

ALASKA DEPARTMENT OF FISH AND GAME SUSITNA HYDRO AQUATIC STUDIES

REPORT NO. 3 Part I, Chapter 2

AQUATIC HABITAT AND INSTREAM FLOW INVESTIGATIONS (MAY-OCTOBER 1983)



ALASKA DEPARTMENT OF FISH AND GAME SUSITNA HYDRO AQUATIC STUDIES REPORT SERIES



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REPORT NO. 3 Part I, Chapter 2

AQUATIC HABITAT AND INSTREAM FLOW INVESTIGATIONS (MAY-OCTOBER 1983)

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#### FORWARD

Part I, "Basin-wide Hydrologic and Water Quality Investigations", is a compilation of the physical and chemical data collected by the ADF&G Su Hydro Aquatic Studies team during the FY 84 open water field season (May-October, 1983). In certain cases, the the 1983 data bases have been combined with the ADF&G 1981 and 1982 data bases, along with other data bases from other subcontractors (R&M Consultants and AEIDC) in order to present a most up to complete listing of currently available data. These data are arranged by data type for ease of use by user agencies.

Part I is divided into five chapters:

Chapter	1	Stage/discharge investigations of the Susitna River basin.
Chapter	2	Channel geometry investigations of the Susicna River basin.
Chapter	3	Continuous water temperature investigations of the Susitna River basin.
Chapter	4	Water quality ivestigations of the Susitna River basin.
Chapter	5	Dissolved gas concentration in estigations of

the Susitna River basin.

April 21, 1984

#### GLOSSARY FOR PART I OF REPORT # 3

Backwater Area - A body or accumulation of water with little or no velocity resulting from a hydraulic (e.g. mainstem discharge) or physical (e.g. beaver dam) barrier which occurs at the mouth of or within a side channel or slough.

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- Berm The ledge or shelf at the head of a side slough or side channel that separates the side slough or channel from the mainstem Susitna River or other side channels.
- Breaching Any of the three conditions of overtopping of the head of a side channel or side slough (see also initial, intermediate, and controlling breaching discharges).
- Controlling Breaching Discharge The breaching condition in which mainstem discharges at Gold Creek are equal to or greater than the mainstem discharge required to directly govern the hydraulic characteristics within a side slough or side channel. This condition can be denoted as equalling the segment of the flow rating curve beginning with the point of inflection and beyond.
- Cross Section Profile A profile describing the cross sectional geometry of a channel.
- Datapod An instrument used to continuously measure and record various enviornmental variables e.g. air or water temperature, stage, and dissolved gas concentration (refer to Chapters 1, 2 and 5).

Discharge - Water volume passing a fixed location at a specific point in time. The term specifically refers to the moving water in the mainstem habitat.

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- DSM Data Storage Module used in the datapod system to store data (refer to Chapters 1 and 2).
- Flow Water volume passing a specific location at a specific point in time. The term specifically refers to moving water in side channel, side slough, upland slough, tributary mouth, and tributary habitats.
- Gaging Station A station at a site which has been established for monitoring stage, flow and/or discharge.
- Gradient Rate of change in vertical elevation per unit horizontal distance.

Head - The upstream confluence or point of origin of a lotic water body.

- Inflection Point The point on a rating curve at which the line describing the data changes slope.
- Initial Breaching Discharge The mainstem discharge at Gold Creek which represents the initial point when mainstem water begins to enter the upstream head (berm) of a side slough or channel.

Intermediate Breaching Discharge - The range of mainstem discharges at Gold Creek representative of the conditions between the Initial and Controlling Breaching Discharges. This range occurs from immediately after mainstem surface water begins to over op the upstream head (berm) of a side slough or side channel up to the point when the mainstem discharge begins to govern the hydraulic characteristics of the site.

Mainstem Habitat - Consists of those portions of the Susitna River that normally convey water throughout the year. Both single and multiple channel reaches are included in this habitat category. Groundwater and tributary inflow appear to be inconsequential contributors to the overall characteristics of mainstem habitat. Mainstem habitat is typically characterized by high water velocities and well armored streambeds. Substrates generally consist of boulder and cobble size materials with interstitial spaces filled with a grout-like mixture of small gravels and glacial sands. Suspended sediment concentrations and turbidity are high during summer due to the influence of glacial melt-water. Discharges recede in early fall and the mainstem clears appreciably in October. An ice cover forms on the river in late November or December.

Mean Daily Discharge - The computed mean discharge per 24 hour period for a gaging station. All USGS discharge data are in this format.

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- Monitoring Station A station set up for the collection of a particular data base.
- Mouth The downstream confluence of one or more water bodies with another water body.

Overtopping - See breaching.

- Peripheral Habitats Aquatic habitats peripheral to the mainstem Susitna River habitat (e.g. side channel, side slough, upland slough, tributary mouth and/or tributary habitats.
- Pool A portion of a water course that is relatively deep and slow-moving in comparison to the rest of the water course.
- Projec. Datum A series of elevations tied to sea level that are used by project personnel to tie relative data bases together.
- Rating Curve A curve that is constructed from data representing two dependent variables (e.g. stage, flow or discharge data) that describes the relationship between the two variables at a site.
- Riffle A portion of a water course that is relatively shallow and fast-running in comparison to the rest of the water course.

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Side Channel Habitat - Consists of those portions of the Susitna River that normally convey water during the open water season but become appreciably dewatered during periods of low mainstem discharge. Side channel habitat may exist either in well defined overflow channels, or in poorly defined water courses flowing through partially submerged gravel bars and islands along the margins of the mainstem river. Side channel streambed elevations are typically lower than the mean monthly water surface elevations of the mainstem Susitna River observed during June, July and August. Side channel habitats are characterized by shallower depths, lower velocities and smaller streambed materials than the adjacent habitat of the mainstem river.

Side Slough Habitat - is located in overflow channels between

the edge of the floodplain and the mainstem and side channels of the Susitna River. It is usually separated from the mainstem and/or side channels by well vegetated bars. An exposed alluvial berm often separates the head of the slough from mainstem discharge or side channel flows. The controlling streambed/bank elevations at the upstream end of the side sloughs are slightly less than the water surface elevations of the mean monthly discharges of the mainstem Susitna River observed for June, July, and August. At intermediate and low-discharge periods, the side sloughs convey clear water from small tributaries and/or upwelling groundwater. These clear water inflows are essential contributors to the existence of this habitat type. The water surface elevation of the Susitna River generally causes a backwater to extend well up into the slough from its lower end. Even though this substantial

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backwater exists, the sloughs function hydraulically very much like small stream systems and several hundred feet of the slough channel often conveys water independent of mainstem backwater effects. At high discharges the water surface elevations of the mainstem river is sufficient to overtop the upper end of the slough. Surface water temperatures in the side sloughs during summer months are principally a function of air termerature, solar radiation, and the temperature of the local runoff.

Staff Gage - A device used to instantaneously monitor stage at a site.

- Stage A measure of water depth which can be converted to water, surface elevation when surveyed to a benchmark at a site. It can be converted to true water surface elevation if it is tied into project datum.
- Thalweg Profile A longitudinal profile that describes the streambed elevation of the deepest portion or middle of mainstem, tributary, slough or other riverine habitats.
- Tributary Habitat consists of the full complement of hydraulic and morphologic conditions that occur in the tributaries. Their seasonal flow, sediment, and thermal regimes reflect the integration of the hydrology, geology, and climate of the tributary drainage. The physical attributes of tributary habitat are not dependent on mainstem conditions:

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- Tributary Mouth Habitat extends from the uppermost point in the tributary influenced by mainstem Susitna River or slough backwater effects to the downstream extent of the tributary plume which extends into the mainstem Susitna River or slough.
- Turbid The condition of water quality at a site when water clarity is decreased by inorganic and/or organic suspended materials. Turbidity levels often exceed 50 NTU's.
- Upland Slough Habitat differs from side slough habitat in that the upstream end of the slough does not interconnect with the surface waters of the mainstem Susitna River or its side channels even at high mainstem discharges. These sloughs are characterized by the presence of beaver dams and an accumulation of silt covering the substrate resulting from the absence of mainstem scouring discharges.

Water Surface Elevation - The elevation of the water surface.

WSEL - See water surface elevation.

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## Channel Geometry Investigations of the Susitna River Basin

1984 Report No. 3, Chapter 2

by: Tim Quane, Isaac Queral, Don Seagren, and Tommy Withrow

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## ABSTRACT

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## 1.0 INTRODUCTION AND OBJECTIVES

#### 1.1 Introduction

The Alaska Department of Fish and Game (ADF&G) Su Hydro Aquatic Feasibility Study Team has collected channel geometry data since 1981 in association with stage/discharge and fish habitat studies. The primary emphasis of these studies has been placed on defining the hydraulic conditions present within selected side slough habitats in the Talkeetna to Devil Canyon reach of the Susitna River and determining how these hydraulic conditions influence fish habitat availability and utilization within these habitats. Results of these investigations (ADF&G 1981, 1982) have been used to determine the mainstem flows required to breach the heads of selected side sloughs, access conditions present at the mouths and passage conditions within selected side sloughs as a function of mainstem flow, and spawning habitat availability and utilization within selected side sloughs.

## 1.2 Objectives

The FY84 open water field season (May 1 - October 15, 1983) channel geometry field data collection program was designed to expand the collection of channel geometry data to an increased number of sites and habitats than were evaluated during 1982. The program was divided into two segments: thalweg profile and cross section profile studies.

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## 1.2.1 Thalweg Profile Study

The objectives of the 1983 open water field season thalweg data collection program were to:

- Evaluate the influence that mainstem discharge has on access into and passage within selected upland and side slough, side channel, and tributary mouth habitats; and,
- Illustrate the influence that mainstem discharge has on the water surface elevation and formation of backwater within selected upland and side slough, side channel, and tributary mouth habitats.

#### 1.2.2 Cross Section Profile Studies

The objectives of the 1983 open water field season cross section data collection program were to:

- Evaluate the influence of mainstem discharge on specific access and passage conditions that exist at specific locations within selected side slough and side channel habitats; and,
- Assist in determining the mainstem flows required to breach the head portions of selected side slough and side channel habitats.

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2.0 METHODS

## 2.1 Site Selection

#### 2.1.1 Thalweg Surveys

Locations at which thalweg data were collected during the 1983 open water field season are presented in Table 2-1, Figure 2-1. Sites were selected, based on consultations with project biologists and the project engineer to meet the outlined objectives, which were to:

- Evaluate the influence that mainstem discharge has on access conditions into and passage conditions within selected upland and side slough, side channel, and tributary mouth habitats; and,
- Illustrate the influence that mainstem discharge has on the water surface elevation and formation of backwater in selected upland and side slough, side channel, and tributary mouth habitats.

## 2.1.2 Cross Section Surveys

Locations at which cross section data were collected during the 1983 open water field season are presented in Table 2-1, Figure 2-1. Sites were selected based on consultations with project biologists and the

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Site	River Mile
Sloughs	
Whiskers Creek Slough 6A 8A 9 9A 10 11 16 16B 19 20 21 22	101.2 112.3 125.3 128.3 133.2 133.8 135.3 137.7 137.9 139.8 140.1 141.8 144.2
Side Channels	
Mainstem II Side Channel Side Channel 10 Upper Side Channel 11 Side Channel 21	114.5 133.8 136.0 140.7

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Table 2-1. Slough (upland and side), and side channel sites which thalweg and cross section data were collected during 1983.

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Figure 2-1 Locations at which channel geometry data were collected during the 1983 open water field season.

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project engineer to meet the outlined objectives, which were to:

- Evaluate the influence of mainstem discharge on specific access and passage conditions that exist at specified locations within selected upland and side slough, side channel, and tributary mouth habitats; and
- Assist in determining the mainstem flows required to breach the heads of selected side sloughs and side channels.

At each upland and side slough and side channel study site, data was collected for the development of cross-sections at:

- the stage monitoring station located at the mouth of the study site;
  - the stage and discharge monitoring station located upstream of the mouth within the free-flowing portion of the study site;
  - the stage monitoring station located at the head of the study site; and
  - critical passage reaches within the study site.

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#### 2.2 Field Data Collection

#### 2.2.1 Thalweg Field Data Collection Procedures

Survey data were collected for the development of thalweg profiles within each study site beginning at the mouth or head of the study site and progressing the entire length of the study site noting points of significant morphological features (such as tops and bottoms of riffles, and pools) as thalweg points. Information collected at each thalweg point included streambed elevation, water surface elevation, substrate, and distance from last thalweg point. Specific techniques and procedure incorporated in the collection of survey data for the development of thalweg profiles are presented in the FY84 ADF&G Procedures Manual (ADF&G 1984).

## 2,2.2 Cross Section Field Data Collection Procedures

Survey data were collected for the development of cross section profiles at selected transects within study sites. Information collected on cross sections included streambed elevations, water surface elevations, and distance from bank headpin at selected cross section points. Specific techniques and procedures incorporated in the collection of survey data for the development of cross section profiles are presented in the ADF&G FY84 Procedures Manual, (ADF&G 1984).

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#### 2.3 Analytical Approach

## 2.3.1 Thalweg Studies

Thalweg survey data consists of a series of elevations representing the deepest part of a stream channel (with the water surface elevation determined for each thalweg point) transversing the entire length of the study site, and distance measurements from the starting point to each elevation obtained from beginning to end. Thalweg survey data are plotted as thalweg elevation on the y axis and the distance measurement on the x axis. Water surface elevations obtained at each thalweg point are also graphed on the y axis. The water surface elevations plotted on the thalweg profile cover the full range of water surface elevations occurring in the study area for 1983. These thalweg profiles are used to delineate any potential access problems in the study site as determined by the depth of water at various mainstem discharges. This analysis, however, does not account for the potential influence of base flow conditions (i.e. groundwater, surface water runoff) occurring within the study site or the indirect relationship between mainstem discharge and base flow conditions occurring in the study site during an unbreached condition. At present, the analysis of local base flow conditions in the study site and corresponding mainstem discharge levels and these influences on the thalweg analysis is based on the professional judgement of project biologists and our consulting hydraulic engineer.

A reach gradient is determined from the survey data by dividing the difference in the elevation between the head and mouth by the length of

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the thalweg survey. If the gradient for the thalweg profile changes dramatically the thalweg profile is divided into reach gredients which are determined for a selected series of thalweg points. Substrate types for the side channel are also super-imposed beneath the thalweg profile to illustrate the general substrate available.

#### 2.3.2 Cross Section Studies

Cross section survey data consists of a series of elevations perpendicular to the stream channel, beginning from the left bank looking upstream and concluding on the right bank with every major change in topography included. These data were plotted with elevation as the y axis and distance from left bank headpin as the x axis to illustrate the cross section profile of the stream at a specific location. Superimposed on the cross section profile are a series of water surface elevations plotted parallel to the x axis representing the range of water surface elevations observed during the FY84 open water field season. For cross sections located at the head of a side slough or side channel, a point of zero flow (PZF, the elevation at which mainstem flow just breaches the head portion of the study site) was also determined.

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## 3.0 RESULTS

Survey data for the development of thalweg and cross section profiles were obtained within selected side channel, side slough, upland slough, and tributary habitats in the Talkeetna to Devil Canyon reach of the Susitna River. These data are presented below by habitat type.

#### 3.1 Mainstem Habitats

Lower river cross section data collected by R&M Consultants (R&M, 1982) were used to construct a thalweg profile for the Susitna River from Talkeetna to Devil Canyon (Figure 2-2). Superimposed on this thalweg profile are the locations of the major side channels, side and upland sloughs, and tributaries located in this reach of the river.

### 3.2 Side Channel Habitats

Survey data were obtained within two side channels for the development of thalweg profiles and five side channels for the development of cross section profiles in the Talkeetna to Devil Canyon reach of the Susitna River. These data are presented below by site.

## 3.2.1 Mainstem II Side Channel (RM 114.4)

#### 3.2.1.1 Site Description

Mainstem II Side Channel (Figure 2-1) is located on the east bank of the Susitna River at RM 114.4. It is approximately one mile in length and



Figure 2-2 Thalweg profile of the Talkeetna to Devil Canyon reach of the Susitna River showing locations of selected study sites.

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is separated from the mainstem by two relatively large vegetated islands. Approximately 0.3 miles upstream of the mouth, the channel divides into two forks, a northeast (NE) fork and a northwest (NW) fork.

During the 1983 open water field season, survey data were obtained for the development of a thalweg profile and seven cross section profiles.

### 3.2.1.2 Thalweg Profile

The thalweg profile developed for the Mainstem II Side Channel is presented in Figure 2-3. The survey data used to develop the thalweg profile are presented in Appendix Tables 2-A-1 and 2-A-2.

During periods of low to high mainstem discharges, the first 1200 feet of this side channel can be characterized as an extensive backwater area. Substrates in this area predominately consist of silt and sand. The remainder of the side channel, for both the NE and NW channels, is composed of an alternating riffle/pool sequence continuing upstream to the head of the side channel. The northwest channel consists of predominately gravel/rubble substrate while the northeast channel is predominately cobble/boulder substrate.

The overall gradient of the northwest and northeast channels is 10.7 ft/mi and 12.5 ft/mi respectively, as compared with the adjacent mainstem gradient of 9.2 ft/mi.



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## 3.2.1.3 Cross Section Profiles

Data were collected for the development of cross section profiles at seven locations in Mainstem II Side Channel, each of which correspond to a staff gage location (Table 2-2). These cross section survey data are presented in Appendix Tables 1-B-1 - 1-B-7. The resultant cross section profiles developed from these survey data are presented in Figure 2-4. Superimposed on each cross section profile are water surface elevations (determined from staff gage observations found in Chapter 1; Appendix Table 1-7) and mean daily mainstem discharge at Gold Creek corresponding to the time of the staff gage observation.

### 3.2.2 Side Channel 10 Complex (RM 133.8)

## 3.2.2.1 Site Description

Side Channel 10 (Figure 2-1)is located on the west bank of the Susitna River at river mile 133.8. It primarily consists of a single channel approximately 0.4 mile in length which is separated from the mainstem by a large gravel bar. It confluences with Slough 10 approximately 100' upstream of the mouth of the slough.

Survey data were obtained for the development of a thalweg profile and six cross sectional profiles during the 1983 open water season.

# DRAFT/Page 2 5/2/84 SER10G/CGI Tables

Site	Staff <u>Gage</u>	Date Obtained	Agency
Mouth	114.4W6	9/22/83	ADF&G
Lower Backwater	114.459	9/22/83	ADF&G
Upper Backwater	114.4S7	9/22/83	ADF&G
NE Channel			
Discharge Station	114.458	7/04.83	ADF&G
NW Channel			
Discharge Station	114.455	8/06/83	ADF&G
NE Channel Head	114.4H1	9/23/83	ADF&G
NW Channel Head	114.4H3	9/24/83	ADF&G

Table 2-2. Sites within the Mainstem II Side Channel for which cross section profiles were constructed.


Figure 2-4 Cross section profiles developed for staff gage sites within Mainstem 2 Side Channel.



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## 3.2.2.2 Thalweg Profile

The thalweg profile developed for Side Channel 10 is presented in Figure 2-5. The survey data from which the thalweg profile was developed is presented in Appendix Tables 2-A-3.

During periods of moderate to high mainstem discharges, the first 900 feet of the side channel is under the influence of mainstem backwater. Substrates in this backwater area consist of a thick layer of silt/sand. The remainder of the side channel is composed of an alternating sequence of pools and riffles. The substrate in this area was found to consist of gravel/rubble and cobble/boulder.

The side channel has an overall gradient of 20.5 ft/mi as compared to the adjacent mainstem which has a gradient of 8.9 ft/mi.

## 3.2.2.3 Cross Section Profiles

Survey data for the development of cross section profiles were obtained at six locations in Side Channel 10, each of which corresponded to a staff gage location (Table 2-3). Survey data for four of the cross sections were obtained at physical habitat modeling transects and are presented in Chapter 7 of this report. Survey data for the remaining two cross sections obtained at the mouth and head of Side Channel 10 are presented in Appendix Tables 2-B-8 and 2-B-9. The cross sectional profiles constructed from these data are presented in Figure 2-6.



Figure 2-5. Streambed (thalweg) profile of Slough 10 Complex (RM 133.8).

# DRAFT/Page 3 5/2/84 SER10G/CGI Tables

Site	Staff Gage	Data Obtained	Agency
Mouth	133.8W5	7/17/83	ADF&G
ADF&G Model	133.851	1983 <sup>1</sup>	ADF&G
Transect 1 ADF&G Mode1	133.852	1983 <sup>1</sup>	ADF&G
Transect 2 ADF&G Model	133.856	1983 <sup>1</sup>	ADF&G
Transect 3 ADF&G Model	133.853	1983 <sup>1</sup>	ADF&G
Transect 4 Head	133.8H4	9/11/83	ADF&G

Table 2-3. Sites within Side Channel 10 for which cross sections were constructed.

 $^{1}\ {\rm These}\ {\rm cross}\ {\rm sections}\ {\rm are}\ {\rm presented}\ {\rm in}\ {\rm Chapter}\ 7.$ 







Figure 2-6 Cross section profiles developed for staff gage sites within Side Channel 10.

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### 3.2.3 Lower Side Channel 11 (RM 135.3)

# 3.2.3.1 Site Description

Lower Side Channel 11 (Figure 2-1) is located on the east bank of the Susitna River at river mile 134.6. It is approximately 0.7 mile in length and is separated from the mainstem by a well vegetated island. Just upstream of the confluence with Slough 11, the channel divides into two forks.

During the 1983 open water field season, survey data were only collected for the development of cross section profiles.

## 3.2.3.2 Thalweg Profile

Survey data for the development of a thalweg profile were not collected in this side channel.

## 3.2.3.3 Cross Section Profiles

Survey data for the development of cross section profiles were collected at six locations in Lower Side Channel 11, each of which corresponded to a physical habitat modeling transect (Table 2-4). These survey data and resultant cross section profiles are presented in Chapter 7 of this report.

### DRAFT/Page 5 5/2/84 SER10G/CGI Tables

Site	Staff Gage	Date Obtained	Agency
ADF&G Mode1		1983	ADF&G
ADF&G Model		1983	ADF&G
Transect 2 ADF&G Model	and the second	1983	ADF&G
Transect 3 ADF&G Model	National States	1983	ADF&G
Transect 4 ADF&G Model	i gantono te	1983	ADF&G
Transect 5	1 S	1983	ADE&G
Transect 6		1905	Abrad

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Table 2-4. Sites within Lower Side Channel 11 for which cross sections were constructed.

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## 3.2.4 Upper Side Channel 11 (RM 136.2)

## 3.2.4.1 Site Description

Upper Side Channel 11 (Figure 2-1) is located on the east bank of the Susitna River at RM 136.2. It consists of a single channel approximately 0.4 miles in length which is separated from the mainstem by a well vegetated island. The head of Slough 11 confluences with this side channel approximately 800 feet downstream of the head of the side channel.

During the 1983 open water field season, survey data were obtained for the development of a thalweg profile and six cross sectional profiles.

## 3.2.4.2 Thalweg Profile

The thalweg profile for Upper Side Channel 11 is presented in Figure 2-7. The survey data used to construct this thalweg profile are presented in Appendix Table 2-A-4.

During periods of low to high mainstem discharges, a substantial area of backwater occurs at the mouth of this side channel. Substrates in this area predominately consist of silt and sand. Above this area of backwater, a riffle/pool sequence occurs extending to the head. Cobble/boulder substrates predominate in this area with silt/sand deposits occurring in the pools.



Figure 2-7 Streambed (thalweg) profile Upper Side Channel 11 (RM 136.2).

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The overall gradient of this side channel is 23.6 ft/mi compared to the adjacent mainstem which has a gradient of 17.5 ft/mi.

## 3.2.4.3 Cross Section Profiles

Data for the development of cross section profiles were collected at six locations in Upper Side Channel 11, each of which corresponded to a staff gage location (Table 2-5). Survey data for four of the cross section profiles were obtained at physical habitat modeling transects and are presented in Chapter 7 of this report. Survey data for the remaining two cross sections, located at the mouth and head staff gage sites of Upper Side Channel 11, are presented in Appendix Tables 2-B-10 - 2-B-12. The cross section profiles developed from these cross section data presented in Figure 2-8. Superimposed on each of these cross sections are water surface elevations determined from staff gage observations (Chapter 1, Appendix Table 1-7) and the mean daily mainstem discharge at Gold Creek corresponding to the time of the staff gage observations.

For ease of presentation, the cross section profile obtained at the head of Upper Side Channel 11 has been shortened 880 feet starting at the left bank headpin. The cross section profile presented in Figure 2-8 represents that portion that is considered breached the majority of the time during the open water field season.

## DRAFT/Page 4 5/2/84 SER10G/CGI Tables

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Site	Staff <u>Gage</u>	Date Obtained	Agency	
Mouth	136.2W3	7/20/83	ADF&G	
ADF&G Model Transect 1		1983	ADF&G	
ADF&G Model Transect 2	136.254	1983	ADF&G	
ADF&G Model Transect 3	136.255	1983	ADF&G	
ADF&G Model Transect 4	136.251	1983	ADF&G	
Head	136.2H2	7/18/83	ADF&G	

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Table 2-5. Sites within Upper Side Channel 11 for which cross sections were developed.







## Figure 2-8 Cross section profiles developed for staff gage sites within Upper Side Channel 11.

### 3.2.5 Side Channel 21 (RM 140.6)

## 3.2.5.1 Site Description

Side Channel 21 is located on the east bank of the Susitna River at RM 140.6. Is is approximately 0.9 miles in length and is separated from the mainstem by a series of well vegetated islands and gravel bars. Approximately 800 feet from the head of the side channel, Side Slough 21 confluences with the side channel.

During the 1983 open water field season, survey data were obtained for the development of a thalweg profile and ten cross sectional profiles.

## 3.2.5.2 Thalweg Profile

The thalweg profile developed for Side Channel 21 is presented in Figure 2-9. The survey data used in the development of the thalweg profile are presented in ADF&G 1983e, Appendix E.

An area of backwater was observed to occur at the mouth of this side channel during periods of moderate to high mainstem discharges. Substrates in this backwater area predominately consisted of silt and sand intermixed with gravel/cobble/rubble. Above the backwater area, the side channel consists of an alternating pool/riffle sequence. Substrates in this area predominately consist of rubble/boulder with silt/sand deposits found in the pools.



Figure 2-9 Streambed (thalweg) profile of Slough 21 Complex (RM 140.6).

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The overall gradient for Side Channel 21 is 16.1 ft/mi, compared with the gradient of the adjacent mainstem of 16.7 ft/mi.

## 3.2.5.3 Cross Section Profiles

Survey data for the development of cross sectional profiles were obtained at ten locations in Side Channel 21, five of which corresponded to staff gage locations (Table 2-6). Survey data for the other five cross section profiles were obtained at physical habitat modeling transects and are presented in Chapter 7 of this report. The survey data for the five cross sections included in this report are presented in Appendix Tables 2-B-13 - 2-B-18. The cross sectional profiles developed from this survey data are presented in Figure 2-10.

The cross sectional profile for Channel A6 was shortened 100 ft for ease of presentation. Superimposed on each of these cross sectional profiles are water surface elevations determined from staff gage observations (Chapter 1, Appendix Table 1-A-7) and mean, daily mainstem discharge at Gold Creek corresponding to the time of the staff gage observations.

### 3.3 Side Slough Habitats

Survey data for the development of thalweg and cross sectional profiles were obtained at ten side slough sites located in the Talkeetna to Devil Canyon reach of the Susitna River (Figure 2-1). These data are presented below by site.

<b>e</b> .	Staff	Date	a a a a a a a a a a a a a a a a a a a
Site	Gage	Obtained	Agency
Mouth	140.6W1	9/12/83	ADF&G
ADF&G Model	tost biddo ta p	1983 <sup>1</sup>	ADF&G
Transect 1 ADF&G Model	in all	1983 <sup>1</sup>	ADF&G
Transect 2 ADF&G Model	· · · · · · · · · · · · · · · · · · ·	1983 <sup>1</sup>	ADF&G
Transect 3 ADF&G Model	140.654	1983 <sup>1</sup>	ADF&G
Transect 4 ADF&G Model	in the state of th	1983 <sup>1</sup>	ADF&G
Transect 5 Mid-Channel	140.652	9/13/83	ADF&G
Channel A5 Head	140.653	7/11/82	R&M Consultants
Upper Discharge	140.657	9/13/83	ADF&G
Channel A6 Head	140.6H5	7/11/82	R&M Consultants

Table 2-6. Sites within Side Channel 21 for which cross sections were constructed.

These cross sections are presented in Chapter 7.

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#### 3.3.1 Whiskers Creek Side Slough (RM 101.2)

## 3.3.1.1 Site Description

Whiskers Creek Side Slough (Figure 2-1) is located on the west bank of the Susitna River at RM 101.2. It consists of a single channel approximately 0.6 miles in length which is separated from the mainstem by a well vegetated island. Whiskers Creek enters on its left bank about 1200 feet from the slough mouth.

During the 1983 open water field season, survey data were obtained for the development of a thalweg profile and three cross sectional profiles.

## 3.3.1.2 Thalweg Profile

The thalweg profile developed for Whiskers Creek Side Slough is presented in Figure 2-11. The survey data used to construct this profile are presented in Appendix Table 2-A-5.

During periods of moderate to high mainstem discharges, a large area of backwater exists at the mouth of the slough. Substrates in this backwater area predominately consist of silt and sand. The remainder of the slough consists of a series of riffle/pool sequences ending with a shallow pool at the head. Substrates in this area consists predominately of gravel/rubble with silt/sand occurring in pools.

The overall gradient of the slough is 9.2 ft/mi, compared with the adjacent mainstem Susitna River gradient of 5.5 ft/mi.



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## 3.3.1.3 Cross Section Profiles

Survey data for the development of cross section profiles were collected at three locations in Whiskers Creek Side Slough, each of which corresponded to a staff gage location (Table 2-7). The survey data for these cross sections are presented in Appendix Tables 2-B-19 - 2-B-21. The cross section profiles developed from these survey data are presented in Figure 2-12. Superimposed on each of these cross sections are water surface elevations determined from staff gage observations (Chapter 1 Appendix Table 1-7) and the mean daily mainstem discharge at Gold Creek corresponding to the time of the staff gage observations.

### 3.3.2 Side Slough 8 (RM 133.6)

## 3.3.2.1 Site Description

Side Slough 8, also known as Lane Creek Slough, is located on the east bank of the Susitna River at RM 133.6. This slough is approximately 0.4 miles long and is separated from the mainstem by a vegetated island.

During the 1983 open water field season, survey data were only obtained for the development of four cross sectional profiles.

## 3.3.2.2 Thalweg Profile

Survey data for the development of a thalweg profile were not obtained in Side Slough 8.

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Site	Staff <u>Gage</u>	Date Obtained	Agency	
Mouth	101.2W1	9/11/83	ADF&G	
Discharge Station	101.253	7/03/83	ADF&G	
Head	101.6H5	7/03/83	ADF&G	

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Table 2-7. Sites within Whiskers Creek Side Slough for which cross sections were constructed.



Figure 2-12 Cross section profiles developed for staff gage sites within Whisker Creek Side Slough.

## 3.3.2.2 Cross Section Profile

Survey data for the development of cross section profiles were collected at four locations in Side Slough 8. Three of these locations corresponded to staff gage locations. The other was located immediately downstream of the mouth staff gage location (Table 2-8).

The survey data for the cross sections are presented in Appendix Tables 2-B-22 - 2-B-25. The cross section profiles developed from these survey data are presented in Figure 2-13. Superimposed on each of these cross section profiles are water surface elevations determined from staff gage observations (Chapter 1, Appendix Table 1-A-7) and the mean daily mainstem discharge (cfs) at Gold Creek corresponding to the time of the staff gage observations.

### 3.3.3 Side Slough 8A (RM 126.2)

## 3.3.3.1 Site Description

Side Slough 8A is located on the east bank of the Susitna River at river mile 125.3 (Figure 2-1). It is approximately two miles in length and is separated from the mainstem by a vegetated island. The main slough channel forks approximately 2,500 feet from the slough mouth. Two beaver dams exist in the slough, one just downstream of the fork in the slough, with the other upstream of the fork in the east channel of the slough.

## DRAFT/Page 8 5/2/84 SER10G/CGI Tables

and a second				
Site	Staff Gage	Date Obtained	Agency	
Below Mouth	No Gage	9/12/83	ADF&G	
Mouth	113.6W8	7/05/83	ADF&G	
Discharge Station	113.652	7/05/83	ADF&G	
Head	113.6H4	7/05/83	ADF&G	

Table 2-8. Sites within Slough 8 Side Slough for which cross sections were obtained.

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Survey data for the development of a thalweg profile was obtained in 1982. Survey data for the development of 17 cross sectional profiles were obtained in 1983.

## 3.3.3.2 Thalweg Profile

The thalweg profile for Side Slough 8A is presented in Figure 2-14. The survey data used to construct this thalweg profile are presented in ADF&G 1983e, Appendix E.

A large backwater area occurs at the mouth of this side slough during periods of moderate to high mainstem discharges. Substrate in the areas influenced by backwater and in the impoundments created by the beaver dams is characterized by a thick layer of silt and sand. Gravel/rubble substrates are found in the alternating sequences of pools and riffles located above and below the beaver dams. The predominate substrate in both channels above the fork is rubble/cobble with deposits of silt/sand in the pool areas.

The overall gradient of the slough is 12.5 ft/mi compared to the gradient of the adjacent mainstem of 9.2 ft/mi.

## 3.3.3.3 Cross Section Profiles

Survey data for the development of cross section profiles were collected at seventeen locations in Side Slough 8A of which six were obtained at staff gage locations and eleven at physical habitat modeling transects (Table 2-9). Survey data for the eleven cross sections obtained at



Figure 2-14 Streambed (thalweg) profile of Side Slough 8A (RM 126.2).

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physical modeling transects are presented in Chapter 7 of this report. The survey data used to construct the cross section profiles at the remaining six locations are presented in Appendix Tables 2-B-26 -2-B-31. The cross sections developed from these survey data are presented in Figure 2-15. Superimposed on each of these six cross section profiles are water surface elevations determined from staff gage observations (Chapter 1, Appendix Table 1-A-7) and mean, daily mainstem discharge (cfs) at Gold Creek corresponding to the time of the staff gage observation.

A cross section was obtained at the NE channel head gage site (125.3H7) but due to an absence of observed water surface elevations no water surface elevations were superimposed of this cross sectional plot.

## 3.3.4 Side Slough 9 (RM 128.3)

## 3.3.4.1 Site Description

Side Slough 9 is located on the east bank of the Susitna River at RM 128.3 (Figure 2-1). This slough is approximately 1.2 miles in length and is separated from the mainstem by a large vegetated island. Two small tributaries enter the slough from the east bank approximately 500 and 3,000 feet upstream from the slough mouth.

Survey data for the development of a thalweg profile were obtained during the 1982 open water field season. Survey data for the development of ten cross sectional profiles were obtained in 1983.

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Site	Staff Gage	Date Obtained	Agency
Mouth	125.3W5	10/19/83	ADF&G
Upper Backwater Lower Slough 8A Discharge Station	125.3S6 125.3S4	7/18/83 7/18/83	ADF&G ADF&G
ADF&G Model	125.3S3 N/A	7/18/83 1983	ADF&G ADF&G
Transect 1 ADF&G Model	N/A	1983	ADF&G
ADF&G Model <sup>1</sup> Transect 3	N/A	1983	ADF&G
ADF&G Model <sup>1</sup> Transect 4	N/A	1983	ADF&G
NDF&G Model <sup>1</sup> Transect 5	N/A	1983	ADF&G
Transect 6 DF&G Model	N/A	1983	ADF&G
Transect 7 DF&G Model	N/A	1983	ADF&G
Transect 8 DF&G Model	N/A	1983	ADF&G
NDF&G Model Transect 10	N/A	1983	ADF&G
DF&G Model <sup>1</sup> Transect 11	N/A	1983	ADF&G
NE Channel Head NW Channel Head	125.3H7 125.3S3	8/4/83 7/18/83	ADF&G ADF&G

Table 2-9. Sites within Side Slough 8A for which cross sections were obtained.

<sup>1</sup> These cross sections are presented in Chapter 7.

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Figure 2-15 Cross section profiles developed for staff gage sites within Side Slough 8A.



# Figure 2-15. Continued

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### 3.3.4.2 Thalweg Profile

The thalweg profile for Side Slough 9 is presented in Figure 2-16. The survey data used to develop the thalweg profile are presented in ADF&G 1983e, Appendix E.

An area of backwater occurs at the mouth of the side slough during periods of moderate to high mainstem discharges. Substrates in this area consist of a layer of silt/sand covering gravel/rubble. Above the backwater area, the channel consists of a sequence of pools and riffles. The substrate in this area predominately consists of cobble/boulder with deposits of silt/sand in the pool areas.

The overall gradient of the slough is 13.8 ft/mi compared to that of the adjacent mainstem of 8.7 ft/mi.

### 3.3.4.3 Cross Section Profiles

Survey data for the development of cross sectional profiles were collected at ten locations in Side Slough 9, three of which corresponded to staff gage locations (Table 2-10). Survey data for the remaining seven cross sections were obtained at physical habitat modeling transects and are presented in Chapter 7 of this report. Survey data used to construct the remaining cross section profiles are presented in Appendix Tables 2-B-32 - 2-B-34. The cross section profiles developed from these survey data are presented in Figure 2-17. Superimposed on each of these cross sections are water surface elevations determined from staff gage observations (Chapter 1, Appendix Table 1-7) and mean daily mainstem



Figure 2-16 Streambed (thalweg) profile of Side Slough 9 (RM 128.3).

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Figure 2-17 Cross section profiles developed for staff gage sites within Side Slough 9.

## DRAFT/Page 10 5/2/84 SER10G/CGI Tables

Site	Staff <u>Gage</u>	Date Obtained	Agency
Mouth	128.3W3	9/14/83	ADF&G
ADF&G Model	N/A <sup>1</sup>	8/3/83	ADF&G
Transect 1 ADF&G Model	N/A <sup>1</sup>	1983	ADF&G
Transect 2 ADF&G Model	N/A <sup>1</sup>	1983	ADF&G
ADF&G Model	128.351	1983	ADF&G
Transect 6 ADF&G Model	N/A <sup>1</sup>	1983	ADF&G
Transect 7 ADF&G Model	N/A <sup>1</sup>	1983	ADF&G
Transect 8 ADF&G Model	N/A <sup>1</sup>	1983	ADF&G
Transect 9 ADF&G Model	N/A <sup>1</sup>	1983	ADF&G
Transect 10 Head	128.3H3	8/23/83	ADF&G

Table 2-10. Sites within Side Slough 9 for which cross sections were obtained.

<sup>1</sup> These cross sections are presented in Chapter 7 of this report.

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discharge at Gold Creek corresponding to the time of the staff gage observation.

For ease of presentation, the cross section of the head was shortened 30 feet, with a range in elevation of 0.41 feet.

## 3.3.5 Side Slough 9A (RM 133.2)

#### 3.3.5.1 Site Description

Side Slough 9A is located on the east bank of the Susitna River at river mile 133.2 (Figure 2-1). It is separated from the mainstem by a large vegetated island.

Survey data for the development of the thalweg profile was obtained during the 1983 open water field season. No survey data were obtained for the development of cross sectional profiles in Side Slough 9A.

#### 3.3.5.2 Thalweg Profile

The thalweg profile for Side Slough 9A is presented in Figure 2-18. The survey data used to develop the thalweg profile is presented in Appendix Table 2-A-6.

An area of backwater occurs at the mouth of this side slough during periods of low to high mainstem discharges. Substrates in this area predominately consist of silt and sand. Above the backwater area, the slough is characterized by a series of pools and riffles. Although



Figure 2-18 Streambed (thalweg) profile of Side Slough 9A (RM 133.2).

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cobble/boulder is the predominate substrate type in this area of this slough, gravel/rubble substrate types are found in the riffle areas. Deposits of silt/sand also occur in pool areas.

The overall gradient for this slough is 16.1 ft/mi compared to the gradient in the adjacent mainstem of 11.1 ft/mi.

## 3.3.5.3 Cross Section Profile

Survey data for the development of cross sectional profiles were not obtained for Side Slough 9A.

## 3.3.6 Side Slough 11 (RM 135.7)

#### 3.3.6.1 Site Description

Side Slough 11 is located on the east bank of the Susitna River at river mile 135.7 (Figure 2-1). This slough is approximately 0.9 miles long and is separated from the mainstem by a vegetated island.

Survey data were obtained during the 1982 open water field season for the development of the thalweg profile. Survey data for the development of three cross sectional profiles were collected by R&M in 1982 and ADF&G in 1983.

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## 3.3.6.2 Thalweg Profile

The thalweg profile developed for Side Slough 11 is presented in Figure 2-19. The survey data used to develop this profile are presented in ADF&G 1983, Volume 4, Appendix E.

A backwater area occurs at the mouth of the slough during periods of moderate to high mainstem discharge. The predominate substrate type in this backwater area is gravel/rubble with deposits of silt/sand in the pool areas. Cobble/boulder substrate types predominate in the section above the backwater area which consists of a series of pools and riffles with gravel/rubble substrates occurring in riffle areas.

The overall gradient of the slough is 19.8 ft/mi compared to the gradient in the adjacent mainstem of 10.3 ft/mi.

## 3.3.6.3 Cross Section Profiles

Survey data for the development of cross section profiles were obtained at three locations in Side Slough 11, each of which corresponded to a staff gage location (Table 2-11). The survey data used to construct the cross section profiles are presented in Appendix Tables 2-B-35 - 2-B-37 with the resultant cross section profiles being presented in Figure 2-20. Superimposed on each cross section profile are water surface elevations determined from staff gage observations (Chapter 1, Appendix Table 1-7) and mean, daily mainstem discharge at Gold Creek corresponding to the time of the staff gage observation.



Figure 2-19 Streambed (thalweg) profile of Side Slough 11 (RM 135.7).



Figure 2-20 Cross section profiles developed for staff gage sites within Side Slough 11.

# DRAFT/Page 11 5/2/84 SER10G/CGI Tables

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Table 2-11.	Sites within	Side	Slough	11	for	which	cross	sections	were
	obtained.								

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Site	Staff Gage	Date Obtained	Agency
Mouth Discharge Station	135.3W1 135.3S6	10/19/83	ADF&G
Head	135.3H3	7/28/82	R&M Consultants

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## 3.3.7 Side Slough 16/16B Complex (RM 138.0)

# 3.3.7.1 Site Description

Side Slough 16/16B is located on the west bank of the Susitna River at river mile 138.0 (Figure 2-1). This slough complex is approximately 0.6 miles in length and is separated from the mainstem by a large gravel bar and a well vegetated island.

Survey data for the development of a thalweg profile were obtained during the 1983 open water field season. The survey data used for the development of two cross section profiles were obtained by R&M Consultants in 1982.

## 3.3.7.2 Thalweg Profile

The thalweg profile for the Side Slough 16/16B Complex is presented in Figure 2-21. The survey data obtained for the development of the thalweg profile are presented in Appendix Table 2-A-9.

Only a small area of backwater occurs at the mouth of this side slough complex. Substrates in this backwater area predominately consist of silt and sand. The rest of the slough consists of a sequence of pools and riffles. The predominate substrate type in this area consists of gravel/rubble interspersed with cobble/boulder with silt/sand deposits found in the pool areas.



Figure 2-21 Streambed (thalweg) profile of Side Slough 16/16B Complex (RM 138.0).

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The overall gradients of Slough 16 and Slough 16B are 9.9 and 17.2 ft/mi, respectively. The gradient of the mainstem adjacent to these sloughs is 10.9 ft/mi.

## 3.3.7.3 Cross Section Profiles

Data for the development of cross section profiles were collected by R&M Consultants in 1982 (R&M 1982) at two staff gages located at the head and discharge stations in Side Slough 16B (Table 1-12). The resultant cross section profiles are presented in Figure 2-22. The survey data used to develop these cross sections are presented in Appendix Tables 2-B-38 - 2-B-39. Superimposed on each of these cross sections are water surface elevations determined from staff gage observations (Chapter 1, Appendix Table 1-A-7) and mean, daily mainstem discharge at Gold Creek corresponding to the time of the staff gage observation.

## 3.3.8 Side Slough 20 (RM 140.2)

#### 3.3.8.1 Site Description

Side Slough 20 is located on the east bank of the Susitna River at river mile 140.2 (Figure 2-1). It is approximately 0.5 miles in length and is separated from the mainstem by a well vegetated island. Two small tributaries enter on the east bank of this slough; Waterfall Creek enters approximately 1,500 feet upstream from the mouth and a small unnamed tributary enters near the head of the slough.







#### DRAFT/Page 12 5/2/84 SER10G/CGI Tables

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# Table 2-12. Sites within Side Slough 16B for which cross sections were constructed.

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Site	Staff Gage	Date Obtained	Agency
Mouth	138.0W1	Cross Section	Not Available
Discharge Station	138.055	7/24/82	R&M
Head	138.OH3	7/22/82	R&M Consultants

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Survey data were obtained during the 1983 open water field season for the development of a thalweg profile. Survey data for the development of three cross section profiles were obtained by R&M Consultants in 1982.

## 3.3.8.2 Thalweg Profile

The thalweg profile developed for Side Slough 20 is presented in Figure 2-23. The survey data used in the construction of this thalweg profile are presented in Appendix Table 2-A-10.

An area of backwater occurs at the mouth of the slough during periods of moderate to high mainstem discharges. The predominate substrate type present in this backwater area is silt/sand. Above the backwater area, the channel is characterized by a sequence of pools and riffles. Substrates in this reach consist of gravel/rubble with areas of cobble/boulder at the head and silt/sand in the pools.

The overall gradient of the slough is 13.5 ft/mi which is similar to that of the adjacent mainstem (13.4 ft/mi).

#### 3.3.8.3 Cross Section Profile

Data for the development of cross sectional profiles were obtained by R&M Consultants at three locations in Side Slough 20 in 1982 all of which corresponded to staff gage locations (Table 2-13). These resultant cross section profiles are presented in Figures 2-24. The survey data used to develop these cross section profiles are presented in



Figure 2-23 Streambed (thalweg) profile of Side Slough 20 (RM 140.2).



Figure 2-24 Cross section profiles developed for staff gage sites within Side Slough 20.

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Site	Staff Gage	Date Obtained	Agency
Mouth	140.1₩4	7/24/82	R&M Consultants
Discharge Station	140.155	7/24/82	R&M Consultants
Head	140.1H3	7/27/82	R&M Consultants

Table 2-13. Sites within Side Slough 20 for which cross sections were developed.

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Appendix Table 2-B-40 - 2-B-42. Superimposed on each cross section profile are water surface elevations determined from staff gage observations (Chapter 1, Appendix Table 1-A-7) and mean, daily mainstem discharge at Gold Creek corresponding to the time of the staff gage observations.

#### 3.3.9 Side Slough 21 (RM 141.8)

## 3.3.9.1 Site Description

Side Slough 21 is located on the east bank at the Susitna River at river mile 141.8 (Figure 2-1). This slough is approximately 0.5 miles in length and is separated from the mainstem by a large vegetated island. The channel divides about 1,500 feet from the mouth into two forks.

Survey data were obtained during the 1983 open water field season for the development of a thalweg profile and eight cross sectional profiles.

## 3.3.9.2 Thalweg Profile

The thalweg profile developed for Side Slough 21 is presented in Figure 2-25. The supporting survey data are presented as part of the Side Channel 21 thalweg profile (see Section 3.2.5).

Mainstem discharge through the upper portion of Overflow Channel A6 creates a backwater area in the immediate vicinity of the mouth of Side Slough 21 during periods of moderate to high mainstem discharge. The predominate substrate in this backwater area consists of silt and sand.



Figure 2-25 Streambed (thalweg) profile of Slough 21 Complex (RM 140.6).

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Above the backwater area, the channel consists of a series of pools and riffles. Substrates in this reach consist of cobble/boulder with deposits of silt/sand occurring in pool areas.

The overall slough gradient is 22.9 ft/mi compared to the gradient of the adjacent mainstem of 12.2 ft/mi.

## 3.3.9.3 Cross Section Profiles

Survey data for the development of cross section profiles were obtained at eight locations in Side Slough 21, five of which were obtained at physical habitat modeling transects located below the slough mouth (Table 2-14). The survey data collected in conjunction with the habitat modeling studies are presented in Chapter 7 of this report. The survey data used to construct these remaining three cross section profiles are presented in Appendix Tables 2-B-43 - 2-B-45. The resultant cross section profiles are presented in Figure 2-26.

The cross sectional profile of the head of Side Slough 21 is presented as two separate plots. For ease of presentation, the cross section was shortened 600 feet. The section that was removed represents the river bank that separates the NW and NE heads

Superimposed on each cross section profile are water surface elevations determined from staff gage observations (Chapter 1, Appendix Table 1-7) and mean daily discharge at Gold Creek corresponding to the time of the staff gage observation.



Figure 2-26 Cross section profiles developed for staff gage sites within Side Slough 21 (RM 141.8).

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ADF&G Mode1	N/A	1983 <sup>1</sup>	ADF&G
Transect 3 ADF&G Model	N/A	19831	ADE&G
Transect 4	W/A	1	Abrad
ADF&G Model	N/A	1983*	ADF&G
ADF&G Model	N/A	1983 <sup>1</sup>	ADF&G
Transect 6 ADF&G Model Transect 7	N/A	1983 <sup>1</sup>	ADF&G
Mouth	142.0W5	5/17/83	ADF&G
Discharge Station	142.056	• 5/17/83	ADF&G
Head	142.0H3	7/11/82	R&M Consultant

Table 2-14. Sites within Side Slough 21 for which cross sections were constructed.

Cross sections are presented in Chapter 7 of this report.

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#### 3.3.10 Side Slough 22 (RM 144.2)

#### 3.3.10.1 Site Description

Side Slough 22 (Figure 2-1) is located on the north bank of the Susitna River at river mile 144.2. It is approximately 0.5 miles long and is separated from the mainstem by a large vegetated island. A small tributary enters on the west bank approximately 2,000 feet upstream from the slough mouth.

Survey data were obtained during the 1983 open water field season for the development of a thalweg profile and a cross section profile of the slough head. Survey data obtained by R&M Consultants in 1982 were used to develop the cross section profiles at the mouth and discharge sites.

## 3.3.10.2 Thalweg Profile

The thalweg profile developed for Side Slough 22 is presented in Figure 2-27. The survey data used in the development of the thalweg profile are presented in Appendix Table 2-A-11.

A backwater area does not occur at the mouth of Side Slough 22 except during periods of high mainstem discharges. The channel consists of a sequence of pools and riffles. Cobble/boulder substrate is the predominate substrate type found in the slough with deposits of gravel/rubble being found in riffle areas and deposits of silt/sand being found in pool areas.



STREAMBED STATION (feet)



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The overall gradient of the slough is 15.2 ft/mi as compared to the gradient of the adjacent mainstem of 11.5 ft/mi.

## 3.3.10.3 Cross Section Profile

Survey data for the development of cross sectional profiles were developed for three staff gage locations (Table 2-15) within Side Slough 22. These cross sections are presented in Figure 2-28. The survey data from which the cross sections were developed are presented in Appendix Tables 2-B-46 - 2-B-49.

Superimposed on each cross section are water surface elevations determined from staff gage observations (Chapter 1, Appendix Table 1-7) and the corresponding mean daily mainstem discharge at Gold Creek at the time of the staff gage observation.

#### 3.4 Upland Slough Habitats

Survey data for the development of thalweg and cross sectional profiles were obtained at three upland (upland sloughs unlike side sloughs are not connected with the mainstem or its sidechannels except at their mouths) slough sites located in the Talkeetna to Deveil Canyon reach of the Susitna River (Figure 2-1). These data are presented below.



Figure 2-28 Cross section profiles developed for staff gage sites within Side Slough 22.

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Mouth	144 3143	9/15/83	ADE&G
Mid-Slough	144.354	7/10/82	R&M
Discharge Station	144.356	7/10/82	R&M
Head	144.3H2	9/15/83	ADF&G

Table 2-15. Sites within Side Slough 22 for which cross sections were constructed.

## 3.4.1 Upland Slough 6A (RM 112.3)

## 3.4.1.1 Site Description

Upland Slough 6A is located on the west bank of the Susitna River at river mile 112.3 (Figure 2-1). The slough divides into two forks approximately 1,200 feet from the slough mouth. A beaver dam is located approximately 1,300 feet upstream from the slough mouth.

During the 1983 open water field season, survey data were obtained for the development of a thalweg profile and two cross sectional profiles at this site.

## 3.4.1.2 Thalweg Profile

The thalweg profile developed for Upland Slough 6A is presented in Figure 2-29. The survey data used to construct the profile are presented in Appendix Table 2-A-10.

A substantial area of backwater exists during periods of low to high mainstem discharges at the mouth of this upland slough extending upstream to the beaver dam. The predominate substrate consists of silt/sand.

The overall gradient of the slough is 6.3 ft/mi compared to the gradient of the adjacent mainstem of 10.6 ft/mi.



Figure 2-29 Streambed (thalweg) profile of Upland Slough 6A.

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## 3.4.1.3 Cross Section Profiles

Data for the development of two cross section profiles were collected in Upland Slough 6A (Table 2-16). These cross section profiles are presented in Figure 2-30. The survey data used to construct these cross section profiles are found in Appendix Table 2-B-50 - 2-B-51.

Superimposed on the cross sectional profile are water surface elevation determined from staff gage observations (Chapter 1, Appendix Table 1-7) and the mean daily discharge (cfs) at Gold Creek corresponding to the time of the staff gage observations.

Table 2-16. Sites within Upland Slough 6A for which cross sections were constructed.

Location	Site	Staff <u>Gage</u>	Date Obtained	Agency
Upland Slough 6A	Mouth	112.3W1	7/5/83	ADF&G
	Backwater	112.3S3	9/10/83	ADF&G

## 3.4.2 Upland Slough 10 (RM 133.8)

## 3.4.2.1 Site Description

Upland Slough 10 is part of the Slough 10 Complex which is located on the west bank of the Susitna River at river mile 133.8. Upland Slough 10 divides into two channels approximately 800 feet from the slough anath. Stda Doard 3012668 1866766888 Stable216766870776677776777

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mouth. Side Channel 10 flows into Upland Slough 10 approximately 200 feet from the slough mouth.

Survey data were obtained for the development of a thalweg profile during the 1983 open water field season. Survey data for the development of cross sectional profiles were not obtained.

## 3.4.2.2 Thalweg Profile

Upland Slough 10 was not surveyed in its entirety for the development of the thalweg profile. The thalweg profile constructed for Upland Slough 10 is presented as part of the Slough 10 Complex (Figure 2-5). The survey data used in the development of the thalweg profile are presented in Appendix Tables 2-A-11 - 2-A-12.

An extensive area of backwater occurs at the mouth of this upland slough during periods of low to high mainstem discharges. The predominate substrate in this backwater area consists of silt/sand. Above the backwater area, the channel consists of a series of pools and riffles. Substrates in this area consist of cobble/boulder.

The overall gradient of this side slough is 15.6 ft/mi as compared to the gradient of the adjacent mainstem of 8.9 ft/mi.

## 3.4.2.3 Cross Section Profiles

Survey data for the development of cross section profiles were not obtained for Upland Slough 10.

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#### 3.4.3 Upland Slough 19 (RM 140.0)

## 3.4.3.1 Site Description

Upland Slough 19 is located on the east bank of the Susitna River at river mile 140.0 (Figure 2-1). An overflow channel conducts mainstem flow laterally across the mouth of this slough.

Survey data were obtained during the 1983 open water field season for the development of cross sectional profiles. The thalweg profile was constructed from cross sectional elevations which were surveyed by ADF&G in 1981.

## 3.4.3.2 Thalweg Profile

The thalweg profile developed for Upland Slough 19 is presented in Figure 2-31. The survey data from which the thalweg profile was developed are presented in Appendix Table 2-A-13.

A backwater area occurs at the mouth of this upland slough during periods of low to high mainstem discharges. Substrates in this area predominately consist of silt/sand. Upstream of the backwater area, the substrate ranges from gravel/rubble to cobble/boulder.

The overall gradient of this slough is 16.9 ft/mi compared to the gradient of the adjacent mainstem of 14.1 ft/mi.



Figure 2-31 Streambed (thalweg) profile of Upland Slough 19 (RM 140.0).

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## 3.4.3.3 Cross Section Profile

Survey data for the development of cross sectional profiles were collected at three staff gage locations in Upland Slough 19 (Table 2-17). The resultant cross section profiles are presented in Figure 2-32. The survey data used to construct these cross section profiles are presented in Appendix Table 2-B-52 - 2-B-54.

Table 2-17. Sites within Upland Slough 19 for which cross sections were constructed.

Site	Staff Gage	Date Obtained	Agency
Access	140.0W1	9/14/83	ADF&G
Below Mouth	140.0S3	9/14/83	ADF&G
Discharge Station	140.054	9/14/83	ADF&G

Superimposed on each cross section are water surface elevations determined from staff gage observations (Chapter 1, Appendix Table 1-7) and the mean daily mainstem at Gold Creek corresponding to the time of the staff gage observations.

## 3.5 Tributary Habitats

Survey data for the development of cross section profiles were collected at four tributaries located in the Talkeetna to Devil Canyon reach of the Susitna River (Figure 2-1). These data are presented below by site.



Figure 2-32 Cross section profiles developed for staff gage sites within Upland Slough 19.

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## 3.5.1 Fourth of July Creek (RM 131.1)

# 3.5.1.1 Site Description

Fourth of July Creek (Figure 2-1) is located on the west bank of the Susitna River at river mile 131.1. It can be characterized as a narrow, fast-running, clear-water stream having a relatively steep gradient.

# 3.5.1.2 Cross Section Profile

A cross section profile was developed for the discharge station and is presented in Figure 2-33. The survey data used to develop the cross section are presented in Appendix Table 2-B-55. Superimposed on the cross section are water surface elevations determined from staff gage observations obtained during streamflow measurements (Chapter 1, Appendix Table 1-A-8).

# 3.5.2 Gold Creek (RM 136.8)

## 3.5.2.1 Site Description

Gold Creek is located on the east bank of the Susitna River at river mile 136.8. It can be characterized as a steep, fast running clear water stream which is confined to a single channel.






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#### 3.5.2.2 Cross Section Profile

A cross section profile was developed for the discharge station in Gold Creek and is presented in Figure 2-34. The survey data used to develop the cross section are presented in Appendix Table 2-B-56. Water surface elevations that were determined from staff gage observations which were obtained during stream flow measurements are superimposed on the cross section (Chapter 1, Appendix Table 1-A-8).

#### 3.5.3 Indian River (RM 138.6)

#### 3.5.3.1 Site Description

Indian River (Figure 2-1) is a relatively large tributary that is located on the east bank of the Susitna River at river mile 138.6. From its mouth to approximately one mile upstream, the channel is highly braided as it flows through a large alluvial deposit.

#### 3.5.3.2 Cross Section Profile

A cross section profile was developed for the discharge station in Indian River and is presented in Figure 2-35. This cross section was developed from streamflow measurement data obtained by ADF&G in 1983 which are presented in Appendix Table 2-B-57. Streambed elevations were derived by subtracting the depth of the water column from the water surface elevation obtained at the time the stream flow measurement was made. This computation was made for each station on the transect from which a stream flow measurement was computed. The horizontal distances









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Figure 2-35 Cross section profile developed for the staff gage site within Indian River (RM 138.6).

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were derived from stations along the transect as well as edge of water measurements.

Superimposed on the cross section are three water surface elevations determined from staff gage observations obtained during stream flow measurements (Chapter 1, Appendix Table 1-A-8).

#### 3.5.4 Portage Creek (RM 148.9)

#### 3.5.4.1 Site Description

Portage Creek enters the Susitna River at river mile 148.9 (Figure 2-1). Streamflow in the study area is confined to a single channel until a point approximately 300 feet upstream from the mouth where it divides into two channels as it flows through an alluvial deposit.

#### 3.5.4.2 Cross Section Profile

A cross section profile was developed for discharge station at Portage Creek and is presented in Figure 2-36. The data from which the cross section was developed are presented in Appendix Table 2-B-58. The cross section for Portage Creek was developed using the same procedures used for developing the Indian River cross section.

Superimposed on the cross section are three water surface elevations determined from staff gage observation obtained during stream flow measurements (Chapter 1, Appendix Table 1-A-8).







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#### 4.0 Discussion

Channel geometry data were collected for the development of thalweg and cross section profiles in selected side channels, side sloughs, and tributaries located in the middle reach of the Susitna River. These data were collected to evaluate the influences that mainstem discharge has on access conditions into and passage conditions within these habitats and to assist in the evaluation of the influences that mainstem discharge has on the formation of backwater at the mouths and breaching at the head of the habitats. Results pertaining to the first objective are addressed in Chapter 6 of this report. Results pertaining to the second objective are addressed below.

Backwater areas were observed to occur at the mouths of many of the side channels and side and upland sloughs in the Talkeetna to Devil Canyon reach of the Susitna River. The size and extent of these backwater areas varied, being dependent on both the level of mainstem discharge and the geomorphological features present at the mouths of these habitats. Generally, the size and extent of the backwater increased as mainstem discharge increased. In addition, habitats showing the least gradient in the area of the mouth exhibited the largest backwater influences. This was most apparent in upland sloughs which exhibited the largest backwater influences. Overall, upland slough habitats exhibited the largest backwater effects followed in order by side slough habitats and side channel habitats.

As the head portions of side channels and side sloughs become breached by progressively higher levels of mainstem discharge, a succession of

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events occurs within these habitats. The first event that occurs in this succession is the initial overtopping of the head portion of these habitats. The mainstem discharge at which this initial overtopping occurs is referred to as the "breaching discharge". This initial overtopping mainstem discharge, however, may or may not significantly influence the hydraulic characteristics of a side channel or side slough due to the low quantity of flow entering the head portion and due to specific geomorphological features of a site. At some point, as progressively higher levels of mainstem discharge overtop the head portion of a side channel or side slough, the hydraulic characteristics of a site begin to become governed by mainstem discharge. The mainstem discharge at which this initially occurs is referred to as the "controlling breaching discharge". The period between the initial "breaching discharge" and the "controlling breaching discharge" is referred to as the "intermediate breaching discharge" condition.

In general, breaching discharges for side channels are lower than those for side sloughs. Initial mainstem breaching discharges for studied side channels in the middle reach of the Susitna River vary from 5,000 to 20,000 cfs as measured at the USGS Gold Creek gaging station (see Chapter 1). These compare to mainstem breaching discharges for studied side sloughs in the middle reach of the Susitna River which vary from 16,000 to 42,000 cfs as measured at the USGS Gold Creek gaging station (see Chapter 1).

These breaching discharges compare to controlling breaching discharges ranging from 5,000 to 25,000 cfs and 19,000 to 42,000 cfs as measured at the USGS Gold Creek gaging station for side channels and side sloughs,

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respectively (see Chapter 1). In general, the controlling breaching discharges are closer to the breaching discharges in side channels than in side sloughs. The reasons for this may be linked to certain geomorphological features present in side channels that differ from those present in side sloughs. The cross sectional profile of the head portion of a side channel is much flatter and rounded than that of a side slough, allowing a larger quantity of water to flow over the head of a side channel at the initial point of overtopping. This causes a more immediate influence of mainstem discharge on the hydraulic characteristics of a side channel.

These initial breaching and controlling breaching discharges presented are based on a combined interpretation of field survey and water surface elevation data, aerial photography, field observations, and the professional judgement of our hydraulic engineering consultant. In addition, the figures are based on mean daily mainstem discharge as measured at the USGS Gold Creek gaging station rather than site specific discharge measurements. Because of this, some error may be associated with the figures, however, the error is believed to be small mounting to approximately 15° as such, the figures presented represent our best estimate of breaching and controlling discharges for the studied sites.

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### 8.0 APPENDICES

APPENDIX A

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2-A-4	Data used in developing the streambed (thalweg) profile of Upper Side Channel 11, 1983	2-4-10
2-A-5	Data used in developing the streambed (thalweg) profile of Whiskers Creek Side Slough, 1983	2-4-12
2-A-6	Data used in developing the streambed (thalweg) profile of Side Slough 9A, 1983	2-4-14
2-A-7	Data used in developing the streambed (thalweg) profile of Side Slough 16/16B, 1983	2-A-17
2-A-8	Data used in developing the streambed (thalweg) profile of Side Slough 20, 1983	2-A- 21
2-A-9	Data used in developing the streambed (thalweg) profile of Side Slough 22, 1983	2-A -25
2-A-10	Data used in developing the streambed (thalweg) profile of Upland Slough 6A, 1983	2-4-29
2-A-11	Data used in developing the streambed (thalweg) profile of Side Slough 10, Left Channel, 1983	2-A - 33
2-A-12	Data used in developing the streambed (thalweg) profile of Side Slough 10, Right Channel, 1983	2-A - 36
2-A-13	Data used in developing the streambed (thalweg) profile of Upland Slough 19, 1983	2-A - 39

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Appendix Table 2-A-1. Data used in developing the streambed (thalweg) profile of Mainstem II, Northwest (Left) Channel, 1983.

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Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
1		-1 + 21	471.86	2.99	474.85	CORU	Mainstem
2	121	0 + 00	472.61	2.17	474.78	SICO	Mouth of Mainstem II, Backwater
3	100	1 + 06	473.74	0.90	474.64	SI	High point in backwater pool
4	185	2 + 91	472.47	2.03	474.50	SICO	Backwater
5	308	5 + 99	472.47	2.07	474.54	SICO	Backwater pool
6	197	7 + 96	472.08	2.44	474.52	SICO	Backwater pool
7	30	8 + 26	473.60	0.82	474.42	SI	Riffle/backwater
8	276	11 + 02	474.45	0.36	474.81	RUCO	Pool/riffle
9	58	11 + 60	473.66	1.17	474.83	LGCO	Pool at Gage 114.4 S7, mid pool
10	79	12 + 39	474.53	0.32	474.85	LGCO	Riffle/pool
11	147	13 + 86	475.82	0.39	476.21	RUÇO	Pool/riffle
12	150	15 + 36	473.48	2.74	476.22	RULG	Poo1
13	77	16 + 13	474.21	2.01	476.22	RUCO	Pool, right channel joins at
14	34	16 + 47	475.74	0.47	476.26	RUCO	this point Riffle/pool
15	99	19 + 19	476.30	0.39	476.69	RULG	Pool/riffle

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Appendix Table 2-A-2. Data used in developing the streambed (thalweg) profile of Mainstem II, Northeast (Right) Channel, 1983.

Point	Distance <u>(ft)</u>	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
1		0 + 00	474.21	2.01	476.22	RUCO	Same as 16 + 13 on left channel
2	60	0 + 60	475.63	0.57	476.20	LGCO	survey, mouth of right channel
3	12	0 + 72	475.94	0.27	476.18	LGCO	
4	28	1 + 00	475 13	0 97	476 10	1 600	
-	35	1 . 00	475.15	0.57	470.10	Laco	
5	78	1 + 35	4/4.09	2.00	476.09	LGCO	
6	43	2 + 13	473.29	2.85	476.14	LGCO	
7	19	2 + 56	473.85	2.30	476.15	LGCO	
8	10	2 + 74	473.41	2.75	476.16	COLG	
9	18	2 + 92	475.77	0.40	476.17	COLG	
10	16	3 + 08	476.63	0.15	476.78	COLG	
11	32	3 + 40	477 20	0 15	477 35	C01 G	
11	111	5 . 40	477.20	0.10	477.35	COLO	
12	54	4 + 51	4//.05	0.10	4//./5	COLG	
13	39	5 + 05	477.17	0.60	477.77	COLG	
14	60	5 + 44	477.46	0.30	477.76	COLG	
15	00	6 + 04	476.82	0.95	477.77	COLG	
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Appendix Table 2-A-2 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments	
16	106	6 + 71	177.32	0.40	477.22	COLG		
17	100	7 + 77	477.35	0.40	477.75	COLG		
18	117	8 + 94	477.38	0.45	477.83	COLG		
10	36	0 + 30	477 24	0.52	477 76	COL C		
19	87	9 + 30	4//.24	0.52	4//./0	COLG		
20	95	10 + 17	475.87	1.90	477.77	COLG		
21	12	11 + 12	476.32	1.40	477.72	LG		
22	12	11 + 24	476.77	1.00	477.77	LG		
23	9	11 + 33	477.35	0.42	477.70	LG		
24	34	11 + 67	477 72	0.05	477 77	16		
	68	10 . 07	477.72	0.05	477.64	001.0		
25	162	12 + 35	4/6.69	0.95	4//.64	COLG		
26	86	13 + 97	475.44	2.20	477.64	SASG		
27	110	14 + 83	474.48	3.20	477.68	SACO		
28	112	15 + 95	475.05	2.65	477.70	LGSG		
29	177	17 + 77	478.77	0.00	478.77	COLG		
30	77	18 + 40	478 30	0 10	478 40	C01 G		
30	170	10 + 49	4/0.50	0.10	470.40	COLG		

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Appendix Table 2-A-2 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
31	71	20 + 19	477.62	0.80	478.42	COLG	
32	/1	20 + 20	477.92	0.50	478.42	COLG	
33	15	21 + 05	478.38	0.20	478.58	COLG	
34	13	21 + 18	478.29	0.29	478.58	COLG	
35	52	21 + 70	478 65	0 10	478 75	C01 G	
35	63	21 . 70	470.05	0.10	470.75	COLO	
30	74	22 + 33	4/9.55	0.10	4/9.05	COLG	
37	13	23 + 07	479.67	0.10	479.77	COLG	
38	83	23 + 20	479.62	0.15	479.77	BOCO	
39	132	24 + 03	479.28	0.50	479.78	BOCO	
40	152	25 + 35	478.47	1.32	479.79	восо	
41	59	25 + 94	478,81	1.00	479.81	восо	
42	47	26 + 41	479.40	1.40	479.80	восо	
43	42	26 + 83	478.84	0.95	479.79	восо	
44	140	28 + 23	470 33	0.40	479 73	BOCO	
44	98	20 7 23	479.33	0.40	479.75	BOCO	
45	135	29 + 21	4/9.21	0.00	4/9./1	BOCO	
46	63	30 + 56	480.25	0.00	480.25	BOCO	

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Appendix Table 2-A-2 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	<u>Substrate</u>	Comments
47	16	31 + 19	480.51	0.00	480.51	BOCO	
48	16	31 + 35	480.68	0.00	480.68	BOCO	
49	11	31 + 46	480.14	0.40	480.54	BOCO	
50	58	32 + 04	480.05	0.41	480.46	BOCO	
51	26	32 + 30	479.83	0.64	480 47	BOCO	
52	24	32 + 54	491 54	0.00	491 54	POCO	÷
52	53	32 + 54	481.94	0.00	401.04	BOCO	
53	114	33 + 07	481.00	0.00	481.00	BOCO	
54	305	34 + 21	481.12	0.00	481.12	BOCO	
55	161	37 + 36	482.71	0.00	482.71	BOCO	
56	141	38 + 87	482.59	0.00	482.59	BOCO	
57	141	40 + 28	482.77	0.00	482.77	BOCO	
58	5/	40 + 85	482.65	0.00	482.65	BOCO	
59	41	41 + 26	482.55	0.10	482.65	восо	
60	27	41 + 53	482.42	0.25	482.67	BOCO	
61	41	41 + 94	482.55	0.12	482.67	BOCO	
	19	11 . 54	102.00	0.11	402.07		

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Appendix Table 2-A-2 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments	
62	14	42 + 13	481.80	0.89	482,69	BOCO		
63 64 65	14	42 + 27 6 42 + 33	482.61	0.00	482.61	BOCO		
	142		483.84	0.00	483.84	BOCO		
	146	43 + 75	484.55	0.00	484.55	BOCO		
					and the second			

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Appendix Table 2-A-2 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments	
62	14	42 + 13	481.80	0.89	482,69	BOCO		
63 64 65	14	42 + 27 6 42 + 33	482.61	0.00	482.61	BOCO		
	142		483.84	0.00	483.84	BOCO		
	146	43 + 75	484.55	0.00	484.55	BOCO		
					and the second			

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Appendix Table 2-A-3. Data used in developing the streambed (thalweg) profile of Side Channel 10, 1983.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
1		0 + 00	647.67	2.18	649.85	CO	= 3 + 79 on left fork thalweg
2	183	1 + 83	650.67	0.51	651.18	SILT	Pool at mouth
3	185	3 + 68	650,69	0.51	651,20		
	64		650.53	0.01	661.20		<b>A</b>
4	115	4 + 32	650.57	0.63	651.20		Backwater pool
5	85	5 + 47	649.85	1.36	651.21		
6	00	6 + 32	650.32	0.90	651.22	CO	
7	19.7	8 + 29	650.42	0.83	651.25		Bottom riffle
8	81	9 + 10	651 04	0.28	651 32		Bottom next riffle
0	18	0 . 00	651.04	0.20	651.6L		
9	52	9 + 28	551.33	0.31	651.64		lop of riffle
10	154	9 + 80	652.02	0.22	652.24		Top of riffle
11	50	11 + 34	652.05	0.36	652.41		Bottom of riffle
12	52	11 + 86	652.46	0.36	652.82		Top riffle
13	73	12 + 59	651.19	1.66	652.85		
14	35	12 + 04	650 72	2 12	652 04		Pottom pool
14	35	12 + 94	050.72	2.12	052.84		
15	28	13 + 29	652.36	0.49	652.85		Bottom of riffle

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Appendix Table 2-A-3 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
16	22	13 + 57	652.67	0.45	653.12		Top of riffle
17	32	13 + 89	648.94	4.22	653.16		Bottom of pool
18	38	14 + 27	652.26	0.93	653.19		Bottom of riffle
19	10	14 + 37	653.11	0.30	653.41		Top riffle
20	74	15 + 11	651.81	1.68	653.49		Pool
21	46	15 + 57	651.85	1.63	653.48		Pool
22	21	15 + 78	652.85	0.65	653.50		Pool
23	40	16 + 18	651.13	2.39	653.52		Poo1
24	62	16 + 80	653.16	0.35	653.51		Bottom of riffle
25	27	17 + 07	654.24	0.25	654.49		Top of riffle/TR4
26	131	18 + 38	654.06	0.54	654 60		Pool
27	52	18 + 90	653 35	1 24	654 59		Pool
20	52	10 + 30	653.55	1.24	654.55		
28	32	19 + 42	652.91	1.00	054.50		
29	94	19 + 74	652.77	1.79	654.56		Pool
30	5	20 + 68	654.11	0.43	654.54		Bottom of log jam

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Appendix Table 2-A-3 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
31		20 + 73	654.53	0.58	655.11		Top of log jam/bottom of riffl
32	20	20 + 93	655.28	0.40	655.68		Top of riffle
33	13	21 + 06	655.30	0.40	655.70		Pool lower
34	58	21 + 64	654.86	0.85	655.71		Pool mid
35	56	22 + 20	655.24	0.47	655.71		Pool/riffle
36	40	22 + 60	655.80	0.46	656.26		Riffle/pool
37	24	22 + 84	655.94	0.35	676.29		Pool bottom
38	24	23 + 08	656.62	0.09	656.71		Head-barely breached
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						2.15	
			Constant Cont	Line		t The second	

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Appendix Table 2-A-4. Data used in developing the streambed (thalweg) profile of Upper Side Channel 11, 1983.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	<u>Substrate</u>	Comments	
1		1 + 75	675.68	2.35	678.03	SISA	Backwater	
2	U	1 + 01	674.81	3.25	678.06	SISA	Backwater	
3	74	0 + 21	674.73	3.35	678.08	SISA	Backwater	
4	80	0 + 00	674.32	3.70	678.02	CO	Backwater	
5	21	0 + 62	674.64	3.40	678.04	co	Bottom of riffle	
6	62	0 + 81	674.40	3.60	678.00	CO	Bottom of riffle	
7	50	1 + 31	674.79	3.23	678.02	SICO	End backwater	
8	23	1 + 54	675.60	2.40	678.00	SICO	End backwater	
9	23	2 + 31	676.60	1.50	678.10	SICO		
10	144	3 + 75	676.05	2.00	678.05	SICO		
11	57	4 + 32	676.06	2.00	678.06	SICO	Bottom of riffle	
12	53	4 + 85	677.05	1.00	678.05	SICO	Mid riffle	
13	150	6 + 37	678.71	0.85	679.56	SICO	Top riffle	
14.	152	7 + 19	678.76	1.00	679.76	S0C0	Small riffle area	
15	136	8 + 55	679.66	0.90	680.56	COBO	Riffle	

Appendix Table 2-A-4. Data used in developing the streambed (thalweg) profile of Upper Side Channel 11, 1983.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	<u>Substrate</u>	Comments
1		1 + 75	675.68	2.35	678.03	SISA	Backwater
2	U	1 + 01	674.81	3.25	678.06	SISA	Backwater
3	74	0 + 21	674.73	3.35	678.08	SISA	Backwater
4	80	0 + 00	674.32	3.70	678.02	CO	Backwater
5	21	0 + 62	674.64	3.40	678.04	со	Bottom of riffle
6	62	0 + 81	674.40	3.60	678.00	CO	Bottom of riffle
7	50	1 + 31	674.79	3.23	678.02	SICO	End backwater
8	23	1 + 54	675.60	2.40	678.00	SICO	End backwater
9	77	2 + 31	676.60	1.50	678.10	SIC0	
10	144	3 + 75	676.05	2.00	678.05	SICO	
11	57	4 + 32	676.06	2.00	678.06	SICO	Bottom of riffle
12	53	4 + 85	677.05	1.00	678.05	SICO	Mid riffle
13	152	6 + 37	678.71	0.85	679.56	SICO	Top riffle
14.	82	7 + 19	678.76	1.00	679.76	S0C0	Small riffle area
15	136	8 + 55	679.66	0.90	680.56	СОВО	Riffle

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Appendix Table 2-A-4 Continued.

Point	Distance (ft)	Station <u>(ft)</u>	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
16	167	10 + 12	680.50	0.65	681.15	COBO	Top of riffle
17	157	11 + 43	680.08	1.30	681.38	СОВО	Top of riffle
18	131	12 + 08	679.42	1.95	681.37	COBO	Top of pool
19	65	13 + 73	680.56	1.35	681.91	COBO	Mid riffle
20	165	14 + 30	681 73	1 18	682 02	COBO	Difflo
20	57	14 + 50	661.75	1.10	602.92	COBO	RITTE
21	111	15 + 41	681.91	1.38	683.29	COBO	Riffie
22	143	16 + 84	682.55	1.32	683.87	СОВО	Riffle
23	93	17 + 77	682.71	1.35	684.06	COBO	Riffle
24	147	19 + 24	682.22	1.50	683.72	СОВО	Riffle
25	71	19 + 95	683.91	1.25	685.16	COBO	Riffle
26	71	20 + 80	684.45	1.11	685.56	СОВО	Top of riffle
27	85	21 + 69	684.04	1.66	685.70	LGBO	Mid pool at head
28	89	22 + 32	684.31	1.42	685.73	SISA	
	63	0 + 50					
12107	1483	12.1	L'EADT C	7.6			

Appendix Table 2-A-5. Data used in developing the streambed (thalweg) profile of Whiskers Side Slough, 1983.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
1	0.26	0 + 00	361.87	1.06	362.93	LGRU	Mainstem/slough confluence
2	230	2 + 36	362.15	0.99	363.14	LGRU	Deep spot in run (near mouth
3	209	4 + 45	361.96	1.45	363.41	LGRU	at gage) Deep spot in run
4	77	5 + 22	363.06	0.52	363.58	LGRU	Mid-run
5	95	6 + 17	364.29	0.19	364.48	LGRU	Mid-run
6	131	7 + 48	364.63	0.40	365.03	LGRU	Riffle/pool
7	73	8 + 21	363.35	1.73	365.08	LGRU	Poo1
8	52	8 + 73	364.36	0.74	365.10	LGRU	Pool/riffle
9	35	9 + 08	365.10	0.31	365.41	LGRU	Riffle/pool
10	152	12 + 00	363.20	2.25	365.45	LGRU	Below ice at creek mouth
11	111	13 + 52	363.97	1.45	365.42	RUCO	Above ice, pool upper 1/3
12	20	14 + 63	365.02	0.42	365.44	RUCO	Pool/riffle
13	200	14 + 83	365.56	0.25	365.81	RUCO	Riffle/pool
14	296	17 + 79	362.73	3.00	365.73	RUCO	Pool frozen over - depth esti
15	366	21 + 45	365.47	0.32	365.79	RUCO	mated - top of ice surveyed Pool/riffle

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Appendix Table 2-A-5 Continued.

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Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
16	213	22 + 51	366.38	0.20	366.58	RUCO	Riffle/pool
17	118	24 + 64	363.46	3.00	366.46	RUCO	Pool - frozen over - estimated
18	295	25 + 82	366.33	0.20	366.53	RUCO	Forks converge - begin of pool
19	63	28 + 77	366.80	0.30	367.10	RUCO	Top of ice - depth estimated R&M cross section
20		29 + 40	366.97	0.00	366.97	RUCO	Low point at head dry

Appendix Table 2-A-6. Data used in developing the streambed (thalweg) profile of Side Slough 9A, 1983.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
1	62	-2 + 40	639.72	0.42	640.14	COSA	
2	63	-1 + 77	639.49	0.70	640.19	COSA	
3	52	-1 + 25	639.51	0.75	640.26	COSA	
4	71	-0 + 54	639.77	0.60	640.37	COSA	
5	54	0 + 00	639.44	0.90	640.34	COSA	Mouth of Slough
6	81	0 + 81	640.04	0.45	640.49	COSA	
7	67	1 + 48	640.46	0.30	640.76	COSA	
8	36	1 + 84	639.52	1.30	640.82	COSA	
9	36	2 + 20	640.23	0.60	640.83	COSA	
10	31	2 + 51	640.35	0.60	640.95	COSA	
11	60	3 + 11	641.78	0.30	642.08	COSA	
12	68	3 + 79	641.36	0.80	642.16	COSA	
13	27	4 + 06	641.99	0.45	642.44	COSA	
14	46	4 + 52	642.35	0.50	642.85	COSA	
15	29	4 + 81	642.55	0.40	642.95	COSA	
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Appendix Table 2-A-6 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
16	-60	5 + 14	642.44	0.60	643.04	COSA	
17	1	5 + 15	642.77	0.35	643.12	COSA	
18	22	5 + 37	643.27	0.25	643.52	COSA	
10	50	5 + 97	643 46	0.20	642 66	6054	
19	40	5 + 6/	043.40	0.20	043.00	LUSA	
20	60	6 + 27	643.62	0.30	643.92	COSA	Mid-riffle/run
21	00	6 + 87	643.82	0.30	644.12		Pool/riffle
22	133	8 + 20	644.13	3.00	644.13		Estimated depth - deep pool
22	50	9 + 70	642 32	1 92	644 15		WSEL surveyed
23	53	0 + 70	042.32	1.05	044.15		RTTTE/poor
24	135	9 + 23	644.78	0.19	644.97		Begin riffle/across from beaver
25		10 + 58	640.51	4.50	645.01		Estimated depth - deep pool
26	00	11 + 24	644.11	0.90	645.01		Shallow point
27	153	12 + 77	642 01	3.00	645 01		Estimated depth - deep pool
	55	10 . 00	642.01		645.00		WSEL surveyed
28	254	13 + 32	643.44	1.56	645.00		High point
29	51	15 + 86	643.42	1.62	645.04		Deep point/pool
30	38	16 + 37	644.49	0.53	645.02		Riffle/pool

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Appendix Table 2-A-6 Continued.

Point	Distance <u>(ft)</u>	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
31	100	16 + 75	645.09	0.38	645.47		Pool/riffle
32	108	17 + 83	642.71	2.85	645.56		Deep point
33	69	18 + 52	644.98	0.58	645.56		Riffle pool
34	49	19 + 01	645.55	0.47	646.02		Bend in slough
35	136	20 + 37	646.84	0.48	647.32		Pool riffle
36	159	21 + 96	645.21	2.16	647.37		Deep point in pool
37	113	23 + 09	646.83	0.56	647.39		High point in pool
38	61	23 + 70	645.97	1.41	647.38		Deep point in pool
39	118	24 + 88	646.75	0.63	647.38		Riffle/pool
40	15	25 + 03	647 13	0.48	647 61		Pool/riffle
40	22	25 + 25	646.42	1 16	647 58		Deen point in pool
41	35	25 + 25	647.22	0.00	647.50		
42	70	25 + 60	647.32	0.20	047.50		Riffle/pool
43	320	26 + 30	647.85	0.29	648.14		Pool/riffle
44	129	29 + 50	647.27	0.90	648.17		Deep point in pool
45	179	30 + 79	647.96	0.24	648.20		Riffle/pool
46		32 + 58	649.11	0.26	649.37		Slough branches from this point, High point, Head of slough

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Appendix Table 2-A-7. Data used in developing the streambed (thalweg) profile of Upland Slough 10 Left Channel, 1983.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
1	124	-3 + 29	644.26	5.40	649.66	SIBO	Mainstem
2	134	-1 + 95	645.63	4.16	649.79	SIBO	Mainstem
3	195	0 + 00	645.29	4.57	649.86	SIBO	Mouth at Gage 133.8 W5A.
	84		C45 10		CAO 77		Pool - backwater
4	96	0 + 84	045.10	4.0/	649.77	2180	POOI - DACKWATER
5	53	1 + 80	647.20	2.66	649.86	SIBO	Pool - backwater
6	55	2 + 33	647.63	2.15	649.78	SIBO	Pool - backwater
7	23	2 + 56	647.34	2.49	649.83	SIBO	Pool
	26						- Dackwater
8	22	2 + 82	647.55	2.28	649.83	SIBO	Pool - backwater
9	22	3 + 04	647.06	2.76	649.82	SIBO	Pool - backwater
10	9	3 + 13	647 40	2 44	649 84	SISA	Pool - backwater
10	11	5 • 15	047.40	2.77		. 5156	TOOT - Dackwater
11	14	3 + 24	647.98	1.82	649.80	SISA	Pool - backwater
12		3 + 38	649.07	0.77	649.84	CO	Riffle
13	41	3 + 70	647 67	2 18	649 85	00	Pool - backwater
15	12	5.75	047.07	2.10	045.05	00	sidechannel junction
14	26	3 + 91	646.98	2.83	649.81	CO	Pool/backwater/deep hole
	20						

Appendix Table 2-A-7 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
15	71	4 + 17	649.08	0.78	649.86	00	Bottom of run/backwater
16	55	4 + 88	648.73	1.20	649.93	CO	Top of run/backwater
17	48	5 + 43	648.42	1.50	649,92	CO	Pool/backwater
18	45	5 + 91	647.97	1.96	649.93	SISA	Pool/backwater
19	70	6 + 36	648.15	1.77	649.92	SISA	Pool/backwater
20	36	7 + 06	648.80	1.10	649.90	SISA	Pool/backwater
21	54	7 + 42	648.25	1.68	649.93	SISA	Pool/backwater
22	18	/ + 96	647.74	2.20	649.94	515K	right fork of Slough 10
23	36	8 + 24	647.54	2.48	650.02	SISA	Pool
24	19	8 + 50	647.75	2.27	650.02	SISA	Deephole - pool
25	41	8 + 69	649.00	1.02	650.02	SISA	Pool
26	20	9 + 10	648.64	1.39	650.03	SISA	Pool
27	55	9 + 30	648.89	1.14	650.03	SARU	Pool

RAFT (DAGE 21, 4/37/04, 5/3/84, 3/5/84, 3/29/84, 4/20/84, 5/3/84 ACT/Thalweg Tables

Appendix Table 2-A-7 Continued.

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Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
28	40	9 + 85	648.64	1.38	650.02	SABO	Poo1
29	48	10 + 33	648.85	1.17	650.02	SABO	Poo1
30	94	11 + 27	647.72	2.30	650.02	SABO	Pool
31	43	11 + 70	648.15	1.86	650.01	SACO	Pool
32	3	11 + 73	647.95	2.06	650.01	SACO	Pool
33	37	12 + 10	648.31	1.71	650.02	SACO	Pool
34	37	12 + 47	648.46	1.57	650.03	SACO	Poo1
35	49	12 + 96	647.78	2.22	650.00	SI	Poo1
36	50	13 + 46	648.01	2.00	650.00	SI	Pool
37	61	14 + 07	648.07	1.93	650.00	SICO	Pool
38	64	14 + 71	648.20	1.80	650.00	SILG	Pool
39	20	14 + 91	647.87	2.13	650.00	SILG	Pool (mainstem backwater from
40	80	15 + 71	649.00	1.07	650.07	BOCO	this point to the mouth Bottom riffle
41	66	16 + 37	649.65	1.16	650.81	SICO	End of pool/top of riffle
42	81	17 + 18	649.24	1.58	650.82	SICO	Mid pool
	71		in Decel				
Appendix Table 2-A-7 Continued.

2-2-20

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
43		17 + 89	649.75	1.08	650.83	COBO	Bottom of riffle/top of pool
44	6	17 + 95	650.39	0.65	651.04	COBO	End of pool/top of riffle
45	52	18 + 47	649.33	1.72	651.05	SICO	Pool
46	32	18 + 79	650.61	0.46	651.07	COLG	Bottom riffle
47	32	19 + 11	650.86	0.56	651.42	COLG	R&M Q Station
		Seame.		1.11			
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DRAFT/PAGE 33, 4/27/84, 5/7/84 3/5/84, 3/29/84, 4/20/84, 5/3/84 ACT/Thalweg Tables

Appendix Table 2-A-8. Data used in developing the streambed (thalweg) profile of Upland Slough 10 Right Channel, 1983.

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Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
1	8	0 + 00	647.74	2.20	649.94	SISA	Point = 7 + 96 on slough left channel thalweg, pool/backwater end of log
2		0 + 08	648.22	1.72	649.94	SI	end of Tog
. 3	18	0 + 26	648 58	1 36	649 94	SIBO	
3	24	0.10	010.00	1.00	013.31	5100	
4	49	0 + 50	648.74	1.20	649.94	SIBO	
5		0 + 99	648.73	1.20	694.93	SIBO	
6	20	1 + 19	648.66	1.27	649.93	SIBO	Numercus decaving logs
-	15		0.0.00			0100	Hamerous accuping rogs
7	13	1 + 34	648.89	1.04	649.93	SIBO	
8		1 + 47	649.05	0.88	649.93	SIBO	
9	21	1 + 68	649.16	0.89	649.94	SIBO	
10	36	0.00	640.35	0.70	C40.04	CIDO	
10	10	2 + 04	648.75	0.78	649.94	SIBO	
11	01	2 + 14	648.91	1.19	649.94	SIBO	
12	21	2 + 35	649.14	1.04	649.95	SIBO	
12	24	2 + 50	640 14	0.92	640 96	SIBO	
15	19	2 + 39	045.14	0.02	049.90	5160	
14	22	2 + 78	649.38	0.58	649.96	SIBO	
15	D) finance	3 + 00	649.34	0.64	649.98	SIBO	
	22						

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## Appendix Table 2-A-8 Continued.

Point	Distance (ft)	Station <u>(ft)</u>	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
16	lar.	3 + 22	649.79	0.38	650.17	SIBO	
17	23	3 + 45	649.79	0.42	650.21	SIBO	
18	18	3 + 63	649.43	0.80	650.23	SIBO	1
19	14	3 + 77	649.84	0.39	650.23	SIBO	
20	11	3 + 88	649.61	0.66	650.27	SIBO	
21	30	4 + 18	649.60	0.72	650.32	SIBO	
22	30	4 + 48	649.88	0.55	650.43	SIBO	
23	17	4 + 65	650.00	0.46	650.46	SIBO	30 fry in pool near
24	24	4 + 89	650.00	0.53	650.53	SIBO	log across slough
24	12	5 + 01	650.27	0.35	650,62	SIBO	
25	42	5 + 42	650.35	0.47	650.82	SIBO	
26	42	5 + 45	650.95	0.22	651 08	SIBO	
27	34	5 + 85	650.86	0.24	651.00	SIBO	
28	16	6 + 19	650.96	0.24	651 21	STRO	
29	23	6 + 35	650.91	0.30	051.21	SIDO	
30	27	6 + 58	650.53	0.72	051.25	5100	

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DRAFT/DAGE 25, 4/27/84, 5/7/84 3/5/84, 3/29/84, 4/20/84, 5/3/84 ACT/Thalweg Tables

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Appendix Table 2-A-8 Continued.

7-0-72

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
31		6 + 85	650.44	0.82	651.26	SIBO	
32	28	7 + 13	650.37	0.89	651.26	SIBO	
33	23	7 + 36	650.66	0.64	651.30	SIBO	
34	24	7 + 60	650.49	0.85	651.34	SIBO	
35	26	7 + 86	650.45	0.89	651.34	SIB0	
36	22	8 + 08	650.58	0.75	651.33	SIBO	
37	28	8 + 36	650,23	1.10	651.33	SIBO	
38	25	8 + 61	650,87	0.48	651 35	STRO	
30	14	8 ± 75	651.02	0.40	651.35	SIBO	
39	23	0 + 75	650.02	0.55	651.35	SIDO	Park company horn kill
40	19	8 + 98	650.82	0.50	051.38	SIBO	chum salmon
41	18	9 + 1/	650.48	0.90	651.38	2180	
42	14	9 + 35	650.08	1.32	651.40	STBO	
43	18	9 + 49	650.71	0.70	651.41	SIBO	7 95 J - 194 -
44	23	9 + 67	649.99	1.41	651.40	SIBO	
45	15	9 + 90	650.60	0.80	651.40	SIBO	

Appendix Table 2-A-8 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
46	10	10 + 05	650.99	0.40	651.39	SIBO	2
47	12	10 + 17	650.77	0.60	651.37	SIBO	
48	12	10 + 29	651.99			SIBO	Elevation of nail placed on log as TBM
	10		1240.02	10 10 10 10 10 10 10 10 10 10 10 10 10 1			1. 27 p. 20
						* * U	• •
			Roman d'a sa Datao e	i.			

Appendix Table 2-A-9. Data used in developing the streambed profile (thaiweg) of Side Slough 16/16B, 1983.

Point	Distance <u>(ft)</u>	Station <u>(ft)</u>	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
1	04	-0+ 84	694.33	2.53	696.86	RUSI	Mainstem
2	84	0 + 00	695.51	1.38	696.89	SI	High point end of sand spit
3	168	1 + 68	694.60	2.30	696.90	SICO	Low point in backwater
4	45	2 + 13	695.02	1.89	696.91	COSI	Low point in backwater
5	88	3 + 01	695.59	1.28	696.87	RUST	Pool/backwater
6	183	1 + 91	695.80	1 12	606 02	SCLC	low point in pool
0	22	4 1 04	695.80	1.12	090.92	501.0	
/	24	5 + 06	696./1	0.23	696.94	SGLG	Run/pool
8	43	5 + 30	695.87	1.02	696.89	SGLG	Low point in run
9	118	5 + 73	696.26	0.75	697.01	sasg	Riffle/run
10	107	6 + 91	697.63	0.25	697.88	SGRU	Pool/riffle
11	107	7 + 98	695.93	2.07	698.00	SGSI	Low point in pool
12	222	10 + 20	697.88	0.15	698.03	RUCO	Mainstem LWE
13	26	10 + 46	698.34	0.00	698.34	LGCO	High point, dewatered
14	42	10 + 88	696.44	1.55	697.99	SACO	Low point in pool
15	21	11 + 09	697.59	0.40	697.99	SGRU	Riffle/pool mouth 168
	27					June	Head 16

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Appendix Table 2-A-9 Continued.

Point	Distance (ft)	Station <u>(ft)</u>	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
16	42	11 + 36	697.89	0.25	698.14	SGLG	Pool/riffle
17	43	11 + 79	696.77	1.38	698.15	SISG	Staff gage 138.0W1
18	42	12 + 21	696.74	1.42	698.16	COSI	Low point in pool
10	78	12 + 00	606 74	1 41	609 15	DUILC	Low point in pool
19	21	12 + 99	090.74	1.41	090.15	KULG	
20	21	13 + 20	697.62	0.55	698.17	SALG	High point in pool
21	12	13 + 41	696.64	1.52	698.16	SASG	Low point in pool
22	12	13 + 53	697.76	0.42	698.18	SALG	Run/pool
23	20	13 + 73	697.87	0.32	698.19	SA	High point in run
24	23	13 + 06	607 03	0 30	608 23	SCIC	Difflo/mun
24	30	13 + 90	037.33	0.50	090.23	Jaca	KTTTTe/run
25	118	14 + 26	698.81	0.10	698.91	SGLG	Pool/riffle
26	41	15 + 44	697.75	1.18	698.93	COLG	Low point in pool
27	41	15 + 85	698.46	0.45	698.91	COLG	Run/Pool
28	52	16 + 37	698.49	0.43	698.92	RUSG	Riffle/run
29	91	17 + 28	699 91	0.10	700 01	SCRII	Run/riffle
	16	17 . 20	699.51	0.10	700.01	Suito	Kuny / / / / e
30	51	17 + 44	699.51	0.53	700.04	RULG	Low point in run

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D.AFT/PAGE 8 4/27/84, 5/7/84 3/5/84, 3/29/84, 4/20/84, 5/3/84 ACT/Thalweg Tables

Appendix Table 2-A-9 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
31	20	17 + 95	699.72	0.31	700.03	LGC0	Pool/run
32	32	18 + 27	699.31	0.74	700.05	LGSG	Staff gage 138.0 S5B
33	13	18 + 40	699.18	0.87	700.05	SARU	Low point in poool
34	36	18 + 76	699.73	0.30	700.03	LGSG	Run/pool
35	47	19 + 23	699.79	0.26	700.05	RUSG	Riffle/run
36	19	19 + 42	700.03	0.27	700.30	RUSH	Run/riffle
37	132	20 + 74	700.30	0.28	700.58	RUCO	Riffle/run
38	33	21 + 07	700.51	0.31	700.82	CORU	Run/riffle
39	87	21 + 94	700.32	0.54	700.86	RUCO	Low point in run
40	15	22 + 09	700.58	0.29	700.87	RUCO	Riffle/run
41	138	23 + 47	701.38	0.15	701.53	RULG	Run/riffle
42	30	23 + 77	700.84	0.68	701.52	LGSG	Low point in run
43	20	23 + 97	701.31	0.21	701.52	LGSG	Riffle/run
44	71	24 + 68	702.60	0.01	702.61	RUCO	Run/riffle
45	34	25 + 02	702.07	0.54	702.61	RULG	Low point in run
	30				,	Nord	Tou Found In Lan

Appendix Table 2-A-9 Continued.

Point	Distance (ft)	Sta (f	tion t)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
46	01	25	+ 32	702.19	0.42	702.61	RULG	Pool/run
47	55	26	+ 13	701.63	0.94	702.57	LGRU	Low point in pool
48	55	26	+ 68	702.47	0.10	702.57	LGRU	Riffle/pool
49	87	27	+ 55	703.23	0.01	703.24	LGRU	High point
50	26	27	+ 81	702.93	0.28	703.21	LGSG	Low point in small pool
51	29	28	+ 10	703.26	0.00	703.26	SGRU	High point, dewatered
52	12	28	+ 22	702.86	0.46	703.32	SGRU	Low point in small pool
53	26	28	+ 48	703.31	0.00	703.31	SGLG	High point, dewatered
54	33	28	+ 81	702.70	0.38	703.08	SGLG	Low point in small pool
55	22	29	+ 03	703.18	0.00	703.18	LGRU	High point, dewatered
56	58	29	+ 61	703.62	0.00	703.62	CORU	High point, dewatered
57	44	30	+ 05	702 57	0.62	703 10	COPU	Mainston

BRAFT/BAGE 5, 4/27/84, 5/7/84 3/5/84, 3/29/84, 4/20/84, 5/3/84 ACT/Thalweg Tables

Appendix Table 2-A-10 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments	
48		27 + 56	729.23	0.65	729.88	COLG	Tributary enters	
49	51	28 + 97	727.79	2.10	729.89	RULG	Low point in pool	
50	6	28 + 13	729.01	0.90	729.91	RULG	High point in pool	
51	14	28 + 27	728.52	1.38	729.90	RULG	Low point in pool	
52	33	28 + 60	729.85	0.08	729.93	RULG	Head of pool	
53	25	28 + 85	729.32	0.74	730.06	RULG	Small pool in riffle	
54	24	29 + 09	730.03	0.04	730.07	LGSG	High point	
55	14	20 + 23	720.80	0.22	730 11	LGSG	Small nool in riffle	
55	60	20 + 02	725.05	0.00	730.11	CODU	Baal (miffle dowstored	
50	36	29 + 63	730.27	0.00	730.27	CORU	Pool/Fille, dewatered	
5/	31	30 + 19	729.52	0.77	/30.29	COST	Low point in pool	
58	30	30 + 50	730.15	0.15	730.30	RULG	Head of slough Head of pool	
59	91	30 + 80	730.39	0.00	730.39	RUCO	High point, dewatered	
60		31 + 71	729.75	0.54	730.29	CORU	Mainstem	

2-A-29

Appendix Table 2-A-10 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
32	107	17 + 27	726.15	1.46	727.61	SICO	High point in pool
33	107	18 + 34	725.69	1.92	727.61	SICO	Low point in pool
34	105	19 + 39	725.81	1.80	727.61	SICO	Low point in pool
25	94	20 1 22	725 10	2 45	727 62	DUCO	Piffle/mool
35	25	20 + 33	725.18	2.45	121.03	RUCU	RTTTIE/ poor
36	176	20 + 58	726.76	0.27	728.03	LGRU	Run/riffle
37	100	22 + 34	728.10	0.06	728.26	SALG	High point in run
38	123	23 + 57	727.90	0.45	728.35	LGRU	Low point in run
39	39	23 + 96	728.21	0.17	728.38	L GCO	High point in run
	22	24 + 10	707 07	0.57	720 44	1000	lou point in run
40	25	24 + 18	121.81	0.57	728.44	LGCO	Low point in run
41	21	24 + 43	728.09	0.39	728.48	RULG	Riffle/run
42		24 + 64	728.68	0.29	728.97	RULG	Run/riffle
43	55	25 + 19	728.47	0.59	729.06	CORU	Low point in run
44	108	26 + 27	728 96	0.42	729.38	C01 G	Pool/run
	81	07 . 00	700.50	0.01	700 41	1000	lou point in seal
45	21	27 + 08	/28.50	0.91	/29.41	LGCO	Low point in pool
46	10	27 + 29	729.16	0.26	729.42	SGLG	Riffle/pool
47	10	27 + 39	729.69	0.19	729.88	LGRU	Pool/riffle
	17						

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DRAFT/DAGE 2 4/27/84, 5/7/84 3/5/84, 3/29/84, 4/20/84, 5/3/64 ACT/Thalweg Tables

Appendix Table 2-A-10. Data used in developing the streambed (thalweg) profile of Side Slough 20, 1983.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
1		0 + 00	722.33	2.00	724.33	CORU	Mainstem
2	17	0 + 17	722.79	1.77	724.56	SI	Mouth high point
3	13	0 + 30	722.62	1.95	724.57	SI	Low point in backwater
4	41	0 + 71	723.37	1.22	724.59	SI	High point in run
5	27	0 + 98	723 15	1 46	724 61	STRU	low point in run
6	30	1 + 20	723.13	1 10	724.01	DILLO	Lich point in run
0	20	1 + 28	723.51	1.10	724.01	RULG	High point in run
/	31	1 + 48	723.30	1.33	724.63	LGSI	Low point in run
8	59	1 + 79	723.54	1.08	724.62	RUSI	Staff gage 140.1 W4C
9	46	2 + 38	723.55	1.07	724.62	LGRU	Low point in run
10	66	2 + 84	724.11	0.54	724.65	LGSG	Riffle/run
11	20	3 + 50	724.57	0.39	724.96	LGRU	Mid-riffle
12	33	3 + 83	724.50	0.67	725.17	COLG	Run/riffle
13	47	4 + 30	724.10	1.09	725.19	RULG	Low point in run
14	30	4 + 60	724.33	0.85	725.18	LGSA	Riffle/run
15	110	5 + 70	724.84	0.39	725.23	RUSG	Mid-riffle
10	79	5.70		0.00	, 20.25	Noou	

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이번에 이번 이 가슴에서 가슴을 가지 못했다. 이번 이 가슴을 다 나라 가슴을 다 가슴을 다 가지 않는 것이 같아. 아이들 것이 않이 않아. 아이들 것이 같아. 아이들 것이 같아. 아이들 것이 같아. 아이들 것이 않아. 아이들 것이 않이

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Appendix Table 2-A-10 Continued.

Point 16	Distance <u>(ft)</u>	Station $\frac{(ft)}{6+49}$	Thalweg Elevation (ft) 724.52	Depth (ft) 0.79	WSEL (ft) 725.31	Substrate CORU	<u>Comments</u> Run/riffle
17	103	7 + 52	724.46	0.90	725.36	RULG	Pool/run
18	14	7 + 66	723.89	1.48	725.37	RUBO	Low point in pool
19	69	8 + 35	724.94	0.43	725.37	SGLG	Riffle/pool
20	50	8 + 85	724_61	0.87	725 48	RIII G	Steel/shallow riffle
21	29	0 + 14	724.01	0.30	726 43	LCCO	High point a wiffle
21	15	9 + 14	726.13	0.50	720.43	LGCU	
22	225	9 + 29	725.99	0.61	726.60	LGRU	Run/riffle
23	12	11 + 54	725.60	1.13	726.73	LGSG	Staff gage 140.1 S5B
24	68	11 + 66	725.89	0.83	726.72	LGSG	Riffle/run
25	44	12 + 34	726.19	0.86	727.05	LGRU	Low point in riffle
26	99	12 + 78	726.79	0.48	727.27	SGLG	Run/riffle
27	24	13 + 77	726.56	0.74	727.30	LGRU	Low point in run
28	26	14 + 01	726.62	0.69	727.31	LGRU	Riffle/run
29	50	14 + 37	727.20	0.40	727.60	RUCI	Pool/riffle
30	64	15 + 01	725.22	2.38	727.60	SIRU	Waterfall creek enters
31	57 169	15 + 58	724.16	3.45	727.61	SI	Low point in pool

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#### RAF AGE 4/32/84, 5/3/84 3/5/84, 3/29/84, 4/20/84, 5/3/84 ACT/Thalweg Tables

Appendix Table 2-A-11. Data used in developing the streambed (thalweg) profile of Side Slough 22, 1983.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments	
1	40	0 + 00	777.79	1.4	779.19	со	Mainstem	
2	40	0 + 40	778.91	0.30	779.21	BOCO	Riffle/backwater	
3	141	1 + 81	779.57	0.65	780.22	COBO	Run/riffle	
4	162	3 + 43	779.52	0.77	780.29	СОВО	Pool/run	
5	346	6 + 89	776.25	4.08	780.33	SI	low point in pool	
6	116	8 + 05	777 74	2 57	780 31	SICO	High point in pool	
7	16	0 + 05	777 56	2.57	790.31	SILU	low point in pool	
1	40	0 + 21	777.58	2.75	760.31	51		
8	156	8 + 61	//8.88	1.40	780.28	SI	Mid-point	
9	41	10 + 17	779.24	1.06	780.30	SICO	Low point in pool	
10	55	10 + 58	779.95	0.34	780,29	SI	Run/pool	
11	12	11 + 13	779.75	0.60	780.35	COSI	Riffle/run	
12	13	11 + 26	780.06	0.35	780.41	СОВО	Staff gage 144.3 S4C	
13	13	11 + 39	780.11	0.39	780.50	СОВО	Pool/riffle	
14	251	13 + 90	777.29	3.23	780.52	SICO	Low point in pool	
15	21	14 + 11	778.12	2.41	780.53	SACO	Channels converge	
	34		1.00					

### Appendix Table 2-A-11 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth <u>(ft)</u>	WSEL (ft)	Substrate	Comments
16	40	14 + 45	780.32	0.20	780.52	SALG	Riffle/pool
17	40	14 + 85	780.64	0.27	780.91	SGRU	Gradient change
18	88	15 + 73	782.33	0.12	782.45	BOLG	Bend
19	95	16 + 68	782.49	0.33	782.82	COLG	Riffle divides
20	254	19 + 22	782.42	0.66	783.08	СОВО	Pool/riffle
21	7	20 + 65	781.25	1.85	783.10	RUCO	Low point in pool
22	34	20 + 72	781.73	1.37	783.10	COBO	
23	9	21 + 06	782.62	0.48	783.10	CORU	Riffle/pool
24	107	21 + 15	782.73	0.43	783.16	CORU	Staff gage
25	40	22 + 22	783.41	0.30	783.71	RUBO	Spring fed fork of slough enters
26	3	22 + 62	784.66	0.00	784.66	BORU	High point, dewatered
27	10	22 + 65	784.28	0.00	784.28	BORU	Low point, dewatered
28	50	22 + 75	784.47	0.00	784.47	CORU	Bend, dewatered
29	52	23 + 27	784.55	0.00	784.55	CORU	Low point, dewatered
30	63	23 + 90	786.02	0.00	786.02	CORU	High point, dewatered

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Appendix Table 2-A-11 Continued.

Point	Distance <u>(ft)</u>	Stati (ft)	ion	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	<u>Substrate</u>	Comments
31	20	24 +	45	785.84	0.00	785.84	CORU	High point, dewatered
32	42	24 +	74	785.66	0.00	785.67	BORU	Low point in pool, dewatered
33	43	25 +	17	787.17	0.00	787.17	CORU	Bend, dewatered
34	109	26 +	26	787.91	0.00	787.91	CORU	High point, dewatered
35	121	27 +	47	786.06	0.87	786.93	СОВО	Low point in pool
36	19	27 +	66	787.00	0.00	787.00	СОВО	High point, dewatered
37	29	27 +	95	786.45	0.42	786.87	SIBO	Low point in pool
38	30	28 +	25	786.17	0.00	786.17	SICO	High point, dewatered
39	22	28 +	47	785.96	0.95	786.91	SIBO	Low point in pool
40	32	28 +	79	787.45	0.00	787.45	CORU	High point
41	32	29 +	11	787.00	0.00	787.00	SA	Mainstem LWE
42	9	29 +	20	786.08	0.96	787.04	COSA	Mainstem

Appendix Table 2-A-12. Data used in developing the streambed (thalweg) profile of Upland Slough 6A, 1983.

Point	Distance <u>(ft)</u>	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
1		0 + 00	452.75	3.05	455.80	SI	Mouth
2	34	0 + 34	453.09	2.84	455.93	SI	Transect at staff gages
3	109	1 + 43	453.45	2.47	455.92	SI	RJ-TR1
4	256	3 + 99	453.97	2.00	455.97	SI	RJ-TR2
5	120	5 + 19	453.35	2.50	455.85	SI	RJ-TR3
6	80	6 + 18	452.62	3.58	456.20	SI	RJ-TR4
7	103	6 + 98	452.37	3.44	455.81	SI	RJ-TR5
8	123	8 + 01	451.27	4.72	455.99	SI	RJ-TR6
9	179	9 + 24	451.88	4.02	455.90	SI	RJ-TR7
10	105	11 + 03	450.76	5.14	455.90	SI	RJ-TR8
11		12 + 08	454.20	1.66	455.86	SI	RJ-TR9

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RAF GE GE 4/22/84, 5/3/84 3/5/84, 3/29/84, 4/20/84, 5/3/84 ACT/Thalweg Tables

Appendix Table 2-A-12 Continued.

Point	Distance (ft)	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
11	05	12 + 08	454.13	1.86	455.99	SI	RJ-TR9
12	95	13 + 03	456.07	0.39	456.45	SI	Left fork bottom of dam
13		13 + 10	458.64	0.00	458.64	LOGS	Left fork - top of dam
1A	11	12 + 08	454.13	1.86	455.99	SI	RJ-TR9
2A	17	12 + 25	454.36	1.53	455.89	SI	Mouth of right fork
ЗА	17	12 + 42	455.25	0.74	455.99	LGSG	Top of gravel bar
4A	7	12 + 60	454.64	1.50	456.10	SI	Right fork - bottom of dam
5A		12 + 67	458.72	0.00	458.72	LOGS	Right fork - top of dam

2-A-37

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Appendix Table 2-A-12 Continued.

Point	Distance <u>(ft)</u>	Station (ft)	Thalweg Elevation (ft)	Depth (ft)	WSEL (ft)	Substrate	Comments
16	00	20 + 18	475.88	0.80	476.68	RULG	Poo1
17	88	21 + 06	476.32	0.28	476.60	RULG	Riffle/pool
18	214	23 + 20	477.11	0.37	477.48	LGRU	Riffle
19	184	25 + 04	478.34	0.36	478.70	LGRU	Pool/riffle
20	327	28 + 91	477.29	1.44	478.73	RULG	Pool
21	417	33 + 08	478.32	0.27	478.59	LGRU	Riffle/pool
22	232	35 + 40	478.60	0.35	478.95	CORU	Pool/riffle
23	359	38 + 99	477.66	1.14	478.80	RUCO	Pool
24	354	41 + 53	477.11	1.71	478.82	RUCO	Poo1
25	50	42 + 03	478.61	0.22	478.83	CORU	Riffle/pool
26	38	42 + 41	479.09	0.30	479 39	CORU	
27	61	43 + 02	481 09	0.00	481 09	CORU	High point
28	50	43 + 52	481.09	0.00	401.05	CORU	
20	54	43 + 52	400.90	0.00	400.50	DUCO	Edge of colid ice
29	35	44 + 06	480.30	0.38	480.08	RUCU	Laye of solid ice
30		44 + 41	4/8.85	1.85	480.70	RUCO	Mainstem, head of left fork

#### BRAFT/DAGE 1-4/27/84, 5/7/84 3/5/84, 3/29/84, 4/20/84, 5/3/84 ACT/Thalweg Tables

Appendix Table 2-A-13. Data used in developing the streambed (thalweg) profile of Upland Slough 19, 1983

Doint	Distance	Station	Thalweg	Depth (ft)	WSEL	Substrate	Comments
Unit	1107	1107	Lievación (ic)	1107	1107	Substruce	Commentes
1		0 + 00	718.79	0.39	719.18	SISA	Mouth of slough
2	79	0 + 79	718.77	0.46	719.23	SISA	
-	100	0.75	/101//	0.10	/10120	010/1	
3	105	1 + 79	718.58	0.68	719.26	SISA	
4	105	2 + 84	718.81	0.71	719.52	SISA	
_	127						
5	216	4 + 11	719.58	0.57	720.15	LGRU	
6	210	6 + 27	720.32	0.51	720.83	LGRU	
_	103	7		0.10	701 07		
7	141	7 + 30	/21.15	0.12	/21.2/	COBO	
8	141	8 + 71	722.01	0.00	722.01	COBO	Dewatered
•	61	0	701 00	0.14	700 00	0000	
9	55	9 + 32	/21.88	0.14	722.02	COBO	
10	55	9 + 87	721.95	0.03	721.98	COBO	

APPENDIX B

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Appendix Table 2-B-1. Cross sectional elevations obtained at Mainstem II Side Channel mouth, staff gage 114.4W6. Surveyed by ADF&G on September 22, 1983.

STATION	ELEVATION	DESCRIPTION
0.0	483.86	LBHF 114.46LB ADF&G
0.0	483.49	GROUND BY LBHP
4.6	482.83	
10.9	480.89	TOP OF LEFT BANK
13.6	478.79	BOTTOM OF LEFT BANK
33.6	477.20	
61.6	476.69	
88.6	475.73	2
108.6	475.31	
135.6	474.98	LEW
172.1	474.54	
198.6	473.91	
224.6	473.23	
244.6	472.73	
267.6	472.47	•
293.6	472.66	
311.6	472.58	
316.6	472.37	
333.1	471.73	4
338.6	473.00	
351.6	474.30	Q
356.3	474.97	REW
370.6	475.58	
388.6	475.16	
407.3	475.92	BOTTOM OF LEFT BANK

Appendix Table 2-B-1. continued.

STATION	ELEVATION	DESCRIPTION
409.1	477.91	TOP OF RIGHT BANK
417.2	479.99	TOP OF RIGHT BANK
441.2	485.27	GROUND BY REHP
441.2	485.47	RBHP ADF&G ALCAP 114.4W6RB

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Appendix Table 2-B-2. Cross sectional elevations obtained at Mainstem II Side Channel (lower backwater), staff gage 114.489. Surveyed by ADF&G on September 22, 1983.

STATION	ELEVATION	DESCRIPTION
0.0	483.84	LBHP 114.4S9LB ALCAP ADF&G
0.0	483.50	GROUND BY LBHP
2.5	483.49	TOP OF LEFT BANK
6.5	481.93	MID BANK
11.5	478.42	BOTTOM OF BANK
26.0	476.78	
54.5	475.61	14 A
78.5	475.65	
122.5	475.65	
146.6	475.15	LEW
165.5	474.25	
183.5	473.38	
199.5	472.76	
213.5	472.88	
237.5	472.47	
250.5	472.52	
267.5	473.00	
288.5	473.97	
298.5	474.18	
319.5	474.58	
328.1	475.05	REW
342.5	476.16	
362.5	477.60	
376.5	479.91	
382 5	480.60	BOTTOM OF RIGHT BANK

Appendix Table 2-B-2. continued

STATION	ELEVATION	DESCRIPTION
387.1	482.96	MID-BANK
392.3	485.23	TOP OF RIGHT BANK
398.0	486.10	GROUND BY RBHP
398.0	486.48	RBHP ADF&G ALCAP 114.4S9RB

Appendix	Table	2-B-3.	Cross sectional elevations obtained at
			Mainstem II Side Channel (upper backwater),
			staff gage 114.4S7. Surveyed by ADF&G on
			September 22, 1983.
			<ul> <li>And a state of the state of the</li></ul>

STATION	ELEVATION	DESCRIPTION
0.0	484.93	LBHP 114.4S7LE ADF&G ALCAP
0.0	484.46	GROUND BY LEHP
4.5	484.41	TOP OF LEFT BANK
11.8	480.05	BOTTOM OF LEFT BANK
31.0	4//.84	
47.0	476.36	
65.0	475.91	
79.2	475.27	LEW
111.0	474.20	
128.5	473.60	
142.8	473.33	
152.6	473.55	
163.6	474.57	
180.0	474.58	
206.0	474.10	
227.8	474.40	
243.2	475.23	REW
271.7	475.64	
297.0	476.69	
322.8	476.53	
350.0	476.22	
372.4	476.92	BOTTOM OF RIGHT BANK
379.0	479.26	VEGETATION
395.0	480.10	VEGETATION
404.2	484.07	TOP OF RIGHT BANK

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Appendix Table 2-B-3. continued.

STATION	ELEVATION	DESCRIPTION
411.4	483.93	GROUND BY RIGHT BANK
411.4	484.66	114.4S7RB ADF&G REBAR

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Appendix Table 2-B-3. continued.

STATION	ELEVATION	DESCRIPTION
411.4	483.93	GROUND BY RIGHT BANK
411.4	484.66	114.4S7RB ADF&G REBAR

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Appendix	Table 2-8-4.	Cross sectional elevations obtained at Mainstem II Side Channel (northwest channel Q site), staff gage 114.485. Surveyed by ADF&G on August 6, 1983.	
STATION	ELEVATION	DESCRIPTION	
0.0	489.37 488.96	LBHP ADF&G ALCAP 114.485LB GROUND BY LBHP	
13.3	489.06	TOP OF LEFT BANK	
19.0	483.64	BOTTOM OF LEFT BANK	
26.5	483.05		
35.0	483.40		
59.0	484.11		
73.4	483.45		
90.0	483.40		
98.0	483.89		
107.0	483.59		
129.0	483.72		
130.5	482.34		
144.0	481.23		
153.0	483.10		
164.2	483.32		
169.8	482.29		
181.0	482.46		
192.0	481.52	LEW	
200.0	480.96		
217.0	480.20		
246.0	479.45		x
265.0	478.33		
282.0	478.67	÷.	
324.0	479.14		

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#### Appendix Table 2-B-4. continued.

STATION	ELEVATION	DESCRIPTION	
376.0	481.59	REW	
379.0	482.21	BOTTOM OF RIGHT BANK	
385.0	487.27	TOP OF RIGHT BANK	
395.0	487.62	GROUND BY REHP	
395.0	487.97	RBHP ADF&G ALCAP 114.4S5RB	

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Appendix	Table	2-B-5.	Cross sectional elevations obtained at
			Mainstem II (northwest channel head),
			staff gage 114.4H3. Surveyed by ADF&G
			on September 24, 1983.

STATION	ELEVATION	DESCRIPTION
0.0	487.68 487.20	LBHP ADF&G ALCAP 114.4H3LB GROUND BY LBHP
13.7	487.23	TOP OF LEFT BANK
24.1	484.41	BOTTOM OF LEFT BANK
37.3	484.35	
48.0	485.43	
76.0	484.47	
102.4	485.09	
134.0	485.15	
177.9	483.37	
184.9	484.03	
227.8	483.59	
254.0	483.50	
296.8	483.77	
339.0	483.83	
392.0	483.58	
436.0	483.24	
493.0	482.73	· · · ·
541.7	482.65	
595.6	482.94	
649.0	482.74	
678.0	482.39	LWE
714.0	482.04	
767.0	481.92	

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Appendix Table 2.8-5. continued.

STATION	ELEVATION	DESCRIPTION
792.0	481.18	
830.0	481.00	
870.0	480.96	
903.0	481.95	
937.0	482.59	RWE
979.0	482.38	
1017.0	484.42	
1059.0	483.09	
1083.0	484.14	BOTTOM OF RIGHT BANK
1093.0	485.79	MID RIGHT BANK
1105.0	487.24	TOP OF RIGHT BANK
1118.0	487.52	GROUND BY RBHP
1118.0	487.98	RBHP ADF&G ALCAP 114.4H3RB

Appendix Table 2-B-6.	. Cross sectional elevations obtained at
	Mainstem II Side Channel (northeast channel
	Q site), at staff gage 114.458. Surveyed by
	ADF&G on July 4, 1983.

	DESCRIPTION	ELEVATION	STATION
	TOP OF LEFT BANK	488.73	0.0
	BOTTOM OF LEFT BANK	484.27	10.0
		483.91	24.0
	LEW	481.92 480.41	48.0 50.0
		478.94	60.0
		479.12	72.0
		478.98	82.0
		478.71	93.0
		478.86	101.0
		479.11	104.0
		479.52	125.0
1	REW	480.54	135.0
		480.75	143.0
		483.54	148.0
		485.24	158.0
	BOTTOM OF RIGHT BANK	485.31	168.0
	TOP OF RIGHT BANK	488.98	172.0

Appendix Table 2-B-7. Cross sectional elevations obtained at Mainstem II Side Channel (northeast channel head), staff gage 114.4Hl. Surveyed by ADF&G on September 23, 1983.

STATION	ELEVATION	DESCRIPTION		
0.0	490.54	LBHP 114.4H1LB		
0.0	490.17	GROUND BY LBHP		
15.6	489.85	TOP OF LEFT BANK		
21.6	487.48	MID BANK		
26.6	485.57		1	
43.7	485.90			
80.0	486.11			
118.0	485.93			
170.0	485.46	0		
227.0	485.92			
274.0	485.40	8 - 19 - 19 - 19 - 19 - 19 - 19 - 19 - 1		
299.0	485.68			
335.0	485.41			
370.0	484.64			
392.0	484.85			
412.6	485.74	الم الله الله الله الله الله الله الله ا	19 an 19	
428.0	486.26			
443.5	487.58	BOTTOM OF RIGHT BANK		
455.0	491.29	MID-BANK		
471.0	499.43	TOP OF RIGHT BANK		
477.5	498.69	GROUND BY RBHP		
	499.07	RBHP 114.4H1RB		

	DESCRIPTION	ELEVATION	TATION
	CLIFF	650.90	0.0
	LEW	650.81	6.5
		646.08	24.0
		645.41	31.0
		646.44	55.0
1	REW	650.82	108.0
	TOP OF BANK	654.46	148.0
	GB	655.14	205.0
	RBHP ALCAP ADF&G 133.8WRB 83	655.28	205.0

Appendix Table 2-B-8. Cross sectional elevations obtained at Side Channel 10 mouth, staff gage 133.8W5. Surveyed by ADF&G on July 17, 1983. Appendix Table 2-B-9. Cross sectional elevations obtained at Side Channel 10 head, staff gage 133.8H4. Surveyed by ADF&G on September 11, 1983.

STATION	ELEVATION	DESCRIPTION
0.0	661.29	LBHP ALCAP ADF&G 134.3HLB83
0.0	660.93	GB
3.0	660.20	TOP LEFT BANK
5.0	658.14	BOTTOM OF BANK
23.0	658.11	
81.0	657.14	· · · · · · · · · · · · · · · · · · ·
96.0	656.65	
120.0	656.33	
135.0	656.25	
152.0	657.46	
178.0	657.67	
206.0	657.21	
227.0	656.23	
260.0	657.06	
270.0	656.37	
285.0	656.20	
300.0	656.98	
310.0	657.03	
320.0	657.54	
330.0	658.79	
350.0	659.02	•
360.0	659.61	TOP OF RIGHT BANK
366.0	659.64	GB
366.0	660.73	RBHP ALCAP ADF&G 134.3HRB83

Appendix Table	Table	2-B-10.	Cross sectional elevations obtained at
		Upper Side Channel 11 mouth, staff	
		gage 136.2W3. Surveyed by ADF&G on	
		July 20, 1983.	

STATION	ELEVATION	DESCRIPTION
0.0	682.31	LBHP ALCAP ADF&G 136.2WLB 83
0.0	682.01	GROUND AT ALCAP
51.0	680.53	EDGE OF VEGETATION
73.5	677.90	LEW
92.0	674.58	THALWEG
119.0	676.88	
130.0	676.72	
149.0	676.58	
166.0	676.99	
185.0	676.05	•
188.0	675.69	BOTTOM OF RB
196.0	677.95	RWE
208.0	684.35	TOP BANK VEGETATION
214.5	684.68	GROUND AT ALCAP
214.5	685.00	RBHP ALCAP ADF&G 136.2WRB 83

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STATION	ELEVATION	DESCRIPTION
0.0	686.14	LBHP R&M ALCAP 136.5Q3RB 82
28.0	681.36	LEW BOTTOM OF BANK
37.0	680.58	
73.0	680.21	
121.0	681.33	REW
153.0	683.77	
169.0	681.85	
189.0	684.80	BOTTOM OF BANK
201.7	688.63	RBHP R&M ALCAP 136.5Q3LB 82

Appendix Table 2-B-11. Cross sectional elevations obtained at Upper Side Channel 11 (Q site), staff

Appendix Table 2-B-12. Cross sectional elevations obtained at Upper Side Channel 11 head, staff gage 136.2H2. Surveyed by ADF&G on July 18, 1983.

STATION	ELEVATION	DESCRIPTION
0.0	691.28 691.04	LBHP ALCAP ADF&G 136.5HLB 83 GROUND BY ALCAP
2.0	691.25	VEGETATION TOP OF BANK
5.5	686.23 685.12	BOTTOM OF LEFT BANK
125.5	685.80	
198.5	685.62	
361.5	685.97	
455.5	686.88	
582.5	686.74	
635.5	686.68	
822.5	686.83	SPARSE VEGETATION
896.5	686.07	REW
935.5	685.05	BOTTOM
975.5	684.50	THALWEG
991.5	685.91	LEW
1017.5	685.96	BOTTOM
1037.5	687.66	EDGE OF VEGETATION
1051.9	691.09	TOP OF BANK
1051.9	691.38	REHP ALCAP ADF&G 136.5HRB 83

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Appendix Table 2-B-13. Cross sectional elevations obtained at Side Channel 21 mouth, staff gage 140.6W1. Surveyed by ADF&G on September 12, 1983.

STATION	ELEVATION	DESCRIPTION	
0.0	736.13 735.71 734.48	LBHP ALCAP ADF&G 140.6W1LB GROUND BY ALCAP MID-BANK	11.1
41.0	733.03	EDGE OF VEGETATION	•
47.0 53.0 63.0 105.0 131.0	731.63 731.53 731.87 731.53 730.66	BOTTOM OF BANK	
156.0 165.0 180.0 203.0 218.0	729.99 729.59 729.76 729.79 729.44	LWE	
241.0 293.0 310.0 346.0 387.0	729.22 729.39 729.38 729.79 730.62	RWE	
402.0 415.0 421.0 436.0 436.0	732.19 735.17 735.74 738.00 738.41	BOTTOM OF RIGHT BANK MID-BANK TOP OF RIGHT BANK GROUND BY ALCAP RBHP ALCAP 140.6W1RB	

Appendix Table 2-B-14. Cross sectional elevations obtained at Side Channel 21 (lower Q site), staff gage 140.6S4. Surveyed by ADF&G on September 12, 1983.

STATION	ELEVATION	DESCRIPTION
0.0	742.26	LBHP ADF&G ALCAP 140.654LB
0.0	741.99	GROUND BY ALCAP
16.0	740.01	MID-BANK
26.0	739.10	BOTTOM OF LEFT BANK
39.0	737.32	
68.0	736-17	LEW
87.0	735.62	
117.0	734.89	
144.0	735.99	
172.0	736.19	
197.0	735.77	
229.0	736.44	REW
260.0	737.31	
277.0	737.33	
289.0	737.80	EDGE OF VEGETATION
293.0	741.43	MID-BANK
294.0	745.18	GROUND BY ALCAP
294.0	745.91	RBHP ADF&G ALCAP 140.6S4RB

0.0		
0.0	747.48	LBHP ALCAP 140.652LB
	747.82	GROUND BY ALCAP
15.0	746.27	TOP OF LEFT BANK EDGE OF VEGETATION
30.0	742.97	BOTTOM OF BANK
44.0	744.03	
81.0	744.53	
114.0	743.78	
170.0	742.98	LEW
174.0	742.59	
190.0	742.19	and the second sec
195.0	742.59	
209.0	742.05	
223.0	742.27	
231.0	741.59	Second and address
251.0	742.09	
286.0	742.19	
302.0	742.83	REW
340.0	744.29	BOTTOM OF RIGHT BANK
350.0	752.72	GROUND BY ALCAP

Appendix Table 2-B-15. Cross sectional elevations obtained at Side Channel 21 (mid channel), staff gage 140.652. Surveyed by ADF&G on September 13, 1983. Appendix Table 2-B-16. Cross sectional elevations obtained at Side Channel 21 (A5 Head), staff gage 140.6S3. Surveyed by R&M in 1982.

STATION	ELEVATION	DESCRIPTION
0.0	751.27	LBHP R&M ALCAP 141.7A5RB
8.0	751.03	TOP OF LEFT BANK
12.0	746.20	
21.0	745.80	
32.0	744.10	
40.0	744.00	
44.0	743.80	
56.0	743.10	
68.0	743.90	
88.0	744.20	
116.0	746.23	
119.0	746.75	BOTTOM OF RIGHT BANK
124.0	750.10	TOP OF RIGHT BANK
144.0	750.18	RBHP R&M ALCAP 141.7A5LB

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-	DESCRIPTION	ELEVATION	STATION
	LBHP ALCAP 140.6S7LB	751.78	0.0
	GROUND BY ALCAP	751.48	0.0
	TOP OF LEFT BANK	751.33	26.0
	BOTTOM OF LEFT BANK	749.03	37.0
		746.27	67.0
	LEW	744.29	93.0
		743.26	113.0
	REW	744.42	143.0
		745.37	177.0
		747.09	219.0
	277 7 25 7 30%	746.91	250.0
		744.75	260.0
	LEW	744.19	270.0
		743.23	299.0
		743.55	305.0
		743.43	320.0
	REW	744.23	324.0
	BOTTOM OF RIGHT BANK	745.32	334.0
¢	TOP OF RIGHT BANK	749.01	342.0
	GROUND BY RBHP	749.85	347.0

Appendix Table 2-B-17. Cross sectional elevations obtained at Side Channel 21 (upper Q site), staff gage 140.6S7. Surveyed by ADF&G on September 13, 1983. Appendix Table 2-B-18. Cross sectional elevations obtained at Side Channel 21 (A6 head), staff gage 140.6H5. Surveyed by R&M in 1982.

STATION	ELEVATION	DESCRIPTION
0.0	753.04	LBHP R&M ALCAP 141.8A6RB
18.0	752.15	TOP OF LEFT BANK
27.0	746.55	BOTTOM OF LEFT BANK
48.0	745.15	
60.0	746.35	where the second second second second
66.0	746.85	
78.0	746.35	LEW
84.0	746.55	REW
116.0	747.85	BREAK
138.0	747.35	TOP OF LOW BANK
158.0	744.95	
169.0	746.65	
197.0	744.95	
218.0	747.15	BOTTOM OF BANK
285.0	749.05	
299.0	747.95	
341.0	749.15	
390.0	749.05	
438.0	749.25	
482.0	748.95	
526.0	748.65	
556.0	748.45	LEW
574.0	748.35	
59500	748.25	
617.0	748.15	

Appendix Table 2-B-18. continued

STATION	ELEVATION	DESCRIPTION
636.0	748.05	
660.0	748.35	
679.0	748.45	BOTTOM OF RIGHT BANK
695.0	748.75	REW
706.0	752.65	TOP OF RIGHT BANK
717.0	753.45	RBHP R&M ALCAP 141.8A6LB

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STATION	ELEVATION	DESCRIPTION	si tos 
0.0	370.02	LBHP R&M ALCAP 101.2W1RB	
0.0	369.90	GROUND BY HEADPIN	
9.0	368.44	TOP OF LEFT BANK	
20.0	365.33	EDGE OF VEGETATION	
	262 42		
24.2	362 40	LEW	
50.0	362.49		
60.0	367 44		
70.0	362.09		
80.0	362.41		
85.0	362.56		
90.0	362.42		
96.0	362.24		
105.0	362.25	· · · · · · · · · · · · · · · · · · ·	
111.0	362.61	8.731 C 1071 C	1.0
114.4	363.45	REW	
119.2	365.89	EDGE OF VEGETATION	
126.5	366.57	MID BANK	
133.0	370.22	GROUND BY HEADPIN	
133.0	370,41	RBHP R&M ALCAP 101, 2W1LB	

Appendix Table 2-B-19. Cross sectional elevations obtained at Whiskers Side Slough mouth, staff gage 101.2W1. Surveyed by ADF&G on September 11, 1983.

Appendix	Table	2-B-20.	Cross sectional elevations obtained at
			Whiskers Side Slough (Q site), staff
			gage 101.2S3. Surveyed by ADF&G on
			July 3, 1983.

TATION	ELEVATION	DESCRIPTION	
0.0	373.21	HIGH BANK	
2.0	371.68	TOE	
09.0	369.08		
19.0	366.19	LEW	
31.0	364.63		
38.0	364.21	THALWEG	
44.0	364.25		
50.0	364.37	·	
55.0	364.55	-	
66.0	365.33		
76.0	366.11	REW	
84.0	368.03		
95.0	368.16	EDGE OF VEGETATION	
105.0	370.38	RBHP R&M ALCAP 101.4S3LB	
125.0	370.93	HIGH BANK	

Appendix	Table	2-B-21.	Cross sectional elevations obtained at	
			Whiskers Side Slough head, staff	
			gage 101.2H5. Surveyed by ADF&G on	
			July 3, 1983.	

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STATION	ELEVATION	DESCRIPTION
0.0	374.15	GROUND BY HEADPIN
9.0	373.30	MIDBANK
18.0	370.04	TOE
27.0	369.33	
30.0	368.42	
42.0	367.42	LEW
48.0	366.48	
64.0	368.39	REW
74.0	369.98	
80.0	369.42	· · · · · · · · · · · · · · · · · · ·
85.0	368.16	LEW
91.0	367.62	
98.0	367.81	
108.0	367.46	
119.0	367.33	•
128.0	367.44	
142.0	368.25	REW
147.0	368.27	TOE
152.0	374.14	HIGH BANK

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Appendix	Table	2-B-22.	Cross sectional elevations obtained at Side Slough 8 (below mouth), staff
			gage 113.6W8. Surveyed by ADF&G on September 12, 1983.

	DESCRIPTION	ELEVATION	STATION
	LBHP ADF&G REBAR	471.23	0.0
	GROUND BY LBHP	470.79	0.0
	TOP OF LEFT BANK	470.49	5.3
LEW	BOTTOM OF LEFT BANK. LE	466.70	10.8
	CHANNEL BOTTOM	465.83	12.2
		466.01	16.7
		466.29	19.7
		466.31	22.7
	REW	466.71	25.9
1		467.00	32.7
		467.36	44.7
		467.75	49.7
		467.28	55.2
		466.96	66.7
	BOTTOM OF RIGHT BANK	467.42	71.7
	TOP OF RIGHT BANK	469.09	78.7
	GROUND BY RBHP	469.85	93.0
	REHP ADF&G REBAR	470.33	93.0

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Appendix Table 2-B-23. Cross sectional elevations obtained at Side Slough 8 mouth, staff gage 113.6W8. Surveyed by ADF&G on July 5, 1983.

EVATION DESCRIPTION	ELEVATION	STATION
71.11 LEFT HIGH BANK	471.11	0.0
70.81	470.81	7.0
68.96 LEW	468.96	11.0
66.37	466.37	15.0
65.85	465.85	19.0
.67.58	467.58	25.0
68.42	468.42	34.0
68.93 REW	468.93	41.0
69.63	469.63	51.0
70.19	470.19	74.4
70.26 EDGE OF VEGETATION	470,26	100.0
70 84	470 84	112.0

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Appendix Table 2-B-24. Cross sectional elevations obtained at Side Slough 8 Q site, staff gage 113.6S2. Surveyed by ADF&G on July 5, 1983.

STATION	ELEVATION	DESCRIPTION	10
0.0	470.97	EDGE OF VEGETATION	
13.0	470.78		
26.0	470.76	TOP OF BANK	
30.0	468.94	LEW	
31.0	468.06	BOTTOM OF BANK	
36.0	467.40		,
43.0	467.36	MIDSTREAM	
52.0	467.46	BOTTOM OF BANK	
57.0	467.74		
61.0	468.92	REW	
64.0	470.25	TOP OF RIGHT BANK	
72.0	470.76		
77.0	471.02	EDGE OF VEGETATION	

STATION	ELEVATION	DESCRIPTION	
0.0 0.0 15.0 22.0 36.0	476.23 476.57 475.76 475.10 475.90	LBHP R&M ALCAP 114.1H1 RB GROUND BY ALCAP HIGH BANK	
55.0 71.0 82.0 95.0 101.0	476.08 475.73 475.95 475.56 475.73		
108.0 110.0 122.0 140.0 151.0	476.13 475.13 475.97 475.47 475.00		
153.0 160.0 178.0 196.0 205.0	474.41 474.92 474.53 474.12 474.05		
208.0 216.0 229.0 235.0 237.0	472.96 472.53 481.34 481.73 481.85	THALWEG HIGH BANK RBHP R&M ALCAP 114.1H1LB	

Appendix Table 2-B-25. Cross sectional elevations obtained at Side Slough 8 head, staff gage 113.6H4. Surveyed by ADF&G on July 5, 1983.

Cross sectional elevations obtained at Appendix Table 2-B-26. Side Slough 8A mouth, staff gage 125.3W5. Surveyed by ADF&G on October 19, 1983.

STATION	ELEVATION	DESCRIPTION	
0.0	566.01	LBHP R&M ALCAP 125.2W1RB	
0.0	565.82	GROUND BY LBHP ALCAP	
8.0	563.99	MID LEFT BANK	
14.0	563.25		
16.0	562.49	BOTTOM OF LEFT BANK	
30.0	561.34	LEW	
52.0	560.68		
61.0	560.69		
81.0	560.11		
106.0	559.67		
113.0	559.12		
118.0	559.25		
137.0	558.93		
156.0	558.62		
165.0	558.93		
170.0	559.26		
175.0	560.61		
177.0	561.36	REW	
178.0	562.22	BOTTOM OF RIGHT BANK	
179.0	566.21	MID-BANK	
184.0	567.57	TOP OF RIGHT BANK	
189.0	568.37	GROUND BY RBHP	
189 0	568.54	REHP RAM ALCAP 125 2WILB	

Appendix Table	Table	2-B-27.	Cross sectional elevations obtained at Side Slough 8A (upper backwater),
			staff gage 125.386. Surveyed by ADF&G on July 18, 1983.

STATION	ELEVATION	DESCRIPTION	
0.0	570.07	LBHP ADF&G ALCAP 125.386LB	
3.0	569.73	TOP OF LEFT BANK	
13.0	564.95	MID-BANK	
28.0	564.73	EDGE OF VEGETATION	
32.0	563.77	10000	
33.0	563.33		
40.0	562.93	LWE	
62.0	561.05		
94.0	561.52		
132.0	562.29		
155.0	561.49		
170.0	562.88	RWE	
171.0	563.86	BOTTOM OF RIGHT BANK	
187.0	564.75	MID-BANK	
197.0	566.77	TOP OF RIGHT BANK	
206.0	567.53	GROUND BY RB ALCAP	
206.0	567.95	RBHP ADF&G ALCAP 125.3S6RB	

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Appendix Table 2-B-28	Table	2-B-28.	Cross sectional elevations obtained at
		Side Slough 8A (lower Q site), staff	
		gage 125.3S4. Surveyed by ADF&G on	
			July 18, 1983.

STATION	ELEVATION	DESCRIPTION	191.2
0.0	567.97	LBHP ADF&G ALCAP 125.3S4LB	
0.0	567.44	GROUND BY ALCAP	
10.0	566.12	TOP OF LEFT BANK	
12.0	564.20	BOTTOM OF LEFT BANK	
19.0	564.50	DRY STREAM BED	
23.0	564.26	BOTTOM OF RIGHT BANK	
26.0	565.71	HIGH BANK	
38.0	565.72	MID-GRAVEL BAR	
50.0	564.84	HIGH BANK	
52.0	563.51	BOTTOM OF LEFT BANK	
54.0	562.99		
68.0	563.25		
85.0	563.53	RWE	
87.0	563.88	BOTTOM OF RIGHT BANK	
101.0	565.98	TOP OF RIGHT BANK	
126.0	566.41	MID-ISLAND	
167.0	565.93	TOP OF LEFT BANK	
171.0	564.55	MID-BANK	
175.0	564.02	BOTTOM OF LEFT BANK	
177.0	563.61	LWE	
185.0	562.91		
199.0	563.55	RWE	
215.0	565.45	EDGE OF VEGETATION	
226.0	565.26	MID-BANK	
235.0	568.38	TOP OF BANK	

Appendix Table 2-B-28. continued.

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 DESCRIPTION	ELEVATION	STATION
GROUND BY ALCAP	568.89	239.0
 REHP 125 354 ADESC ALCAP	569.28	239.0

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Appendix Table 2-B-29.	Cross sectional elevations obtained at Side Slough 8A (northwest channel Q site),
2	staff gage 125.383. Surveyed by ADF&G on July 18, 1983.

STATION	ELEVATION	DESCRIPTION
0.0	573.32	LBHP ADF&G ALCAP 125.3S3LB
0.0	572.90	GROUND BY ALCAP
9.0	573.06	TOP OF LEFT BANK
16.0	570.13	MID BANK
22.0	568.48	BOTTOM OF BANK
25.0	566.61	
29.0	566.15	LWE
35.0	565.81	
44.0	565.70	
64.0	566.03	RWE
69.0	566.34	EDGE OF VEGETATION
71.0	567.19	BOTTOM OF BANK
82.0	568.61	MID-BANK
95.0	570.70	TOP OF BANK
122.0	571.47	GROUND BY ALCAP
122.0	572.08	RBHP ADF&G ALCAP 125.3SLB

Appendix Table	e 2-B-30.	Cross sectional elevations obtained at Side Slough 8A (northwest channel head),		
			staff gage 125.3H2. Surveyed by ADF&G on May 15, 1983.	

DESCRIPTION	ELEVATION	STATION
LBHP R&M ALCAP 126.1H4RB	577.11	0.0
EDGE OF VEGETATION	575.46	0.0
	574.29	66.0
	574.23	100.0
	573.55	135.0
	573.18	172.0
	573.11	232.0
EDGE OF VEGETATION	573.92	260.0
RBHP REBAR	582.40	279.0

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STATION	ELEVATION	DESCRIPTION	
0.0	583.87 583.52	LBHP ADF&G REBAR GROUND BY LBHP	
16.5 20.0 24.0	583.48 580.33 579.30	TOP OF LEFT BANK MID-BANK BOTTOM OF BANK	
36.0	578.98		
54.0 56.0 60.0	580.33 579.75 578.51		
62.5 67.0 75.5	577.80 579.28 579.46		
86.0 97.0	579.64		
103.0 108.0 119.0	578.97 578.05 578.33		
126.0	577.37 577.98		
140.0 151.0 168.0 180.0	577.95 577.18 577.39 577.06		
187.0	577.12		

Appendix Table 2-B-31. Cross sectional elevations obtained at Side Slough 8A (northeast channel head), staff gage 125.3H7. Surveyed by ADF&G on August 4, 1983. Appendix Table 2-B-31. continued.

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STATION	ELEVATION	<b>FESCRIPTION</b>		
200.0	577.13			.0
209.0	577.31 577.19			
234.0	578.39			
260.0 271.0	579.33 579.10			
294.5	579.96 580.28	GROUND BY RBHP RBHP ADF&G REBAR		
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Appendix Table 2-B-32. Cross sectional elevations obtained at Side Slough 9 mouth, staff gage 128.3W3. Surveyed by ADF&G on September 14, 1983.

ELEVATION	DESCRIPTION
592.59	LBHP ADF&G REBAR
591.38	GROUND BY LBHP
591.36	TOP OF SAND BAR
590.68	
589.96	LEW
589.62	1.0 50 500
589.84	
589.82	
589.63	
589.44	
589.76	
590.01	REW
591.96	
592.71	BOTTOM OF RIGHT BANK
595.29	TOP OF RIGHT BANK
596.03	GROUND BY RBHP
596.44	RBHP ADF&G ALCAP 128.3W3RB
	ELEVATION 592.59 591.38 591.36 590.68 589.96 589.62 589.84 589.82 589.63 589.44 589.76 590.01 591.96 592.71 595.29 596.03 596.03 596.44

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Appendix Table 2-B-33. Cross sectional elevations obtained at Side Slough 9 (Q site), staff gage 128.3S1. Surveyed by ADF&G on August 3, 1983.

STATION	ELEVATION	DESCRIPTION	
0.0	600.15	ADF&G REBAR LBHP	
0.0	599.45	GROUND BY LBHP	
5.0	597.49	MID-BANK	
8.0	596.30		
11.5	593.72	BOTTOM OF LEFT BANK	
21.0	593.70		1
41.0	594.08		
76.0	593.73		
97.8	593.59	LWE	
110.0	592.93		
130.0	592.57		
148.0	592,48		
155.7	593.59	RWE	
166.4	595.35	EDGE OF VEGETATION	
168.3	597.03	MID-BANK	
171.0	598,18	TOP OF RIGHT BANK	5 (P. 1. 19 (P.
192.3	599.67	GROUND BY RBHP	
192.3	600.20	ADF&G REBAR RBHP	
2 A 10			

Appendix	Table	2-B-34.	Cross	sec	tic	ona	1 e1	Lev	ations	obta	ained at	1
7.151			Side	Slou	igh	9	head	1,	staff	gage	128.3H3	١.
			Surve	yed	by	AD	F&G	on	Augus	t 23	, 1983.	

STATION	ELEVATION	DESCRIPTION	
0.0 0.0 15.0	604.97 604.50 604.77	ADF&G REBAR LBHP GROUND BY LBHP	
25.0 31.0	604.45 603.99	LWE	
36.0 46.0 61.0 68.0 78.0	603.94 604.11 603.86 603.68 604.01	-	
94.0 108.0 122.0 134.0 138.0	603.91 604.17 604.09 604.22 604.00		
152.0 169.0 175.0 194.0 210.0	604.69 604.38 604.63 604.93 604.63	RWE	n vires arte Filosofi tron Statisti Erre
220.0 250.0 259.0 272.0 289.0	604.28 605.38 605.59 605.20 605.51		

Appendix Table 2-B-34. continued.

ELEVATION	DESCRIPTION
605,50	
605.10	
604.35	
602.69	LWE
610.84	
602.67	RWE
604.00	BOTTOM OF RIGHT BANK
607.90	TOP OF RIGHT BANK. EDGE OF VEGETATION
608.19	GROUND BY RBHP
608.68	ADF&G REBAR RBHP

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Appendix Table 2-B-3	. Cross sectional elevations obtained at
	Side Slough 11 mouth, staff gage 135.3W1.
	Surveyed by ADF&G on October 19, 1983.

TATION	ELEVATION	DESCRIPTION
0.0	672.77	LBHP ALCAP R&M 135.5W1LB
0.0	672.57	GB
3.0	670.96	TOP OF LEFT BANK. EDGE VEGETATION
16.5	670.42	
41.0	669.14	MIDDLE BANK
64.4	668.15	
83.4	667.45	
107.6	667.64	
114.8	667.38	
120.0	666.60	BOTTOM OF LOW BANK
126.5	666.30	LWE
133.2	665.81	
137.0	665.61	
144.0	665.83	
148.4	665.45	
154.0	665.75	
155.7	666.31	RWE
162.2	666.88	BOTTOM OF LOW BANK
173.5	667.78	MIDDLE BANK
184.6	669.24	BANK
186.6	671.97	BANK
186.6	674.00	

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Appendix	Table	2-B-36.	Cross sectional elevations obtained at	
			Side Slough 11 (Q site), staff gage 135.386.	
			Surveyed by ADF&G on June 29, 1983.	

STATION	ELEVATION	DESCRIPTION	
0.0	674.36 674.06	LBHP ALCAP R&M 135.7S2RB GB	
11.5 23.5 43.6	673.69 674.19 673.04		
72.0	672.19		
107.6	670.74	LEW	
125.6	669.77.	THALWEG	
129.9 147.3	669.83 670.78	REW	
162.6	6/4.2/	MIDDLE OF HIGH BANK	

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STATION	ELEVATION	DESCRIPTION	
0.0	688.67	LBHP ALCAP R&M LRX44	
13.0	688.10	TOP BANK	
21.0	685.30	BOTTOM OF BANK	
31.0	684.80		
40.0	684.90		
53.0	685.10		
65.0	684.90		
79.0	684.70		
90.0	684.90		
98.0	684.00		
108.0	684.20		
116.0	685.50		
129.0	685.40		
140.0	685.60		
154.0	685.70	*	
168.0	685.60		
182.0	685.10		
197.0	685.80		
213.0	686.60		
229.0	687.30		£ .
246.0	687.70		
263.0	688.30		
280.0	688.80		
292.0	689.00	TOP OF BANK	
299.0	689.70	GB	

Appendix Table 2-B-37. Cross sectional elevations obtained at Side Slough 11 head, staff gage 135.3H3. Surveyed by R&M in 1982. Appendix Table 2-B-37. continued.

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STATION	ELEVATION	DESCRIPTION
307.0	689.36	RBHP ALCAP 136.5H4LB

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TATION	ELEVATION	DESCRIPTION
0.0	706.50	LBHP R&M ALCAP 138.0S3RB
7.0	704.87	
10.0	703.27	
32.0	700.98	
39.0	699.97	
46.0	699.77	
53.0	699.67	
61.0	699.87	
67.0	699.67	
78.0	705.37	
84.0	705.62	RBHP R&M ALCAP 138.0S3LB

Appendix Table 2-B-38. Cross sectional elevations obtained at Side Slough 16B (Q site), staff gage 138.0S5. Surveyed by R&M in 1982.

STATION	·ELEVATION	DESCRIPTION	1002712710
0.0	708.22	LBHP ADF&G REBAR RB	
5.0	707.00		
7.0	704.14		
21.0	703.64		
29.0	703.40	A STATE OF STATE	
41.0	703.10		
53.0	703.10		
66.0	703.00		
80.0	703.30		
94.0	703.48		
107.0	703.70		
126.0	703.70		
149.0	704.10		
173.0	704.70		
187.0	704.60		13.05
195.0	708.86	RBHP ADF&G ALCAP LB	un. d
			15.411

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Appendix Table 2-B-39. Cross sectional elevations obtained at Side Slough 16B head, staff gage 138.0H3. Surveyed by R&M in 1982.

TATION	ELEVATION	DESCRIPTION
0.0	733.76	LBHP R&M ALCAP LRX-53 LB
11.0	732.58	
27.0	731 58	TOP BANK
30.0	729.48	BOTTOM OF LEFT BANK
38.0	727.88	
54.0	726.98	
75.0	727.08	
78.0	725.63	
89.0	725.48	
109.0	724.98	
114.0	724.42	
121.0	722.92	
128.0	723.12	
136.0	723.62	
142.0	724.02	- 1 " · · · · · · · · · · · · · · · · · ·
148.0	724.32	
154.0	724.72	
161.0	724.82	
168.0	/24.92	
176.0	725.02	
189.0	725.51	
201.0	727.22	
209.0	728.14	RBHP R&M ALCAP 140.1W1 RB

Appendix Table 2-B-40. Cross sectional elevations obtained at Side Slough 20 mouth, staff gage 140.1W4. Surveyed by R&M in 1982. Appendix Table 2-B-41. Cross sectional elevations obtained at Side Slough 20 (Q site), staff gage 140.155. Surveyed by R&M in 1982.

	DESCRIPTION	ELEVATION	STATION
140.2S2LB	RBHP R&M ALCAP	732.20	0.0
	TOP BANK	731.70	4.0
		727.48	9.0
		726.40	13.0
	•	726.00	18.0
		726.00	22.0
		726.10	27.0
		726.10	31.0
		726.50	36.0
		726.50	41.0
		726.60	46.0
		726.80	51.0
		726.90	57.0
		727.10	61.0
		727.20	66.0
		727.48	70.0
		728.40	74.0
140.2S2RB	LBHP R&M ALCAP	729.66	79.0

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Appendix	Table	2-B-42.	Cross sectional elevations obtained at
			Side Slough 20 head, staff gage 140.1H3.
			Surveyed by R&M in 1982.

ATION	ELEVATION	DESCRIPTION	
0.0	734.25	RBEP R&M ALCAP	140.6H3LB
15.0	733.90		
32.0	733.10		
47.0	732.80		
59.0	732.40		
71.0	732.10		
79.0	731.73		
84.0	731.50		
93.0	731.30		
102.0	731.10		
110.0	731.00		
117.0	730.60		
123.0	730.50		
129.0	730.50	BOTTOM	
134.0	731.71		
141.0	737.33	LBHP R&M ALCAP	140.6H3RB

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Appendix Table 2-B-43. Cross sectional elevations obtained at Side Slough 21 mouth, staff gage 142.0W5. Surveyed by ADF&G on May 17, 1983.

	DESCRIPTION	ELEVATION	STATION
LBHP8	LBHP REBAR ADF&G 1981	751.49	0.0
	BOTTOM OF LEFT BANK	744.21	9.0
		743.55	32.0
		742.82	54.0
100		742.62	85.0
		744.36	99.0
		744.47	120.0
RBHP8	RBHP REBAR ADF&G 1981	750.97	130.0

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Appendix	Table	2-B-44.	Cross sectional elevations obtained at
			Side Slough 21 (Q site), staff
			gage 142.056. Surveyed by ADF&G on May 17, 1983.

)N	ELEVATION	DESCRIPTION
.0	751.21	LBHP ALCAP 141.9S8RB
.0	745.89	BOTTOM OF BANK
.0	746.18	
.0	744.92	LEW
.7	744.31	
.0	744.88	REW BOTTOM OF RIGHT BANK
.3	751.61	TOP OF RIGHT BANK

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STATION	ELEVATION	DESCRIPTION	
0.0	759.26 758.34	LBHP R&M LRX-56 GROUND BY LRX-56	
26.0 39.0 55.0	755.34 754.74 754.94	•	
63.0	756.61		
74.0	754.84		53.34
158.0	756.21		
161.0	754.84		
198.0 243.0	755.44 756.24		
290 .0 334 .0	756.44		
375.0	756.64		
411.0 465.0	756.44 756.14		
486.0 526.0	756.34 757.04		
562.0	757.24		
587.0	756.74		
654.0 675.0	757.04		

Appendix Table 2-B-45. Cross sectional elevations obtained at Side Slough 21 head, staff gage 142.0H3. Surveyed by R&M in 1982.

#### Appendix Table 2-B-45. continued.

STATION	ELEVATION	DESCRIPTION		
10 OP 00 95 97 08 05 05 05 04 94 94		477 9 1 877 TE	W. 1980 0.25	Kalty (c)
715.0	756.81			1
754.0	757.11			
795.0	757.01			
831.0	756.81			
867.0	757.01		11.361	
893.0	756.71		also also	
928.0	755.67			
929.0	755.61			
952.0	757.11			
957.0	756.68	BOTTOM OF RIGHT BANK		
977.0	761.38	TOP OF RIGHT BANK	In. e	
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Appendix Table 2-B-46. Cross sectional elevations obtained at Side Slough 22 mouth, staff gage 144.3W3. Surveyed by ADF&G on September 15, 1983.

	DESCRIPTION	ELEVATION	STATION
10.00	Salar of the second		
	LBHP ADF&G REBAR	787.62	0.0
	GROUND BY ALCAP	787.23	0.0
	BOTTOM OF LEFT BANK	781.77	13.0
		780.76	50.0
	LEW	780.37	66.0
		780.01	71.0
		779.77	92.0
		779.74	115.0
		780.34	132.0
	REW	780.35	168.0
		781.03	190.0
		781.61	228.0
		781.68	266.0
		781.77	300.0
		781.61	331.0
		781.63	379.0
		781.72	405.0
		783.85	410.0
	EDGE OF VEGETATION	783.86	443.0
		784.27	498.0
		782.73	513.0
		782.82	523.0
		783.92	525.0
		784.07	530.0
		782.37	560.0

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Appendix Table 2-B-46. continued.

 DESCRIPTION	ELEVATION	STATION
BOTTOM OF RIGHT BANK	782.78	575.0
RBHP ADF&G REBAR	-34.11	576.0

Appendix Table 2-B-47. Cross sectional elevations obtained at Side Slough 22 (mid Slough), staff gage 144.3S4. Surveyed by R&M in 1982.

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STATION	ELEVATION	DESCRIPTION	40.1.1
0.0	785.16	LBHP R&M ALCAP 144.4S2RB	
10.0	784.19	TOD OF TREE BANK	
33.0	780.78	TOP OF LEFT BANK	
38.0	779.57	BOTTOM	
43.0	779.22		
50.0	778.89	BOTTOM	
55.0	777.66		
65.0	778.52	BOTTOM	
82.0	780.94		0- 58-
96.0	784.72		10.00
100.0	787.25	TOP OF RIGHT BANK	
110.0	787.56	RBHP ADF&G 144.3S4A	
			Ma. 1993

Appendix Table 2-B-48. Cross sectional elevations obtained at Side Slough 22 (Q site), staff gage 144.356. Surveyed by R&M in 1982.

 DESCRIPTION	ELEVATION	STATION
LBHP ALCAP 144.6S3RB	789.54	0.0
TOP LEFT BANK	788.57	3.0
TOE. BOTTOM OF LEFT BANK	785.88	5.0
	783.72	17.0
	783.43	21.0
	783.24	25.0
	783.21	30.0
	783.21	35.0
	782.86	40.0
·	782.90	45.0
	783.74	53.0
	785.29	71.0
	788.89	82.0
RBHP ADF&G REBAR 3 LB	789.54	110.0

Appendix Table 2-B-49. Cross sectional elevations obtained at Side Slough 22 head, staff gage 144.3H2. Surveyed by ADF&G on September 15, 1983.

	DESCRIPTION	ELEVATION	STATION
	HP REBAR ADF&G	790.07	0.0
	OUND BY LBHP	791.19	0.0
	GE OF VEGETATION	790.58	13.0
		789.78	19.0
		788.72	33.0
		788.96	54.0
		788.02	76.0
		787.79	90.0
		786.78	105.0
10		786.35	115.0
		787.16	127.0
		788.87	135.0
		789.55	152.0
		789.25	159.0
- 55		787.85	169.0
		788.97	184.0
		787.54	191.0
	GE OF VEGETATION	788.68	203.0
		790.21	218.0
	TTOM OF RIGHT BANK	791.45	232.0
	P OF RIGHT BANK	793.53	237.0
	OUND BY REHP	793.39	263.0
	EP SPIKE IN COTTONWOOOD	795.00	265.0

Appendix	Table	2-A-50.	Cross sectional elevations obtained at Upland Slough 6A mouth, staff
			gage 112.3W1. Surveyed by ADF&G on July 5, 1983.

 DESCRIPTION	ELEVATION	STATION
LEFT BANK	467.29	0.0
	466.50	16.0
	459.61	21.0
TOE	457.51	27.0
	457.23	42.0
LEW	457.35	56.0
	456.77	69.0
	455.96	71.0
	452.16	83.0
	452.54	88.0
	453.42	94.0
	456.28	102.0
REW	457.28	112.0
RIGHT HIGH BANK	458.64	120.0

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Appendix	Table	2-B-51.	Cross sectional elevations obtained a Upland Slough 6A backwater, staff	t
			gage 112.3S3. Surveyed by ADF&G on September 12, 1983.	

STATION	ELEVATION	DESCRIPTION	
0.0	460.16 459.66	LEHP ALCAP 112.3S3LB GROUND BY ALCAP	
10.6 16.6 17.6	458.30 455.65 455.29	TOP OF LEFT BANK BOTTOM OF LEFT BANK AND LEW	
19.6	454.62		
24.6	454.68		
28.6	455.09		
30.6	453.84		
32.6	453.71		
36.6	453.56		
38.6	453.93		
39.6	454.42		
42.3	455.65	REW	
45.0	455.82	BOTTOM OF LEFT BANK	
45.3	457.55	TOP OF RIGHT BANK	
52.2	458.19	GROUND BY REHP	
52.2	458.88	RBHP ADF&G REBAR	

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Appendix Table 2-B-52. Cross sectional elevations obtained at Upland Slough 19 (access), staff gage 140.0W1. Surveyed by ADF&G on September 14, 1983.

STATION	ELEVATION	DESCRIPTION
0.0	719.57	MAINSTEM REW
20.0	720.37	GRAVEL BAR
27.0	719.94	GRAVEL BAR
56.0	719.72	GRAVEL BAR
59.0	720.36	SAND BAR
88.0	719.95	SAND BAR
98.0	718.61	LEW
100.0	718.03	THALWEG
103.0	718.64	REW
109.0	720.25	
111.0	721.00	BOTTOM OF BANK EDGE OF VEGETATION
117.0	724.52	GROUND BY ALCAP
117.0	724.71	RBHP ALCAP ADF&G 140.0W1RB

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	gan Sej	ge 140.0S3. Surveyed by ADF&G on otember 14, 1983.		
STATION	ELEVATION	DESCRIPTION	flyrar 1	0.27
0.0	719.97 720.55 720.31	MAINSTEM LEW		
38.0 48.0	719.96 720.42			
75.0 81.0 95.0 105.0 120.0	720.09 719.75 719.85 720.02 719.11	LEW		
135.0 142.0 150.0 156.0 165.0	717.01 716.80 718.16 717.74 719.03	THALWEG	1.5. 457 8.5. 919 98.911 1.5. 1.5.	
168.0 169.0 176.0 176.0	719.38 722.32 722.87 723.23	BOTTOM OF BANK TOP OF BANK EDGE OF VEGETATION GROUND BY ALCAP RBHP ALCAP ADF&G 140.0S3RB 83	ŕŝ.	

Appendix Table 2-B-53. Cross sectional elevations obtained at Upland Slough 19 (below mouth), staff

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Appendix Table 2-B-54. Cross sectional elevations obtained at Upland Slough 19 (Q site), staff gage 140.0S4. Surveyed by ADF&G on September 14, 1983.

STATION	ELEVATION	DESCRIPTION
0.0	724.52	LBHP ALCAP ADF&G 140.0S4LB 83
0.0	724.25	GROUND BY ALCAP
6.0	721.84	MIDDLE BANK
10.0	720.81	BOTTOM OF BANK
11.0	720.02	LEW
16.0	719.68	THALWEG
18.0	719.65	
21.0	720.02	REW
30.0	720.35	
33.0	721.86	TOP OF BERM VEGETATION
36.0	720.01	LEW
38.0	719.45	BOTTOM OF POOL
42.0	719.99	REW
44.0	721.61	TOP OF BANK EDGE OF VEGETATION
52.0	722.43	MIDDLE OF BANK
71.0	724.94	GROUNG BY ALCAP
71.0	725.22	RBHP ALCAP ADF&G 140.0S4RB 83

Appendix Table 2-B-55. Cross sectional elevations obtained at 4th July Creek (Q site), staff gage 131.1T1. Surveyed by ADF&G on July 3, 1983.

STATION .	ELEVATION	DESCRIPTION	ACT TAVE IS	
0.0 0.0 3.0 4.5	627.69 627.47 626.46 624.79	LBHP R&M ALCAP 131.1T3LF GROUND BY ALCAP TOP OF LEFT BANK LWE		
7.0	623.93		10.000	
10.0	622.39		12.100	
13.0	624.09			
16.0	623.27			
19.0	623.30			
22.0	623.41			
25.5	624.41	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
25.5	624.77	RWE		14. 142
27.0	627.06	TOP OF RIGHT BANK		
31.0	627.98	GROUND BY ALCAP		
31.0	628.54	RBHP R&M REBAR		

Appendix Table 2-B-56. Cross sectional elevations obtained at Gold Creek (Q site), staff gage 136.8T1. Surveyed by ADF&G on May 16, 1983.

			DESCRIPTION	ELEVATION	STATION
1983	136.8T2RB	LD CREEK	RBHP R&M ALCAP GOLD	699.81	0.0
			TOP BANK	700.69	11.0
			LEW	695.82	20.0
			BOTTOM	695.09	28.0
				694.99	32.0
				695.71	41.0
			TOP OF BANK	698.16	54.0
В	136.8T2LP	OLD CREEK	LBHP R&M ALCAP GOL	698.87	61.0

## Appendix Table 2-B-57. continued.

STATION	ELEVATION	DESCRIPTION		
33 0	945 40			
34 1	845 33			
34.8	845 99			
36.9	846 19			
38.1	846.08			
41.9	846.29			
43.2	846.29			
46.1	846.46			
46.9	846.31			
47.4	846.19		•	
51.6	846.29			
51.9	846.19			
55.6	846.38			
55.8	846.19			
56.5	846.29			
59.6	846.28			
60.0	846.19			
61.9	845.61			
63.6	845.78	<i>x</i>		
64.2	845.99	÷		
66.9	845.09			
70.0	846.18			
71.9	845.49			
72.2	846.09			
75.0	845.99			

### Appendix Table 2-B-57. continued.

 DESCRIPTION	ELEVATION	STATION
	846.99	75.6
	846.93	79.6
	840.69	80.2
	847.27	81.9
	847.49	82.9
REW	847.49	83.2

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Appendix Table 2-B-57. Cross sectional elevations obtained at Indian River (Q site), staff gage 138.6T2. Developed from ADF&G 1983 stream flow data.

STATION	ELEVATION	DESCRIPTION	thatti		
0.0	847.49	LEW			
0.4	847.49				
0.0	840.99				
1.6	847.28				
2.4	846.69			CT BCF	
5.1	846.48				
5.8	846.49				
6.1	846.73				
8.9	845.84				
10.0	846.39			53 8.44	143
10.1	846.48				
11.9	845.79				
14.1	846.28				
14.2	846.09				
14.9	845.67			C2 - 97N	
18.0	845.99				
20.9	845.49				
22.1	845.86				
23.9	845.39				
26.1	845.83			NL - 5 (C)	
26.4	845.89				
27.9	845.09				
30.1	845.68				
30.6	845.79				

Appendix Table 2-B-58. Cross sectional elevations obtained at Portage Creek (Q site), staff gage 148.8T1. Developed from ADF&G 1983 stream flow data.

STATION	ELEVATION	DESCRIPTION	by Right and
0.0 1.8 5.0 8.0 10.0	841.33 840.94 839.54 838.83 838.54	LEW	
13.0 15.0 18.0 20.0 23.0	838.73 838.44 838.73 838.74 838.53		
25.0 28.0 30.0 33.0 35.0	838.44 838.53 838.44 838.53 838.14		
38.0 40.0 43.0 44.0 48.0	838.33 838.14 838.33 838.14 838.14 838.14		
52.0 53.0 56.0 58.0 60.0	838.14 838.03 837.94 838.53 838.34		

#### Appendix Table 2-B-58. continued.

 DESCRIPTION	ELEVATION	STATION
	837.93	63.0
	837.04	64.0
	837.79	68.0
	837.74	72.0
	838.13	73.0
	837.84	76.0
	837.33	78.0
	837.74	80.0
	836.83	83.0
	837.74	84.0
	837.34	88.0
	838.74	92.0
REW	841.33	95.0

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