ADMINISTRATIVE ORDER NO. 271

<TARGET><BILL></BILL><SUBJECT>ADMINISTRATIVE ORDER NO. 271 ALASKA AEROSPACE COMPLEX ALASKA STAND ALONE PIPELINE AMBLER ROAD PROJECT KNIK ARM CROSSING AND JUNEAU ACCESS SUSITNA-WATANA DAM PROJECT</SUBJECT><COMM>SFIN29</COMM></TARGET>

STATE CAPITOL
P.O. Box 110001
Juneau, AK 99811-0001
907-465-3500
fax: 907-465-3532

Governor Bill Walker
STATE OF ALASKA

550 West Seventh Avenue, Suite
Anchorage, AK 99501
907-269-7450
fax 907-269-7461
www.Gov.Alaska.Gov
Governor@Alaska.Gov

ADMINISTRATIVE ORDER NO. 271

I, Bill Walker, Governor of the State of Alaska, under the authority of Article III, Sections 1 and 24 of the Constitution of the State of Alaska, implement this fiscal restraint order to all State agencies.

PURPOSE

With the extensive drop in market oil prices contributing to a large budget deficit, there is a need to take immediate and responsible action to ensure the State remains in a healthy fiscal position. Consequently, pending further review, I am directing all State agencies to halt to the maximum extent possible discretionary expenditures for the following projects (each a "Project"):

A. Ambler Road Project (Alaska Department of Transportation and Public Facilities, Alaska Department of Natural Resources);
B. Juneau Access Project (Alaska Department of Transportation and Public Facilities);
C. Susitna-Watana Dam Project (Alaska Energy Authority);
D. Kodiak Launch Complex (Alaska Aerospace Corporation);
E. Knik Arm Crossing Project (Knik Arm Bridge and Toll Authority, Alaska Department of Transportation and Public Facilities); and
F. Alaska Stand Alone Pipeline Project (Alaska Gasline Development Corporation).

ORDER

Under the authority of Article III, Sections 1 and 24 of the Constitution of the State of Alaska, I order that each agency working on a Project shall:

A. Immediately cease all discretionary spending on the Project and
(1) not incur new or additional expenses or obligations including hiring personnel or entering into or amending any contracts (unless entering or amending a contract would reduce agency costs);
(2) not spend any unobligated or unencumbered funds that have been appropriated to the agency by the Alaska Legislature;
(3) not spend funds received from the federal government or from other sources through contracts, grants, donations, or other instruments or transfer, unless such funds have been obligated or encumbered by the agency.

B To the extent spending is non-discretionary, such as contractually required spending and salaries of existing agency personnel, continue to work on the Project until further notice.

C. Submit to the director of the Office of Management and Budget by 5:00 p.m. on January 5, 2015, a report that includes the following information for the Project:
(1) a spreadsheet of discretionary funding obligations subject to this Administrative Order;
(2) a spreadsheet of non-discretionary funding obligations, including contracts, and the sources of funds for payment of those obligations, and potential costs to delay, suspend or terminate each contract or obligation;
(3) budgeted personnel costs for the remainder of Fiscal Year 2015; and
(4) operating costs status to date.

OTHER PROVISIONS

This order takes effect immediately.

Dated this 26 day of December, 2014, at Juneau, Alaska.

Bill Walker
Governor

ALASKA AEROSPACE COMPLEX

ALASKA AEROSPACE CORPORATION

Ms Pat Pitney
Director, Office of Management and Budget
Court Plaza Building,
240 Main St. Suite 802
Juneau, AK 99801

January 5, 2015

Dear Ms. Pitney,

In response to Administrative Order (AO) 271, dated December 26, 2014, Section C, Alaska Aerospace Corporation (AAC) submits the attached spreadsheet to comply with the AO direction.

In our review of AO 271, it was concluded that the purpose of the AO was to restrict the expenditure of discretionary funds appropriated by Sec. 7, Ch. 17, SLA 2012 for discrete capital projects, as is being done by AAC with the New Medium Lift Launch Pad project at the Kodiak Launch Complex. That is the only project currently being conducted by AAC specifically using state appropriated funds for capital project development. As a public corporation, AAC is conducting other aerospace related activities, such as tracking the Dragon capsule, sales of Alaska geospatial imaging data, commercial launches from Launch Pad 1, and other related services. Therefore, it is our conclusion that the restriction of expenditures for KLC only applies to the New Medium Lift Launch Pad project.

As I mentioned to Governor Walker in our December 19, 2014 meeting, and reiterated at our meeting this past Friday, as a result of the proposal process we initiated last year AAC has issued an "Intent to Award" letter to Lockheed Martin for the purpose of developing medium lift capability at KLC. AAC intends to use no more than $3.0 million of the $25.0 million appropriated for medium lift capability at KLC under Sec. 7, Ch. 17, SLA 2012 for this purpose. The remaining $22.0 million is available to the state for whatever purpose the administration may wish to use it. In compliance with AO 271, AAC is not proceeding with any expenditure for the medium lift project at this moment, but would request that the administration approve the use of the remaining $2,317,000 of the $3.0 million to allow AAC to bring medium lift capability to Alaska at the earliest opportunity.

AAC fully recognizes the difficult fiscal issues facing Alaska and believes that diversifying our economy is part of the long term solution. Over the past two years AAC has aggressively marketed our launch service capability and expanded into new market areas in order to reduce the requirement for state funding. We believe it is our fiduciary responsibility to conservatively invest in new business markets that have the potential to bring new jobs and

commercial funding to our state. I appreciated our meeting last Friday, where we were able to share with you many of the new opportunities we are pursuing and show you some of the new business ventures we have started. AAC wants to be part of the solution, not part of the problem. We believe that our innovative approach to bringing medium lift launches to Alaska can result in increased capability at a fraction of the cost that was projected just three years ago.

In conclusion, we ask that AAC be allowed to continue with the medium lift initiative, not to exceed the $3.0 million appropriated in Sec. 7, Ch. 17, SLA 2012 and that AAC also remain in the governor's budget for $4.0 million of general funds for operations. This is a 50% reduction from two years ago and keeps us on track to eliminate the requirement for state general funds by FY2018 without jeopardizing market opportunities and current launch contracts. AAC is a different company than in 2012. At that time AAC had become 100% dependent on state funding. Our states financial condition today does not permit that, nor is that the purpose for which AAC was incorporated. The team at AAC has worked hard to expand our business model, attract new launch customers, and diversify our business portfolio to reduce the demand for state funding and make AAC an economic driver for Alaska. We request that we be allowed to complete our transformation with your support.

Respectfully submitted,

Craig E. Campbell
President and Chief Executive Officer

Attachment: Excel Spreadsheet on KLC Medium Lift Project

cc: DMVA

	Category Types	Sum of Extended Price [F4311]	Sum of Amount Open [F4311]	Description	Fund Type	Terms	Notes
Response C(2)							
Non-Discretionary Obligations	Term	Potential Cost	Consequence				
Professional Services	To 30 Jun 2015	5,935	Incomplete Environmental Assessment for Medium Lift - No legal exposure				
Response C (3)							
Personnel Costs for FY 2015	Hours	Labor Cost					
Engineer IV	40	4,235					
Response C (4)							
Operating Costs Status to date							
Costs thru 31 December 2014	$685,000						
Gate #1 Authorization	$3,000,000						
Balance of Gate #1 Authorization - unspent	$2,315,000						AAC intent is to use funds for medium lift at KLC
Balance of Gate #2 and #3 Authorization - unspent	$22,000,000						AAC intent is to return funds to state
Response C (1)							
Discretionary Obligations							
None							

ALASKA AEROSPACE

Alaska Legislative

2015 Overview Presentation

February 2015

Alaska Aerospace Corporation
4300 B Street, Suite 101
Anchorage, Alaska 99503
907-561-3338

FY 2015 Budget Changes

- New Launch Contract secured
- New Global Imaging Distribution Contract secured
- $2.0 Million Reduction (25%) in General Funds
- Deleted 3 vacant PCN's
- Huntsville Virtual Office established
- Received $2.4 Million in deferred maintenance funds

FY 2016 Budget Highlights

- Eliminate $4.2 Million General Funds for operations and sustainment
- Return $22.0 Million in capital fund appropriation for medium-lift
- Complete Launch Facility Rebuild with Insurance Funds
- Complete Launch Pad 3 Environmental Assessment
- Pending Executive Branch Approval, complete medium-lift project with remaining $3.0 Million in previously appropriated capital funds
- Proceed in collaboration with Lockheed Martin, ASRC, and the University of Alaska in developing an Aerospace Integration Complex to support a diversified aerospace industry in Alaska
- Reduce 10 PCN's
- Expand Blackbridge satellite imaging services
- Expand commercial launcher capabilities
- Provide contract Range Services at non-Federal spaceports in the U.S.
- Initiate transition process of AAC to a privatized non-state company

SMDC August Launch

- Advanced Hypersonic Weapon Test Flight
- Aborted Launch August 25, 2014
- Rocket Destroyed shortly after Lift-off – Safety measures worked properly
- ***SMDC Investigation Clears KLC of any issues pertaining to the failure!***
- Damage was fully contained on AAC property
- Damaged Facilities
  - Launch Support Structure
  - Integrated Processing Facility
  - Spacecraft and Assembly Transfer Facility
  - Minor damage to Payload Processing Facility
  - Minor damage to Rocket Motor Storage Facility
- Estimated Damage Repair Costs
  - $29.7 million

- ***Facilities Fully Insured***
- Clean-up of rocket and payload debris mostly complete
- Demolition and clean-up of severely damaged facilities underway
- Rebuild design completed and rebuild contracts are being issued
- Rebuild to be completed by October 1, 2015

Medium Lift Request For Proposals

- In the FY2013 budget, the Legislature approved, $25.0 Million capital funds to support developing medium-lift in Alaska
  - Legislation specifically stated that the $25.0 Million in state funding was for infrastructure development specifically for medium payload launches
  - Medium payloads weight in excess of 4,000 pounds
  - The $25.0 million was "gated" into three phases:
    - Phase One = $3.0 Million for design, engineering, infrastructure prep, and environmental work
    - Phase Two = $10.0 Million for infrastructure development, which could not be spent until a firm contract was signed with a launch provider for medium class launches
    - Phase Three = $12.0 Million for construction which can not be spent until any additional funding is raised to complete construction of a medium lift facility
- Estimated cost for a new medium-lift complex at Kodiak was estimated to be no less than $125.0 Million.
  - All funds above the state $25.0 Million would require private/commercial funding

Medium Lift Request For Proposals - Continued

- In September 2014 staff developed a Request For Proposal offering $21.0 Million of the $25.0 Million in a competitive source selection to ***provide commercial launch services for delivering medium class payloads into orbit from the Kodiak Launch Complex***
- Proposers must:
  - Describe how the $21.0 Million state funding would be used
  - Identify the Offeror Infrastructure Requirements
  - Identify the Offeror Infrastructure Investment
  - Guarantee three medium class launches from KLC by 2020
- Proposals were delivered on November 25, 2014
- Four proposals were submitted
- Evaluation of proposals was completed by AAC staff and oral interviews were held on December 9, 2014
- On December 12, 2015, Lockheed Martin was selected for their Athena IIS medium lift rocket proposal
- ***An "Intent to Award a Contract" notice has been issued to Lockheed Martin.***
- Contract negotiations have started, with initial estimates for medium-lift between $3.0 and $6.0 Million
- AAC plans to use only the Phase I $3.0 Million of the $25.0 Million appropriation, plus other existing Federal funding for medium-lift construction

Administrative Order 271

- Governor Walker issued AO 271 on December 26, 2014
- Specified to halt to the maximum extent possible discretionary expenditure on six "Projects"
  - Kodiak Launch Complex was listed as one of the projects
- Alaska Aerospace Corporation legal counsel reviewed and determined the only "project" currently being pursued by AAC was the medium lift RFP process
- ***AAC has suspended further actions on medium lift pending approval to proceed by the Executive branch***
- AAC has advised the administration that the remaining $22.0 million is available to be returned to the state
- AAC has requested the governor approve AAC to complete the contract negotiations with Lockheed Martin, not to exceed $3.0 million of the $25.0 million appropriation

Medium Lift RFP

The medium lift initiative is on hold, per Administrative Order 271, pending approval of the Executive Branch to proceed

Athena IIS6 depicted at Launch Pad 1,
Pacific Spaceport Complex - Alaska

Launch Pad 3 – Environmental Assessment

- An Environmental Assessment (EA) is being conducted for medium lift operations from the Kodiak Launch Complex
- The Federal Aviation Administration (FAA) is the sponsor of the EA
- A draft EA was released for public review September 15, 2014
- A public hearing was conducted in Kodiak on October 7, 2014
- The FAA is reviewing public comments
  - 54 written comments were received
  - 20 people testified
- FAA determination expected in early 2015
- AAC has a potential customer interested in conducting west coast launches from Alaska and building LP-3 in the future

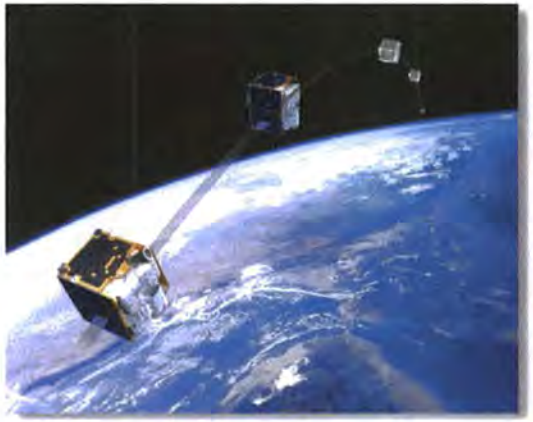
Geospatial Imaging Data Distribution Contract

- To diversify AAC, in May 2014 senior staff initiated discussion with BlackBridge for potential distribution rights for imaging data from the RapidEye imaging constellation
- RapidEye is a constellation of five polar orbiting satellites that collect five meter imaging data for commercial sales
- The AAC Board of Directors approved Resolution #14-03 at the August board meeting authorizing negotiation for a new business venture in Geospatial Data and Satellite Imaging Sales and Distribution
- A contract was signed on October 2, 2014 for distribution rights of BlackBridge Alaska imaging data
- AAC has completed initial orientation with BlackBridge and has a staff member dedicated to BlackBridge sales of Alaska imaging

❖ *This contract was a significant step in diversifying AAC with an emphasis on commercial markets*

❖ AAC has initiated discussions with BlackBridge to expand the contract to include data downlink services

- AAC is also working to secure launch services for the next generation of RapidEye satellites, expected to be launched in the 2018/2020 timeframe



Dragon Tracking

- AAC has a contract to track the Dragon capsule during missions to the International Space Station (ISS)
- AAC has tracked the Dragon on all five of it's missions to the ISS
- Last tracking mission was last month, January 2015

Range Safety and Telemetry System (RSTS)

- The RSTS is a sophisticated telemetry tracking system that provides range safety during the launch and telemetry downlink capability to collect data from the launch vehicle
- There are at least three companies in the United States that offer range safety and/or telemetry services worldwide
- AAC has determined that separating the RSTS out from the KLC range and creating a separate business unit for RSTS operations is a viable option
- Discussions are currently underway with other service providers to develop a plan for marketing RSTS services and providing more cost-effective range and telemetry services at KLC for future launches

International Business Development Initiatives

- The international launch market has expanded in the past decade
- Numerous foreign companies now offer both rocket and satellite services
- Eighty percent of the U.S. commercial satellite market is launched overseas
- The only U.S. competitor for KLC polar launches is Vandenberg AFB, a Federal military installation
- Wyoming Aerospace conducted a study for AAC which identified significant opportunity for international business
- AAC has initiated coordination with the State Department for International Traffic In Arms Regulation (ITAR) approval to conduct foreign launches
- Three markets are being pursued for commercial launches:
  - Japan – Epsilon rocket
  - Italy – Vega rocket
  - Israel – Shavit rocket

Unmanned Aircraft Systems (UAS) Initiatives

- For the past six years AAC has pursued acquisition of the Global Hawk Unmanned Aircraft System (UAS) from the U.S. Air Force for commercial use in Alaska
- Initial concept was to acquire three Global Hawks and operate from Eielson AFB
- Primary projected customers were state and Federal agencies
- Peak 3, an Alaskan firm, was hired in 2014 to do a comprehensive analysis of the financial feasibility of AAC acquiring and operating the Global Hawk
- Conclusion of the study found that the acquisition and operating costs probably could not be recovered by the projected customer revenue base
- Decision was made in June 2014 to cease further pursuit of the Global Hawk
- ***AAC is a partner with the University of Alaska in the FAA UAS Pan-Pacific Test Site.***
- AAC has identified KLC as a test location for UAS operations
- AAC is discussing with the University staff means for AAC to become the commercial entity for UAS operations beyond the research, test, and development stages.

Global Hawk

AAC Composite Revenue History

- Federal Grants = $150,646,770 (43%)
- Launch Revenues = $146,325,065 (41%)
- State Investment = $58,627,566 (16%)
- Total = $355,599,401

* Figures reflect all revenues from 1993 through June 30, 2014

State of Alaska Funding Snapshot

- **SFY 2013** - $8.0M State Funding (Includes 100% Sustainment Funding)
- **SFY 2014** - $8.0M State Funding *Provided a launch services contract is signed by 31 March 2013
- **SFY 2015** - $6.0M – Approved State funding
- **SFY 2016** - $0.0M – Governor's budget request

FY14 through FY16 Operating Budget Comparison

General Funds (RDU Totals FY2014 vs FY 2015)

FY 14 Management Plan	FY 15 Governor Budget	FY 14 Management Plan to FY 15 Governor Request
$8,129.2	$6,084.3	-$2,044.9 (-25.2%)

General Funds (RDU Totals FY 2015 vs FY 2016)

FY 15 Management Plan	**FY 16 Governor Request**	FY 15 Management Plan to FY 16 Governor Request
$6,084.3	**$0.0**	-6,084.3 (100%)

GF & Other Funds (RDU Totals FY2014 vs FY 2015)

FY 14 Management Plan	FY 15 Governor Budget	FY 14 Management Plan to FY 15 Governor Request
$10,618.9	$10,125.5	-$493.4 (-4.6%)

GF & Other Funds (RDU Totals FY2015 vs FY2016)

FY 15 Management Plan	FY 16 Governor Request	FY 15 Management Plan to FY 16 Governor Request
$10,125.5	$11,251.3	+$1,125.8 (+10.6%)

Federal Funding Pursuit

- The Federal government provides nearly $1.0 Billion in operations and sustainment funding for the Federal ranges at Vandenberg AFB and Cape Canaveral
- The Federal government does not provide this type of funding to non-Federal spaceports
- This year, Senators Murkowski and Begich, along with co-sponsorship from the Virginia delegation, included in the Defense Appropriations Bill $10.0 Million for non-Federal spaceports that support the National Space Policy with capability to place satellites into orbit. KLC and MARS are the only two facilities that currently have that capability
- Final action on the Federal FY2015 Omnibus Appropriations Bill included $6.0 Million for non-Federal Spaceports that launch government mission into orbit supporting the National Security program
- ***AAC expects to receive up to $3.0 Million from the Federal (Air Force) government in 2015, specifically for operational support of potential national security launches into polar orbit from the Kodiak Launch Complex***

Conclusion

Alaska Aerospace Corporation is rapidly changing from a state-owned corporation, wholly dependent on government launches and state funding, to a diversified aerospace corporation which has a mix of commercial and government operations in a variety of aerospace related businesses and no longer dependent on state funding.

The new AAC leadership team can not change what happened in the past. However, we have already made significant changes which are showing a positive impact on the corporation, future business potential, and the ability to continue operating.

We are working with the Administration on a transition plan which retains the market viability of AAC, while minimizing requirements for state operations and sustainment funding.

For FY2016, AAC requests no state general funds.

With Executive and Legislative support, we are committed to making AAC a viable industry in Alaska, independent of state funding. We request your support!

ALASKA STAND ALONE PIPELINE

ALASKA GASLINE DEVELOPMENT CORP.
GAS FOR ALASKANS

Memorandum

From: Dan Fauske, President
To: Pat Pitney, Director of OMB
Cc: Jim Whittaker, COS

Date: January 5, 2015

Re.: AO 271 – Alaska Stand Alone Pipeline Project

The Alaska Gasline Development Corporation is developing the Alaska Stand Alone Pipeline (ASAP) Project as mandated by HB4, passed by the 28th Alaska Legislature in April 2013. The intent of this legislation was to develop an in-state pipeline for delivering North Slope natural gas to Fairbanks, the Southcentral region, and other communities wherever possible. Since 2010, approximately $420mm was appropriated by the Legislature to the project, either directly, or through the In-state Natural Gas Pipeline Fund to advance this project through FY16. As of December 2014, approximately $176mm has been spent establishing the Corporation and advancing the ASAP project.

The ASAP project plan, as approved by the Legislature, contemplated a successful open season in 2015, project sanctioning in 2016, a three-year construction cycle beginning in 2017, and first gas delivered in 2021. To advance ASAP to project sanctioning in 2016, the Corporation expected to expend $244 million, the remaining balance of the In-State Natural Gas Pipeline Fund, between now and the end of FY16. AGDC has now scaled and scoped plans, budgets and deliverables to align ASAP with the next major decision point on the Alaska LNG project, whether or not to proceed with Front End Engineering and Design (FEED) costing billions of dollars. The Alaska LNG project is scheduled to make its next investment decision in Q1 2016. AGDC also represents the State of Alaska's (SOA) interest in the Alaska LNG project.

Based on discussions with Governor Walker, AGDC staff has revised its 2015/2016 work plans* to align with our Board of Directors' vision of *"One Project, Two Options"*. As a result of this review, AGDC has significantly reduced projected ASAP non-discretionary expenditures by $90mm to $60.7mm over the next 15 months to align with the Alaska LNG FEED decision. This will be accomplished by:

*The AGDC Board of Directors will be reviewing these staff recommendations at their January 8, 2015 meeting. Board concurrence and approval will be necessary for implementation.

- Optimizing core ASAP management team for efficiency, while still retaining institutional knowledge and momentum;
- Scaling and scoping ASAP technical and engineering work to essential tasks
  - Focusing on durable work and transferrable data beneficial to either initiative
  - Pursuing jointly funded AKLNG work efforts to benefit both projects;
- Continuing federal environmental (NEPA) process, major permit acquisitions, and State and Federal right of ways acquisition (major assets for any SOA pipeline project).

The spreadsheet below identifies the $60.7mm **non-discretionary** spend across ASAP's five main project development functions. All of the funding for these efforts will come out of the In-state Natural Gas Pipeline Fund (1229), not the State's general fund. This spend plan includes contracts for existing work ($27.6mm) already underway, and contracts for future work ($33.1mm) that is required. All of AGDC's contracts are written under a Master Services Agreement and provide that if necessary, AGDC can terminate without penalty.

2015/2016 ASAP Work Plan (15 Months) Expenditures Estimate

	Task Order Project Work Package		
ASAP Project Functional Team	Task Orders Committed	Task Orders Not Committed	Total Cost
PMT	$ 670,192	$ 816,308	$ 1,486,500
Pipeline & Interface Management	$ 9,589,483	$ 10,607,232	$ 20,196,715
Facilities Management	$ 9,080,221	$ 12,864,129	$ 21,944,350
ERL	$ 4,132,570	$ 5,876,129	$ 10,008,699
Construction & Project Services	$ 4,107,144	$ 2,950,356	$ 7,057,500
TOTAL	$ 27,579,611	$ 33,114,153	$ 60,693,763

The net result of this revised schedule will be an ASAP project that has retained a core team capable of moving the project forward, a completed Supplemental Environmental Impact Statement, the receipt of 100 miles of federal right-of way, and completed field programs valuable to both ASAP and Alaska LNG. This will allow ASAP to remain as the state's viable alternative should the Alaska LNG project not proceed into FEED.

There are no AGDC positions solely budgeted for the ASAP project. AGDC contracts for professional personnel to manage and meet the deliverables laid out in HB4. AGDC is currently tasked with overseeing both the ASAP and Alaska LNG projects and has developed a cost allocation model to share Corporate costs between fund source 1229 AK Gasline Development Corporation In-State Pipeline Fund and fund source 1235 Alaska Liquefied Natural Gas Project Fund (AGDC-LNG). The budgeted personnel costs for the 2nd half of FY15 are approximately $2.9mm. The FY15 operating costs through December for AGDC from fund source 1229 AK Gasline Development Corporation In-State Pipeline Fund are approximately $2.4mm.

Project Funding Status

Alaska LNG

Alaska Liquified Natural Gas Project Fund (AS 31.25.110)

($ Millions)

Total Legislative Appropriations	$	69.8
Expenditures through Year End FY14	$	(1.0)
Forecast Expenditures: FY15	$	(25.1)
Forecast Expenditures: FY16	$	(43.7)
Projected Funds @ FEED	**$**	**0.0**

The Alaska LNG Project Fund was established in FY14 (SB 138)

ASAP

In-State Natural Gas Pipeline Fund (AS 31.25.100)

($ Millions)

	Activity Scenerios	
	ASAP aligns to AKLNG FEED	ASAP continues to sanctioning
Total Legislative Appropriations*	$ 419.8	$ 419.8
Expenditures through Year End FY14	$ (120.0)	$ (120.0)
Forecast Expenditures: FY15	$ (98.0)	$ (150.0)
Forecast Expenditures: FY16	$ (51.0)	$ (149.8)
Projected Funds @ FEED/Sanctioning	**$ 150.8**	**$ 0.0**

The In-State Natural Gas Pipeline Fund was established in FY13 (HB4)

** $419.8 represents all appropriations towards ASAP from FY10-FY14*

- Alaska LNG Pre-Feed activities projected to conclude 1Q16 – AGDC's participation fully funded
- Modifying ASAP work activities to compliment either option and to align with an Alaska LNG Feed decision, delays $150mm in ASAP expenditures
- Should Alaska LNG falter, the $150mm will be required to move ASAP through Open Season and on to Project Sanctioning

AMBLER ROAD PROJECT

Ambler EIS Project - Response to Administrative Order No. 271
Project Description: Identify an approved route for road access to the Ambler Mining District which would utilize public/private financing for road construction.

ORDER A. (1) - (3): Complied with
ORDER B: Complied with
ORDER C: Complied with (below)

AIDEA Funding Summary

Expended to Date	$7,850,853	c(4)	
Non-Discretionary	$1,579,970	c(2)	*Believe cost to delay, suspend or terminate each contract or obligation would exceed cost to wind down identified Non-Discretionary costs.*
Discretionary	$8,158,771	c(1)	
TOTAL	**$17,589,594**		

Budgeted Personnel	$141,556	c(3)

AIDEA Funding Summary - Detail

FUNDING SOURCE State Capital Appropriations (FY13-15), all Non-Discretionary costs paid with State Capital Appropriations

COST CATEGORY		Non-Discretionary		Discretionary		
	Expended to Date	Encumbered	Unencumbered	Encumbered	Unencumbered	NOTES (for Non-Discretionary Amounts)
	c(4)	c(2)	c(2)	c(1)	c(1)	
AIDEA PERSONNEL	$171,395	$141,556		$0		
AIDEA TRAVEL	$23,183	$10,000		$0		
OTHER EXP	$39,312	$82,330		$13,849		Fairbanks Office Lease and Miscellaneous Expenses
DOWL PM	$446,628	$115,000		$329,761		Project Management Services to wind down project
DOWL PI	$895,509	$100,000		$874,256		Wrap up Public Involvement and cover outstanding charges from Dec 2014.
DOWL E&E	$4,375,587	$295,484		$1,845,569		Funding required to finish reports on recent field studies and remove some equipment from the field.
OTHER CONTRACTORS	$4,000	$0		$16,000		
THIRD PARTY EIS	$0	$0		$0		
DCCED	$76,656	$0		$170		
UAF-HYDRO STUDIES	$606,996	$342,385		$0		Funding required to finish report on field studies and remove equipment from the field (includes some UAF personnel).
ADF&G-FISH/SUBS	$677,392	$208,908		$0		Funding required to finish reports on field studies and remove equipment from the field (includes personnel costs for DF&G research staff).
DEPT LAW AAG	$41,785	$20,000		$23,322		AAG support and outside legal counsel support. Need to cover charges accrued in December 2014.
DOT&PF- GEOTECH	$70,484	$64,306		$0		Funding required to finish reports on field work and remove equipment from the field (includes some DOT&PF personnel).
ADNR - COORD/HLA	$92,551	$200,000		$416,191		DNR OPMP and other State agency permitting team members. Need to cover costs accrued in December 2014 and $70K in budgeted State personnel salaries (DNR OPMP and other State agencies) through June 2015.
NPS/FHWA/BLM	$329,375	$0		$470,625		
Corps	$0	$0		$0		
SUB-TOTAL	**$7,850,853**	**$1,579,970**	**$0**	**$3,989,744**	**$4,169,027**	Approximately $1.6 million of the $5.6 encumbered would be needed to wind down project. About $8M could be released if project canceled (i.e. total discretionary funds).

PROJECT DESCRIPTION

Identify an approved route for road access to the Ambler Mining District which would utilize public/private financing for road construction.

FUNDING AND BENEFITS

- Historical Funding ($80.05 Million)
  - State Appropriations of $26.25 Million (FY11 to FY15)
    - $9.25 Million to DOT&PF (FY11 to FY13)
    - $17 Million to AIDEA (FY14 and FY15)
  - NovaCopper has spent approximately $53.8 Million on Upper Kobuk Mineral Projects to date
    - If EIS Process moves forward, NovaCopper will likely continue these projects (55% Native Hire)
- Future Funding Requirements ($6.8 Million in FY17 & FY18)
  - AIDEA proposes using remaining appropriated funds ($9.7 Million) to continue the EIS process
  - With the existing appropriations, in FY17 and FY18 an additional $6.8 Million would conclude the EIS
  - Post EIS and permitting, AIDEA will work with private industry to finance construction and operation of the project as it has always planned
- State Benefits from ***Mine*** Construction and Operation (ONLY WITH ACCESS)
  - Over $300 Million in taxes and royalties (SINGLE MINE – Arctic prospect)
  - Over 1,300 construction related jobs per year for two years (SINGLE MINE – Arctic prospect)
  - Over 1,000 operations related jobs per year for the life of the mine (SINGLE MINE – Arctic prospect)
  - With access, similar classes of benefits from Bornite, Sun, and Smucker mining prospects in the District
- State Benefits from ***Road*** Construction and Operation
  - Dividend to State of Alaska will be increased (after repayment)
  - Over 490 construction related jobs per year for four years
  - Over 50 operations related jobs per year for the life of the proposed road
  - State of Alaska recovers initial investment in the EIS and Preliminary Feasibility
  - State benefits by the road financing, construction and operating costs paid for by private sector users

PROJECT CONSIDERATIONS

"Congress finds that there is a need for access for surface transportation purposes across the Western (Kobuk River) unit of the Gates of the Arctic National Preserve (from the Ambler Mining District to the Alaska Pipeline Haul Road) and the Secretary shall permit such access in accordance with the provisions of this subsection."

– Alaska National Interest Lands Conservation Act, Section 201(4)(b)

- Congress recognized the need decades ago as noted in ANILCA,
- State lands/resources that are currently stranded will finally be accessible,
- AIDEA will work with private industry to finance construction and operation of the project,
- AIDEA has conducted many layers of outreach to interested parties and looks forward to a robust public process through the EIS, and
- There is support for completing the EIS to provide all decision makers with the thorough and detailed information needed to make a reasonable decision on whether to proceed with AMDIAR.

Ambler EIS Project - Response to Administrative Order No. 271
Exhibit 2
Environmental Impact Statement - Ambler Mining District Industrial Access Road
Estimated Cost to Complete Over 4 Years and Additional Funding Required

COST CATEGORY	Cost to Complete	NOTES
AIDEA PERSONNEL	$976,000	
AIDEA TRAVEL	$40,000	
OTHER EXP	$96,179	Includes Fairbanks Office Rent and Staffing
DOWL PM	$800,000	Half time PM over 4 years
DOWL PI	$400,000	PI support over 4 years
DOWL E&E	$1,000,000	Completion of current field work and support over next 4 years, engineering review of alternatives for EIS, etc..
OTHER CONTRACTORS	$0	
THIRD PARTY EIS	$10,000,000	Funding for third-party contractor to complete EIS under lead federal agency direction.
UAF-HYDRO STUDIES	$342,385	Hydrology studies. Funding required to finish report on field studies and remove equipment from the field.
ADF&G-FISH/SUBS	$208,908	Fisheries studies. Funding required to finish reports on field studies and remove equipment from the field.
DEPT LAW AAG	$200,000	AAG support and outside legal counsel support (BHBC)
DOT&PF - GEOTECH	$70,484	Geotechnical studies. Funding required to finish reports on field work and remove equipment from the field.
DHSS - HIA	$400,000	HIA required by State policy ($400K)
NPS/FHWA/BLM	$2,000,000	This funding is for NPS/FHWA/BLM cost recovery as allowed under federal law for processing right-of-way permit application on federal lands. If the project does not go forward, the encumbered funds could be released.
TOTAL	**$16,533,956**	

Encumbered Available to Continue	$5,418,157
Non-Encumbered Funding Available	$4,320,584
Total Funds Available	***$9,738,741***

Additional Funding Required	**$6,795,215**

Ambler EIS Project - Response to Administrative Order No. 271
Exhibit 3 - Ambler Mining District Industrial Access Road (AMDIAR) EIS Decision Matrix

The issues presented: File for EIS in FY 15; Put the EIS on Hold; or Cancel the EIS.

OPTION 1: File for EIS in FY 15

PROS	CONS
• Provides path to recover State funds invested to date • The EIS is the permit needed before any access to the mining district can be financed by AIDEA and private capital • EIS is a step to AMDIAR revenues, jobs and access to benefits similar to Red Dog DMTS • No new State funds needed until FY17, possibly FY18 • Continues validation to industry that State and AIDEA are undertaking infrastructure development for natural resources and acknowledges private investments to date bring value to State • Provide mechanism for Federal consultation with tribes • Federal EIS contractor conducts public outreach and stakeholder involvement • Provides decision-making information for communities	• No re-appropriation of $8.2 million during tight budget • Additional $6.8 million in future years to complete EIS

AIDEA has approximately $9.7 million in FY 15 funds that could be used to file an EIS application with an additional $6.8 million needed in FY17 & FY18 to complete the permit. The EIS Record of Decision is the permit needed before the road could be financed by AIDEA and private capital. No appropriated funds would be used for the construction or maintenance of the road, if built. The federal EIS process will include a review of all alternatives, such as rail or a road from the Red Dog port to Ambler, as well as providing the public with detailed information on the economic, health, and environmental consequences of the proposed project.

OPTION 2: Do not file the EIS Application in FY 15 (Hold or Cancel EIS)

PROS	CONS
• Re-appropriation of $8.2 million	• No path to recover State funds invested in AMDIAR EIS • No additional mining company exploration investment in Ambler District • Negative effect on future P3 infrastructure investments • Environmental data collected becomes stale/expires (a wasted cost) and creates a high cost to restart EIS process • Rejection of public support for the EIS process • No near-term path to potential mining revenues, payments to AIDEA for use of the road (Red Dog model), job creation and taxes or PILT to local government

A second option is to simply end the EIS process and not spend any more funds. This approach would let the legislature re-appropriate the approximately remaining $8.2 million. This approach appears the least costly, but risks making all the work done to date a wasted effort. In addition, all of the relationships built with communities and the mining industry over the last four years would be lost as well as create great doubt in private industry's willingness to co-invest with the State in economic/resource development projects in the future.

KNIK ARM CROSSING AND JUNEAU ACCESS

MEMORANDUM

State of Alaska

Department of Transportation & Public Facilities
Office of the Commissioner

TO: Pat Pitney
Director,
Office of Management and Budget

DATE: January 5, 2015

TELEPHONE NO: (907) 465-3900
FAX NUMBER: (907) 586-8365

FROM: Patrick J. Kemp, P.E.
Commissioner

SUBJECT: Reply to Requirements of Administrative Order 271

Attached is the department report to communicate the two Alaska DOT&PF projects that fall under Administrative Order 271. Both Knik Arm Crossing and Juneau Access projects are funded under the Federal-Aid Highway program administered by FHWA. This funding source comes with rules that are specific to this funding source, and as such we have provided a paper that explains the most relevant requirements.

Perhaps the most significant issue is that each project must be evaluated in total, as the many specific contracts and reimbursable service agreements with other agencies are intended to advance the project. Halting or even suspending any one of these activities is essentially delaying the project overall, and as such would likely trigger a financial penalty.

Both of these projects are long-standing goals of the state, as exemplified by repeated Legislative appropriations and the progress accomplished to date under previous administrations. Both represent a cost-effective opportunity to significantly improve transportation in terms of capacity, travel time and user costs.

The majority of federal-aid involved in each of these projects will require state funds for the match. Halting or delaying the projects would only require that we shift this federal funding to other projects and match would still be required. There is no direct savings on match requirement if the federal aid funds are used on other projects. There is also a plan in the funding strategy to lessen the impact to projects serving other needs. This is explained in the attachment on Federal-Aid, but the department is cognizant of such impacts and has always planned on trying to soften such effects.

For the Juneau Access project I have also included a PowerPoint we presented to the joint House and Senate Transportation committees last spring. It demonstrates that the cost of ferry service is highly disproportional to both the citizens served and the travel provided. It also demonstrates how similar jurisdictions (Canada and Norway) have targeted their ferry services for replacement with highways, bridges and/or tunnels. Simply put the costs of ferries (both capital and operating) are a perpetual drain on budgets, and both kinds of costs have long escalated much faster than the CPI. Only by intervening with initially high capital highway expenditures is this ongoing operating and capital replacement cost of ferries lessened.

The Knik Arm Crossing project was just transferred to the agency on July 1, 2014 and a new Traffic and Revenue study was recently completed. The department has had significantly less time to analyze and prepare a similar presentation. However, the financing plan, relying on three distinct funding sources (federal-aid, federal loan and state bonds) and user fees to recover all operating, and partial capital costs is significant and unique in state history.

As you will see, there is considerable information and a complex set of requirements that impact each project. Should you desire more information or a briefing for Q&A, please let me know.

Cc: Jim Whitaker, Chief of Staff

Enclosures (see List of Attachments)

Department of Transportation and Public Facilities
Administrative Order 271 Report
January 5, 2015

List of Attachments

1. FHWA Requirements Affecting Projects Addressed by AO 271
2. Knik Arm Crossing Brief
3. Juneau Access Brief
4. Juneau Access Power Point to 2014 Legislature
5. Knik Arm Crossing Project Financial Information
6. Juneau Access Project Financial Information

Attachment Number 1

FHWA Requirements Affecting Projects Addressed by AO 271

By Alaska Department of Transportation and Public Facilities

Both the Knik Arm Crossing (KAC) and the Juneau Access (JA) projects are being pursued under U.S. DOT Federal Highway Administration (FHWA) rules. A 9th Circuit decision some years ago ruled that once a project is started with federal-aid, the entire project regardless of follow-on funding sources must adhere to the federal-aid rules. This imposes a number of requirements that deserve explanation in view of the objectives in AO 271.

Elsewhere in this report, the specific status of each project is portrayed. For brevity, this detail is not repeated herein. However, a few key facts deserve mention:

- Both KAC and JA are far along in the pre-construction stage (design, permitting, right-of-way and utility relocation), meaning that a significant investment of federal and state funds has been invested to date.
- Both KAC and JA have advanced to a point where there is no legal possibility of simply stopping or even suspending one or both projects without penalty. Such penalty can be as severe as full repayment of all federal costs to date ($72.9 Million for KAC and $25.7 Million for JA)>
- Both KAC and JA fall under a special provision of Title 23 as the total cost of each is estimated to be in excess of $500 million. Such projects are considered "Major Projects" and this triggers a host of special additional requirements. (See 23 USC § 106 (h) Major Projects).

Non-Participating Determination Risk

One important issue that applies to both projects is how to maneuver decisions in a manner that reduces risk of repayment being mandated on the state. This occurs when FHWA decides to declare a project as "non-participating", which FHWA can enforce retroactively to include all prior federally-funded expenditures.

This risk is not academic or hypothetical. In recent years the state has been required to fully repay federal costs to date when it was decided to suspend all work on other projects.

Key Rules

The requirements of 23 USC are considerable, as the program has operated over many decades and has been amended repeatedly by Congressional action and FHWA rule-making. Considering that the vast majority of major highways in all 50 states and other territories have been funded by this program, there are rules for nearly any eventuality. Further, recent enforcement of these rules by FHWA has

increased to a considerable degree. It is unrealistic to assume these rules are malleable or can simply be bypassed.

The key requirements that apply to any consideration of KAC or JA are as follows:

1. FHWA requires that each phase of work be fully funded. Thus even funds that may not be needed in the immediate future must not be removed if it leaves a phase under-funded. Further, should the agency determine that the cost of a phase has increased after it has begun, the department is required to apply additional funds (federal and state match) to ensure that full funding is again available. (A phase in this context means one of the series of activities leading up to and including construction.) Typically, a project requires four or five phases: design or pre-construction up to completion of environmental document, final design, right-of-way, utility relocations and construction. Each proceeds in sequence, with completion of work in one phase usually necessary to undertake the next.

2. FHWA imposes a time-trap requirement once a project has begun. The time trap is a requirement for full repayment, should the agency start then not complete a federally supported project. A time-trap penalty occurs following the 10th year for any project that has not acquired right-of-way, or following the 20th year for projects that have acquired right-of-way. Both KAC and JA are well past the 10th year, though KAC has also started a right-of-way phase and is well inside the longer 20-year period. If a project has exceeded the time trap period that applies, it can proceed without penalty by requesting an extension; this is usually granted so long as there is continued progress and delays if any, are not discretionary actions taken by the state.

3. FHWA does not permit unnecessary periods of inactivity once a project is initiated. In other words, just slowing down a project by decisions such as cancelling some but not all activity can trigger a financial penalty. This is because it results in inefficiency and ongoing staff costs that do not accomplish forward progress. The FHWA Alaska Division has expressed strong opposition to "political" decisions on projects, and seem prepared to use their authority if the state is not diligent in project progress. One example of such penalty might be to disallow federal eligibility for all staff and related costs during a period of inactivity. For this reason, virtually all of the contracts and/or reimbursable service agreements with other agencies working for the project are non-discretionary. Each is considered a necessary sub-activity necessary to achieve the primary purpose of the project.

4. FHWA requires that all changes to schedule, budget, scope and/or funding be portrayed in one or more updated public documents. The Major Project rules mentioned earlier require a project schedule and finance plan, updated annually. The portrayal of projects, funding and funding sources in the statewide listing of all projects known as the STIP (Surface Transportation Improvement Program) and LRTP (statewide Long Range Transportation Plan), if changed, requires amendments to these documents as well. As the KAC project also partially lies within

the boundary of the AMATS (Anchorage Metropolitan Area Transportation System) organization, it also triggers a host of additional requirements: Both the AMATS transportation plan (MTP) and spending plan (TIP) as well as their air quality plan for AMATS under EPA air quality rules can be impacted.

5. FHWA will accept a different final selected alternative, and this may be the best means to avoid large payback costs for the state. This is best done prior to a final EIS determination, as otherwise the EIS (Environmental Impact Statement) must be done over as a supplemental EIS. However, if the federal agency believes such a decision is politically and not technically motivated, they may not go along with such a change of final alternative. The final decision on an EIS selected alternative rests solely with the FHWA and not the state.

6. FHWA financial rules offer tools to mitigate impact of larger projects affecting other state needs. The most significant such tool is known as AC (Advance Construction, see 23 U.S. Code § 115). A hypothetical example will help describe this tool: Project A will require $60 million in federal funding plus $6 million in state match. The project will take 3 full construction seasons to construct, costing approximately one-third per year. Instead of applying the full $60 million of federal funds to the project in the first year, under the AC rules the state can apply a lesser amount, say $20 million, and then apply the remaining $40 million in $20 million increments in year 2 and year 3. The full $6 million in state match does have to be paid in year 1. This approach would allow other work to proceed simultaneously using the funds not locked up in year 1. DOT&PF, in preparing the financial planning for these two projects (and many others too) intended to soften the impact by using the AC tool. Note, this approach does not violate the full funding requirement (see paragraph #1) because the state commits it's future federal aid and provides all state match up front.

7. FHWA funds are normally subject to lapse in the year appropriated and must be applied to projects or will lapse. Unlike state GF appropriated to specific named projects, the federal-aid program requires the state to fully use annual federal-aid funding each year. Though a few exceptions to lapsing such as earmark funds exist, the great majority of funding is subject to the "use or lose" requirement. Each August, approximately 60 days prior to the end of the federal fiscal year, we must report our level of excess funding, or if we have sufficient projects that are ready, our level of surplus funding we could absorb from other states. This means that changing funding plans for projects such as JA and KAC must be done with a plan to substitute projects, sufficient time to make them eligible to receive funding and such plan must include necessary capital budget authority.

Attachment Number 2

Knik Arm Crossing Project

By Alaska Department of Transportation and Public Facilities

The purpose and need for the Knik Arm Crossing (KAC) is to further the development of transportation systems in the Upper Cook Inlet region by providing improved vehicular access and connectivity between Anchorage and the Matanuska-Susitna Borough (MSB). The KAC will provide regional transportation connectivity for the movement of people, freight and goods between Anchorage, the MSB and Interior Alaska by addressing the need for an alternative travel routing and access between regional airports, ports, and hospitals; and for fire, police and disaster relief services to facilitate emergency response and evacuation.

Current Project Status

In 2007, a final Environmental Impact Statement (EIS) was completed evaluating several route alternatives and in 2010 the Federal Highway Administration (FHWA) issued a "build" Record of Decision (ROD) for the recommended alternative. Since then, 86% of the necessary right-of-way has been acquired. All private property has been acquired, with remaining acquisitions to be made from the University of Alaska, Joint Base Elmendorf-Richardson, the Municipality of Anchorage, and the Alaska Railroad Corporation.

All environmental permit applications were submitted between 2010 and 2013, of which 3 permits remain outstanding. Multiple additional studies necessary to finance and procure the project have been completed, including the FHWA Major Projects Requirements of a Project Management Plan (2014) and the FHWA Cost Estimate review (2014). The financial plan submitted to the USDOT Transportation Infrastructure Finance and Innovation Act (TIFIA) Joint Program Office will satisfy the final FHWA Major Project Requirement.

The USDOT TIFIA program provides federal credit assistance in the form of direct loans, loan guarantees, and standby lines of credit to finance surface transportation projects of national and regional significance. TIFIA credit assistance provides improved access to capital markets, flexible repayment terms, and potentially more favorable interest rates than can be found in private capital markets for similar instruments. TIFIA can help advance qualified, large-scale projects that otherwise might be delayed or deferred because of size, complexity, or uncertainty over the timing of revenues.

Operating and Capital Costs

The KAC will be a tolled facility. Long range capital and operating costs will be funded from toll revenue, as will TIFIA debt service.

A public finance plan was developed by the Governor's Office of Management and Budget, DOT&PF, and the Alaska Department of Revenue in December of 2013, which identified $345 million in TIFIA loan, State of Alaska Revenue Bonds totaling $275 million, and federal-aid highway funds totaling $300 million.

The TIFIA loan will be supported by a pledge of net toll revenue. Under House Bill 23 (SLA 14, Chapter 51), securing the TIFIA loan is a condition precedent to issuing the bonds. HB 23 authorized the State

Bond Committee to issue up to $300 million of state revenue bonds, backed by the moral obligation of the state, subject to appropriation. In addition, HB 23 transferred management and oversight of the project from the Knik Arm Bridge and Toll Authority to DOT&PF.

The financial plan also anticipates $300 million of federal-aid highway program funds to be used, of which $227 million remain to be appropriated by the legislature. The federal-aid highway funds will not require additional state matching funds from the general fund, as bond proceeds will be used for that purpose.

A comprehensive Traffic and Toll Revenue Study was completed on December 5, 2014 that indicates toll revenue will be sufficient to meet the TIFIA debt service of the KAC in addition to the long range operating and capital costs with 2 times the necessary coverage. Long range operating and capital costs are comprised of the following:

- Bridge and roadway operations and maintenance (O&M), including bridge inspections, snow removal, lighting, repairs, landscape maintenance, etc.
- Toll system operations, maintenance, customer care, account management, and billing and collection.
- Renewal and rehabilitation (R&R) capital maintenance, including periodic roadway resurfacing, bridge bearing replacements, signing and guardrail replacement, etc.

Excess toll revenue is anticipated to be used to service project debt.

Consequences of Canceling or Delaying Project

Canceling the project without bringing it to a conclusion may result in the State owing the Federal government all federal funds expended on the project per CFR 630.112(c)(2). To date, federal funds that may be required to be paid back total $72.9 million.

Delay of the project would not be an immediate cause to repay federal funds as this project has begun the right-of-way phase. Under 23 CFR 630.112(c)(1), road construction must occur on the right-of-way within 20 years of right-of-way acquisition.

It is not clear at this time if delaying the project indefinitely would result in immediate federal reimbursement, as FHWA is currently researching the issue. Prior to this point, FHWA has been very consistent in saying that they expected us to move expeditiously on KAC, given previous delays imposed by other administrations. However, delaying the project could cause completed studies and progress on permits to become stale, requiring additional costs to update. Significant delay could result in the inability to secure a TIFIA loan due to the potential of diminishing federal funds.

Again, as long as DOT&PF is making progress on the project, reasonable requests for time extensions are allowed. Due to the total cost of the project exceeding $500 million, FHWA requires that a Financial Plan be approved by the FHWA Major Projects Office. The Financial Plan must provide reasonable assurance that sufficient funds will be available to meet the proposed construction schedule.

Attachment Number 3

Juneau Access Improvement Project

By Alaska Department of Transportation and Public Facilities

The purpose and need for the Juneau Access Improvement (JAI) Project is to provide improved surface transportation to and from Juneau within the Lynn Canal corridor that will:

- Provide the capacity to meet transportation demand in the corridor
- Provide flexibility and improve opportunity for travel
- Reduce travel times between communities
- Reduce State costs for transportation in the corridor
- Reduce user costs for transportation in the corridor

Current Project Status

The Department of Transportation and Public Facilities (DOT&PF) and the Federal Highway Administration (FHWA) initiated the preparation of a Draft Supplemental Environmental Impact Statement (SEIS) in January 2012 following a Ninth Circuit U.S. Court of Appeals ruling which upheld a District Court decision that the FHWA violated the National Environmental Policy Act (NEPA) in issuing a Record of Decision (ROD) selecting Alternate 2B (East Lynn Canal Highway to Katzehin) by failing to consider an alternative for improved ferry service using existing ferries and terminals.

On September 18, 2014, DOT&PF announced the release of the JAI Project Draft SEIS for review and comment, with the East Lynn Canal Highway (Alt 2B) identified as the preferred alternative. The public comment period ended on November 25, 2014. DOT&PF is in the process of responding to comments and revising the Draft SEIS as appropriate. A Final SEIS and ROD is anticipated to be issued in the fall of 2015.

Consequences of Canceling or Delaying Project

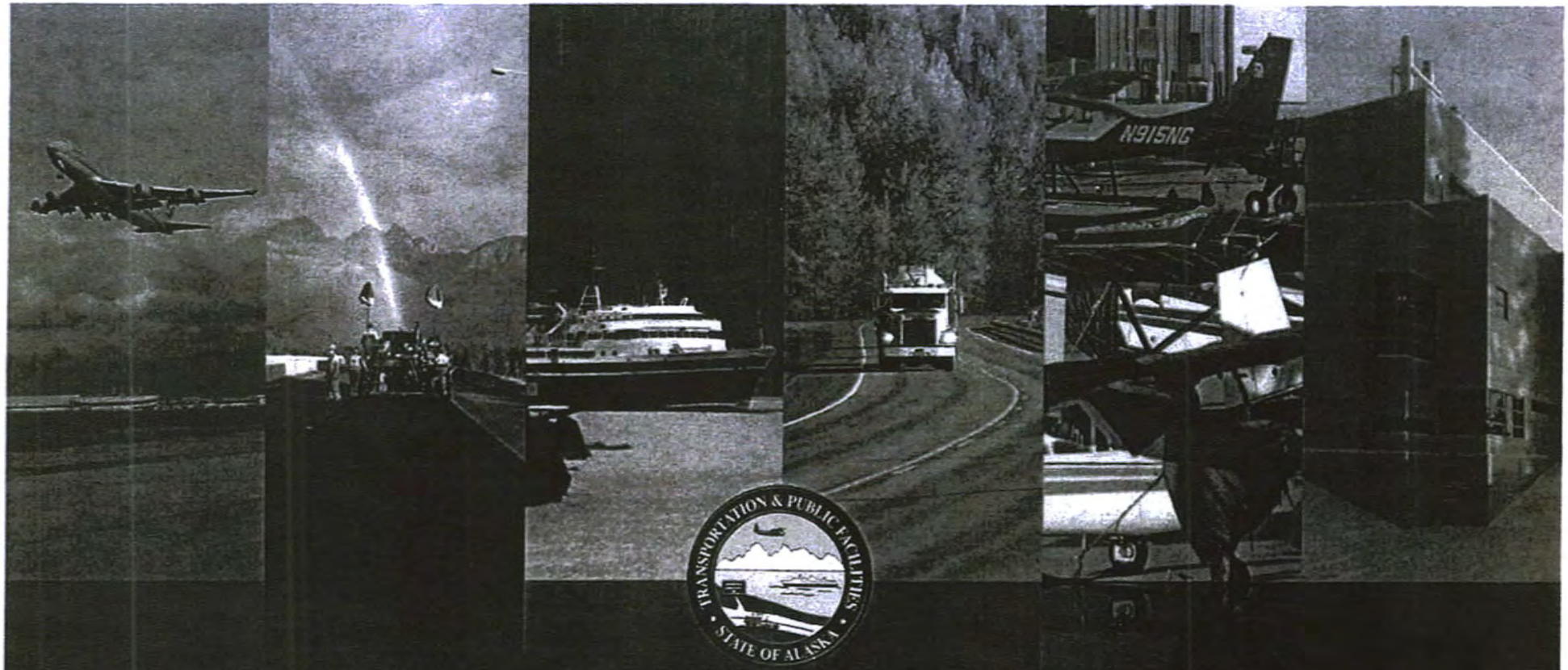
Canceling the project without bringing it to a conclusion may result in the State owing the Federal government all federal funds expended on the project per CFR 630.112(c)(2). To date, federal funds that may be required to be paid back total $25.7 million. Reaching a conclusion means FHWA selecting an alternative in a ROD and DOT&PF beginning implementation if an action alternative is selected.

Delaying the project prior to issuance of the ROD for more than a year or two would result in the requirement to later restart the process with agency and public scoping, and revising or replacing the Draft SEIS as appropriate. It is not clear at this time if delaying the project indefinitely prior to a ROD would result in immediate federal reimbursement, as FHWA is currently researching the issue. Prior to this point, FHWA has been very consistent in saying that they expected us to move expeditiously on Juneau Access, given previous delays imposed by other administrations.

Delaying the project post-ROD would be less of an issue with FHWA. 23 CFR 630.112(c)(2) requires that a right-of-way acquisition or construction begin within 10 years of the start of a project, but extensions for delay caused by lawsuits and/or required additional NEPA documentation are allowed; this project has received multiple extensions. A single right-of-way action would satisfy the requirements of (c)(2) and trigger the requirements of (c)(1), which mandates that road construction must occur on the right-of-way within 20 years of right-of-way acquisition.

However, if conditions change during a delay, such as new environmental laws being enacted or a new endangered species declared, additional environmental work may be required. Too, the added burden of inflation to project costs would continue to mount.

Again, as long as DOT&PF is making progress on the project, reasonable requests for time extensions are allowed. Due to the total cost of the project exceeding $500 million, FHWA requires that a Financial Plan be approved by the FHWA Major Projects Office. The Financial Plan must provide reasonable assurance that sufficient funds will be available to meet the proposed construction schedule.



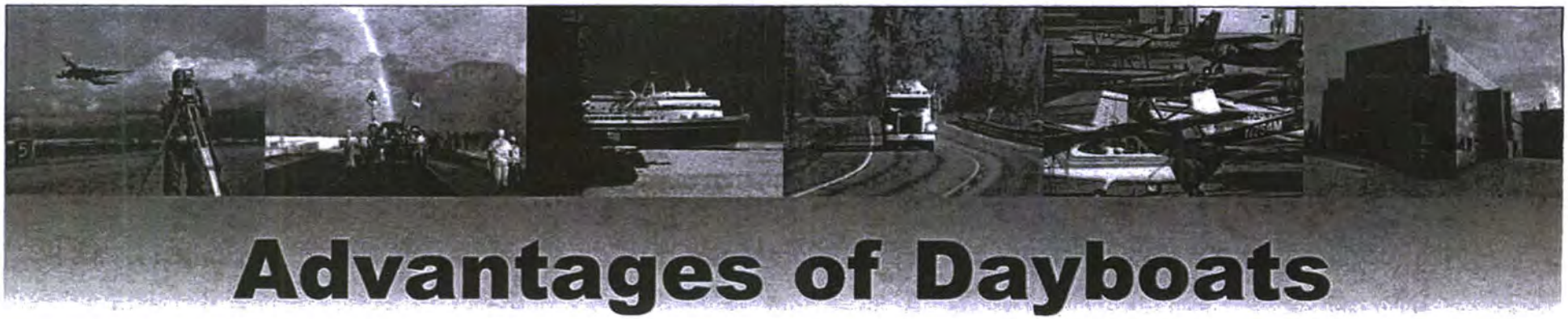
Alaska Department of Transportation & Public Facilities

Why Extending Roads and Shortening Ferry Links is a Sound Policy Choice

Jeff Ottesen, Director of Program Development
March 6, 2014

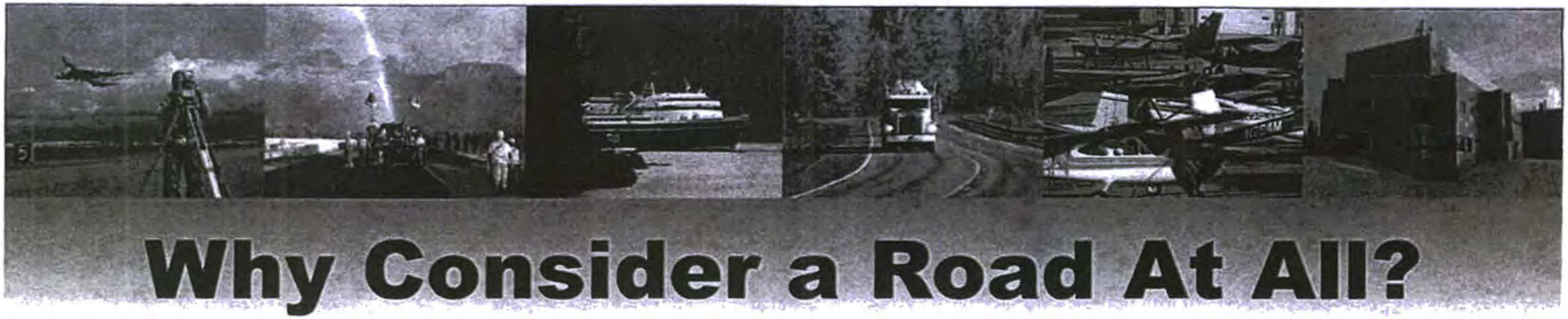
Outline

- If possible, why should Alaska build roads where ferries now operate?
  - Answer: Lowers long term costs for state and user while greatly expanding capacity and travel flexibility
- Some examples how this policy is approached in similar settings, both here and around the world.
- Why decision affects all Alaskans; the ongoing ferry subsidy is significant and alternatives deserve consideration.
- Specifics of Juneau Access Project (Mike Vigue)



Advantages of Dayboats

- Dayboat: is a ferry intended to operate 12 hours or less, from a home port, typically making 1 or more round trips per day.
- Advantages:
  - No hotel or restaurant functions required
  - Crew return home each night
  - Large capital and operating savings are typical



Why Consider a Road At All?

- Roads are far less costly to state in capital and operating costs over time
- Roads greatly increase capacity, frequency, travel opportunity and offer significant travel time and user cost savings.
- Ferries essentially restrict demand, reducing flexibility, making travel costly or prohibitive
- Ferry subsidies are very high. Without significant change these costs continue in perpetuity.

State's Preferred Plan

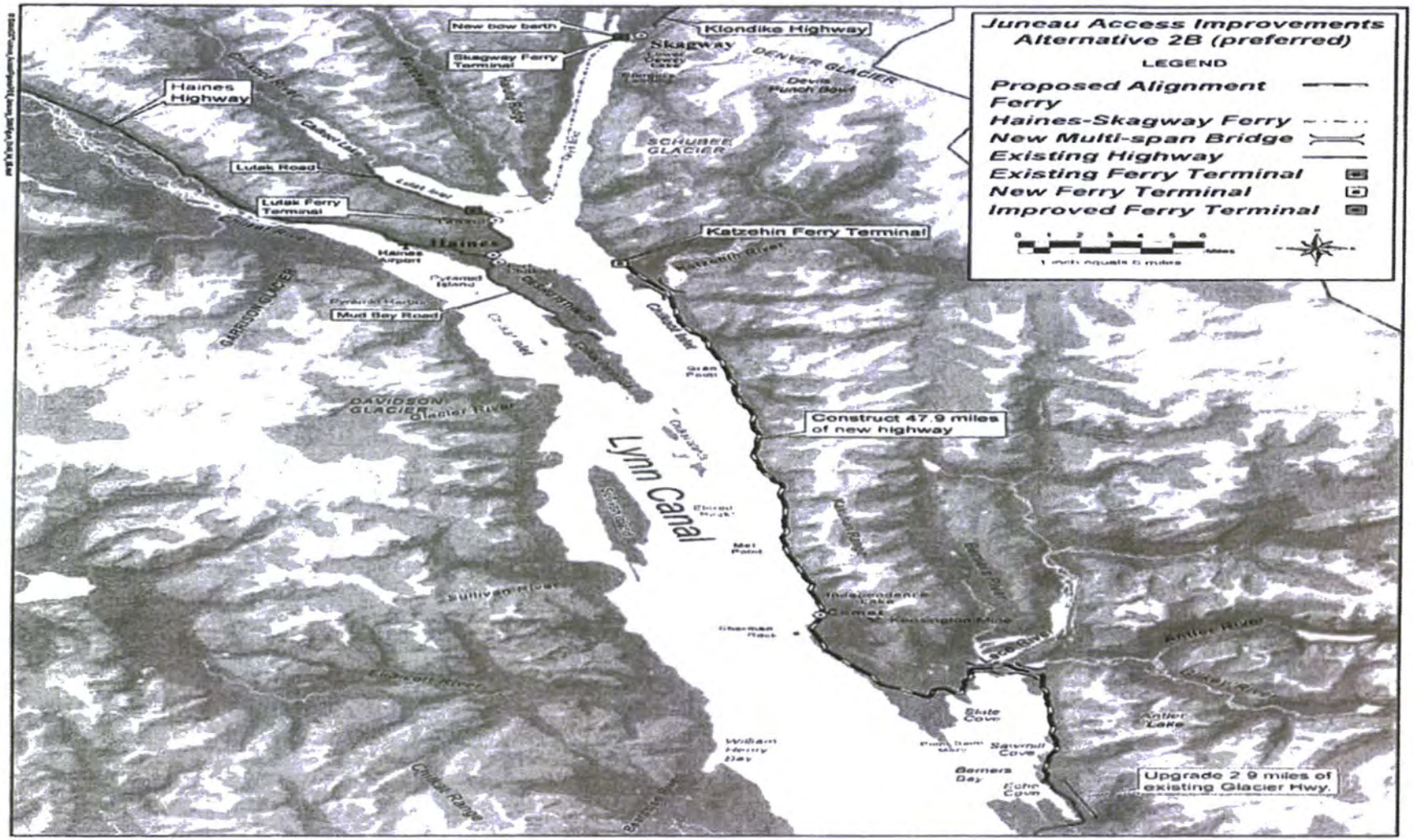
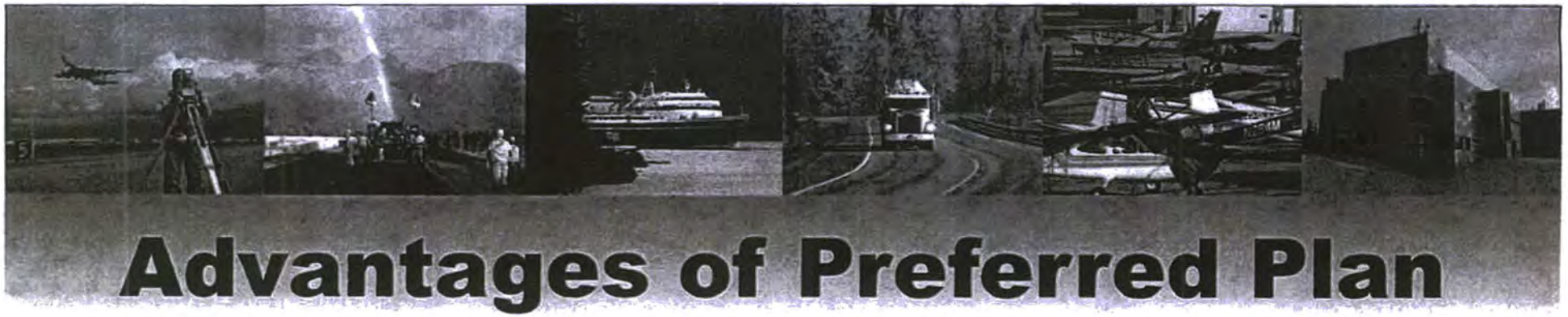
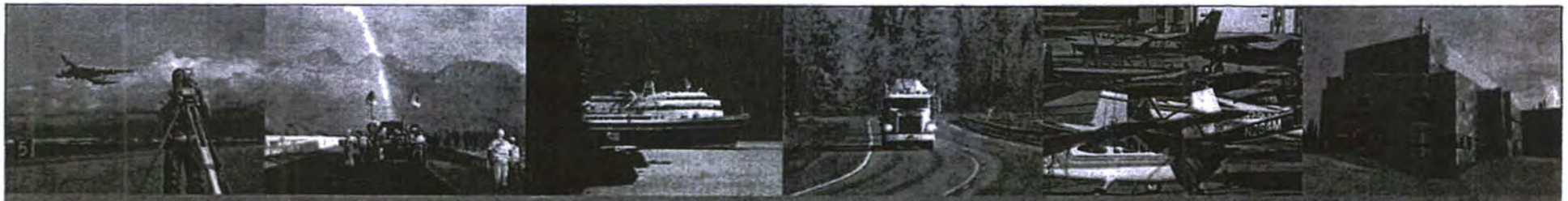


Figure 2-7
Alternative 2B: East Lynn Canal Highway to Katzehin Ferry Terminal with Shuttles to Haines & Skagway

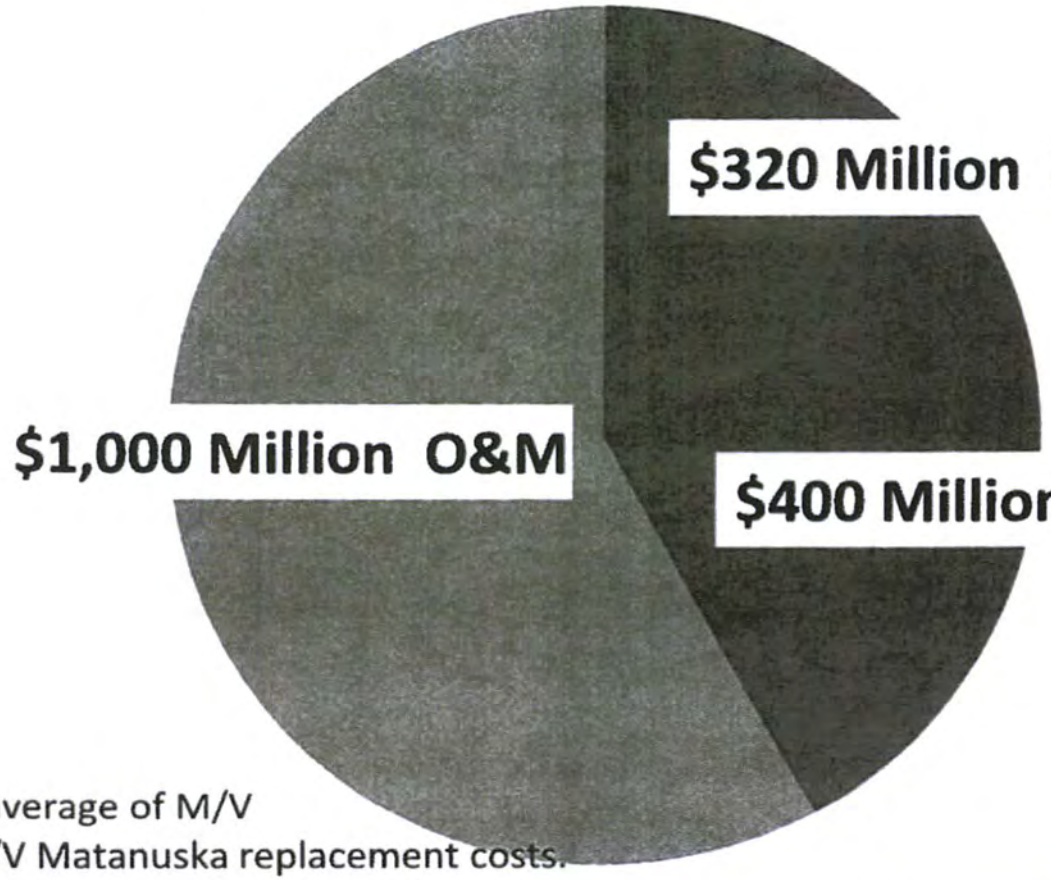


Advantages of Preferred Plan

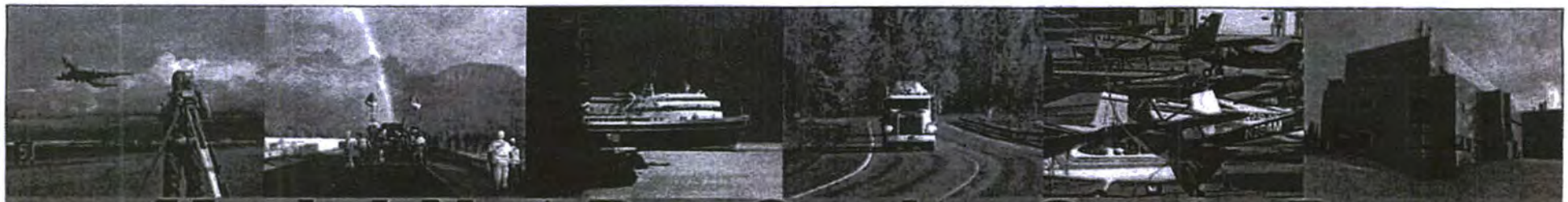
- Ferry mainline operating distance can be reduced by 186 miles per voyage (Auke Bay to Skagway RT)
  - Based on Auke Bay as northern terminus of mainline service.
- Capacity in corridor significantly increased
- Capital costs substantially lowered
  - Unlike roads, ferry capital costs have little residual value upon replacement
- With proposed Alaska Class ferries and road, between 1 & 2 mainliners can be eliminated



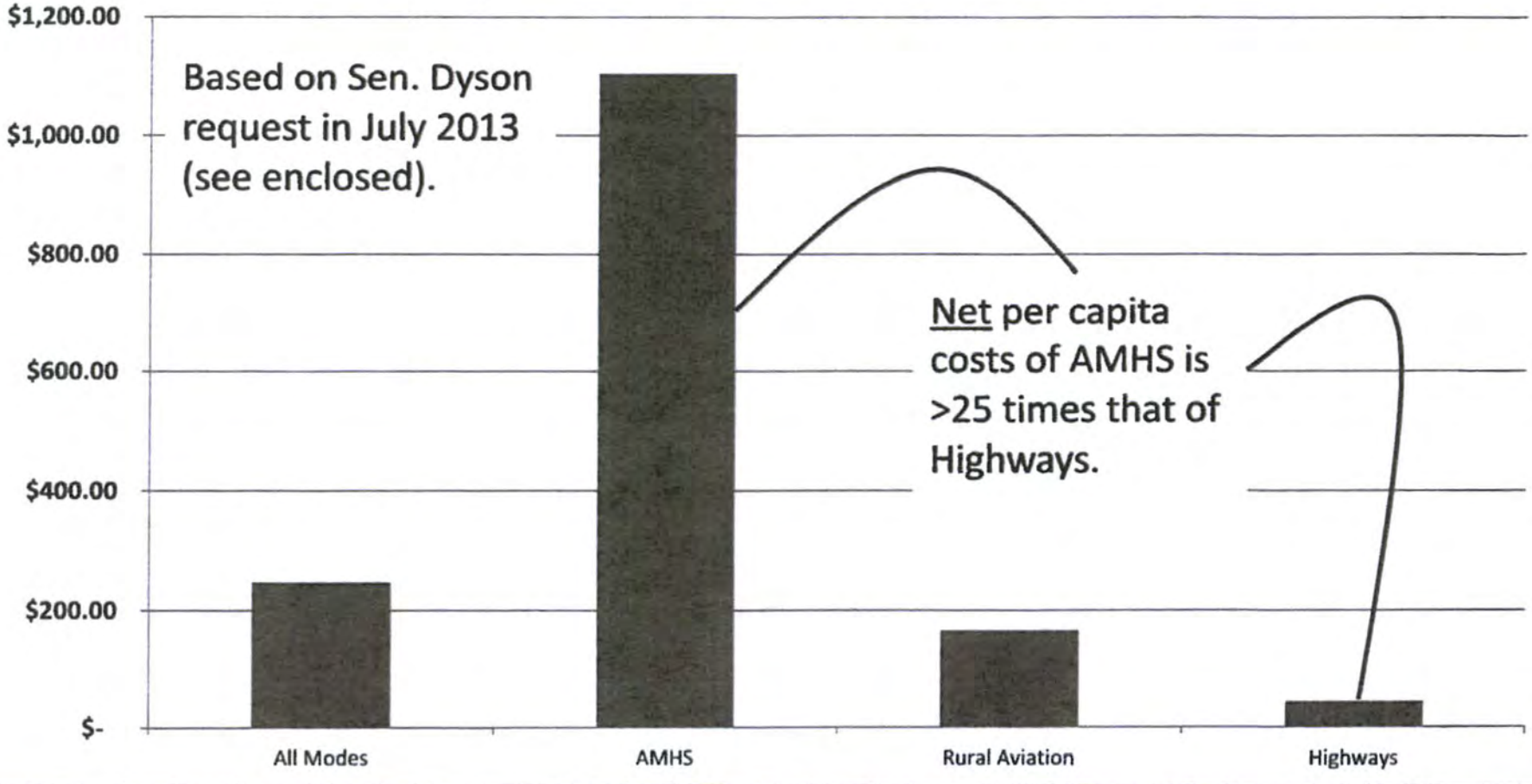
50 Year Mainliner Cost: $1.72 B



*Replacement = average of M/V Columbia and M/V Matanuska replacement costs.

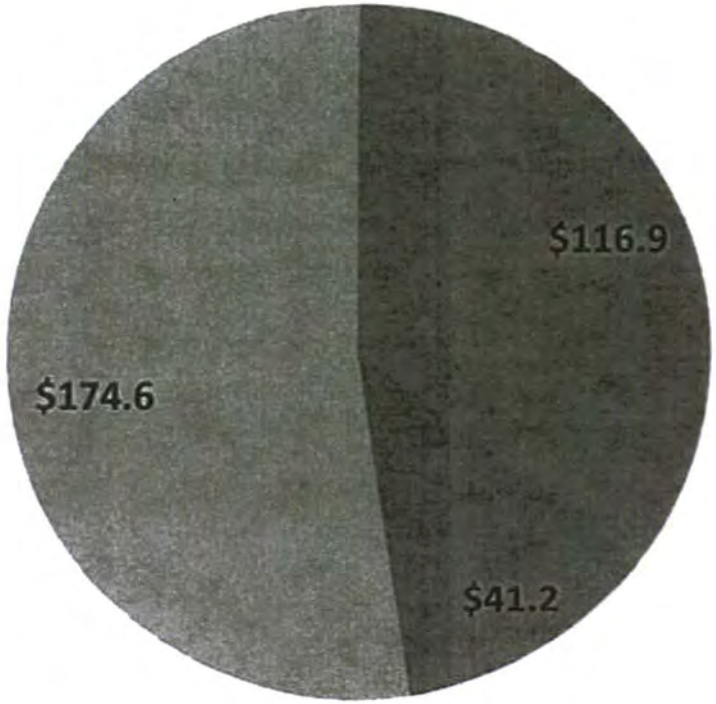


Modal Net Per Capita Costs Per Population Served



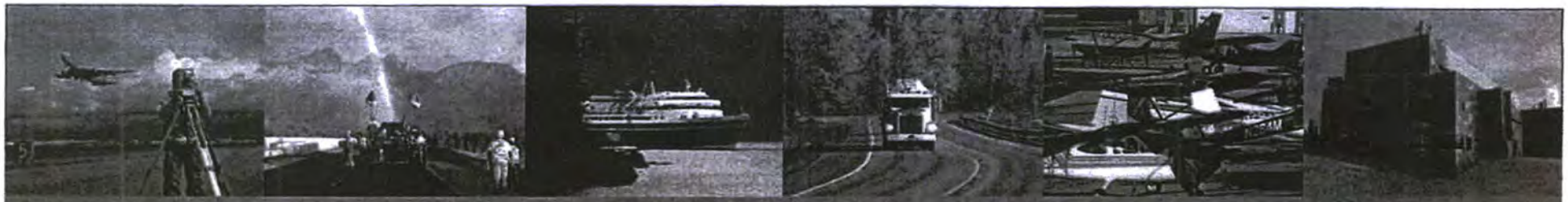
Alaska Modal Gross Operating Costs

DOT&PF SFY 2015 Request (Millions)



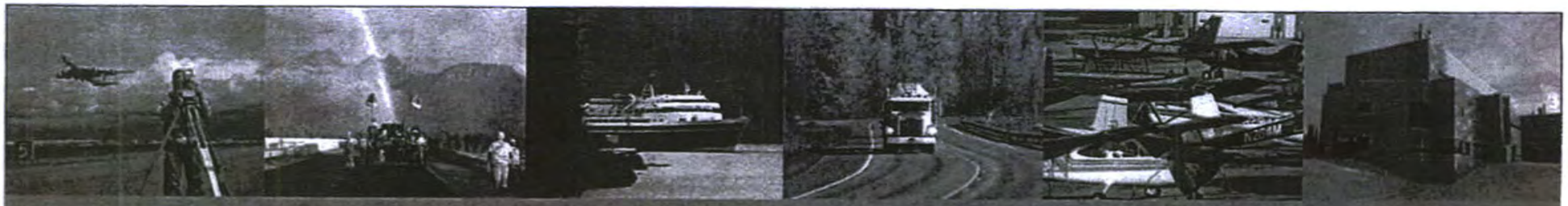
>99% of travel is achieved by highways and aviation. This requires less than one-half of DOT&PF's operating budget.

- Highways
- Rural Aviation
- AMHS



Other Ferry Systems

- Both Norway and Canada have recently focused on reducing or eliminating ferries, where possible
  - Canada's Prince Edward Is. bridge built with 33 year pledge of subsidy to finance new bridge.
  - Norway's ambitious effort to systematically reduce ferry crossings, with bridges and tunnels on Highway E-39 far more challenging that Juneau Access project.
- In Alaska, Metlakatla, Prince of Wales Island and proposed King Cove-Cold Bay ferries are also models of applying roads, dayboats.



Norway Highway E39

Ferry on E-39 Highway; one of 8 remaining.

Take Aways

- Replacing or shortening ferry routes with roads, and using dayboats is a rational public policy response:
  - It lowers public and private costs
  - It offers superior service to travelers
  - The actions in other places including Canada and Norway demonstrate that perpetual ferry subsidies are strong motivation to make changes.
- As stewards of transportation choices and their future costs, there is strong merit to building the preferred alternative.

Attachment Number 5

Knik Arm Crossing Appropriations - Summary

Legislature	SLA Reference	AR Number	Title	Approp Amount	Spent	Obligated	Un-Obligated (Discretionary)	Fund Source	Status / Balance
20th	61/01/41/24	58579	Knik Arm Crossing	2,600,000	2,600,000	0	0	Fed	AR Lapsed
22nd	82/03/49/24	62274	Knik Arm Crossing Environmental Impact Statement	33,600,000	33,600,000	0	0	Fed	AR Lapsed
23rd	82/06/104/33	60081	Knik Arm Bridge / Mat-Su Borough Road Improvements	93,600,000	36,722,961	16,100,947	40,776,092	Fed	
24th	18/14/63/12	60114	Knik Arm Bridge Project Development	55,000,000	0	0	55,000,000		$50M Fed / $5M GF
			General Fund	5,000,000	0	0	5,000,000		
			Federal Authority	179,600,000	72,922,961	16,100,947	90,776,092		
			Total Appropriations	184,600,000	72,922,961	16,100,947	95,776,092		

Knik Arm Crossing - Capital Project Information

Projects include funds from named appropriations above and STWD Surface Transportation Preconstruction and Federal Highway Match Funds

PJ #	Title	Auth	Spent	Encumb	Un-Obligated
56047	**KNIK ARM CROSSING**	**68,113,700**	**74,359,550**	**7,916,847**	**5,837,303**
58136	**KNIK ARM XING AK029**	**6,592,500**	**6,592,500**	**0**	**0**
56055	2KNIK ARM XING AK029	1,000,000	1,000,000	0	0
57082	2KNIK ARM XING AK029	5,592,500	5,592,500	0	0
58142	**KNIK ARM XING AK044**	**6,000,000**	**6,000,000**	**0**	**0**
58133	2KNIK ARM XING AK044	6,000,000	6,000,000	0	0
58583	**KNIK ARM XING AK090**	**75,521,200**	**61,767,050**	**7,916,847**	**5,837,303**
58584	2KNIK ARM XING AK090	75,521,200	61,767,050	7,916,847	5,837,303
53735	**KNIK ARM CROSSING, PHASE III**	**16,808,360**	**9,650,214**	**4,025,786**	**3,132,360**
53719	3 KNIK ARM XING P3	16,808,360	9,650,214	4,025,786	3,132,360

Project Expenditures by Account Code (LL40)

71000 Personal Svcs	72000 Travel	73000 Services	74000 Commodities	75000 Cap Outlay	
47,727	7,644	944,553	76		
392,445	120,701	5,023,096	44,823	11,435	
465,331	37,900	5,487,478	9,291		
8,194,792	411,135	52,769,602	97,186	294,334	
352,849	2,606	2,908,743		6,386,017	
9,453,144	579,986	67,133,472	151,376	6,691,786	84,009,764

As of 12/30/14

Attachment Number 6

Juneau Access Appropriations - Summary

Legislature	SLA Reference	AR Number	Title	Approp Amount	Spent	Obligated	Un-Obligated (Discretionary)	Fund Source	Status / Balance
16th	117/89/82/6		Juneau Road Access Environmental Impact Statement	100,000	100,000			GF	AR Lapsed
16th	208/90/70/10		Juneau Access Improvements Environmental Impact Study	200,000				GF	Vetoed
17th	96/91/78/7	65670	Juneau Land Routes Environmental Impact Statements	225,000	150,000			GF	reduced to $150,000 by Governor Hickel - AR Lapsed
17th	5/92/52/21	66436	Juneau Access Route Feasibility Study	200,000	200,000			Fed	AR Lapsed
18th	79/93/34/27	64625	Juneau Access Route Preliminary Engineering	1,800,000	1,800,000			Fed	AR Lapsed
19th	103/95/42/25	61110	Juneau - Access Improvements	1,000,000	1,000,000			Fed	AR Lapsed
21st	135/00/32/33		Juneau Access Environmental Impact Statement Completion by July 1, 2002	1,530,000				GF	Vetoed
23rd	82/03/49/6	62230	Juneau Access Improvement Preliminary Engineering	5,000,000	5,000,000			Fed	Expended - $0 balance - AR Lapsed
23rd	159/04/48/19	64449	Juneau: Access Improvement	128,729,100	4,883,875	2,394,384	121,450,841	Fed	
24th	03/05/98/12	58767	Juneau: Glacier Highway Road Extension	5,000,000	4,883,410	116,590		GF	
24th	82/06/107/26	60278	Juneau Access	45,000,000	2,790,677	42,209,323		GF	
25th	30/07/150/18	60278	Juneau Access	-9,157,400		-9,157,400		GF	reappropriation to Statewide: Road and Bridge Construction Materials
28th	16/13/80/13	58013	Juneau Access	4,600,000		0	4,600,000	GF	
28th	16/13/130/17	59343	Juneau Access	5,395,119		0	5,395,119	GF	
28th	18/14/63/11	60108	Juneau Access	35,000,000		0	35,000,000		$30,000,000 Fed / $5,000,000 GF
			General Fund	56,087,719	7,924,087	33,168,513	14,995,119		
			Federal Authority	166,729,100	12,883,875	2,394,384	151,450,841		
			Total Appropriations	222,816,819	20,807,962	35,562,897	166,445,960		

Juneau Access - Capital Project Information

Projects include funds from named appropriations above and STWD Surface Transportation Preconstruction and Federal Highway Match Funds

PJ #	Title	Auth	Spent	Encumb	Un-Obligated	
71100	JNU ACCESS RT STUDY	40,167,835	28,869,031	1,847,867	9,450,937	
69046	1JNU ACCESS ROUTE	1,611,335	85,250	1,409,001	117,084	
71211	2JNU ACCESS RT STUDY	38,556,500	28,783,780	438,867	9,333,853	
69583	JNU GLACIER HWY EXT	5,000,000	4,848,015	48	151,937	
69584	2JNU GLACIER HWY EX	485,830	485,830	0	0	
69586	4JNU GLACIER HWY EX	4,514,170	4,362,185	48	151,937	
68010	JNU LYNN CANAL HWY	26,100,012	2,033,307	66,152	24,000,553	
67554	1JNU LYNN CANAL HWY	23,575,012	0	0	23,575,012	
68014	2JNU LYNN CANAL HWY	2,525,000	2,033,307	66,152	425,541	
68727	JNU LYNN CANAL HIGHWAY BRIDGE PILES	9,168,385	9,031,915	15,904	120,565	
68741	4JNU LCH PILES	9,168,385	9,031,915	15,904	120,565	
69221	JNU YANKEE COVE ARTIFICIAL REEF	155,759	155,759	0	0	closed
68937	JNU LYNN CANAL HWY - ECHO COVE TO SWEENY	68,696	68,696	0	0	closed
68796	JNU LYNN CANAL HIGHWAY GIRDERS	56,315	56,315	0	0	closed
68080	JNU LYNN CANAL HIGHWAY OFFICE	156,115	156,115	0	0	closed

Project Expenditures by Account Code (LL40)

71000 Personal Svcs	72000 Travel	73000 Services	74000 Commodities	75000 Cap Outlay	
42,041		4,371		38,839	
6,565,881	1,026,725	17,931,879	90,223	3,169,271	
232,848	1,205	251,760	17		
594,635	49,062	496,270	268,756	2,953,462	
706,674	131,176	975,615	28,328	191,514	
10,028		420,405	8,594,948	6,535	
9,302		7,247	40	139,170	
		3,196		65,500	
	991	2,824	52,500		
683		91,778		63,654	
8,162,092	1,209,159	20,185,145	9,034,812	6,627,945	45,219,153

As of 12/30/14

SUSITNA-WATANA DAM PROJECT

ALASKA ENERGY AUTHORITY

January 8, 2015

Pat Pitney, Director
State of Alaska
Office of Management and Budget
PO Box 110001
Juneau, AK 99811-0001

Subject: Alaska Energy Authority Response to Administrative Order 271

RE: Susitna-Watana Hydroelectric Project

Dear Ms. Pitney:

In response to Administrative Order No. 271 (AO 271) dated December 26, 2014, the Alaska Energy Authority (AEA) has prepared the following information to comply with paragraph "C" of AO 271 for Susitna-Watana Hydro. As per email approval dated December 31, 2014 from the Office of the Governor Chief of Staff, Jim Whitaker, AEA was granted a deadline of January 9 to comply with paragraph "C".

Completion of the Federal Energy Regulatory Commission (FERC) licensing process would require an estimated additional funding of $102 million based on the current Integrated Licensing Process. The additional funding is needed to complete the FERC approved studies and prepare the license application. Obtaining a FERC license would position the State to move forward with a project that would provide long-term affordable energy and consistent with State of Alaska energy policy, chapter 82, session law 2010. AEA is currently assessing licensing options that would provide the State with licensing schedule flexibility that may potentially reduce licensing costs.

Summary of project funding (in thousands):

Authorized Funds - State of Alaska appropriations	$ 192,072.8
Expenditures (as of December 31, 2014)	(158,476.0)
Non-Discretionary:	
Encumbered funds	(19,250.8)
Unencumbered funds required to complete essential tasks	(4,614.5)
Budgeted personnel costs for remainder of FY2015	(2,179.8)
Estimated personnel costs for FY2016 (July-December 2015)	(870.0)
Total Non-Discretionary	(26,915.1)
Balance of Authorized Funds	6,681.7

813 West Northern Lights Boulevard Anchorage, Alaska 99503 T 907.771.3000 Toll Free (Alaska Only) 888.300.8534 F 907.771.3044

The attached spreadsheet provides detailed information listing the discretionary funding obligations, non-discretionary funding obligations and budgeted personnel costs for FY 2015 as required by paragraph "C" of AO 271. Descriptions of work currently under way and recommended work is included in the spreadsheet. Much of the ongoing work includes contractor completion of reports from the 2014 field season. The impacts to delay, suspend or terminate the existing obligations would be incomplete work products from contractors which would unnecessarily increase future costs to the project for the state to pursue a Susitna-Watana Hydro license.

If the State decides to abandon the Susitna-Watana Hydro FERC licensing effort, AEA will complete the following major tasks to suspend the project:

- Remove field equipment and restore disturbed areas pursuant to permit requirements.
- Prepare permit compliance reports.
- Complete ADF&G surveys of collared moose, caribou, and ptarmigan.
- Complete deliverables such as contractor study reports from 2014 field effort.
- Prepare user manuals and calibration reports for models completed to date to enable future use of these models in future licensing or new resource projects in the study area.
- Prepare index of data collected and completed reports for future use by public.
- Upload and archive Geographic Information System (GIS) data on Geographic Information Network of Alaska (GINA) for use by State agencies and the public for other projects in the study area.
- Archive reports on Alaska Resources Library and Information Services (ARLIS).

Operating budget impacts are limited to payroll costs and other project office costs funded by CIP receipts. The attached spreadsheet includes this detail.

Please contact me if you have any questions or need further information.

Sincerely,

Sara Fisher-Goad

Sara Fisher-Goad
Executive Director

Attachment: AO 271 Susitna Watana Project Information Funding Obligations

Prepared by Alaska Energy Authority
January 8, 2015

Susitna-Watana Funding Status
Preconstruction - Licensing
as of December 31, 2014

Activity	Budget Authorized	Total Expenditures	AO 271 - C2 Encumbrance	AO 271 - C2 Status of Encumbrances: Description of remaining scope currently encumbered	AO 271- C1 Unencumbered: Description of tasks to be encumbered to meet contract/permit obligations or summarize/archive	AO 271- C1 Unencumbered: Cost Estimate
Pre-PAD Activities						
Pre-PAD Staffing Costs	377,535.16	377,535.16	0.00			
Pre-PAD Travel	43,909.54	43,909.54	0.00			
Pre-PAD Legal	46,816.54	46,816.54	0.00			
Pre-PAD Conferences & Fees	4,490.22	4,490.22	0.00			
Pre-PAD Contractual Services	5,805,633.69	5,805,633.69	0.00			
Pre-PAD Project Office	219,882.51	219,882.51	0.00			
Pre-PAD Activities Subtotal:	**6,498,267.66**	**6,498,267.66**	**0.00**			
Deposits and Advances (nets against OPMP budget)						
Deposits and Advances	0.00	8,463.35	0.00			
and Advances (nets against OPMP budget) Subtotal:	**0.00**	**8,463.35**	**0.00**			
Engineering Feasibility Study						
Engineering-Planning & Support	**1,080,933.55**	1,005,933.55	0.00			
Engineering-Geotechnical Services I	**119,911.20**	119,911.20	0.00			
Engineering-Conceptual Design	**281,802.53**	281,802.53	0.00			
Engineering-Surveys and Mapping	**607,414.77**	451,984.80	55,429.97	NTP Closed		
Engineering Feasibility Studies	**7,685,179.69**	7,046,967.40	459,134.57	Significant funds needed to finish Engineering Feasibility Report		
Advisory and Review Services	**56,981.53**	38,479.01	18,502.52	Funds needed to cover potential late invoices		
Engineering-Geology & Geotechnical Studies	**6,755,005.15**	5,774,739.46	690,417.65	Geology effort ongoing - anticipate most of remaining funds needed		
Engineering-Technical Review	**14,790.27**	14,790.27	0.00			
Independent Construction Cost Estimate	**234,950.00**	234,950.00	0.00			
Seismic Monitoring	**733,880.25**	579,296.06	154,584.19	Committed to AEC		
Engineering Feasibility Study Subtotal:	**17,570,848.94**	**15,548,854.28**	**1,378,068.90**			
Geotechnical Services						
Engineering-Geotechnical Services II	**154,421.03**	154,421.03	0.00			
Geotechnical Services Subtotal:	**154,421.03**	**154,421.03**	**0.00**			
Board of Consultants						
Board of Consultants	**1,144,299.55**	749,275.58	131,766.84	Work nearly complete.		
Resources & Procurement Plan	**7,289.12**	7,289.12	0.00			
Board of Consultants Subtotal:	**1,151,588.67**	**756,564.70**	**131,766.84**			
Detailed Engineering Design						
Detailed Engineering Design	**0.00**	0.00	0.00			
Detailed Engineering Design Subtotal:	**0.00**	**0.00**	**0.00**			
Utility Coordination,Operations, & Power Sales						
Utility Coordination, Operations, Sales Agreement	**0.00**	0.00	0.00			
Financial Advisory Team	**6,177.70**	6,177.70	0.00			
Financial Consultant	**235,025.00**	91,877.62	143,147.38	Most remaining funds have been spent		
ty Coordination,Operations, & Power Sales Subtotal:	**241,202.70**	**98,055.32**	**143,147.38**			
Update Integrated Resource Plan						
Update RIRP - Conference Participation	**18,270.00**	18,270.00	0.00			
Update Integrated Resource Plan Subtotal:	**18,270.00**	**18,270.00**	**0.00**			
Watana Transportation Analysis						
ADOTPF Access Road	**521,156.86**	521,156.86	0.00			
Watana Transportation Analysis Subtotal:	**521,156.86**	**521,156.86**	**0.00**			
FERC Licensing Support						
FERC Licensing Services	**283,896.12**	283,896.12	0.00			
FERC Licensing and Regulatory Approval Planning	**2,615,117.15**	2,009,810.53	187,671.62	FERC licensing - ISR Meeting Summary, ISR Responses to Meeting Summary Disagreements, etc.	FERC Licensing - ISR meeting planning	10,000.00
FERC Licensing Support Subtotal:	**2,899,013.27**	**2,293,706.65**	**187,671.62**			**10,000.00**

Prepared by Alaska Energy Authority
January 8, 2015

Susitna-Watana Funding Status
Preconstruction - Licensing
as of December 31, 2014

Activity	Budget Authorized	Total Expenditures	AO 271 - C2 Encumbrance	AO 271 - C2 Status of Encumbrances: Description of remaining scope currently encumbered	AO 271- C1 Unencumbered: Description of tasks to be encumbered to meet contract/permit obligations or summarize/archive	AO 271- C1 Unencumbered: Cost Estimate
OPMP						
OPMP DEC Review	**41,119.68**	31,700.18	9,419.50			
ARLIS Report Scanning & Digitizing	**93,708.00**	93,708.00	0.00			
DNR Project Review and Permitting	**3,668,050.06**	2,125,472.22	1,451,596.78	Encumbered funds needed to complete ISR process with Services		
Assess Impacts to Fish and Wildlife	**1,160,520.00**	983,207.28	177,312.72			
BLM Rights-of-Way Applications	**111,536.65**	111,536.65	0.00			
OPMP Subtotal:	**5,074,934.38**	**3,346,624.33**	**1,638,329.00**			
Water Resource Studies						
Water Resources Program Lead (COMBINED WITH 731	**0.00**	0.00	0.00			
Transect Data Collection	**2,661,417.63**	2,661,417.63	0.00			
Susitna River Ice Studies	**439,777.11**	439,777.11	0.00			
Ground Water Study	**0.00**	0.00	0.00			
Glacier Run Off Study	**672,062.00**	672,062.00	0.00			
Hydrology Support for In-Stream Flow	**267,130.75**	67,130.75	194,034.00	Committed to USGS. Removal of hydrology equipment and permit compliance (September 2015).		0.00
Instream Flow & Riparian Study Planning	**1,651,979.80**	1,651,979.80	0.00			
Water Resource-2nd Study Series	**0.00**	0.00	0.00			
Groundwater-Related Aquatic Habitat (7.5)	**3,894,642.70**	3,631,553.44	170,271.00	2014 data collection complete.	Final 2014 QC'd data and Final Report; permit compliance; removal of cameras, groundwater/ surface water gages, and telemetered data delivery system (July 2015).	300,000.00
Ice Processes (7.6)	**2,116,792.00**	1,389,425.33	281,880.67	Data collection and report complete. Modeling underway, but incomplete.	Final QC'd modeling input/output data and Technical Modeling Status Report. (May 2015)	20,000.00
Glacial and Runoff Changes (7.7)	**360,648.00**	75,332.61	285,315.39	Committed to DGGS. Final Report not yet delivered.		0.00
Instream Flow Study (8.5)	**10,935,212.00**	8,633,527.73	1,104,656.64	Data collection complete. Modeling underway, but incomplete. 2014 QC'd data and Final Report not yet delivered.	Complete model calibration and inputs. Final QC'd modeling input/output data and Technical Modeling Status Report (September 2015); permit compliance; removal of field equipment (July 2015).	400,000.00
Riparian Instream Flow Study (8.6)	**2,268,569.00**	1,576,956.56	238,107.44	Data collection complete. Modeling underway, but incomplete. 2014 QC'd data and Final Report not yet delivered.	Final QC'd modeling input/output data and Technical Modeling Status Report; permit compliance; removal of field equipment (July 2015).	125,000.00
Water Resource Studies Subtotal:	**25,268,230.99**	**20,799,162.96**	**2,274,265.14**			**845,000.00**
Water Quality Studies						
Water Quality Program Lead	**0.00**	0.00	0.00			
Water Quality Data Collection & Models	**1,411,625.97**	1,411,625.97	0.00			
Field Monitoring of Flow and Sediment (1st Yr)	**567,294.00**	567,294.00	0.00			
Water Quality-2nd Study Series	**770,126.00**	490,462.77	147,430.23			
Field Monitoring of Flow and Sediment (2nd Yr)	**1,140,895.00**	1,036,895.00	0.00			
Baseline Water Quality (5.5)	**3,855,589.00**	3,169,808.31	109,096.69	Data collection complete and all QC'd data delivered. 2014 Final Report not yet delivered (March 2015).	Permit compliance; removal of MET stations and telemetered data delivery system (July 2015).	45,000.00
Water Quality Modeling (5.6)	**1,534,396.00**	910,257.87	555,594.13	Modeling underway, but incomplete. 2014 Final Report not yet delivered (May 2015).	Final QC'd modeling input/output data and Technical Modeling Status Report (June 2015).	170,000.00

Prepared by Alaska Energy Authority
January 8, 2015

Susitna-Watana Funding Status
Preconstruction - Licensing
as of December 31, 2014

Activity	Budget Authorized	Total Expenditures	AO 271 - C2 Encumbrance	AO 271 - C2 Status of Encumbrances: Description of remaining scope currently encumbered	AO 271- C1 Unencumbered: Description of tasks to be encumbered to meet contract/permit obligations or summarize/archive	AO 271- C1 Unencumbered: Cost Estimate
Mercury Assessment & Bioaccumulation (5.7)	**408,088.00**	231,951.70	19,342.30	Data collection complete and all QC'd data delivered. Modeling underway, but incomplete. 2014 Final Report not yet delivered (March 2015).		0.00
Water Quality Studies Subtotal:	**9,688,013.97**	**7,818,295.62**	**831,463.35**			**215,000.00**
Geomorphology/Geology/Soils Studies						
Geomorphology Studies	**1,041,409.95**	1,041,409.95	0.00			
Geomorphology/Geology-2nd Study Series	**0.00**	0.00	0.00			
Geology and Soils (4.5)	**0.00**	0.00	0.00	Data collection complete. 2014 QC'd data and Final Report not yet delivered.	Permit compliance report.	
Geomorphology (6.5)	**1,471,873.00**	900,701.47	571,171.53	Data collection complete. Modeling underway, but incomplete. 2014 QC'd data and Final Report not yet delivered (February 2015).	Complete calibration and model runs. Final QC'd modeling input/output data and Technical Modeling Status Report; permit compliance reporting (September 2015).	450,000.00
Fluvial Geomorphology Modeling (6.6)	**4,303,551.00**	4,088,684.68	58,495.32	6.5 and 6.6 combined; see above.		
Geomorphology/Geology/Soils Studies Subtotal:	**6,816,833.95**	**6,030,796.10**	**629,666.85**			**450,000.00**
Fish and Acquatic Resource Studies						
Fish and Aquatic Program Lead	**764,565.23**	764,565.23	0.00			
Synthesis of Existing Fish Data	**172,591.88**	172,591.88	0.00			
Middle & Lower River Habitat Studies	**2,473,109.16**	2,473,109.16	0.00			
Fish Distribution & Habitat above Devil's Canyon	**1,382,732.93**	1,382,732.93	0.00			
Beluga Whale Impact Study	**192,421.29**	192,421.29	0.00			
Salmon Assessment for 2012 Field Season	**1,647,339.05**	1,647,339.05	0.00			
Fish and Aquatic -2nd Study Series	**3,813,750.00**	2,790,218.49	664,128.18	Data management and final QC; Fish Program reporting.	Complete QC and cumulative data delivery. Finalization of Project geodatabase. Fish synthesis report.	350,000.00
Fish Distribution & Abundance Upper River (9.5)	**3,699,201.50**	2,239,931.04	904,366.46	2014 data collection complete. QC'd data and Final Report not yet delivered. Ongoing telemetry surveys (May 2014).	Continue surveys of radiotagged fish. Permit compliance report. Removal and storage of field equipment.	210,000.00
Fish Distribution Middle & Lower River (9.6)	**7,439,077.00**	5,430,976.28	115,496.85		Permit compliance report. Removal and storage of field equipment. Logisitcs costs included below.	35,000.00
Salmon Escapement in Susitna River (9.7)	**9,503,760.93**	7,160,059.09	2,332,922.84	Committed to ADFG (~$1.7m); rest to AEA contractor; all data collection and permit complinace complete. Data analysis underway. 2014 QC'd data and Final Report not yet delivered (June 2015).	Permit compliance report.	5,000.00
River Productivity (9.8)	**2,085,029.00**	1,192,547.44	573,269.56	Committed to UAF. Data collection complete. Data and lab analysis underway. 2014 QC'd data and Final Report not yet delivered.	Permit compliance report.	1,000.00
Characterization of Aquatic Habitats (9.9)	**1,700,575.00**	1,371,426.86	263,118.03	FERC study data collection completed. Data analysis underway. Complete QC'd data and Final Study Report not yet delivered.	Permit compliance report.	1,000.00
Future Watana Reservoir Fish Community (9.10)	**15,000.00**	0.00	0.00	Deferred study; no work has been approved/performed.		0.00
Fish Passage Feasibility at Watana Dam (9.11)	**780,842.00**	290,871.63	279,041.37	Study delayed; initial workshops completed. Final Report not yet delivered.		0.00
Fish Passage Barriers (9.12)	**447,172.00**	179,012.53	97,736.47	Data collection complete. 2014 QC'd data and Final Report not yet delivered.	Complete barrier analysis and final report. Permit compliance report.	50,000.00
Aquatic Resources w/i Access Alignment (9.13)	**55,000.00**	0.00	0.00	Deferred study; no work has been approved/performed.		0.00

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Fish Genetics (9.14)	**959,844.00**	865,539.35	94,304.65	Committed to ADF&G; data collection complete; analysis underway. Final Report not yet delivered.	DNA analysis of all fish samples collected and at increased level based on intial results.	160,000.00
Fish Harvest (9.15)	**10,000.00**	0.00	0.00	Deferred study; no work has been approved/performed.		0.00
Beluga Whale (9.17)	**1,091,635.00**	660,240.88	231,394.12	Data collection and 2014 Final Report complete.	Permit complaince report; removal of field equipment. Logisitcs costs included below.	1,000.00
Eulachon Distribution (9.16)	**1,116,244.00**	808,703.07	17,372.73			
Fish and Acquatic Resource Studies Subtotal:	**39,349,889.97**	**29,622,286.20**	**5,573,151.26**			**813,000.00**
Wildlife Resource Studies						
Wildlife Program Lead	**282,247.00**	282,247.00	0.00			
Wildlife Habitat Use and Movement Studies	**66,907.15**	66,907.15	0.00			
Big Game & Furbearer Studies	**43,820.52**	43,820.52	0.00			
Eagle & Raptor Nest Studies	**353,270.06**	353,270.06	0.00			
Moose Abundance and Survival Study	**612,750.00**	612,750.00	0.00			
Caribou Movements Study	**629,451.00**	629,451.00	0.00			
Ptarmagin Ecology Study	**138,618.00**	138,618.00	0.00			
Wildlife - 2nd Study Series	**499,836.00**	419,075.32	80,760.68	Data management and final QC; Wildlife Program reporting.	Synthesis report and final delivery of all data and Project geodatabase.	150,000.00
Moose (10.5)	**474,366.73**	174,158.24	297,986.64	Committed to ADF&G - continued surveys of collared moose; browse surveys. 2014 Final Report.	Refurbishment of GPS collars and deployment in Middle River. Continued calf survival surveys, moose movement from spring thorugh fall through winter. Analysis and final reporting. (June 2016).	80,000.00
Caribou (10.6)	**713,877.37**	189,322.79	484,801.94	Committed to ADF&G - continued surveys of collared caribou. 2014 Final Report.	Continued surveys of collared animals - calf survival surveys, movement surveys through fall migration. Analysis and final reporting. (June 2016).	110,000.00
Dall Sheep (10.7)	**71,082.40**	24,169.36	38,515.60	Partially committed to ADFG - spring aerial surveys remain. Mineral lick surveys completed by AEA contractor. 2014 QC'd data and Final Report.		
Large Carnivore (10.8)	**233,567.60**	159,123.95	53,443.65	Primarily committed to ADFG; study otherwise deferred. ADFG analysis complete. 2014 Final Report.		
Wolverine (10.9)	**230,599.95**	30,154.88	200,445.07	Committed to ADFG - winter surveys, data analysis, and final report not yet completed.		
Terrestrial Furbearer (10.10)	**414,515.00**	315,576.04	98,938.96	Committed to UAF - data collection complete; analysis and reporting underway. 2014 Final Report (June 2015).	Permit compliance reporting.	
Aquatic Furbearer (10.11)	**282,521.00**	69,616.55	141,154.45	2014 data collection complete. 2014 QC'd data and Final Report not yet delivered.	Spring surveys to complete overwinter survival from fall 2014 surveys. Permit compliance reporting.	30,000.00
Small Mammal Species Composition & Habitat (10.12)	**6,000.00**	0.00	0.00	Deferred study; no work has been approved/performed.		
Little Brown Bat Distribution & Habitat (10.13)	**305,000.00**	256,000.76	41,618.24	FERC study data collection completed. 2014 QC'd data and Final Report not yet delivered (March 2015).	Permit compliance reporting.	1,000.00
Surveys of Eagles and Other Raptors (10.14)	**816,243.00**	669,913.30	18,759.70	2014 data collection complete. 2014 QC'd data and Final Report not yet delivered (April 2015). .		

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Waterbird Migration, Breeding, & Habitat (10.15)	**1,261,991.00**	1,052,203.35	109,419.65	2014 data collection complete. 2014 QC'd data and Final Report not yet delivered (April 2015). .	Permit compliance reporting.	
Land Birds & Shorebirds Breeding Survey (10.16)	**999,979.00**	875,023.73	66,659.27	2014 data collection complete. 2014 QC'd data and Final Report not yet delivered (April 2015).	Permit compliance reporting.	
Population Ecology of Willow Ptarmigan (10.17)	**295,105.94**	46,483.99	239,959.68	Committed to ADFG - ongoing surveys of collared birds, additional collaring; QC'd data and Final Report.	Continue surveys of collared animals. Analysis and final reporting (June 2016).	125,000.00
Wood Frog Distribution & Habitat (10.18)	**213,162.00**	183,892.06	15,075.94	FERC study data collection completed. 2014 QC'd data and Final Report not yet delivered (March 2015).	Permit compliance reporting.	
Evaluation of Wildlife Habitat Use (10.19)	**33,000.00**	0.00	0.00	Deferred study; no work has been approved/performed.		0.00
Wildlife Harvest Analysis (10.20)	**1,000.00**	0.00	0.00	Deferred study; no work has been approved/performed.		0.00
Wildlife Resource Studies Subtotal:	**8,978,910.72**	**6,591,778.05**	**1,887,539.47**			**496,000.00**
Botanical Resource Studies						
Botanical Program Lead	**163,550.16**	163,550.16	0.00			
Vegetation Mapping Studies	**330,063.28**	330,063.28	0.00			
Riparian Study	**364,053.35**	364,053.35	0.00			
Wetland Mapping Studies	**268,536.77**	268,536.77	0.00			
Botanical - 2nd Study Series	**220,540.00**	165,090.36	55,449.64	Data management and final QC; Botanical Program reporting.		
Vegetation & Wildlife Habitat Mapping (11.5)	**784,916.00**	581,996.52	202,919.48	No data collection in 2014. QC'd mapping-to-date and final report to be delivered.	Complete mapping (October 2015).	150,000.00
Riparian Habitat Mapping (11.6)	**772,333.00**	621,257.34	151,075.66	No data collection in 2014. QC'd mapping-to-date and final report to be delivered.		
Wetland Mapping (11.7)	**753,410.00**	510,522.76	242,887.24	No data collection in 2014. QC'd mapping-to-date and final report to be delivered.	Complete mapping (October 2015).	150,000.00
Rare Plant (11.8)	**75,485.00**	68,715.53	6,769.47			0.00
Invasive Plant (11.9)	**75,307.00**	68,421.41	6,885.59			0.00
Botanical Resource Studies Subtotal:	**3,808,194.56**	**3,142,207.48**	**665,987.08**			**300,000.00**
Recreation and Aesthetic Resource Studies						
Aesthetic Resources Studies	**649,185.38**	649,185.38	0.00			
Aesthetic and Recreation - 2nd Study Series	**0.00**	0.00	0.00			
Recreation Resources (12.5)	**2,892,089.00**	2,310,907.79	456,181.21	2014 data collection complete. 2014 QC'd data and Final Report not yet delivered (April 2015).		0.00
Recreation River Flow (12.7)	**765,212.00**	513,737.80	138,474.20	2014 data collection complete. 2014 QC'd data and Final Report not yet delivered (April 2015).		0.00
Aesthetic Resources (12.6)	**1,408,693.79**	1,116,840.21	99,853.58	2014 data collection complete. 2014 QC'd data and Final Report not yet delivered (April 2015).		0.00
Recreation and Aesthetic Resource Studies Subtotal:	**5,715,180.17**	**4,590,671.18**	**694,508.99**			**0.00**
Land Use Resource Studies						
Land Use - 2nd Study Series	**0.00**	0.00	0.00			
Land Use Resource Studies Subtotal:	**0.00**	**0.00**	**0.00**			
Cultural Resource Studies						
Cultural Resources Studies	**1,040,699.82**	1,040,699.82	0.00			
Cultural Resources - 2nd Study Series	**241,419.00**	233,330.82	8,088.18	Data management and final QC; Cultural Program reporting.		

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Cultural Resources (13.5)	4,175,842.00	3,955,771.25	174,319.75	2014 data collection complete. 2014 QC'd data and Final Report not yet delivered. Remaining federal and state permit compliance reports (February 2015).	Complete predictive modeling report and delivery of final QC'd input/output data.	75,000.00
Paleontological Resources (13.6)	0.00	0.00	0.00	Deferred study; no work has been approved/performed.		0.00
Cultural Resource Studies Subtotal:	**5,457,960.82**	**5,229,801.89**	**182,407.93**			**75,000.00**
Subsistance Resource Studies						
Subsistance Resources Studies	154,654.00	154,654.00	0.00			
Subsistance - 2nd Study Series	1,354,691.00	1,018,993.09	19,339.91	2014 data collection deferred. Subsistence Program reporting.		
Subsistence Resources Documentation (14.5)	926,875.00	825,565.86	1,309.14	Committed to ADFG. FERC study data collection complete. 2014 QC'd data and Final Report not yet delivered (February 2015).		
Subsistance Resource Studies Subtotal:	**2,436,220.00**	**1,999,212.95**	**20,649.05**			**0.00**
Socioeconomic and Transportation Issues						
Socioeconomic & Transportation Studies	373,559.00	339,867.02	0.00			
Health Impact Project Review	35,000.00	27,818.40	7,181.60			
Transportation Studies	0.00	0.00	0.00			
Socioeconomic and Transportation -2nd Study Series	495,352.00	196,116.06	299,235.94	Data management and final QC; Socioeconomic Program reporting.		
Health Impact Studies (2nd Year)	90,000.00	90,000.00	0.00	see below.		
Regional Economic Evaluation (15.5)	448,076.00	218,223.83	129,852.17	Ongoing analysis; 2014 QC'd data and Final Report not yet delivered.	Northern Economics - Preparation of construction & operations effects on regional economy.	70,500.00
Social Conditions & Public Goods/Services (15.6)	852,677.00	599,592.82	253,084.18	Ongoing analysis; 2014 QC'd data and Final Report not yet delivered.		
Transportation Resources (15.7)	216,192.00	114,154.41	92,037.59	Ongoing analysis; 2014 QC'd data and Final Report not yet delivered.		
Health Impact Assessment (15.8)	387,662.50	248,885.96	138,776.54	Ongoing analysis; 2014 QC'd data and Final Report not yet delivered.		
Air Quality (15.9)	97,726.00	40,341.55	57,384.45	Ongoing analysis; 2014 QC'd data and Final Report not yet delivered.		
Socioeconomic and Transportation Issues Subtotal:	**2,996,244.50**	**1,875,000.05**	**977,552.47**			**70,500.00**
Safety (combine with Logistical Support)						
Probable Maximum Flood (16.5) See 721010700	0.00	0.00	0.00	covered under engineering above; study complete.	Final report.	
Site-Specific Seismic Hazard Evaluation (16.6)	0.00	0.00	0.00	covered under engineering above; data collection continous.		
Safety (combine with Logistical Support) Subtotal:	**0.00**	**0.00**	**0.00**			
Draft License Application, BA, EFHA, Historic PMP						
Draft License Application, BA, EFHA, Historic PMP	0.00	0.00	0.00			
cense Application, BA, EFHA, Historic PMP Subtotal:	**0.00**	**0.00**	**0.00**			
Final License Application						
Final License Application	0.00	0.00	0.00			
Final License Application Subtotal:	**0.00**	**0.00**	**0.00**			
FERC NEPA Process						
FERC NEPA Process	0.00	0.00	0.00			
FERC NEPA Process Subtotal:	**0.00**	**0.00**	**0.00**			
Settlement						
Settlement	0.00	0.00	0.00			
Settlement Subtotal:	**0.00**	**0.00**	**0.00**			

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Project Management Consultant						
Project Management Consultant	**676,595.69**	676,595.69	0.00			
Project Management Consultant Subtotal:	**676,595.69**	**676,595.69**	**0.00**			
Technical Assistance						
Technical Assistance	**128,149.00**	128,149.00	0.00			
Technical Assistance Subtotal:	**128,149.00**	**128,149.00**	**0.00**			
Field Permitting, Insurance, Bonding, & Misc						
Insurance and Bonding for Field Access Permits	**247,763.70**	28,402.21	1,173.79			
Field Permits	**3,399,604.66**	3,258,521.42	140,305.62			
eld Permitting, Insurance, Bonding, & Misc Subtotal:	**3,647,368.36**	**3,286,923.63**	**141,479.41**			
Safety & Logistical Support						
Field Transportation	**10,418,456.80**	10,418,456.80	0.00			
Lodging	**5,718,672.37**	5,415,294.97	113,908.40			
Logistics Coordinator/Planning	**11,151,081.64**	10,332,939.85	748,180.52			1,000,000.00
Health & Safety Officer	**209,708.00**	70,710.27	38,997.73			
Safety & Logistical Support Subtotal:	**27,497,918.81**	**26,237,401.89**	**901,086.65**			**1,000,000.00**
GIS						
Geospatial Clearinghouse, Web Mapping	**695,705.82**	529,213.16	98,895.67	Committed to GINA	Upload, organization and hosting of entire cumulative Project dataset. Annual maintenance of data website and archived data and services (June 2016).	300,000.00
Geological Study and GIS Mapping	**237,627.00**	199,790.39	37,836.61	Committed to GINA		
Topographical and Aerial Imaging	**242,863.33**	242,863.33	0.00			
GIS Subtotal:	**1,176,196.15**	**971,866.88**	**136,732.28**			**300,000.00**
SharePoint Site						
Sharepoint Consulting Services	**2,908.75**	2,908.75	0.00			
SharePoint Site Subtotal:	**2,908.75**	**2,908.75**	**0.00**			**0.00**
Website and Public Information Library						
Website Update and Maintenance	**102,390.00**	52,386.50	0.00			
ARLIS Public Website	**7,500.00**	7,500.00	0.00			
ARLIS Scanning & Data Maintenance	**162,212.00**	127,912.00	34,300.00	Committed to ARLIS	Annual maintenance of library and services (June 2016).	40,000.00
Website and Public Information Library Subtotal:	**272,102.00**	**187,798.50**	**34,300.00**			**40,000.00**
Public Notices/Communications						
Legislative Reports	**42,333.21**	31,953.21	10,380.00			
Media & Strategic Communications	**1,010,723.06**	409,215.58	137,718.77			
Public Notices/Communications Subtotal:	**1,053,056.27**	**441,168.79**	**148,098.77**			**0.00**
Legal						
Legal-DOL	**600,000.00**	368,379.97	0.00			
Legal-DOL-Interim Outside	**115,911.74**	115,911.74	0.00			
Legal-Outside (DOL-Van Ness Feldman)	**4,206,562.93**	3,564,051.98	640,000.00			
Legal Subtotal:	**4,922,474.67**	**4,048,343.69**	**640,000.00**			**0.00**
Travel (AEA Staff & Board)						
Travel (In-State)	**83,575.20**	66,357.93	0.00			
Travel (Out-of-State)	**110,199.89**	101,857.22	0.00			
Travel (AEA Staff & Board) Subtotal:	**193,775.09**	**168,215.15**	**0.00**			**0.00**
Project Office						
SOA Professional Services	**24,000.00**	550.11	0.00			
Advertising, Printing, Binding	**23,166.00**	21,590.57	0.00			
Postage, Courier, Freight	**22,733.69**	3,995.98	0.00			
Building Rent	**252,651.64**	161,744.42	32,968.53			
Insurance	**0.00**	0.00	0.00			

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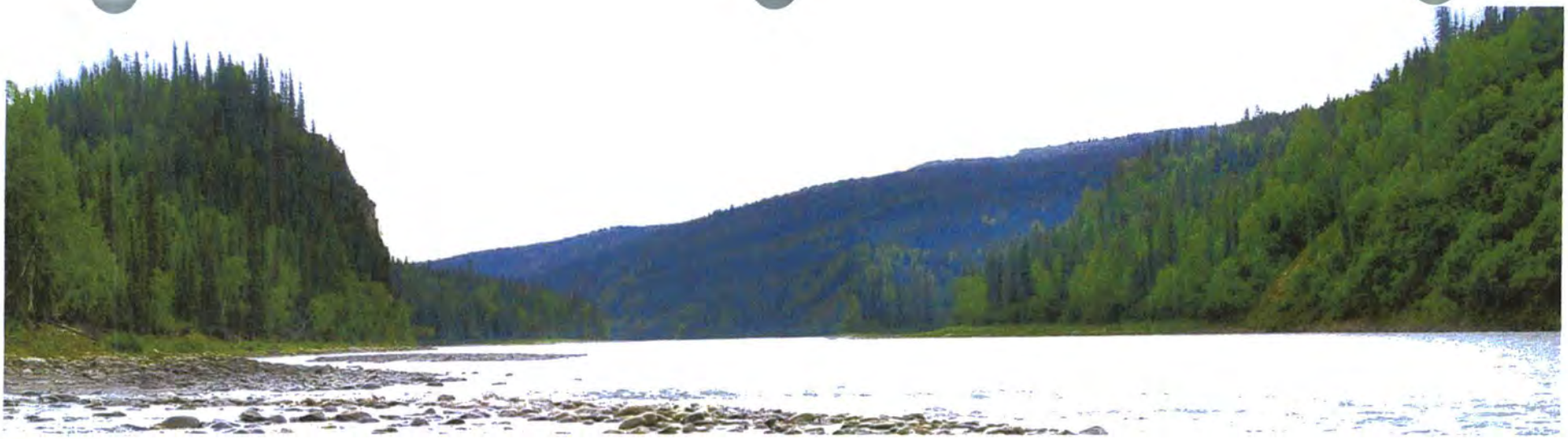
Utilities	0.00	0.00	0.00			
PJ Office-Telephone, Internet, Cable	134,224.95	128,625.27	0.00			
Other Office Expense (Parking, Misc.)	13,571.00	7,358.41	0.00			
Office Supplies	11,522.70	6,794.06	0.00			
Food Supplies	8,367.10	5,879.19	0.00			
Computer Commodities	53,000.00	31,683.26	0.00			
Office Equipment and Furniture	7,028.96	6,397.96	0.00			
Computer Systems	115,123.18	50,702.09	0.00			
Software	40,000.00	25,269.87	0.00			
Project Office Subtotal:	**705,388.22**	**450,591.19**	**32,968.53**	Remaining Encumbrance for FY2015 Lease of Office Space from AIDEA.		**0.00**
Staff Training and Benefits						
Staff Fees and Allowances	6,500.00	700.00	0.00			
Conferences and Training	38,995.00	34,965.01	0.00			
Staff Training and Benefits Subtotal:	**45,495.00**	**35,665.01**	**0.00**			**0.00**
AO 271 - C3 AEA Staff						
AIDEA Staff Professional Services (Direct)	4,274,175.67	3,176,764.17	0.00			
AIDEA Support Staff (Indirect)	2,732,088.63	1,691,649.22	0.00			
AIDEA Support Staff (Direct)	0.00	0.00	0.00			
Contractual Support Services	35,952.00	29,410.40	0.00			
AO 271 - C3 AEA Staff Subtotal:	**7,042,216.30**	**4,897,823.79**	**0.00**	Remaining budgeted funds estimated to cover direct and shared services personal services costs through December 2015.	FY 2015 $2,179.8 and FY 2016 $870.0	**3,049,800.00**
Contingency and Unallocated Budget						
Contingency	0.00	0.00	0.00			
Unallocated Budget	63,727.53	0.00	0.00			
Contingency and Unallocated Budget Subtotal:	**63,727.53**	**0.00**	**0.00**			
Total Project Costs:	**192,072,755.00**	**158,476,048.62**	**19,250,840.97**			**7,664,300.00**

Estimated Remaining Balance **6,681,665.41**



SUSITNA-WATANA HYDRO

Clean, reliable energy for the next 100 years.

Susitna-WatanaHydro.org

Senate Finance Committee
February 19, 2015
Sara Fisher-Goad, AEA executive director
Wayne Dyok, project manager

Project Status

- Federal Energy Regulatory Commission Integrated Licensing Process
- Three Environmental Field Seasons Supporting 58 FERC-Approved Studies
- Filed Initial Study Report June, 2014
- 50 Tech Memos filed with FERC 2013-2014
- Engineering Feasibility Report Released January 2015
- 60-Day Licensing Abeyance

Project Funding

- Funded total of $192 million through Capital Fund appropriations
  - FY09-11: $11.17 million (combination of Railbelt Energy Fund and General Fund)
  - FY12: $65.7 million (Railbelt Energy Fund)
  - FY13: $0
  - FY14: $95.2 million (General Fund)
  - FY15: $20 million (General Fund)

Administrative Order 271

- Dec. 26, 2014- AO 271 directs all State agencies to halt to the maximum extent possible discretionary expenditures for six projects, including Susitna-Watana Hydro
- Summary of Project Funding ($thousands)
  - State of Alaska appropriations $192,072.8
  - Expenditures (as of 12.31.14) ($158,476)
  - Total Non-Discretionary Encumbered Funds ($26,915.10)
  - Balance of Authorized Funds $6,681.70

Potential Paths

Current Status

- Expenditures: (12.31.14) $158.5 million
- Encumbered Funds $26.9 million

$6.6 million in Remaining Unencumbered Funds

- 28 Studies Completed
- Modeling
- Vegetation and Wildlife
- T-line Corridor Baseline

$10 million Additional Funds

- 36 Studies Complete
- Extensive Modeling
- Fisheries
- Botanical
- Limited Cultural Resources

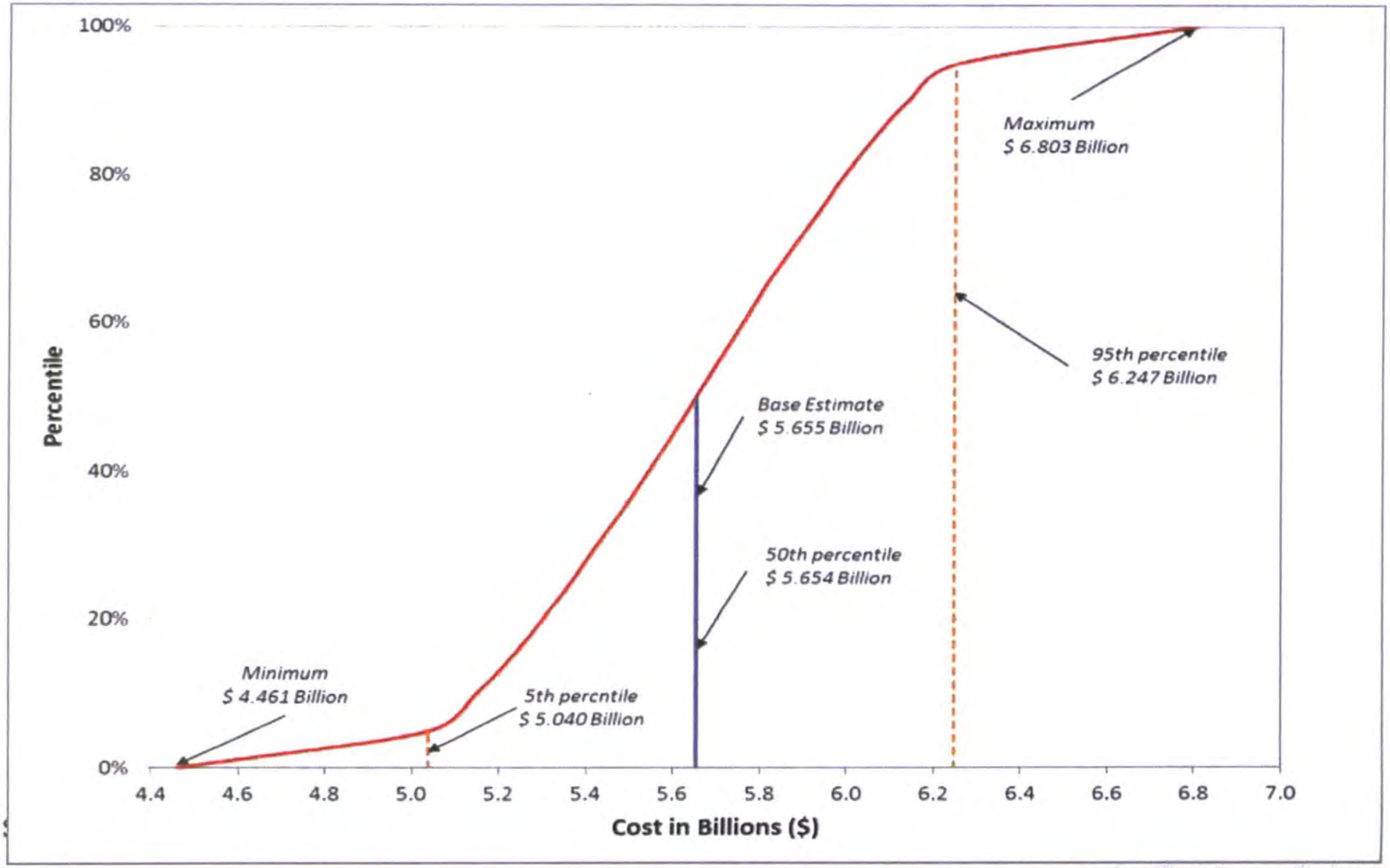
$20 million Additional Funds

- 43 Studies Completed
- Instream Flow
- Water Quality and Geomorphic Modeling
- Additional Fisheries

License Application

- $100 million
- Complete All Studies
- License Application
- 404 Permit
- Water Quality Certification
- Biological Assessment
- Eagle Permitting

Project Cost Range



Comparing 3 Finance Options

- Bond & RUS Financing
  - $0.064/kWh 50 year average real price
- All Bond Financing
  - $0.073/kWh 50 year average real price
- State Loan & RUS
  - Similar to Bradley Lake model
  - $0.037/kWh 50 year average real price

Economic Impact

- Majority Alaska Hire
  - 65% Alaskans employed
  - Capitalizing on Pacific Northwest hydroelectric experience while maintaining Alaska Hire
- In 2014, nearly $7 million earned in Alaska wages
- In 2013, $6 million spent in goods and services in the Mat-Su Valley

Environmental Study Process

- ✓ Study Plan Development
- Study Implementation Phase
- Impact Assessment
- Development of Protection, Mitigation and Enhancement Measures (PMEs)

2014: Safe and Effective Field Work

- More than 200 in the field, with one recordable incidents
- Completed data collection for 13 FERC-approved studies
  - Water Quality, Bioaccumulation of Mercury
  - Ice Processes, Glacier and Runoff Changes
  - Salmon Escapement, Aquatic Habitat Characterization, Fish Passage Barriers
  - Large Carnivores, Terrestrial Furbearers, Bat, Wood Frog
  - Subsistence
  - Probable Maximum Flood

Understanding the Susitna Basin

- Advanced the state of science for agencies to better manage resources
  - Wildlife, fish, recreation, subsistence surveys etc.
  - Documented distribution of invasive Northern Pike in Lower Susitna River
  - Contributed >4,500 tissue samples to ADF&G Gene Conservation Lab
  - Expanded distribution data for species such as Chinook Salmon, Lake and Rainbow Trout
  - Maximized value of Mat-Su fisheries research
- Expanded public knowledge of Susitna Basin
  - Environmental, fish and game, aerial imagery, hydrology data, etc.

Cultural Resources

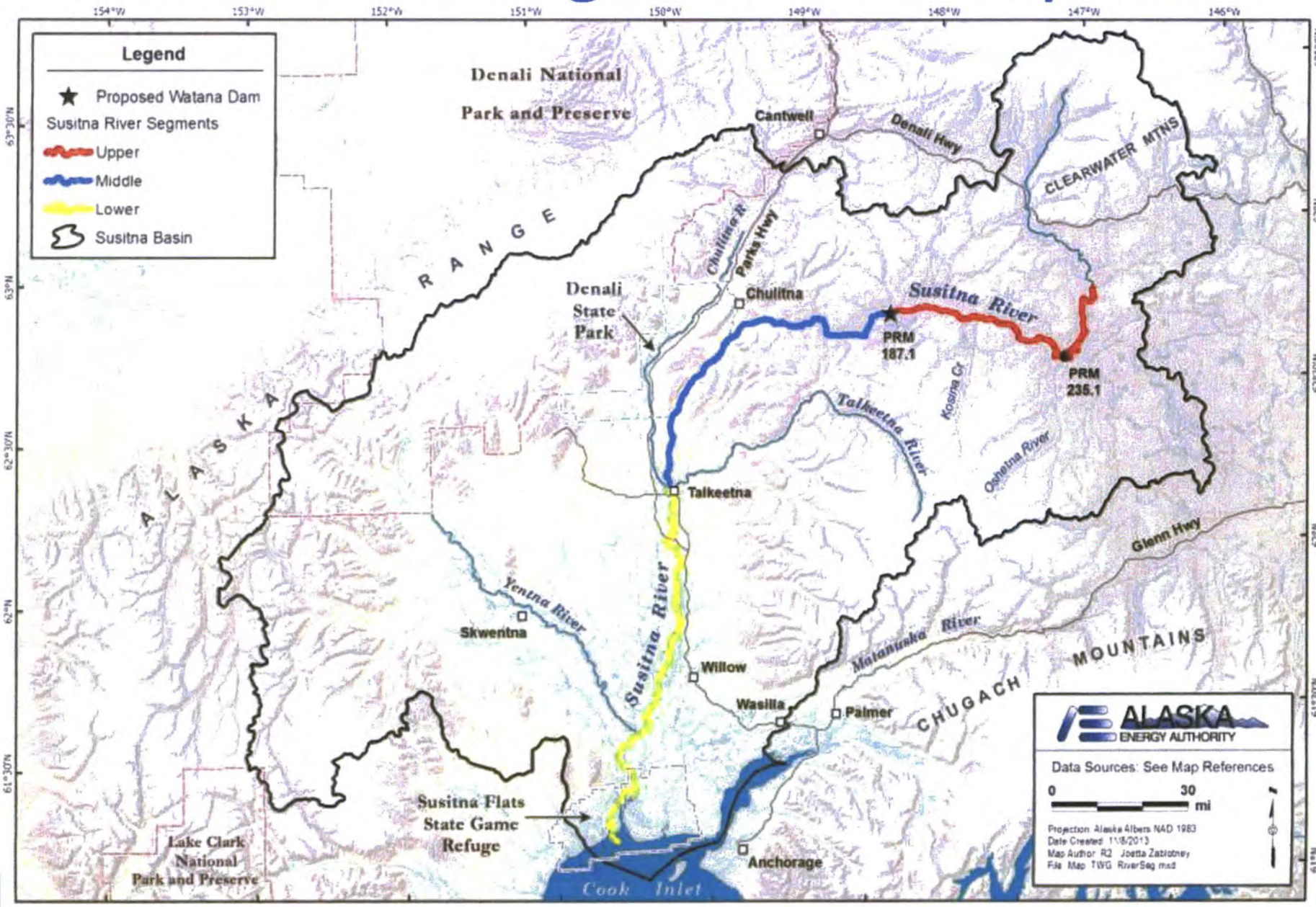
- Developing a better understanding of historical and current human use of the Susitna region
  - Subsistence, cultural resources, archeology, ethnogeography, recreation, health, etc.
- Ahtna Ethnogeography Study
  - Interviewed Ahtna elders to discuss traditional uses
  - Documented Ahtna place-names, Athabascan groups and territorial boundaries, traditional routes, trails, artifacts.
- A similar effort for Dena'ina people part of FERC-approved study plan, not completed

Wildlife Studies and Coordination

Increased ADF&G's Understanding for Game Management Unit 13E

- **Moose** habitat use and movement; population estimates and bull and calf ratios; productivity and survival
- **Caribou** seasonal use and movement; interactions between neighboring herds and population dynamics
- **Dall's Sheep** surveys

Understanding Potential Impacts

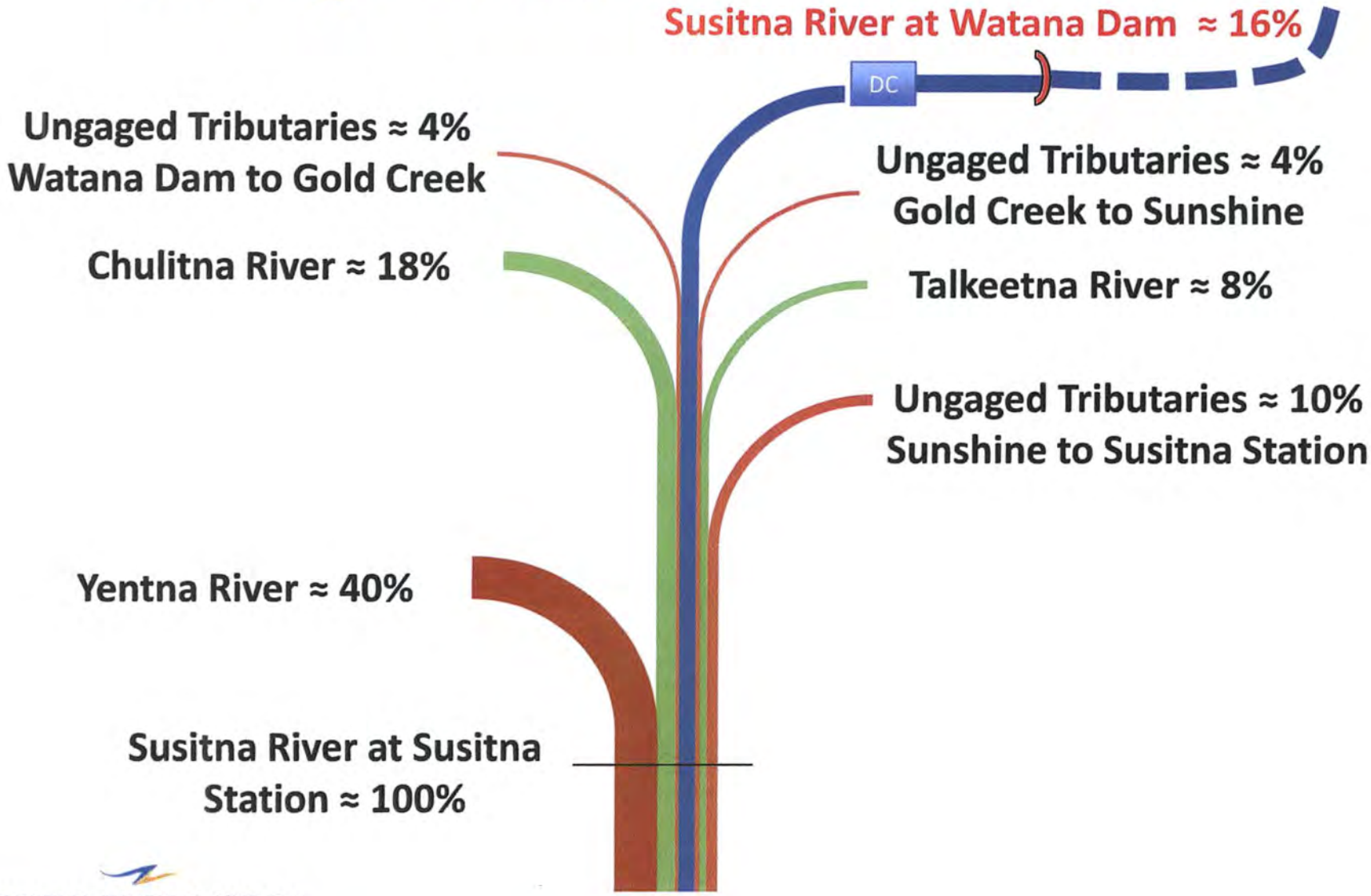


Confirming Results and Defining Areas of Impacts

- Observations similar to 1980s
  - Fish distribution
  - Chinook salmon only documented anadromous fish above Devils Canyon
  - Water chemistry and seasonal changes in chemistry
  - Geomorphically stable river system
  - Magnitude of bird migration and breeding distribution

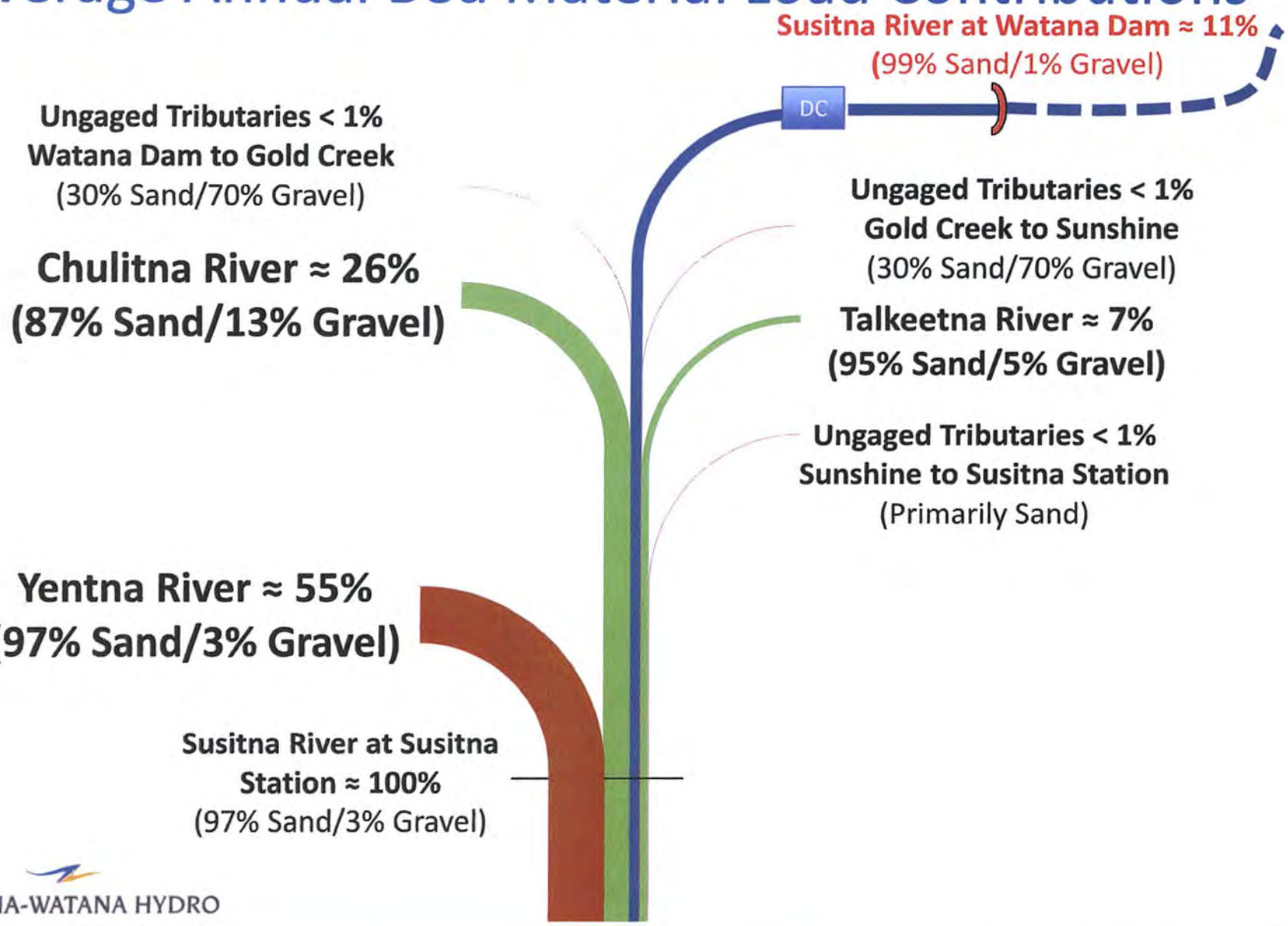
- Defining potential areas of impacts
  - Insignificant water quality or geomorphic impacts below Yentna River Confluence (No further modeling proposed in this reach)
  - Minor impacts on main channel geomorphology in Middle River (Dam site to Chulitna River confluence)

Average Annual Flow Contributions



SUSITNA-WATANA HYDRO

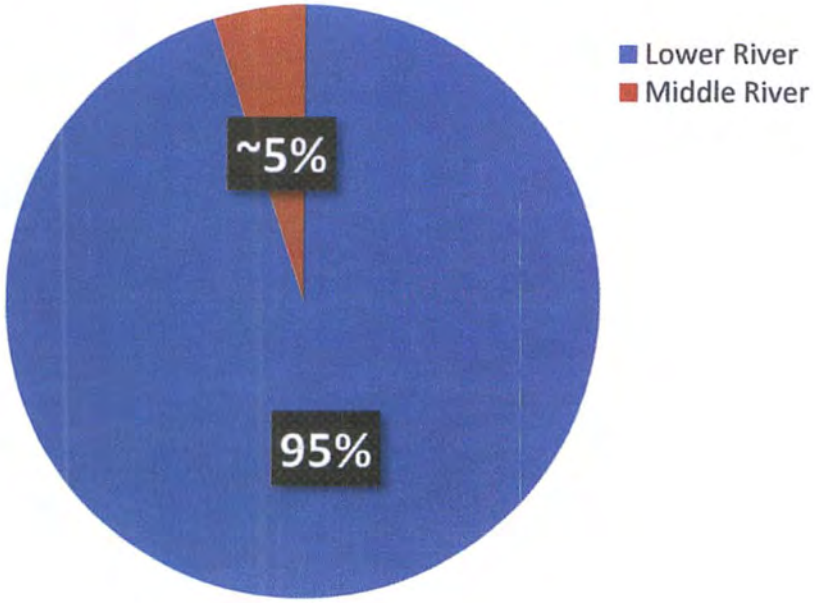
Average Annual Bed Material Load Contributions



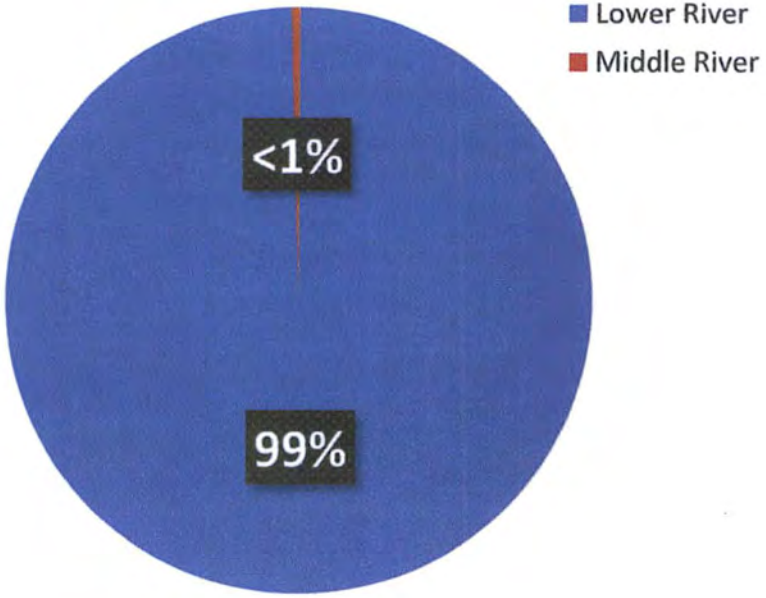
SUSITNA-WATANA HYDRO

Salmon Spawning Distribution

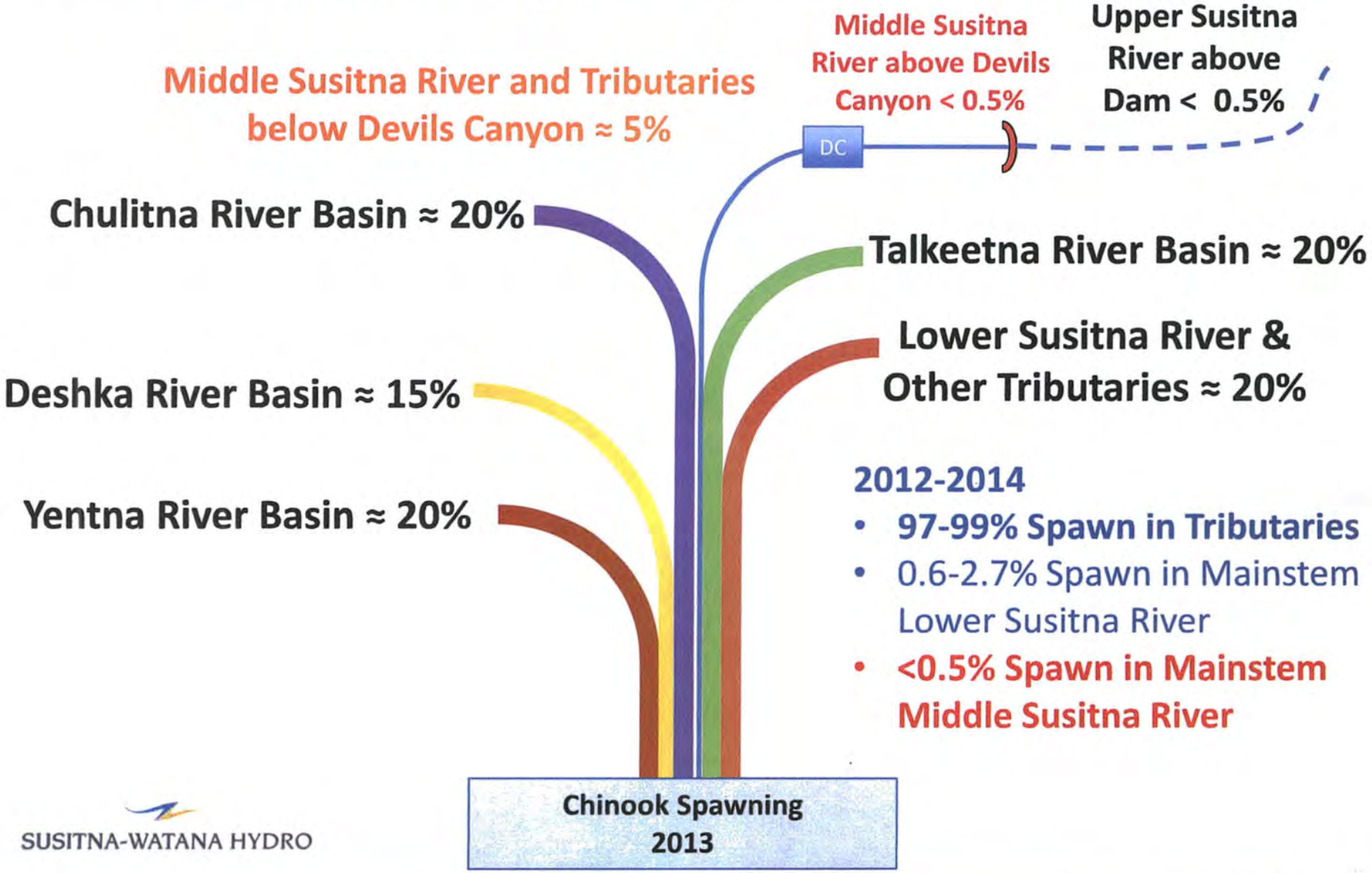
Chinook/Coho/Chum



Sockeye



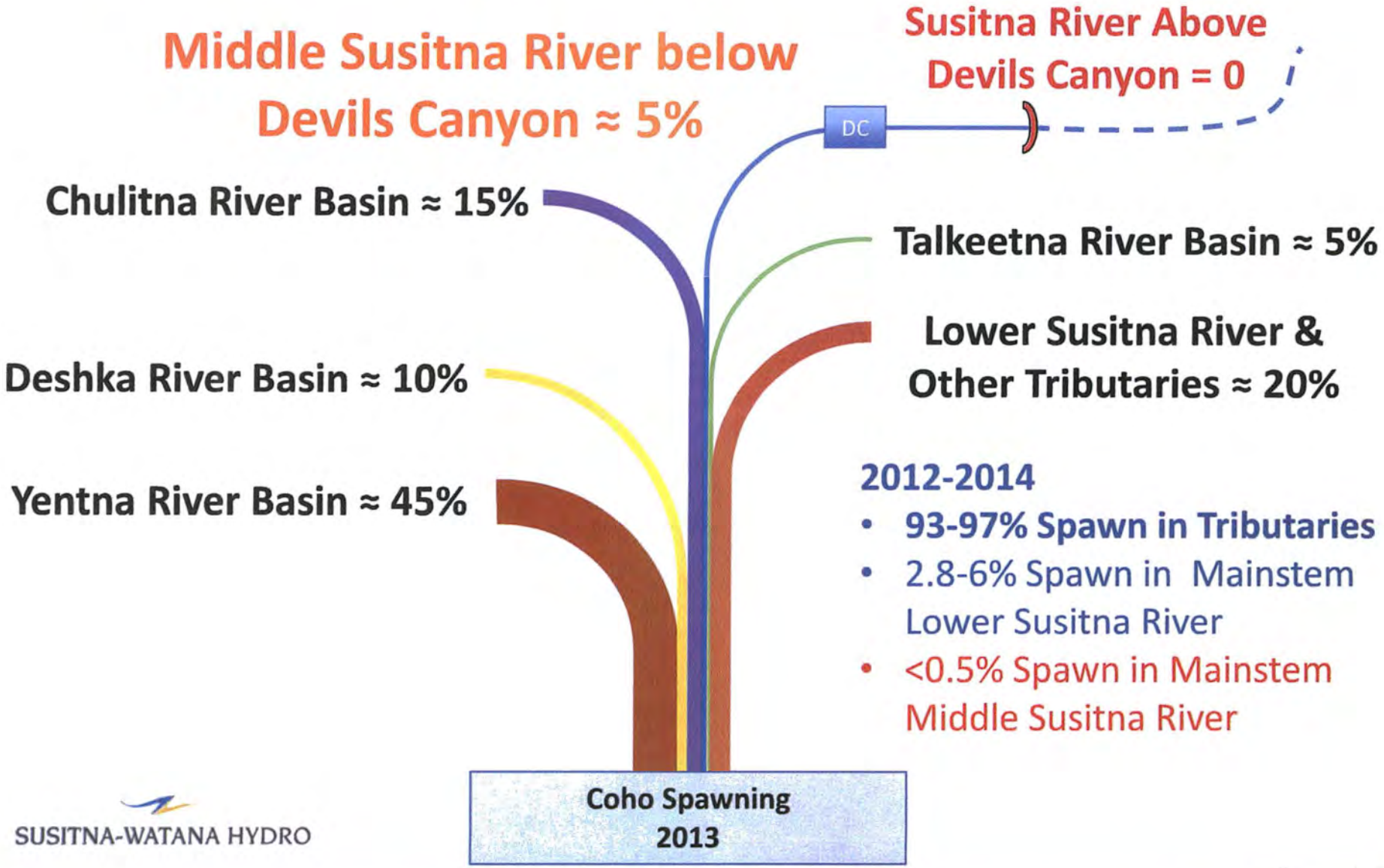
Chinook Salmon Spawning Distribution by Basin



SUSITNA-WATANA HYDRO

Data Sources: LGL (2014)

Coho Salmon Spawning Distribution by Basin



2012-2014

- **93-97% Spawn in Tributaries**
- 2.8-6% Spawn in Mainstem Lower Susitna River
- <0.5% Spawn in Mainstem Middle Susitna River

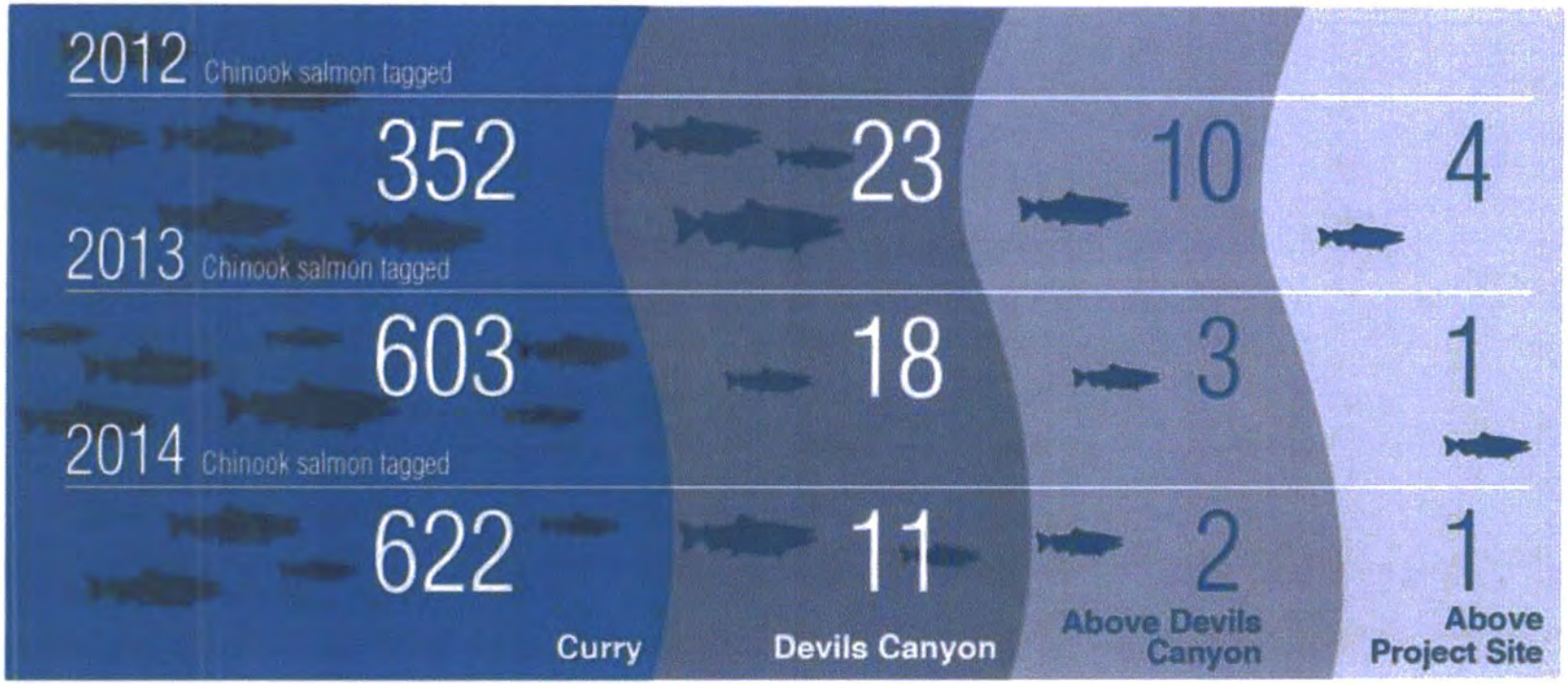
SUSITNA-WATANA HYDRO

(Merizon 2010) Data Source: LGL (2014)

Chinook by the Numbers

Tagged Chinook Salmon and Devils Canyon

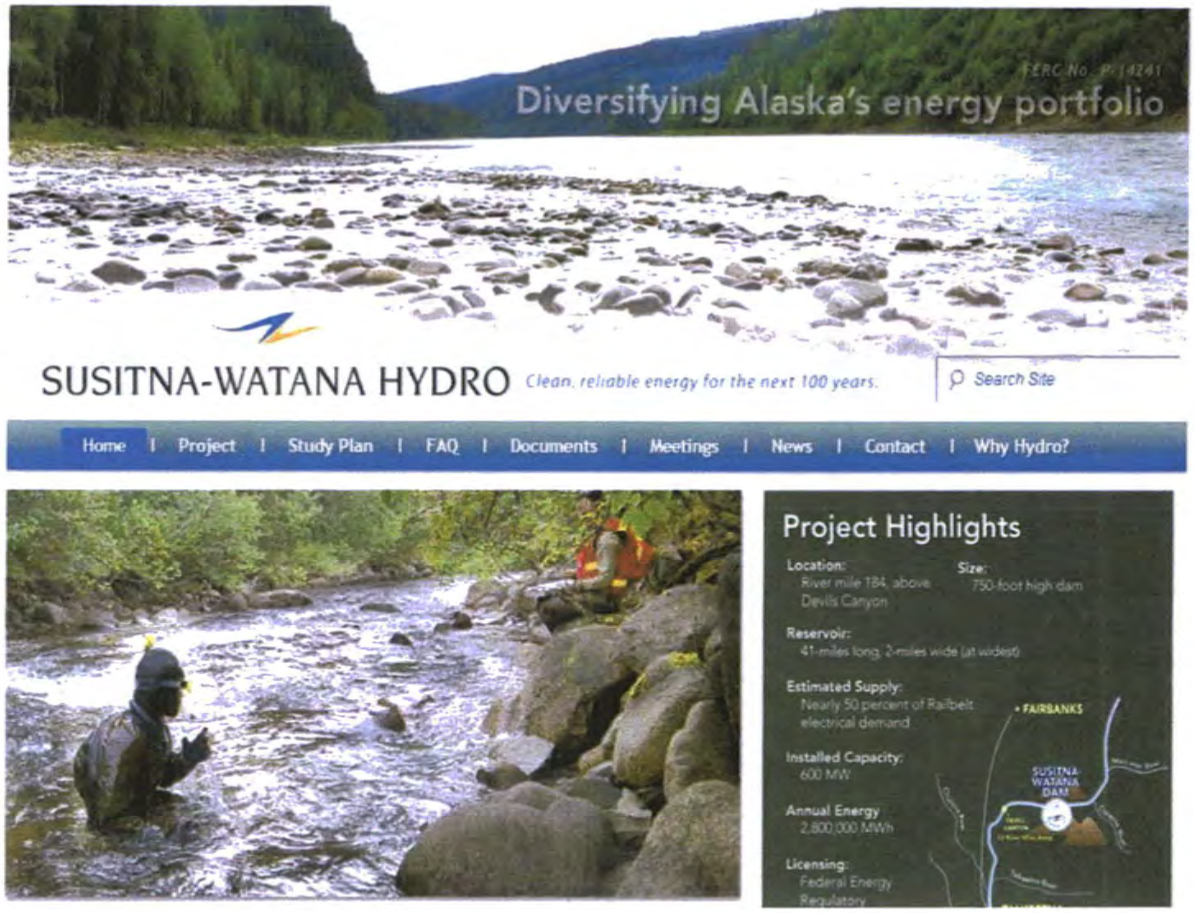
Only one salmon species has been documented within 30 miles of the project site



SUSITNA-WATANA HYDRO *Clean, reliable energy for the next 100 years.*

Engineering Accomplishments

- Board of Consultants Endorsed Roller Compacted Concrete and Dam Configuration
- 2014 drilling confirmed no active faults found at dam site
- Mean Annual Energy - 2,800 Gigawatt Hours
- Engineering Feasibility Report - January 2015
  - Optimized dam height, capacity and power generation



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SUSITNA-WATANA HYDRO *Clean, reliable energy for the next 100 years.*

March 9, 2015

The Honorable Pete Kelly
Finance Committee Co-Chair
State Capitol, Room 518
Juneau, AK 99801

The Honorable Anna MacKinnon
Finance Committee Co-Chair
State Capitol, Room 516
Juneau, AK 99801

Subject: Senate Finance Committee February 19 follow-up

Dear Senators Kelly and MacKinnon:

Thank you for the opportunity to present the Susitna-Watana Hydro update during the Feb. 19 Senate Finance Committee meeting. This letter is to follow-up and answer questions that were asked during the committee hearing.

Project Status without Additional Funding

Senator Dunleavy asked about the impacts to the project if no additional funding is provided and if the identified $6.681 million in unencumbered funds were re-appropriated. There were some additional questions about encumbered funds and I'd like to take this opportunity to further clarify funds available to the project.

Our goal, regardless of where in the process the decision to "pause" the project is reached, is to preserve the substantial state investment made to date for the advancement of this project. The consequence of terminating the project is foreclosure of an opportunity to provide state residents with a project that will provide long term, affordable, renewable electrical power and meet the state's 50 percent renewable energy goal. Predictable long-term electric costs provide stability and greatly enhance economic development opportunities and the potential for job creation. Fiscal costs to the State to terminate the project include losing the value of the work and investment made to date.

The paths forward for Susitna-Watana Hydro remain a policy-level decision. Without the $6.681 million it would be challenging to continue the licensing effort. If the decision is made to shut down the project today, all tasks necessary for a responsible project closeout would be completed by Dec. 31, 2015 and all staff and contractors would be terminated at that time. Others would be terminated sooner as required tasks are completed. There would be ongoing costs and funds that would need to be available to wrap up work product, ensure the data is compiled and recorded in a useable format, and to remove equipment in the field in compliance with access permits.

In AEA's response to Administrative Order 271, $6.681 million was identified as being available for re-appropriation should the project be suspended and $26.9 million as non-discretionary funds. The large majority of the non-discretionary funds are required for contractors to complete essential tasks assigned to them in 2014. Non-discretionary encumbered funds are being expended for critical work and are not available for re-appropriation.

813 West Northern Lights Boulevard Anchorage, Alaska 99503 T 907.771.3000 Toll Free (Alaska Only) 888.300.8534 F 907.771.3044

Using existing funds over the next two years would enable AEA to complete essential tasks and immediately ramp up the licensing efforts in FY 18.

Project Employment

Senator MacKinnon asked how many people are employed working on the project.

Employment statistics for Susitna-Watana Hydro are highly variable, based on the type of work conducted. Summer field seasons represent the peak level of activity on the project as crews work to implement the FERC-approved study plan.

AEA has maintained a small core team of employees with seven full-time positions dedicated to Susitna-Watana Hydro and additional reliance on shared services and AEA staff. Including contractors and logistics support, there were approximately 250 full-time equivalent positions in 2014.

State agencies provide significant support to the licensing effort, including approximately 13 FTEs at the Alaska Department of Fish and Game. ARLIS, the University of Alaska Fairbanks, GINA and the Division of Geological and Geophysical Surveys have also provided staff support for the project, totaling 12 part time equivalent positions.

Financial Modeling

Senator Dunleavy requested additional information about the financial models and options for repaying the project costs.

Public Financial Management, Inc. (PFM) did a financial analysis for the project and developed nine financing options for Susitna-Watana Hydro (Attachment 1). The three most realistic financing models for the construction Susitna-Watana Hydro use a combination of bonds and financing while the state is repaid on its original licensing investment. A Power Sales Agreement would provide a revenue stream for debt repayment.

Following is a basic chart outlining the rate impacts of the financing models:

	Combination of Bond and Rural Utility Service Financing	All Bond Financing	State Loan and Rural Utility Service Financing
50-year Average Real Price	$0.064/kilowatt hour	$0.073/kilowatt hour	$0.037/kilowatt hour

Fisheries Studies

Senator Dunleavy asked how much has been spent on fish studies to date and how much is planned to be spent in the future.

As of the Dec. 31, 2014 funding status report provided in our AO271 response, $29.6 million has been expended on fisheries studies and an additional $5.7 million encumbered (total $35.1 M). Expended and encumbered funds for aquatic resource studies total $35.5 million. Aquatic resource studies include groundwater, ice processes, water quality, geomorphology, hydrology and instream flow. Field logistics and permitting support are accounted for separately; we have expended $26.2 million for field logistics and $3.2 million for permitting support for all studies. Approximately $40 million will be needed to complete fisheries and aquatic resources studies.

AEA has coordinated extensively with the Alaska Department of Fish and Game on Susitna-Watana Hydro studies, and in particular to complete salmon escapement and fish genetics studies.

1980s Water Chemistry

Senator Bishop requested information about the water quality studies, the 1980s water chemistry analysis and specific information regarding sulfates and sulfides. Additional information is provided in Attachment 2.

Annual Power Production

Senator Dunleavy asked how many households would be powered by Susitna-Watana Hydro.

The average home in the Railbelt uses 480 to 680 kilowatt hours of electricity per month. For this purpose we averaged the use to 580 kWh/month. At an annual average of 2,800 gigawatt hours, Susitna-Watana Hydro could provide all of the electrical demand of 402,000 residential customers.

Financing and Public/Private Partnerships

Senator Micciche requested additional information about financing of large hydroelectric projects and the potential for public/private partnerships. A licensed project allows AEA to explore private investment opportunities. The World Bank Group is presently using P3s to finance hydropower projects that exceed the funds available from public sources. Beyond issuing revenue bonds to finance the construction of the project, we believe there are various opportunities for the project to be financed in a manner such as a P3 financing structure.

If you have further questions, please contact me.

Sincerely,

Sara Fisher-Goad

Sara Fisher-Goad
Executive Director

Attachments: Financing options
Water quality studies

Attachment 1

1) High Level Susitna-Watana Financing Need Overview

Susitna-Watana Hydro Financing Overview : Three Funding Purposes Over Three Time Periods Financing Time Frames -vs- Uses	[illegible]	[illegible]	[illegible]	Project Use Totals
Licensing & Design Costs	[illegible]	$ -	$ -	[illegible]
Construction Costs		[illegible]	[illegible]	[illegible]
Program Costs		[illegible]	[illegible]	[illegible]
Totals By Period	[illegible]	[illegible]	[illegible]	[illegible]
Funding Comments and Presumptions:	[illegible]	[illegible]	[illegible]	

2) Nine Financing Plan Options That Span The Full-Spectrum Of "Everything Is On-The-Table" Options

		Main "All-On-The-Table" Financing Plans								
		Securitization	State Moral Obligation Plans		Modified Bradley Plans			Utility Debt	P3 Funding	100% State
		Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9
[illegible]	For Licensing & Design Costs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] "The Donut Hole" [illegible]	For Construction & Program Costs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	For Construction & Program Costs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

3) Plan Elimination Section Due To Specific Plan Challenges And/Or Final Model Costs Per KWH Unacceptability

	More likely to select these financing plans								Less likely to select these financing plans
	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9
Financing Plan Challenges	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Finance Plan Benefit	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

4) State Asks And Repayments By Year For Possible Financing Plan Options

		Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6
[illegible] Licensing & Design Costs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
"The Donut Hole" [illegible] Construction & Program Costs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] Construction & Program Costs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

5) Possible Financing Plan Options Costs Per KWH Model Results

		Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	[illegible]
[illegible] Cost Averages	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	[illegible]

Other Major Project Assumptions include: [illegible]

6) Specific Financing Plan Assumptions By Plan Funding Period

Financing Plan		Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9
[illegible] Licensing and Engineering Costs		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] Construction Costs	Description	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Issuance Dates	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Assumed Rating	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-
	Interest Cost Assumption	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-
	Financing Term	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-
	Interest Cost During Construction	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-
[illegible] Construction Costs	Description	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Issuance Dates	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Assumed Rating	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-
	Interest Cost Assumption	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-
	Financing Term	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-
	Interest Cost During Construction	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-
Refinancing	Description	[illegible]	[illegible]	[illegible]	-	-	-	-	-	-
	Issuance Dates	-	[illegible]	[illegible]	-	-	-	-	-	-
	Assumed Rating	-	[illegible]	[illegible]	-	-	-	-	-	-
	Interest Cost Assumption	-	[illegible]	[illegible]	-	-	-	-	-	-
	Financing Term	-	[illegible]	[illegible]	-	-	-	-	-	-
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	[illegible]
State Cash Outlay Amounts		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	[illegible]
State Cash Repayment Amounts		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-
Unreimbursed State Contribution		-	-	-	-	-	-	-	-	[illegible]
State IRR		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-

Attachment 2

Susitna-Watana Water Quality Detail

Water quality data has been collected at various locations in the Susitna River and significant tributaries beginning in 2012 with the purpose of characterizing baseline conditions, developing water quality models to assess potential project impacts and developing protection, mitigation and enhancement measures.

During the current monitoring effort, a total of seventeen sites were sampled to characterize the full suite of water quality parameters. Ten of these sites were also sampled during the 1980s for select parameters; seven sites are located in the mainstem Susitna River while the other three are located on the Talkeetna, Chulitna and Yentna rivers.

Attachment 2 provides a summary of historic (1980s data) and current (2013 and 2014) water quality results as well as references for the water quality reports and data. The tables are limited to parameters sampled during both the historic and current efforts, as indicated by Table 1. Additional water quality parameters have been sampled during the current efforts, in part, as a reflection of additional parameter test methods that have been approved since the 1980s and more stringent requirements by regulatory agencies (e.g., U.S. Fish and Wildlife Service, National Marine Fisheries Service, and Alaska Department of Environmental Conservation) to generate results that describe known toxic chemicals that harm aquatic life. The complete set of current water quality data can be found at http://gis.suhydro.org/isr_mtg/05%20-%20Water%20Quality/5.5%20-%20Baseline%20Water%20Quality/ISR-MTG_5_5_WQ_2014_LabData/

Comparisons of water quality results between historic and current monitoring periods are reported as minimum and maximum ranges for each overlapping field and laboratory parameter measured for each site where monitoring occurred during both time periods (see Table 2 through Table 5). Monitoring results are further partitioned by season (summer or winter) so that comparisons reflect the same seasonal influence on water quality conditions.

In general, comparison between historic and current water quality parameter ranges showed little change in water quality conditions over a 30+ year period (see Table 2 through Table 5). There are several factors that can explain differences in a water quality parameter range between historic results and current results, including:

- Small number of observations for a parameter can result in a narrow minimum-maximum range, by increasing the amount of data a more representative minimum-maximum range is observed;
- Detection limits for a parameter measured during the 1980s would be higher than those detection limits used currently (e.g., low level metals analysis a more recent analytical procedure approved by the U.S. Environmental Protection Agency), hence historic data was biased inappropriately to the higher estimates; and
- Current environmental conditions that influence water quality conditions could be different than historic conditions, i.e. temperature and precipitation patterns or extremes.

Criteria for the protection of aquatic life were applied to the current monitoring data. For metals, these standards are hardness dependent and calculated using co-monitored sample results. The available historic data records are provided in ranges without sufficient detail to evaluate criteria. Additionally, current water quality criteria may not be applicable with 1980s results as thresholds may be lower than detection limits from historical analytical methods.

Sulfides in sediment is an indicator of the potential for metals to aggregate and then bioaccumulate in some aquatic species (e.g., sediment-dwelling aquatic insects or early life stages of fish). In lake or reservoir environments, water near the sediment may have little or no dissolved oxygen (anoxic). When this condition occurs, sulfur-eating bacteria become active and convert sulfate (sulfur with oxygen) to sulfide (sulfur without oxygen). The sulfide molecule binds tightly with metals which concentrate in the sediment. Bioavailability is most likely when metals are dissolved in sediment porewater, but not likely when a precipitate or adsorbed to a fine sediment particle. The metal-sulfide complex is not likely to result in bioaccumulation by aquatic life and cause toxic effects.

Comparisons between historic and current sediment data were not made as sulfide data were not available for either the 1980s collection effort or during the 2013/2014. Estimates of metals toxicity use Total Organic Carbon (TOC) to normalize the concentration before site-to-site comparisons are made or comparison of sediment condition at a site over time. Sediment samples have differing concentrations of TOC that play a role in bioavailability of metals in porewater and is the reason why normalization of concentration (considered a conservative approach in protection of aquatic life) is done before comparison to thresholds or criteria. TOC results are available for historic and current conditions in surface water showing a high degree of similarity.

Sulfate is associated with iron and aluminum; both metals measured with high concentrations in the Susitna River. The role of sulfides and potential for metals bioaccumulation may be greater in the reservoir if dissolved oxygen concentrations are at or near 0 mg/L (anoxic) near the bottom. The mechanism for bioaccumulation in sediment-dwelling animals might be exposure to dissolved metals in the porewater and these concentrations were measured in the current study. At this point in our technical studies, anoxic conditions at the bottom of the reservoir is not likely to occur.

Current water quality results show that the three major tributaries (e.g., Chulitna River, Talkeetna River, and Yentna River) have a major influence on conditions of the lower Susitna River. Water quality parameters- such as turbidity- have consistently higher maximum values below the Chulitna River that override the influence of upper river water quality conditions. These tributaries also contribute total suspended solids to the Susitna River, as can be seen by progressively increasing maximum values at downstream sites (historic water quality results confirm the same increasing pattern).

Any project-related changes to the water quality conditions at these lower river sites will be insignificant based on the major influence these three tributaries have on water quality in the Lower Susitna River.

Table 1. List of water quality parameters collected in the Susitna River during both historic and current licensing efforts.

Category	Parameter	1980s	2012-2014
Field Parameters	Temp (°C)	x	x
	DO (mg/L)	x	x
	pH	x	x
	Conductivity (umhos/cm)	x	x
Conventionals & Nutrients	Orthophosphate (mg/L)	x	SRP
	Total Phosphorus (mg/L)		x
	Nitrate (mg/L)	x	
	Nitrate + Nitrite (mg/L)		x
	Ammonia (mg/L)		x
	TKN		x
	Turbidity (NTU)	x	x
	TSS (mg/L)	x	x
	Total Hardness (mg/L)	x	x
	Total Alkalinity (mg/L)	x	x
	TOC (mg/L)	x	x
	DOC (mg/L)		x
	Total Coliform Bacteria (colonies/100mL)	x	x
	Chlorophyll-a (ug/L)	x	x
Ions	Ca (total)		x
	Ca (diss.)	x	x
	Mg (diss.)	x	x
Metals (total & dissolved)	Al	x	x
	As	x	x
	Ba	x	x
	Cd	x	x
	Se	x	x
	Cu	x	x
	Fe	x	x
	Pb	x	x
	Mn	x	x
	Hg	x	x
	Ni	x	x
	Zn	x	x

SRP = Soluble reactive phosphorous

Table 2. Historic (1980s) and Current (2013 - 2014) Field Parameters Collected in situ

Project River Mile		187.2	152.7	142.3	140.1	124.2	101*	102.4*	88.3	32.3*	29.9
Description		Susitna at Watana Dam site	Susitna above Portage Creek	Susitna above Indian River	Susitna below Gold Creek	Susitna near Curry	Talkeetna River	Chulitna River	Susitna at Parks Highway West (current data collected from EAST)	Yentna River	Susitna at Susitna Station
Temp (°C)	Historic Winter	--	--	--	≈0	--	--	≈0	≈0	≈0	≈0
	Current Winter	--	--	--	0	--	--	--	0	--	0
	Historic Summer	1.9-14.4	--	--	4.5-14.1	2.7-15.3	2.9-16.4	3.8-9.5	5-14	3.9-11.6	2.5-14.8
	Current Summer	2.6-14.8	7.5-12.0	7.3-15.0	7.5-14.2	7.6-15.1	8.0-14.3	4.6-8.3	7.3-11.7	7.4-10.4	7.5-12.1
Dissolved oxygen (mg/L)	Historic Winter	--	--	--	10.9-16.2	--	--	--	12.8-14.4	10.9-11.1	9.9-12.7
	Current Winter	--	--	--	13.9-14.5	--	--	--	12.8-14.6	--	10.8-13.9
	Historic Summer	9.9-11.6	10.9-14.8	--	8.5-12.7	10.1-13.9	9.8-12.0	--	9-13.4	10.4-12.1	9-12.3
	Current Summer	10.1-12.47	10.4-12.6	10.4-12.4	10.5-12.5	10.0-12.5	10.2-11.9	12.0-13.6	10.7-13.7	11.5-12.0	10.9-12.53
pH	Historic Winter	--	--	--	7.6-8.0	--	--	≈7.1	7.8-8.2	7.1-7.9	7.5-7.6
	Current Winter	--	--	--	7.3-7.7	--	--	--	7.1-7.2	--	6.9-7.0
	Historic Summer	8-8.2	6.8-8.2	--	7.5-8.3	6.8-8.0	7.4-8.0	7.2-8.1	7.1-8.3	7.4-8.3	7.5-8.5
	Current Summer	7.4-8.5	7.1-8.5	7.6-8.6	7.7-8.6	7.6-8.3	7.6-8.4	7.8-8.7	7.8-8.5	8.0-8.6	7.5-9.4

Project River Mile		187.2	152.7	142.3	140.1	124.2	101*	102.4*	88.3	32.3*	29.9
Description		Susitna at Watana Dam site	Susitna above Portage Creek	Susitna above Indian River	Susitna below Gold Creek	Susitna near Curry	Talkeetna River	Chulitna River	Susitna at Parks Highway West (current data collected from EAST)	Yentna River	Susitna at Susitna Station
Conductivity (µmhos/cm)	Historic Winter	--	--	--	84-300	--	--	≈115	159-240	189-216	180-225
	Current Winter	--	--	--	241-263	--	--	--	190-220	--	136-216
	Historic Summer	--	--	--	87-227	--	--	101-144	80-170	93-142	96-154
	Current Summer	137.8-178.5	122.2-164.7	122-162.8	116-161.5	131-166.6	122-168.8	106.4-145.9	122-156.9	135.9-167	116.1-170

Notes:

ND = non-detection

"—" = data unavailable

*Indicates Project River Mile of the Susitna River at the confluence of the tributary sampled.

Table 3. Historic (1980s) and Current (2013 – 2014) Conventional and Nutrient Water Quality Monitoring Data

Project River Mile		187.2	152.7	142.3	140.1	124.2	101*	102.4*	88.3	32.3*	29.9
Description		Susitna at Watana Dam site	Susitna above Portage Creek	Susitna above Indian River	Susitna below Gold Creek	Susitna near Curry	Talkeetna River	Chulitna River	Susitna at Parks Highway West (current data collected from EAST)	Yentna River	Susitna at Susitna Station
Orthophosphate (mg/L)	Historic Winter	--	--	--	0.03-0.09	--	--	<0.01	0.031-0.12	<0.01	<0.01
	Current Winter	--	--	--	0.005 - 0.006	--	--	--	0.001 - 0.003	--	ND - 0.002
	Historic Summer	--	--	--	0-0.184	--	--	<0.01	0.031-0.061	<0.01	<0.01
	Current Summer	ND - 0.0317	ND - 0.0114	ND - 0.0067	ND - 0.011	ND - 0.0074	ND - 0.0414	ND - 0.0194	ND - 0.0265	ND - 0.0078	ND - 0.0185
Turbidity (NTU)	Historic Winter	--	--	--	0.1-0.7	--	--	--	0.5-2.7	--	1-3
	Current Winter	--	--	--	--	--	--	--	--	--	--
	Historic Summer	--	45-200	--	23-290	20-396	16-480	--	43-500	30-220	up to 790
	Current Summer	18 - 650	90 - 600	75 - 400	50 - 1000	90 - 500	160 - 500	310 - 900	130 - 1300	110 - 950	110 - 950
TSS (mg/L)	Historic Summer	--	52-482	--	--	39-512	5.5-8.0	--	--	--	--
	Current Summer	41.9 - 578	81 - 650	73 - 426	64 - 1050	99 - 480	186 - 488	470 - 1170	162 - 1420	186 - 744	194 - 780
TDS (mg/L)	Historic Summer	--	--	--	55-140	--	--	--	--	--	--
	Current Summer	100 - 154	87 - 146	92 - 174	72 - 156	70 - 132	66 - 154	92 - 166	44 - 138	62 - 152	82 - 190

Project River Mile		187.2	152.7	142.3	140.1	124.2	101*	102.4*	88.3	32.3*	29.9
Description		Susitna at Watana Dam site	Susitna above Portage Creek	Susitna above Indian River	Susitna below Gold Creek	Susitna near Curry	Talkeetna River	Chulitna River	Susitna at Parks Highway West (current data collected from EAST)	Yentna River	Susitna at Susitna Station
Total Hardness (mg/L)	Historic Summer	--	--	--	--	--	--	--	43.6-72	--	44-66
	Current Summer	57.5 - 70.5	54.4 - 64.5	53.1 - 66.1	49.6 - 67.3	53.1 - 107	51.7 - 69.6	47.7 - 73.9	52.2 - 72.1	59 - 121	52.7 - 73.2
Total Alkalinity (mg/L)	Historic Summer	--	--	--	23-87	--	--	--	--	--	36-57
	Current Summer	48.5 - 53.4	41.1 - 53.3	40.1 - 54.2	34.5 - 54.6	40.7 - 53.9	42.2 - 53.5	34.1 - 52.8	41.1 - 49.4	40.1 - 50.4	40 - 53.3
TOC (mg/L)	Historic Summer	--	1.4-3.8	--		--	--	--	1.7-3.2	--	2.7-11
	Current Summer	2.4	2.29 - 2.39	1.92 - 2.14	1.7 - 2.02	1.8 - 3.43	1.9 - 2.09	1.71 - 1.92	2.05 - 2.42	1.98 - 2.76	2.1 - 3.68
Chlorophyll (µg/L)	Historic Summer	--	--	--	--	--	--	--	--	--	ND-1.2
	Current Summer	0 - 0.53	0 - 1.9	0 - 1.3	0 - 0.87	0 - 1.3	0 - 1.3	0 - 2.5	0 - 2.5	0 - 1.4	0 - 1.2
Total Coliform Bacteria (colonies/100 ml)	Historic Summer	--	--		--	--	--	--	--	--	≤ 20
	Current Summer	0	14 - 22	9 - 12	9 - 27	12 - 20	6 - 26	7 - 15	6 - 18	8 - 18	7 - 18

Notes:

ND = non-detection

"—" = data unavailable

*Indicates Project River Mile of the Susitna River at the confluence of the tributary sampled.

Table 4. Historic (1980s) and Current (2013 – 2014) Total Metals Water Quality Monitoring

Project River Mile		187.2	152.7	142.3	140.1	124.2	101*	102.4*	88.3	32.3*	29.9
Description		Susitna at Watana Dam site	Susitna above Portage Creek	Susitna above Indian River	Susitna below Gold Creek	Susitna near Curry	Talkeetna River	Chulitna River	Susitna at Parks Highway West (current data collected from EAST)	Yentna River	Susitna at Susitna Station
Al (total) (µ/L)	Historic Summer	--	--	--	≈13000	--	--	--	up to 15000	--	--
	Current Summer	470 - 7990	959 - 5630	564 - 5830	476 - 5680	452 - 7350	420 - 7980	2341 - 20800	1650 - 19400	1249 - 23029	790 - 22584
As (total) (µ/L)	Historic Winter	--	--	--	1	--	--	--	1-2	--	1-3
	Current Winter	--	--	--	ND	--	--	--	ND	--	ND
	Historic Summer	--	--	--	2-12	--	--	--	1-3	--	7-40
	Current Summer	1.89 - 11.8	ND - 11.4	ND - 8.85	1.72 - 16.3	ND - 9.79	ND - 10.9	4.53 - 37.5	2.80 - 32.5	3.80 - 26.05	3.2 - 23.53
Ba (total) (µ/L)	Historic Winter	--	--	--	≤ 100	--	--	--	100	--	100
	Current Winter	--	--	--	50	--	--	--	38	--	35
	Historic Summer	--	--	--	100-500	--	--	--	100-500	--	up to 400
	Current Summer	89.0 - 788	39.4 - 516	37.9 - 434	34.7 - 883	37.9 - 454	35.6 - 434	66.3 - 905	49.9 - 795	41.4 - 382	37.7 - 413
Cd (total) (µ/L)	Historic Summer	--	--		0-30	--	--	--	0-35	--	≤ 1
	Current Summer	0.0486 - 1.12	0.123 - 0.771	ND - 0.434	0.0676 - 0.862	0.119 - 0.492	0.193 - 0.66	0.295 - 0.655	0.142 - 0.778	0.132 - 0.519	0.133 - 0.454

Project River Mile		187.2	152.7	142.3	140.1	124.2	101*	102.4*	88.3	32.3*	29.9
Description		Susitna at Watana Dam site	Susitna above Portage Creek	Susitna above Indian River	Susitna below Gold Creek	Susitna near Curry	Talkeetna River	Chulitna River	Susitna at Parks Highway West (current data collected from EAST)	Yentna River	Susitna at Susitna Station
Se (total) (µ/L)	Historic Summer	--	--	--	≤ 1	--	--	--	0-1	--	≤ 1
	Current Summer	0.547	0.376 - 0.547	0.471 - 0.689	0.395 - 0.55	0.411 - 0.582	0.451 - 0.624	ND	0.618 - 0.909	0.569 - 0.776	0.483 - 0.707
Cu (total) (µ/L)	Historic Summer	--	--	--	15-190	--	--	--	0-35	--	30-90
	Current Summer	3.93 - 43.9	7.83 - 37.1	7.22 - 31.3	4.21 - 68.7	7.87 - 33.5	11.1 - 33.4	27.4 - 64	13.8 - 73	11.4 - 39.1	11.5 - 41.6
Fe (total) (µ/L)	Historic Winter	--	--	--	≈120	--	--	≈0	110-1100	--	240-720
	Current Winter	--	--	--	54 - 64	--	--	--	89 - 628	--	132 - 207
	Historic Summer	--	--	--	430-24000	--	--	up to 4300	7600-32000	--	7900-42000
	Current Summer	8550 - 9430	1325 - 7160	958 - 7430	802 - 7010	743 - 9106	688 - 9935	3760 - 31091	2364 - 27403	2151 - 31889	1507 - 30894
Pb (total) (µ/L)	Historic Summer	--	--	--	≤ 200	--	--	--	2-13	--	≤ 200
	Current Summer	0.381 - 7.86	1.3 - 5.99	1.04 - 4.64	0.636 - 9.29	1.22 - 4.46	ND - 4.98	7.52 - 17.5	2.88 - 18.7	3.17 - 10.9	2.59 - 10.7
Mn (total) (µ/L)	Historic Winter	--	--	--	≤ 20	--	--	≈10	2-10	--	30-40
	Current Winter	--	--	--	ND	--	--	--	19	--	9
	Historic Summer	--	--		10-390	--	--	20-280	170-670	--	320-870
	Current Summer	20.9 - 172	37.6 - 157	41.1 - 149	29.4 - 144	24.9 - 174	22.5 - 189	97.3 - 618	59.1 - 547	89.4 - 745	68.8 - 702

Project River Mile		187.2	152.7	142.3	140.1	124.2	101*	102.4*	88.3	32.3*	29.9
Description		Susitna at Watana Dam site	Susitna above Portage Creek	Susitna above Indian River	Susitna below Gold Creek	Susitna near Curry	Talkeetna River	Chulitna River	Susitna at Parks Highway West (current data collected from EAST)	Yentna River	Susitna at Susitna Station
Hg (total)	Historic Summer (ng/L)	--	--		2,000-13,000	--	--	--	100-600	--	≤ 1000
	Current Summer (ng/L)	0.83 - 22.0	2.94 - 25.8	1.92 - 23.10	1.53 - 21.10	1.09 - 18.5	1.02 - 25.3	4.95 - 54.5	3.49 - 80.1	8.43 - 33.6	6.09 - 32.1
Ni (total) (µ/L)	Historic Summer	--	--		≤ 50	--	--	--	18-30	--	1-2
	Current Summer	4.33 - 49.2	9.56 - 40.7	8.48 - 42.4	5.41 - 75.9	9.44 - 38.3	12.8 - 33.8	37.1 - 85.9	15.9 - 80.9	12.9 - 44.3	12.3 - 46.6
Zn (total) (µ/L)	Historic Summer	--	--	--	20-120	--	--	--	40-200	--	80-180
	Current Summer	8.62 - 106	19.1 - 98.2	17.5 - 77.3	10.8 - 163	19.5 - 80	27 - 86.3	72.9 - 191	33.5 - 202	30.7 - 124	29.2 - 121

Notes:

ND = non-detection

"—" = data unavailable

*Indicates Project River Mile of the Susitna River at the confluence of the tributary sampled.

Table 5. Historic (1980s) and Current (2013 – 2014) Dissolved Metals Water Quality Monitoring

Project River Mile		187.2	152.7	142.3	140.1	124.2	101*	102.4*	88.3	32.3*	29.9
Description		Susitna at Watana Dam site	Susitna above Portage Creek	Susitna above Indian River	Susitna below Gold Creek	Susitna near Curry	Talkeetna River	Chulitna River	Susitna at Parks Highway West (current data collected from EAST)	Yentna River	Susitna at Susitna Station
Al (dissolved) (µ/L)	Historic Winter	--	--		≈10	--	--	--	10-30	--	--
	Current Winter	--	--	--	ND - 3	--	--	--	4 - 9	--	4 - 22
	Historic Summer	--	--		20-120	--	--	--	40-200	--	40-350
	Current Summer	18.9 - 1030	22.9 - 117	20.1 -105	40.1 - 122	36.1 - 237	36.4 - 2880	72.7 - 700.4	49.6 - 198	32 - 189	35 - 133
As (dissolved) (µ/L)	Historic Winter	--	--	--	0	--	--	--	≈2	--	0-0.1
	Current Winter	--	--	--	ND	--	--	--	ND	--	ND
	Historic Summer	--	--	--	3-6	--	--	--	4-15	--	0.3-0.6
	Current Summer	0.633 - 1.35	0.716 - 1.21	0.796 - 1.24	0.769 - 1.63	0.829 - 1.16	0.869 - 1.74	1.12 - 5.16	0.927 - 5.36	1.16 - 1.73	1.1 - 1.81
Ba (dissolved) (µ/L)	Historic Winter	--	--	--	≤ 100	--	--	--	25-100	--	≈40
	Current Winter	--	--	--	48	--	--	--	35	--	26
	Historic Summer	--	--	--	0-44	--	--	--	0-70	--	20-200
	Current Summer	36.9 - 69.7	34.0 - 49.5	32.8 - 47.9	27 - 73.8	32.1 - 46	32.6 - 88.9	14.1 - 69.9	17.4 - 111	15.9 - 23.4	17.7 - 27.5

Project River Mile		187.2	152.7	142.3	140.1	124.2	101*	102.4*	88.3	32.3*	29.9
Description		Susitna at Watana Dam site	Susitna above Portage Creek	Susitna above Indian River	Susitna below Gold Creek	Susitna near Curry	Talkeetna River	Chulitna River	Susitna at Parks Highway West (current data collected from EAST)	Yentna River	Susitna at Susitna Station
Cd (dissolved) (µ/L)	Historic Summer	--	--	--	0-20	--	--	--	0-24	--	≤ 2
	Current Summer	ND - 0.059	ND - 0.023	ND - 0.023	ND - 0.064	ND - 0.039	ND - 0.069	ND - 0.076	ND - 0.110	ND - 0.517	ND - 0.022
Se (dissolved) (µ/L)	Historic Summer	--	--	--	≤ 1	--	--	--	0	--	≤ 1
	Current Summer	0.523	0.355 - 0.579	0.573 - 0.617	0.445 - 0.584	0.481 - 0.565	0.472 - 0.661	0.708 - 0.874	0.506 - 0.792	0.508 - 0.663	0.505 - 0.678
Ca (dissolved) (µ/L) - move to metals	Historic Winter	--	--	--	18,000-39,000	--	--	≈19,000	18,000-39,000	--	24,000-31,000
	Current Winter	--	--	--	19,100	--	--	--	11,600	--	14,300
	Historic Summer	--	--	--	10,000-37,000	--	--	14,000-18,000	10,000-37,000	--	15,000-22,000
	Current Summer	19,000 – 22,300	17,600 – 21,700	17,100 – 21,900	15,700 – 22,500	17,100 – 21,300	17,300 – 22,600	14,200 – 21,626	16,900 – 20,100	17,700 – 20,000	16,200 – 22,200
Cu (dissolved) (µ/L)	Historic Summer	--	--	--	15-190	--	--	--	16-63	--	29-89
	Current Summer	0.558 - 2.46	0.526 - 1.23	0.584 - 1.09	0.437 - 2.58	0.283 - 4.77	0.422 - 2.91	0.241 - 6.8	0.090 - 9.62	0.330 - 1.02	0.343 - 1.39
Fe (dissolved) (µ/L)	Historic Winter	--	--	--	≈110	--	--	--	120-1100	--	300-400
	Current Winter	--	--	--	ND	--	--	--	ND	--	59 - 109
	Historic Summer	--	--	--	50-320	--	--	--	10-330	--	10-460
	Current Summer	19.4 - 1480	15.8 - 249	16.4 - 120	18.5 - 1680	27.4 - 171	ND - 2000	11.5 - 5530	6.41 - 7310	9.63 - 480	7.19 - 190

Project River Mile		187.2	152.7	142.3	140.1	124.2	101*	102.4*	88.3	32.3*	29.9
Description		Susitna at Watana Dam site	Susitna above Portage Creek	Susitna above Indian River	Susitna below Gold Creek	Susitna near Curry	Talkeetna River	Chulitna River	Susitna at Parks Highway West (current data collected from EAST)	Yentna River	Susitna at Susitna Station
Pb (dissolved) (µ/L)	Historic Summer	--	--	--	0-5	--	--	--	--	--	≤5
	Current Summer	ND - 0.310	ND - 0.073	ND - 0.043	ND - 0.420	ND - 0.069	ND - 0.462	ND - 1.77	ND - 2.06	ND - 0.189	ND - 0.110
Mg (dissolved) (µ/L)	Historic Winter	--	--	--	3,200-10,000	--	--	≈1,900	2,900-10,000	--	3,600-5,000
	Current Winter	--	--	--	4,680	--	--	--	4,260	--	5,040
	Historic Summer	--	--	--	300-7,800	--	--	2,500-4,100	1,200-7,800	--	2,000-3,300
	Current Summer	2350 - 3570	2290 - 2730	2380 - 2730	2320 - 2940	2220 - 2750	2040 - 3160	2950 - 5640	2460 - 5390	3230 - 4540	2700 - 4690
Mn (dissolved) (µ/L)	Historic Winter	--	--	--	7-10	--	--	--	10-30	--	0-30
	Current Winter	--	--	--	ND	--	--	--	6	--	9
	Historic Summer	--	--	--	2-180	--	--	--	7-12	--	6-20
	Current Summer	2.86 - 29.2	2.53 - 7.38	2.31 - 5.78	1.75 - 35.8	2.79 - 7.58	2.47 - 37	4.86 - 118	1.85 - 151	1.21 - 12.4	1.3 - 17.9
Hg (dissolved)	Historic Summer (ng/L)	--	--	--	100-400	--	--	--	100-600	--	≤ 1,000
	Current Summer (ng/L)	ND - 1.46	ND - 0.958	ND - 12.3	ND - 0.815	ND - 2.28	ND - 1.21	ND - 3.54	ND - 1.54	ND - 0.874	ND - 1.48

Project River Mile		187.2	152.7	142.3	140.1	124.2	101*	102.4*	88.3	32.3*	29.9
Description		Susitna at Watana Dam site	Susitna above Portage Creek	Susitna above Indian River	Susitna below Gold Creek	Susitna near Curry	Talkeetna River	Chulitna River	Susitna at Parks Highway West (current data collected from EAST)	Yentna River	Susitna at Susitna Station
Ni (dissolved) (µ/L)	Historic Summer	--	--	--	≤50	--	--	--	18-30	--	0-2
	Current Summer	1.46 - 3.53	0.674 - 1.98	0.988 - 1.81	0.778 - 4.18	0.689 - 2.11	1.05 - 3.97	0.924 - 9.14	0.856 - 10.8	0.742 - 1.71	0.793 - 1.5
Zn (dissolved) (µ/L)	Historic Summer	--	--	--	20-120	--	--	--	40-200	--	80-180
	Current Summer	0.745 - 7.59	0.657 - 2.77	ND - 1.72	0.569 - 17.3	ND - 3.73	0.495 - 8.35	0.545 - 21.2	ND - 26.8	0.578 - 4.87	0.517 - 4.26

Notes:

ND = non-detection

"—" = data unavailable

*Indicates Project River Mile of the Susitna River at the confluence of the tributary sampled.

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