3/16/10 LUNCH & LEARN: BRIEFING ON ENVIRON-MENTAL...

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Pebble Prospect

Jane Whitsett, Manager Environmental Studies

March 2010

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The Pebble Partnership

A Shared Commitment to Sustainable Development
and Social and Community Responsibility.

Northern Dynasty has delineated one of the world's great orebodies, assembling one of the most extensive environmental databases in the history of resource development.

Anglo American US brings a depth of corporate resources and a successful track record of global leadership in modern mining practices.

www.pebblepartnership.com

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The Pebble Partnership

will be guided by five core principles:

- Pebble will benefit Alaskans
- Pebble will co-exist with healthy fish, wildlife and other valued natural resources
- Pebble will apply the world's best and most advanced science
- Pebble will help build sustainable communities
- At Pebble, we will listen before we act.

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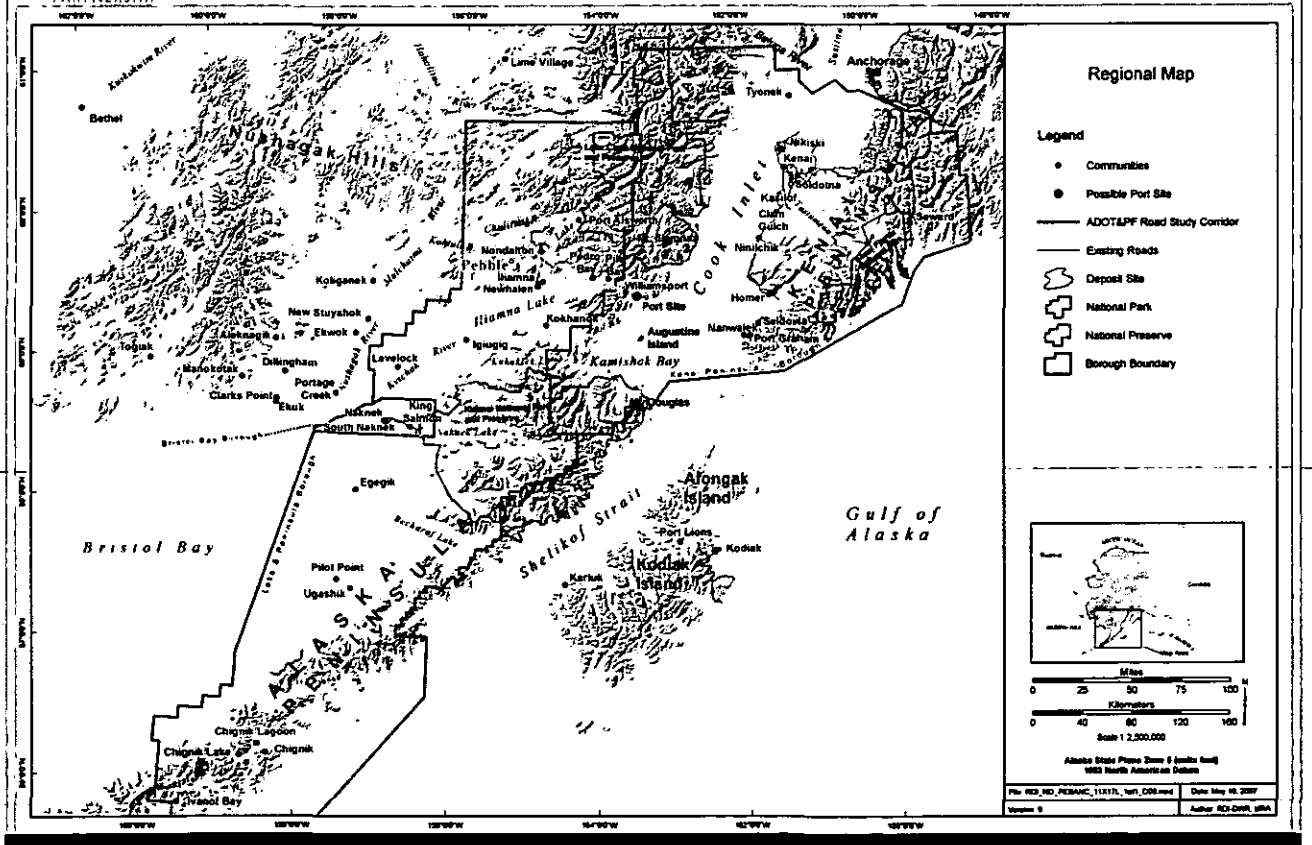
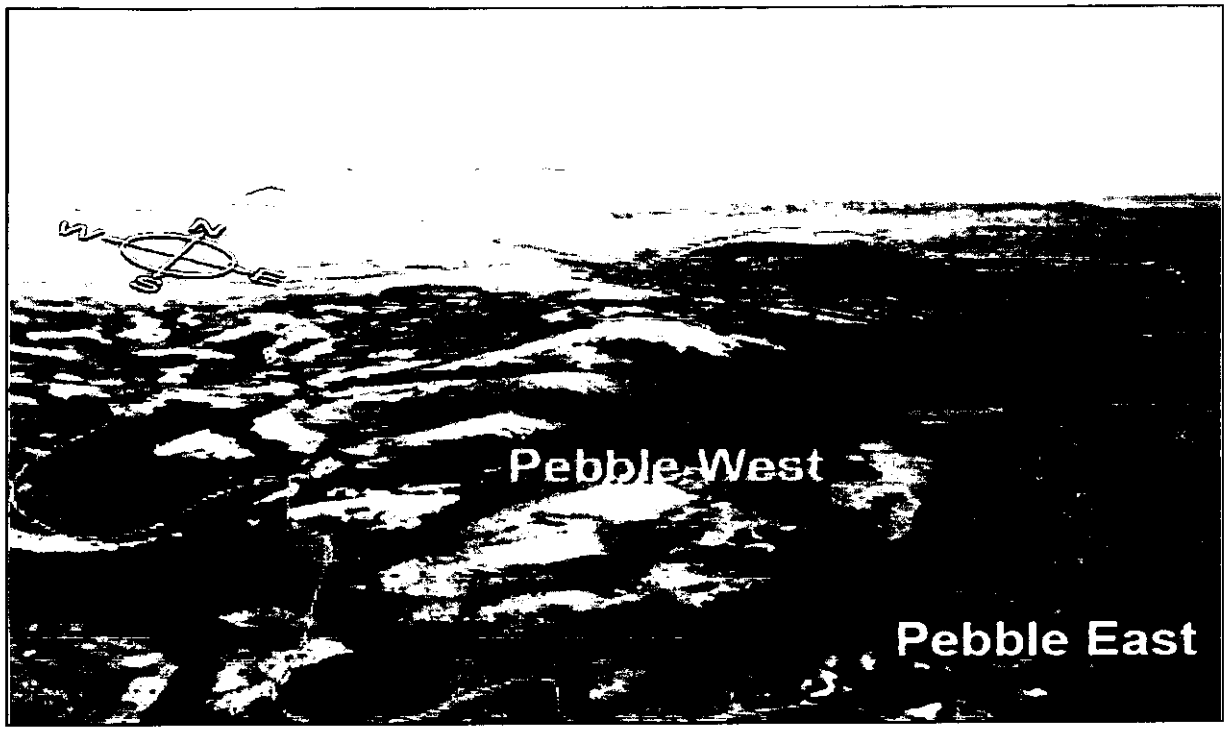
Prospect Location

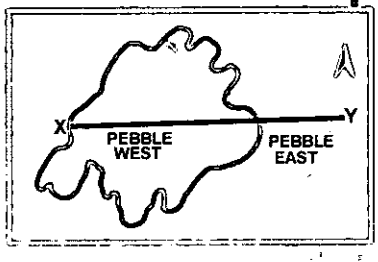


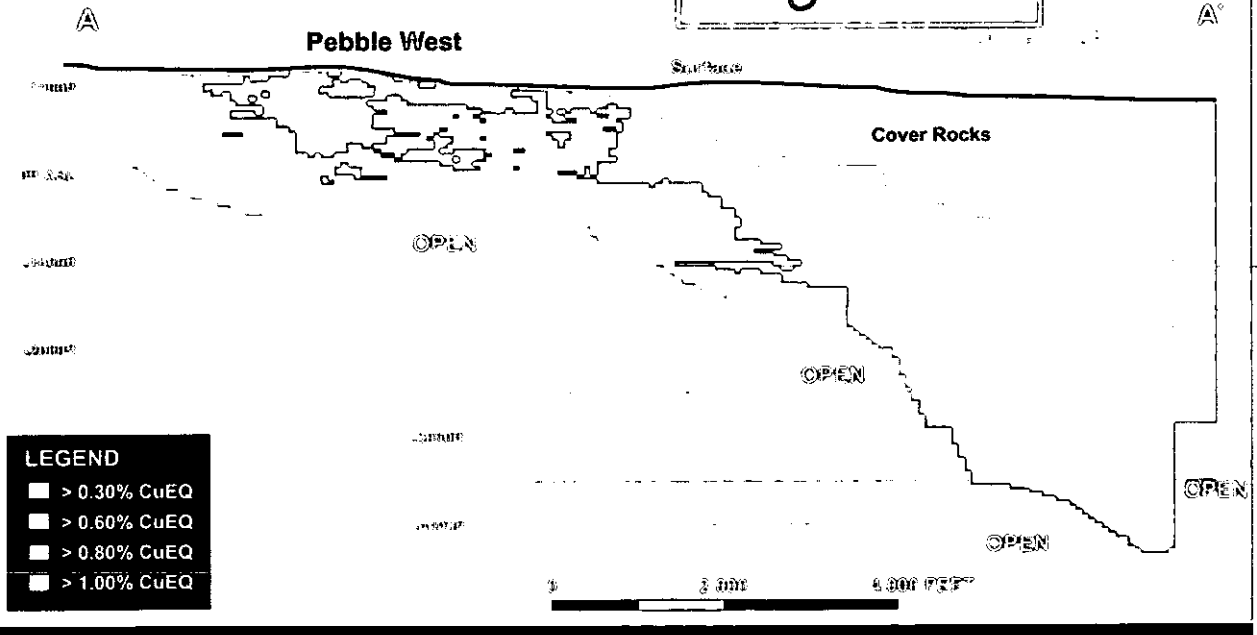
Pebble Prospect – Deposit Topography



Pebble Deposit

Total In-Situ Resource: 72B lbs Copper,
94M ounces Gold &
4.8B lbs Molybdenum.





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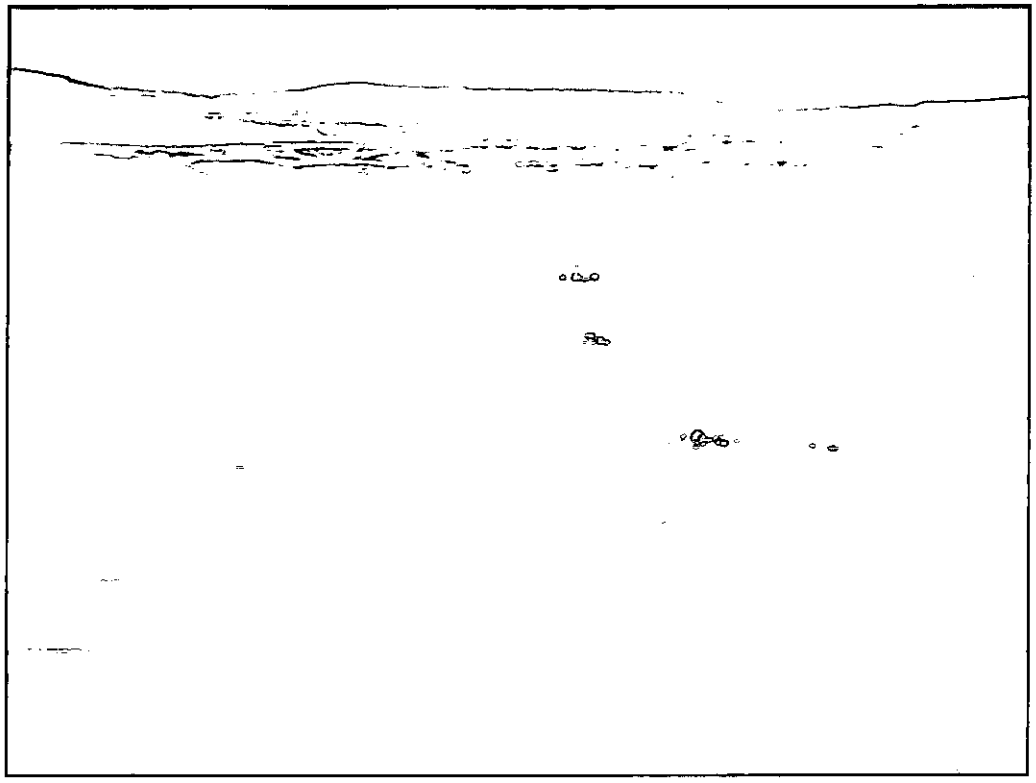
Low Footprint Exploration



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Environmental Baseline Study Objectives

- Characterization of baseline conditions before project initiation

- Input for project engineering and design

- A basis for impact assessment during the National Environmental Policy Act (NEPA) and permitting processes

- A basis for long term monitoring

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Permitting

Agencies involved in permitting large hard rock mines in Alaska:

- AK Department of Natural Resources (lead agency)
- AK Department of Environmental Conservation
- AK Department of Fish and Game
- AK Department of Transportation & Public Facilities
- AK Department of Commerce, Community and Economic Development
- AK Department of Law
- US Environmental Protection Agency
- US Army Corps of Engineers
- US Fish and Wildlife Service
- US National Marine Fisheries Service
- US Bureau of Land Management
- US Forest Service

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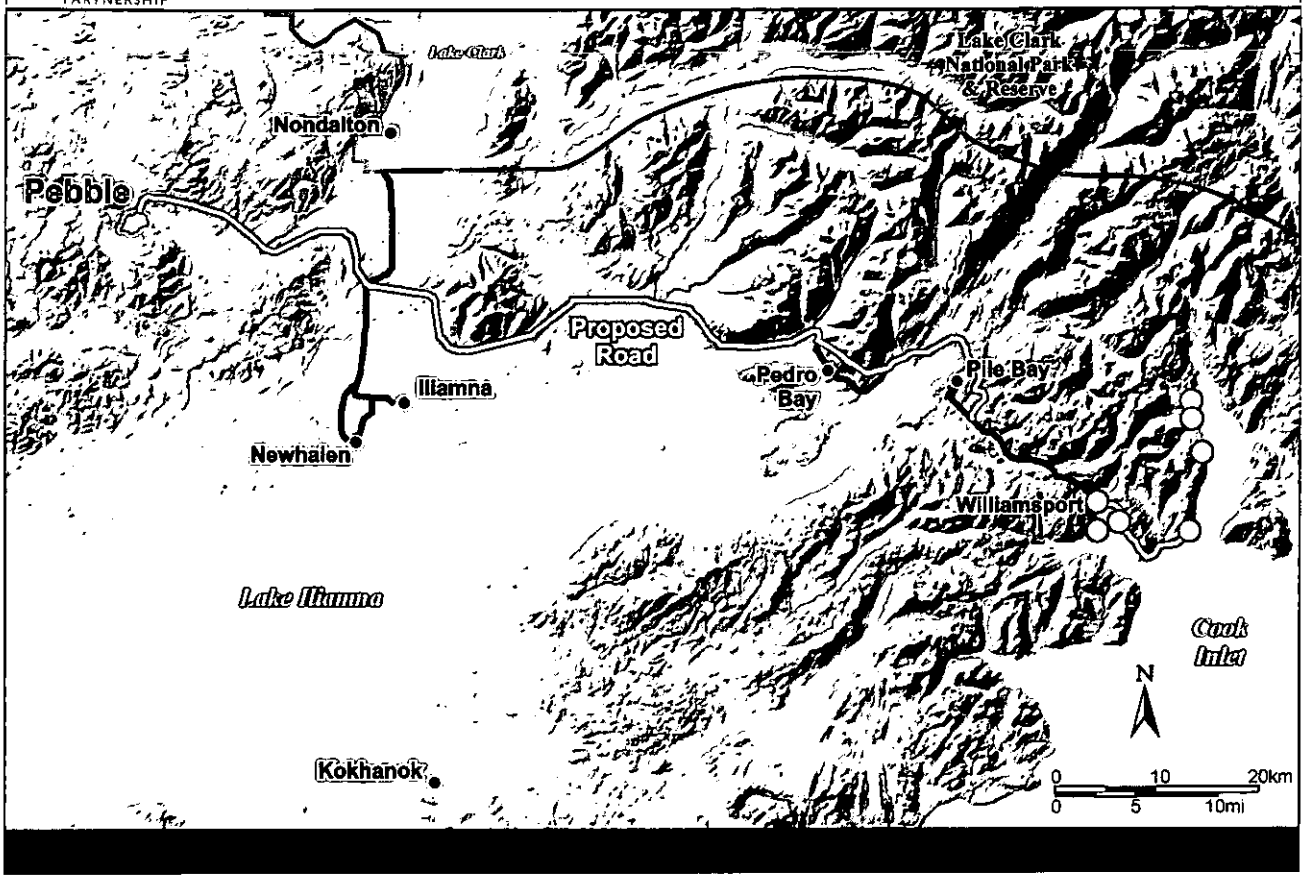
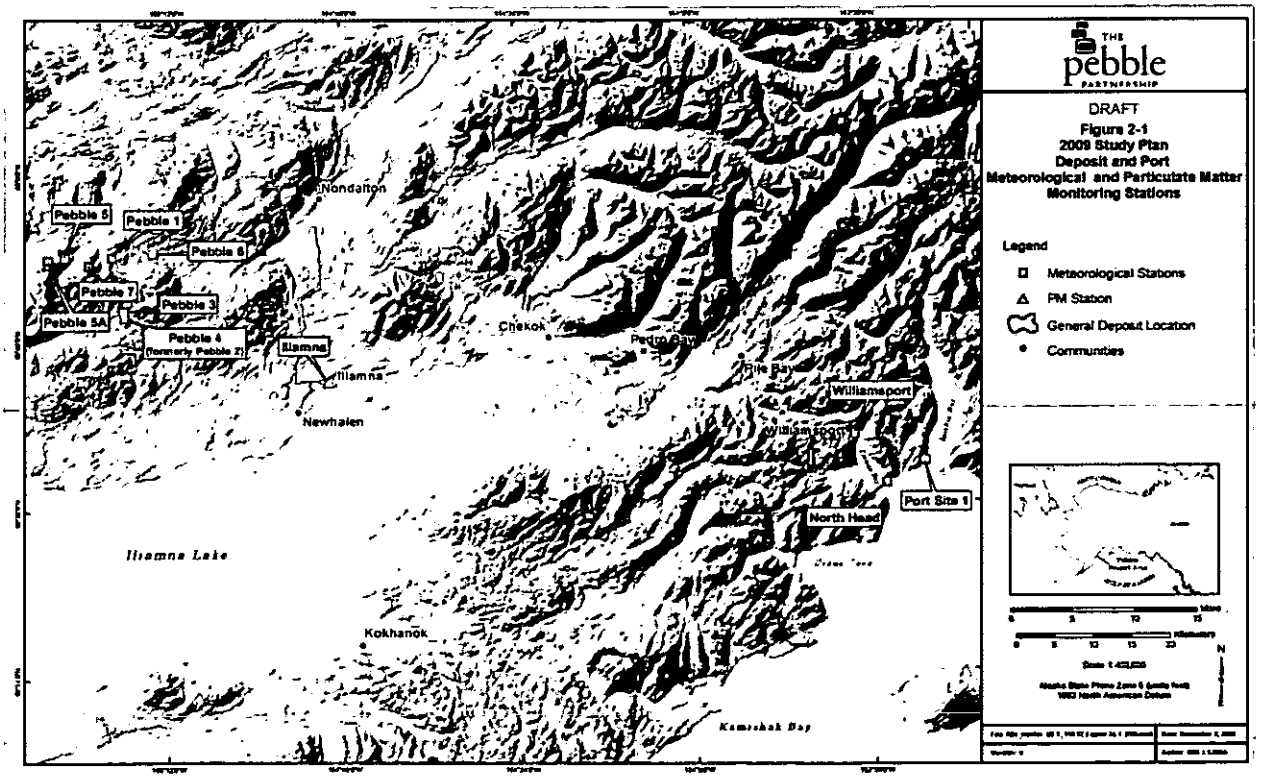
Environmental Baseline Studies

- Surface Water
- Water Quality
- Groundwater
- Geochemistry
- Snow Surveys
- Analytical QA/QC
- Fish & Aquatic Resources
- Macroinvertebrates
- Wetlands
- Trace Elements
- Flow Habitat Study
- Iliamna Lake Study
- Marine
- Wildlife
- Air Quality
- Noise
- Cultural Resources
- Subsistence
- Land Use
- Recreation
- Socioeconomics
- Visual Aesthetics
- Impact assessment & management
- Mine closure & reclamation

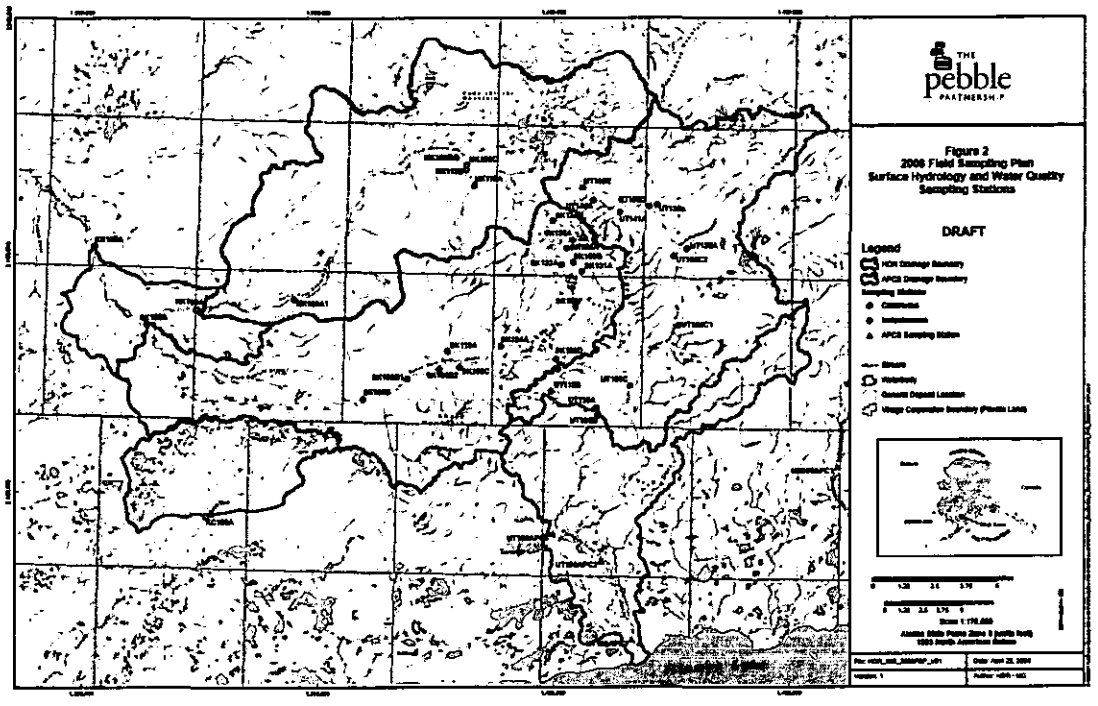
Environmental Baseline Studies Areas



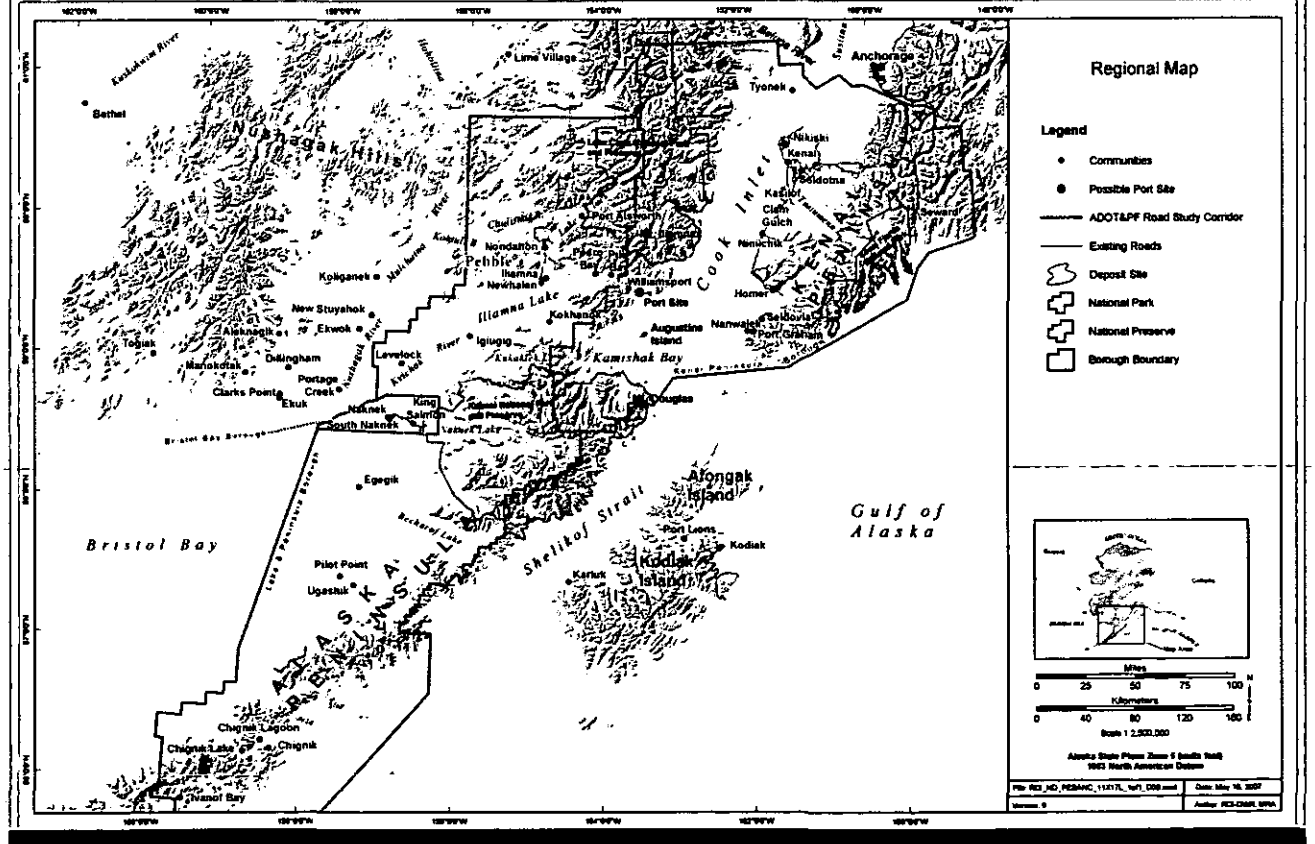
Meteorological/Air Quality Station Locations



Surface Water Quality Sampling



Prospect Location



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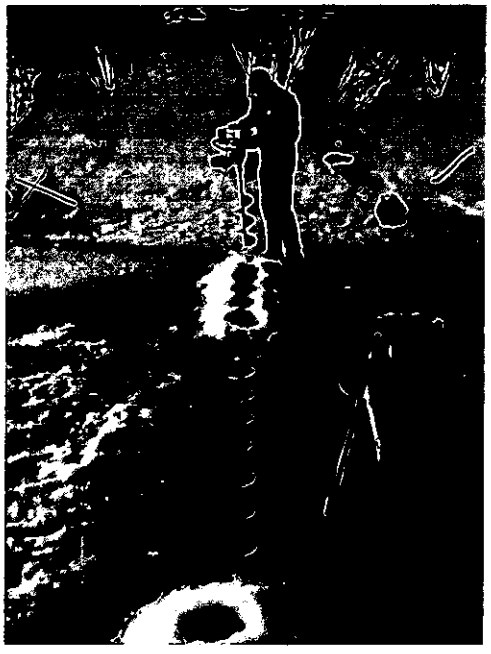
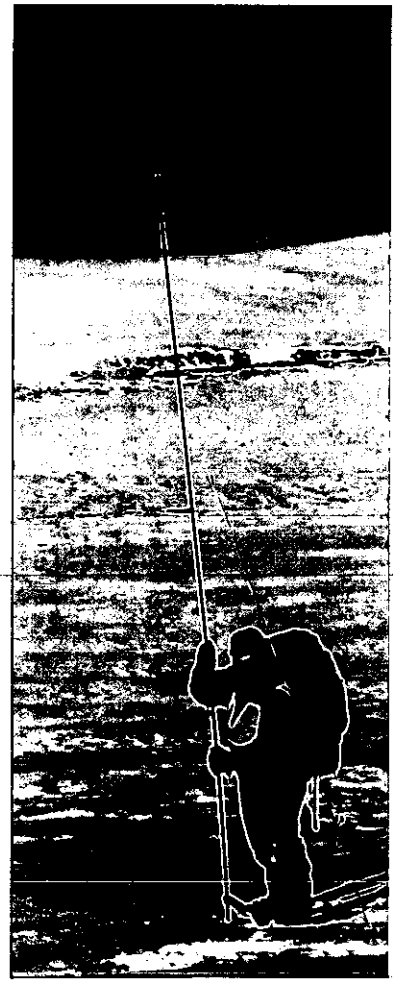
Hydrologic Studies



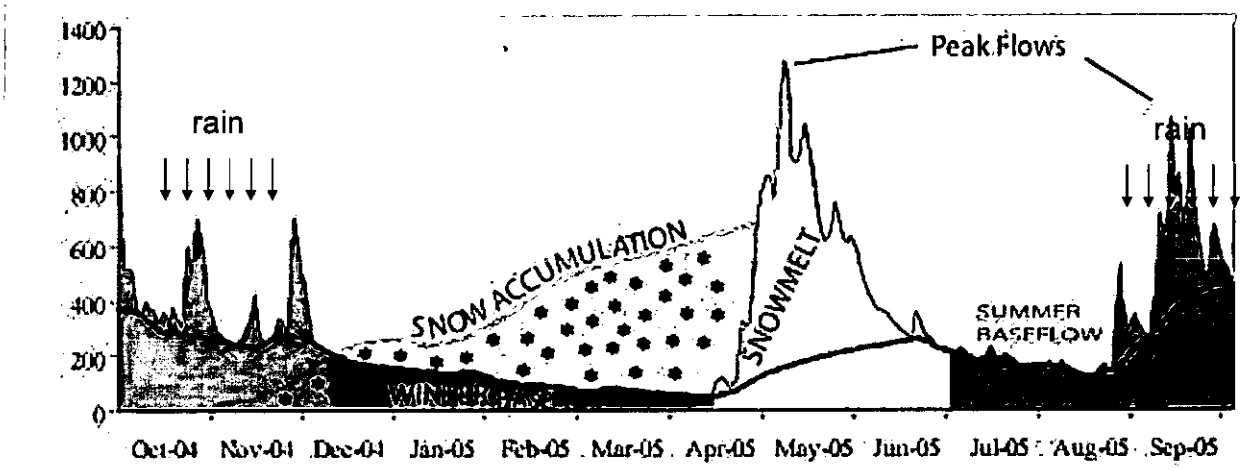


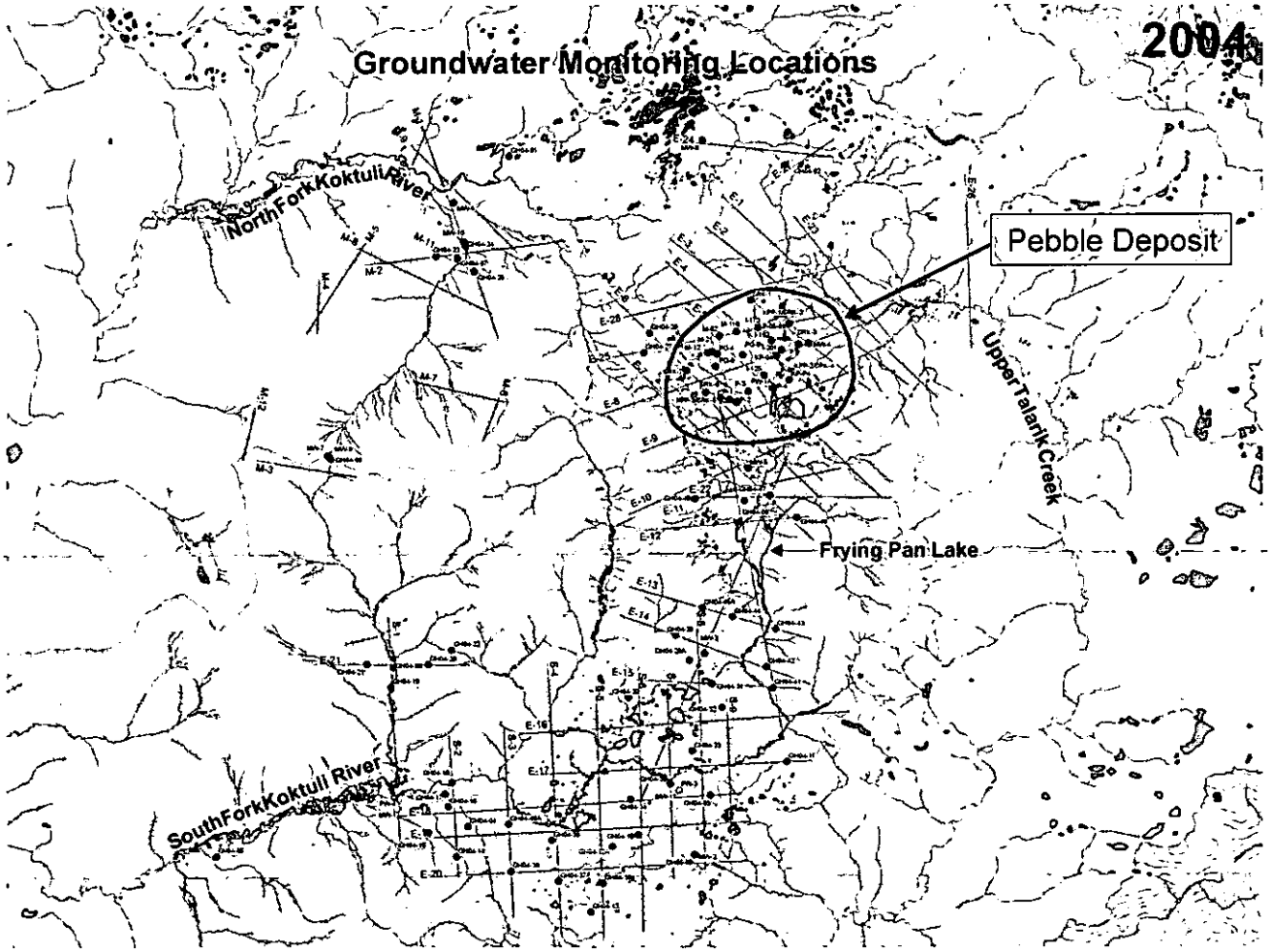
Snow Surveys 2004–2008

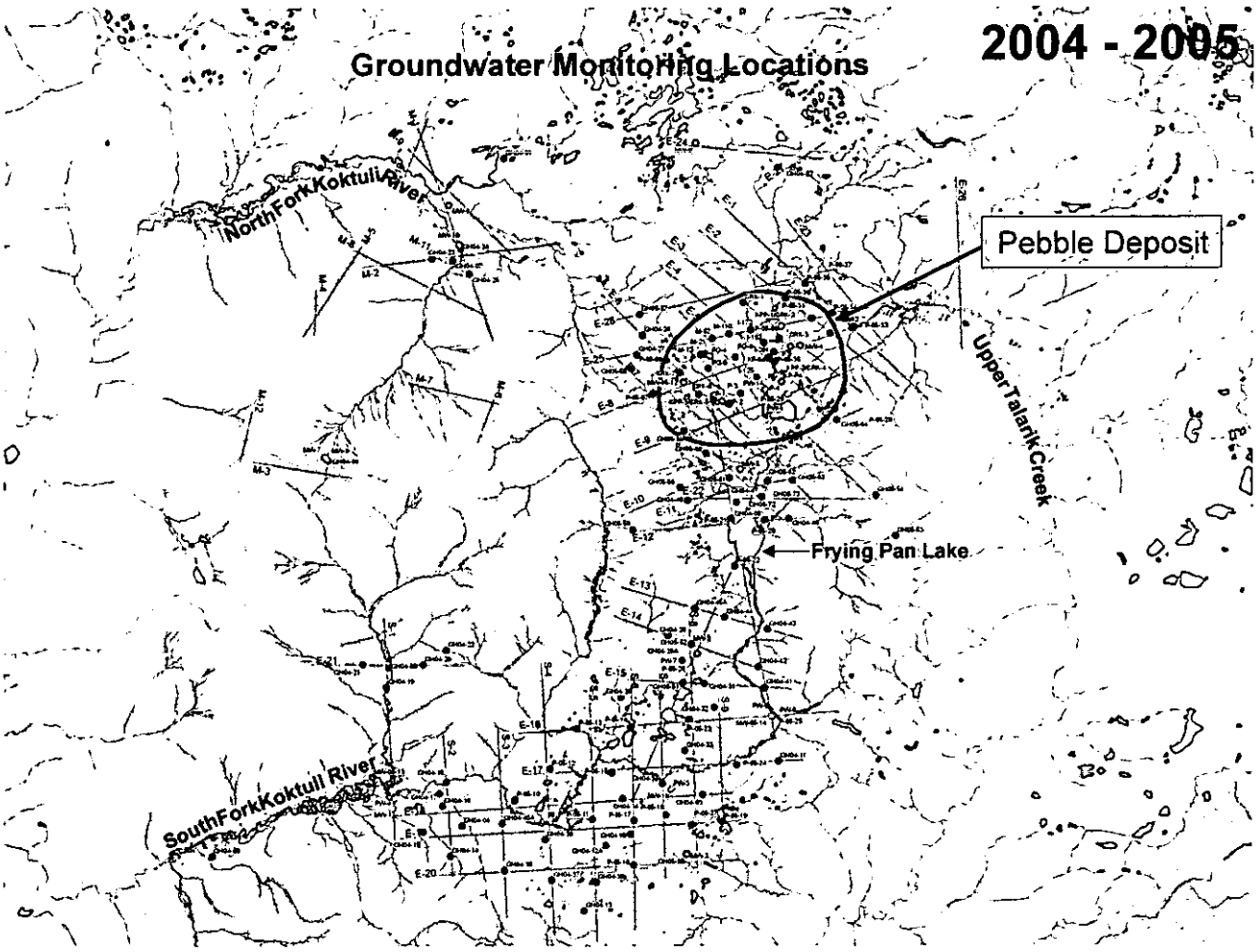
- Critical component for water balance modeling
- Snow cores up to 120 inches extracted and weighed, with snow-water equivalent as high as 46 inches.

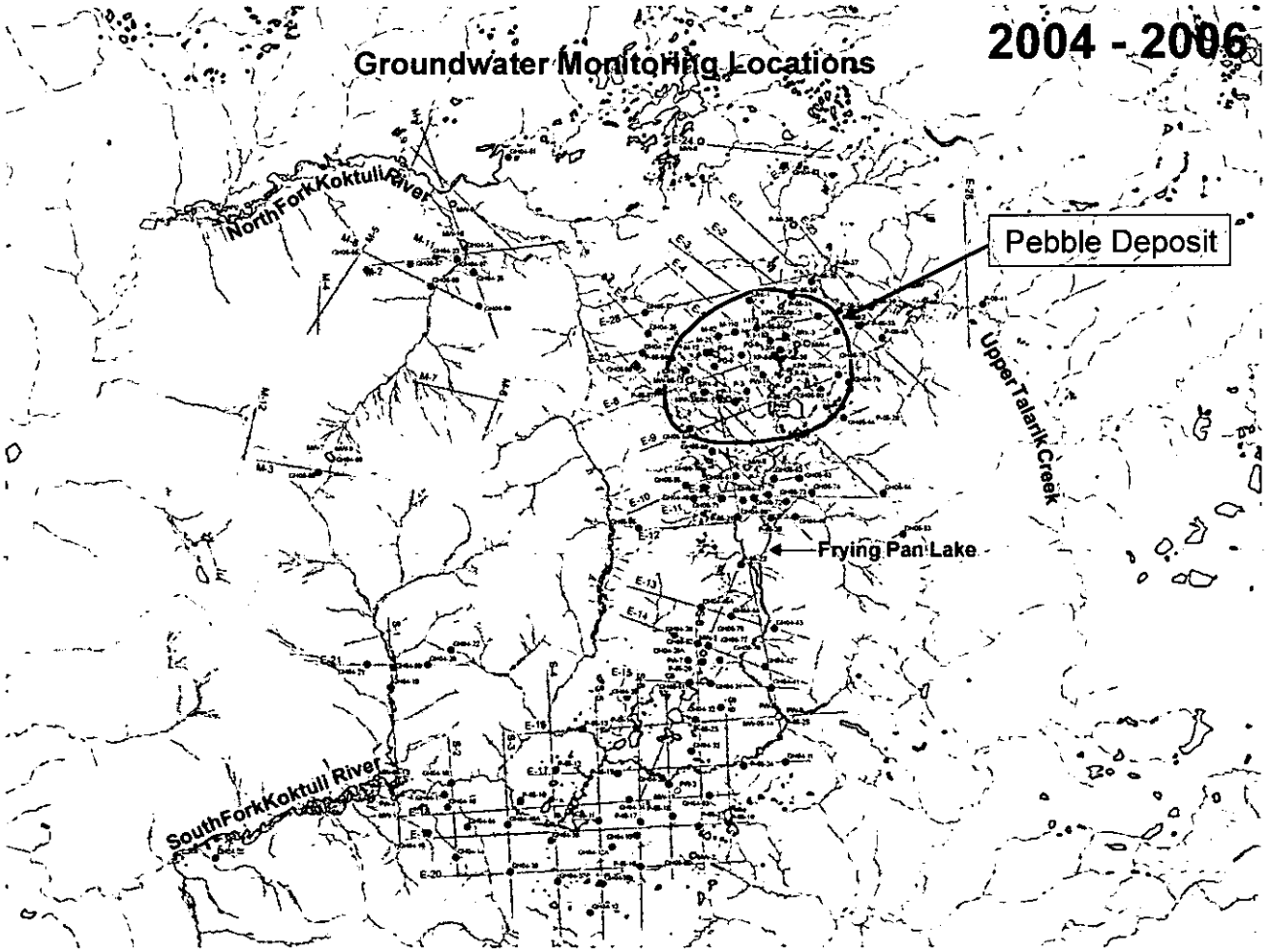
Baseflow Fieldwork

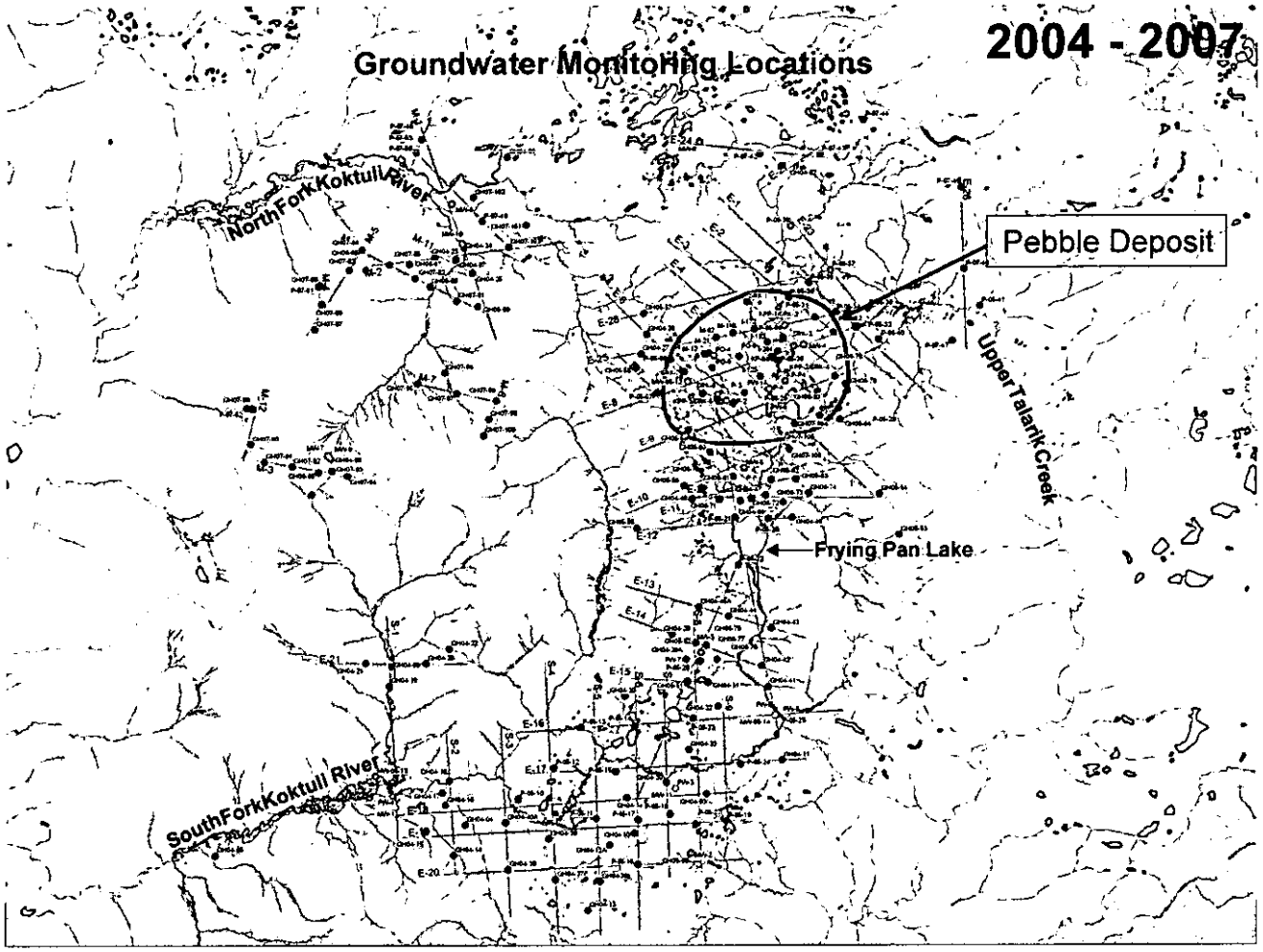
- 41 Stations
- Instantaneous Measurements

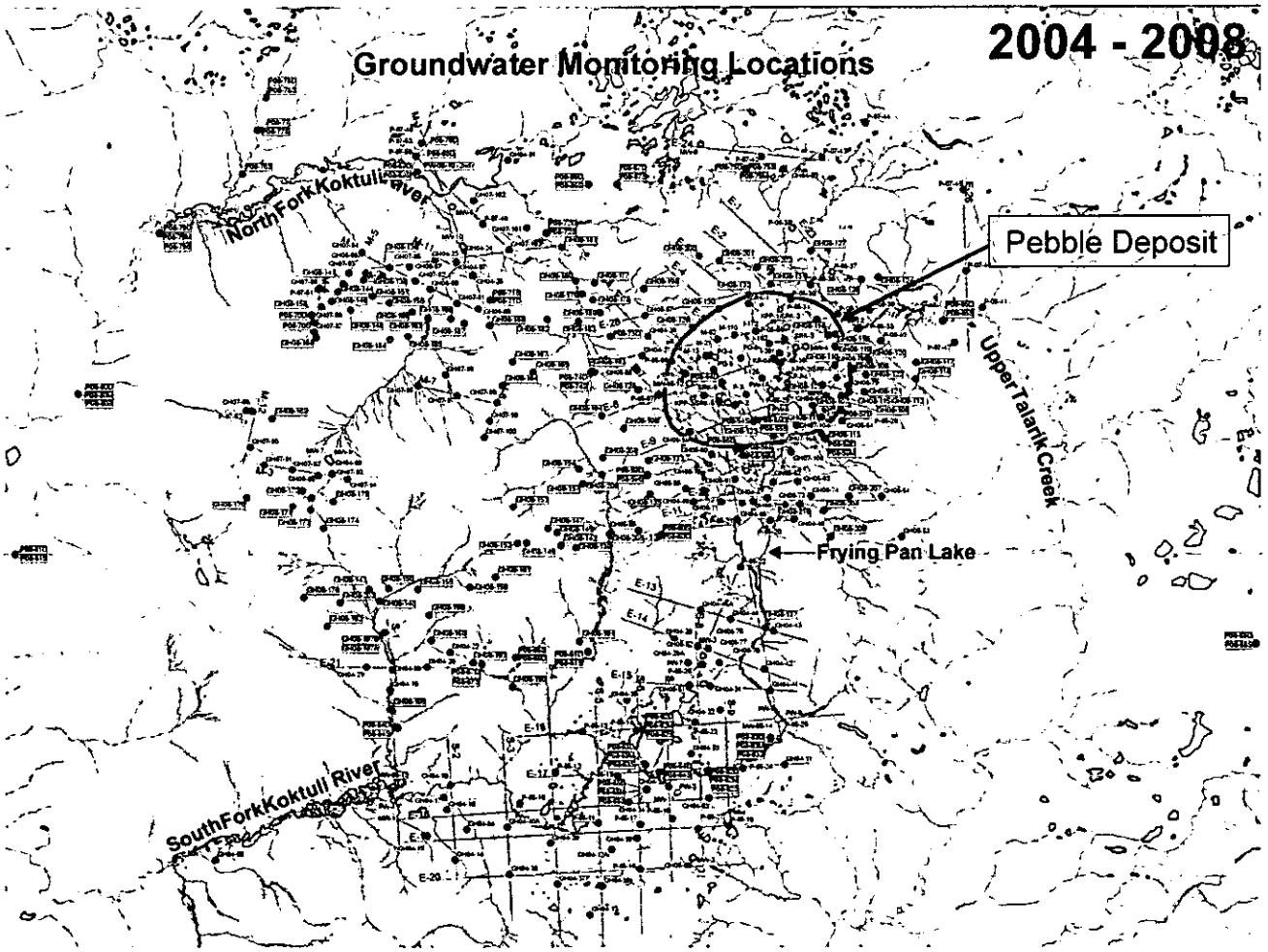





Groundwater Monitoring Locations
2004 - 2005
North Fork Koktuli River
Pebble Deposit
Upper Talarik Creek
Frying Pan Lake
South Fork Koktuli River


Groundwater Monitoring Locations
2004 - 2006
North Fork Koktuli River
Pebble Deposit
Upper Talarik Creek
Frying Pan Lake
South Fork Koktuli River


Groundwater Monitoring Locations
2004 - 2007
North Fork Koktuli River
Pebble Deposit
Upper Talarik Creek
Frying Pan Lake
South Fork Koktuli River


Groundwater Monitoring Locations
2004 - 2008
North Fork Koktuli River
Pebble Deposit
Upper Talarik Creek
Frying Pan Lake
South Fork Koktuli River

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Fish Studies

A wide variety of fish studies are employed to assess:

- Species diversity
- Relative abundance
- Distribution
- Spawning
- Rearing
- Migration
- Escapement
- Habitat use

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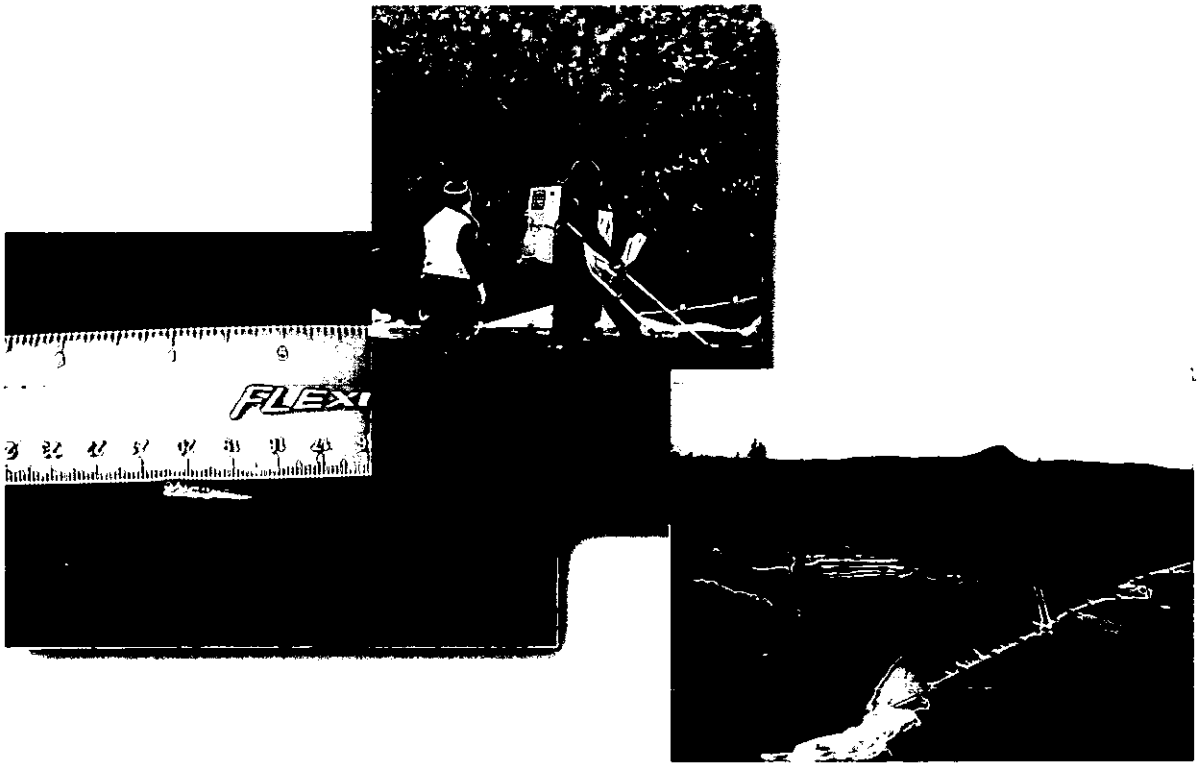
Relative Fish Abundance Surveys



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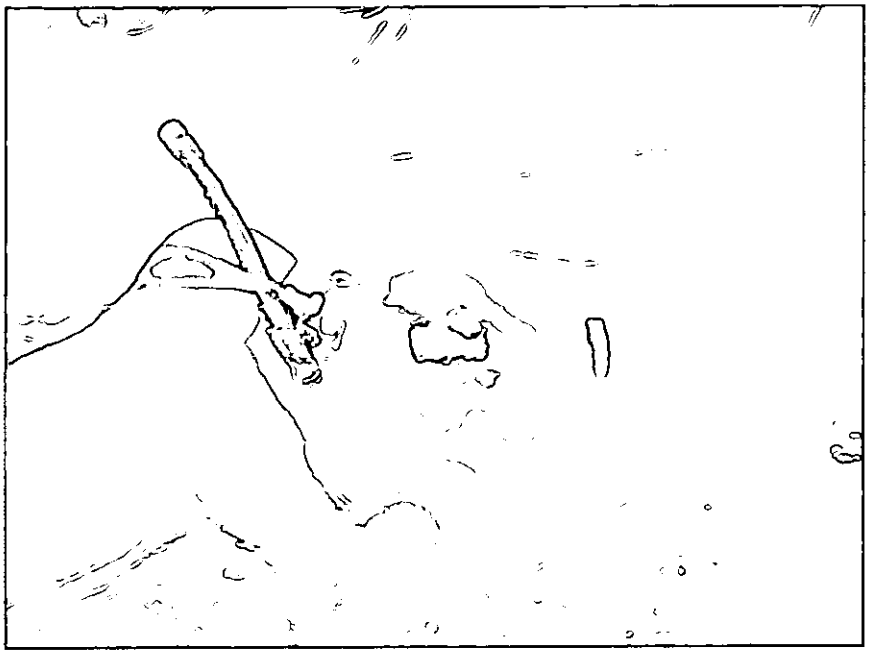
Relative Abundance of Fish Videotaping



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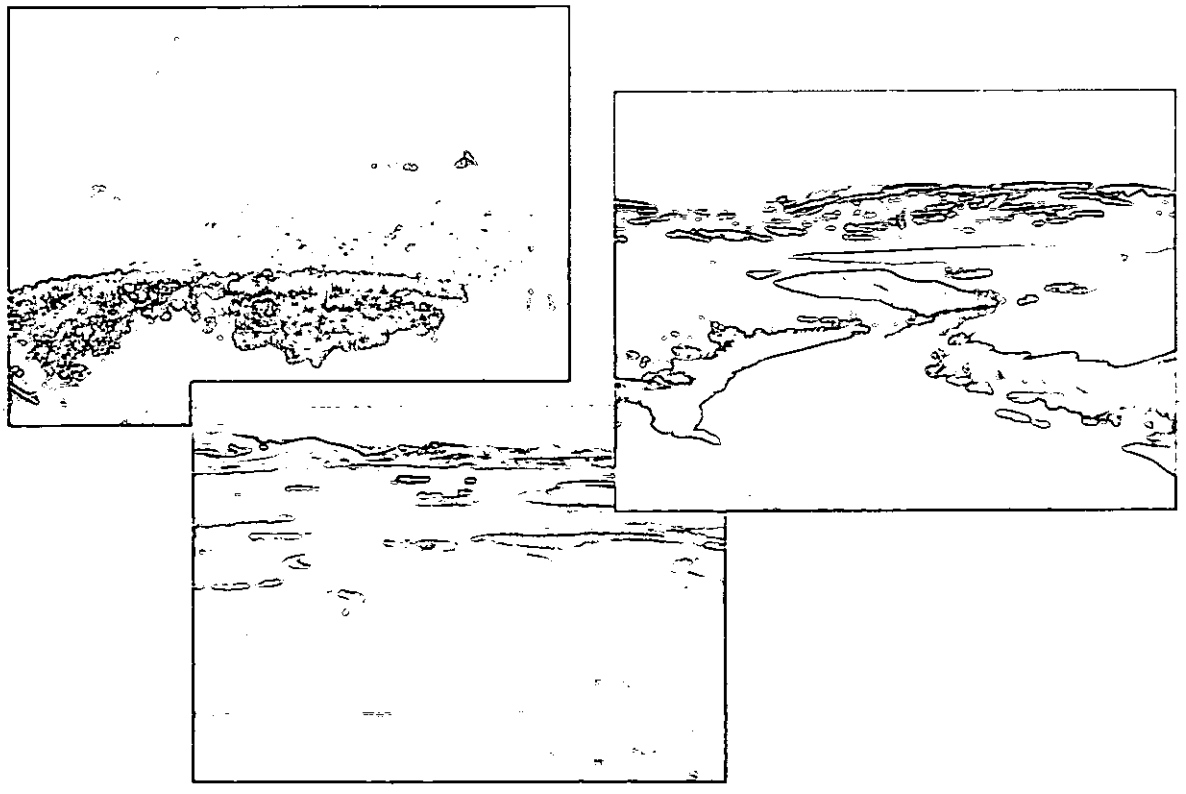
Aerial Spawning Surveys



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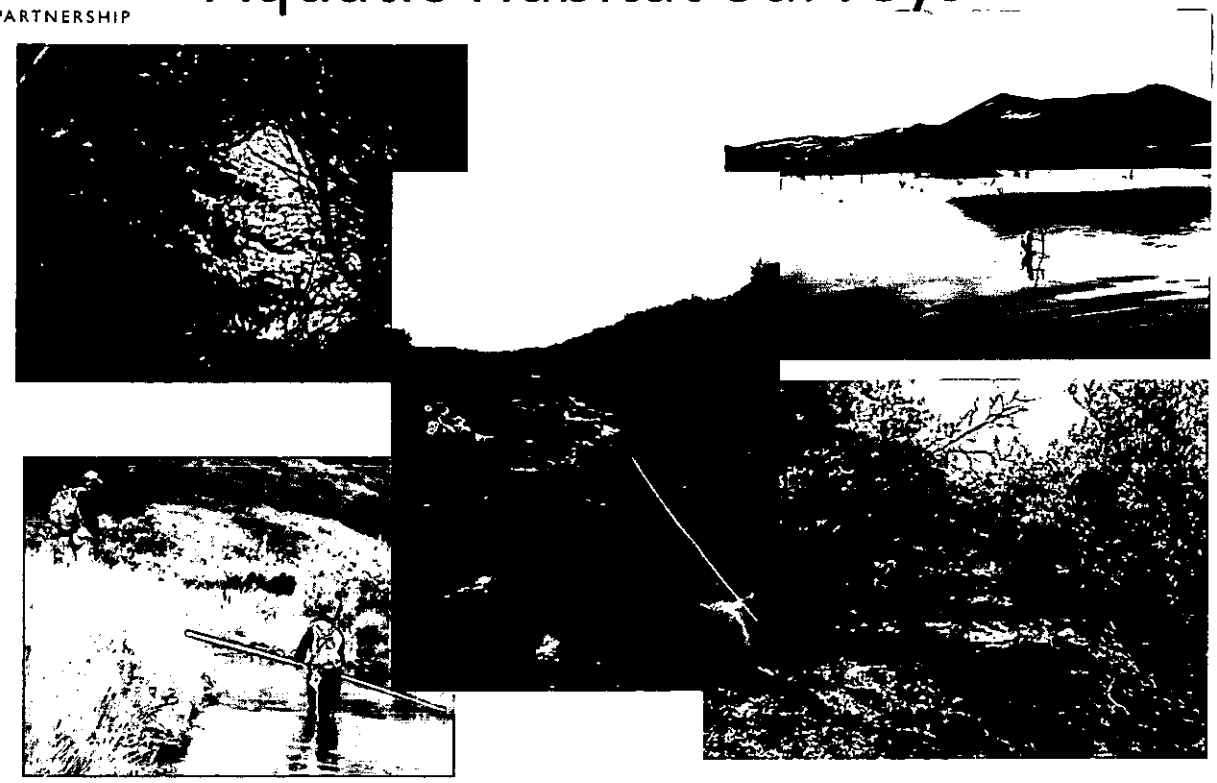
Aquatic Habitat Surveys



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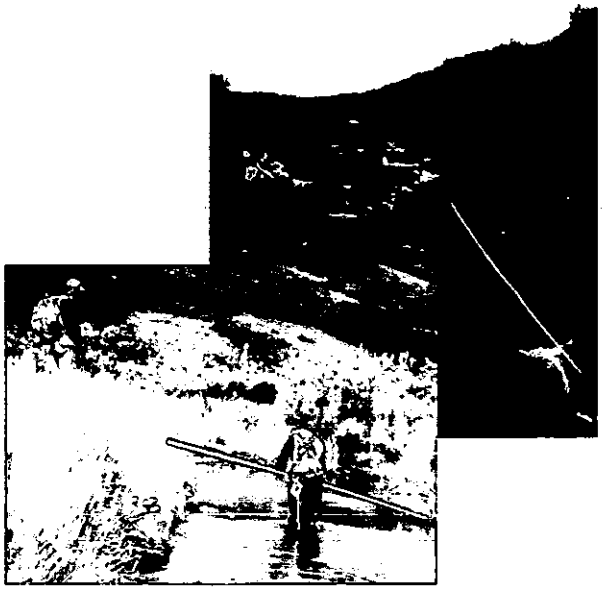
Instream Flow Habitat Modeling

Models include factors such as:

- Water surface elevations
- Water depth
- Discharge
- Velocity
- Substrate
- Channel geometry
- Cover
- Fish presence
- Habitat type:
  - Glide, run, riffle, pool, cascade, island complex



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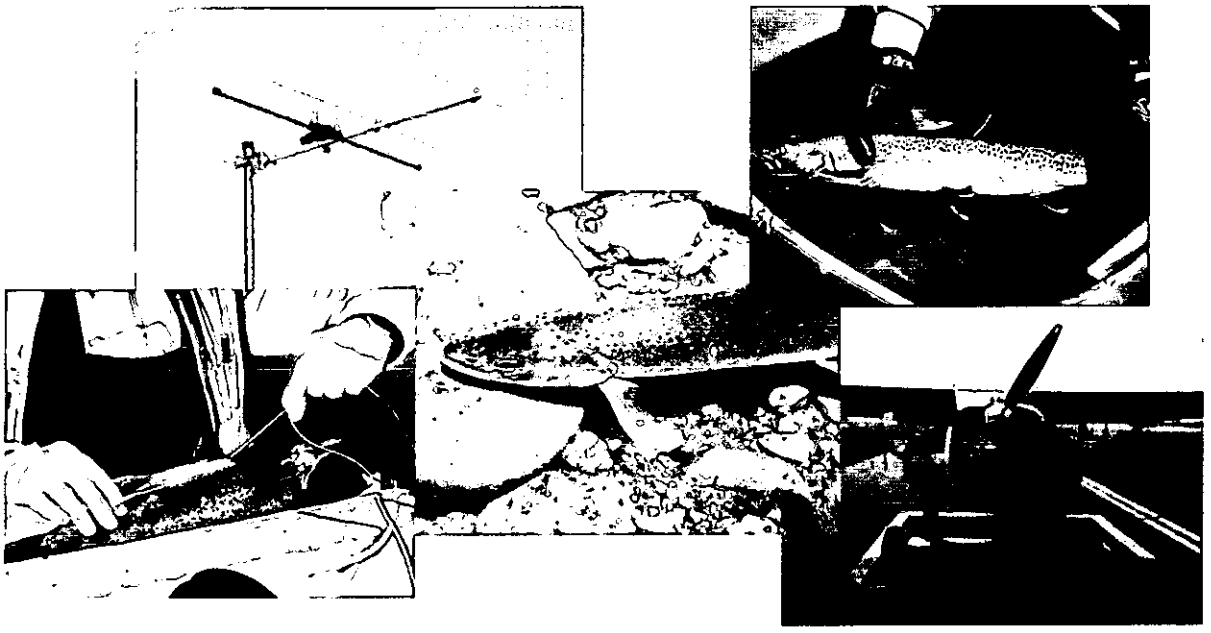
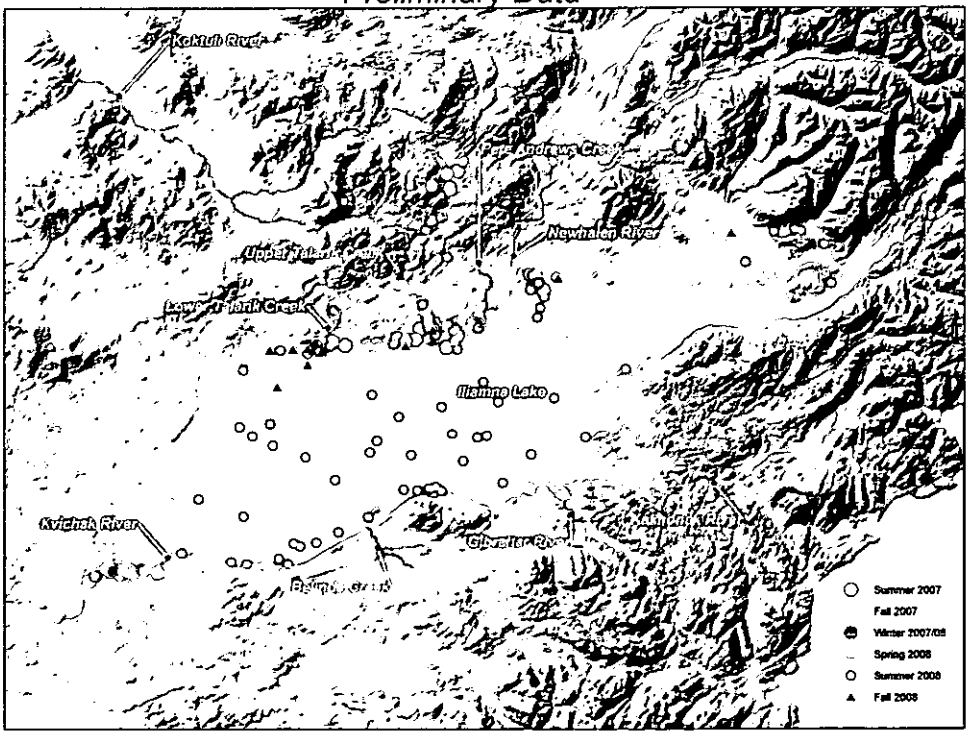
Telemetry Studies



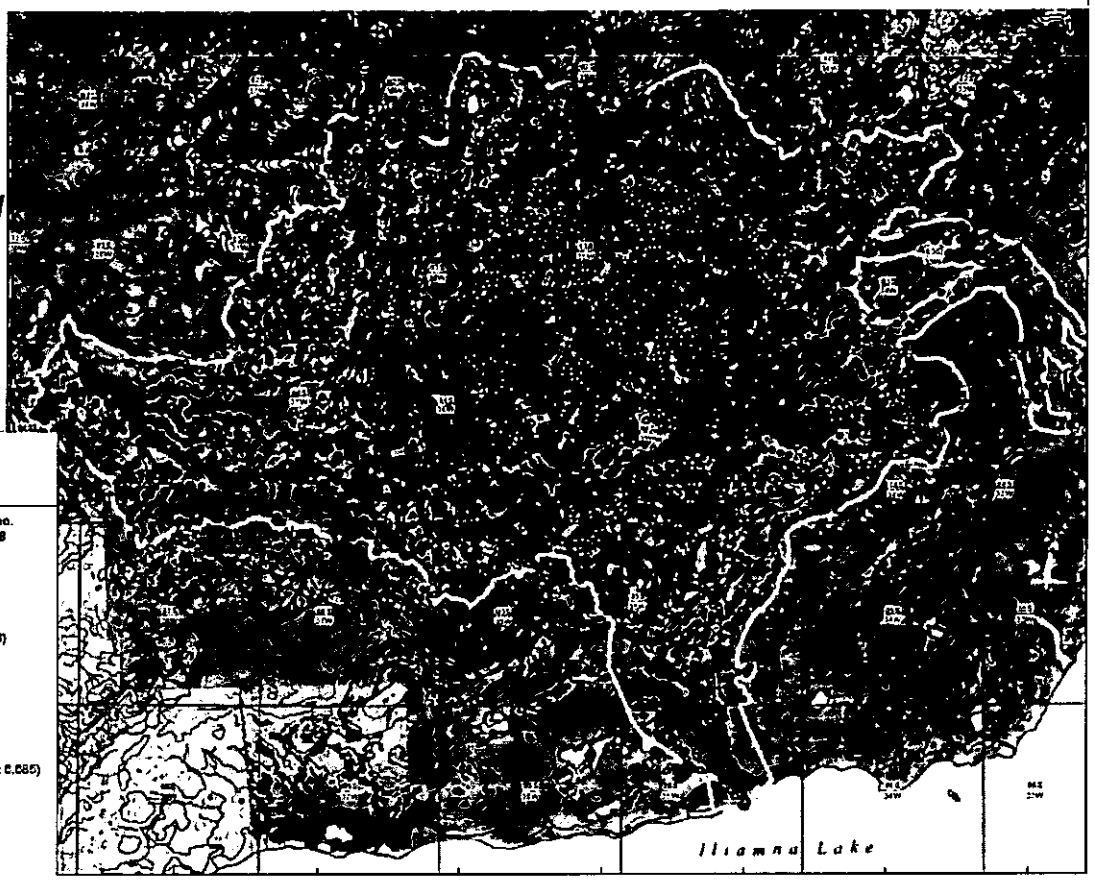
Late Summer 2007 Tag Group

Preliminary Data



WETLANDS FIELD SURVEYS

17,000 field plot surveys completed in project area



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Three Parameters Plus, Inc.
3PPI and HDR 2004 - 2008
Field Plot Locations
DRAFT

Legend

3PPI and HDR 2004 - 2008
Field Plot Locations (10/28/2008)

- JD (Count 4,594)
- SH (Count 2,467)
- FA (Count 932)
- SC (Count 1,570)
- WB (Count 2,237)
- Other Photo Points (Count 6,685)

2008 3PPI Study Area

General Deposit Location

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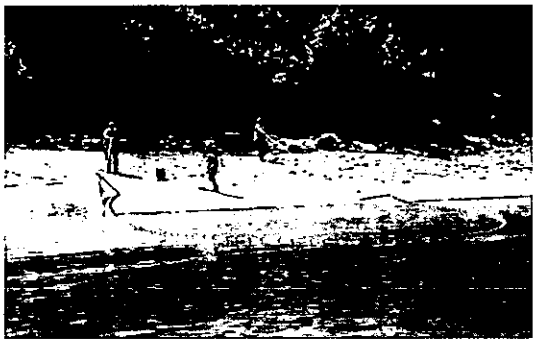
Marine Fish Studies

Trawl Net Sampling

Beach Seine Sampling



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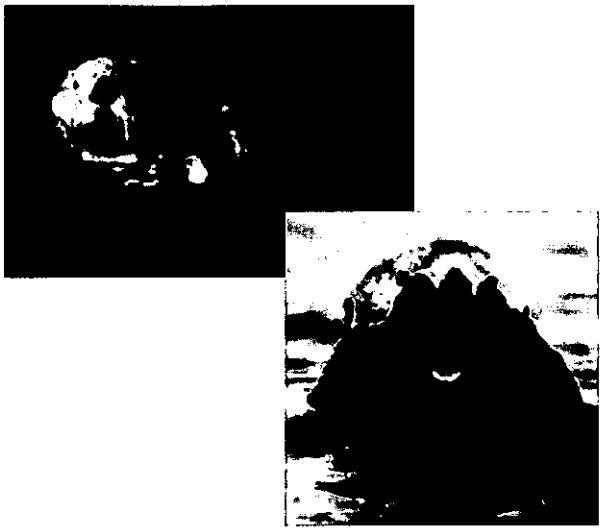
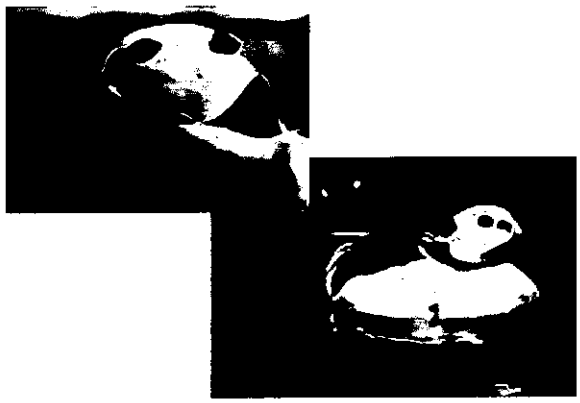
Marine Studies

Monthly aerial surveys for Otters and Steller's Eiders in support of Section 7 Consultation for Threatened & Endangered Species





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Wildlife Studies

Species dependent on wetlands and waterbodies are important components of wetland mitigation

Migration and other factors affect timing of the field survey

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Wildlife Studies

- mapping habitats
- estimating population densities
- species diversity
- distribution
- seasonal use

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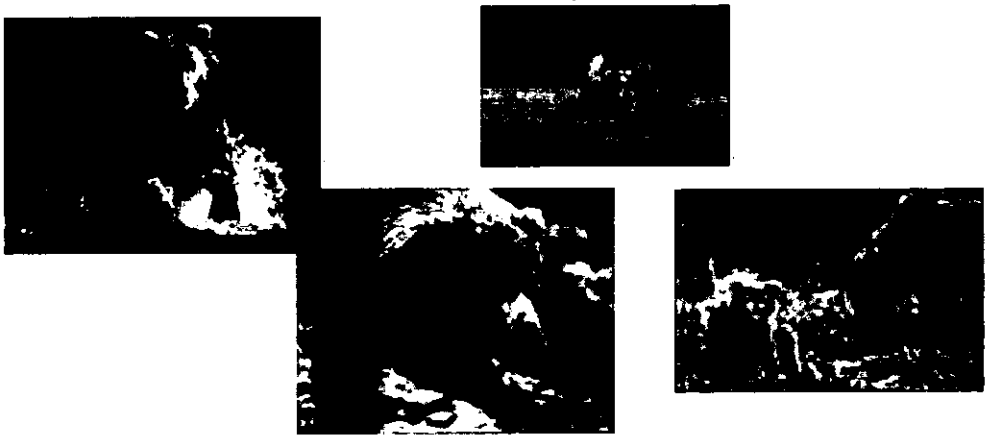
Mammal Studies in Cooperation with ADFG

Aerial Brown Bear Surveys



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Prospect Benefits

- Multi-billion capital investment
- 2,000 construction jobs
- 20 – ? year life
- Hundreds of millions dollars annual operating expenditures
- Local and state taxes
- 1,000 plus operating jobs
- Supply/service contracts & other project spinoffs

Pebble Prospect

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Environmental Studies

JUNE 2009 BACKGROUNDER

To the end of 2008, the Pebble Partnership has invested more than $100 million on environmental and socioeconomic studies to guide the development of a comprehensive mine plan. According to the Partnership's current schedule, the plan will be submitted for public and government review in 2010. To support this goal, the Pebble Partnership has retained leading Alaskan experts and consultants to help design a mine that can operate safely while preserving healthy fisheries, wildlife, water quality, and other valued natural resources.

Environmental baseline studies are the cornerstone of environmental planning at the Pebble Project. Data collected from these rigorous studies provide the basis for understanding how the natural environment in the project area works, and why it works the way it does. This baseline knowledge is essential to determine how the project can be responsibly developed and managed.

Sediment sampling at the Pebble Project.

The company began its environmental programs while still in the early stages of exploration at the Pebble Project. The first step has been to collect the environmental baseline data necessary to develop a detailed description of the environment surrounding the project – including water quality, wildlife and fisheries, climate, air quality, land use, and subsistence resources.

The baseline data have four important uses.:

1) To help Pebble Project regulators, stakeholders and the public understand the environment in and around the proposed project area.
2) To provide environmental input for the design process and ensure that the project will meet the requirements of state and federal regulators.
3) Baseline data are required as the basis for the environmental impact statement (EIS), mandated under the Federal National Environmental Policy Act (NEPA) as the process to identify and assess potential environmental and social issues related to the proposed project before it is built.
4) The data will also support all permitting efforts and provide the basis for a long-term monitoring plan.

While no project as important and complex as Pebble can reasonably be expected to operate without altering or affecting the environment at the mine site and associated infrastructure to some extent, the Pebble Partnership will avoid, minimize and mitigate for such effects where necessary. Protecting Bristol Bay fisheries is a primary objective. In pursuing development of the Pebble Project, the Pebble Partnership is guided by five core principles which include applying the world's best, most advanced science and co-existing with healthy fish, wildlife and other natural resources. An important requirement is to ensure that all water leaving the site during operations and post-mine closure meets water quality standards.

The Pebble Project is situated on state land designated for mineral resource development, but this status does not ensure project approval. The Pebble Partnership must first finalize its planning for the Pebble Project and submit the description of the project with its permit applications. These applications will then proceed through a rigorous review process involving 11 state and federal agencies and the citizens of Alaska. A major component of this review will be preparation (by federal agencies) of the EIS under NEPA, for which the Partnership must provide the data collected under its environmental baseline program. Only after receiving a positive result from that review will state and federal agencies grant the more than 60 permits required to construct and operate the mine. The combined review and permitting process is expected to take several years to complete.

"Tread Lightly" Program

The Pebble Partnership has adopted a number of initiatives to minimize the environmental impacts of drilling programs and other exploration activities at the Pebble Project site.

This includes ensuring that exploration activities do not disturb wildlife. The company also enforces a "no hunting, fishing or gathering" policy for employees and consultants. Disturbed surface areas, including drill sites, are reclaimed as quickly as possible in the exploration and development phase.

Environmental Baseline Studies

The Pebble Partnership has invested more than $100 million to conduct detailed multi-disciplinary environmental studies since 2004, with the assistance of some 50 independent consulting firms and 500 people, including a significant number of Alaskans. The studies are rigorous and designed to encompass all of the most important environmental and cultural values in the region.

A consultant measures low flow conditions at a stream near the Pebble Project.

- **Fisheries, and Aquatic and Marine Habitat** – Detailed studies in these areas are top priorities to ensure conservation of the fisheries. The scope of these studies includes identifying opportunities to increase the productive capacity for fish in three watersheds near the Pebble site, an activity that extends beyond regulatory requirements.
- **Surface and Groundwater Quality** – These studies are extensive and ongoing. Assessment is critical as use of water requires various permits, including special permits for any activities involving fish-bearing waters. The studies will help ensure that surface and groundwater relationships are fully understood in order to protect important resources through project design.
- **Terrestrial Wildlife/Habitat** – Assessments and ongoing studies will help protect wildlife and their habitat, and include measures to conserve and maintain resources that are important to local communities. Another goal is to ensure that subsistence users are accommodated as development proceeds.
- **Wetlands** – Detailed assessment is needed as activities within wetlands require special permits and are closely monitored by government agencies. Wetlands information is being fed into the design process to help identify the best locations for mill and tailings-storage facilities, roads and infrastructure.
- **Meteorology and Air Quality** – Studies to establish a baseline are necessary before proposing any facilities that may affect air quality.
- **Soil and Rock Geochemistry and Trace Elements** – Mineral deposits have a unique geochemical (natural chemistry) signature that must be measured and analyzed to help understand how they can be responsibly developed.
- **Socioeconomic considerations, including Recreation, Subsistence, and Cultural Resources** – The data collected by these rigorous studies are critical to designing a project that protects subsistence and recreational resources, cultural features, and environmental and community values.

Information generated by environmental baseline studies is being fed directly into the project design process, allowing Pebble's engineers and planners to respond to input from biologists and other environmental specialists. This "environmentally driven" process fosters greater cooperation among disciplines and helps engineers determine the best options for mining, milling, tailings disposal, mine-related infrastructure and water management. An important goal is to protect fisheries, wildlife and other valued natural resources while maximizing economic and social benefits for all Alaskans.

In May 2008, as part of its commitment to full and open disclosure, the Pebble Partnership initiated the release of environmental and socio-economic baseline data collected in support of the project to state and federal agencies, project stakeholders and the general public prior to project permitting. The reports, titled the *Pre-Permitting Environmental & Socio-economic Data Report Series* are publicly available on the Pebble Partnership website at www.pebblepartnership.com.

Data from environmental studies are fed into the project design process.

Documenting fish habitat on video near the site.

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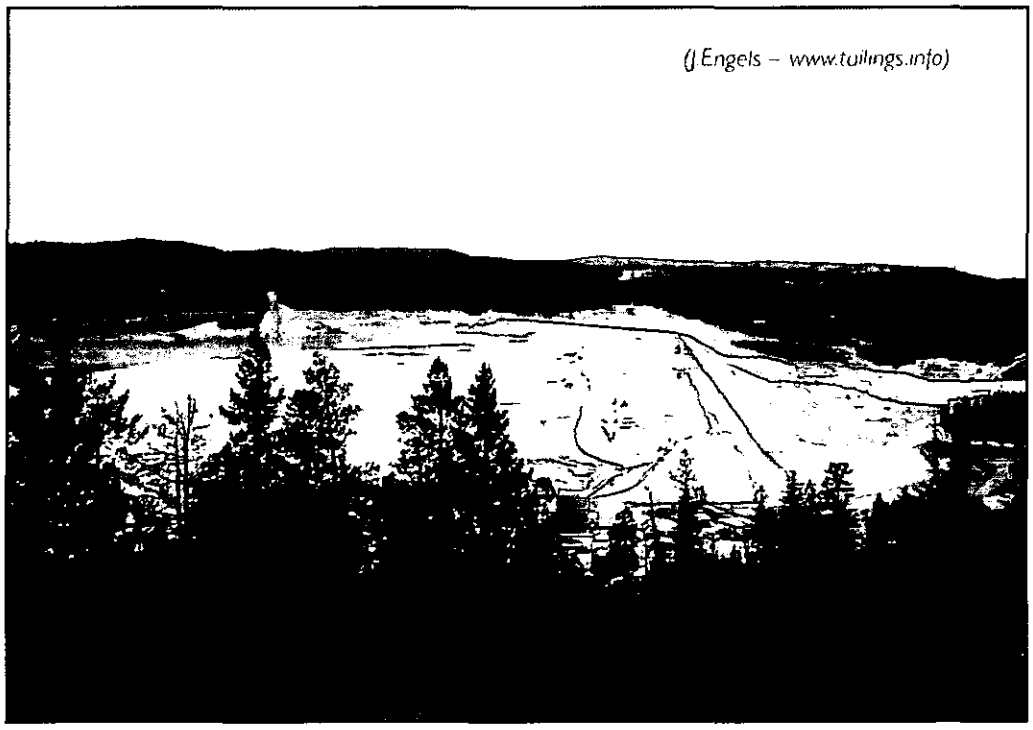
Tailings and Tailings Management

JUNE 2009 BACKGROUNDER

Building and operating a mine is a complex business. It takes rigorous study and careful planning to ensure that the mine is safe, that the environment is protected, and that the interests of local people are met.

One of the most prominent features of an open-pit or underground mine is its tailings storage area. Providing for the safe, permanent storage of tailings is important because tailings material that is not properly contained can have undesirable effects on the local environment.

This backgrounder is intended to provide Pebble Project stakeholders with an understanding of the issues and considerations for tailings management.



A tailings storage facility at the Highland Valley Mine in British Columbia.

What are tailings?

There are five different kinds of material found at a mine. Each is managed differently. They are:

1. **Overburden** is made up of soil, gravel, and other loose materials that cover the surface of a mine site. It is often used as a construction material during mine development or may be stored in large piles and used after mining is complete to restore natural conditions.
2. **Ore** is rock that contains high concentrations of minerals – such as copper, gold, molybdenum and silver. Once ore is mined and removed, it is crushed and processed in an on-site milling facility.
3. **Mine rock** is solid material removed from an open-pit or underground mine that does not contain enough minerals to be considered ore. It is stored on site and may be used to construct mine facilities – such as roads and embankments. Some mine rock can be potentially reactive, which means it produces a mild acid when exposed to air and water. Look for a future back-grounder on the presence of potentially reactive mine rock at the proposed Pebble mine, and how it will be safely managed.

Once processed at the on-site mill, ore is separated into two materials. They are:

4. **Mineral concentrate** is a mixture of water and finely ground rock that usually contains about 80 to 90 percent of the economic minerals present in ore. Once excess water is removed, mineral concentrate is transported from the mine site for further processing.
5. **Tailings** are a mixture of water and finely ground rock that is left over once mineral concentrate is removed. They are permanently stored in a secure facility at the mine site. Tailings usually contain about 10 to 20 percent of the economic minerals that could not be recovered from the ore.

Look for a future backgrounder on the milling process to be used at the proposed Pebble mine.

How are tailings managed?

Once valuable minerals have been separated from ore, the remaining tailings are sent through a pipeline to a storage facility.

A tailings facility is a large storage area that is typically located and constructed in a hollow or valley in order to take advantage of natural barriers and provide multiple layers of environmental protection. In many cases, a tailings embankment – or barrier – built of rock and other natural materials is constructed at the low end of the valley to contain the tailings material.

Once placed in a storage facility, the finely ground rock and water that together make up tailings will separate. The heavier solids will settle to the bottom of the tailings embankments for additional stability. The remaining water will accumulate at the surface to form a shallow tailings pond.

Tailings ponds provide an important water source for mine operations. Tailings water is usually pumped back to the mill to be reused in the milling process. In this way, mine water is recycled over and over again, significantly reducing the amount of water that must be taken from the environment.

What issues are raised by tailings management?

The first issue is to ensure that tailings storage areas are properly located. Extensive studies are done in an effort to select sites for tailings storage facilities away from sensitive environmental areas – such as lakes and streams, wetlands, fishing and hunting areas – to the greatest extent possible.

Secondly, care must be taken to ensure that tailings material is as environmentally friendly as possible. This can be achieved by designing a milling process that captures the vast majority of the minerals present in ore, and by ensuring that the chemicals present in tailings are kept at predictable and manageable levels.

Finally, tailings storage areas must provide for the safe and permanent storage of tailings material. This is achieved by designing tailings embankments to withstand potential catastrophic events, and by controlling the seepage of tailings water. Through modern advances in engineering and construction, it is possible to design and build permanent tailings facilities that are able to withstand severe earthquakes, floods and other catastrophic events.

The goal of the Pebble Partnership and its consultants is to design and construct a tailings facility at the Pebble Project that can operate safely and protect the environment, including downstream water quality and fisheries in the region.

What approach to tailings management will be used at the proposed Pebble mine?

The Pebble Partnership and its consultants have conducted extensive studies to determine the best design options and site locations for proposed tailings facilities at the Pebble Project.

The Partnership will apply modern engineering practices and build its facilities to meet exacting standards and safety requirements enforced by state and federal agencies. The location and footprint of the tailings storage area will be determined prior to the submission of a comprehensive mine plan for the Pebble Project targeted for 2010.

A range of options are currently being examined as part of the development of a proposed mine plan for Pebble, including a conventional open pit, an underground block caving operation, or a combination of both.

A significant portion of the material to be mined at Pebble is considered ore, which contains valuable minerals that will be extracted through the milling process. The remainder will be overburden and mine rock. Once the ore is crushed, watered and put through an on-site mill, it will be separated into mineral concentrate and tailings. Most of the total volume of processed ore will end up as tailings; the remainder will be mineral concentrates containing copper, gold, silver and molybdenum.

The Pebble Partnership will continue technical and environmental studies to refine its plans for the proposed tailings facility at the Pebble Project. Once complete, the proposed tailings facility will include embankments designed to withstand seismic events larger than could actually occur in the project area.

The final proposal for tailings management at Pebble will be included in the mine plan targeted for completion in 2010. This proposal will be subject to an exhaustive regulatory review and permitting process involving state and federal agencies and the people of Alaska that is expected to take three years to complete.

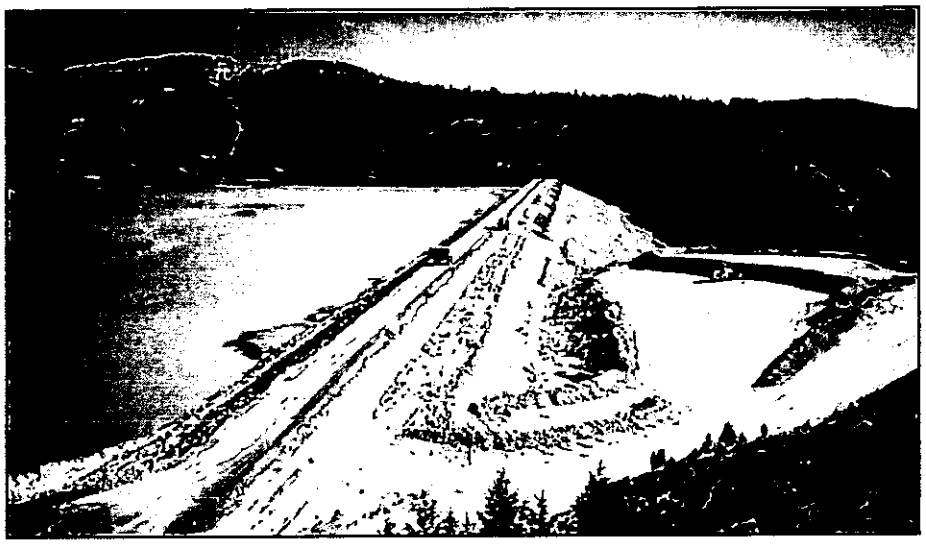
How are tailings embankments built?

Once the best possible site has been chosen for a tailings storage facility, a plan must be developed to ensure it can safely and permanently store all of the tailings produced over the life of a mine. This usually means an embankment is built at the low end of the area selected for tailings storage, and that a pipeline is constructed to carry tailings from the mill to the top of the embankment.

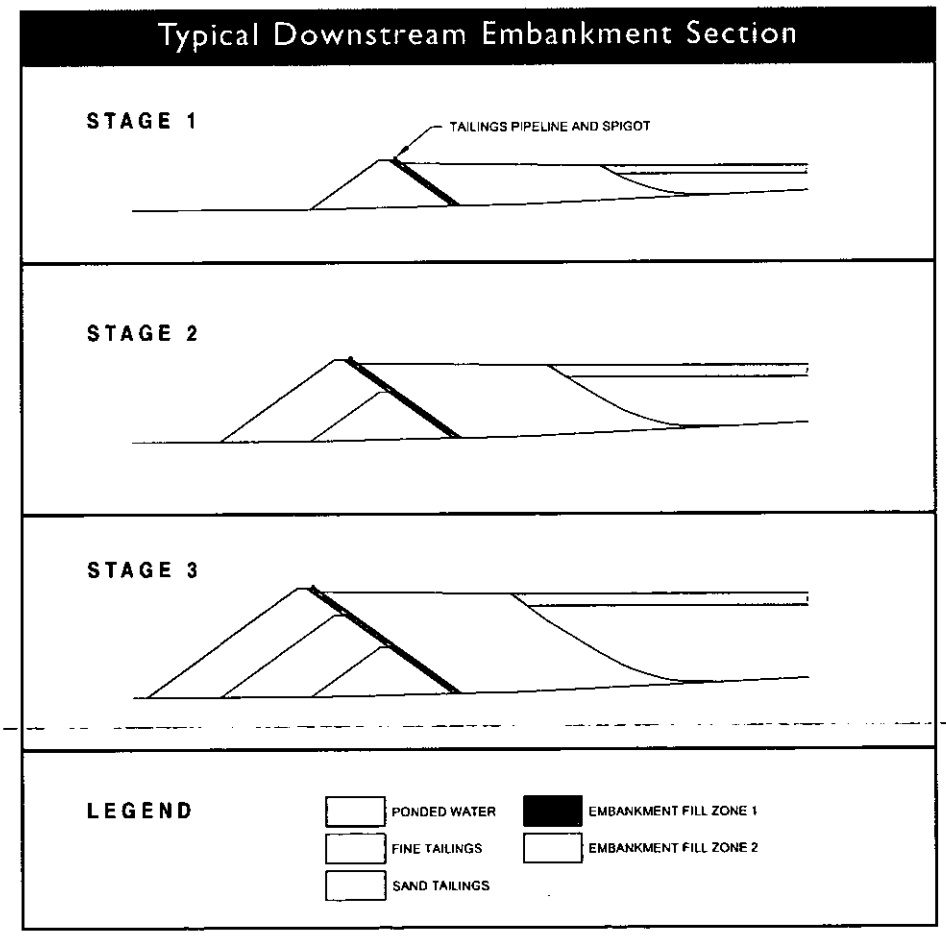
Unlike water dams, tailings embankments are made of rock and sand, and have a very wide base. They are engineered structures built to withstand earthquakes, floods, and other catastrophic events. They are designed and built to exacting standards enforced by state and federal government experts. They also employ modern engineering practices and technology from around the world.

As the volume of tailings material contained in the storage area grows, so too must the height of the tailings embankment and the elevation of the tailings pipeline. Each stage of the process is carefully planned, highly engineered and carefully scrutinized by state and federal experts.

Tailings material – water and ground rock – is transported from the mill to the tailings storage area via pipeline.



A tailings embankment – or barrier – is usually built at the low end of a valley to contain tailings material. (A tailings embankment near Jefferson City, Montana.)



As the volume of tailings material contained in the storage area grows, so must the height of the tailings embankment and the elevation of the tailings pipeline.

How do you make sure that mine tailings do not harm the environment?

The first step to effective tailings management is to design a milling process that produces tailings that are as 'clean' as possible. This means that the mineral content is low, and that chemicals are kept at manageable and predictable levels.

The second priority is to ensure that tailings material remains safely stored. This is achieved by building an embankment capable of retaining all of the tailings material generated over the life of a mine. Tailings embankments are engineered to be permanent structures.

Over time, the sand and silt-sized particles within tailings will accumulate at the bottom of the storage facility to form a dense layer that is highly resistant to water movement. This natural barrier will become several hundred feet thick over the life of a mine – considerably deeper than the relatively shallow pool of water it contains.

The separation of tailings solids and tailings water is an important safeguard for the environment. Not only do tailings solids help contain the tailings pond, they also attract and accumulate the mineral content that exists in tailings water. Over time, these minerals will stabilize in the tailings solids and safely settle in the dense layer that forms at the bottom of the storage facility.

Another design feature of tailings facilities is the incorporation of seepage control and collection measures to ensure no impairment of the groundwater surrounding a mine site. This issue is managed differently at different mines.

In some cases, waterproof liners may be used in combination with water collection systems to control and manage seepage that occurs from storage areas. In other cases, water collection systems are used to ensure that any water that seeps from a tailings storage area is collected and recycled. This approach has been proven to achieve 100% recovery of tailings water at other mines.

The final design feature to be considered in tailings management relates to the control of tailings dust dispersal. This dispersal can be managed by keeping the tailings material saturated at all times.

What happens when mining is complete?

Mining companies are required to design and build permanent tailings storage facilities. But some important changes are made when mining is complete.

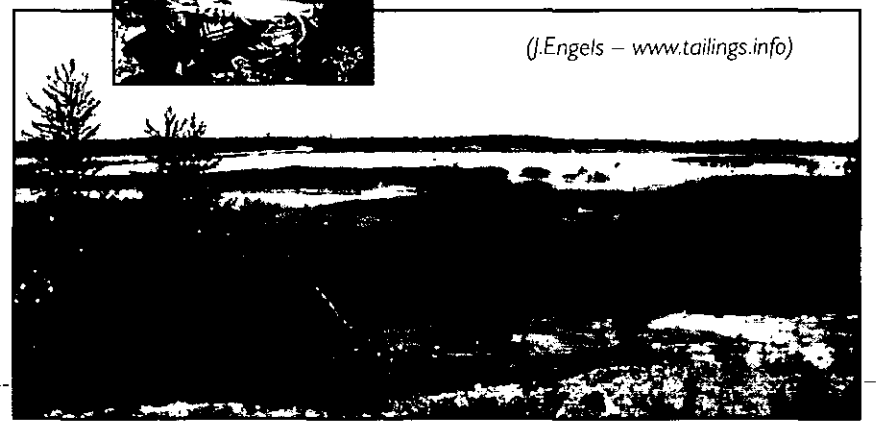
Of course, the pipelines and equipment required to transport tailings to the storage area and water to the mill are removed. The water collection system is operated until monitoring shows that water in the tailings pond is entirely safe. This may occur naturally at some mine sites, usually within five years. Ongoing water treatment may be required in some cases.

Additionally, after mining is complete, tailings storage areas are reclaimed – or returned to a natural-like condition. This means that the area is recontoured to blend into the surrounding environment. Soil and other overburden are replaced and native vegetation is re-established.

Once water in the tailings pond is safe, it can be reconnected to the natural water system through a series of channels and streams. In this way, water balance in the area can be re-established. Depending on environmental conditions before development, former tailings ponds can become lakes capable of supporting fish populations. Land areas become revegetated and provide habitat for local wildlife.

A trophy rainbow trout fishery has been established at a reclaimed tailings pond at the Highland Valley Mine in British Columbia, Canada.

(J.Engels – www.tailings.info)



A reclaimed tailings pond in Sudbury, Ontario, Canada.

In all cases, state and federal laws require that mining companies post a financial surety before any areas can be disturbed for mine construction or operations. This ensures that enough money is always available to restore disturbed areas to a natural-like condition.