DONLIN GOLD PROJECT

18 May 2015

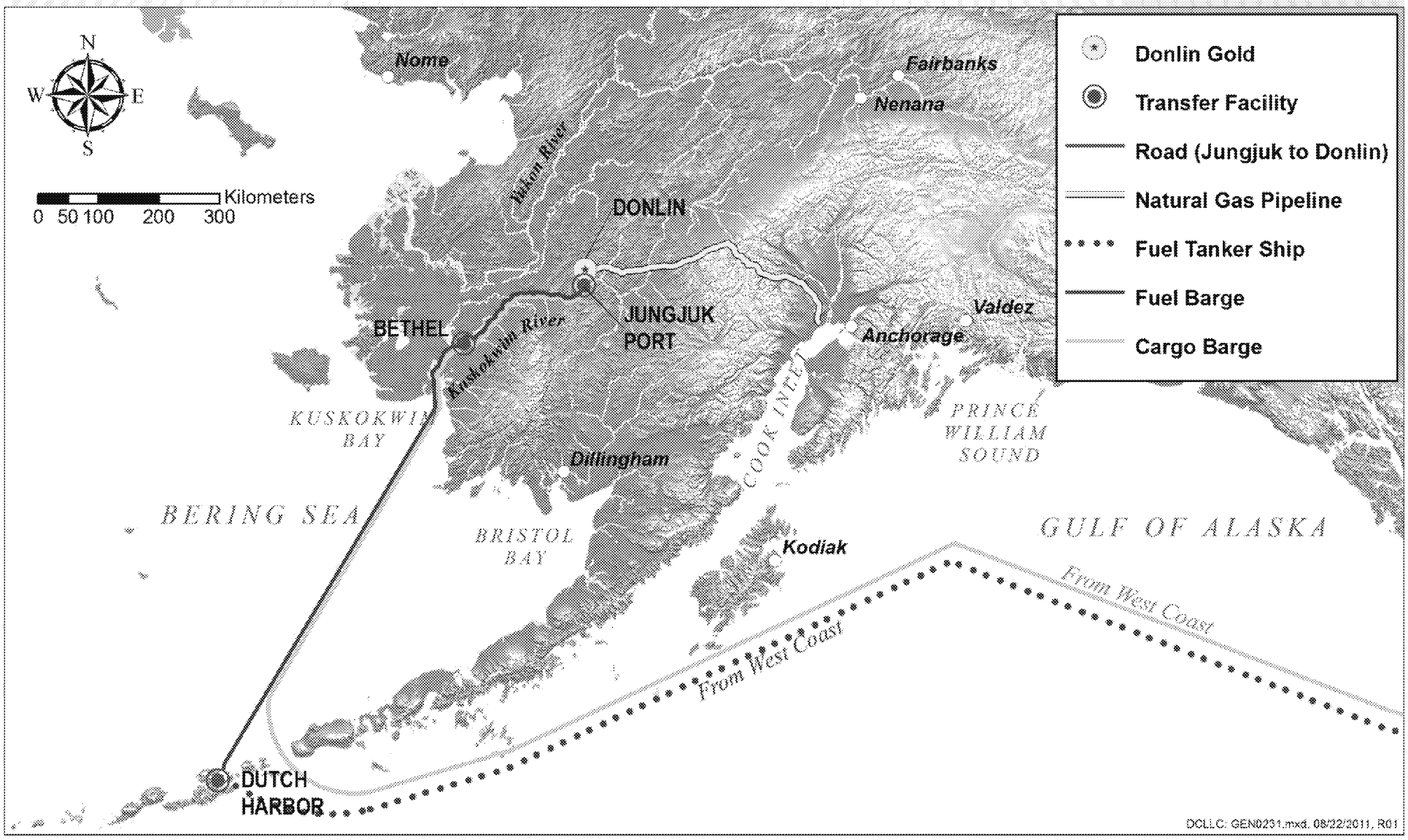
ED_012993_00002483-00001

EPA Region 10 Mining Team

- Ken Marey, Mining Coordinator
- Mark Ide – NCPA
- Herman Wong – Air Modelling
- Cindi Godsey – NPDES, Surface Waters
- Matthew LaCroix – Wetlands/404
- Zach Hedgpeth – Air Emissions/Engineering
- Chris Eakley – Mercury, Contaminants
- Lorraine Edmond – Groundwater, Hydrology
- Tami Fordham – Senior Tribal Policy Advisor
- Endre Szalay, ORC
- Alex Eidis, ORC – Air/Stationary Source
- Skills Market Place – Brent Truskowski, R8
  - KerryAnn Weaver, R5
- NatureServe Contract

PROJECT COMPONENTS

■ Mine ■ Transportation Infrastructure ■ Pipeline ■



STAKEHOLDERS

DONLIN GOLD LLC

- Barrick Gold US, Inc
- NovaGold Resources, Inc

LANDOWNERS

Mine Site (ANCSA)

- Calista Corp. (subsurface)
- The Kuskokwim Corp. (surface)

Transportation Infrastructure

- Calista, Kuskokwim, State, City of Bethel

Natural Gas Pipeline Right-of-Way

- State of Alaska (66%)
- Federal – BLM (31%)
- Calista Corp. and Cook Inlet (CIRI)

RESIDENTS (Y-K Region)

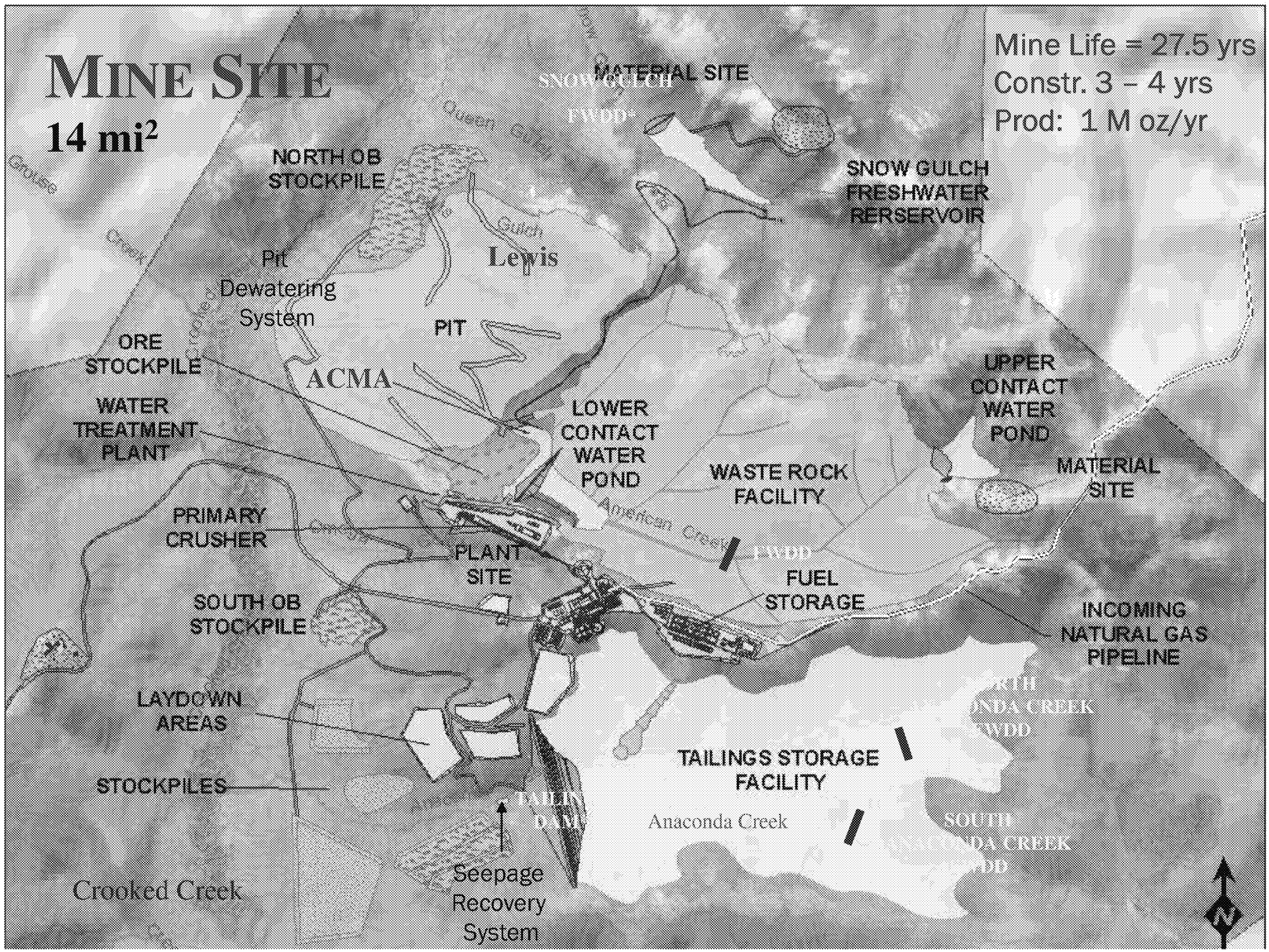
- Alaska Tribes (66)

EIS DEVELOPMENT

- Corps of Engineers – Lead

Cooperating Agencies

- EPA, BLM, PHMSA USFWS
- State – ADNR, ADEC, ADFG
- Tribal Governments (6) Aniak, Crooked Creek Akiak, Chuathbaluk Knik, Napaimute


MINE SITE
14 mi²
Mine Life = 27.5 yrs
Constr. 3 – 4 yrs
Prod: 1 M oz/yr
MATERIAL SITE
SNOW GULCH FWDD
Queen Gulch
NORTH OB STOCKPILE
SNOW GULCH FRESHWATER RERSERVOIR
Gulch
Lewis
Pit Dewatering System
PIT
ORE STOCKPILE
ACMA
UPPER CONTACT WATER POND
WATER TREATMENT PLANT
LOWER CONTACT WATER POND
WASTE ROCK FACILITY
MATERIAL SITE
American Creek
PRIMARY CRUSHER
PLANT SITE
FWDD
FUEL STORAGE
SOUTH OB STOCKPILE
INCOMING NATURAL GAS PIPELINE
LAYDOWN AREAS
TAILINGS STORAGE FACILITY
STOCKPILES
Anaconda Creek
Seepage Recovery System
Crooked Creek
N

NEPA & PSD Air Quality Analysis

- Team:
  - Region 10 (NEPA)
    - Herman Wong, OEA, Meteorology and Dispersion Modeling
    - Zach Hedgpeth, OEA, Emissions and Engineering
    - Alex Fidis, ORC, Stationary Source Determination
  - State of AK (PSD Permit)
    - Alan Schuler, Dispersion Modeler
    - James Renovatio, Emissions and Engineering
    - Barbara Trost, Meteorology
  - Donlin
    - Nick Enos, Permit Lead
    - Air Sciences, Contractor

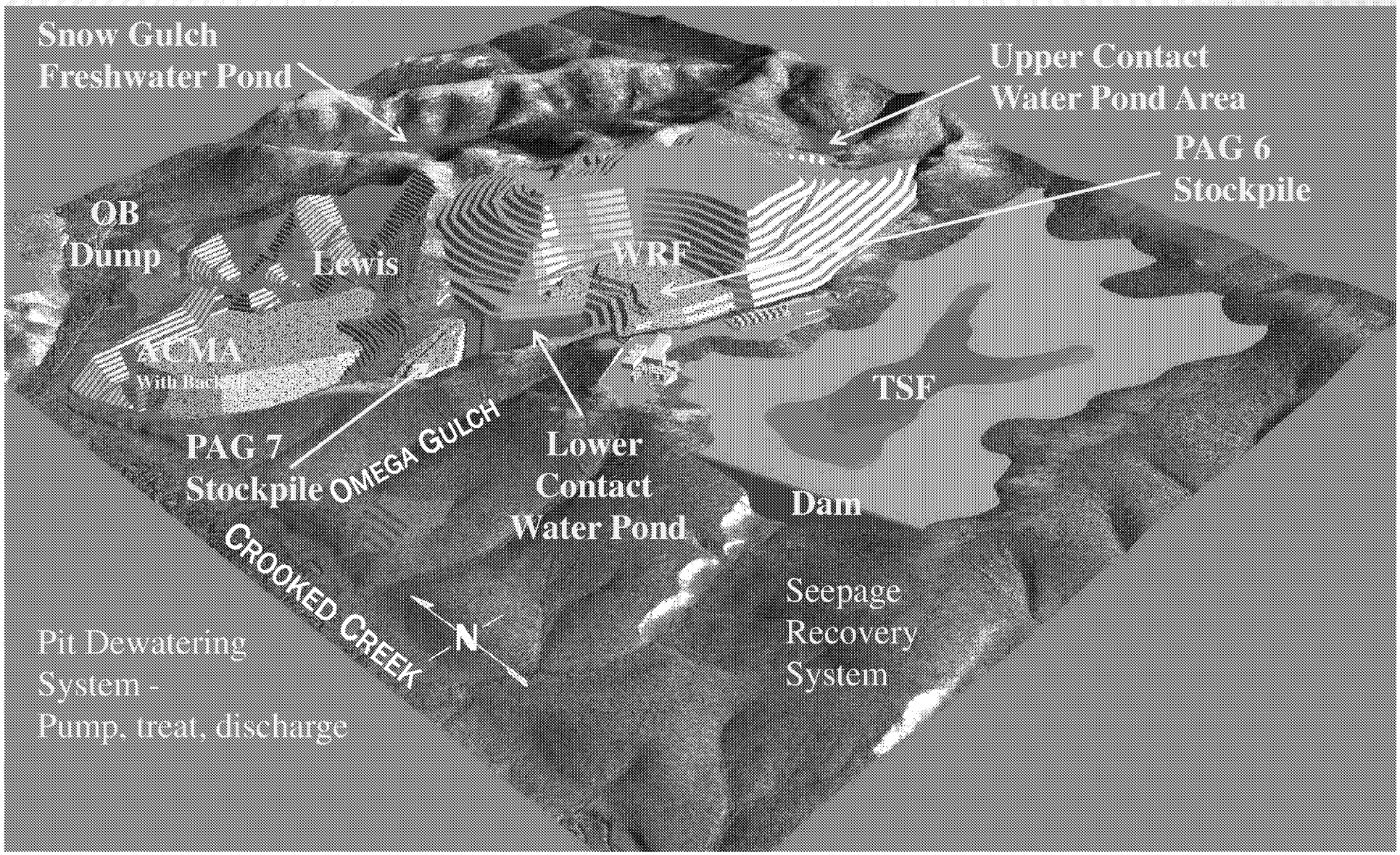
NEPA & PSD Air Quality Analysis

- Region 10 coordinate with NPS and FWS
- Meetings in Anchorage and Seattle
  - Region 10, AK and Donlin Team in Attendance
  - Agree that NEPA and PSD Permit Analyses should be similar
  - Identify, discuss and resolve issues related to PSD Permit
  - Resolve issues consistent with laws, regulations and science
- Over 10 issues were resolved since 2006, some requiring Region 10 approval

NEPA & PSD Air Quality Analysis

- Outstanding Issue – Low Wind Speed, u, Beta Option for NAAQS Modeling
  - Approach Region 10 with request to approval use in late summer 2014
  - Model C/H wanted a Section 3.2.2(c), (d) or (e) Demonstration for their Beta Option;
  - Region 10 could not approve because of lack of documentation in the record
  - Donlin Management contacted the Model C/H in late 2014
- Draft Appendix W Release in Mid Summer 2015
- Documentation in docket
- Region 10 should be able to approve

WATER MANAGEMENT

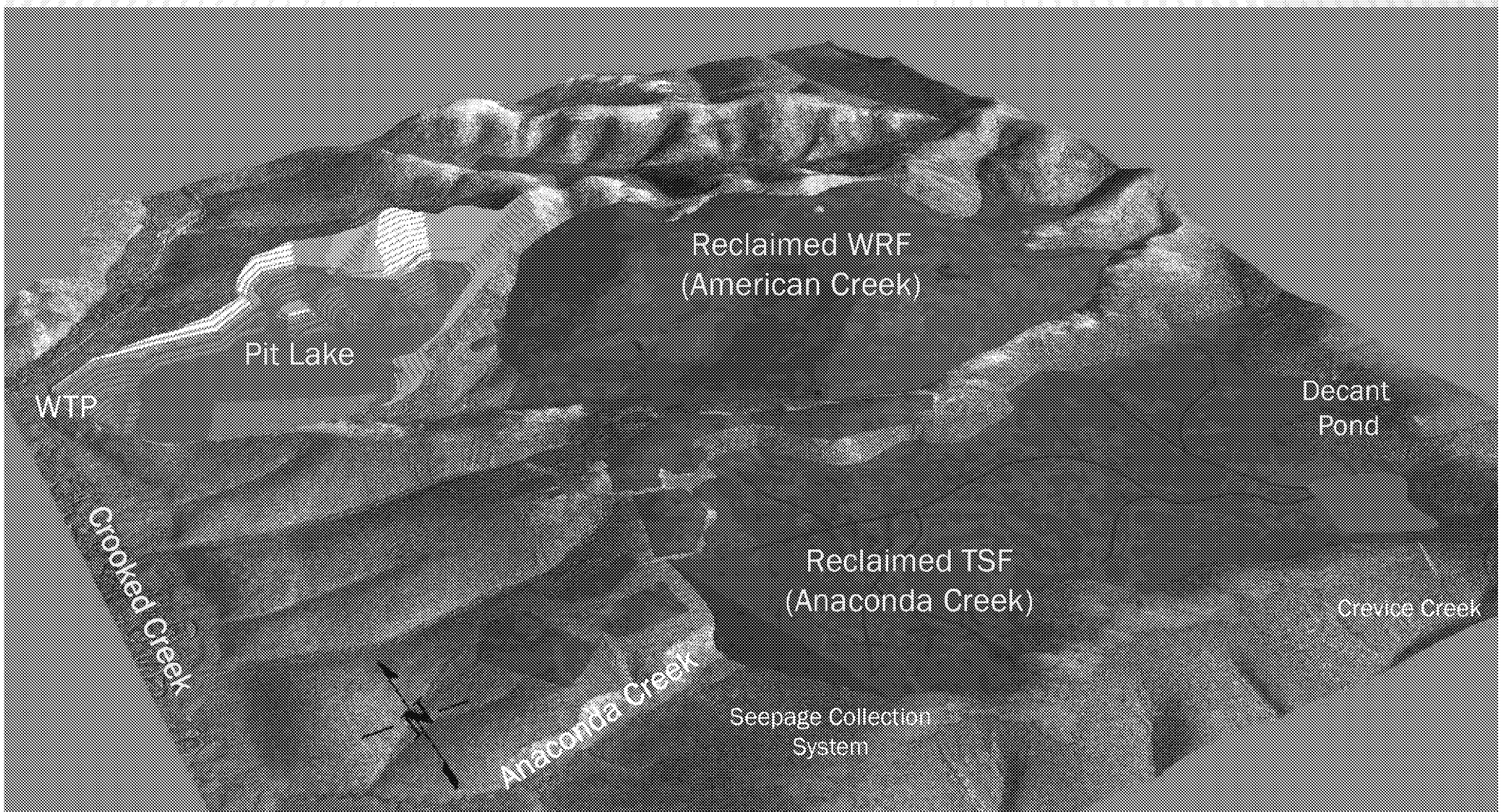


Mine Pit Dewatering

- Lower the ground water table – stability/safety
- Pit Dewatering System – install gw wells
  - used in ore process or pump, treat, discharge
- Cone of depression = 1600 ft depth
- Impacts to Crooked Creek
  - Flow reduced by 30% (winter) /20% (summer)
  - Flow reduced in certain reaches (2 – 3 mi)
  - May go dry under some conditions

Reclamation & Closure

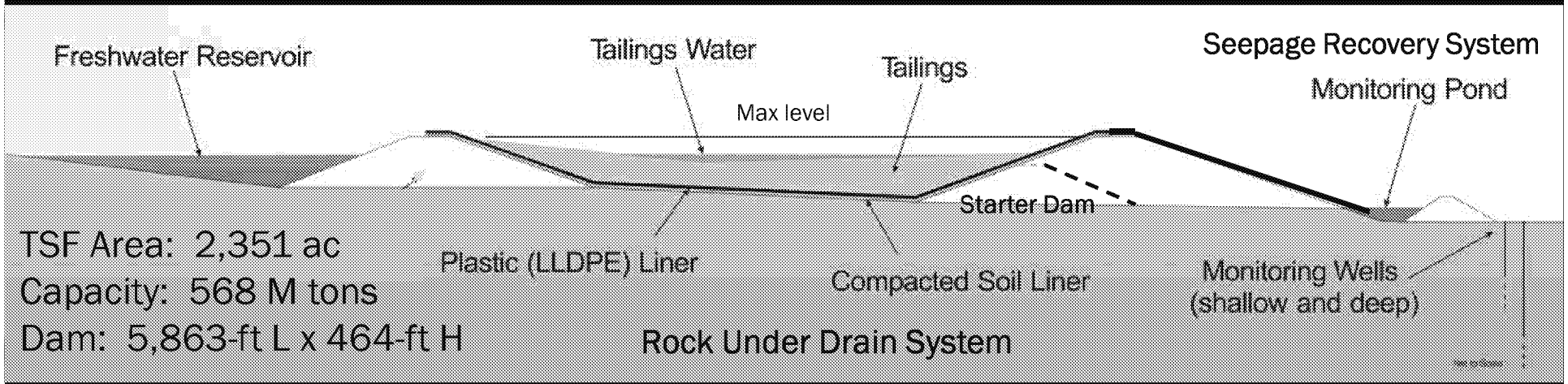
Long-Term Water Monitoring



EIS ALTERNATIVES

1. No Action
2. Doublin Gulch's Proposed Action
3. Reduced Diesel Barging
   3A – LNG Fueled/Powered Haul Trucks (32%)
   3B – Diesel Hybrid
4. Reduced Barging Distance
   Birch Tree Crossing Port (38%)
5. Mine Site
   5A – Dry Stack Tailings
   5D – Treat & Discharge Excess Water
6. Modified Pipeline Alignment
   6A – Dalzell Gorge Route

TAILINGS STORAGE FACILITY



TSF Area: 2,351 ac
Capacity: 568 M tons
Dam: 5,863-ft L x 464-ft H

EIS - SPILL SCENARIO

- Failure Mode Effects Analysis (FMEA)
- Low probability, high consequence event
- 528 M gal (2 M m³) tailings & contaminated water released

1. Partial pipe at the TSF dam & downslope failure
2. Liner rupture leads to sinkhole & outflow of tailings

CHEMICAL MANAGEMENT

Mercury, Cyanide, Tailings, Diesel, Natural Gas, LNG

- 10 Spill Risk Scenarios for Alternatives
- Mercury - 2000 EPA emission standards (NESHAPs)
  - Model mercury air emissions – stacks & fugitive sources
  - Ore processing facility – 7 points (99.6% captured)
    - (1) condense as liquid
    - (2) carbon capture
- Cyanide – International Cyanide Management Code
  - Transported as solid sodium-cyanide briquettes;
  - Ore processing facility: detoxify prior to placement in TSF

Acid Rock Drainage

Categories	Description	Tons	%	Management
NAG	Unlikely to generate ARD	2.8 B	93	WRF
PAG 5	Several decades to onset of ARD	87 M	3	Blended with NAG in WRF
PAG 6	Less than a decade to onset of ARD	135 M	4	Minimize contact with water; Place in isolated cells in WRF Pit backfill at closure*
PAG 7	Less than a few years to onset of ARD	2.6 M	<0.1	Low grade ore stockpile Pit backfill at closure*
	Total	3.0 B		

*At closure, the Open Pit will be the Pit Lake, which will submerge the waste rock.

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KUSKOKWIM RIVER

River Barge Traffic (110 days – June to October)

- 68 annual barge trips ⟶ 122 (avg.)/190 (peak)
- Environmental Effects – wakes and propeller wash
  - Shoreline Erosion (0.01 to 0.21 acres/mile/year)
  - River bed scour, sedimentation, and turbidity
  - Habitat loss and degradation
  - Disturbance/mortality – fish & eggs
- King Salmon fishing closures
- Conflicts – subsistence/commercial fishing
- Displace small vessels
- Barge Stranding – shallower areas upriver
- Spill Risk – diesel fuel, cyanide, etc.

Wetlands Compensatory Mitigation

- Total scale of impacts is unprecedented, but presuming no significant degradation.
- Most of American and Anaconda creeks would be eliminated, potentially significant impacts to Crooked Creek flow.

Project Components	Wetland Impacts (acres) Construction		River/Stream (miles)
	Direct	Indirect	
Mine	5,489 (61%)	1,432	42
Infrastructure	195 (23%)	1,014	2
Pipeline	2,072 (36%)	NA	29
Total:	7,756 (48%)	2,446 (15%)	73

- Wetland Functional Assessment will be used to calculate debits and credits. A 2:1 mitigation ratio applied to the direct impacts would be over 15,000 debits, would require 20,000 acres to offset. Scale of compensation equivalent to project.
- Calista Corporation proposed a mitigation bank that would preserve 20,000 acres. The District did not accept their initial proposal.
- Compensation workshop summer 2015. Mitigation Plan won't be developed until after FEIS issued. Compensation options should be analyzed in EIS.

- **Region 10 Mining Strategy**
  - Disclose FA cost estimates in the EIS
- **Mine/Transportation**
  - Reclamation & Closure = $259 M
  - Long-Term Post Closure Costs = $73 M (Trust Fund)
- **Pipeline**
  - Removal, Abandonment, Reclamation = $10 M
- **State of Alaska & BLM**
  - Manage/Implement FA Instrument
  - Letter of Credit and/or Surety Bond

Financial Assurance

Alaska Mines

Operation	*F.A. Mechanism*	*Total Bond ($ Millions)*
Greens Creek Mine	Surety Bond-- USFS	$30.5 Currently being updated
Red Dog Mine	Letter of Credit	$305.2
Fort Knox Mine	Letter of Credit	$65.8 Currently being updated
True North Mine	Letter of Credit	$3.1
Kensington Project	Surety Bond-- USFS	$28.7
Rock Creek Mine	Letter of Credit	$13.5
Pogo Mine and Road	Letter of Credit	$57.1
Nixon Fork Mine	Surety Bond-- BLM	$6.0
Niblack Project	Letter of Credit	$1.2

Source: Presentation by SOA: Alaska Mine Permitting Process Financial Assurance (January 29, 2014).

EIS SCHEDULE

Preliminary Draft EIS	Apr to Jun 2015
Workshop – Mitigation Measures	Jul 15 – 16, 2015
Notice of Availability DEIS	Late Oct 2015 to Mar 2016
DEIS - Public Meetings	Mid-Dec through Mar 2016
Preliminary Final EIS	Late 2016
Final EIS	Early 2017

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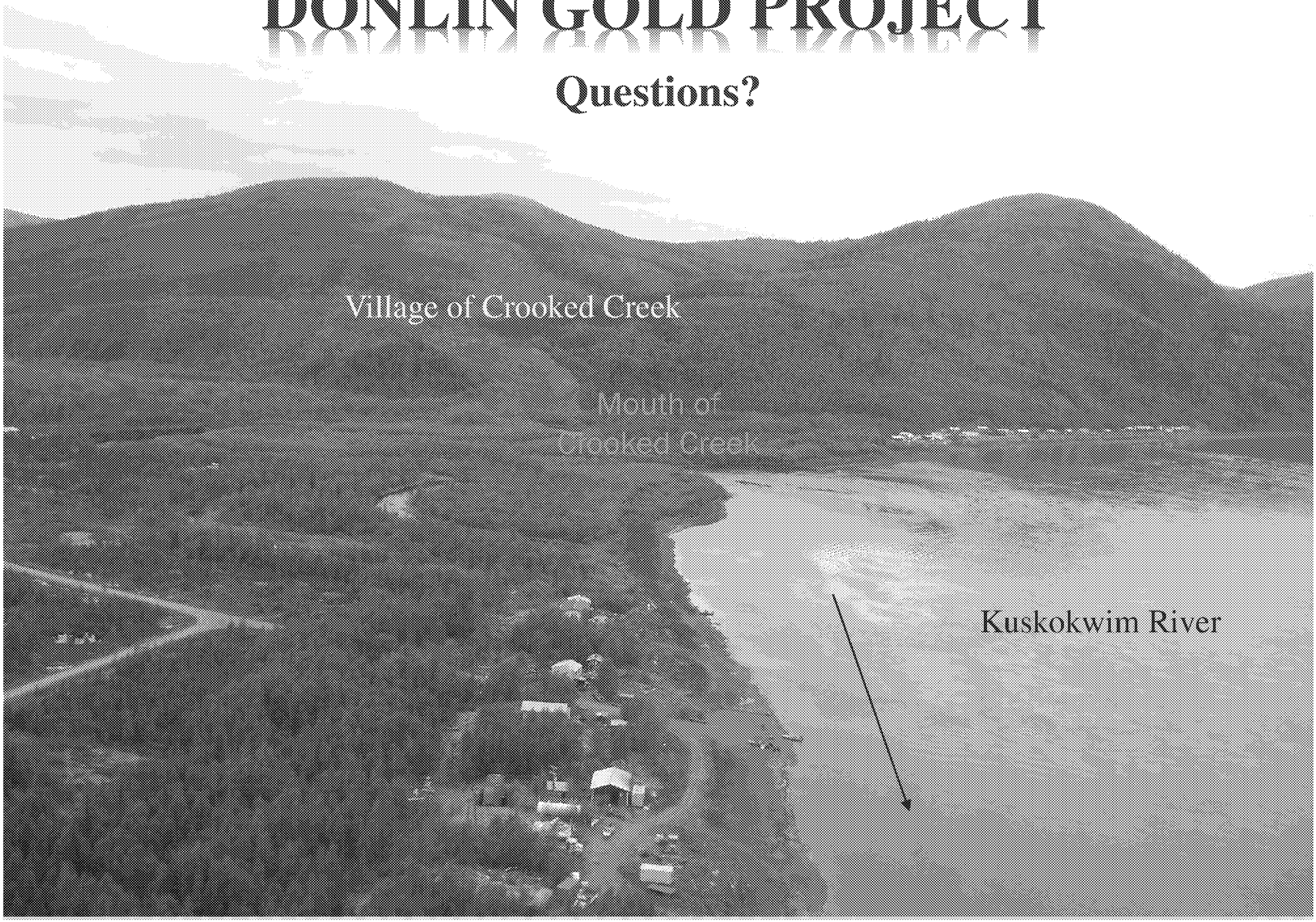
Questions?