

HARZA-EBASCO

Susitna Joint Venture
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EXHIBIT E

SCHEDULES, OUTLINES AND GUIDELINES

SEPTEMBER 21, 1982



Acres American Incorporated

1577 C Street
Suite 305
Anchorage, Alaska 99501
Telephone (907) 279-9631

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EXHIBIT E

SCHEDULES, OUTLINES AND GUIDELINES

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SCHEDULES

EXHIBIT E
CHAPTER 1 GENERAL DESCRIPTION

<u>Description</u>	<u>Activity</u>	<u>Begin</u>	<u>Duration</u>	<u>End</u>
M. Grubb	Initial Draft	Sep 1	10 days	Sept 15
Clerical Staff	Production	Sept 16	2 days	Sept 17
J. Lawrence	Internal Review	Sept 20	2 days	Sept 21
M. Grubb	Revised Draft	Sept 22	5 days	Oct 1
Clerical Staff	Production	Sept 29	3 days	Oct 8
-	APA Review	Oct 4	5 days	Oct 8
M. Grubb	Revised Draft	Oct 11	10 days	Oct 22
C. Debelius	Revised Review	Oct 25	5 days	Oct 29
Clerical Staff	Revised Production	Nov 1		Nov 5
(Distribution to Agencies & FERC		Nov 15		
M. Grubb	Revised based on Agency & FERC Comments	Dec 6	19 days	Jan 4
C. Debelius	Final Review	Jan 5	4 days	Jan 10
Clerical Staff	Final Production	Jan 11	14 days	Jan 28
Contractor	Printing	Jan 31	7 days	Feb 9
-	Submit	Feb 10	4 days	Feb 15

EXHIBIT E
CHAPTER 2 WATER QUALITY

<u>Responsibility</u>	<u>Activity</u>	<u>Begin</u>	<u>Duration</u>	<u>End</u>
W. Dyok	Initial Draft	Sept 13	5 weeks	Oct 15
Clerical Staff	Production	Oct 18	1 week	Oct 22
T. Lavander/Hayden/ APA	Review	Oct 25	1 week	Oct 29
W. Dyok	Revised Draft	Nov 1	1 week	Nov 5
Clerical Staff	Production	Nov 8	1 week	Nov 12
Distribution to Agencies and FERC		Nov 15		
W. Dyok	Revised based on Agency and FERC Comments	Dec 6	4 weeks	Jan 4
J. Hayden	Final Review	Jan 5	5 days	Jan 11
Clerical Staff	Final Production	Jan 12	2 weeks	Jan 28
Contractor	Printing	Jan 31	2 weeks	Feb 9
-	Submit	Feb 10	1 week	Feb 15

KEY INPUTS REQUIRED/MILESTONES

<u>Responsibility</u>	<u>Action</u>	<u>Date Required</u>
AEIDC	Aquatic Systems Model	Oct 1
Staff	Downstream Modeling Results	Oct 1/Nov 15
R&M	Water Quality Report	Oct 1
R&M	Groundwater Dynamics Report	Oct 1/Nov 15
R&M/PN	Sedimentation Study Report	Oct 1

EXHIBIT E

CHAPTER 3 FISH, WILDLIFE, AND BOTANICAL WILDLIFE AND BOTANICAL SECTIONS

<u>Responsibility</u>	<u>Activities</u>	<u>Begin</u>	<u>Duration</u>	<u>End</u>
R. Sener (LGL)	Initial Draft	Sept 13	4 weeks	Oct 8
Clerical Staff	Production	Oct 11	1 week	Oct 15
M. Grubb	Review	Oct 18	1 week	Oct 22
R. Sener	Revised Draft	Oct 25	2 weeks	Nov 8
Clerical Staff	Production	Nov 9	3 days	Nov 12
Distribution to Agencies and FERC				

WORKSHOP

R. Sener	Final Draft based on Workshop results	Dec 6	4 weeks	Jan 4
J. Hayden	Senior Review	Jan 5	1 week	Jan 14
Clerical Staff	Final Production	Jan 17	4 days	Jan 28
Contract	Printer	Jan 31	2 weeks	Feb 9
-	Submit	Feb 10	1 week	Feb 15

KEY INPUTS REQUIRED/MILESTONES

<u>Responsibility</u>	<u>Action</u>	<u>Date Required</u>
ADF&G	Quarterly Reports	July 30
R. Sener	Initial Report	Oct 8
U of A	Data Reports	Oct 25
ADF&G	Quarterly reports	Oct 30
R. Sener	Final draft	Jan 4

EXHIBIT E

CHAPTER 4 CULTURAL RESOURCES

<u>Responsibility</u>	<u>Activity</u>	<u>Begin</u>	<u>Duration</u>	<u>End</u>
J. Dixon (U of A)	Initial Draft	Oct 4	4 weeks	Oct 25
K. Young	Review	Oct 26	3 days	Oct 29
J. Dixon	Revised Draft	Nov 1	1 week	Nov 15
Distributed to Agencies and FERC		Nov 15		
J. Dixon	Revised Draft based on Agency and FERC Comments	Dec 6	4 weeks	Jan 4
K. Young	Final Draft	Jan 5	1 week	Jan 10
J. Hayden	Senior Review	Jan 11	2 days	Jan 13
Clerical Staff	Final Production	Jan 14	3 days	Jan 14
Contractor	Printing	Jan 20	3 weeks	Feb 9
-	Submit	Feb 10	1 week	Feb 15

KEY INPUTS REQUIRED/MILESTONES

<u>Responsibility</u>	<u>Action</u>	<u>Date Required</u>
J. Dixon	Initial Draft	Nov 1
	Distribute to	
K. Young	Final Draft	Jan 10

EXHIBIT E
CHAPTER 5 SOCIOECONOMICS

<u>Responsibility</u>	<u>Activity</u>	<u>Begin</u>	<u>Duration</u>	<u>End</u>
P. Rogers (FOA)	Initial Draft	Sept 7	8 weeks	Oct 25
M. Grubb	Review	Oct 25	1 week	Oct 31
P. Rogers	Revised Draft	Nov 1	1 week	Nov 8
Distribute to Agencies and FERC		Nov 15		
P. Rogers	Final Draft	Dec 6	2 weeks	Dec 22
J. Hayden	Senior Review	Dec 27	1 week	Jan 5
P. Rogers	Camera Ready Copy	Jan 10	1 week	Jan 17
Contractor	Printing	Jan 20	3 weeks	Feb 9
-	Submit	Feb 10	1 week	Feb 13

KEY INPUTS REQUIRED/MILESTONES

<u>Responsibility</u>	<u>Action</u>	<u>Date Required</u>
P. Rogers	Initial Draft	Nov 1
P. Rogers/Acres	Distribute to Agencies and FERC	Nov 15
P. Rogers	Final Draft	Dec 22

EXHIBIT E
CHAPTER 6 GEOLOGY AND SOILS

<u>Responsibility</u>	<u>Activity</u>	<u>Begin</u>	<u>Duration</u>	<u>End</u>
J. Gill	Initial Draft	Oct 1	2 weeks	Oct 15
Clerical Staff	Production	Oct 16	1 week	Oct 22
D. W. Lamb	Review	Oct 23	1 week	Oct 31
J. Gill	Revised Draft	Nov 1	1 week	Nov 8
Clerical Staff	Production	Nov 8	1 week	Nov 12
Distribute to FERC and Agencies		Nov 15		
J. Gill	Final Draft	Dec 6	1 week	Jan 12
S. Thompson	Final Review	Jan 13	1 day	Jan 14
Clerical Staff	Final Production	Jan 15	4 days	Jan 26
Contractor	Printing	Jan 20	3 weeks	Feb 9
-	Submit	Feb 10	1 week	Feb 15

KEY INPUTS REQUIRED/MILESTONES

<u>Responsibility</u>	<u>Document</u>	<u>Date Required</u>
J. Gill	Initial Draft	Nov 5
Staff	1982 Field Season Results	As Available
J. Gill	Draft Exhibit E	Nov 15
J. Gill	Final Draft	Jan 12

EXHIBIT E
CHAPTER 7 RECREATION

<u>Responsibility</u>	<u>Activity</u>	<u>Begin</u>	<u>Duration</u>	<u>End</u>
R. Erickson	Initial Draft (Task 6)	Sept 6	4 weeks	Oct 4
Clerical Staff	Production	Oct 5	1 week	Oct 12
K. Young/B. Ecklain	Review	Oct 15	1 week	Oct 22
R. Erickson	Revised Draft (Task 11)	Oct 25	2 weeks	Nov 8
Clerical Staff	Production	Nov 9	3 days	Nov 12
	Distribute to FERC and Agencies	Nov 15		
R. Erickson	Final Draft (Task 13)	Dec 6	1 week	Dec 14
J. Hayden/D. Blau	Senior Review	Dec 15	1 week	Dec 22
Clerical Staff	Final Production	Jan 3	1 week	Jan 10
Contract	Printing	Jan 20	3 weeks	Feb 9
-	Submit	Feb 10	1 week	Feb 15

KEY INPUTS REQUIRED/MILESTONES

<u>Responsibility</u>	<u>Action</u>	<u>Date Required</u>
R. Eickson	Initial Draft Completed	Oct 22
R. Erickson	Final Draft	Dec 14

EXHIBIT E
CHAPTER 8

<u>Responsibility</u>	<u>Activities</u>	<u>Begin</u>	<u>Duration</u>	<u>End</u>
J. Chappell	Initial Draft	Oct 1	3 weeks	Oct 22
Clerical Staff	Production	Oct 25	1 week	Oct 29
K. Young/B. Ecklain	Review	Nov 1	1 week	Nov 5
Clerical Staff	production	Nov 8	1 week	Nov 12
Distribute to FERC and Agencies		Nov 5		
J. Chappell	Final Draft	Dec 13	1 week	Dec 20
J. Hayden/D. Blau	Senior Review	Dec 20	2 days	Dec 22
Clerical Staff	Final Production	Dec 27	1 week	Jan 3
Contract	Printing	Jan 20	3 weeks	Feb 9
	Submit	Feb 10	1 week	Feb 15

KEY INPUTS REQUIRED/MILESTONES

<u>Responsibility</u>	<u>Action</u>	<u>Date Required</u>
J. Chappell	Initial Draft	Oct 22
APA, Agency, FERC	Review	Nov 15
J. Chappell	Final Draft	Dec 20
APA/Agency	Review	Dec 20

EXHIBIT E
CHAPTER 9 LAND USE

<u>Responsibility</u>	<u>Activities</u>	<u>Begin</u>	<u>Duration</u>	<u>End</u>
K. Young	Initial Draft	Oct 1	3 weeks	Oct 22
Clerical Staff	Production	Oct 25	4 days	Oct 29
J. Gill	Review	Nov 1	1 week	Nov 5
Clerical Staff	Production	Nov 8	1 week	Nov 12
Distribute to FERC and Agencies		Nov 15		
K. Young	Revised Draft	Dec 6	2 weeks	Dec 17
C. Debelius	Review	Dec 20	4 days	Dec 23
K. Young	Final Draft	Jan 3	1 week	Jan 7
J. Hayden	Final Review	Jan 10	2 days	Jan 12
Clerical Staff	Final Production	Jan 17	3 days	Jan 20
Contractor	Printing	Jan 20	3 weeks	Feb 9
-	Submit	Feb 10	1 week	Feb 15

KEY INPUTS REQUIRED/MILESTONES

<u>Responsibility</u>	<u>Action</u>	<u>Date Required</u>
J. Sullivan (LUS)	Exhibit G Input	Oct 18
K. Young	Initial Draft	Oct 22
K. Young	Final Draft	Jan 7

EXHIBIT E
CHAPTER 10 ALTERNATIVES

<u>Responsibility</u>	<u>Activities</u>	<u>Begin</u>	<u>Duration</u>	<u>End</u>
C. Debelius/ P. Hoover	Initial Draft	Sept 6	3 weeks	Sept 27
Clerical Staff	Production	Sept 28	1 week	Oct 4
J. Hayden	Review	Oct 4	1 week	Oct 11
C. Debelius/ P. Hoover	Revised Draft	Oct 11	2 weeks	Oct 25
Clerical Staff	Production	Oct 25	1 week	Oct 30
J. Lawrence	Review	Nov 1	3 days	Nov 5
-	APA/Submittal Agency Dist.	Nov 5		
C. Debelius/ P. Hoover	Final Draft	Nov 15	1 week	Jan 22
G. Warnock	Final Review	Jan 22	4 days	Jan 26
Clerical Staff	Final Production	Jan 27	2 days	Jan 28
Contractor	Printing	Jan 28	2 weeks	Feb 9
-	Submit	Feb 10	1 week	Feb 15

KEY INPUTS REQUIRED/MILESTONES

<u>Milestones Responsibility</u>	<u>Action</u>	<u>Date Required</u>
C. Debelius/ P. Hoover	Initial Draft	Oct 1
APA	Review	Dec 6
D. Debelius/ P. Hoover	Final Draft	Dec 5

INPUTS

Access Road Report
Transmission Corridor Selection Report
Project Operation Selection Report

OUTLINES

1 - GENERAL DESCRIPTION OF THE LOCALE

Page

1.1	-	Location.....	1-1
1.2	-	Physiography and Topography.....	1-1
1.3	-	Geology and Soils.....	1-1
1.4	-	Hydrology.....	1-1
1.5	-	Climate.....	1-2
1.6	-	Vegetation.....	1-2
1.7	-	Wildlife.....	1-3
1.8	-	Fish.....	1-3
1.9	-	Land Use.....	1-3

Section 2 - WATER QUALITY AND FLOW

1. Introduction

2. Baseline Description

2.1 - Devil Canyon to Headwaters

(a) Flows

(i) Flood Frequency

- 1:10,000
- 1:50
- mean annual

(ii) Annual Flows

- maximum annual
- average annual
- minimum annual

(iii) Monthly Flows

- maximum monthly
- average monthly
- minimum monthly

(iv) Flow Duration Curves

- annual
- monthly
- 7 day low flow
- 1 day low flow

(b) Water Quality

(i) Temperature

- open water
- freeze up

- winter ice conditions
- break up
- (ii) Suspended Sediments
- (iii) Turbidity
- (iv) Nitrogen Saturation
- (v) Other Parameters
 - significant ions
 - chlorophyll a
 - nutrients
 - specific conductance
 - pH
 - total dissolved
 - total alkalinity
 - total hardness
 - dissolved oxygen
 - bacteria
- (c) Baseline Groundwater Conditions
 - (i) Description of Water Table and Artesian Conditions
 - (ii) Hydraulic Connection of Groundwater and Surface Water
 - (iii) Location of Springs, Wells, and Artesian Flows
- (d) Existing Lakes and Streams
 - (i) Lakes
 - (ii) Streams
 - gradient
 - substrate classification
- (e) Existing Instream Flow Uses

- (i) Downstream Water Rights
- (ii) Fishery Resources
- (iii) Navigation and Transportation
- (iv) Recreation
- (v) Riparian Vegetation and Wildlife Habitat
- (vi) Sanitary and Water Quality Purposes

2.2 - Cook Inlet to Devil Canyon

(a) Flows

(i) Flood Frequency

- 1:10,000
- 1:50
- mean annual

(ii) Annual Flows

- maximum annual
- average annual
- minimum annual

(iii) Monthly Flows

- maximum annual
- average annual
- minimum annual

(iv) Flow Duration Curves

- annual
- monthly
- 7 day low flow
- 1 day low flow

(b) Water Quality

(i) Temperature

- open water

- freeze up
- winter ice conditions
- break up

(ii) Suspended Sediments

(iii) Turbidity

(iv) Nitrogen Saturation

(v) Other Parameters

- significant ions
- chlorophyll a
- nutrients
- specific conductance
- pH
- total dissolved
- total alkalinity
- total hardness
- dissolved oxygen
- bacteria

(c) Baseline Groundwater Conditions

(i) Description of Water Table and Artesian Conditions

(ii) Hydraulic Connection of Groundwater and Surface Water

(iii) Location of Springs, Wells, and Artesian Flows

(d) Existing Lakes and Streams

(i) Lakes

(ii) Streams

- gradient
- substrate classification

(e) Existing Instream Flow Uses

- (i) Downstream Water Rights
- (ii) Fishery Resources
- (iii) Navigation and Transportation
- (iv) Recreation
- (v) Riparian Vegetation and Wildlife Habitat
- (vi) Sanitary and Water Quality Purposes

3. Project Impact on Water Quality and Quantity

3.1 - Proposed Project Reservoirs

(a) Watana Characteristics

- (i) Surface Area
- (ii) Volume
- (iii) Maximum Depth
- (iv) Mean Depth
- (v) Flushing Rate
- (vi) Shoreline Length
- (vii) Substrate Classification

(b) Devil Canyon Characteristics

- (i) Surface Area
- (ii) Volume
- (iii) Maximum Depth
- (iv) Mean Depth
- (v) Flushing Rate
- (vi) Shoreline Length
- (vii) Substrate Classification

3.2 - Watana Development

(a) Watana Construction

(i) Impact on Lakes and Streams in Impoundment Area

(ii) Impact on Downstream Flows

- floods
- annual flows
- monthly flows
- low flows
- flow duration

(iii) Effects on Water Quality

- physical parameters (ions, pH, conductance, DO, etc)
- temperature
 - freeze up
 - winter ice condition
 - break up
 - open water conditions
- suspended sediments
- turbidity
- vertical illumination

(iv) Effects on Groundwater Conditions

(v) Effects on Instream Flow Uses

(b) Impoundment of Watana Reservoir

(i) Impact on Lakes and Streams in Impoundment Area

(ii) Impact on Downstream Flows

- floods
- annual flows
- instream flows
- monthly flows
 - Watana

- Gold Creek
- Sunshine
- Susitna Station

(iii) Effects on Water Quality

- physical parameters
- temperature
 - reservoir
 - Watana to Talkeetna
 - Talkeetna to Cook Inlet
- turbidity
- nutrients
- suspended sediment
- vertical illumination

(iv) Effect on Groundwater Conditions

(v) Effects on Instream Flow Uses

(c) Watana Operation

(i) Impact on Downstream Flows

- floods
- annual flows
- instream flows
- monthly flows
 - Watana
 - Gold Creek
 - Sunshine
 - Susitna Station

(ii) Effects on Water Quality

- physical parameters

- temperature
 - reservoir
 - Talkeetna to Watana Dam
 - Talkeetna to Cook Inlet
- turbidity/sedimentation
 - reservoir
 - open water conditions
 - ice cover conditions
 - Watana to Talkeetna
 - stability analysis
 - Talkeetna to Cook Inlet
 - stability analysis
- nutrients
 - reservoir
 - Watana to Talkeetna
 - Talkeetna to Cook Inlet
- salinity in Cook Inlet

(iv) Effects on Groundwater

(v) Effects on Instream Flow Uses

3.3 - Devil Canyon Development

(a) Devil Canyon Construction - Watana Operation

(i) Impact on Downstream Flow and Stage

- floods
- annual flows
- instream flows
- monthly flows

- Watana
- Devil Canyon
- Gold Creek
- Sunshine
- Susitna Station

(ii) Effects on Water Quality

- physical parameters
 - Watana Reservoir
 - Watana to Devil Canyon
 - Devil Canyon to Watana
 - Talkeetna to Cook Inlet
- turbidity
 - Watana Reservoir
 - Devil Canyon Reservoir
 - Devil Canyon to Talkeetna
- nutrients
 - Devil Canyon Reservoir
 - Devil Canyon to Talkeetna
- salinity in Cook Inlet

(iv) Effects on Groundwater

(v) Effects on Instream Flow Uses

(b) Watana/Devil Canyon Operation

(i) Impact on Downstream Flows and Stage

- floods
- annual flows
- instream flows

- monthly flows

- Watana
- Devil Canyon
- Gold Creek
- Sunshine
- Susitna Station

- (ii) Effects on Water Quality

- physical parameters

- temperature

- Watana Reservoir
- Watana to Devil Canyon
- Devil Canyon to Talkeetna
 - mainstem
 - sloughs
- Talkeetna to Cook Inlet
- Cook Inlet

- turbidity

- Watana Reservoir
- Devil Canyon Reservoir
- Devil Canyon to Talkeetna

- nutrients

- Devil Canyon Reservoir
 - trophic status
- Devil Canyon to Talkeetna

- salinity in Cook Inlet

3.4 - Access Plan

(a) Flows

- (b) Water Quality
 - (i) Construction
 - (ii) Post Construction
- (c) Instream Flow Uses

3.5 - Transmission Corridor

- (a) Flows
- (b) Water Quality
 - (i) Construction
 - (ii) Post Construction
- (c) Instream Flow Uses

3.6 - Summary of Project Effects

- (a) Flows
- (b) Water Quality
- (c) Instream Flow Uses

4. Mitigative, Enhancement, and Protective Measures

4.1 - Watana Development

- (a) Construction Phase
- (b) Reservoir Filling
- (c) Operation

4.2 - Devil Canyon Development

- (a) Construction
- (b) Reservoir Filling
- (c) Operation

5. Agency Consultation

- Appendix - Water Quality Certificate

Section 3 - REPORT ON FISH, WILDLIFE, AND
BOTANICAL RESOURCES

1. Introduction

1.1 - Purpose

1.2 - Approach

- (a) Baseline Description
- (b) Impact Assessment
- (c) Mitigation Planning

2. Fish

2.1 - Introduction

- (a) Important Species
- (b) Threatened or Endangered Species
- (c) Contribution to Commerce, Recreation, Subsistence,
and Wildlife

2.2 - Baseline Description

- (a) Species Accounts
 - (i) Salmon
 - (ii) Other Anadromous Fish
 - (iii) Resident Fish
- (b) Habitat Utilization
 - (i) Watana Reservoir Area
 - (ii) Devil Canyon Reservoir Area
 - (iii) Talkeetna to Devil Canyon
 - (iv) Cook Inlet to Talkeetna
 - (v) Transmission Stubs and Intertie

2.3 - Impacts

- (a) Watana Development
 - (i) Construction
 - (ii) Filling
 - (iii) Operation
- (b) Devil Canyon Development
 - (i) Construction
 - (ii) Filling
 - (iii) Operation
- (c) Access
 - (i) Construction
 - (ii) Operation
- (d) Transmission
 - (i) Construction
 - (ii) Operation
- (e) Impact Summary
 - (i) Adult Anadromous Fish
 - (ii) Anadromous Fish Embryo Development
 - (iii) Juvenile Anadromous Fish
 - (iv) Resident Fish

2.4 - Mitigation Plan

- (a) Watana Development
 - (i) Construction
 - (ii) Filling
 - (iii) Operation
- (b) Devil Canyon Development
 - (i) Construction

- (ii) Filling
 - (iii) Operation
- (c) Access
 - (i) Construction
 - (ii) Operation
- (d) Transmission
 - (i) Construction
 - (ii) Operation
- (e) Mitigation Summary
 - (i) Facility Siting, Design, and Construction
 - (ii) Resource Management
 - (iii) Monitoring
 - (iv) Further Studies

3. Botanical Resources

3.1 - Introduction

- (a) Regional Botanical Setting
- (b) Floristics
- (c) Threatened or Endangered Species
- (d) Contribution to Wildlife, Recreation, Subsistence, and Commerce

3.2 - Baseline Description

- (a) Watana Reservoir Area
- (b) Devil Canyon Reservoir Area
- (c) Talkeetna to Devil Canyon
- (d) Cook Inlet to Talkeetna
- (e) Transmission Stubs and Intertie

3.3 - Impacts

- (a) Watana Development
 - (i) Construction
 - (ii) Filling
 - (iii) Operation
- (b) Devil Canyon Development
 - (i) Construction
 - (ii) Filling
 - (iii) Operation
- (c) Access
 - (i) Construction
 - (ii) Operation
- (d) Transmission
 - (i) Construction
 - (ii) Operation
- (e) Impact Summary
 - (i) Watana Reservoir Area
 - (ii) Devil Canyon Reservoir Area
 - (iii) Talkeetna to Devil Canyon
 - (iv) Cook Inlet to Talkeetna
 - (v) Transmission Stubs and Intertie

3.4 - Mitigation Plan

- (a) Watana Development
 - (i) Construction
 - (ii) Filling
 - (iii) Operation
- (b) Devil Canyon Development

- (i) Construction
 - (ii) Filling
 - (iii) Operation
- (c) Access
 - (i) Construction
 - (ii) Operation
- (d) Transmission
 - (i) Construction
 - (ii) Operation
- (e) Mitigation Summary
 - (i) Facility Siting, Design, and Construction
 - (ii) Resource Management
 - (iii) Monitoring
 - (iv) Further Studies

4. Wildlife

4.1 - Introduction

- (a) Important Species
- (b) Threatened or Endangered Species
- (c) Contribution to Recreation, Subsistence, and Commerce

4.2 - Baseline Description

- (a) Big Game
 - (i) Moose
 - (ii) Caribou
 - (iii) Dall Sheep
 - (iv) Brown Bear
 - (v) Black Bear

- (c) Access
 - (i) Construction
 - (ii) Operation
- (d) Transmission
 - (i) Construction
 - (ii) Operation
- (e) Impact Summary
 - (i) Big Game
 - (ii) Furbearers
 - (iii) Birds
 - (iv) Non-Game (Small) Mammals

4.4 - Mitigation Plan

- (a) Watana Development
 - (i) Construction
 - (ii) Filling
 - (iii) Operation
- (b) Devil Canyon Development
 - (i) Construction
 - (ii) Filling
 - (iii) Operation
- (c) Access
 - (i) Construction
 - (ii) Operation
- (d) Transmission
 - (i) Construction
 - (ii) Operation

- (vi) Wolf
- (vii) Wolverine
- (b) Furbearers
 - (i) Beaver
 - (ii) Muskrat
 - (iii) River Otter
 - (iv) Mink
 - (v) Pine Marten
 - (vi) Red Fox
 - (vii) Lynx
 - (viii) Coyote
 - (ix) Short-tailed Weasel
 - (x) Least Weasel
- (c) Birds
 - (i) Raptors
 - (ii) Waterfowl
 - (iii) Other Birds
- (d) Non-Game (Small) Mammals

4.3 - Impacts

- (a) Watana Development
 - (i) Construction
 - (ii) Filling
 - (iii) Operation
- (b) Devil Canyon Development
 - (i) Construction
 - (ii) Filling
 - (iii) Operation

(e) Mitigation Summary

- (i) Facility Siting, Design, and Construction
- (ii) Resource Management
- (iii) Monitoring
- (iv) Further Studies

Section 4 - HISTORIC AND ARCHAEOLOGICAL RESOURCES

1. Introduction

1.1 - Program Objectives

1.2 - Study Area

- (a) Archeology
- (b) Geoarcheology
- (c) Paleontology

1.3 - Program Specifics

- (a) Archeology
 - (i) Step 1. Field Study Preparation
 - (ii) Step 2. Reconnaissance Level Survey
 - (iii) Step 3. Systematic Testing
 - (iv) Step 4. Analysis and Report Preparation
 - (v) Step 5. Curation
- (b) Historical
- (c) Geoarcheology
- (d) Paleontology

2. Baseline Description

2.1 - Archeological Methodology

- (a) Literature Review
- (b) Cultural Chronology
- (c) Research Strategy
 - (i) Overlooks
 - (ii) Lake Margins
 - (iii) Stream and River Margins

(iv) Natural Constrictions

(d) Data Collection Procedures

(e) Application of Data Base

2.2 - Georcheology - Method

(a) Literature Review

(b) Field Study

(i) Aerial Reconnaissance

(ii) Stratigraphic Reconnaissance

(iii) Geomorphic Reconnaissance

(c) Geoarcheologic Terrain Unit Mapping

(d) Data Organization and Compilation

(e) Investigation and Dating of Samples

2.3 - Paleontology - Methods

(a) Fossil Leaves

(b) Pollen

2.4 - Historic and Archeological Sites in the Project Area Located during Reconnaissance Level Testing; 1980 through 1982

(a) Prehistory and History of Upper Susitna River Region

(i) Introduction

(ii) Contemporary Sites: 1945 to Present

(iii) Trapping Period: 1920 - 1945

(iv) Goldrush: 1900 - 1920

(v) Athapaskan Tradition: A.D. 1900 - A.D. 500

(vi) Choris/Norton Tradition: ca. A.D. 500 - ca. 1500 A.D.

(vii) Northern Archaic Tradition: ca. 1500 B.C. - ca. 3000 B.C.

(viii) American Paleoarctic Tradition: ca. 3000 B.C.? - 9000 B.C.?

(ix) Early Period: ca. 30,000 B.C. - ca. 20,000 B.C.

- (b) Watana Dam and Impoundment
 - (i) Archeological Sites - Results and Discussion (By Reference)
 - (ii) Historic Sites - Results and Discussion
- (c) Devil Canyon Dam and Impoundment
 - (i) Archeological Sites - Results and Discussion
 - (ii) Historic Sites - Results and Discussion
- (d) Borrow Areas, Associated Facilities and Areas Disturbed by Geotechnical Testing
 - (i) Archeological Sites - Results and Discussion
 - (ii) Historic Sites - Results and Discussion
- (e) Access Routes
 - (i) Archeological Sites - Discussion and Evaluation
 - (ii) Historic Sites - Results and Discussion
- (f) Transmission Lines
- (g) Other Areas
 - (i) Archeological Sites - Results and Discussion
 - (ii) Historic Sites - Results and Discussion

2.5 - Geoarcheology

- (a) Geoarcheology Terrain Unit Mapping
- (b) Glacial - Geomorphologic Mapping
- (c) Stratigraphic Framework
- (d) Stratigraphic Units
- (e) Archeological Stratigraphy
 - (i) Lithologic Units (By reference)
 - (ii) Contact Units (By reference)
- (f) Cultural Horizons
- (g) Chronology and History

(h) Mammoth/Mastadon Fossil Discovery

(i) Summary of Geologic History

2.6 - Paleontology

(a) Introduction

(b) Plant Fossils

(c) Pollen

(d) Paleoenvironment

3. Impact on Historic and Archeological Sites

3.1 - Introduction

3.2 - Significance

3.3 - Watana Dam and Impoundment

3.4 - Devils Canyon Dam and Impoundment

3.5 - Borrow Areas, Associated Facilities, and Areas Disturbed by Geotechnical Testing

3.6 - Access Routes

3.7 - Transmission Lines

3.8 - Other Areas

4. Mitigation of Impact on Historic and Archeological Sites

4.1 - Mitigation Policy and Approach

(a) Avoidance

(b) Preservation

(c) Investigation

4.2 - Mitigation Plan

(a) Plan Details

(b) Estimated Costs of Plan

(c) State and Federal Agency Recommendations

(d) Applicants Variation from these Recommendations

Section 5 - REPORT ON SOCIOECONOMIC IMPACTS

1. Introduction

2. Baseline Description

2.1 - Identification of Socioeconomic Impact Areas

- (a) Local
- (b) Regional
- (c) State

2.2 - Description of Employment, Population, Personal Income and Other Trends in the Impact Areas

- (a) Local
- (b) Regional
- (c) State

3. Evaluation of the Impact of Project

3.1 - Impact of In-migration of People on Governmental Facilities and Services

(a) Watana - Construction Phase

(i) Local

- Mat-Su Borough

- water supply
- sewage
- solid waste
- law enforcement
- fire protection
- health care
- education

- public recreation facilities
- transportation
- Trapper Creek
 - water, sewage and solid waste
 - transportation
 - police protection
 - fire protection
 - health care
 - education
- Talketna
 - water and sewage
 - solid waste
 - transportation
 - police protection
 - fire protection
 - health care
 - education
- Other Nearby Communities
 - water and sewage
 - solid waste
 - transportation
 - police protection
 - fire protection
 - health care
 - education

(ii) Regional

(b) Watana - Operation Phase

(i) Local

(ii) Regional

(c) Watana - Operation Phase and Devil Canyon - Construction Phase

(i) Local

- Mat-Su Borough

- water supply
- sewage
- solid waste
- law enforcement
- fire protection
- health care
- education
- public recreation facilities
- transportation

- Trapper Creek

- water, sewage and solid waste
- transportation
- police protection
- fire protection
- health care
- education

- Talkeetna

- water and sewage
- solid waste
- transportation
- police protection
- fire protection
- health care

- education
- Other Nearby Communities
 - water and sewage
 - solid waste
 - transportation
 - police protection
 - fire protection
 - health care
 - education

(ii) Regional

(d) Watana and Devil Canyon - Operation Phase

(i) Local

(ii) Regional

3.2 - On-site Manpower Requirements and Payroll, by Year

(a) Watana - Construction Phase

(b) Watana - Operation Phase

(c) Watana - Operation Phase and Devil Canyon - Construction Phase

(d) Watana and Devil Canyon - Operation Phases

3.3 - Residency and Movement of Project Construction Personnel

(a) Number of Workers that Reside in the Impact Areas at Beginning of Construction of Watana

(b) Number of Workers that Would Commute from Alternative Impact Areas and from Outside the Largest (State) Impact Area

(i) Watana - Construction Phase

(ii) Watana - Operation Phase

(iii) Watana - Operation Phase and Devil Canyon - Construction Phase

(iv) Watana and Devil Canyon Operation Phases

(c) Number of Workers that Would Relocate in Impact Areas

- (i) Watana - Construction Phase
- (ii) Watana - Operation Phase
- (iii) Watana - Operation Phase and Devil Canyon - Construction Phase
- (iv) Watana and Devil Canyon Operation Phases

3.4 - Adequacy of Available Housing in Impact Areas

(a) Watana - Construction Phase

- (i) Local
 - Mat-Su Borough
 - Trapper Creek
 - Talkeetna
 - Other Nearby Communities

(ii) Regional

(b) Watana - Operation Phase

(c) Watana - Operation Phase and Devil Canyon - Construction Phase

- (i) Local
 - Mat-Su Borough
 - Trapper
 - Talkeetna
 - Other Nearby Communities

(ii) Regional

(d) Watana and Devil Canyon Operation Phases

3.5 - Displacement of Residences and Businesses: Type and Number of Residences and Businesses; Procedures for Acquisition; and Types and Amounts of Relocation Assistance Payments

(a) Watana - Construction Phase

- (i) Local

(ii) Regional

(b) Watana - Operation Phase

(i) Local

(ii) Regional

(c) Watana - Operation Phase and Devil Canyon - Construction Phase

(i) Local

(ii) Regional

(d) Watana and Devil Canyon - Operation Phases

3.6 - Fiscal Impact Analysis: Evaluation of Incremental Local Government Expenditures and Revenues

(a) Watana - Construction Phase

(b) Watana - Operation Phase

(c) Watana - Operation Phase and Devil Canyon - Construction Phase

(d) Watana and Devil Canyon - Operation Phases

3.7 - Local and Regional Impacts on Fish and Wildlife User Groups

(a) Fish

(i) Commercial

(ii) Recreational

(iii) Subsistence

(b) Game

(i) Commercial

(ii) Recreational

(iii) Subsistence

(c) Furbearers

(i) Commercial

(ii) Recreational

(iii) Subsistence

4. Mitigation

4.1 - Local Attitudes Toward Change and Preferences

4.2 - Mitigation Alternatives

4.3 - Performance of Mitigation Alternatives on Local Preferences

4.4 - Mitigation Process

Section 6 - REPORT ON GEOLOGICAL AND SOIL RESOURCES

1. Regional Geology

1.1 - Introduction

1.2 - Stratigraphy and Lithology

1.3 - Tectonic History

1.4 - Glacial History

1.5 - Mineral Resources

1.6 - Quaternary Geology

(a) Regional Pleistocene Geology Setting

(b) Age and Extent of Quaternary Surfaces in the Quaternary Study Regions

(c) Key Quaternary Study Areas

(d) Glacial History and Distribution of Quaternary Surfaces

2. Soils

2.1 - Airphoto Interpretation

2.2 - Results of Geotechnical Investigations

3. Permafrost Distribution

4. Watana Dam site

5. Devil Canyon Dam site

6. Reservoir Slopes

7. Geological Hazards

7.1 - Significant Features - Siesmicity

7.2 - Reservoir Inducent Siesmicity

7.3 - Maximum Gradible Earthquakes

7.4 - Transmission Line and Access Route Suceptibility to
Siesmically Induced Feature

7.5 - Reservoir Slopes

7.6 - Relict Channel - Watana Damsite

8. Mitigation Measures

8.1 - Reservoir Operation

8.2 - Design Features

(a) Watana

(b) Devil Canyon

Section 7 - REPORT ON RECREATION RESOURCES

1. Introduction

1.1 - Purpose of Report

1.2 - Relationship to Other Reports

1.3 - Study Methodology

- (a) General
- (b) Recreation Opportunity Inventory
- (c) Recreation Opportunity Evaluation
- (d) Site Designation and Recommendations

2. Description of Existing Recreation

2.1 - Statewide Setting

- (a) Facilities and Activities
- (b) Existing Use
- (c) Projected Use and Future Facilities
- (d) Department of Natural Resources Planning

2.2 - Susitna Basin

- (a) Facilities and Activities
- (b) Existing Use
- (c) Projected Use and Future Facilities (without Project)
- (d) Relationship of Project to Existing Use Patterns

2.3 - Watana Project Area

2.4 - Devel Canyon Project Area

2.5 - Vicinity of Access Areas

3. Impacts on Recreation (*Summarized from Chapter 5 - Report on Socio Economic Impacts)

3.1 - Watana Development

(a) Construction

(i) Reservoir*

- fishery
- game

(ii) Talkeetna to Reservoir Fishery*

(iii) Other River-related Recreation

(iv) Other Land-related Recreation

(b) Operation

(i) Reservoir

- fishery*
- game*

(ii) Talkeetna to Reservoir Fishery

(iii) Other River-related Recreation

(iv) Other Land-related Recreation

3.2 - Devil Canyon Development

(a) Construction

(i) Reservoir*

- fishery
- big game

(ii) Talkeetna to Reservoir Fishery*

(iii) Other River-related Recreation

(iv) Other Land-related Recreation

(b) Operation

(i) Reservoir*

- fishery
- big game

(ii) Talkeetna to Reservoir Fishery*

(iii) Other River-related Recreation

(iv) Other Land-related Recreation

3.3 - Access

(a) Construction

(i) Denali Route (North)

(ii) Denali Route (East-West)

(iii) Gold Creek - Devil Canyon Railroad

(b) Operation

(i) Denali Route (North)

(ii) Denali Route (East-West)

(iii) Gold Creek - Devil Canyon Railroad

3.4 - Transmission

(a) Construction

(i) Project Area

(ii) Stubs

(iii) Intertie

(b) Operation

(i) Project Area

(ii) Stubs

(iii) Intertie

4. Factors Influencing the Recreation Plan

4.1 - Construction Phasing and Access

- (a) Watana Dam and Reservoir
- (b) Devil Creek Dam and Reservoir

4.2 - Facilities Design Standards

- (a) Roads Alignment, Sections and Borrow Areas
- (b) Damsite Related Construction Standards

4.3 - Operational Characteristics of the Project

- (a) Watana Dam and Reservoir
- (b) Devil Creek Dan and Reservoir

4.4 - Management Objectives

- (a) Alaska Power Authority
- (b) Alaska Department of Parks
- (c) Alaska Department of Fish and Game
- (d) U.S. Bureau of Land Management
- (e) CIRC and Village Corporations
- (f) Mat-Su Borough
- (g) Alaska Department of Transportation

4.5 - Recreation Use Patterns and Demand

4.6 - Physical Opportunities and Constraints of the Land

4.7 - Financial Obligation and Responsibility of the Alaska Power Authority

5. Recreation Use Plan

5.1 - Recreation Opportunities Criteria

5.2 - Development Levels

5.3 - Proposed Sites Related to Watana Development

- (a) Site One
- (b) Site Two

(c) Site n

5.4 - Estimated User Levels - Watana-related Development

5.5 - Proposed Sites Related to Devil Canyon Development

(a) Site One

(b) Site Two

(c) Site n

5.6 - Estimated User Levels - Devil Canyon-related Development

6. Plan Implementation

6.1 - Phasing

6.2 - Monitoring and Future Additions

7. Costs Associated with Construction Operations and Maintenance of Proposed Facilities

7.1 - General

7.2 - Construction

7.3 - Operations and Maintenance

7.4 - User Fees

8. Consultation with Persons and Agencies

9. List of Literature Cited or Consulted

Section 8 - REPORT ON AESTHETIC RESOURCES

1. Introduction

1.1 - Purpose of Report

1.2 - Relationship to Other Reports

1.3 - Study Methodology

- (a) General
- (b) Dams, Reservoirs and Major Facilities
- (c) Roads, Bridges and Railroad
- (d) Project Area Transmission Lines
- (e) Stubs
- (f) Intertie
- (g) Impacts, Alternatives and Mitigations

2. Description of the Existing Environment

2.1 - Regional Setting

2.2 - Watana Project Area

- (a) Character Type A
- (b) Character Type B
- (c) Character Type n

2.3 - Devil Canyon Project Area

- (a) Character Type A
- (b) Character Type B
- (c) Character Type n

2.4 - Access

- (a) Denali Route (North)
- (b) Denali Route (East-West)

(c) Gold Creek - Devil Canyon Railroad

2.5 - Transmission

(a) Project Area

(b) Stubs

(c) Intertie

3. Visual and Aesthetic Impacts

3.1 - Watana Project Area

(a) Construction

(i) Dam and Facilities

(ii) Borrow Areas

(iii) Reservoir

(iv) Construction Camp and Village

(b) Operation

(i) Dam and Facilities

(ii) Borrow Areas

(iii) Reservoir

(iv) Construction Camp and Village Sites

(v) Watana Town

3.2 - Devil Canyon Development

(a) Construction

(i) Dam and Facilities

(ii) Reservoir

(iii) Construction Camp and Village

(b) Operation

(i) Dam and Facilities

(ii) Reservoir

(iii) Construction Camp and Village

3.3 - Access

(a) Construction

- (i) Denali Route (North)
- (ii) Denali Route (East-West)
- (iii) Gold Creek - Devil Canyon Railroad

(b) Operation

- (i) Denali Route (North)
- (ii) Denali Route (East-West)
- (iii) Gold Creek - Devil Canyon Railroad

3.4 - Transmission

(a) Construction

- (i) Project Area
- (ii) Stubs
- (iii) Intertie

(b) Operation

- (i) Project Area
- (ii) Stubs
- (iii) Intertie

3.5 - Proposed Recreation Areas

- (a) Area 1
- (b) Area 2
- (c) Area n

4. Cost Estimates for Mitigation Measures

5. Consultation with Persons and Agencies

6. List of Literature Cited or Consulted

Section 9 - LAND USE

1. Introduction

- 1.1 - Purpose and Approach
- 1.2 - Current Land Status Issues in Alaska
- 1.3 - Land Use Management Planning in the Project Area
- 1.4 - Types of Existing Land Use in the Project Area
- 1.5 - Summary of Major Anticipated Land Use Changes

2. Description of Existing Land Use

- 2.1 - Description of Existing Land Status in the Project Area
- 2.2 - Description of Existing Land Use Management Plans for the Project Area
- 2.3 - Description of Existing Land Use in the Project Area
 - (a) General Patterns
 - (b) Land Use Categories
 - (c) Land Use Activities
 - (d) Land Use Developments

3. Description of Land Use Changes Resulting from the Project

- 3.1 - Watana Development
 - (a) Land Acquisition
 - (b) Construction
 - (c) Operation
- 3.2 - Devil Canyon Development
 - (a) Land Acquisition
 - (b) Construction
 - (c) Operation

3.3 - Access Road

(a) Watana

(i) Construction

(ii) Operation

(b) Devil Canyon

(i) Construction

(ii) Operation

3.4 - Transmission

(a) Watana

(i) Construction

(ii) Operation

(b) Devil Canyon

(i) Construction

(ii) Operation

Section 10 - ENVIRONMENTAL ASSESSMENT
ALTERNATIVE LOCATIONS DESIGNS AND ENERGY SOURCES

1. Introduction and Summary

1.1 - Study Methodology (Acres/Batelle)

1.2 - Most Probable Alternatives

- (a) Chackachanna
- (b) Coal at Beluga
- (c) Gas

2. Alternative Hydropower Sites

2.1 - Non-Susitna Basin Hydro (DSR App. C)

- (a) Environmental Screening of Sites
- (b) Site Evaluations
- (c) Chackachanna Environmental Assessment

2.2 - Alternative Susitna Basin Sites (DSR Section 8)

- (a) Potential Sites
- (b) Site Screening
- (c) Selected Basin Development Plans
- (d) Environmental Comparisons of Plans

3. Alternative Facility Designs

3.1 - Watana Dam (FR Section 9)

- (a) Selection of General Arrangement
- (b) Environmentally Sensitive Features

3.2 - Devil Canyon Dam (FR Section 10)

- (a) Selection of General Arrangement
- (b) Environmentally Sensitive Features

3.3 - Access Roads (Access Road Report by 9/15)

- (a) Alternative Sites Not Selected
- (b) Environmental Consideration

3.4 - Transmission Line Corridor (Trans. Selection Report by 10/1)

3.5 - Project Operations and River Flow

- (a) Alternative Operation Considered (Project Operation
Closeout by 10/1)
- (b) Environmental Impacts of Other Operation Schemes

4. Alternatives Sources of Power

4.1 - Alternatives Studies

- (a) Susitna Feasibility Study
- (b) Railbelt Alternatives Study
- (c) State Long Term Energy Plan

4.2 - Sources Considered (Access Study 6 Batelle Tech Summ.)

- (a) Gas
- (b) Oil
- (c) Coal
- (d) Nuclear
- (e) Renewable Technologies
- (f) Other Technologies (Feasibility Study 18 Batelle Vol. 1)

5. Alternative Energy Plans

5.1 - Plan Components

5.2 - Environmental Implications

GUIDELINES



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Approved By:

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Title:

FERC Exhibit and License Application Style Guide

1 - SCOPE

This procedure sets forth a standard format for preparation, referencing and compiling the reports and drawings which will become part of the FERC license application and exhibits.

2 - POLICY

In order to assure consistency and avoid reprocessing time and costs, documents which will become part of the FERC submittal will be prepared in accordance with a standard format as set forth in this procedure.

3 - AREAS APPLICABLE

This procedure is applicable to all project personnel concerned in the preparation of information which will ultimately be included in the FERC license submittal, including the application, Exhibits A through G (in the revised format) and attachments.

4 - REPORT IDENTIFICATION

4.1 - Content of Exhibit Reports

Specific content requirements and procedures for preparation of the Application for License for Major Unconstructed Project or Major Modified Project are set forth in Title 18 of the Code of Federal Regulations, Section 4.41. Specific rules for Maps and Drawings to be included in the application are set forth in Section 4.32. These documents should be consulted in the preparation of the application.

4.2 - File Numbers

File numbers for exhibit reports will be assigned from the following series block of numbers from the project file index:

P5700.15 - Design Transmittals and Reports.

The file number should indicate the task which has primary responsibility for that exhibit.



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Tasks with responsibilities for major input to exhibits are:

Task 6 - Exhibits A,B,F,G
Task 7 - Exhibit E
Task 9 - Exhibit C
Task 10 - Initial Statement
Task 11 - Exhibit D

An exception to this would occur when an exhibit is broken down into a series of small reports which will be completed by different tasks or subtasks. In this case, file numbers will reflect the subtask authors.

4.3 - Report Numbers

The report numbers will correspond with the file number assigned, for clarity of filing.

5 - REPORT FORMAT

5.1 - General

The FERC license application (according to revised content requirements) will consist of an Initial Statement and seven Exhibits identified by letter (A through G). The scope of these documents may range from single-page declaration to a detailed report of several volumes.

In order to accommodate this wide range, two formats will be adopted as guidelines. Both formats will conform to the Acres standard report format with slight modifications to accommodate FERC requirements. The two formats are defined as:

FORMAT A

Used for the larger exhibits which are divided into major report sections (primarily for Exhibit E).

FORMAT B

More widely used for most exhibits in which section divisions are not as significant.



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5.2 - Page Format - FORMATS A and B

5.2.1 - Margins, Type, Spacing, etc.

All final reports for the Project will ultimately be printed on both sides of the paper. The left and right hand margins for all 8 1/2 x 11 inch figures, tables, and text must be at least one (1") inch. This applies to original or reduced pages of 8 1/2 x 11 inch size. For figures reduced to 11 x 17 inch format, left hand margins must also be at least one inch. This will ensure sufficient allowance for binding. Type single space and use Letter Gothic (12 pitch) type style.

5.2.2 - Paper

Use good quality paper (minimum 20 lb. weight) for report masters. "White Out" will be allowed but it should not affect the final reproduction quality.

5.3 - Section Identification, Main Report - FORMATS A AND B

The main body of exhibit reports will conform to the format on the following page. (See also the Subtask 1.01 Closeout Report for an example.)



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Example for single space format:

1 - SECTION NUMBER AND HEADING

X

X

1.1 - Major Subsection

X

XX
XX

X

(a) Enumeration

X

XX
XX

X

(i) Subsections

X

XX
XX

X

- XXX
XX

X

- XXX
XX

X

o XXX

X

o XXX

X

1.2 - Major Subsection

X

XX
XX

All tables and figures pertaining to a particular section are placed directly behind that section, not in the body of the text.



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5.4 - Appendix Designation

Many exhibits will include technical, statistical, and other appendices. For ease of cross reference between exhibits, the following system of identifying appendices will be used:

Example: Exhibit E Appendices

Appendix EA - Hydrology
Appendix EB - Vegetation
Appendix EC - Soils
Appendix ED - Water Quality
Appendix EE - etc.

The first digit identifies the exhibit and the second digit is a letter in alphabetical series identifying the specific appendix. The appendix topics are to be assigned by the preparer of the individual exhibit.

5.5 - Page Numbering

Page numbers for reports, appendices, and included drawings will be used as follows.

5.5.1 - Main report page numbers: Main report page numbers, including tables should be at bottom of each page in the following format:

FORMAT A

E - 8 - 142

refers to page number, starting at "1"
for each main section

refers to main section number

refers to exhibit

FORMAT B

B - 23

refers to page number, in sequence for the exhibit
designates exhibit



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5.5.2 - Appendix page numbers:

FORMAT A and FORMAT B

CA - 3

refers to sequenced page number within an appendix
appendix designation (see Section 5.4)

5.5.3 - Drawings, page numbers:

Engineering and other drawings and maps will be prepared in strict accordance with procedure No. 7.1 of the Susitna Procedures Manual. Such items will be reduced to 11" x 17" format for inclusion in the main report and appendices. Each separate sheet will be assigned a page number in sequence with the pages of the report where it is included (see also Section 6 - Drawing identification, in this procedure).

5.6 - Tables

The tables included in exhibit reports will be labelled as follows:

FORMAT A

Table E.4.3

refers to the assigned table number, in sequence
for a main section

refers to main section number

refers to exhibit

FORMAT B

Table B.5

refers to the assigned table number

refers to exhibit



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Tables will be assigned a page number according to Subsection 5.5 of this procedure.

APPENDIX (Format A or B)

Table BB.3

refers to the table number, assigned in sequence
for the appendix

appendix designation (see Section 5.4)

5.7 - Figures

Figure numbers will be assigned to all drawings, maps, figures, and graphs in an exhibit, including those reduced from engineering drawings to an 11" x 17" format. The reduced drawings will have the figure number leroxed onto the body of the drawing.

Figures will be labeled as follows:

FORMAT A

Figure E.4.3

refers to the assigned figure number, in sequence
for a main section

refers to main section number

refers to the exhibit

FORMAT B

Figure A.5

refers to the figure number, assigned in sequence
for the exhibit

refers to the exhibit



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APPENDIX (Format A or B)

Figure EA-1

figure number assigned in sequence

appendix designation (see Section 5.4)

5.8 - Referencing Other Exhibit Reports or Sections

Cross referencing of exhibits may be made to avoid extensive duplication of data, tables and figures. The FERC license application content requirements state some specific instances where referencing is acceptable.

The bibliography, list of references, and footnotes should be placed at the end of each section of an exhibit. Appendices will be placed at the end of the pertinent exhibit.

6 - DRAWING IDENTIFICATION AND REFERENCES

The figures and engineering drawings will be prepared in conformance with Acres standards (Buffalo Office) and FERC "Specifications for Maps and Drawings" as presented in Procedure No. 7.1 of this manual. A standard 'Title Block for Full Size Drawings to be Included in License Application' will be used for the exhibit drawings. An example can be found in Section 7.1 of this manual.

Two blocks of the standard drawing title block will be used for identifying numbers. The block labeled "ACRES" in the lower left-hand corner will be used for Acres' in-house drawing identification number. The block in lower right-hand corner labeled 'Exhibit' will be used for the identifying figure number assigned in accordance with Section 5.7 of this procedure.

7 - STATUS OF PROPOSED REGULATIONS

The new format for the FERC License Application has been set forth in Docket No. RM 80-39. Although these are proposed rules and, as of September 1981, were not finalized, preparation of the application document will proceed according to the new rules. FERC officials are in agreement with this plan.

Procedure Memorandum

Alaska Power Authority

Susitna Hydroelectric Project

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FERC Exhibit and License Application Style Guide

APPENDIX A

Extracts from Acres Secretarial Manual,
Section 13 - Format and Samples

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x

x

x

GLOSSARY OF ABBREVIATIONS

LIST OF TABLES

LIST OF FIGURES

LIST OF PHOTOGRAPHS

x

x

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APPENDIX A - MARGINAL ECONOMIC COSTS OF POWER
BY COMPONENT AND TYPE OF DEMAND

APPENDIX B - LOAD DATA

x

TABLES

FIGURES

PHOTOGRAPHS

NOTE

*If table is very short,
double space all items.*

1 - SECTION NUMBER AND HEADING
SPACE-AND-A-HALF REPORT

x

x

1.1 - Instructions

x

Note that the foregoing samples of preliminary material are standard for all documents--whether in single-, 1-1/2- or double-space typing.

x

The following items are also standard.

x

- A Page Outline for Reports must be used as a guide to correct placement of material.

x

- Each MAIN SECTION starts on a new page.

x

- MINOR SUBSECTION HEADINGS and TEXT are indented.

x

- Indent 2 spaces for MINI HEADINGS and TEXT so that these items are distinguishable from the main text.

x

The instructions which follow relate specifically to space-and-a-half typing of reports and proposals.

x

- Return carriage twice between PARAGRAPHS.

x

- Return carriage 3 times after SECTION HEADINGS.

- Return carriage 3 times before, and twice after MAJOR SUBSECTION HEADINGS.
- Return carriage twice between ENUMERATED ITEMS, such as (a), (b), (c), (i), (ii), (1), (2), (3).
- If ENUMERATED ITEMS have a heading, return carriage twice between HEADING and TEXT.
- For ENUMERATED ITEMS which are small, text may commence on the same line as HEADING.
- Return carriage twice after series of ENUMERATED ITEMS.
- Return carriage twice before and twice after each MINOR SUBSECTION HEADING.
- Return carriage twice before and twice after MINI HEADINGS.
- Return carriage twice between MINI ITEMS.
- Return carriage twice between ITEMS (such as appear here).
- Return carriage once if such ITEMS are short.
 - Mechanical Department
 - Hydraulic Department
 - Electrical Department
 - Secretarial Department
 - Civil Department
- Return carriage 3 times before and after TABLES appearing within text.
- Return carriage once between items in a ~~Table~~

2 - SECTION NUMBER AND HEADING -
SPACE-AND-A-HALF REPORT

x

x

2.1 - Major Subsection

x

Regional geological studies and regional geophysical surveys of the country were the main source of information for this area, together with informal discussion with members of the Institute.

There is no known deep borehole information available for this area.

x

(a) Enumerated Items (short) - There is no known deep borehole information available for this area.

x

(b) Enumerated Items (short) - There is no known deep borehole information available for this area.

x

x

2.2 - Major Subsection

x

In predicting the subsurface geology, the only information available to the geologist is from geophysical survey work (gravity and magnetic) and stratigraphic correlation.

x

(a) Enumerated Items (long)

x

A well-consolidated conglomerate horizon may be found near the base of the lake, composed of pebbles derived from the fossils.

x

(i) Shaly horizons are likely among the predominant rock types, which are probably grits.

(ii) It should be possible to build the intermediate reservoir within a grit or graywacke bed.

x

(iii) The chances are low that this anomaly represents an intrusive body at depth.

x

(b) Enumeration

x

(i) Development of cleavage planes in rocks intersected by the shaft is likely to be related to rock type. Certain rock types may prove difficult owing to the cleavage impressed on them.

x

x

2.3 - Major Subsection

2.3.1 - Minor Subsection

x

A map is available from the Institute. A recent aeromagnetic survey is available at scale 1 inch to 1 mile. More refined gravity studies on a detailed grid could also be made over the area.

x

2.3.2 - Minor Subsection

x

A detailed magnetic survey would be required to outline the intrusion.

x

Information on rock strength, quality and permeability at depth would be required.

x

Immediately after logging, the test pit was backfilled with excavated material. Permeability depends on degree of fracturing at depth.

Immediately after logging, the test pit was backfilled with excavated material. Permeability depends on degree of fracturing at depth.

x

2.3.3 - Information on rock strength, quality and permeability at depth would be required.

x

2.3.4 - Immediately after logging, the test pit was backfilled with excavated material. Permeability depends on degree of fracturing at depth.

Immediately after logging, the test pit was backfilled with excavated material. Permeability depends on degree of fracturing at depth.

3 - SECTION NUMBER AND HEADING -
SPACE-AND-A-HALF REPORT

x

x

From the inspections, site investigations and analyses reported herein, the following conclusions have been reached.

- (a) The full length of the north wall of flume No. 2 is spalled and deteriorated to the extent that repairs are required in the immediate future.
- (b) The integrity of the length of wall between the dam and the stoplogs is of crucial importance as it must be considered to be part of the dam structure.
- (c) Beneath the spalled and deteriorated surfaces, the concrete in the walls is in good condition and can be considered to be sound and adequate for a gravity structure.
- (d) The bedrock is sound and gives no concern regarding stability of the walls.

x

Downstream from stoplogs, the north wall requires remedial work to halt the deterioration and to satisfy the design criteria.

x

x

3.1 - Major Subsection

x

Resistivity surveying could indicate the presence of faulting. The area in question is one of moderate to low relief. It consists of gently dipping Mesozoic sediments overlying a lower Paleozoic basement.

The area in question is one of moderate to low relief. It consists of gently dipping Mesozoic sediments overlying a lower Paleozoic basement.

Mini Heading

x

This is known from borehole intersections. It consists of gently dipping Mesozoic sediments overlying a mainly lower Paleozoic basement.

x

Mini Heading

x

This is represented by Jurassic and Triassic strata comprising sandstones, marls, limestones and clays.

x

Immediately after logging, the test pit was backfilled with excavated material.

x

In the sinking process, the concrete lining operations follow closely behind the excavation, while in the raising method concrete lining can only be installed afterwards.

x

- (a) Although shaft sinking contractors will have winders suitable for sinking shafts to the depth envisaged, the winders will not be able to cater for the high outputs.

x

- (b) Since shaft sinking will be a critical activity on the construction schedule, a rapid rate of sinking will be desirable to ensure early commissioning of the overall scheme.

x

The main factors which have led to improved sinking rates include team organization and high quality equipment.

4 - SECTION NUMBER AND HEADING
SPACE-AND-A-HALF REPORT

x

x

Tables which appear within text should be clearly separate
 from that text and from each other.

x

x

TABLE 1

EXAMPLE OF SPACE-AND-A-HALF
 TABLE APPEARING WITHIN TEXT

x

	<u>Estimated Cost</u>	
	<u>(Can \$).</u>	<u>(U.S. \$)</u>
x		
Materials	000,000	000,000
Labor	000,000	000,000
Etc	<u>000,000</u>	<u>000,000</u>
TOTAL	<u>000,000</u>	<u>000,000</u>

x

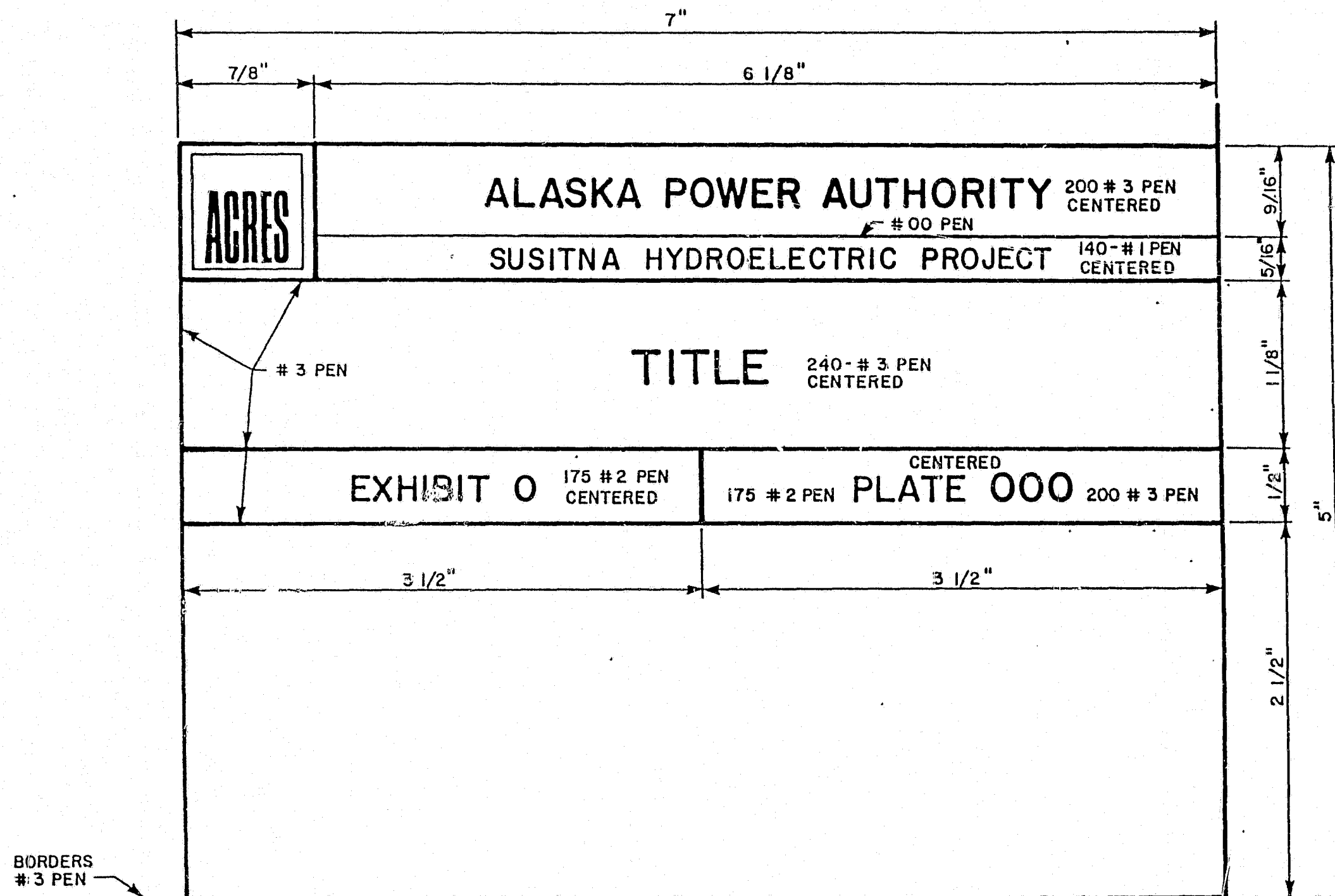
x

TABLE 2

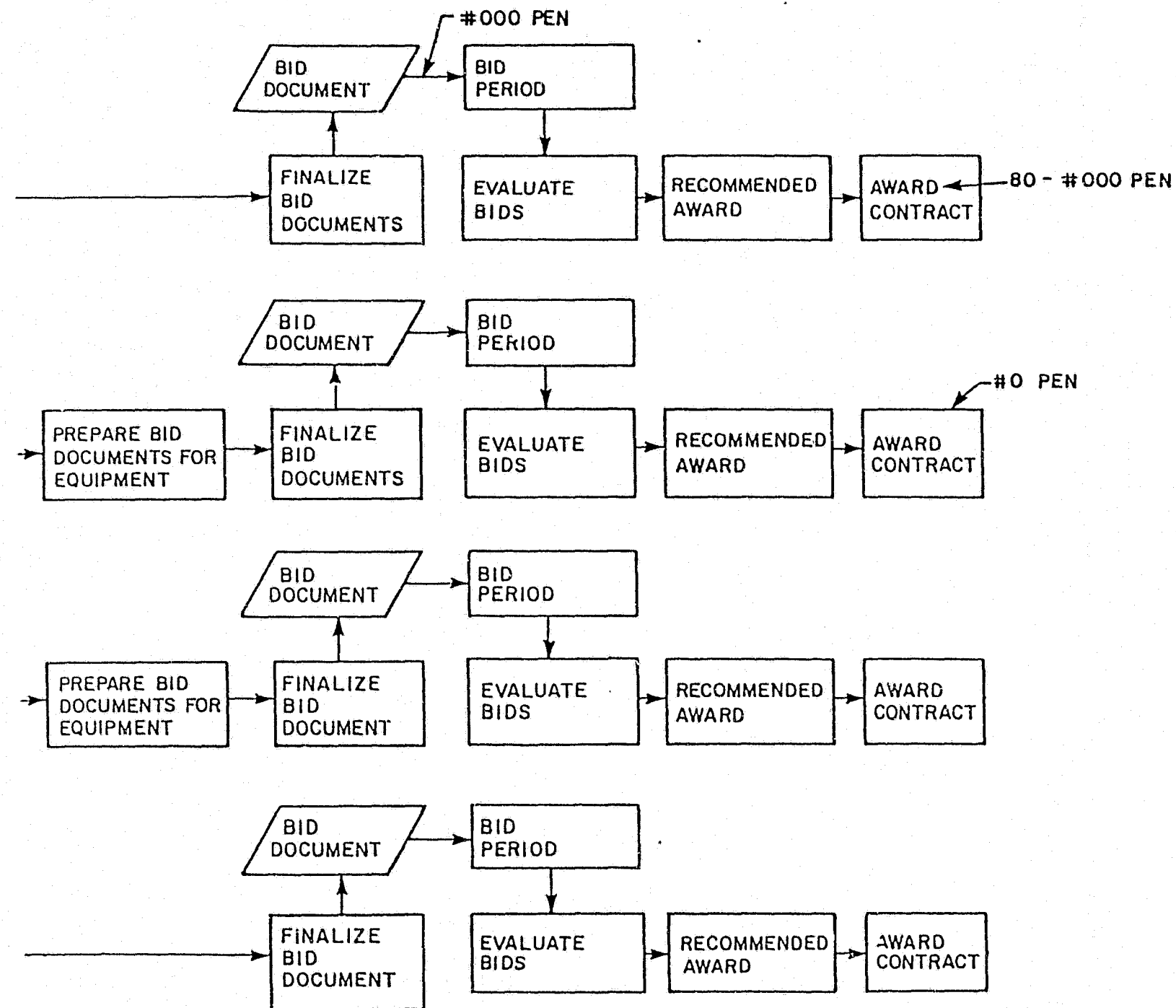
EXAMPLE OF SPACE-AND-A-HALF
 TABLE APPEARING WITHIN TEXT

x

<u>Plant</u>	<u>River</u>	<u>Distance Upstream from City (miles)</u>
x		
A Generating Station	A River	14
B Power Plant (two plants)	B "	21
C Generating Station (3 plants)	C "	21-3/4
D Generating Station (4 plants)	D "	15-1/2



STANDARD TITLE BLOCK FOR
"C" SIZE DRAWINGS (26 x 37)



TYPICAL BOX DIAGRAM STANDARDS

CONTRACT PACKAGE	DESCRIPTION	ITEM QUALITY CLASS	DESIGN		
			DESIGN VERIFICATION	DESIGN DOCUMENT QA REVIEW	PROCUREMENT DOCUMENT QA REVIEW
* INDICATES SUPPLY ONLY	100 - # 00 PEN CENTERED				
	80 - # 000 PEN				
	# 0 PEN				
M-1	TURBINES & GOVERNORS	A	X	X	X
M-2	POWER INTAKE/OUTLET, GATES ETC.	A	X	X	X
M-3	SPILLWAY GATES	B			X
M-4	DIVERSION TUNNEL GATES	B			X
M-5	LOW LEVEL RELEASE GATES & LINER	B			X
M-6 *	DRAFT TUBE GATES	B			X
M-7 *	DRAFT TUBE CRANE	B			X
M-8 *	SURGE CHAMBER STOPLOGS & FOLLOWER	B			X
*	TAILRACE STOPLOGS & FOLLOWER	B			X
M-9	FIXED CONE VALVES	A	X	X	X
M-10	STEEL LINER & RING FOLLOWER GATES	B			X
M-11	PENSTOCK LINER	B			X
M-12	POWERHOUSE CRANES	B			X
M-13 *	DOMESTIC WATER & SEWAGE SYSTEMS	-			X
M-14 *	FIRE PROTECTION PACKAGE	A	X	X	X
M-15 *	COMPRESSED AIR SYSTEM	B			X
M-16 *	OIL HANDLING SYSTEM	B			X
M-17 *	DRAINAGE & DEWATERING	C			X
M-18 *	GENERATOR COOLING SYSTEM	A	X	X	X
M-19 *	PIEZOMETER PIPING SYSTEM	B			X
M-20 *	HEATING, VENTILATING, & COOLING SYSTEM	C			X
M-21	POWERHOUSE ELEVATOR & MANHOISTS	-			X
M-22 *	MACHINE SHOP EQUIPMENT	-			X
M-23 *	MECHANICAL INSTALLATION	-	X	X	X

TYPICAL SCHEDULE TYPE DRAWING STANDARDS

TITLE 140 # 1 PEN CENTERED

80 - # 000 PEN
FIGURE 0

ACRES

1/4"

STANDARD LAYOUT FOR
11" x 17" DRAWINGS

1/4"

FOLD
LENGTH

12
11
8.5
8

AUTO

MANUA

FEED

TITLE 140 - # 1 PEN
CENTERED

1/4"

80 -
#000 PEN

FIGURE 0



1/6" 1/2" 3/16"

The following guide for references should be used in conjunction with the preparation of Exhibit E.

Book

Mishan, E. J. Cost - Benefit Analysis, George Allen and Unwin, London, 1975.

Article

Baumol, W. J. "On the Social Rate of Discount", American Economic Review, Vol. 58, September 1968.

Report

Acres American Incorporated, Susitna Hydroelectric Project 1980-81 Geotechnical Report, prepared for the Alaska Power Authority, February, 1982.

Personal Communication

SRI International, personal communication, October 12, 1981.

References should be noted numerically in the text at the end of the sentence. They should be numbered consecutively by ~~section~~ and listed in numerical order at the end of the ~~section~~.
chapter chapter