



Highland Valley Copper Corporation Valley Pit Dewatering Project:

FILE REPORT 01-8

Public Stakeholder Needs Assessment

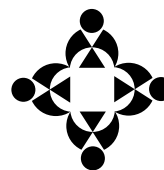


Southern Interior
Forest Extension and
Research Partnership

Highland Valley Copper Corporation Valley Pit Dewatering Project:

Public Stakeholder Needs Assessment

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(editors and compilers)



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ABSTRACT

As a normal part of mining operations, the Highland Valley Copper Corporation (HVCC) situated near Logan Lake, B.C., has operated a series of wells around the perimeter of the company's open pit for many years. The wells are necessary to prevent groundwater from entering the pit, which would destabilize the pit walls. To accommodate ongoing development of the company's pit operations, a substantial increase in the rate of groundwater extraction is required. The preferred option is to dewater the pits by discharging the water into Witches Brook, which flows east from the mine site into Guichon Creek near the community of Logan Lake.

Because of the scope of this project, a review under the British Columbia Environmental Assessment Act (EAA) is required. As a component of the review process, the Southern Interior Forest Extension and Research Partnership (SIFERP) was invited by HVCC to identify the issues and information needs of stakeholders.

This report summarizes the results of three public stakeholder needs assessment workshops conducted by SIFERP in the communities of Logan Lake and Merritt, B.C. Based on feedback from the workshops, concerns exist about the potential impacts of the proposed dewatering project on local water quality and quantity. Issues relating to fish habitat, wildlife, channel erosion, property damage, liability, and safety measures were identified.

Citation—

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Terry Carriou, HVCC

Hugh Hamilton, Summit Environmental Consultants Ltd.

Brian Guy, Summit Environmental Consultants Ltd.

QUALIFER

This report presents the results of a public stakeholder needs assessment conducted by the Southern Interior Forest Extension and Research Partnership (SIFERP) on behalf of Highland Valley Copper Corporation (HVCC). SIFERP was invited by HVCC to conduct this needs assessment as a neutral third party. This report does not reflect the views of SIFERP but instead reflects the issues and concerns that were identified by SIFERP from the participants at the workshops. Any comments or concerns regarding the content of this report should be directed towards HVCC. Please contact:

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1 INTRODUCTION

As a normal part of mining operations, the Highland Valley Copper Corporation (HVCC) situated near Logan Lake, B.C., has for many years operated a series of wells around the perimeter of the company's open pit. The wells are necessary to prevent groundwater from entering the pit, which would destabilize the pit walls. While the groundwater pumped from the wells has primarily been used in the milling process, the operation has approval from the B.C. Ministry of Water, Land and Air Protection to discharge the current flow (averages 6,000 gallons [22,710 litres] per minute) into Witches Brook, when required.

To accommodate ongoing development of the company's pit operations, a substantial increase in the rate of groundwater extraction is required. Pumping rates of up to 15,000¹ U.S. gallons (56,780 litres) per minute may be necessary to maintain stability of the pit walls. A number of options have been considered for disposing the extracted groundwater as the mine operation cannot use all of the water in its milling processes. The preferred option is to discharge the water into Witches Brook, which flows east from the mine site into Guichon Creek near the community of Logan Lake. Guichon Creek then flows south through Mamit Lake and enters the Nicola River west of Merritt, B.C.

Because of the scope of this project, a review under the British Columbia Environmental Assessment Act (EAA) is required. As a component of the review process, the Southern Interior Forest Extension and Research Partnership (SIFERP) was invited by HVCC to identify the issues and information needs of those stakeholders living within the affected areas. HVCC plans to address the identified issues and information needs through the EAA process. This report is a summary of SIFERP's needs assessment.

2 GOALS AND OBJECTIVES

As a result of this information-gathering process, the following goals and objectives for HVCC were met. They are:

- HVCC was able to present the proposed plan to the public.
- A list of concerns from the public was identified.
- A list of at least five measurable indicators, which satisfied the public's areas of concern, was identified.
- A list of possible researchable questions, which HVCC may need to address through science or some monitoring, was developed.
- The participating public was given an opportunity to understand the HVCC Valley Pit dewatering plan and to provide input.

¹ Initial estimates determined that a maximum pumping amount of 25,000 U.S. gallons per minute (94,640 litres) may be required; however, based on more extensive calculations the estimated maximum has been updated to 15,000 U.S. gallons (56,780 litres) per minute.

3 APPROACH

To solicit public stakeholder issues and information needs, three workshops were held: one at Logan Lake (July 19, 2001) and two at Merritt (July 25 and August 23, 2001). The workshops served as a forum for the exchange of information and ideas. At these workshops, HVCC outlined their proposed Valley Pit dewatering project, with questions, issues, and needs being discussed both during and after the company's presentation. Participants were specifically asked to develop a list of indicators that could be used to satisfy the public's areas of concern about the project. Questions and indicators developed from the workshops and categorized into specific theme areas are summarized in this report. This report also contains HVCC's comments or answers to questions posed at the workshops, which address the various issues and concerns raised. An evaluation form was also provided to each of the participants to further solicit comments. These forms are summarized in Appendix 1 and 2. Additional issues and concerns from the evaluations are included in the report summary.

4 PARTICIPANTS

The public stakeholder meetings were designed to gather information about concerns and issues pertinent to the proposed HVCC Valley Pit dewatering plan. HVCC solicited the public's participation in the workshops through newspapers and flyers, and extended invitations to individuals who could be directly affected by the proposed project (e.g., water licensees, range community, etc.). The participating public included individuals from the local communities, provincial government ministries, local government, ranching community, water licensees, and concerned citizens. An attempt was made to include a diverse range of views from the general public and public stakeholders. The workshops held in Logan Lake (July 19, 2001) and in Merritt (July 25, 2001) occurred directly after HVCC's open house about the proposed project.

5 INDICATORS OF SUCCESS

The following are important "indicators of success" identified by the participants at the three workshops.

5.1 Indicators from the Logan Lake Workshop (July 19, 2001)

- No change in water quality or supply for the community of Logan Lake.
- No change in water quality or supply for the community of Lower Nicola.
- Control of potential damage to property in the system.
- Fish and wildlife in or adjacent to Mamit Lake and affected watersheds remains constant or is improved.
- Monitoring information is made available to general public.
- Continued relationship with consultants from the communities and regional district.

- Responsibility assigned for communicating changes to the public.
- Prompt response from the government (Ministry of Water, Land and Air) if serious problems arise.
- Regular notices and updates from the mine.

5.2 Indicators from the Merritt Workshop (July 25, 2001)

- Controlled flow in Guichon Creek accepted by all parties (i.e., people living along Creek, HVCC and fisheries).
- Water quality testing and results available for review at least four times per year. Need to know if change in water quality occurs.
- Mechanism in place to deal with controlled flows that are worst case scenarios (i.e., if flows exceed controlled levels, need a mechanism in place to deal with potential impacts or to avoid impacts).
- Safe water supply with satisfied people living in the water district of Lower Nicola.
- Continued high quality and quantity of water.

5.3 Indicators from the Merritt Workshop (August 23, 2001)

- Ensure that we have safe drinking water—Quality and Quantity.
- Ensure that property is not flooded.
- Maintain or improve local habitat along streams (i.e., fish and wildlife).

6 SUMMARY OF CONCERNS AND COMMENTS

After completion of the needs assessments at Logan Lake and Merritt, a number of patterns and themes were evident from the public stakeholder meetings. The concerns and issues are summarized here by theme and issue. “Themes” represent common areas of concern that surfaced consistently during all meetings. “Issues” highlight the specific areas that were of greatest importance within the theme. The themes and issues are presented here in no particular order of priority.

The “comments” or answers provided by HVCC, which addressed the various issues or concerns, are also included in *italic type*.

6.1 Theme: Water Disposal Options

Issue: Why hasn't further consideration been given to the Thompson River option? It was suggested that more money should be spent on putting water into the Thompson River via a pipeline, which in turn could have less impact on environment.

Our analysis indicates that a pipeline to the Thompson River will be very costly, both for the initial construction and the annual pumping and maintenance costs.

As well, there are serious concerns about the current low water flows in the Guichon system and its effect on fisheries. Within limits, which need to be determined, the discharge of water from the mine will have a positive effect in this area.

Issue: If several wells are needed for any of the project options, where does the additional \$10 million come from to put the water into the Thompson River?

The \$10 million is the extra cost for the pipeline needed to get water around the tailings pond to the existing pipeline at the west end of the pond and for the upgraded pumping station needed to pump the water the additional distance.

Issue: Is there a contingency plan in place in the event of a catastrophic, high spring freshet event?

The tailings pond can temporarily store spring freshet water. We will commit to diverting runoff in high flow years to the tailings pond. This will keep it out of Witches Brook until water levels in the brook drop to safe levels.

Issue: Could the costs of the Thompson River option be offset by the production of hydro power, if water is discharged to Thompson River?

It doesn't look likely. The existing pipeline is too small; it takes a long time to get a hydro plant approved and operational, whereas we need to start pumping very soon. The total time frame for this project is relatively short (about 8 years), not long enough to make a hydro investment worthwhile.

6.2 Theme: Increased Awareness for Local Communities

Issue: Where will copies of the Environmental Impact Assessment application be made available for comment from people in local communities?

This is a decision made by the Environment Assessment Office, but we expect satellite repositories will be established at libraries in Merritt and Logan Lake and on the Internet at the Environmental Assessment Office Web site (www.eao.gov.bc.ca).

Issue: Will there be regular press releases or updates in local newspapers and flyers?

We will issue regular press releases about the status of the project. Once the application has been submitted to government and the review process begins, we are required by law to notify the public through newspaper advertisements.

Issue: Could information of the project be sent to individuals not at the meetings?

This document will be included as part of the application and will be sent to everyone holding a water licence along Guichon Creek between Logan Lake and the Nicola River. Anyone wishing to receive a copy of the report should contact Mark Freberg at (250) 523-3200.

Issue: Will there be regular community updates as the application process progresses?

We will issue regular press releases about the status of the project. Once the application has been submitted to government and the review process begins, we are required by law to notify the public through newspaper advertisements.

Issue: Will HVCC co-operate in allowing a review of the Environmental Impact Assessment by a consultant hired by local communities?

HVCC will co-operate fully with any consultants hired by the local communities.

Issue: Will water quality reports be made available on a regular basis?

HVCC expects that this will be a condition of any project approval and we are confident that it will not be difficult to set up an acceptable distribution system.

Issue: There were too many facts presented within the two-hour meeting. The local communities need more information and time to determine their concerns. Will there be more information and time to review the proposed project?

The public will have the opportunity to review the application and provide comments to the Environment Assessment Office before any decisions are made on the project.

Issue: Are there any case studies from similar projects conducted in other areas?

Most large mines require some form of dewatering to depressurize the mine walls. Dewatering usually occurs via pumping from groundwater wells or tunnels beneath the mining area. Open-pit mines usually require much higher pumping rates than underground mines because of their large horizontal extent.

Dewatering rates in underground mines may range from 500 to 5,000 U.S. gallons (1,893–18,930 litres) per minute (U.S. gal/min) whereas open pit dewatering rates can range up to 60,000 U.S. gal/min (227,100 litres) (as with the Barrick Mine in Nevada,

USA). HVCC is unique in that we are dewatering a very deep soil trench (350 metres deep) located behind one of the rock walls in our pit. At the bottom of the trench is a pressurized groundwater zone we call the “basal aquifer.” We need to dewater the pressurized soil behind the wall before we remove the rock; otherwise, the pit would fill with water and the walls could become unstable.

Issue: Not quite sure how all this will affect the future of Logan Lake? Hope there is a lot of public information brought forward on results of all findings.

The BC Environmental Assessment process provides opportunities for public review and comments.

6.3 Theme: Fish and Wildlife Impacts

Issue: What are the impacts to fish habitat and populations once the valley pit dewatering project is complete and pumps are shut off?

This issue has been raised by government agencies. The environmental impact assessment, which is presently under way, will include consideration of possible impacts at shutdown.

Issue: Is there a plan in place with Fisheries and Oceans Canada?

We have involved Fisheries and Oceans Canada in consultations on the project and they will have an opportunity to review and comment on the application, which will include the environmental impact assessment report. The Fisheries Act is a strong piece of environmental legislation that we must operate within.

Issue: Will there be impacts to wildlife?

There could be. We are conducting field studies this summer to determine whether, and to what extent, riparian vegetation and wildlife habitat could be affected by changed water flows.

Issue: Will there be impacts on fish and wildlife in Witches Brook?

We are presently conducting detailed studies on fish and fish habitat in Witches Brook and Guichon Creek. The government agencies concerned with water management and fisheries management generally agree that some additional flow in Witches Brook and Guichon Creek would be a good thing. We are trying to determine whether our proposal would have any negative impacts in addition to the positive ones.

Issue: Will there be impacts to the ecosystem?

Yes, it is possible that there will be both positive and negative impacts. If significant negative impacts are identified, some form of mitigation is expected to be required.

Issue: Are there any concerns about changes in habitat or fish or ecosystems, any concerns for salmon fry?

Yes, a concern has been raised that higher water temperatures in winter could affect incubation. There is also a concern that faster water could reduce rearing habitat. The consultants doing the environmental impact assessment work are addressing these issues.

Issue: Is there a potential for ice build-up that could cause biological impacts?

Higher water levels in winter could raise ice levels and possibly affect ice jam flooding. We will investigate this issue further.

6.4 Theme: Surface Water Quantity

Issue: There is a need to figure out the acceptable range for flows in affected creeks. Is this going to be done?

We are doing field studies to determine channel conveyance capacities and to identify potential for erosion and scour during high flows.

Issue: Is there a potential for increased bank erosion along affected creeks?

We will limit the flow releases to Witches Brook during large natural runoff events to prevent erosion and scour.

Issue: Flooding, reduced channel stability, and property damage need to be avoided. What is the impact of large freshet events (e.g., 1997 spring freshet) on Witches Brook, Guichon Creek, Nicola River, and Thompson River?

We can temporarily store water in the tailings pond, and will commit to not causing increased flow during large natural runoff events (events large enough to cause erosion and flooding).

Issue: Is there a potential for increased bed load transport and “sluicing out” of creek beds?

We are examining this possibility via detailed field-based measurements, and will limit our releases so we don't cause such problems.

Issue: Cottonwood Trailer Park, which borders Guichon Creek in Lower Nicola, needs to be assured that there will not be excessive erosion of the creek bank. Could someone assess the creek along this property regarding potential impacts?

We will take a look at this area.

Issue: Is there adequate monitoring of water quantity?

This summer we have established two permanent monitoring sites: one on Witches Brook and one on Guichon Creek between Chartrand Creek and Meadow Creek.

Issue: Will there be an ability to reduce pumping rates during high runoff or flood conditions?

We can shunt water to the tailings pond.

Issue: Will there be increased tree mortality adjacent to creeks due to an increased water table?

We are doing field surveys to look into this possibility.

Issue: Will there be reduced water quantity after the mine is closed and the aquifer recharges?

Yes, and we are still figuring out the amounts and the possible impacts of this future flow reduction. At the same time we will be restoring a number of watercourses to Witches Brook, which will help to reduce the impact.

Issue: Who will run the dam at Mamit Lake and who controls the valve?

The Guichon Creek Water Users Community owns and operates the dam. HVCC rebuilt the dam in 1985 and continues to do annual maintenance, but we don't have any say in how it is operated. The Lower Nicola Indian Band is a significant player in this association.

Issue: What happens at the dam during high water events (flooding)?

The dam is operated to maximize benefits to irrigators with licences on Guichon Creek. The various gates and the spillway can safely pass a very large flow so there shouldn't be any higher water levels around the lake.

Issue: Will there be more water extracted at different times of year due to seasonal variations?

Our plans would be to pump at a steady rate. There will be some fluctuations in flows as individual wells are brought on-line or go dry, but there will not be seasonal fluctuations

Issue: Will channel cross-section information be made available to property owners along affected creeks, especially at low points or areas that traditionally have flooded? Property owners want to avoid potential impacts to property and livestock grazing areas.

Yes, if a request is made.

Issue: What will happen to the water level at the irrigation ditches?

It will generally be higher than it is now. The work we have planned will identify the changes that can be expected.

Issue: There are concerns that in winter months ice will build up (e.g., ice dams) and cause flooding problems. If there was an ice dam, how quickly could the pumps be turned off or water diverted to the Thompson River? (winter monitoring and emergency response).

We could monitor ice levels during the melt season and, if necessary, temporarily divert the water to the tailings pond.

Issue: How long does it take water to travel downstream in the event that an emergency response is required?

The response of Witches Brook is slow because of its low gradient. We will look into this further.

6.5 Theme: Surface Water Quality

Issue: What is the quality of the extracted water. What types of minerals are in the water?

Detailed water quality analyses will be included in the application.

Issue: Will there be recreation and fishing impacts with kids taking fish out of Witches Brook?

Indications thus far suggest that the water is safe to drink. The water will come from a deep, uncontaminated aquifer; it will not come into contact with any part of the mine before it is discharged to the creek.

Issue: Is there a concern with increased molybdenum or pH?

Because the surficial and bedrock geology near the mine does contain molybdenum, the basal aquifer water also contains some molybdenum. Indications thus far suggest that the levels will be within agricultural guidelines, which are stricter than aquatic or drinking water guidelines. The pH is about neutral.

Issue: Will there be temperature impacts in creeks and lakes in both summer and winter months?

The temperature of the basal aquifer water will be higher than natural creek water in winter and lower in summer. We are presently looking at how far downstream these differences could persist. If necessary, we will develop a mitigation plan to minimize any negative impacts.

Issue: Will the water quality in creeks be reduced?

We are studying possible changes to water quality now. The basal aquifer water is somewhat different from the surface water, but so far it doesn't appear that there will be any problems.

Issue: It is important that adequate water quality monitoring occur. Will water quality monitoring be conducted?

We currently conduct a comprehensive water quality monitoring program. We expect that this program will become even more extensive if the project is approved.

Issue: Increased water levels in creeks could bring up groundwater levels adjacent to creeks. Could this affect septic fields and cause water quality problems? What would be the increased groundwater levels?

Groundwater levels will rise about the same as the creeks will. If there are concerns about particular septic fields, we will get out and take a look.

Issue: What happens if equipment failure occurs at the mine (e.g., hydraulic line breaks)? Is there the potential to contaminate the aquifer?

The aquifer is very large and the probability of an incident at the mine significantly affecting the aquifer is extremely low.

6.6 Theme: Liability

Issue: Who pays if short-term or long-term impacts occur?

HVCC will, as part of the application process, conduct an environmental impact assessment to identify any short- and long-term impacts and will develop a mitigation plan for any such impacts. HVCC anticipates that the project approval certificate will define necessary mitigation procedures, which will then be incorporated in the discharge permit. HVCC will, as holder of the discharge permit, comply with the terms of the permit.

Issue: Who is liable if impacts occur to drinking water supplies or property?

Depending upon the circumstances, HVCC or other parties may be liable. However, based on all studies conducted to date and because HVCC anticipates being required to conduct an extensive ongoing monitoring program, HVCC fully expects that such impacts will not occur.

Issue: How long would HVCC's liability be held?

HVCC has posted a substantial reclamation bond with the Province of British Columbia for the mine operation, securing post-closure environmental risks. HVCC expects that the bond will remain in place for a substantial time after closure and would not be released until the Province considers there to be no risk warranting further bonding.

Issue: Is HVCC still liable if there are environmental impacts many years (i.e., >25 years) after the mine is closed?

Depending on the nature of the impact, HVCC could be found liable for impacts that were not discovered until after the mine closed. Certainly this is the case under the Contaminated Sites Regulations where, in many circumstances, no time limits on the length of liability. As noted above, HVCC will have bonding in place for a considerable period after closure.

Issue: Concerned that decisions are always based on the bottom line to the exclusion of common sense. How has common sense and the bottom line been considered in this project?

Economics were a factor in HVCC selecting Witches Brook as the preferred option. However, fisheries in the Guichon Creek and Nicola River system have already been significantly influenced by low flows resulting from water diversions for other uses. Releasing groundwater into the system has the potential to improve habitat for the next ten or more years. After that time, HVCC will be working to return watercourses, which are currently diverted for mining purposes, to Witches Brook.

Issue: If water along the floodplain increases, and water is contaminated from local sources (e.g., septic tanks or other sources), how would HVCC be liable?

HVCC has indicated to the government and in public meetings that during periods of high water we will be able to divert the extracted groundwater to the main tailings pond. We anticipate that any Project Approval Certificate will contain wording covering the conditions under which such a diversion would occur.

6.7 Theme: General Environment Issues

Issue: Could this project increase greenhouse gases due to the decomposition of vegetation on shores of creeks?

Impacts to vegetation are being studied as part of the environmental impact assessment.

Issue: Will a new microclimate be created along the creeks?

This will be considered as part of the environmental impact assessment.

Issue: What causes the colour in the water in the tailings pond?

Lime used in the milling process.

Issue: Why were communities downstream of the Nicola River not contacted?

The change in flows in the Thompson River is minuscule relative to the flows of the Thompson River. There will be no impact on the Thompson River.

Issue: Could this project affect river-rafting operations?

There will be slightly more water during all seasons in the Nicola and Thompson Rivers. On the Nicola River, the increase will be 5–10%, but on the Thompson River, the increase will be less than 1%. It's not likely that there will be a noticeable effect on rafting operations.

6.8 Theme: Basal Aquifer

Issue: Could the dewatering of the basal aquifer cause subsidence of ground above the aquifer?

We are presently investigating this risk. The area at risk of subsidence will be restricted to the area immediately next to the dewatering wells.

Issue: Extent of aquifer: Is the aquifer connected to local water supplies and what is the extent of aquifer (i.e., proximity to Logan Lake)?

We don't believe the aquifer extends to Logan Lake, but we are drilling additional wells along Witches Brook to confirm this.

Issue: Does the aquifer maintain habitat somewhere else?

Interactions between surface water and groundwater are being evaluated as part of the environmental impact assessment work currently under way.

Issue: What happens if more water is required to be pumped than the proposed maximum amount of 25,000 gallons (94,640 litres) per minute?

We will have a permit that will specify a maximum pumping rate. Therefore, we will likely apply for a rate that is higher than what we anticipate needing.

Issue: When the Valley Pit is closed, where does the water go when the pit fills? Will there be sufficient head once the pit is full to avoid subsidence of the Valley Pit wall after the mine is closed?

The pit will infill with water until equilibrium with the surrounding water table is reached. We will continue pumping the basal aquifer after mining ceases in order to prevent catastrophic failure of the pit walls due to intruding water.

Issue: Could there be acid rock drainage from the mine site similar to Britannia Beach Mine?

Acid rock drainage occurs when sulphide minerals are exposed to air and water. It can be a very serious problem. It is not an issue for Highland Valley Copper for two reasons. First, there are very low levels of sulphide minerals present in the rock at the mine site. Second, the rock containing the mineralization has a strong buffering capacity and will act to neutralize any acidity that is generated.

Issue: Have you drilled test wells to determine the content (surficial materials) of the aquifer? Are the wells cased and how many are there?

All of the wells that we drill into the deep soil trench are fully cased. We recover soil samples every 2 or 3 m so we can better define the geology of the aquifers in the area.

Issue: How often do water quality tests occur on the aquifer (current and in future)?

We analyze a composite sample of extracted groundwater monthly. We have completed two sets of detailed sampling of all the aquifers this year. HVCC currently carries out a detailed downstream water quality monitoring program. We anticipate that an even

more extensive program would be one of the required conditions if the project is approved.

6.9 Theme: Community Drinking Water Supply

Issue: Are there potential impacts to local community drinking water supplies at Logan Lake, Merritt, and Lower Nicola?

This is being examined through the environmental impact assessment currently under way.

Issue: Is there an interconnection between the aquifer and the community water supplies?

This is being examined through the environmental impact assessment currently under way.

Issue: Will there be test wells developed to see if the lower aquifers are being affected?

This is being examined through the environmental impact assessment currently under way.

Issue: Is the water of high enough quality to be consumed even though the water is static (old) water?

Our current data indicates that the water meets drinking water guidelines.

Issue: Extremely important that quality of water be maintained both during and after dewatering project. Will HVCC ensure that the quality of drinking water be protected in Logan Lake and Lower Nicola?

HVCC recognizes that water quality is a significant concern to the residents of both Logan Lake and Lower Nicola.

Issue: Will there be increased molybdenum in the creeks?

The water in the basal aquifer does contain low concentrations of molybdenum, but so far it appears that it is within all applicable guidelines and regulations.

Issue: Could the Greater Vancouver Regional District biosolids get into deep well-water sources?

Biosolids are applied at HVCC as prescribed in our permit from the Ministry of Water Land and Air Protection. The Permit requires regular sampling to ensure that no detrimental impacts are occurring.

Issue: Is there a market for water coming from the basal aquifer?

At this point, HVCC is not considering any plans to attempt to market the extracted water.

Issue: Could there be additional water shortages during the recharge of the aquifer (Nicola/Guichon watersheds are historically short of water) after the dewatering project is finished?

We will develop a ramp-down program to minimize any impacts associated with shutdown of the dewatering system.

Issue: Will there be an effect on other aquifer (s) in lower Guichon Creek watershed?

This is being examined through the environmental impact assessment currently under way.

Issue: Not prepared to have my drinking water jeopardized. No way! No how! How will this be ensured?

As noted above, HVCC recognizes that water quality is a significant concern to the residents of both Logan Lake and Lower Nicola.

Issue: If the level of Mamit Lake is increased, will this change the level of water in nearby wells (i.e., in Lower Nicola and below Mamit Lake)?

It is not likely. As noted above, the gates and valves on the Mamit Lake Dam have sufficient capacity to easily pass this additional flow. The seasonal level in Mamit Lake can be maintained at whatever level is desired by the dam operators.

6.10 Theme: Mine Life and Closure

Issue: What will be the start-up or shutdown timeline? What would be the mine closure dates with and without the proposed project? Are there other areas that could be expanded which could further prolong the mine life?

We hope to submit our project application in October. The Environmental Assessment Office will review it over a period of months. We will start pumping as soon as we get an approval certificate. At present, the mine is forecast to close in mid-2009. However, if we didn't do this project, the mine would close in 2005.

7 RESEARCHABLE QUESTIONS

As indicated earlier, one of the objectives of this process was to generate a list of possible researchable and monitoring questions. The workshops did generate a list of items and ideas that HVC viewed as important for monitoring considerations (see section 6). In the area of researchable questions, however, limited information was generated through discussions held at the workshops. These questions will most likely be dealt with during other aspects of the EAO process.

8 CONCLUSION

This report presents the results of a public stakeholder needs assessment conducted by the Southern Interior Forest Extension and Research Partnership (SIFERP) during the summer of 2001 on behalf of Highland Valley Copper Corporation (HVCC). It is based on questions and information collected by SIFERP from participants that attended workshops in both Logan Lake and Merritt regarding the proposed Valley Pit dewatering project. Key indicators, concerns, and questions from the public are presented with comments provided by HVCC.

Based on feedback from the workshops, concerns exist about the potential impacts of the proposed dewatering project on local water quality and quantity. Issues relating to fish habitat, wildlife, channel erosion, property damage, liability, and safety measures were identified.

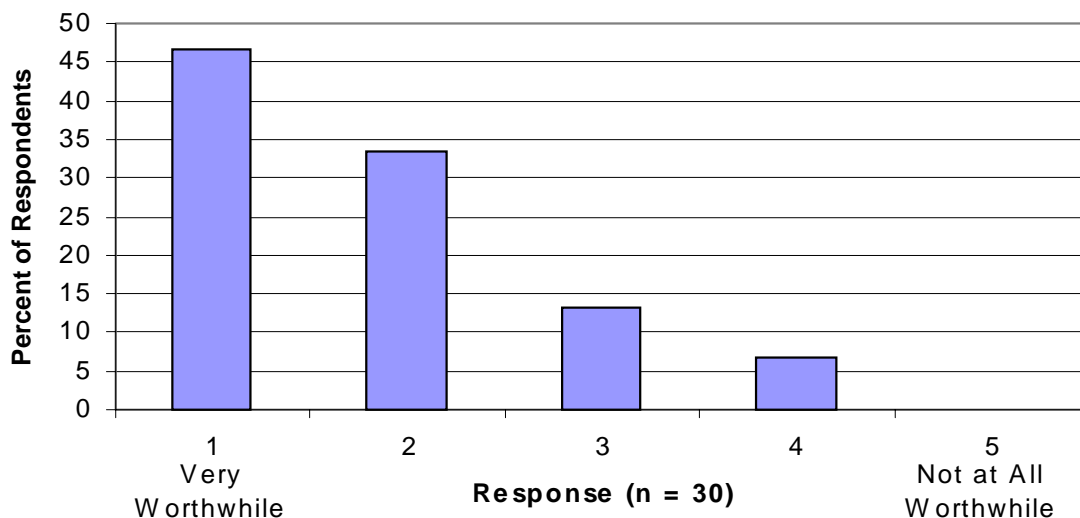
A review of the evaluation forms received from the participants of the public stakeholder workshops shows that these events have been useful in providing information and allowing the participants to ask questions and provide comments. The overall majority of participants appeared satisfied with the public stakeholder workshops and appear to have been able to adequately provide input.

This report does not reflect the views of SIFERP, but instead reflects the issues and concerns that were identified by the participants at the workshops. Comments and answers to the participants' issues were supplied by HVCC. Any additional questions or comments regarding this report or the proposed Valley Pit dewatering project should be directed to HVCC.

APPENDIX 1 Highland Valley Copper Corporation Groundwater Stakeholder Meeting Comment Form Summary: Logan Lake Meeting (July 19, 2001)

A total of 31 comment forms were received from the public stakeholder meeting in Logan Lake on July 19, 2001. Comments were received from approximately 80% of the participants. The following sections summarize the comment forms by question. One of the comment forms collected contained limited information; therefore, the majority of information presented here is based on the comments of 30 participants.

Question 1: In general, how worthwhile was this meeting to you? (Measured on a scale of 1 to 5, with 1 as very worthwhile and 5 as not at all worthwhile)



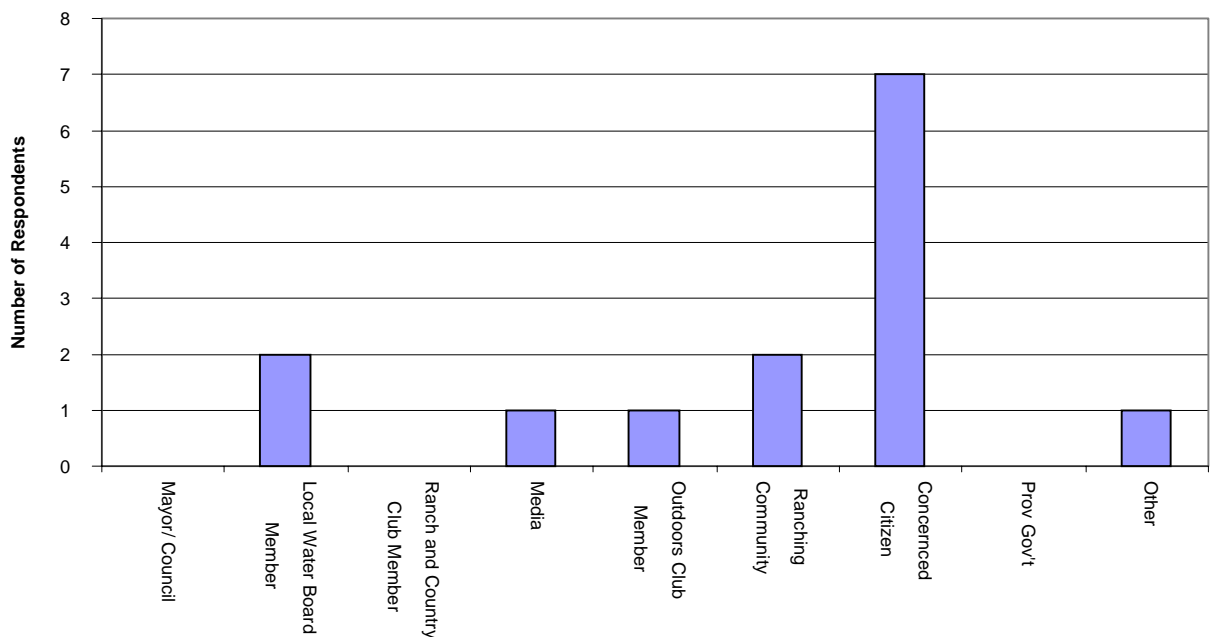
Question 2: What motivated you to attend this meeting?

- Long time resident in Logan Lake
- Concerned citizen
- I live here
- Curiosity
- Information
- Twenty-five year Highland Valley Copper supervisor
- Concern over project
- Concerns about the impact on the Village.
- I have 5 acres of property straddling Guichon Creek at Chartrand Road (6 km from ranch and country club): property very low on Creek
- Knowledge of the project
- Outdoor user
- District Water System Superintendent
- Work for Municipality of Logan Lake: Concerned about our water supply

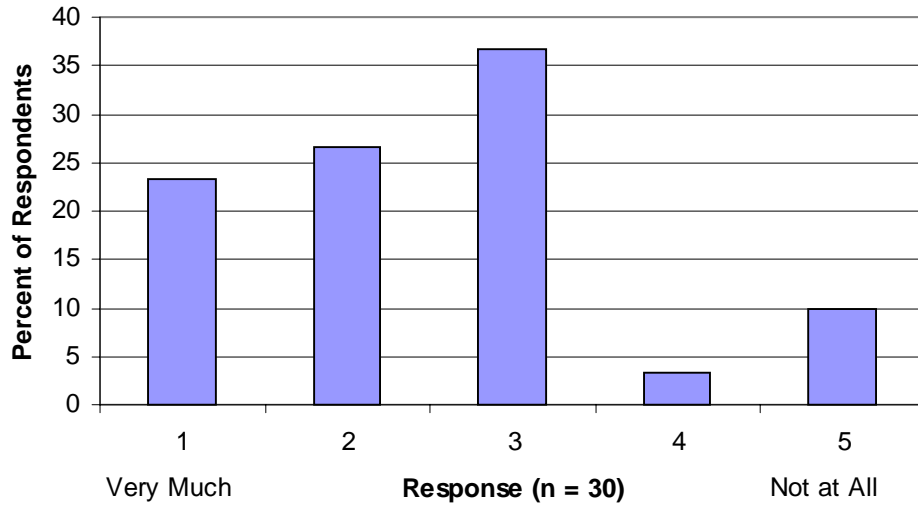
- Wanted to learn more about how this would affect our quality of life: water supply
- Concerns regarding my drinking water and impacts on habitat
- Logan Lake Weekly newspaper: want to inform those who didn't attend
- Water quality
- Councillor, District of Logan Lake and a resident
- District of Logan Lake, water quality
- Engineering studies that were done to see the mine life is good for another 10 years
- Concerned about increased flows to Guichon Creek and if this project would affect the Lower Nicola water supply
- Professional interest in hydrogeology, geomorphology, and stream channel changes and impacts on the environment: want to get some details of their plans, techniques and mitigation
- Interested in future of the mine and affect on water supply in Logan Lake
- Long-term economic development and survival of Logan Lake after mine closure
- Reside downstream
- Media (*Merritt Herald/Valley Express* correspondent), personal interest (water quality)
- Media (*Kamloops Daily News*), BC outdoors and local resident

Question 3: Which of the following most closely describes you as a participation stakeholder?

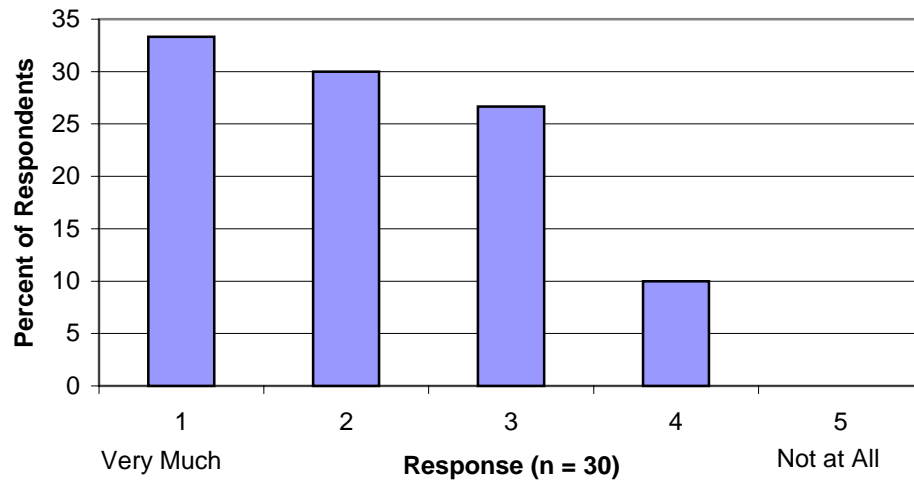
The following graph describes the participating stakeholders. It should be noted that more than one category was indicated on many of the comment forms.



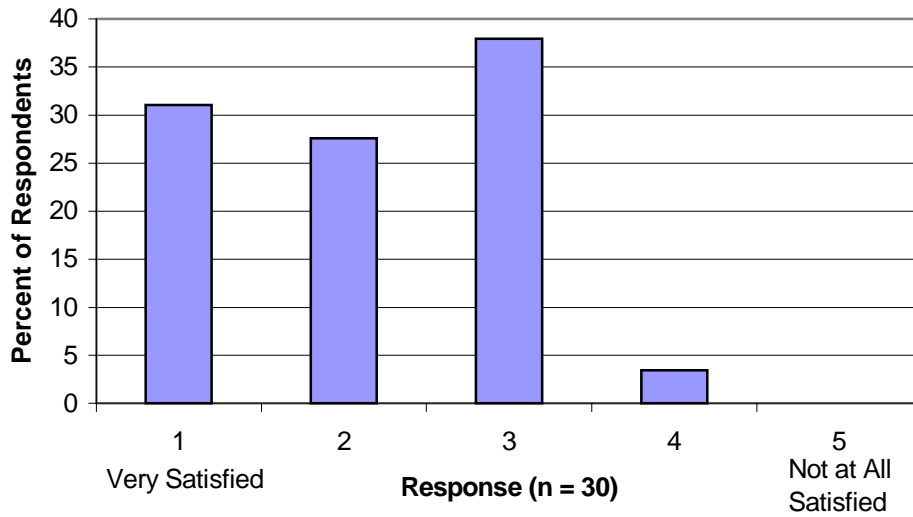
Question 4: Did this meeting affect your attitude about the Highland Valley Groundwater Proposal? (Measured on a scale of 1 to 5, with 1 as very much and 5 as not at all)



Question 5: How much has your participation in this meeting increased your knowledge about the HVCC Groundwater Proposal? (Measured on a scale of 1 to 5, with 1 as very much and 5 as not at all)



Question 6: One of the objectives of this meeting was to provide you with the opportunity for input into the HVCC Proposal. Please rate how satisfied you are that this has taken place at this meeting.



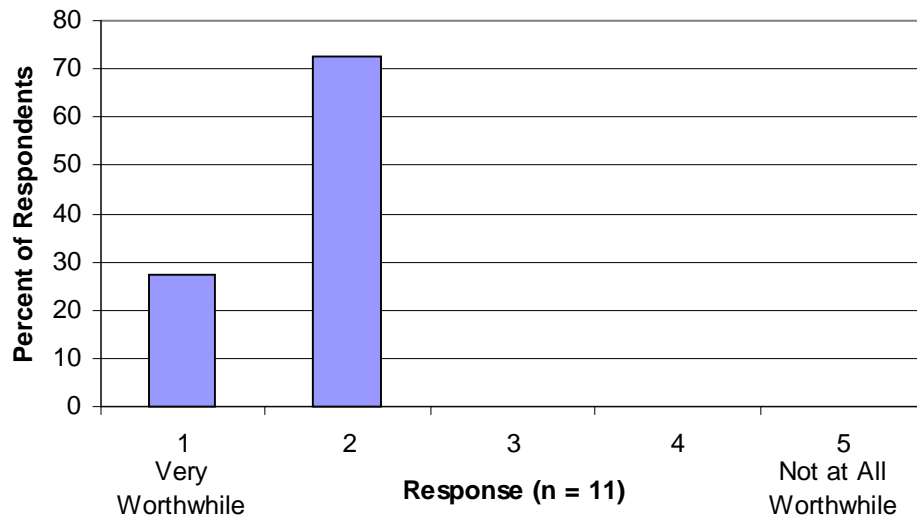
Question 7: Are there any outstanding concerns that you may have that were not brought forward during this meeting?

Outstanding concerns have been summarized in the report.

APPENDIX 2 Highland Valley Copper Corporation Groundwater Stakeholder Meeting Comment Form Summary: Merritt Meetings (July 25 and August 23, 2001)

A total of 11 comment forms were received from the public stakeholder meetings in Merritt on July 25 and August 23, 2001. Comments were received from approximately 70% of the participants. The following sections summarize the comment forms by question.

Question 1: In general, how worthwhile was this meeting to you? (Measured on a scale of 1 to 5, with 1 as very worthwhile and 5 as not at all worthwhile)

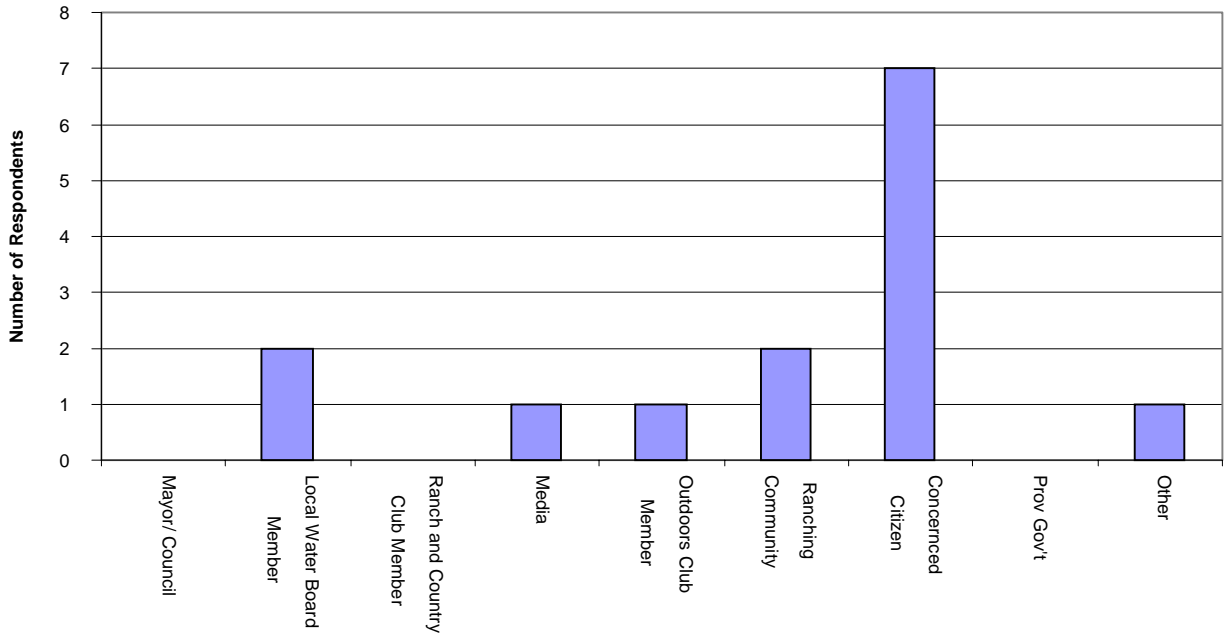


Question 2: What motivated you to attend this meeting?

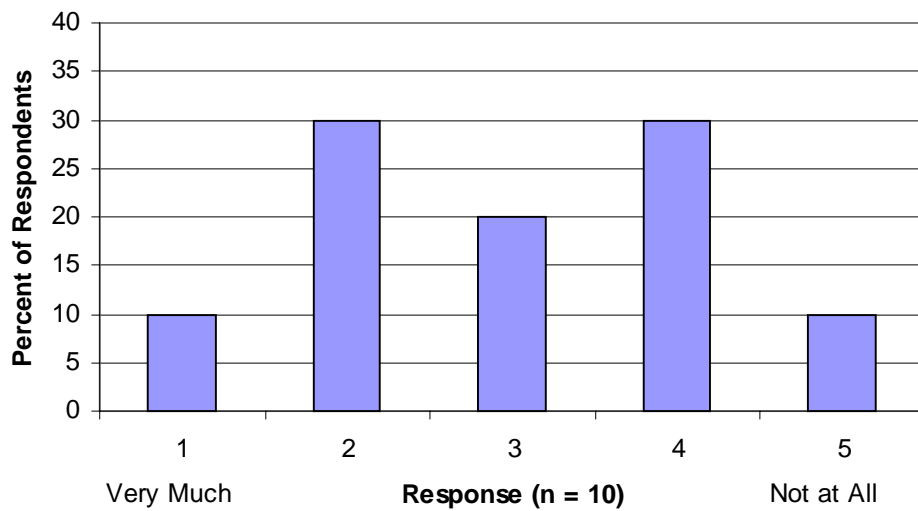
- Concerned about high water and existing channel capacity in relation to increased flows
- Property owners on Guichon Creek
- Concerned with underground water supply and increase flow in Guichon Creek
- I'm a reporter for the Merritt Herald: it's my job
- I have a well for drinking water
- Lower Nicola resident
- Concerned about groundwater rising, biology along the affected waterways, height of runoff, chemical leaching, emergency plans to help in case of unexpected runoff
- Lower Nicola water
- Water quality and flood plain, Logan Lake, Lower Nicola and downstream
- Safety of the Lower Nicola water

Question 3: Which of the following most closely describes you as a participating stakeholder?

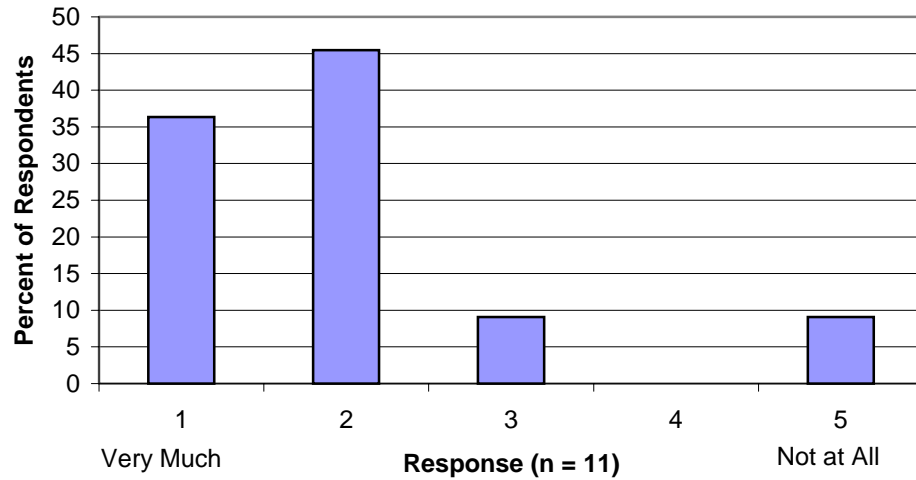
The following graph describes the participating stakeholders. It should be noted that more than one category was indicated on many of the comment forms.



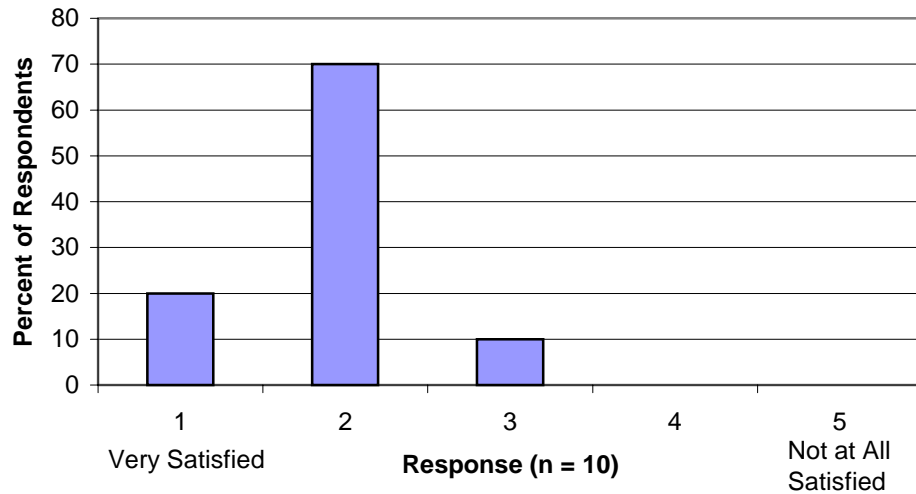
Question 4: Did this meeting affect your attitude about the Highland Valley Groundwater Proposal? (Measured on a scale of 1 to 5, with 1 as very much and 5 as not at all)



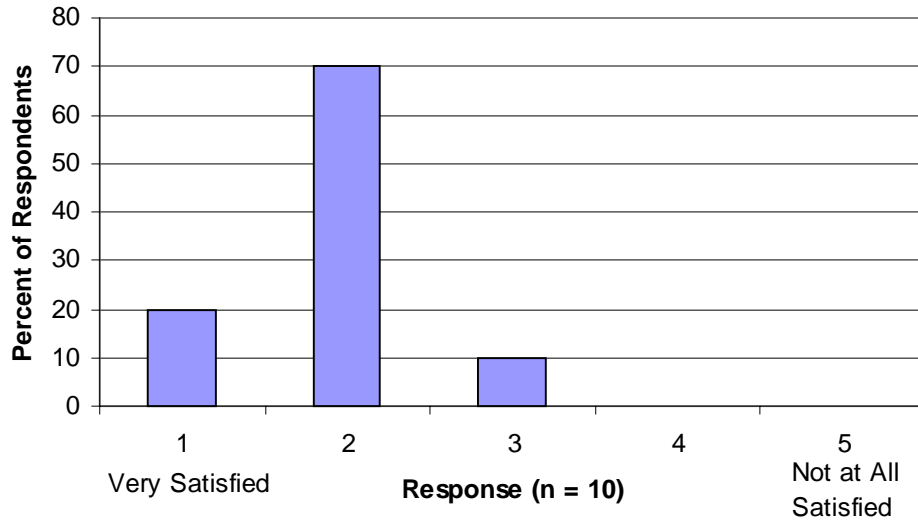
Question 5: How much has your participation in this meeting increased your knowledge about the HVCC Groundwater Proposal? (Measured on a scale of 1 to 5, with 1 as very much and 5 as not at all)



Question 6: One of the objectives of this meeting was to provide you with the opportunity for input into the HVCC Proposal. Please rate how satisfied you are that this has taken place at this meeting. (Measured on a scale of 1 to 5, with 1 as very satisfied and 5 as not at all satisfied)



Question 7: One of the roles of the facilitation team is to ensure that participants have the opportunity to express their concerns. Please rate how satisfied you are that this has taken place at this meeting. (Measured on a scale of 1 to 5, with 1 as very satisfied and 5 as not at all satisfied)



Question 8: Are there any outstanding concerns that you may have that were not brought forward during this meeting?

Outstanding concerns have been summarized in the report.

Question 9: Please circle the best way for the results of this meeting to be communicated back to you.

