

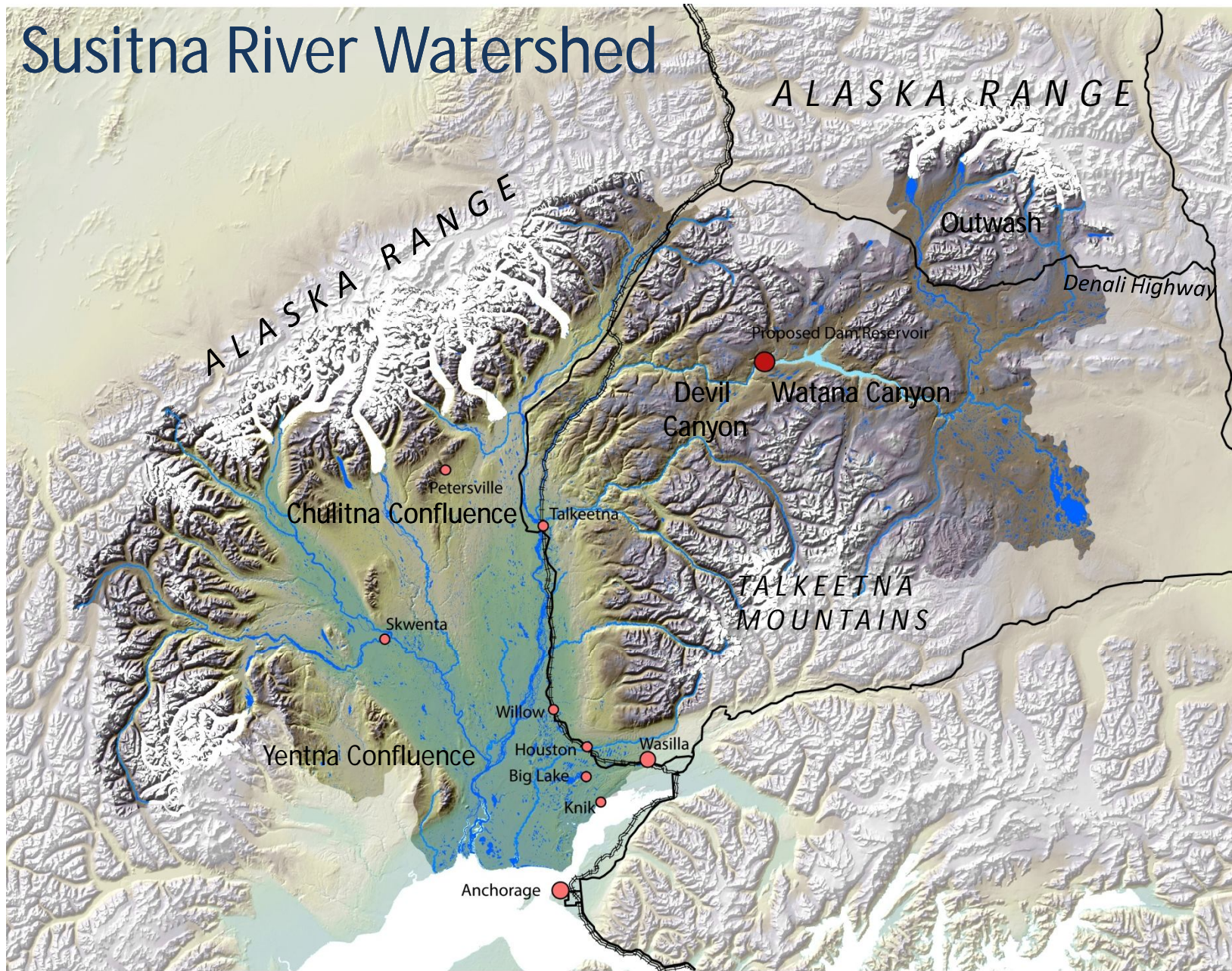


Susitna Hydroelectric

Past, Present, Future

Robin Beebee, HDR Alaska, Inc.
Jim Gill, Cardno-Entrix, Inc
Stephen Trimble, MWH
Alaska Energy Authority

Susitna River Watershed



Upper Susitna River and Susitna Glacier



Robin Beebee Photo



Alaska Energy Authority Photo



Watana Canyon of the Susitna

Devil Canyon of the Susitna



Chulitna Confluence Near Talkeetna



Robin Beebee Photo

Lower Susitna River

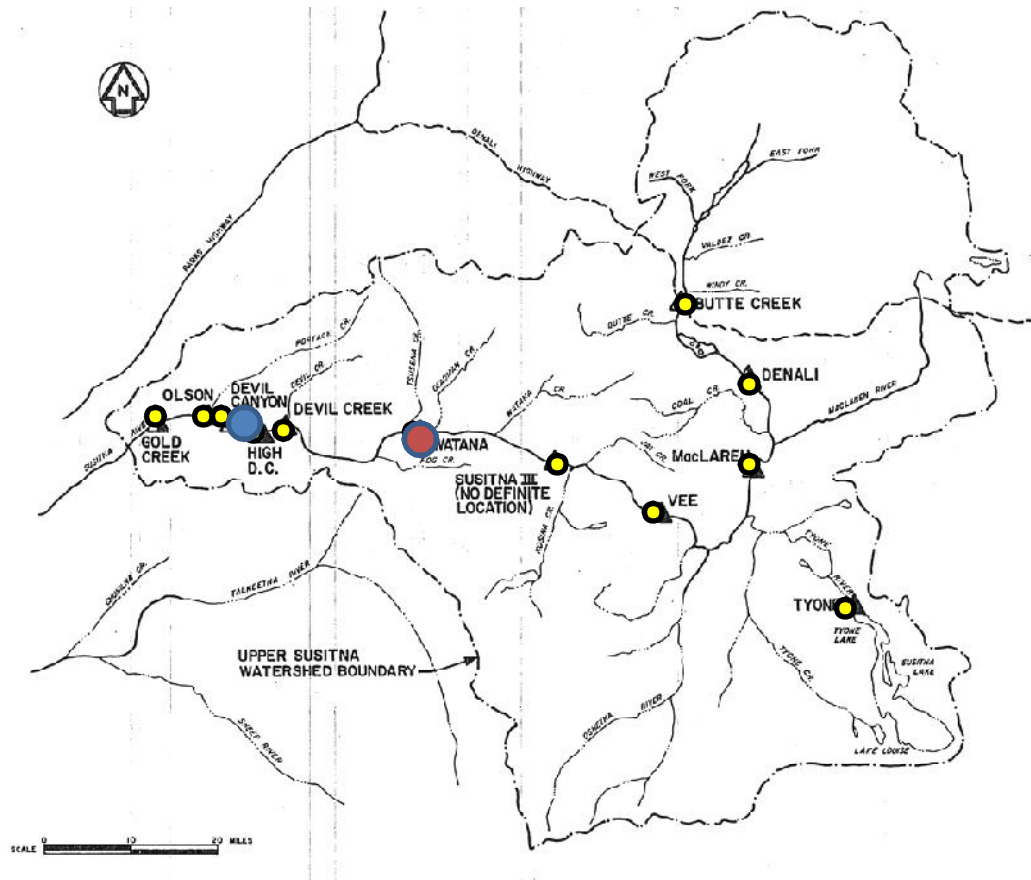


Mark Meyers Photo



Jill Homer Photo

Potential Dam Sites Identified in the Upper Susitna River Watershed



BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION
APPLICATION FOR LICENSE FOR MAJOR PROJECT
SUSITNA HYDROELECTRIC PROJECT
VOLUME 7

EXHIBIT
Chapters 4, 5, 6
FEBRUARY 1986

Prepared by:



ARLIS
Alaska Resources
Library & Information Services
Anchorage, Alaska

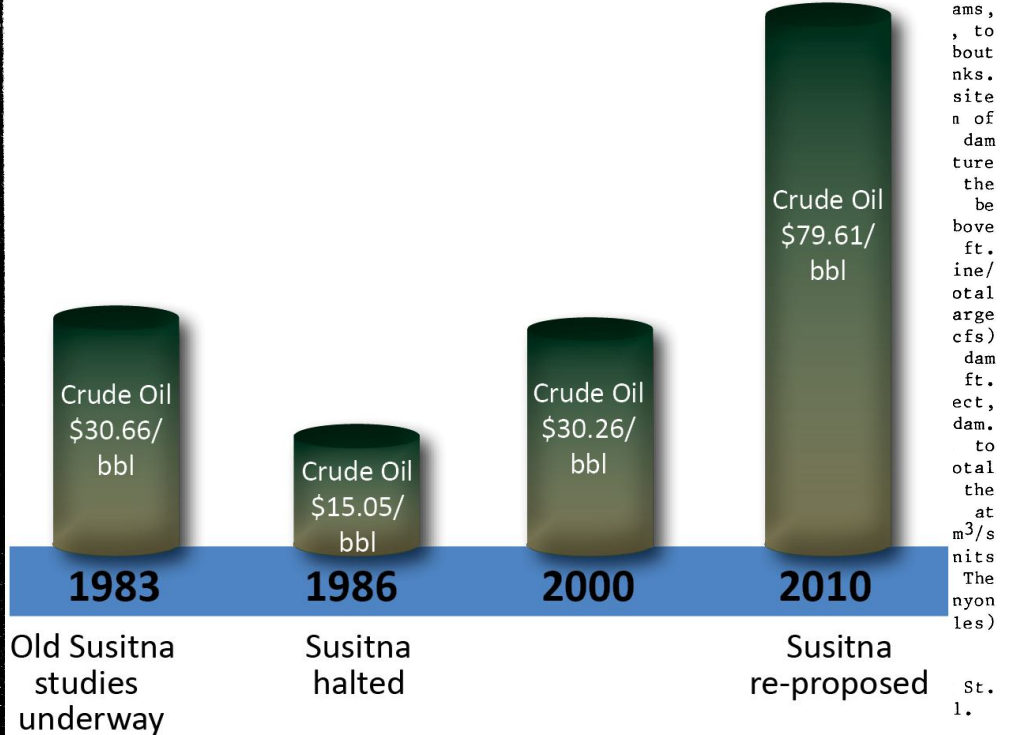
ALASKA POWER AUTHORITY

**HYDROLOGY AND HYDRAULIC STUDIES
FOR LICENSING OF THE SUSITNA HYDROELECTRIC PROJECT**

Eugene J. Gemperline¹

ABSTRACT: The planning for and licensing of a major hydroelectric project require many hydrologic and hydraulic studies. These range from observations of existing conditions in the watershed, to estimates of project related effects on water use, water quality and impacts on the ecosystem. The number and breadth of these studies for a project located in a cold

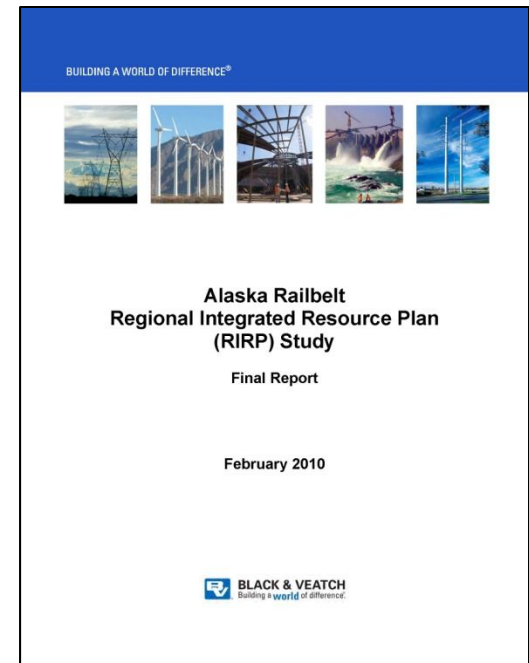
energy needs of the Railbelt region in the 21st century. The Railbelt region is the area of southcentral Alaska extending from Homer at the southern tip of the Kenai Peninsula to Fairbanks and including the large metropolitan area of Anchorage. The region is so-named because its principal cities are linked by the Alaska Railroad (Figure 1).



Oil price source: U. S. Energy Information Administration 2011

ams,
, to
bout
nks.
site
n of
dam
ture
the
be
bove
ft.
ine/
otal
arge
cfs)
dam
ft.
ect,
dam.
to
otal
the
at
m³/s
nits
The
nyon
les)
st.
1.

Railbelt Integrated Resources Plan (RIRP) February 2010



Current Energy Situation

- Dependence on fossil fuels
- Limited Cook Inlet gas deliverability and storage
- Increasing fuel prices

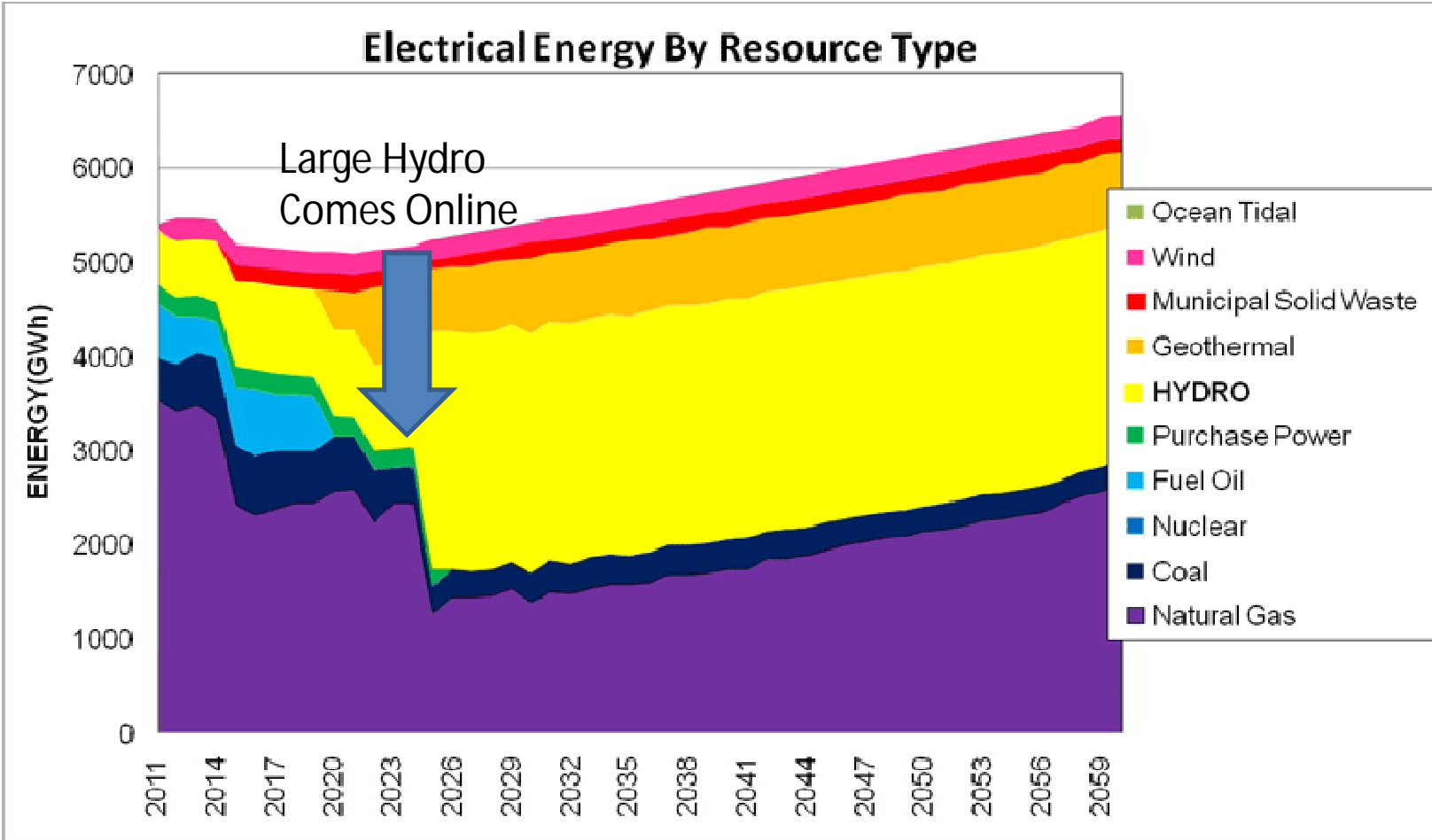
Recommendations

- Increase energy efficiency
- Increase renewable energy

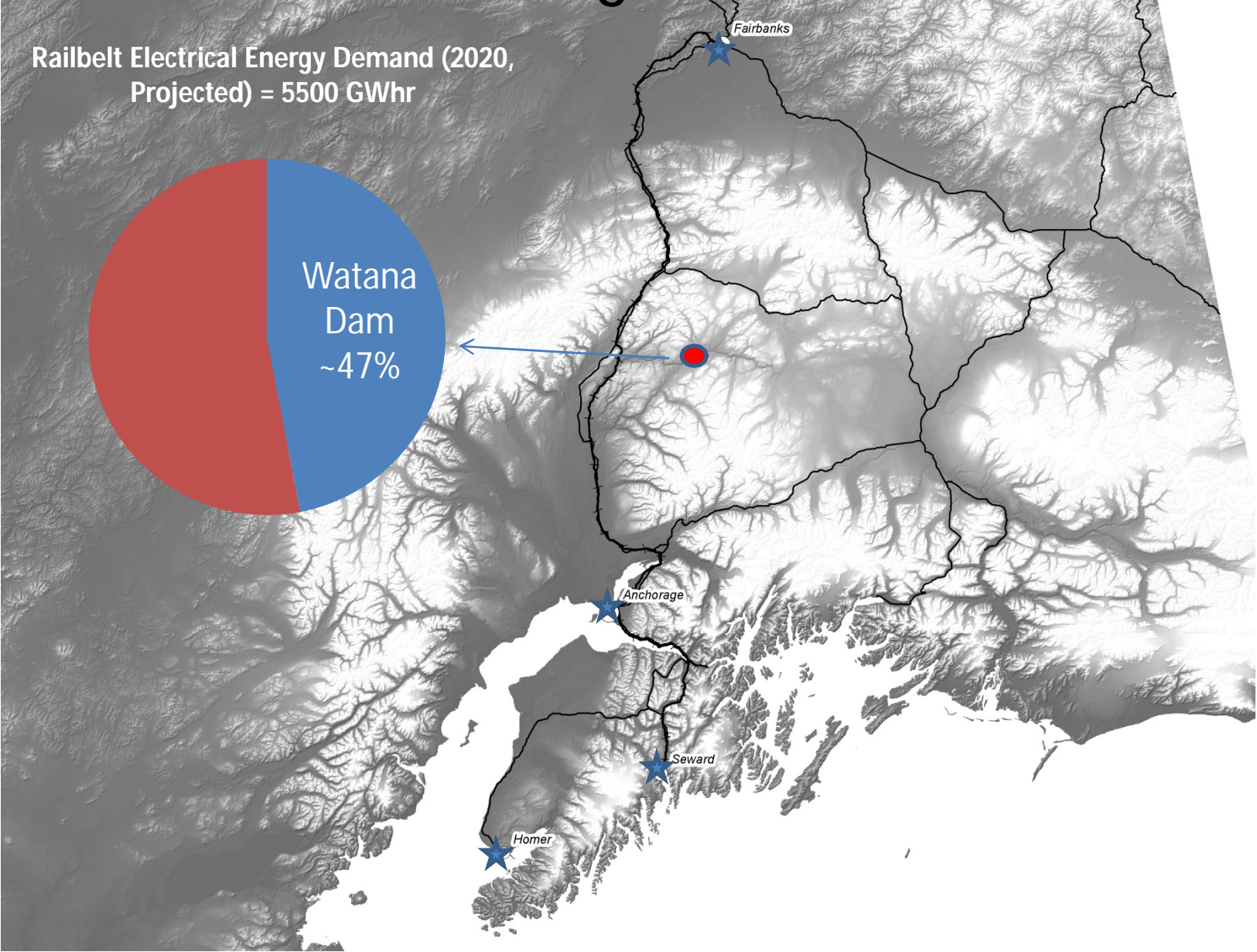
Next Step

Explore Large Hydro Projects in Railbelt

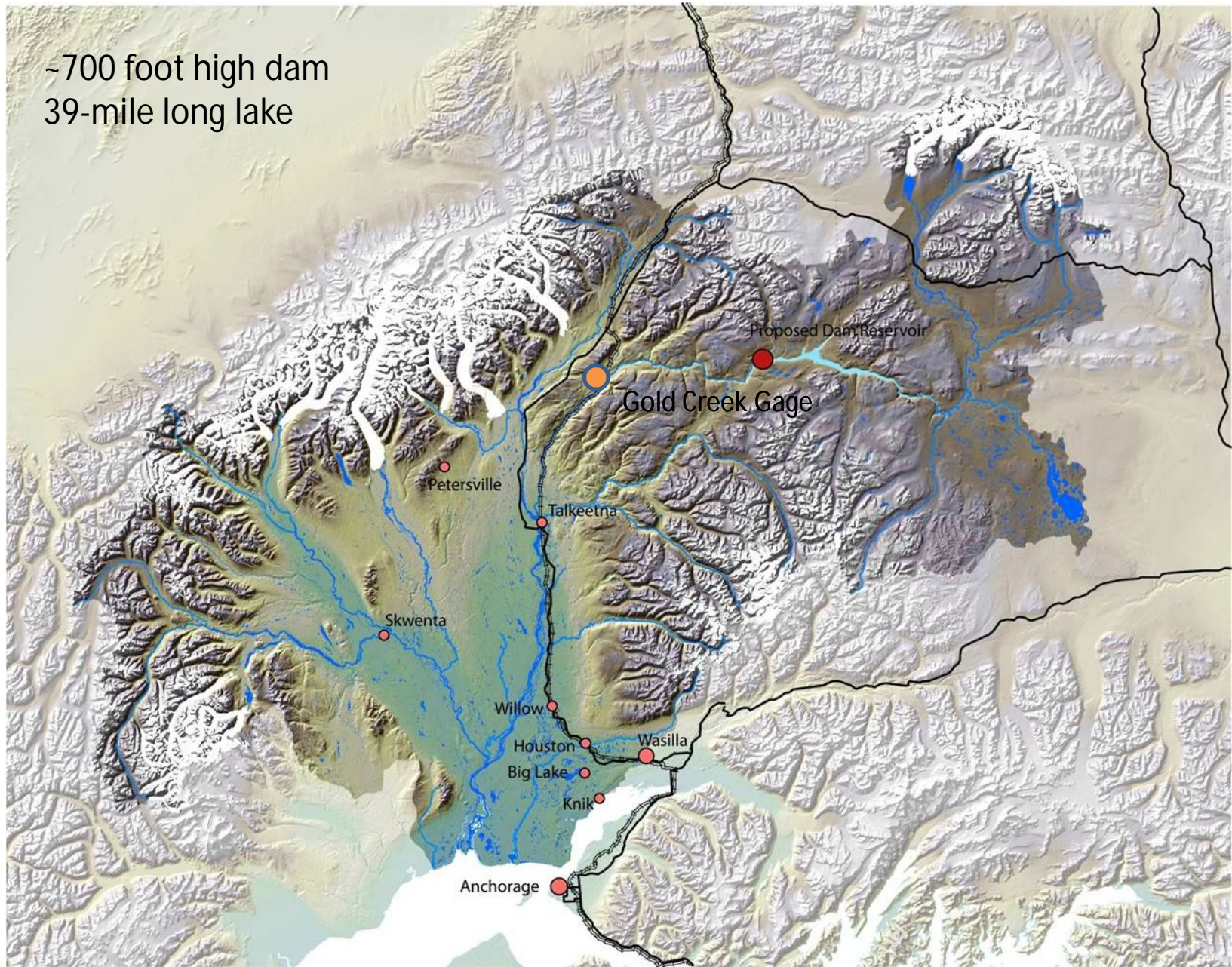
House Bill 306: 50% Renewable Energy by 2025



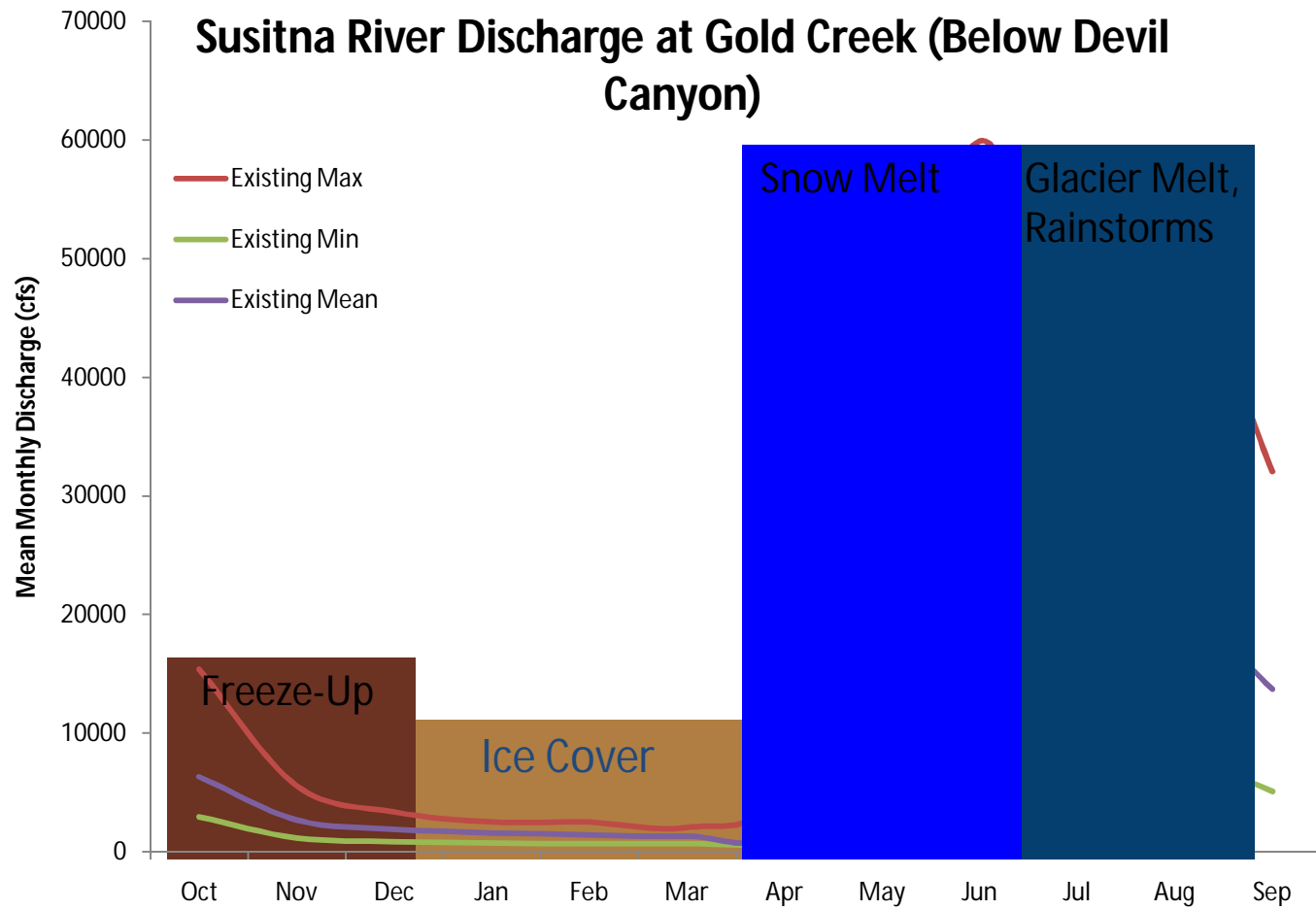
Railbelt Region of Alaska



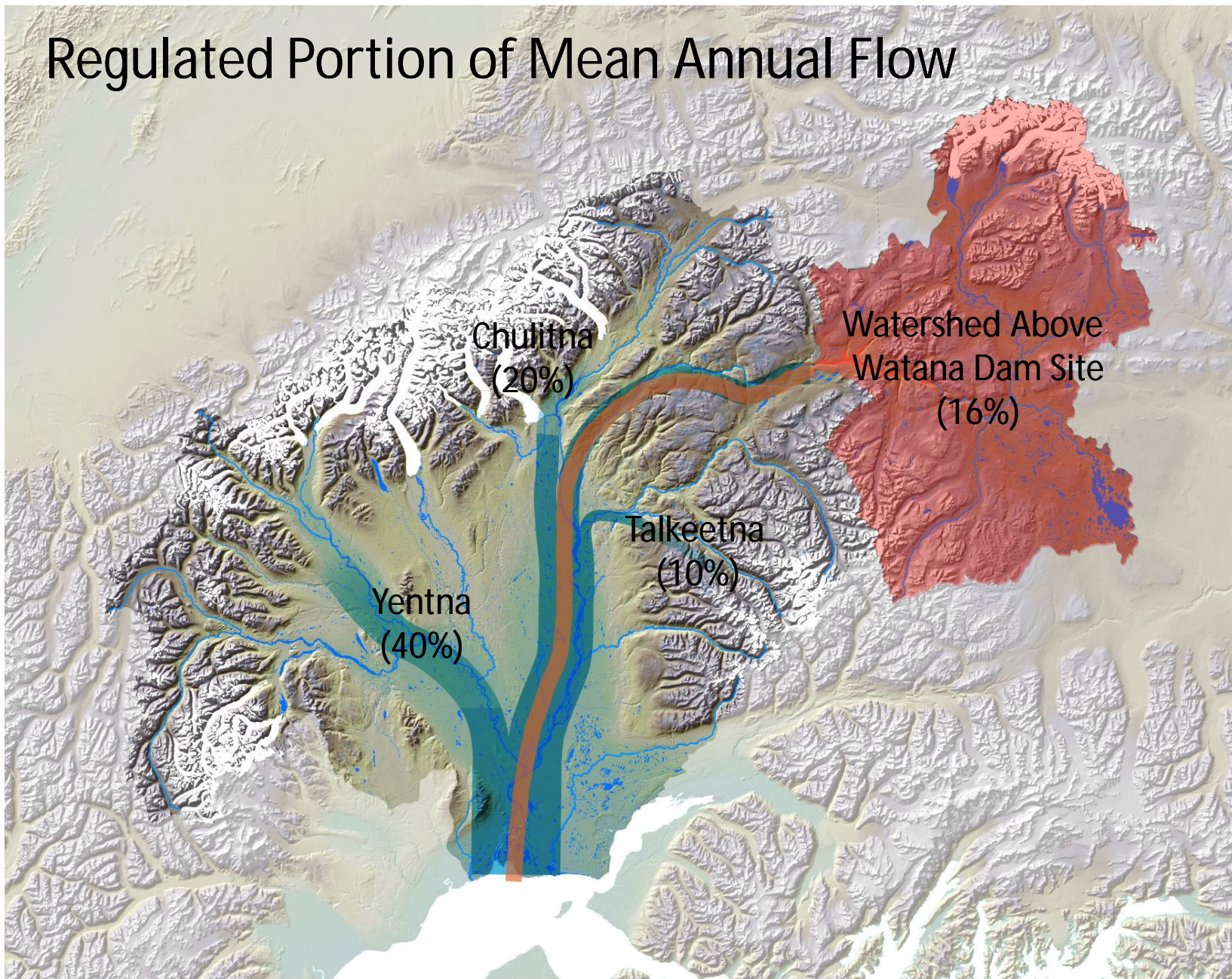
- 700 foot high dam
39-mile long lake

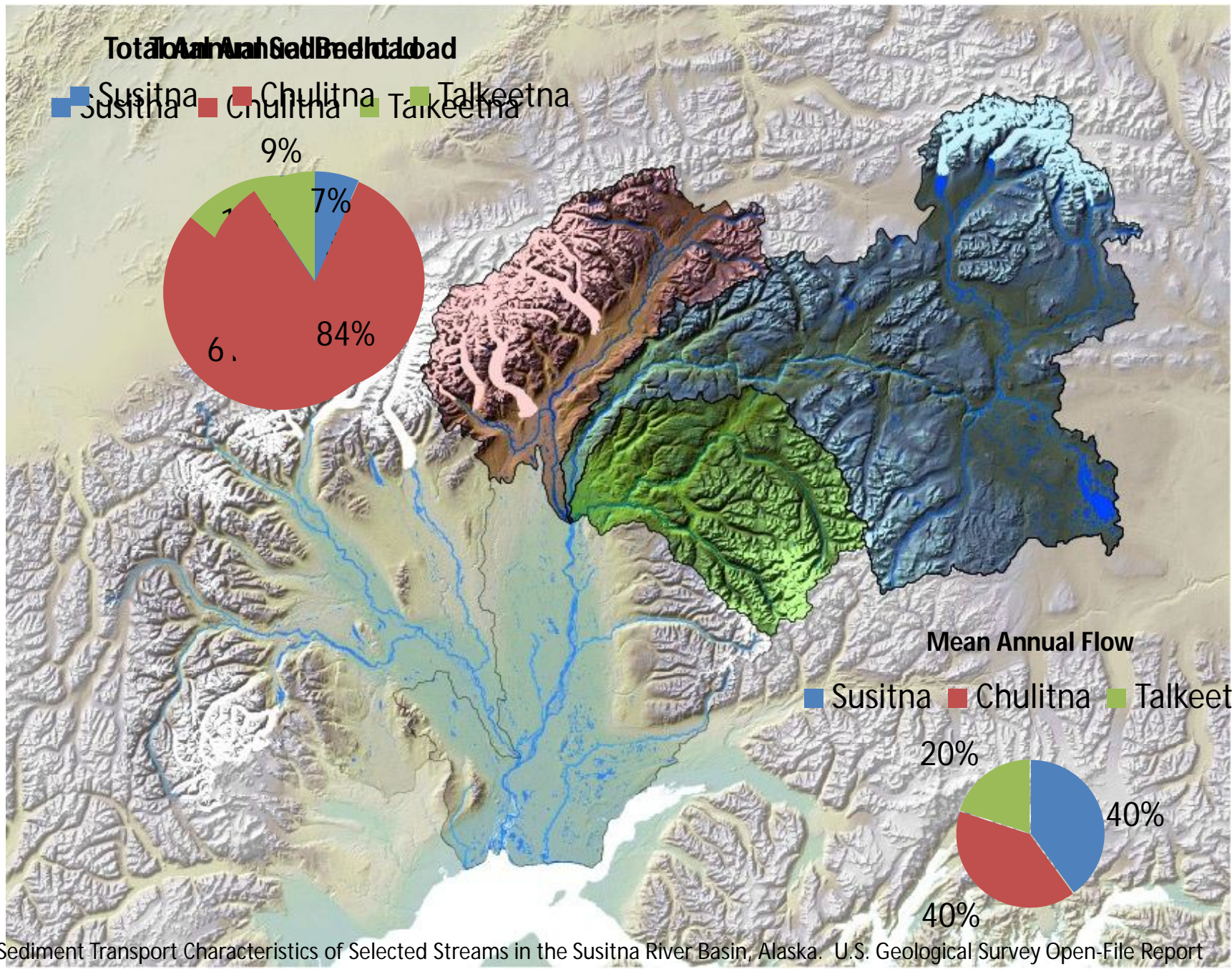


Susitna River Discharge at Gold Creek (Below Devil Canyon)



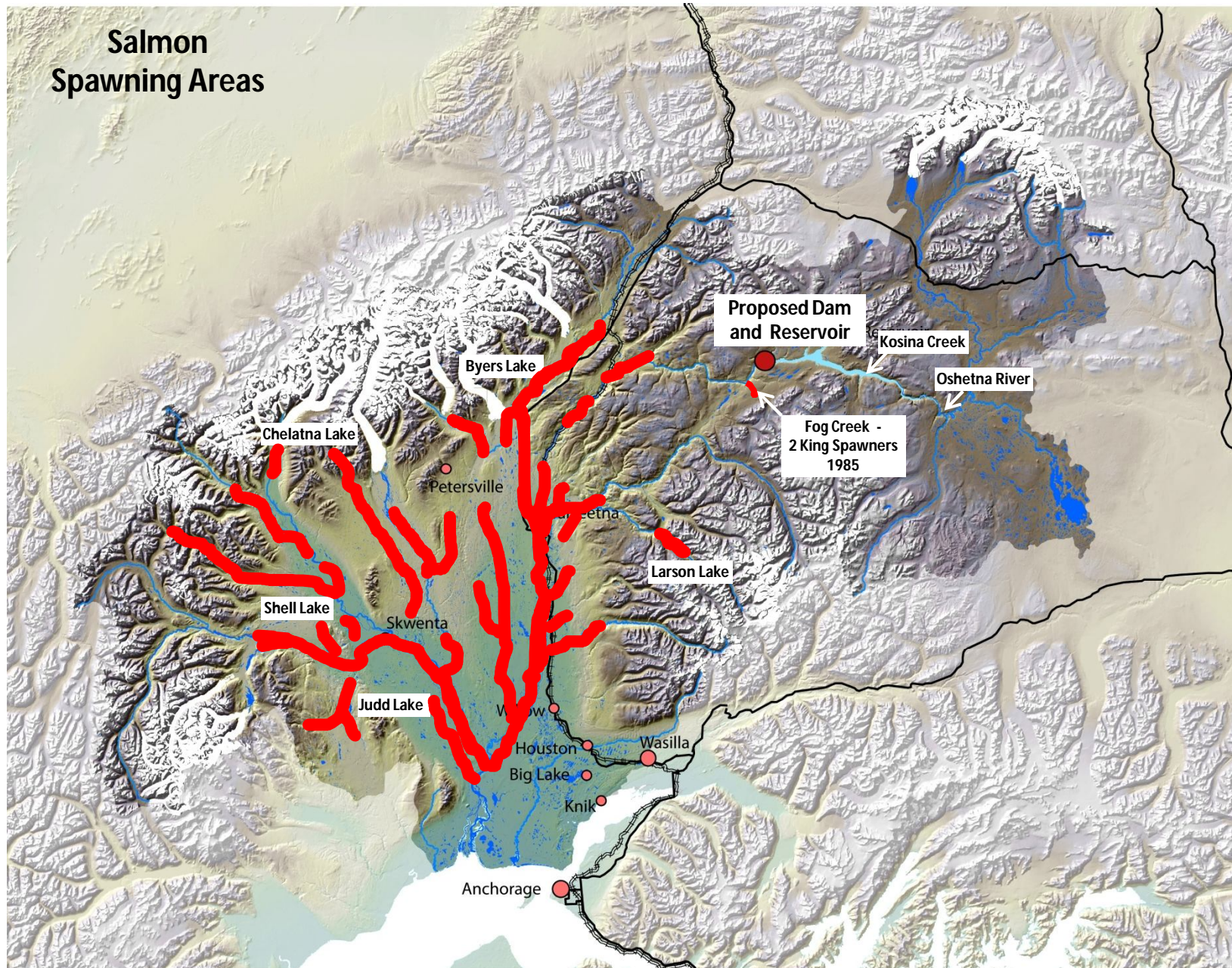
Regulated Portion of Mean Annual Flow

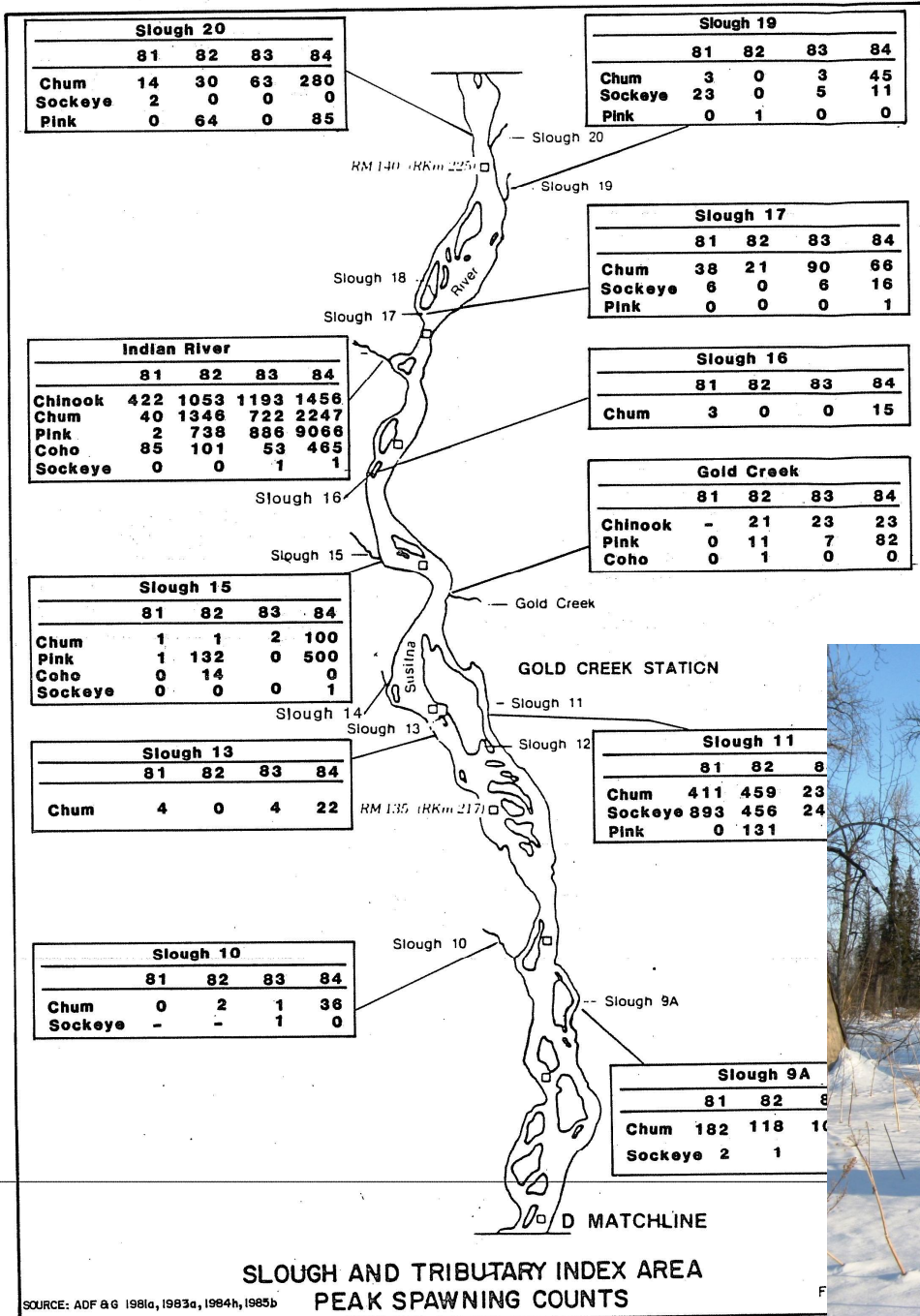


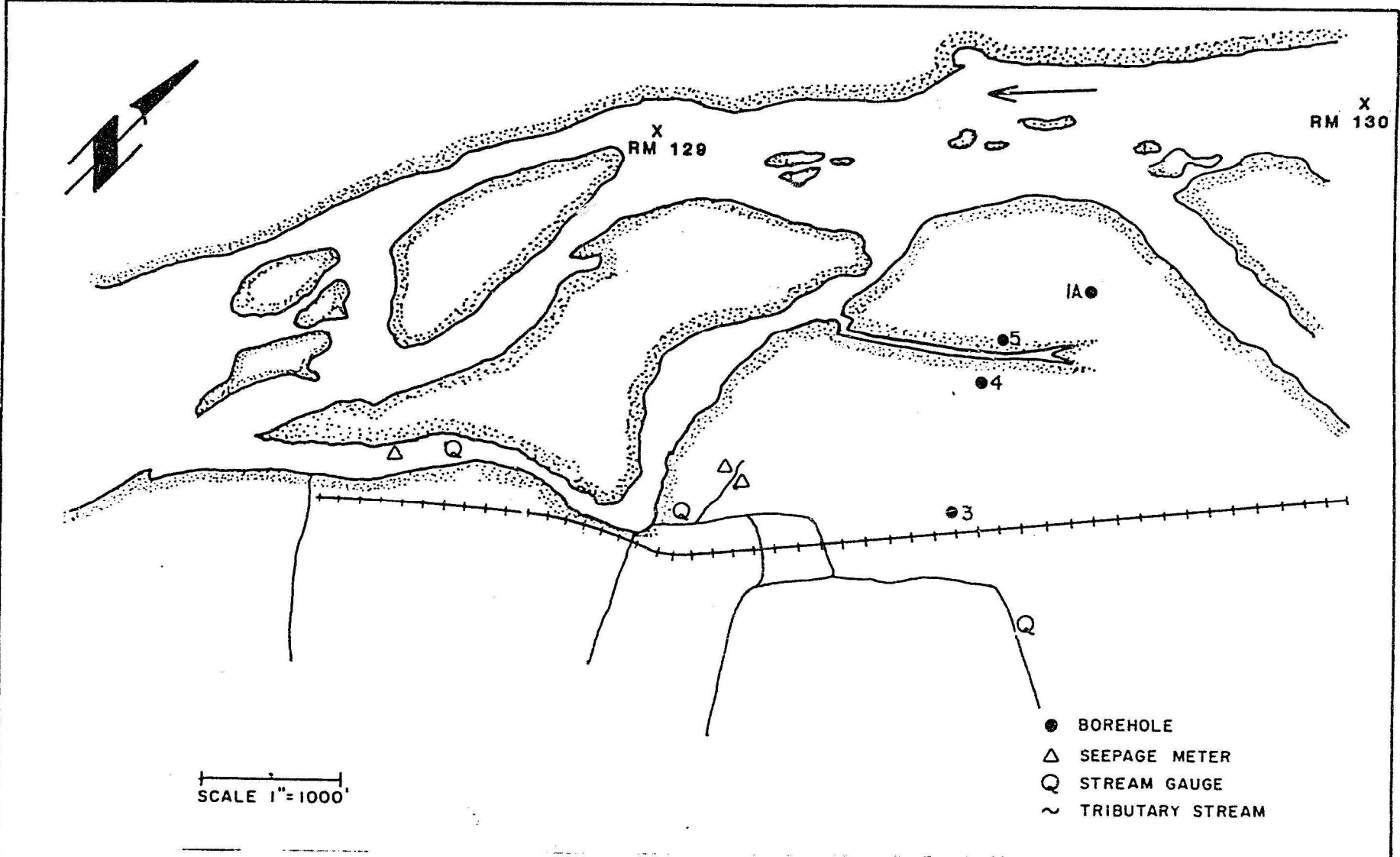


Sediment Transport Characteristics of Selected Streams in the Susitna River Basin, Alaska. U.S. Geological Survey Open-File Report 87-229

Salmon Spawning Areas







- BOREHOLE
- △ SEEPAGE METER
- ⊙ STREAM GAUGE
- ~ TRIBUTARY STREAM

SCALE 1"=1000'

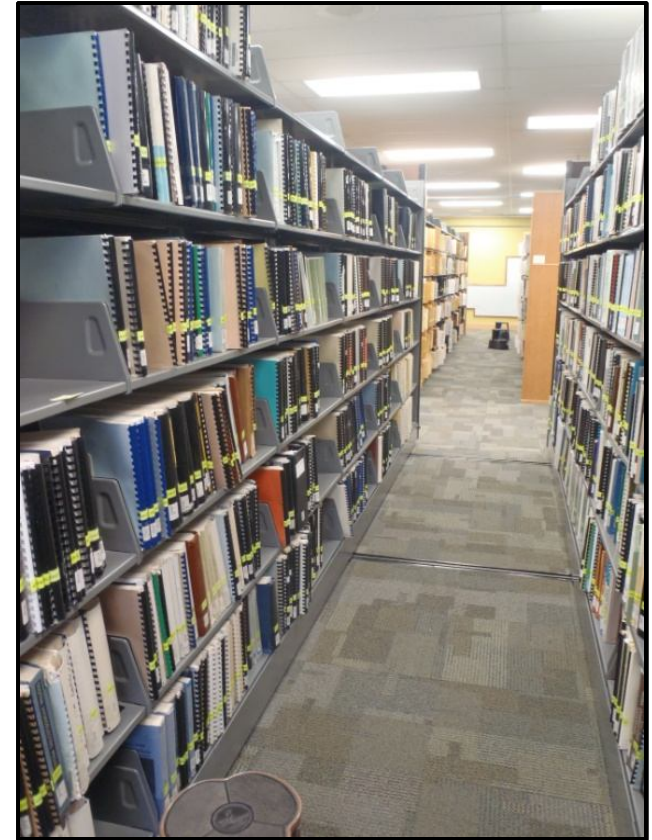
PREPARED BY:
R&M
R&M CONSULTANTS, INC.
ENGINEERS GEOLOGISTS HYDROLOGISTS SURVEYORS

Figure 3.3 SLOUGH 9

PREPARED FOR:
HARZA-EBASCO
 SUSITNA JOINT VENTURE

Current Efforts

- Public Meetings (completed)
- Aquatic and Wildlife Data Gap Analysis (HDR Alaska and ABR, Inc.)
- Preliminary Engineering and Licensing Studies (MWH)
- Streamflow Synthesis (USGS)
- LiDAR Collection (Mat-Su Borough)

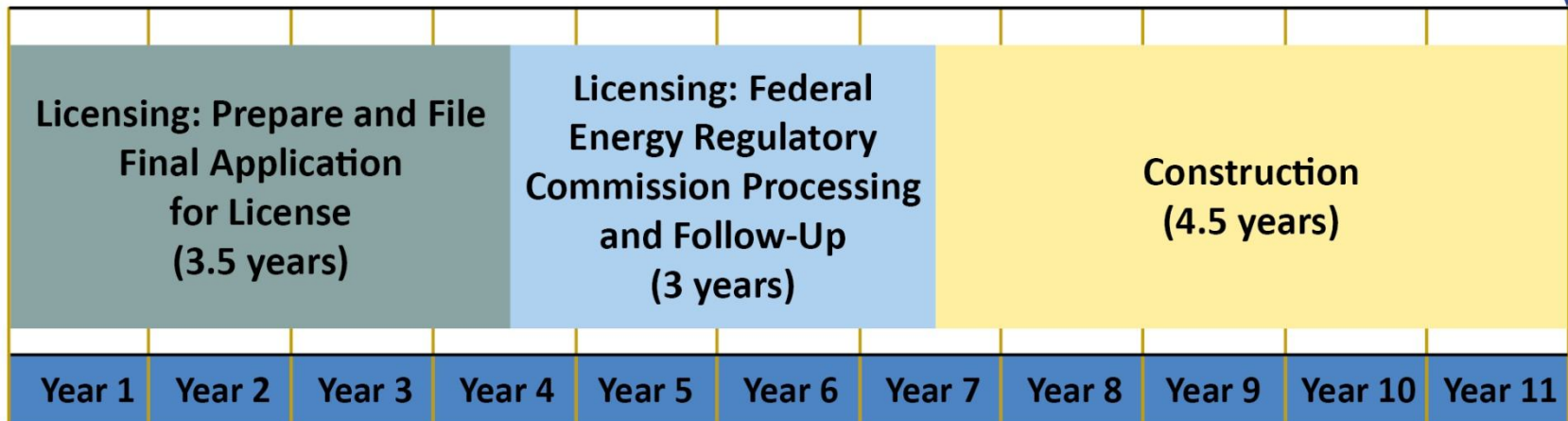


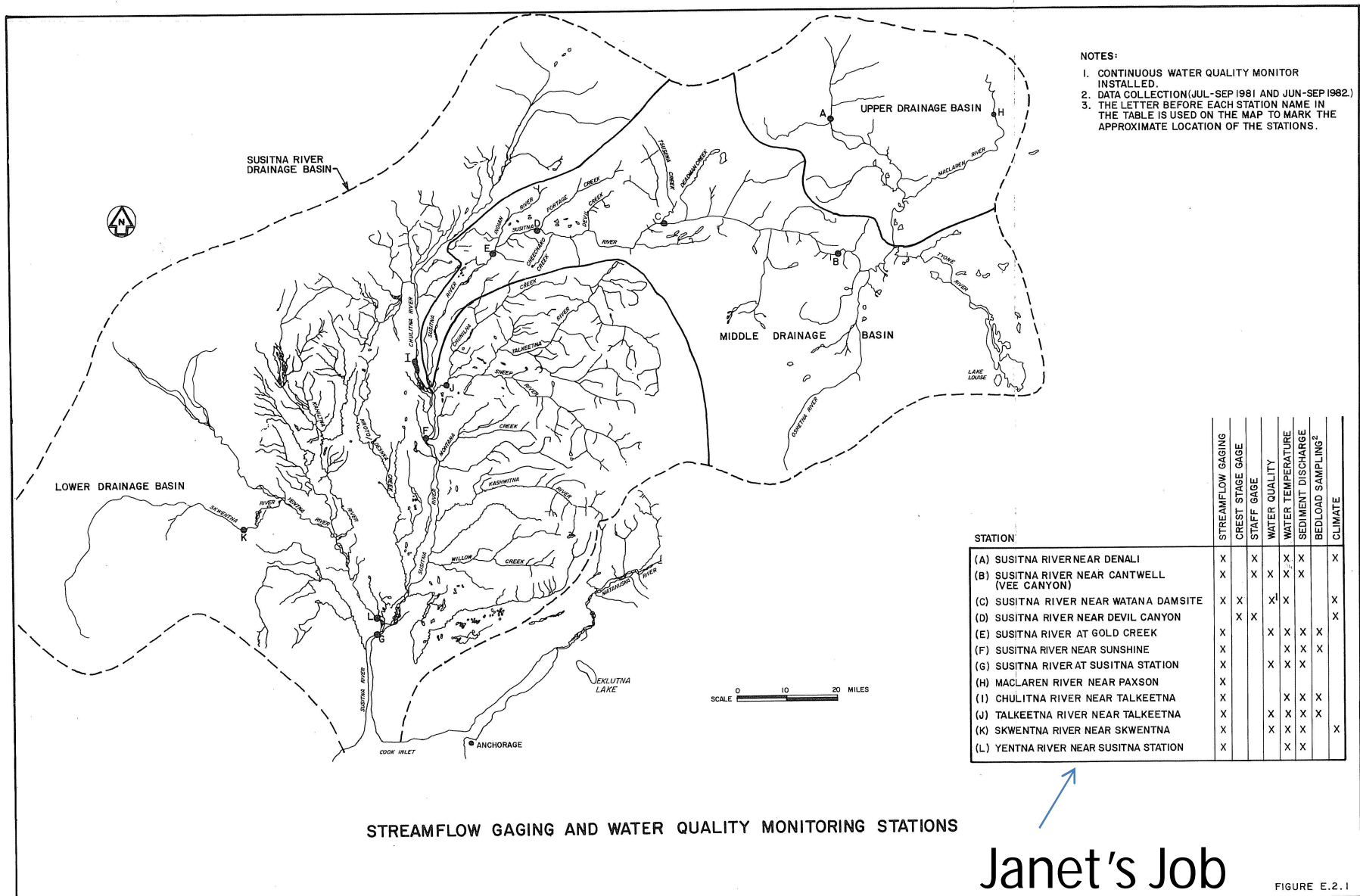
Over 3500 Documents!

Next Steps

1. Legislative Action
2. Study Planning
3. File Preliminary Application Document

START-UP





- NOTES:
1. CONTINUOUS WATER QUALITY MONITOR INSTALLED.
 2. DATA COLLECTION (JUL-SEP 1981 AND JUN-SEP 1982).
 3. THE LETTER BEFORE EACH STATION NAME IN THE TABLE IS USED ON THE MAP TO MARK THE APPROXIMATE LOCATION OF THE STATIONS.

STATION	STREAMFLOW GAGING	CREST STAGE GAGE	STAFF GAGE	WATER QUALITY	WATER TEMPERATURE	SEDIMENT DISCHARGE	BEDLOAD SAMPLING ²	CLIMATE
(A) SUSITNA RIVER NEAR DENALI	X	X		X	X			X
(B) SUSITNA RIVER NEAR CANTWELL (VEE CANYON)	X	X	X	X	X	X		
(C) SUSITNA RIVER NEAR WATANA DAMSITE	X	X	X	X				X
(D) SUSITNA RIVER NEAR DEVIL CANYON	X	X						X
(E) SUSITNA RIVER AT GOLD CREEK	X			X	X	X	X	
(F) SUSITNA RIVER NEAR SUNSHINE	X			X	X	X	X	
(G) SUSITNA RIVER AT SUSITNA STATION	X			X	X	X	X	
(H) MACLAREN RIVER NEAR PAXSON	X							
(I) CHULITNA RIVER NEAR TALKEETNA	X			X	X	X		
(J) TALKEETNA RIVER NEAR TALKEETNA	X			X	X	X	X	
(K) SKWENTNA RIVER NEAR SKWENTNA	X			X	X	X		X
(L) YENTNA RIVER NEAR SUSITNA STATION	X			X	X			

STREAMFLOW GAGING AND WATER QUALITY MONITORING STATIONS

Janet's Job