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Dissolved oxygen was measured using a Hach HQ10 meter.
- (6) Velocity was measured using a Marsh-McBirney

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Upstream of Bridge

Sample Date: December 7, 2005

Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	Velocity (ft/sec)
400-ft Upstream N70°14'14.4" W150°50'09.4" 12:45 p.m.	11.4	1.5	0	1	-	-	-	-	-	-
				2	0.1	216	9.6	68%	0.2	-
				3	0.0	215	-	-	0.2	-
				4	0.0	215	9.6	68%	0.2	-
				5	0.0	215	-	-	0.2	-
				6	0.0	215	9.6	67%	0.2	-
				7	0.1	219	-	-	0.2	-
				8	0.2	252	9.6	68%	0.2	-
				9	0.4	785	-	-	0.7	-
				10	0.5	1743	10.0	71%	1.3	-
				11	0.7	3866	-	-	3.5	-
800-ft Upstream N70°14'10.6" W150°50'06.8" 1:15 p.m.	12.4	1.5	0	1	-	-	-	-	-	-
				2	0.1	216	9.4	67%	0.2	-
				3	0.0	215	-	-	0.2	-
				4	0.1	215	9.4	67%	0.2	-
				5	0.0	215	-	-	0.2	-
				6	0.1	215	9.4	66%	0.2	-
				7	0.1	218	-	-	0.2	-
				8	0.2	230	9.6	68%	0.2	-
				9	0.4	887	-	-	0.8	-
				10	0.5	1493	9.8	70%	1.5	-
				11	0.8	3583	-	-	3.5	-
				12	1.0	4884	-	-	4.7	-
1200-ft Upstream N70°14'06.7" W150°50'04.2" 1:35 p.m.	12.7	1.5	0	1	-	-	-	-	-	-
				2	0.2	216	9.3	66%	0.2	-
				3	0.2	215	-	-	0.2	-
				4	0.2	215	9.3	66%	0.2	-
				5	0.2	215	-	-	0.2	-
				6	0.2	215	9.3	66%	0.2	-
				7	0.2	217	-	-	0.2	-
				8	0.3	240	9.9	70%	0.2	-
				9	0.6	852	-	-	0.8	-
				10	0.7	1778	9.4	67%	1.5	-
				11	0.9	3668	-	-	3.6	-
				12	1.1	5060	-	-	4.8	-

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Dissolved oxygen was measured using a Hach HQ10 meter.
- (6) Velocity was not measured due to equipment limitations.

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Downstream of Bridge

Sample Date: December 7, 2005

Downstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	Velocity (ft/sec)
400-ft Downstream N70°14'21.1" W150°50'19.0" 11:10 a.m.	13.2	1.5	0	1	-	-	-	-	-	-
				2	0.3	216	9.2	65%	0.2	-
				3	0.3	215	-	-	0.2	-
				4	0.3	214	9.3	65%	0.2	-
				5	0.3	214	-	-	0.2	-
				6	0.3	214	9.3	65%	0.2	-
				7	0.4	219	-	-	0.2	-
				8	0.5	399	9.6	67%	0.3	-
				9	0.7	749	-	-	0.7	-
				10	0.8	1730	9.6	68%	1.6	-
				11	1.1	3829	-	-	3.8	-
				12	1.2	8290	-	-	8.6	-
				13	1.4	10530	-	-	11.1	-
800-ft Downstream N70°14'24.5" W150°50'19.6" 10:45 a.m.	12.4	1.9	0	1	-	-	-	-	-	-
				2	0.2	222	9.8	68%	0.2	-
				3	0.2	214	-	-	0.2	-
				4	0.2	215	9.5	67%	0.2	-
				5	0.2	214	-	-	0.2	-
				6	0.2	214	9.6	67%	0.2	-
				7	0.2	221	-	-	0.2	-
				8	0.5	339	9.6	67%	0.3	-
				9	0.6	811	-	-	0.7	-
				10	0.8	1718	9.6	67%	1.6	-
				11	0.9	3807	-	-	3.5	-
				12	1.1	8060	9.2	65%	8.4	-
1200-ft Downstream N70°14'29.1" W150°50'20.3" 10:15 a.m.	11.5	1.7	0	1	-	-	-	-	-	-
				2	0.0	208	-	-	0.2	-
				3	0.0	205	10.3	72%	0.2	-
				4	0.0	215	-	-	0.2	-
				5	0.0	215	10.0	70%	0.2	-
				6	0.0	216	-	-	0.2	-
				7	0.1	220	10.0	70%	0.2	-
				8	0.4	557	-	-	0.5	-
				9	0.5	756	9.9	69%	0.7	-
				10	0.6	1991	-	-	1.6	-
				11	0.8	3867	10.8	76%	3.8	-

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Dissolved oxygen was measured using a Hach HQ10 meter.
- (6) Velocity was not measured due to equipment limitations.

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

**Colville River Ice Bridge Monitoring Program
Water Quality - East Channel**

Sample Date: December 7, 2005

Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	DO (mg/L)	DO (Percent n)	Salinity (ppt)	Velocity (ft/sec)
EB 1200-ft Upstream N70°14'10.2" W150°49'41.0" 2:45 p.m.	7.7	1.5	0	1	-	-	-	-	-	-
				2	0.1	216	9.5	68%	0.2	-
				3	0.1	214	-	-	0.2	-
				4	0.2	214	9.3	66%	0.2	-
				5	0.2	214	-	-	0.2	-
				6	0.2	215	9.2	65%	0.2	-
				7	0.2	215	-	-	0.2	-

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Dissolved oxygen was measured using a Hach HQ10 meter.
- (6) Velocity was not measured due to equipment limitations.

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

**Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Upstream of Bridge**

Sample Date: December 19, 2005

Upstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	Velocity (ft/sec)
400-ft Upstream N70°14'14.4" W150°50'09.5" 2:45 p.m.	12.1	1.7	0	1	-	-	-	-	-	-	-
				2	0.2	219	426	-	-	0.2	-
				3	-	-	-	-	-	-	-
				4	0.2	219	427	-	-	0.2	-
				5	-	-	-	-	-	-	-
				6	0.3	242	469	-	-	0.2	-
				7	0.5	1157	2226	-	-	1.1	-
				8	0.8	2316	4406	-	-	2.3	-
				9	-	-	-	-	-	-	-
				10	0.9	12410	23520	-	-	13.5	-
				11	-	-	-	-	-	-	-
				12	1.0	14760	27870	-	-	16.2	-
800-ft Upstream N70°14'10.7" W150°50'06.5" 3:30 p.m.	12.5	1.7	0	1	-	-	-	-	-	-	-
				2	0.2	218	425	-	-	0.2	-
				3	0.2	219	426	-	-	0.2	-
				4	-	-	-	-	-	-	-
				5	0.2	221	431	-	-	0.2	-
				6	-	-	-	-	-	-	-
				7	0.5	475	914	-	-	0.4	-
				8	0.6	2251	4314	-	-	2.2	-
				9	-	-	-	-	-	-	-
				10	0.9	12320	23349	-	-	13.4	-
				11	-	-	-	-	-	-	-
				12	0.2	14730	28662	-	-	16.5	-
1200-ft Upstream N70°14'06.6" W150°50'03.4" 4:10 p.m.	12.7	1.4	0	1	-	-	-	-	-	-	-
				2	0.2	219	426	-	-	0.2	-
				3	-	-	-	-	-	-	-
				4	0.2	219	427	-	-	0.2	-
				5	-	-	-	-	-	-	-
				6	0.3	242	469	-	-	0.2	-
				7	0.5	1157	2226	-	-	-	-
				8	0.8	2316	4406	-	-	0.2	-
				9	-	-	-	-	-	0.4	-
				10	0.9	12410	23520	-	-	0.9	-
				11	-	-	-	-	-	1.9	-
				12	1.0	14760	27870	-	-	3.9	-

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen measurements were terminated due to conditions related equipment failure.

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Downstream of Bridge

Sample Date: December 19, 2005

Downstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	Velocity (ft/sec)
400-ft Downstream N70°14'21.2" W150°50'18.9" 1:45 p.m.	12.9	1.5	0	1	-	-	-	-	-	-	-
				2	0.2	220	428	-	-	0.2	0.04
				3	-	-	-	-	-	-	-
				4	0.2	221	430	-	-	0.2	0.05
				5	-	-	-	-	-	-	-
				6	0.3	273	530	-	-	0.2	-0.30
				7	0.5	1263	2430	-	-	1.2	-
				8	0.6	2584	4952	-	-	2.5	-0.04
				9	0.8	8470	16112	-	-	8.9	-
				10	0.9	12760	24183	-	-	13.9	-0.09
				11	-	-	-	-	-	-	-
				12	0.9	13900	26344	-	-	15.2	-0.05
800-ft Downstream N70°14'24.5" W150°50'19.6" 1:00 p.m.	12.8	2.5	0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	0.2	220	428	-	-	0.2	-
				4	0.2	220	429	9.0	59.3	0.2	-
				5	0.2	220.7	429	9.0	59.6	0.2	-
				6	0.3	239	464	9.2	61.4	0.2	-
				7	0.4	669	1292	9.4	63.1	0.6	-
				8	0.5	1646	3167	9.2	62.5	1.6	-
				9	0.7	6720	12831	8.1	55.7	7.0	-
				10	0.8	12630	24026	7.6	52.2	13.7	-
				11	-	-	-	-	-	-	-
				12	1.0	14850	28040	7.3	49.9	16.3	-
1200-ft Downstream N70°14'29.1" W150°50'20.3" 12:05 p.m.	12.0	1.9	0	1	-	-	-	-	-	-	-
				2	0.2	220	428	8.6	58.3	0.2	-
				3	-	-	-	-	-	-	-
				4	0.1	221	431	8.6	58.6	0.2	-
				5	-	-	-	-	-	-	-
				6	0.2	241	470	8.6	59.2	0.2	-
				7	0.3	1098	2128	9.1	62.3	1.0	-
				8	0.5	1947	3746	8.9	61.3	1.9	-
				9	-	-	-	-	-	-	-
				10	0.8	13180	25072	7.5	52.2	14.4	-
				11	1.1	14360	27015	6.9	48.5	15.8	-
				12	1.5	15050	27901	6.8	48.0	16.5	-

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen measurements were terminated due to conditions related equipment failure.
- (7) Velocity was measured using a Marsh-McBirney

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Upstream of Bridge

Sample Date: January 4, 2006

Upstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	Velocity (ft/sec)	
400-ft Upstream N70°14'14.4" W150°50'09.5" 11:00 a.m.	12.5	2.1	0	1	-	-	-	-	-	-	-	
				2	-	-	-	-	-	-	-	-
				3	0.4	226	436	7.6	51.3	0.2	-	
				4	0.4	226	437	7.6	51.3	0.2	-	
				5	-	-	-	-	-	-	-	
				6	0.5	292	563	7.7	52.3	0.3	-	
				7	-	-	-	-	-	-	-	
				8	0.9	5180	9817	7.0	48.2	5.2	-	
				9	-	-	-	-	-	-	-	
				10	1.2	14740	27628	7.1	48.6	16.1	-	
				11	-	-	-	-	-	-	-	
				12	1.2	15720	29465	7.2	48.5	17.2	-	
800-ft Upstream N70°14'10.7" W150°50'06.5" 11:45 a.m.	12.4	2.2	0	1	-	-	-	-	-	-	-	
				2	-	-	-	-	-	-	-	-
				3	0.4	225	435	7.6	51.0	0.2	-	
				4	0.4	228	440	7.6	51.1	0.2	-	
				5	-	-	-	-	-	-	-	
				6	0.5	273	525	7.6	51.8	0.2	-	
				7	-	-	-	-	-	-	-	
				8	1.0	6080	11480	7.1	48.9	6.3	-	
				9	-	-	-	-	-	-	-	
				10	1.3	14870	27769	7.1	48.8	16.2	-	
				11	-	-	-	-	-	-	-	
				12	1.3	15950	29786	7.1	49.2	17.5	-	
1200-ft Upstream N70°14'06.6" W150°50'03.4" 11:25 a.m.	12.5	2.0	0	1	-	-	-	-	-	-	-	
				2	0.4	225	434	7.6	51.4	0.2	-	
				3	-	-	-	-	-	-	-	
				4	0.4	225	435	7.6	51.6	0.2	-	
				5	-	-	-	-	-	-	-	
				6	0.6	269	515	7.7	52.4	0.2	-	
				7	-	-	-	-	-	-	-	
				8	1.0	5100	9630	7.7	53.0	5.2	-	
				9	-	-	-	-	-	-	-	
				10	1.3	14840	27713	7.2	49.2	16.2	-	
				11	-	-	-	-	-	-	-	
				12	1.3	15840	29581	7.7	51.9	17.3	-	

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen measurements were obtained using a Hach HQ10 meter

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Downstream of Bridge

Sample Date: January 4, 2006

Downstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	Velocity (ft/sec)
400-ft Downstream N70°14'21.2" W150°50'18.9" 9:45 a.m.	12.8	2.2	0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	0.3	270	524	7.7	52.2	0.2	0.05
				4	0.4	327	631	7.7	52.3	0.3	0.13
				5	-	-	-	-	-	-	-
				6	0.6	1286	2465	7.8	53.3	1.2	0.00
				7	-	-	-	-	-	-	-
				8	0.9	5480	10386	7.1	49.0	5.5	-0.12
				9	-	-	-	-	-	-	-
				10	1.1	1470	2765	6.9	47.8	16.0	0.09
				11	-	-	-	-	-	-	-
				12	1.1	16050	30194	6.8	46.6	17.7	0.02
800-ft Downstream N70°14'24.5" W150°50'19.6" 9:15 a.m.	12.8	2.4	0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	0.2	279	543	7.7	52.3	0.2	-
				4	0.2	336	654	7.8	53.0	0.3	-
				5	-	-	-	-	-	-	-
				6	0.4	1088	2101	7.8	53.1	1.0	-
				7	-	-	-	-	-	-	-
				8	0.7	5620	10731	7.1	49.0	5.8	-
				9	-	-	-	-	-	-	-
				10	0.9	16200	30703	7.1	48.6	16.1	-
				11	-	-	-	-	-	-	-
				12	1.0	16020	30249	7.4	49.4	17.7	-
1200-ft Downstream N70°14'29.1" W150°50'20.3" 9:00 a.m.	12.1	2.1	0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	0.1	285	-	7.8	53.0	0.3	-
				4	0.1	342	668	7.9	53.7	0.3	-
				5	-	-	-	-	-	-	-
				6	0.2	1058	2059	8.1	55.3	1.0	-
				7	-	-	-	-	-	-	-
				8	0.6	4950	9487	7.1	49.6	5.1	-
				9	-	-	-	-	-	-	-
				10	0.9	14780	28012	7.1	49.9	16.3	-
				11	-	-	-	-	-	-	-
				12	1.0	16880	31873	7.1	50.4	18.7	-

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen measurements were obtained using a Hach HQ10 meter
- (7) Velocity was measured using a Marsh-McBirney

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

**Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Upstream of Bridge**

Sample Date: January 17, 2006

Upstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	Velocity (ft/sec)	
400-ft Upstream N70°14'14.4" W150°50'09.5" 1:00 p.m.	12.4	2.3	0	1	-	-	-	-	-	-	-	
				2	-	-	-	-	-	-	-	-
				3	0.2	246	479	7.2	59.0	0.2	-	
				4	0.2	248	483	7.1	48.8	0.2	-	
				5	-	-	-	-	-	-	-	
				6	0.3	278	538	7.1	48.4	0.2	-	
				7	-	-	-	-	-	-	-	
				8	0.4	2020	3901	7.5	51.3	2.0	-	
				9	-	-	-	-	-	-	-	
				10	1.1	10630	19998	6.5	45.2	11.3	-	
				11	-	-	-	-	-	-	-	
				12	1.0	17680	33384	6.8	47.1	19.6	-	
800-ft Upstream N70°14'10.7" W150°50'06.5" 12:30 p.m.	12.4	2.2	0	1	-	-	-	-	-	-	-	
				2	-	-	-	-	-	-	-	
				3	0.2	249	484	7.1	48.2	0.2	-	
				4	0.2	250	486	7.1	48.2	0.2	-	
				5	-	-	-	-	-	-	-	
				6	0.2	273	532	6.9	47.2	0.2	-	
				7	-	-	-	-	-	-	-	
				8	0.4	2177	4204	6.8	47.1	2.1	-	
				9	-	-	-	-	-	-	-	
				10	1.0	11000	20770	5.9	40.8	11.8	-	
				11	-	-	-	-	-	-	-	
				12	1.1	16630	31285	6.6	45.7	18.4	-	
1200-ft Upstream N70°14'06.6" W150°50'03.4" 10:50 a.m.	13	2.4	0	1	-	-	-	-	-	-	-	
				2	-	-	-	-	-	-	-	
				3	0.2	249	484	7.1	48.5	0.2	0.01	
				4	0.2	249	485	7.1	48.2	0.2	0.01	
				5	-	-	-	-	-	-	-	
				6	0.0	288	565	6.9	47.6	0.3	0.01	
				7	-	-	-	-	-	-	-	
				8	0.0	1319	2583	6.8	46.9	1.3	0.00	
				9	-	-	-	-	-	-	-	
				10	0.8	10190	19384	6.2	43.3	10.9	0.10	
				11	-	-	-	-	-	-	-	
				12	1.0	16810	31741	6.6	46.4	18.6	0.08	
				13	1.0	17080	32251	6.8	47.8	19.0	0.01	

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen measurements were obtained using a Hach HQ10 meter
- (7) Velocity was measured using a Marsh-McBirney

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

**Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Downstream of Bridge**

Sample Date: January 17, 2006

Downstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	Velocity (ft/sec)
400-ft Downstream N70°14'21.2" W150°50'18.9" 1:25 p.m.	13.8	2.4	0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	0.4	794	1533	6.9	47.3	0.7	-
				4	-	-	-	-	-	-	-
				5	0.7	7880	15046	6.0	41.6	8.3	-
				6	-	-	-	-	-	-	-
				7	0.9	11780	22326	6.0	41.7	12.7	-
				8	-	-	-	-	-	-	-
				9	1.1	16130	30345	6.3	44.1	17.7	-
				10	-	-	-	-	-	-	-
				11	1.1	16830	31662	6.7	46.2	18.6	-
				12	-	-	-	-	-	-	-
				13	1.0	18010	34007	6.8	46.6	20.1	-
800-ft Downstream N70°14'24.5" W150°50'19.6" 2:00 p.m.	13.2	2.7	0.1	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	0.2	707	1376	7.4	50.5	0.7	-
				4	-	-	-	-	-	-	-
				5	0.6	6890	13205	6.2	42.8	7.2	-
				6	-	-	-	-	-	-	-
				7	0.9	11500	21795	6.1	42.2	12.4	-
				8	-	-	-	-	-	-	-
				9	1.1	15990	30081	6.4	44.4	17.6	-
				10	-	-	-	-	-	-	-
				11	1.1	16870	31737	6.7	46.2	18.6	-
				12	-	-	-	-	-	-	-
				13	1.1	18100	34013	6.8	46.6	20.1	-
1200-ft Downstream N70°14'29.1" W150°50'20.3" 2:20 p.m.	12.7	2.2	0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	0.3	640	1241	6.5	44.8	0.6	-
				4	0.5	3291	6331	6.5	44.5	3.3	-
				5	-	-	-	-	-	-	-
				6	0.9	10230	19388	6.1	42.3	10.9	-
				7	-	-	-	-	-	-	-
				8	1.1	13960	26262	6.3	43.9	15.2	-
				9	-	-	-	-	-	-	-
				10	1.1	16480	31003	6.5	45.0	18.2	-
				11	-	-	-	-	-	-	-
				12	1.1	18160	34164	6.7	47.0	20.2	-

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen measurements were obtained using a Hach HQ10 meter

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

**Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Upstream of Bridge**

Sample Date: January 31, 2006

Upstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	Velocity (ft/sec)
400-ft Upstream N70°14'14.4" W150°50'09.5" 2:50 p.m.	12.7	2.6	0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	-0.1	266	524	6.9	48.0	0.2	-
				4	-0.1	267	526	6.9	48.6	0.2	-
				5	-	-	-	-	-	-	-
				6	0.0	275	539	6.6	46.3	0.2	-
				7	-	-	-	-	-	-	-
				8	0.3	445	863	6.3	44.0	0.6	-
				9	-	-	-	-	-	-	-
				10	0.5	10080	19392	5.4	38.2	10.7	-
				11	-	-	-	-	-	-	-
				12	0.6	16370	31375	5.7	41.0	18.2	-
800-ft Upstream N70°14'10.7" W150°50'06.5" 2:25 p.m.	13.2	2.5	0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	-0.1	263	518	6.7	46.9	0.2	-
				4	-	-	-	-	-	-	-
				5	0.0	266	522	6.7	46.7	0.2	-
				6	-	-	-	-	-	-	-
				7	0.2	326	634	6.3	44.0	0.3	-
				8	-	-	-	-	-	-	-
				9	0.3	2839	5503	5.8	40.9	2.0	-
				10	-	-	-	-	-	-	-
				11	0.5	13930	26799	5.6	39.9	15.7	-
				12	-	-	-	-	-	-	-
				13	0.9	17060	32333	5.8	41.4	19.0	-
1200-ft Upstream N70°14'06.6" W150°50'03.4" 1:10 p.m.	14	2.5	0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	0.0	262	514	6.7	46.4	0.2	0.01
				4	0.1	263	514	6.6	46.3	0.2	-0.01
				5	-	-	-	-	-	-	-
				6	0.2	280	545	6.5	45.8	0.2	-0.01
				7	-	-	-	-	-	-	-
				8	0.3	340	659	6.3	44.3	0.3	-0.03
				9	-	-	-	-	-	-	-
				10	0.5	6280	12082	5.7	40.0	7.0	-0.01
				11	-	-	-	-	-	-	-
				12	0.7	15330	29271	6.2	43.6	17.2	0.05
				13	-	-	-	-	-	-	-
				14	0.9	17390	32958	6.8	47.1	19.4	-0.04

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
 - (2) Freeboard is the distance from the top of ice to the water surface.
 - (3) Sample depth is measured from the water surface.
 - (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
 - (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
 - (6) Dissolved oxygen measurements were obtained using a Hach HQ10 meter
 - (7) Velocity was measured using a Marsh-McBirney
- ### Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

**Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Downstream of Bridge**

Sample Date: January 31, 2006

Downstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	Velocity (ft/sec)
400-ft Downstream N70°14'21.2" W150°50'18.9" 3:16 p.m.	13.9	2.6	0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	-0.1	1476	2905	8.2	57.4	1.5	-
				4	-	-	-	-	-	-	-
				5	0.2	6240	12142	6.0	42.2	6.5	-
				6	-	-	-	-	-	-	-
				7	0.3	8200	15895	5.7	40.3	9.1	-
				8	-	-	-	-	-	-	-
				9	0.4	15100	29160	5.6	39.5	16.9	-
				10	-	-	-	-	-	-	-
				11	0.7	16460	31429	5.8	41.3	18.3	-
				12	-	-	-	-	-	-	-
				13	0.9	17900	33925	6.0	42.8	20.1	-
800-ft Downstream N70°14'24.5" W150°50'19.6" 3:35 p.m.	13.3	3.6*	0.3*	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	0.0	2301	4512	6.3	44.1	2.4	-
				4	-	-	-	-	-	-	-
				5	0.2	5080	9885	5.8	41.0	5.4	-
				6	-	-	-	-	-	-	-
				7	0.3	10450	20257	5.5	39.0	11.4	-
				8	-	-	-	-	-	-	-
				9	0.5	15100	29050	5.6	39.3	16.8	-
				10	-	-	-	-	-	-	-
				11	0.6	16270	31183	5.7	40.3	18.2	-
				12	-	-	-	-	-	-	-
				13	0.9	18180	34455	5.9	41.8	20.4	-
1200-ft Downstream N70°14'29.1" W150°50'20.3" 4:00 p.m.	12.8	2.5	0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	-0.1	1571	3092	8.8	61.1	1.6	-
				4	0.1	2564	5008	6.5	45.3	2.8	-
				5	-	-	-	-	-	-	-
				6	0.3	7710	14945	5.8	40.6	8.1	-
				7	-	-	-	-	-	-	-
				8	0.4	13960	26958	5.5	39.1	15.5	-
				9	-	-	-	-	-	-	-
				10	0.6	15800	30282	5.7	40.3	17.7	-
				11	-	-	-	-	-	-	-
				12	0.9	17190	32579	5.8	41.6	19.4	-

Notes:

*Sample hole located over past sampling overflow, increasing ice thickness and freeboard

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen measurements were obtained using a Hach HQ10 meter

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

**Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Upstream of Bridge**

Sample Date: February 14, 2006

Upstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	Salinity (ppt)	Velocity (ft/sec)
400-ft Upstream N70°14'14.4" W150°50'09.5" 2:10 p.m.	12.3	2.8	0	1	-	-	-	-	-
				2	-	-	-	-	-
				3	-	-	-	-	-
				4	0.1	280	546	0.3	-
				5	-	-	-	-	-
				6	0.1	292	571	0.3	-
				7	-	-	-	-	-
				8	0.3	536	1039	0.5	-
				9	-	-	-	-	-
				10	0.7	15750	30073	17.5	-
				11	-	-	-	-	-
				12	0.9	17560	33280	19.6	-
800-ft Upstream N70°14'10.7" W150°50'06.5" 1:25 p.m.	13.7	3.2	0	1	-	-	-	-	-
				2	-	-	-	-	-
				3	-	-	-	-	-
				4	0.1	278	542	0.2	-
				5	-	-	-	-	-
				6	0.2	294	572	0.3	-
				7	-	-	-	-	-
				8	0.4	541	1045	0.5	-
				9	-	-	-	-	-
				10	0.8	15860	30170	17.6	-
				11	-	-	-	-	-
				12	1.0	17580	33195	19.6	-
				13	1.0	18160	34290	20.3	-
1200-ft Upstream N70°14'06.6" W150°50'03.4" 12:45 p.m.	14.2	2.8	0	1	-	-	-	-	-
				2	-	-	-	-	-
				3	-	-	-	-	-
				4	0.1	277	541	0.2	0.01
				5	-	-	-	-	-
				6	0.2	309	601	0.3	0.01
				7	-	-	-	-	-
				8	0.4	545	1052	0.5	0.00
				9	-	-	-	-	-
				10	0.8	15740	29942	17.5	-0.01
				11	-	-	-	-	-
				12	0.9	17500	33167	19.6	-0.02
				13	-	-	-	-	-
				14	1.0	18210	34384	20.3	-0.02

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen measurements were not obtained due to equipment failure.
- (7) Velocity was measured using a Marsh-McBirney

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Downstream of Bridge

Sample Date: February 14, 2006

Downstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	Salinity (ppt)	Velocity (ft/sec)	
400-ft Downstream N70°14'21.2" W150°50'18.9" 12:05 p.m.	14.0	3.0	0	1	-	-	-	-	-	
				2	-	-	-	-	-	-
				3	-	-	-	-	-	-
				4	0.1	2634	5145	2.6	-	
				5	-	-	-	-	-	
				6	0.4	9640	18616	10.4	-	
				7	-	-	-	-	-	
				8	0.3	15270	29600	17.2	-	
				9	-	-	-	-	-	
				10	0.8	16930	32206	18.9	-	
				11	-	-	-	-	-	
				12	1.0	18130	34233	20.3	-	
				13	-	-	-	-	-	
				14	1.0	18360	34668	20.5	-	
800-ft Downstream N70°14'24.5" W150°50'19.6" 11:20 a.m.	13.5	3.4	0.2	1	-	-	-	-	-	
				2	-	-	-	-	-	
				3	-	-	-	-	-	
				4	0.0	2541	4982	2.6	-	
				5	-	-	-	-	-	
				6	0.4	8270	15970	9.7	-	
				7	-	-	-	-	-	
				8	0.5	15150	29146	16.9	-	
				9	-	-	-	-	-	
				10	0.8	16780	31921	18.7	-	
				11	-	-	-	-	-	
				12	0.9	17800	33735	19.9	-	
				13	1.0	18390	34724	20.5	-	
1200-ft Downstream N70°14'29.1" W150°50'20.3" 10:46 p.m.	12.8	3.2	0	1	-	-	-	-	-	
				2	-	-	-	-	-	
				3	-	-	-	-	-	
				4	0.1	3183	6217	3.2	-	
				5	-	-	-	-	-	
				6	0.4	9690	18712	10.5	-	
				7	-	-	-	-	-	
				8	0.5	15400	29627	17.2	-	
				9	-	-	-	-	-	
				10	0.8	16610	31597	18.5	-	
				11	-	-	-	-	-	
				12	1.0	18380	34705	20.5	-	

Notes:

*Sample hole located over past sampling overflow, increasing ice thickness and freeboard

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25^oC) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen measurements were not obtained due to equipment failure.

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Upstream of Bridge

Sample Date: February 28, 2006

Upstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	Salinity (ppt)	Velocity (ft/sec)
400-ft Upstream N70°14'14.4" W150°50'09.5" 10:20 a.m.	13.3	3.3	0.1	1	-	-	-	-	-
				2	-	-	-	-	-
				3	-	-	-	-	-
				4	-0.1	353	694	0.3	-
				5	-	-	-	-	-
				6	0.0	433	848	0.4	-
				7	-	-	-	-	-
				8	0.3	2144	4156	2.1	-
				9	-	-	-	-	-
				10	0.8	17290	32891	19.7	-
				11	-	-	-	-	-
				12	0.9	18050	34209	20.2	-
				13	0.9	19070	36142	21.4	-
800-ft Upstream N70°14'10.7" W150°50'06.5" 10:00 a.m.	13.6	3.1	0	1	-	-	-	-	-
				2	-	-	-	-	-
				3	-	-	-	-	-
				4	-0.1	359	706	0.3	-
				5	-	-	-	-	-
				6	0.0	434	850	0.4	-
				7	-	-	-	-	-
				8	0.4	4518	8725	4.7	-
				9	-	-	-	-	-
				10	0.8	17550	33385	19.6	-
				11	-	-	-	-	-
				12	0.9	18170	34436	20.3	-
				13	0.9	19150	36294	21.6	-
1200-ft Upstream N70°14'06.6" W150°50'03.4" 9:05 p.m.	13.5	3.2	0	1	-	-	-	-	-
				2	-	-	-	-	-
				3	-	-	-	-	-
				4	-0.1	358	704	0.3	0.02
				5	-	-	-	-	-
				6	0.0	510	1000	0.5	0.03
				7	-	-	-	-	-
				8	0.4	7650	14773	7.9	0.02
				9	-	-	-	-	-
				10	0.8	17760	33785	19.9	0.04
				11	-	-	-	-	-
				12	0.9	18250	34588	20.4	0.06
				13	1.0	19140	36140	21.5	0.02

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen measurements were not obtained due to equipment failure.
- (7) Velocity was measured using a Marsh-McBirney

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Downstream of Bridge

Sample Date: February 28, 2006

Downstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	Salinity (ppt)	Velocity (ft/sec)
400-ft Downstream N70°14'21.2" W150°50'18.9" 10:40 a.m.	13.7	3.2	0.1	1	-	-	-	-	-
				2	-	-	-	-	-
				3	-	-	-	-	-
				4	0.1	4589	8964	4.7	-
				5	-	-	-	-	-
				6	0.5	13240	25471	14.6	-
				7	-	-	-	-	-
				8	0.6	15960	30589	17.9	-
				9	-	-	-	-	-
				10	0.7	17540	33491	19.7	-
				11	-	-	-	-	-
				12	0.8	18230	34679	20.5	-
				13	-	-	-	-	-
				14	0.9	19270	36521	21.7	-
800-ft Downstream N70°14'24.5" W150°50'19.6" 10:58 a.m.	13.4	4.3	0.3	1	-	-	-	-	-
				2	-	-	-	-	-
				3	-	-	-	-	-
				4	-	-	-	-	-
				5	0.2	7290	14185	8.0	-
				6	-	-	-	-	-
				7	0.6	15300	29324	17.0	-
				8	-	-	-	-	-
				9	0.7	16830	32135	18.8	-
				10	-	-	-	-	-
				11	0.8	17820	33899	20.0	-
				12	-	-	-	-	-
				13	0.9	19500	36957	21.9	-
1200-ft Downstream N70°14'29.1" W150°50'20.3" 11:17 p.m.	13.1	3.2	0	1	-	-	-	-	-
				2	-	-	-	-	-
				3	-	-	-	-	-
				4	0.1	4504	8798	5.0	-
				5	-	-	-	-	-
				6	0.5	13670	26299	15.2	-
				7	-	-	-	-	-
				8	0.7	16260	31047	18.1	-
				9	-	-	-	-	-
				10	0.7	17430	33281	19.6	-
				11	-	-	-	-	-
				12	0.9	19230	36445	21.6	-
				13	0.8	19320	36752	21.8	-

Notes:

*Sample hole located over past sampling overflow, increasing ice thickness and freeboard

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen measurements were not obtained due to equipment failure.

Value exceeds 500 µS/cm, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

**Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Upstream of Bridge**

Sample Date: April 4, 2006

Upstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	Salinity (ppt)	DO (mg/L)	DO (%)	Velocity (ft/sec)
400-ft Upstream N70°14'14.4" W150°50'09.5" 10:30 a.m.	12.6	3.5	0.0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	-	-	-	-	-	-	-
				4	0.9	436	826	0.4	5.9	41.2	-
				5	-	-	-	-	-	-	-
				6	0.2	446	868	0.5	4.9	33.9	-
				7	-	-	-	-	-	-	-
				8	0.3	15160	29387	16.4	4.2	28.9	-
				9	-	-	-	-	-	-	-
				10	0.4	18080	34914	20.7	4.0	27.2	-
				11	-	-	-	-	-	-	-
				12	0.6	18900	36224	21.4	3.6	25.2	-
				13	-	-	-	-	-	-	-
800-ft Upstream N70°14'10.7" W150°50'06.5" 10:15 a.m.	13.4	3.9	0.0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	-	-	-	-	-	-	-
				4	-	-	-	-	-	-	-
				5	0.4	426	823	0.4	6.4	44.1	-
				6	-	-	-	-	-	-	-
				7	0.3	8140	15779	8.4	4.4	30.2	-
				8	-	-	-	-	-	-	-
				9	0.5	16740	32205	18.8	4.3	29.5	-
				10	-	-	-	-	-	-	-
				11	0.6	18810	36051	21.3	4.2	29.1	-
				12	-	-	-	-	-	-	-
				13	0.6	18950	36319	21.5	3.9	27.0	-
1200-ft Upstream N70°14'06.6" W150°50'03.4" 9:35 p.m.	13.5	3.7	0.0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	-	-	-	-	-	-	-
				4	0.1	404	790	0.4	6.3	43.6	-
				5	0.1	451	881	0.4	5.3	36.4	-
				6	-	-	-	-	-	-	-
				7	0.4	14830	28638	16.7	4.8	32.8	-
				8	-	-	-	-	-	-	-
				9	0.5	17910	34456	20.1	4.7	32.4	-
				10	-	-	-	-	-	-	-
				11	0.6	18940	36300	21.4	4.5	31.0	-
				12	-	-	-	-	-	-	-
				13	0.9	19120	36237	21.5	4.3	29.9	-

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen measurements was recorded using Hach HQ10 meter.
- (7) Velocity was measured using a Marsh-McBirney

Value exceeds 500 µS/cm specific conductance, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

**Colville River Ice Bridge Monitoring Program
Water Quality - Main Channel Downstream of Bridge**

Sample Date: April 4, 2006

Downstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	Salinity (ppt)	DO (mg/L)	DO (%)	Velocity (ft/sec)
400-ft Downstream N70°14'21.2" W150°50'18.9" 10:50 a.m.	13.8	4.1	0.3	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	-	-	-	-	-	-	-
				4	-	-	-	-	-	-	-
				5	0.1	6530	12755	6.9	5.4	36.9	-
				6	-	-	-	-	-	-	-
				7	0.4	14520	28040	16.1	5.2	35.7	-
				8	-	-	-	-	-	-	-
				9	0.7	17280	32995	19.3	5.1	35.5	-
				10	-	-	-	-	-	-	-
				11	0.3	18720	36288	21.4	5.0	34.6	-
				12	-	-	-	-	-	-	-
				13	0.9	19200	36388	21.6	4.9	33.7	-
				14	-	-	-	-	-	-	-
800-ft Downstream N70°14'24.5" W150°50'19.6" 11:15 a.m.	12.9	3.9	0.3	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	-	-	-	-	-	-	-
				4	-0.4	6210	12367	6.7	5.3	36.1	-
				5	-	-	-	-	-	-	-
				6	0.1	8570	16740	9.4	4.3	29.5	-
				7	-	-	-	-	-	-	-
				8	0.4	14660	28310	16.3	3.9	26.6	-
				9	-	-	-	-	-	-	-
				10	0.7	17740	33873	20.0	3.7	25.5	-
				11	-	-	-	-	-	-	-
				12	0.9	19070	36142	21.5	3.3	23.0	-
				13	-	-	-	-	-	-	-
1200-ft Downstream N70°14'29.1" W150°50'20.3" 12:55 p.m.	12.9	4.0	0.0	1	-	-	-	-	-	-	-
				2	-	-	-	-	-	-	-
				3	-	-	-	-	-	-	-
				4	-	-	-	-	-	-	-
				5	-	-	-	-	-	-	-
				6	0.2	8860	17240	9.7	5.0	33.6	-0.02
				7	-	-	-	-	-	-	-
				8	0.6	14790	28346	16.1	4.3	29.3	0.01
				9	-	-	-	-	-	-	-
				10	0.8	17270	32853	19.3	4.4	30.5	-0.01
				11	-	-	-	-	-	-	-
				12	0.8	18920	35991	21.0	4.3	29.6	-0.03
				13	-	-	-	-	-	-	-

Notes:

*Sample hole located over past sampling overflow, increasing ice thickness and freeboard

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen measurements was recorded using Hach HQ10 meter.
- (7) Velocity was measured using a Marsh-McBirney

Value exceeds 500 µS/cm specific conductance, as specified in ADNR Fish Habitat Permit FH04-III-0135, Issued May 18, 2004

Trip Reports

Project Trip Report

Project Name: Colville River Ice Bridge Monitoring	Date of Trip: November 21, 2005
Project Code: 107341	Submitted by: Mike Alexander, PE/Mark McBroom, EIT

Weather: Temperature -22 to -27° F with light wind, clear with fog on horizon.

Mr. Alexander and Mr. McBroom arrived at Alpine on Sunday, November 20, 2005 at 5:00 PM. Upon arrival, they met up with Gene Diamond of LCMF, and coordinated the procedures that were going to be followed at the ice bridge monitoring site. The purpose of the trip was to conduct initial seasonal monitoring of the Colville River Ice Bridge.

At 6:00 AM on November 21, LCMF conducted their weekly health and safety meeting which was attended by Mr. Alexander and Mr. McBroom. At 7:30, equipment was assembled, calibrated and loaded into the Tucker. Mr. Chris Zeimet of LCMF drove Mr. Alexander and Mr. McBroom to the ice bridge monitoring site leaving Alpine at 8:30 AM. Water depth, ice thickness, freeboard, salinity, conductivity, temperature, dissolved oxygen and water velocities were measured at the predetermined sampling locations. Locations included sites 400, 800 and 1200 feet upstream and downstream of the ice bridge centerline. Results are tabulated in the attached spreadsheets.

In-situ water quality parameters were recorded using a YSI-30 meter (conductivity, salinity and temperature), Hach HQ10 (dissolved oxygen,) and a Marsh McBirney Model 2000 (water velocity). All measurements were made from below the ice surface to the river bottom at one-foot intervals. Water chemistry meters were calibrated prior to the trip by TTT Environmental. The YSI-30 was again calibrated on the morning of November 21 by Mr. Alexander and Mr. McBroom.

Mr. Alexander, Mr. McBroom and Mr. Zeimet returned to Alpine at 4:30 PM. At 8:30 AM on Tuesday, November 22, Mr. Alexander and Mr. McBroom departed Alpine for Anchorage, arriving at 4:00 PM.

Concentrations of conductivity were recorded above 500 us/cm in each of the six monitoring locations at or below nine feet of depth, with values above this limit ranging from 730 to 3,400 us/cm. The next monitoring event will be scheduled as outlined in DNR permit FH 04-III-0135.



1200 DOWNSTREAM ⊗

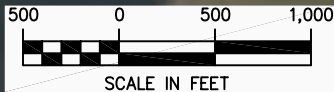
800 DOWNSTREAM ⊗

400 DOWNSTREAM ⊗

⊗ 400 UPSTREAM

⊗ 800 UPSTREAM

⊗ 1200 UPSTREAM



LEGEND	
⊗	SAMPLE LOCATION
▲	ICE BRIDGE SHOULDER
---	SHOULDER

ConocoPhillips
Alaska, Inc.

DATE: 11/23/05	PROJECT: 107341
DRAWN: WAP	FILE: ICE BRIDGE MONITORING SITES
CHECKED: MTA	SCALE: 1" = 1000'



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2005/2006 ICE
BRIDGE MONITORING
LOCATIONS

1-1

(SHEET 1 OF 1)

Project Trip Report

Project Name: Colville River Ice Bridge Monitoring	Date of Trip: November 30, 2005
Project Code: 107634	Submitted by: Mark McBroom, EIT

Weather: Temperature -5° F with light wind, clear.

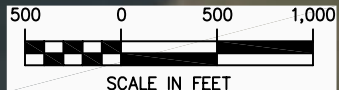
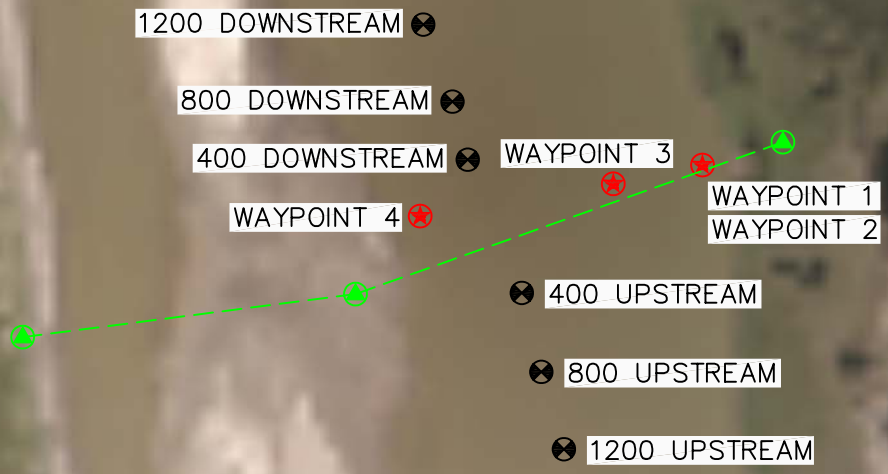
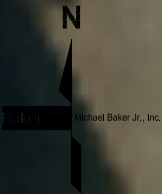
Mr. McBroom arrived at Kuparuk on Tuesday, November 29, 2005 at 3:00 PM. Prior to departure for Alpine, Mr. McBroom met with Environmental Exploration Coordinator Chris Brown and Exploration Coordinator Moose to discuss the sampling regime at the Colville River Ice Bridge. Mr. McBroom arrived at Alpine 5:00 PM, met with LCMF (Don Bruce), and coordinated the access and procedures for ice bridge monitoring on the Colville River. The purpose of the trip was to monitor water chemistry at locations in the Main Channel, establish additional monitoring sites in the low-flow East Channel and conduct monitoring at these locations near the Colville River Ice Bridge.

At 6:00 AM on November 30, Mr. McBroom attended the daily LCMF health and safety meeting. At 7:30, equipment was assembled, calibrated and loaded into the Tucker. LCMF (Mr. Templeman) drove Mr. McBroom to the ice bridge monitoring site, accompanied by Mr. Rourick (LCMF) on snow machine, leaving Alpine at 8:30 AM. Water depth, ice thickness, freeboard, salinity, conductivity, temperature and water velocities were measured at sampling locations positioned at 400, 800 and 1200 feet upstream and downstream of the ice bridge centerline. Lateral locations were modified from previous investigations to identify and monitor the deepest portion of the Main Channel.

At the request of Moose and Chris Brown of ConocoPhillips, Mr. McBroom established new locations in the east channel, specifically at the ice bridge centerline (Station 4+00), 400 feet upstream and 400 feet downstream of the ice bridge centerline. Again, the deepest portion of this low-flow channel was identified prior to investigations. Water depth, ice thickness, freeboard, salinity, conductivity, temperature and water velocities were measured at the three sampling locations. Results of Main Channel and East Channel investigations are tabulated in the attached spreadsheets.

In-situ water quality parameters were recorded using a YSI-30 meter (conductivity, salinity and temperature) and a Marsh McBirney Model 2000 (water velocity). Dissolved oxygen was not measured during this monitoring event due to equipment failure of the primary DO meter (Hach HQ10). The backup DO meter (YSI-556) was not used for DO because sampling was conducted via snowmachine due to ice access limitations and the ambient temperature precluded the use of DO membrane technology.

Specific conductivity above 500 uS/cm was encountered in each of the six Main Channel monitoring locations with values above this limit ranging from 503 to 10,300 uS/cm. East Channel concentrations were below 500 uS/cm in each of the three holes.



LEGEND	
	SAMPLE LOCATION
	ICE THICKNESS
	ICE BRIDGE SHOULDER
	SHOULDER



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2005/2006 ICE
 BRIDGE MONITORING
 LOCATIONS

DATE: 11/23/05	PROJECT: 107341
DRAWN: WAP	FILE: ICE BRIDGE MONITORING SITES
CHECKED: MTA	SCALE: 1" = 1000'

1-1
 (SHEET 1 OF 1)

Project Trip Report

Baker

Project Name: Colville River Ice Bridge Monitoring	Date of Trip: December 6 and 7, 2005
Project Code: 107634	Submitted by: Mike Alexander, PE

Weather: Ambient Temperature ranged -20° to -32° F with wind 25-35 mph (12/6/2005)
Ambient Temperature -9° F with wind 20-25 mph (12/7/2005)

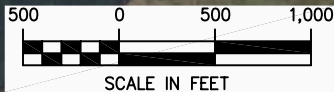
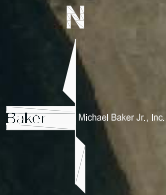
Mr. Alexander arrived at Alpine on Monday December 5, 2005 at 6:00 PM. Upon arrival, he met with Don Bruce of LCMF, and coordinated the procedures that were going to be followed at the ice bridge monitoring site. The purpose of the trip was to conduct additional seasonal monitoring of the Colville River Ice Bridge in the Main Channel, establish new sites in the low-flow East Channel upstream and downstream and conduct monitoring at these locations.

At 6:00 AM on December 6, LCMF conducted their daily health and safety meeting, which was attended by Mr. Alexander. At 7:30 AM, equipment was assembled, calibrated and loaded into the Haggland. Mr. Mike Rourick of LCMF drove Mr. Alexander to the ice bridge-monitoring site leaving Alpine at 8:30 AM and arriving at the ice bridge about 9:50 AM. Ice thickness did not allow access to the ice with the Haggland, so all sampling was completed via snow machine transportation. The approximate deepest location at the east bank was determined at 800 and 1200-feet downstream and 800-feet upstream of the bridge centerline. Water depth, ice thickness, freeboard, salinity, conductivity, temperature and water velocities were measured at these sampling locations as well as 400-feet upstream and downstream. At 4:30 sampling activities were stopped due to low temperatures, blowing snow and equipment limitations.

At 6:00 AM on December 7, LCMF conducted their daily health and safety meeting, which was attended by Mr. Alexander. At 7:30 AM, equipment was assembled, calibrated and loaded into the Haggland. Mr. Mike Rourick of LCMF drove Mr. Alexander to the ice bridge-monitoring site leaving Alpine at 8:30 AM. The approximate deepest location at the east bank was determined at 1200-feet upstream. Water depth, ice thickness, freeboard, salinity, conductivity, and temperature were measured at 400, 800 and 1200-feet upstream and downstream sites in the main channel. At 3:00 all sampling was completed. Water velocities were not recorded due to difficulties in auguring larger holes and due to problems maintaining meter ice-free.

In-situ water quality parameters were recorded using a YSI-30 meter (conductivity, salinity and temperature) and a Marsh McBirney Model 2000 (water velocity). Dissolved Oxygen was recorded using a Hach HQ10 meter. Concentrations of conductivity were recorded above 500 uS/cm in each of the six Main Channel monitoring locations with values above this limit ranging from 557 to 10,530 uS/cm. East Channel concentrations were below 500 uS/cm in five of the six holes. The next monitoring event will be scheduled as outlined in DNR permit FH 04-III-0135.





LEGEND	
	SAMPLE LOCATION
	ICE BRIDGE CENTERLINE
	CENTERLINE

ConocoPhillips
Alaska, Inc.

DATE: 12/12/05	PROJECT: 107341
DRAWN: WAP	FILE: 12/12/05 ICE BRIDGE MONITORING
CHECKED: MTA	SCALE: 1" = 1000'



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DECEMBER 6 & 7, 2005
ICE BRIDGE MONITORING
LOCATIONS

1-1

(SHEET 1 OF 1)

Project Trip Report

Project Name: Colville River Ice Bridge Monitoring	Date of Trip: December 19, 2005
Project Code: 107341	Submitted by: Mark McBroom, EIT

Weather: Temperature 8° F, 10-15 mph wind, minor snowfall in AM.

Mr. McBroom arrived at Alpine on Sunday, December 18, 2005 at 4:30 PM. Upon arrival, he met up with Gene Diamond and Chris Zeimet of LCMF, and coordinated the procedures that were going to be followed at the ice bridge monitoring site. The purpose of the trip was to conduct scheduled monitoring of the Colville River Ice Bridge.

At 6:00 AM on December 19, LCMF conducted their weekly health and safety meeting which was attended by Mr. McBroom. At 7:30, equipment was assembled, calibrated and loaded into the Haggulund. Mr. Chris Zeimet of LCMF drove Mr. McBroom to the ice bridge monitoring site leaving Alpine at 8:30 AM. Water depth, ice thickness, freeboard, salinity, conductivity, temperature, dissolved oxygen and water velocities were measured at predetermined sampling locations. Locations included sites 400, 800 and 1200 feet upstream and downstream of the ice bridge centerline. Results are tabulated in the attached spreadsheets.

In-situ water quality parameters were recorded using a YSI-30 meter (conductivity, salinity and temperature). Dissolved oxygen was only measured at two locations (1200 and 800 feet downstream) due to equipment failure of the primary DO meter (Hach HQ10). Water velocities were measured at one location (400 feet downstream) to determine the presence of flow using a Marsh McBirney Model 2000. All measurements were made from below the ice surface to the river bottom at one-foot intervals. Water chemistry meters were calibrated prior to the trip by TTT Environmental. The YSI-30 was again calibrated on the morning of November 19 by Mr. McBroom.

A representative water sample was collected at 400 feet downstream, at a depth of 0 feet below water surface, to determine the correction coefficient necessary for specific conductance calculations. The resulting correction coefficient for a reference temperature of 25° C was determined to be 0.0196 (Standard Methods suggests a value of 0.0191 for most environmental water samples). The resulting specific conductance values were calculated and are presented in the attached spreadsheets.

Mr. McBroom and Mr. Zeimet returned to Alpine at 5:30 PM. At 10:30 AM on Tuesday, December 20, Mr. McBroom departed Alpine for Anchorage, arriving at 1:30 PM.

Concentrations of conductivity were recorded above 500 $\mu\text{s}/\text{cm}$ in each of the six monitoring locations at or below seven feet of depth, with values above this limit ranging from 640 to 18,160 $\mu\text{s}/\text{cm}$. The next monitoring event will be scheduled as outlined in DNR permit FH 04-III-0135.





DATE: 12/19/05	PROJECT: 107341
DRAWN: WAP	FILE: 12/19/05 ICE BRIDGE MONITORING
CHECKED: MDM	SCALE: 1" = 1000'



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LEGEND	
	SAMPLE LOCATION
	ICE BRIDGE CENTERLINE
	CENTERLINE

DECEMBER 19, 2005
ICE BRIDGE MONITORING
LOCATIONS
1-1
(SHEET 1 OF 1)

Project Trip Report

Project Name: Colville River Ice Bridge Monitoring	Date of Trip: January 4, 2006
Project Code: 107341	Submitted by: Mark McBroom, EIT

Weather: Temperature -16° F, 10-15 mph wind

Mr. McBroom arrived at Alpine on Tuesday, January 3, 2005 at 6:25 PM. Upon arrival, he met up with Don Bruce and Mike Rourick of LCMF, and coordinated the procedures that were going to be followed at the ice bridge monitoring site. The purpose of the trip was to conduct scheduled monitoring of the Colville River Ice Bridge.

At 6:00 AM on January 4, LCMF conducted their weekly health and safety meeting which was attended by Mr. McBroom. At 7:30, equipment was assembled, calibrated and loaded into the Hagglund. Mr. Rourick of LCMF drove Mr. McBroom to the ice bridge monitoring site leaving Alpine at 8:30 AM. Water depth, ice thickness, freeboard, salinity, conductivity, temperature, dissolved oxygen and water velocities were measured at predetermined sampling locations. Locations included sites 400, 800 and 1200 feet upstream and downstream of the ice bridge centerline. Results are tabulated in the attached spreadsheets.

In-situ water quality parameters were recorded using a YSI-30 meter (conductivity, salinity and temperature) and Hach HQ10 meter (dissolved oxygen). Water velocities were measured at one location (400 feet downstream) to determine the presence of flow using a Marsh McBirney Model 2000. All measurements were made from below the ice surface to the river bottom at one-foot intervals. Water chemistry meters were calibrated prior to the trip by TTT Environmental. The YSI-30 was again calibrated on the morning of January 4 by Mr. McBroom.

Mr. McBroom and Mr. Rourick returned to Alpine at 3:30 PM. At 8:00 AM on Thursday, January 5, Mr. McBroom departed Alpine for Anchorage, arriving at 11:30 AM.

Concentrations of conductivity were recorded above 500 $\mu\text{s}/\text{cm}$ in each of the six monitoring locations at or below six feet of depth, with values above this limit ranging from 15,720 to 16,880 $\mu\text{s}/\text{cm}$. The next monitoring event will be scheduled as outlined in DNR permit FH 04-III-0135.

Project Trip Report

Project Name: Colville River Ice Bridge Monitoring	Date of Trip: January 17, 2006
Project Code: 107341	Submitted by: Mark McBroom, EIT

Weather: Temperature -5° F, 10-15 mph wind

Mr. McBroom arrived at Alpine on Monday, January 16, 2005 at 6:25 PM. Upon arrival, he met up with Gene Diamond and Chris Zeimet of LCMF, and coordinated the procedures that were going to be followed at the ice bridge monitoring site. The purpose of the trip was to conduct scheduled monitoring of the Colville River Ice Bridge.

At 6:00 AM on January 17, LCMF conducted their weekly health and safety meeting which was attended by Mr. McBroom. At 7:30, equipment was assembled, calibrated and loaded into the Hagglund. Mr. Zeimet of LCMF drove Mr. McBroom to the ice bridge monitoring site leaving Alpine at 8:30 AM. Water depth, ice thickness, freeboard, salinity, conductivity, temperature, dissolved oxygen and water velocities were measured at predetermined sampling locations. Locations included sites 400, 800 and 1200 feet upstream and downstream of the ice bridge centerline. Results are tabulated in the attached spreadsheets.

In-situ water quality parameters were recorded using a YSI-30 meter (conductivity, salinity and temperature) and Hach HQ10 meter (dissolved oxygen). Water velocities were measured at one location (1200 feet upstream) to determine the presence of flow using a Marsh McBirney Model 2000. All measurements were made from below the ice surface to the river bottom at one-foot intervals. Water chemistry meters were calibrated prior to the trip by TTT Environmental. The YSI-30 was again calibrated on the morning of January 17 by Mr. McBroom.

Mr. McBroom and Mr. Zeimet returned to Alpine at 4:00 PM. At 8:00 AM on Wednesday, January 18, Mr. McBroom departed Alpine for Anchorage, arriving at 11:45 AM.

Concentrations of conductivity were recorded above 500 $\mu\text{s}/\text{cm}$ in each of the six monitoring locations at or below three feet of depth, with values above this limit ranging from 640 to 18,160 $\mu\text{s}/\text{cm}$. The next monitoring event will be scheduled as outlined in DNR permit FH 04-III-0135.

Project Trip Report

Project Name: Colville River Ice Bridge Monitoring	Date of Trip: January 31, 2006
Project Code: 107341	Submitted by: Mark McBroom, EIT

Weather: Temperature -38° to -46° F, 10-15 mph wind

Mr. Wilden Paulino arrived at Alpine on Tuesday, January 31, 2006 at 10:15 AM. Upon arrival, he met up with Don Bruce and AJ Griffin of LCMF, and coordinated the procedures that were going to be followed at the ice bridge monitoring site. The purpose of the trip was to conduct scheduled monitoring of the Colville River Ice Bridge.

At 10:50, equipment was assembled, calibrated and loaded into the Hagglund. Mr. Griffin of LCMF drove Mr. Paulino to the ice bridge monitoring site leaving Alpine at 12:15 PM. Water depth, ice thickness, freeboard, salinity, conductivity, temperature, dissolved oxygen and water velocities were measured at predetermined sampling locations. Locations included sites 400, 800 and 1200 feet upstream and downstream of the ice bridge centerline. Results are tabulated in the attached spreadsheets.

In-situ water quality parameters were recorded using a YSI-30 meter (conductivity, salinity, and temperature) and Hach HQ10 meter (dissolved oxygen). Water velocities were measured at one location (1200 feet upstream) to determine the presence of flow using a Marsh McBirney Model 2000. All measurements were made from below the ice surface to the river bottom at one-foot intervals. Water chemistry meters were calibrated prior to the trip by TTT Environmental. The YSI-30 was again calibrated on the morning of January 31 by Mr. Paulino.

Mr. Paulino and Mr. Griffin returned to Alpine at 6:00 PM. At 8:00 AM on Wednesday, February 1, Mr. Paulino departed Alpine for Anchorage, arriving at 11:45 AM.

Concentrations of conductivity were recorded above 500 $\mu\text{s}/\text{cm}$ in each of the six monitoring locations at or below three feet of depth, with values above this limit ranging from 1476 to 18,200 $\mu\text{s}/\text{cm}$. The next monitoring event will be scheduled as outlined in DNR permit FH 04-III-0135.



Project Trip Report



Project Name: Colville River Ice Bridge Monitoring	Date of Trip: February 14, 2006
Project Code: 107341	Submitted by: Mark McBroom, EIT

Weather: Temperature 21° F, 10-15 mph wind

Mr. McBroom arrived at Alpine on Monday, February 13, 2006 at 5:20 PM. Upon arrival, he met up with Gene Diamond and Chris Zeimet of LCMF, and coordinated the procedures that were going to be followed at the ice bridge monitoring site. The purpose of the trip was to conduct scheduled monitoring of the Colville River Ice Bridge.

At 6:00 AM on February 14, LCMF conducted their weekly health and safety meeting which was attended by Mr. McBroom. At 8:00, equipment was assembled, calibrated and loaded into the Haggulund. Mr. Chris Zeimet of LCMF drove Mr. McBroom to the ice bridge monitoring site leaving Alpine at 8:15 AM. Water depth, ice thickness, freeboard, salinity, conductivity, temperature, and water velocities were measured at predetermined sampling locations. Locations included sites 400, 800 and 1200 feet upstream and downstream of the ice bridge centerline. Results are tabulated in the attached spreadsheets.

In-situ water quality parameters were recorded using a YSI-30 meter (conductivity, salinity and temperature). Dissolved oxygen was not measured due to equipment failure of the primary DO meter (Hach HQ10). Water velocities were measured at one location (1200 feet upstream) to determine the presence of flow using a Marsh McBirney Model 2000. All measurements were made from below the ice surface to the river bottom at one-foot intervals. Water chemistry meters were calibrated prior to the trip by TTT Environmental. The YSI-30 was again calibrated on the morning of February 14 by Mr. McBroom.

Mr. McBroom and Mr. Zeimet returned to Alpine at 4:00 PM. At 8:00 AM on Wednesday, February 15, Mr. McBroom departed Alpine for Anchorage, arriving at 11:25 AM.

Concentrations of conductivity were recorded above 500 $\mu\text{S}/\text{cm}$ in each of the six monitoring locations at or below four feet of depth. The values above this limit ranged from 536 to 18,390 $\mu\text{S}/\text{cm}$. The next monitoring event will be scheduled as outlined in DNR permit FH 04-III-0135.



Project Trip Report

Baker

Project Name: Colville River Ice Bridge Monitoring	Date of Trip: February 28, 2006
Project Code: 107341	Submitted by: Michael T. Alexander, PE

Weather: Temperature -32° F, 10-15 mph wind

Mr. Paulino arrived at Alpine on Monday, February 27, 2006 at 5:55 PM. Upon arrival, he met up with Don Bruce of LCMF, and coordinated the procedures that were going to be followed at the ice bridge monitoring site. The purpose of the trip was to conduct scheduled monitoring of the Colville River Ice Bridge.

At 6:00 AM on February 28, LCMF conducted their weekly health and safety meeting which was attended by Mr. Paulino. At 7:30 AM, equipment was assembled, calibrated and loaded into the Haggulund. Mr. Sam Ahtuanguak of LCMF drove Mr. Paulino to the ice bridge monitoring site leaving Alpine at 8:05 AM. Water depth, ice thickness, freeboard, salinity, conductivity, temperature, and water velocities were measured at predetermined sampling locations. Locations included sites 400, 800 and 1200 feet upstream and downstream of the ice bridge centerline. Results are tabulated in the attached spreadsheets.

In-situ water quality parameters were recorded using a YSI-30 meter (conductivity, salinity and temperature). Dissolved oxygen was not measured due to equipment failure of the primary DO meter (Hach HQ10). Water velocities were measured at one location (1200 feet upstream) to determine the presence of flow using a Marsh McBirney Model 2000. All measurements were made from below the ice surface to the river bottom at one-foot intervals. Water chemistry meters were calibrated prior to the trip by TTT Environmental. The YSI-30 was again calibrated on the morning of February 28 by Mr. Paulino.

Mr. Paulino and Mr. Ahtuanguak returned to Alpine at 1:30 PM. Mr. Paulino departed Alpine At 8:00 AM on Wednesday, March 1.

Concentrations of conductivity were recorded above 500 $\mu\text{S}/\text{cm}$ in each of the six monitoring locations. The values above this limit ranged from 2144 to 19,500 $\mu\text{S}/\text{cm}$. The next monitoring event will be scheduled as outlined in DNR permit FH 04-III-0135.



Project Trip Report

Project Name: Colville River Ice Bridge Monitoring	Date of Trip: April 4, 2006
Project Code: 107341	Submitted by: Michael T. Alexander, PE

Weather: Temperature ranged 10 to -10° F, calm wind, clear and sunny

Mr. Alexander arrived at Alpine on Monday, April 3, 2006 at 5:45 PM. Upon arrival, he met up with Gene Diamond of LCMF, and coordinated the procedures that were going to be followed at the ice bridge monitoring site. The purpose of the trip was to conduct scheduled monitoring of the Colville River Ice Bridge.

At 6:00 AM on April 4, LCMF conducted their daily health and safety meeting which was attended by Mr. Alexander. At 7:00 AM, equipment was assembled, calibrated and loaded into the Haggulund. Mr. AJ Griffin of LCMF drove Mr. Alexander to the ice bridge monitoring site leaving Alpine at 8:45 AM. Water depth, ice thickness, freeboard, salinity, conductivity, temperature, dissolved oxygen and water velocities were measured at predetermined sampling locations. Locations included sites 400, 800 and 1200 feet upstream and downstream of the ice bridge centerline. Results are tabulated in the attached spreadsheets.

In-situ water quality parameters were recorded using a YSI-30 meter (conductivity, salinity and temperature). Dissolved oxygen was measured using a Hach HQ10 meter. Water velocities were measured at one location (1200 feet downstream) to determine the presence of flow using a Marsh McBirney Model 2000. All measurements were made from below the ice surface to the river bottom at two-foot intervals. Water chemistry meters were calibrated prior to the trip by TTT Environmental. The YSI-30 was again calibrated on the morning of April 4 by Mr. Alexander.

Mr. Alexander and Mr. Griffin returned to Alpine at 6:15 PM. Mr. Alexander departed Alpine at 7:30 AM on Wednesday, April 5.

Conductivity was measured above 500 $\mu\text{S}/\text{cm}$ in each of the six monitoring locations. The values above this limit ranged from 6,210 to 19,200 $\mu\text{S}/\text{cm}$.