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## **Background Information**

How many surface hectares will the proposed coal mining operations cover? How many hectares of surface land will be disturbed?

Will the underground coal extraction extend underneath any residential areas and if so at what depth?

Will the underground extraction extend beneath Baynes Sound?

Will the underground extraction extend beneath any rivers or creeks? What is the shallowest depth under a watercourse?

How many mine openings are anticipated and where will they be situated in relation to residential areas?

In particular will there be any exhaust shafts in the deeper portions of the mine closer to the Baynes Sound?

Will you be able to predict where surface subsidence might occur?

How will you monitor the occurrence, or not, of surface subsidence?

Should surface subsidence occur at what stage of the mining process would you anticipate that this would happen?

If subsidence occurs post mining operations, what remediation measures would CVJ ventures have in place to ensure that fish and wildlife habitat is not damaged?

What types of fuels or chemicals will be kept on site? What measures will be taken to contain, mitigate and react to spills both on site and during transportation.

What other types of materials will be stockpiled on-site?

Specifically what coal extraction processes at the Raven Coal Site will involve burning or discharge of substances into the atmosphere? What processes will require water and where will any discharged water end up?

What environmental assessment protocols will be in place to monitor atmospheric and other effluents discharges?

What measures will be taken to minimize dust from the movement of vehicles to and from and around the mining site?

Will you be able to determine the extent of fine particulate released into the atmosphere as a result of mining activity?

Will you be able to track particulate and monitor the locations where particulate matter might settle?

Do you have a methodology for assessing and mitigating against pervasive environmental contamination? Pervasive environmental contamination would include: acid mine drainage, decreased water quality due to

tailing pond overflow into water bodies, well contamination, salt water intrusion into wells, downstream impacts to shellfish growing operations....need to be more specific about this.

Are remediation plans in place for the rectification, where possible, of pervasive environmental contamination?

What types of monitoring processes will be in place during the production process?

Who will conduct the ongoing, required on-site environmental monitoring of the mining site and processes?

Would Compliance agree to third party environmental monitoring of their coal mining processes?

There is a significant lack of baseline data on the Cowie Creek and Tsable River Watersheds. Specifically these areas lack assessments, studies, reports and information pertaining to:

- Water quality: Cowie Creek and Tsable River
- Hydrology:
  - Movement of surface water in the area in relation to aquifer recharge and runoff entering Cowie Creek, Tsable River and Baynes Sound.
  - Hydrological assessment of Cowie Creek and Tsable River
- Types of wildlife utilizing the area, wildlife movement and habitat use of the area
- Vegetative studies identifying plant communities and their significance to wildlife
- Fisheries assessment of Cowie Creek and Tsable River
- Groundwater studies, particularly in relation to aquifer recharge, capacity and relationship to waterbodies, streams, rivers, lakes and wetlands in the area.

How will you address this lack of baseline data?

Do you intend to conduct a detailed 1:5,000 sensitive habitat mapping, stream assessment and fish habitat inventory on Cowie Creek and Tsable River?

### **Solid Coal Waste Generation Concerns**

What type of solid waste by-products will be produced during coal extraction and processing?

What potentially toxic chemicals are contained in solid coal waste? Specifically what types of waste are toxic and how are they toxic?

What type of leachate is associated with the exposed wastes?

How will you monitor leachate of exposed wastes?

Where will the tailings (solid waste) be stored in the short term and long term?

Is there a plan to dewater the tailings?

How many hectares do you anticipate the tailing ponds will cover? Specifically where will they be?

How will the containment areas be monitored for leaks and what is planned to contain any spills?

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If left on the surface of the mine site, what management plans and mitigation measures will be in place to ensure that the waste does not leach, impacting the surrounding land and water?

What methods will be used to extract and dispose of coal waste particularly any resultant heavy metals?

Where will coal waste including heavy metals be disposed of?

If chemicals, waste by-products or other potentially toxic effluent is to be disposed of off site, what community would these substances be transported to? Would residents of the community have an awareness of these substances being transported through or disposed of in their area?

How will wastes be transported?

If wastes or toxic materials are to be disposed of off site, what transportation safeguards are in place?

Is a detailed emergency spill response plan in place for implementation should an accident occur during transportation of toxic and hazardous materials?

What sorts of chemicals are used during the extraction of coal and during the washing process?

What safeguards will be instituted to ensure that hazardous materials used during extraction don't impact the surrounding air, water or land?

Are there any plans to place any coal mining waste by-products underground in mined out areas?

Should mine waste be stored underground will any monitoring of the waste be conducted?

Aside from extraction and washing what other coal processing will occur on the Raven Coal site?

Could you provide a detailed list of all hazardous substances that will be entering the coal mining site and leaving the coal mining site and provide:

- An accompanying toxicology report for each substance
- A detailed outline of transportation logistics
- Specific emergency response plans for each phase of the coal mining process where the potential for hazardous substance spillage/release may occur, including transportation.

### **Impacted Watersheds**

What watersheds will be potentially impacted by the proposed mine and mining operations.

What are your plans for conducting a comprehensive assessment of these watersheds prior to any development on the site in order to establish a base line upon which to assess future impacts?

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## Groundwater Issues

Presently Compliance Coal estimates all process and potable water requirements can be supplied from groundwater. (AMEC, pg 16).

Which aquifer will groundwater be drawn from? What is the classification and/or sensitivity of this aquifer? What is the relationship of the aquifer to surface water?

Where is the aquifer re-charge area located?

What is the estimated re-charge rate?

What is the estimated peak drawdown of the aquifer during the operation of the mine? How will you measure this?

What is the maximum daily withdrawal amount from each proposed groundwater well? Where will these wells located?

Can you be sure that water levels in watercourses on or adjacent to the aquifer will not be affected by drawing water from this aquifer?

What mitigation plans are in place should watercourses suffer from reduced water levels due to excessive aquifer drawdown?

What is the potential for sea water contamination of the aquifer, due to salt water intrusion?

What is the estimated impact on aquifers in the area due to reduced snow pack expected as a result of changes in the climate? How will this impact projected water consumption and aquifer drawdown?

Will any domestic wells drawing on this aquifer be affected either by reduced water levels or contamination? What mitigation and compensation measures will be in place if either of these occurs?

What will be done with the waste water left over from coal washing? Is there a plan to reuse process water? Will this be discharged on site? What water treatment is planned before discharge?

What monitoring will be conducted on waste water discharge and how often will monitoring be conducted.

What exactly will the water be monitored for?

How much mine dewatering is expected and what is known about the water quality. Will this water be used in the wash process?

Acid base accounting (ABA) results showed that pyritic sulphur was the most common sulphur species, followed by sulphate and then organic sulphur. Organic sulphur composed approximately 0.17 to 4 % in samples from TS95-05 and approximately 0.5 to 15% in samples from TS96-10 of the total sulphur. Eighty-five of the 135 samples from TS97-05 had a net potential ratio (NPR) less than 2 and were classified as potentially acid generating (PAG). Nine of the 85 samples from TS96-10 had a NPR less than 2 and were classified as PAG. (AMEC, pg 13).

What does this mean in the context of potential acid mine drainage for the Raven Coal Project?

Given that at one sample site (TS97-05) "85 of 135 samples were classified as potentially acid generating", how can you ensure that acid mine drainage won't occur? What processes are in place to prevent and mitigate acid mine drainage?

How will you monitor both during and post mining for acid mine drainage.

If evidence of acid mine drainage is found will you continue to mine?

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### **Fisheries and Surface Water Concerns**

The project has the potential to reduce flows in Cowie Creek because the mine will require a water management plan that may reduce the drainage area of Cowie Creek. (AMEC, pg 29).

In what ways will the mine operations and footprint reduce the drainage area of Cowie Creek and in which years and specific months will this reduction occur?

What are the mean annual and mean monthly discharges of the creeks affected by the mine?

What are the current water allocations in the watersheds affected by the mine?

How will it be determined what is an "acceptable" amount of flow reduction from a fisheries perspective?

How will the fisheries impacts of flow reductions be measured?

How will impacts from reduced flows be mitigated or remediated?

How will a potential increase in Cowie Creek's water temperature due to changes in run-off patterns and loss of vegetation be monitored and mitigated?

As some habitat alteration and loss is anticipated, the fish and habitat information will be critical in the preparation of a Fisheries Compensation Plan. (AMEC pg 33)

What sort of Fisheries Compensation Plan is proposed? What exactly is being proposed here? Compensation implies monetary (or other "material") replacement for the loss of something. Rather than compensation it would be preferable to strive for no net loss of habitat through restoration or remediation elsewhere on the creek.

Could you detail what habitat alteration and loss is anticipated and where exactly?

What methods will be used to conduct aquatic habitat and species inventories on Cowie and Cougar Smith Creeks and the Tsable River? What efforts will be made to ensure that wetlands and riparian vegetation that contribute to fish and wildlife habitat will not be impacted?

How close to a waterbody (stream, river, wetland, lake) will the mine site come i.e. Cowie Creek?

Will an extensive riparian zone be left intact to assure minimum impacts to creeks, wetlands, lakes or rivers?

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What criteria will you use to determine the extent of the riparian zone?

Can no net loss of stream, riparian and wetland habitat be guaranteed?

What is your definition of no net loss of habitat?

Have you determined where the headwaters of Cowie, Cougar Smith and the Tsable River are?

Have you determined what the water source of the headwaters for these creeks and rivers is?

### **Baynes Sound**

What emergency response, mitigation & remediation protocol is in place to ensure that Baynes Sound water quality is not affected due to mining construction, operation, de-construction or post-operation reclamation?

### **Wildlife Issues**

What methods will be used for inventories and assessment of impacts to wildlife species and wildlife habitats, and where and when will these inventories occur?

Specifically what species and habitats will be inventoried and assessed?

Will an ecosystem classification site assessment be conducted to identify valued habitat components?

What vegetation studies or assessment of impacts will be conducted?

How will inevitable loss of wildlife habitat be remediated?

Will wildlife corridors and biodiversity, both local and regional, be considered in the construction of the mine site and the location of roads and other mine associated alterations?

What measures will be taken to ensure wildlife doesn't come into contact with hazardous materials. i.e. impacts on birds, elk, deer, bear

What biodiversity or wildlife corridors are on or near the mining operations? How will these be impacted and what sort of mitigation/compensation will be provided?

How will the impact of road collisions with wildlife be mitigated? Will wildlife be protected from roads by the installation of fencing?

### **Noise Issues**

What measures will be taken to reduce sound pollution from the mine operations and coal handling facility? It is important to note that the mountains to the west of this site amplify any sound coming from industrial activity.

What will the noise level be from trucks entering and exiting the mine for residents living down slope from the mine site? How will noise levels be monitored and mitigated?

Will the mine operate for 24 hours, 7 days per week, year round?

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### **Transportation Issues**

Will loading facilities be built outside of the proposed mine-site footprint?

During transportation of washed coal from the site what type of containers will be used? Covered? How will residue and dust from coal be mitigated during transportation?

What safeguards will be in place to respond to spills during transportation of hazardous materials to and from site?

During mine site construction what on-site monitoring will be in place to ensure no impacts occur to surrounding waterbodies?

How will sediment and erosion be monitored during road construction during mine site construction and during mine operations?

How much road will be built? How many road crossings of creeks will there be and what types are they?

What type and quality of roads will be used to enter and leave mine site?

Will sediment and vehicle effluent (oil, anti-freeze etc.) mitigation be implemented at all creek/road crossings?

What monitoring and mitigation measures will be established to ensure that sediment/chemical laden runoff from roads doesn't enter waterbodies.

### **Not covered in AMEC Report**

#### **Coal Seam Fire Containment**

The underground coal seam in Centralia, Pennsylvania has been burning since 1962. An engineering study concluded in 1983, found that the fire could burn for another century or even more and "could conceivably spread over an area of approximately 3,700 acres." [www.offroaders.com/album/centralia/centralia.htm](http://www.offroaders.com/album/centralia/centralia.htm). What is the potential for this type of scenario occurring at the Raven Coal Site? Specifically how do the Raven site conditions differ from Centralia site conditions?

What emergency response/management plans and mitigation measures are in place in the event of a coal seam fire?

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### **Methane Gas Extraction**

How much methane will be released during mine ventilation?

Prior to active coal mining how will the methane gas in the coal seam be extracted? What will be done with the gas? Burned? Or stored for later use?

If the methane gas is burned what emissions will be released? What can be done to ensure that the smoke plumes and any potential fumes associated with methane gas burning don't impact residents of the area?

If methane gas is burned how long will it be burned for? (Days, weeks, months, years)? Is this ongoing or a one-time thing?

If the methane is stored on site what type of containers will be used to store it? How many of these will there be? How long will they be on-site for? Will the methane be used during the mining process as a fuel?

Post mining, is coal bed methane extraction a possibility?

What are the environmental implications of this process?

Will a new and separate environmental review be required to extract coal bed methane once the coal seams are mined?

### **Disaster Preparedness**

In the event of an earthquake what emergency response control mechanisms are in place to ensure that no release of hazardous materials occurs? i.e. Release of stored waste water, fuel or other toxic materials.

### **Public Awareness and Input**

How will people in the area, and especially in Fanny Bay, be kept informed regarding Compliance Coal's application?

How will the public, especially in Fanny Bay, be informed in the future regarding public meetings?

### **Public Access**

What public access to all or part of the Raven property will be tolerated? What opportunities will be provided to local community and environmental groups to "walk the land" on a regular, recurrent basis to determine possible environmental damage?

What impact will the mine and its various operational sites have on the new residential developments being planned in the area? (i.e. Kensington and Sage Hills).

What protection against vandalism will be in place?

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Will regular monitoring from a third party out-side agency be allowed?

### **Mine Site Reclamation**

Considering the possibility that coal wastes and other by-products of the coal extraction process may be stored on site, at the end of the lifespan of the mine how much acreage do you anticipate the site will have disturbed.

What monitoring and assessment protocol will be in place post mine operations? How long after reclamation will the area be monitored? Who will do the monitoring and assessment after the mine has closed?

If impacts due to mine operations become apparent after the mine operation has closed who will take responsibility for remediation.

What rehabilitation and reclamation plans, if any, are in place?

What money will be set aside in a secure fund to cover the cost of rehabilitating the mine site and impacted area once the mine has been decommissioned? How will it be determined that the mine is no longer serviceable and who will control the reclamation funds?

## **Reference**

**AMEC Earth & Environmental.** A Division of AMEC Americas Ltd. AMEC FILE: VE51897. **Raven Underground Coal Project.** Draft Work Plan for Environmental Studies. Prepared For **Compliance Coal Corporation, DBA Comox Joint Venture**  
JUNE 2009

### **Compliance Energy Corporation Website.**

[http://www.complianceenergy.com/projects/raven\\_coal/index.shtml](http://www.complianceenergy.com/projects/raven_coal/index.shtml)

Website. Centralia Pennsylvania...truth is stranger than fiction. A Pennsylvania community consumed by an underground mine fire. <http://www.offroaders.com/album/centralia/centralia.htm>