Alaska Large Mine Environmental Permitting Process

JOGMEC Presentation
Tokyo, Japan
November 7, 2006

Tom Crafford, Mining Coordinator
tom_crafford@dnr.state.ak.us
Department of Natural Resources
Office of Project Management and Permitting

David Johnson, Technical Engineer
david_johnson@dec.state.ak.us
Department of Environmental Conservation
Division Of Water
MAJOR POINTS

1) Alaska can and does permit mines
2) Alaska has experienced regulators
3) Plan for closure from the beginning
4) Mines must be reclaimed
5) State requires financial assurance
6) Wastewater discharges must meet State water quality standards
State of Alaska Agencies
LARGE MINE PERMITTING TEAM (LMPT)

- Department of Natural Resources (DNR)
  (Lead State agency for mining projects)
  - Office of Project Management and Permitting
  - Division of Mining, Land & Water
  - Office of Habitat Management & Permitting

- Department of Environmental Conservation
  - Division of Water
  - Division of Air Quality
  - Division of Environmental Health

- Department of Fish and Game (ADF&G)

- Department of Transportation & Public Facilities (DOTPF)

- Department of Commerce, Community and Economic Development (DCED)

- Department of Law (DOL)
The Large Mine Permitting Team:

- Provides a coordinated, efficient approach to mine permitting
- Benefits from multi-disciplinary expertise of team members
- Enables the public, agencies, and applicant to view the project as a whole
- Conducts mine inspections and updates permits during operation
State of Alaska Regulatory Requirements

- Plan of Operations (DNR) [not required on private lands]
- Reclamation and Bonding (DNR)
- Dam Safety Certification (DNR)
- Fish Habitat and Fishway Permits (DNR)
- Solid Waste Permits and Bonding (ADEC)
- Certification of NPDES and ACOE (federal) Permits (ADEC)
- Sewage Treatment System Approval (ADEC)
- Air Quality Permits (ADEC)
- Water Rights (DNR)
- Right of Way/Access (DNR/DOT)
- Cultural Resource Protection (DNR)
- Monitoring Plan (Surface/Groundwater/Wildlife) (DNR/DEC)
- Coastal Zone Consistency Determination (DNR)

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Mines Must be Reclaimed

RECLAMATION PLAN APPROVAL

Issued by DNR

- Minesite must be returned to a stable condition, compatible with the post-mining land use.
- Financial Assurance (bond) must ensure State can do reclamation even if company cannot.
Reclamation Bond is based on a detailed cost estimate.

### Table F.3: Demolition Hourly Labor Wage Rates

<table>
<thead>
<tr>
<th>Description</th>
<th>General Demolition Crew</th>
<th>Mechanical Crew</th>
<th>Heavy Equipment Operator</th>
<th>Electrical Crew</th>
<th>Foreman</th>
<th>Labourer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Hourly Rate - straight time</td>
<td>$29.56</td>
<td>$316.04</td>
<td>$27.77</td>
<td>$30.89</td>
<td>$30.66</td>
<td>$23.43</td>
</tr>
<tr>
<td>Overtime for 50 hour week</td>
<td>10.0%</td>
<td></td>
<td></td>
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<tr>
<td>Adjusted Hourly Base Rate</td>
<td>$29.21</td>
<td>$30.64</td>
<td>$30.55</td>
<td>$33.91</td>
<td>$33.91</td>
<td>$20.77</td>
</tr>
<tr>
<td>Social Security, Medicare, Unemployment, Liability, and Workers’ Comp Insurance</td>
<td>$7.63</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Total Direct Hourly Labor Costs</td>
<td>$40.54</td>
<td>$34.86</td>
<td>$37.18</td>
<td>$41.27</td>
<td>$40.90</td>
<td>$31.37</td>
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</tbody>
</table>

### Table F.2: Hourly Equipment Rates ($)

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Equipment Lease Rate</th>
<th>Maintenance &amp; Fuel</th>
<th>Support &amp; Transport</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excavator 330</td>
<td>31.00</td>
<td></td>
<td></td>
<td>100.00</td>
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<tr>
<td>Excavator 575L</td>
<td>48.00</td>
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<tr>
<td>Excavator 256</td>
<td>31.00</td>
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<tr>
<td>Digger DNIA</td>
<td>73.00</td>
<td></td>
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<tr>
<td>Digger DMP</td>
<td>42.00</td>
<td></td>
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<tr>
<td>DPF Digger</td>
<td>30.00</td>
<td></td>
<td></td>
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<tr>
<td>Grader 16G</td>
<td>34.00</td>
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<tr>
<td>Water Truck</td>
<td>20.00</td>
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<tr>
<td>Tamrock Drill</td>
<td>48.00</td>
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<tr>
<td>Shake Machine</td>
<td>20.00</td>
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<tr>
<td>Pickle Truck</td>
<td>30.00</td>
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<tr>
<td>Re-seeding</td>
<td>15.00</td>
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<tr>
<td>Shear on 375L</td>
<td>65.00</td>
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<tr>
<td>FE Loader 95D</td>
<td>30.00</td>
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<tr>
<td>FE Loader 196F</td>
<td>45.00</td>
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<tr>
<td>FE Loader 82C</td>
<td>62.00</td>
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<tr>
<td>Dump Truck 14Cy</td>
<td>25.00</td>
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<tr>
<td>Self Load Flat Bed</td>
<td>50.00</td>
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<tr>
<td>Low Bed Truck</td>
<td>35.00</td>
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<tr>
<td>Dump Truck 17Cy</td>
<td>31.00</td>
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<tr>
<td>Crane Truck 20T</td>
<td>43.00</td>
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<tr>
<td>Crane Truck 50T</td>
<td>70.00</td>
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<tr>
<td>Track Skidder 22B</td>
<td>50.00</td>
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### POGO: Reclamation Cost Estimate (September 2003)

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
<th>Qty</th>
<th>Unit</th>
<th>Total Direct</th>
<th>Total Indirect</th>
<th>Total Mat</th>
<th>Total Sub</th>
<th>Total Sub Cost</th>
<th>Total Equip</th>
<th>Total Equip Cost</th>
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<tbody>
<tr>
<td>Phase I: Post-Construction</td>
<td>4,988</td>
<td>287,345</td>
<td>12,213</td>
<td>25,490</td>
<td>116,171</td>
<td>485,983</td>
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<tr>
<td>Phase II: Reclamation Concurrent with Mining</td>
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<tr>
<td>A-07 YELLS</td>
<td>1.15</td>
<td>8,294</td>
<td>1,200</td>
<td>0</td>
<td>0</td>
<td>7,494</td>
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<tr>
<td>A-08 GRAVEL PADS</td>
<td>0.08</td>
<td>213.2</td>
<td>800</td>
<td>0</td>
<td>0</td>
<td>47,224</td>
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<tr>
<td>A-12 ROCK PILES</td>
<td>0.05</td>
<td>168,614</td>
<td>0</td>
<td>0</td>
<td>197,764</td>
<td>363,877</td>
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<tr>
<td>A-13 LINERS UNDER ROCK PILES</td>
<td>0.05</td>
<td>35,340</td>
<td>0</td>
<td>0</td>
<td>41,040</td>
<td>75,381</td>
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<td>A-14 PADS UNDER ROCK PILES</td>
<td>0.05</td>
<td>19,996</td>
<td>870</td>
<td>0</td>
<td>0</td>
<td>44,726</td>
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<td>A-15 EXPLOSIVES STORAGE</td>
<td>0.05</td>
<td>233.10</td>
<td>0</td>
<td>0</td>
<td>10,904</td>
<td>34,418</td>
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<tr>
<td>R-01 SURFACE BOREHOLES</td>
<td>2.20</td>
<td>11,400</td>
<td>50,000</td>
<td>0</td>
<td>0</td>
<td>155,320</td>
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<tr>
<td>S-01 WATER QUALITY ASSURANCE</td>
<td>0.00</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Phase II: Reclamation Concurrent with Mining</td>
<td>6,701</td>
<td>386,468</td>
<td>52,970</td>
<td>10,000</td>
<td>329,862</td>
<td>773,241</td>
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</tr>
</tbody>
</table>

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Financial Assurance (Bond)

- Single Bond for combined DNR & DEC requirements
- Generally recalculated every 5 years
- How Much? Kensington is $7.3 million, Greens Creek is $26.2 million
- What Mechanism? Most are Letters of Credit.
- Trust Fund allowed for long-term obligations
- Applies equally to US and non-US corporations
Dam Safety Certification

Issued by DNR

- All dams (tailings and water storage) must be designed to State standards & Hazard classification
- Seismic standards
- Financial Assurance for long term care and maintenance
Fish Habitat & Fishway Permits

Issued by DNR

- To protect fish & wildlife and habitats in cataloged anadromous (salmon) streams
- To ensure fish passage in all other resident fish streams

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ADEC Role in the Large Mine Permitting Team

- Participates in National Environmental Policy Act (NEPA) scoping process if applicable;
- Participates in public meetings and public hearings;
- Approves baseline data collection plans;
- Participates in the approval of mine operating plans such as:
  - Monitoring Plan
  - Reclamation and Closure Plan
  - Plan of Operations
- Issues environmental permits for large mines;
- Participates in financial responsibility/financial assurance evaluations.

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ADEC MINE PERMITTING

- Division of Water
  - Wastewater Discharge Program

- Division of Environmental Health
  - Solid Waste Program
  - Drinking Water Program
  - Food Safety Program

- Division of Air Quality
  - Air Permitting
ADEC Mission

- AS 46.03.010 Reads:
  - “It is the policy of the state to conserve, improve, and protect its natural resources and environment and control water, land, and air pollution, in order to enhance the health, safety, and welfare of the people of the state and their overall economic and social well being.”
Typical ADEC Permits and Approvals Required at Large Mines

- Wastewater Disposal Permit(s) for discharge of non-domestic and domestic wastewater, including 401 certification of National Pollution Discharge Elimination System (NPDES) permits;
- Air Quality Permits for mine construction and operation;
- Solid Waste Management Permit for tailings and/or waste rock;
- 401 certification of Army Corps of Engineers (ACOE) (404) Permit;
- Additional permits/approvals may include: drinking water system, food service permits, garbage disposal, fuel storage plan, stormwater pollution prevention plan, etc.
ADEC Wastewater Discharge Permit

- State issued permit(s)
  - Domestic and non-domestic
- State certified federal permits
Typical Water Quality Monitoring Required in ADEC Large Mine Permits

- **At No-discharge facilities:**
  - Groundwater and surface water monitoring to ensure that a permitted facility is operating as no-discharge (chemical and physical);
  - Tailings impoundment water monitoring;
  - Process water monitoring;
  - Tailings solids monitoring;
  - Waste rock monitoring;

- **At Discharging Facilities:**
  - All of the above monitoring;
  - Upstream and downstream receiving water monitoring;
  - Biological monitoring;
A Solid Waste Disposal Permit is required for a mining operation if:

- The tailings from hard rock or placer mining have been amalgamated or chemically treated, or is not otherwise exempt from the regulations;
- There is an environmental problem associated with the management of the waste or materials;
- The waste material poses a threat to public health, safety, or welfare or to the environment;
- The waste material is being managed in a manner that causes a nuisance
Solid Waste Permit Exemptions

- Waste rock from a mining operation (if it doesn’t cause problems as previously mentioned)
- Tailings from placer mining that have not been amalgamated or chemically treated.
- Mining waste regulated by the Federal Surface Mining Control Act of 1977 and by the Alaska Surface Coal Mining Control and Reclamation Act (AS 27.21)
- Other exemptions:
  - Treatment works
  - Storage of small quantities
  - Contaminated site cleanup projects
  - Facilities under a hazardous waste permit
  - Ore beneficiation fluids for reuse
  - Other
Integrated ADEC Waste Management Permits

- Alaska’s Solid Waste Regulations (18 AAC 60) allow other ADEC (State) permits to be “rolled” into one integrated permit covering:
  - Solid Waste
  - Air Quality
  - Wastewater Discharge and Water Quality
ADEC Air Quality Permits

- Emissions Sources (eg. power plants)
- Road Dust
- Mill or Plant Emissions
Types of Air Permits

- **Pre-Construction Permit** (Clean Air Act Title I permit): must be acquired before purchasing and constructing
  - Minor source permit
  - Major new source permit

- **Operating Permit** (Clean Air Act Title V permit): apply within one year after start-up
  - Purpose: comprehensive inclusion of all air obligations; establish all monitoring and reporting terms after construction phase is completed

- **When To use Both**: adding new sources or modifying operations or sources
Key Factors for On-time Air Permitting

- Plan for up to 2 years of baseline air quality and meteorological data gathering;

- Examine range of power requirements and mine air pollution sources to determine permit types and issues, control methods for sources, possible timing for permit for alternative mine designs;

- Pre-design consultation with DEC to decide if Major (PSD) construction permit is needed;

- Computer modeling can be complex and time consuming: predicts air quality impacts, compliance with ambient standards – shows problems to be resolved;
Key Factors for On-time Air Permitting

- Learn from other permitted mines – review permits and applications for technology and deciding factors to avoid problems up front;

- Understand that permit application may take a year to prepare after baseline monitoring is complete; take the extra time for a thorough and technically accurate application;

- DEC goal is to issue permit within 130 days after complete application;

- Avoid mine design changes after permit application is prepared; and

- Expect public concern and address those concerns before the permit application is filed;
ADEC Contacts

Wastewater Discharge Program
• Sharmon Stambaugh, Program Manager, Anchorage - 907 269-7565
• David Johnson Soldotna - 907 262-5210 ext 238
• Tim Pilon, Fairbanks - 907 451-2136
• Kenwyn George, Juneau - 907 465-5313

Division of Environmental Health
• Solid Waste – Kim Stricklan, Program Manager, Anchorage - 907 269-1099
• Drinking Water – James Weise, Program Manager, Anchorage - 907 269-7647
• Food Safety and Sanitation – Ron Klein, Program Manager, Anchorage - 907 269-7583

Division of Air Quality
• Air Permits Program - John Kuterbach, Program Manager, Juneau - 907 465-5103

DEC email format:
first name_last name@dec.state.ak.us

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Federal Agencies

- US Environmental Protection Agency
- US Army Corps of Engineers
- US Fish and Wildlife Service
- National Marine Fisheries Service
- Bureau of Land Management
- U. S. Forest Service
MAJOR FEDERAL REGULATORY REQUIREMENTS

- US EPA Section 402 NPDES Water Discharge Permit
- US ACOE Section 404 Dredge and Fill Permit
- US ACOE Section 106 Historical and Cultural Resources Protection
- NMFS Threatened and Endangered Species Act Consultation
- NMFS Essential Fish Habitat
- USFWS Threatened and Endangered Species Act Consultation
- USFWS Bald Eagle Protection Act Clearance
- USFWS Migratory Bird Protection
National Environmental Policy Act (NEPA) Process

- Environmental Impact Statement (EIS)
NEPA Process for EIS
A means for considering and evaluating alternatives
Not a permit

5 Components

- Scoping (delineation of issues)
- Draft EIS
- Public Comment
- Final EIS
- Record of Decision (ROD)
NEPA Process For EIS

Commonly 5 to 6 years from initiation of Baseline Studies to Issuance of Permits

- Baseline Studies (~3 yr)
- Public Scoping
- Alternatives Development And Analysis
- Federal Permit Applications/EIS Notice of Intent
- Issuance of Draft EIS & Draft State Permits
- Public Comment (30 days +)
- Evaluation & Response to Comments
- Issuance of Final EIS
- Public Comment, No Action Period (30 days)
- RECORD OF DECISION (ROD)
- ISSUANCE OF PERMITS

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Example: Pogo Mine

Underground Gold Mine near Delta Junction

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Pogo Process

- Agency Discussions and Baseline Studies Initiated in 1997
- EIS Initiated in August 2000
- Public input on Scoping 2000/2001
- Public Review of Draft EIS and Public Meetings, Spring 2003
- Final EIS Completed in October 2003
- State Permits Issued in December 2003

Total Time, 6+ years

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Pogo Baseline Studies

- Surface Water Quality & Quantity
- Groundwater Quality & Quantity
- Meteorology
- Aquatic Life
- Wildlife
- Wetlands
- Socioeconomics
- Cultural Resources
- Subsistence
- Traditional Ecological Knowledge
- Visual Resources
- Noise
- Air Quality
Coordinated State/Federal Process

- Draft State Permits included in Draft EIS for Public Review
Public Participation

- Pre-Application meetings and outreach
- Environmental Impact Statement Process
  - Scoping (meetings, public notice)
  - Draft EIS (meetings, public notice)
  - Final EIS (public notice)
- Tribal Consultation (Government to Government)
- Open Communication (website, meetings, etc)

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Tribal Involvement

Tribes have a special relationship with the Federal Government

- Federal Government to Government Process
- Face to Face Meetings
- Review of Baseline Data
- Review of Draft Permits
- Review of DEIS & FEIS

13 tribes were involved in POGO EIS
Summary

- Make sure that the Company is collecting the right baseline data
- Understand what the issues are (Scoping) as early as possible - Public Process
- “DESIGN FOR CLOSURE”
- Technical review of mine plan and environmental data
- Coordination of public notice, hearings, public comments
- Determine financial requirements for reclamation and closure
- Ensure appropriate monitoring (air, water, reclamation success, etc)
VISIT US AT:

DNR
http://www.dnr.state.ak.us/opmp/
http://www.dnr.state.ak.us/mlw/mining/largemine.htm

DEC
http://www.dec.state.ak.us/air/index.htm
http://www.dec.state.ak.us/water/index.htm

DOMO

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