[Crown Resources Corp., Buckhorn Mountain Mine Project, WA-005243-4]

#### **RESPONSES**



Cindy Huwe Department of Ecology, Water Quality 15 West Yakima Ave, Suite 200 October 21, 2013

Yakima, WA 98902-3452 chuw461@ecy.wa.gov

Re: Buckhorn Mine draft NPDES Permit No. WA0052434 comments

Dear Ms. Huwe.

The following comments are submitted to the Washington State Department of Ecology (Ecology) on behalf of the Okanogan Highlands Alliance (OHA). These comments include general as well as specific comments that we ask you to consider. Appendix 1 contains specific comments by Ann Maest of Buka Environmental, which include the following topics: compliance limits for different water types; start and duration of freshet sampling; parameters and water types excluded from compliance limit and monitoring requirements; toxicity testing issues; and flows and turbidity sampling and limits. Appendices 2, 3, and 4 are documents produced by the Pacific Groundwater Group that are referenced in the comments.

The Okanogan Highlands Alliance (OHA) appreciates the efforts of the Water Quality Section of the Department of Ecology at the Central Regional Office to improve the National Pollution Discharge Elimination System (NPDES) permit for the Buckhorn Mine. The 2013 draft NPDES permit is an improvement over the current permit. A stronger permit is necessary because the current permit has not been sufficient to prevent the consistent release of pollutants from the mine into the environment. While OHA appreciates and supports the increased environmental protections and clarity in the final NPDES permit, they will only be as good as Ecology's commitment to enforce them. In order to repair existing and avoid future water pollution, Ecology must strongly enforce the permit and resist the political pressure that this wealthy industry can bring to bear. Systematic enforcement by Ecology is needed to prevent lax practices from continuing and to stop the mining company from disregarding permit requirements. Please consider the following comments.

In addition, Crown Resources, a fully owned subsidiary of Kinross Gold, has pressured Ecology into accepting what OHA considers to be unsupportable changes that expand the area that is allowed to be negatively impacted by the mine (i.e., expansion of the capture zone). Ecology has not provided any scientific justification for moving the line of compliance from the current (2006 FSEIS) line. That location has undergone the public environmental review process. In these comment, OHA has provides compelling reasons why the changes to the capture zone location in the draft NPDES permit on east side of the capture zone represents backsliding from current Clean Water Act protections and creates confusion regarding permit compliance. The current capture zone map should be retained on the northeast side of the mine.

The draft permit proposed a very generous set of interim permit compliance limits for monitoring locations outside the capture zone. Interim limits were agreed to conceptually by Ecology on June, 29, 2013. Under the June 29, 2013 Penalty Settlement Agreement (PCHB No.12-084), Ecology agreed conceptually to the interim limits and to a conceptual timeframe to bring the mine into compliance with the final compliance limits for

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### OKANOGAN HIGHLANDS ALLIANCE 10/21/2013

OHA1 The 2007 NPDES Permit did not contain a map of the Capture Zone. Ecology enforcement action taken in 2009 required a map of the capture zone to be included with each DMR. Regarding scientific justification, Crown submitted a map that was based on most recent model. Ecology made a technical decision by including MW-16 and D-6 inside the capture zone. The proposed area of the map is smaller than the original 2006 FSEIS map, therefore it is not backsliding.

OHA1

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#### OKANOGAN HIGHLANDS ALLIANCE 10/21/2013 Continued...

OHA2 Ecology's policy position is that the interim limits will be in place until December 31, 2014. Final Limits will be effective from January 1, 2015 until the duration of the permit.

OHA3 Ecology is requiring a revision of the AMP in 2014 and that revision would address this issue.

OHA4 Ecology requires a mine closure hydraulic reclamation plan under S21 of 2014 NPDES Permit. The Permittee must notify Ecology in writing of the intent to close the mine a minimum of 90 days prior to the mine closure date. Ecology will call for a scoping meeting for the Buckhorn Mine Rehabilitation Plan within 30 days of the notification.

OHA5 Permittee is prohibited from any mine activity inside or outside the Capture Zone that has the potential to adversely impact the monitoring function of points of compliance in Tables 12, 13, 14 & 15 without pre-approval, in writing, by Ecology, Central Region Office Water Quality section.

OHA6 The 2014 NPDES Permit requires revision of the AMP in 2014.

OHA7 Ecology agrees with this comment.

OHA8 One of the purposes of the AMP is managing the source of contaminants including waste rock and ore stockpiles (AMP Appendix C). The 2014 NPDES Permit requires revision of the AMP in 2014.

that Crown had already or was planning to conduct a number of water protection activities at the mine. If OHA had been given an opportunity to provide input, we would have explained that the underground mine is likely a major source of contamination, and nothing in the list of water protection activities addresses the problem of pollution emanating from the underground mine. Instead of working with due diligence to address water quality problems at the mine to ensure that water quality outside the capture zone would return to background conditions, since the penalty settlement, Crown and their consultants have worked aggressively to ensure that the new NPDES standards would be to their best advantage. There is nothing in the penalty settlement that says that the compliance timeframe will be more than one year, as proposed in the draft permit. If one year is to be the timeframe, it should be from when the penalty settlement was signed, not from the issuance of the permit. Unless a more aggressive timeframe for compliance with final limits is set, especially for contaminants that are currently out of compliance, mine contaminants will continue to pollute the streams and groundwater in this area. OHA requests and recommends that interim limits be permitted only for a year from the penalty settlement, or until June 29, 2014, which would be over six months from permit issuance. If at that time Ecology decides that Crown has acted with due diligence and has aggressively endeavored to achieve background water quality levels outside the capture zone, a three-month extension would be possible. A shorter compliance timeframe

locations outside the capture zone. The public has had no say in this agreement, which has not undergone any public review. The justification for interim levels and the compliance timeline was based on an understanding

OHA3

Regardless of what Ecology decides on the timeframe for interim compliance, if monitoring shows that values outside the capture zone exceed background values and indicate that the capture zone is not being maintained, Crown should be required to investigate the problems, identify the contaminant sources, and develop a plan for stopping the problem.

would provide incentives for positive action that would result in quantifiable water quality improvements.

Without this incentive, OHA is concerned that the already long-standing problems with the capture zone will

The draft permit is set to expire on November 30, 2018. The Buckhorn Mine is scheduled to finish mining in a little over two years, which is during the time this NPDES permit will be in force. It is likely that the water treatment facility will have to keep operating after mining is completed and during reclamation in order to bring water inside the capture zone to background conditions and to maintain compliance outside the capture zone. It is important that the NPDES permit stay active until all water quality consistently meets background values, and that background values are maintained through subsequent spring freshets.

The draft NPDES permit and fact sheet express that additional outfall locations are being sought. The draft permit is silent on the need for additional dewatering well and monitoring well locations. It is understandable that because it is the mining company's responsibility to maintain the capture zone, they must propose where dewatering wells should be located. However, the NPDES permit should make it clear that dewatering wells must be located within the capture zone and operated so that the zone of influence of the mine is not expanded.

The network of groundwater monitoring wells around the Buckhorn mine is inadequate to determine if mine contaminants are escaping capture and impacting the environment. Groundwater monitoring is missing on the southeast, south, and southwest sides of the mine. The NPDES permit should clearly state that it is Crown's responsibility to establish, with Ecology's approval, an improved network of groundwater monitoring locations within 90 days from the date the permit goes into effect. The NPDES permit should state that all new dewatering and groundwater monitoringwells will be monitored according to the provisions established in the

Water that leaches from waste rock and ore stockpiles should be monitored for water quality and flow, and the results should be reported to Ecology on a regularly scheduled basis. This type of monitoring is not included in the draft permit, yet it will help determine possible sources of the contamination that exists outside the mine's capture zone.

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# OHA4



# OHA6 OHA7



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#### RESPONSES

## OHA is pleased to submit to Ecology the following comments on the September 19, 2013 draft permit and fact

### OHA9 Ecology agrees with this position and has included it in the 2014 NPDES Permit.

OKANOGAN HIGHLANDS ALLIANCE 10/21/2013

#### 1. Capture Zone

#### Definition

The draft NPDES permit defines the capture zone as: "...the surface area over which recharge would be captured by the mine." This definition focuses on groundwater flow paths originating at the land surface and moving toward the mine or its dewatering wells. This definition does not sufficiently embody the required function of the capture zone. The local groundwater flow system is sufficiently complex that shallower flow paths (e.g., recharge of precipitation at the land surface and releases from mine facilities on the land surface) may differ from deeper flow paths (e.g., seepage that flows from the underground mine workings to downgradient discharge locations). The capture zone definition should include consideration of groundwater flow paths regardless of depth. We recommend that the capture zone definition in the NPDES include: "The footprint over which recharge would be captured by the mine extends from the land surface to the depth at which groundwater is not affected by mining activities."

OHA10 Ecology agrees with this position and has included it in the 2014 NPDES Permit.

OHA11 Ecology agrees with this position and has included it in the 2014 NPDES Permit.

Continued...

OHA12 Thank you for your comment. Part of the NLF3 Fault will be located inside the 2014 Capture Zone.

### OHA9

In addition, we believe that the capture zone requirement in the current NPDES permit ("The Permittee must establish and maintain a ground water capture zone to include all underground mine workings, the surge pond, and all surface stockpiles of ore and development rock") should be maintained in the proposed document, as it specifically addresses control of groundwater exposed to mine facilities at the land surface and mine workings at depth. The definition should also include that the purpose of the capture zone is to ensure that water impacted by mine-related contaminants is contained, collected, and treated prior to discharge. Most importantly, the final NPDES permit should clearly express that the capture zone is the farthest extent from the mine that minerelated contaminants are allowed. In other words, it is the area that is permitted to be contaminated during mining, but must be brought back to background conditions after reclamation is complete. In order for the capture zone to be meaningful, it must be able to be monitored and enforced.

OHA10

OHA believes that these modifications to the definition of the capture zone more closely capture the discussion in the fact sheet (e.g., "The Capture Zone represents the 3-dimensional area... The Capture Zone functions as a pump and treat water capture area over which mine impacted surface stormwater and groundwater is collected and treated to prevent contamination of water resources outside the zone.").

#### Capture Zone Expansion

The proposed capture zone (as delineated in the draft NPDES permit) would allow significant expansion of the near-mine areas allowed to be contaminated from mine operations. This is particularly true near the portion of the NLF-3 fault where the mine has had the most difficulty controlling unpermitted discharges. This proposed expansion on the northeastern side of the capture zone, as drawn by Crown's consultants, would now include the surface expression of the NLF-3 fault (see Figure 1). In the current capture zone, which derives from the 2006 FSEIS, the NLF-3 fault is outside the capture zone north of the NWF-1 fault. The NLF-3 fault dips to the southeast and away from the mine workings in this location and could easily feed contamination to areas outside the proposed capture zone (see Figure 2). The NLF-3 fault constitutes a major preferential flow path in the mine vicinity. If the surface expression of the fault, which would be inside the expanded capture zone, is allowed to be contaminated, it would be nearly impossible to control contaminant movement within the fault and therefore to maintain compliance outside the capture zone. Contaminant transport from locations within the proposed expanded capture zone would likely appear in monitoring wells MW-14, MW-15, and MW-2R, which intersect the fault at depth but are located outside the proposed capture zone (Figures 1, 2, & 3). The capture zone should be drawn so that the NLF-3 fault north of the NWF-1 fault is outside the capture zone in the final NPDES permit (see Figure 4).

OHA12

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#### RESPONSES

#### OHA13

Ecology's Fact Sheet describes the modifications to the capture zone as "minor" and provides no scientific justification for the proposed expansion of the capture zone. The capture zone in the current NPDES permit, which is from the FSEIS, better protects the environment because it excludes most of the NLF-3 fault. The capture zone should not be expanded without adequate scientific or technical justification. This backsliding in the draft NPDES permit would undermine Ecology's ability to enforce compliance because it appears to allow pollution of wells in the NLF-3 fault that are located outside the capture zone. This should be corrected in the final permit by moving the line back to that of the 2006 FSEIS. Ecology can and should justify this 2006 FSEIS capture zone delineation in the fact sheet and explain why expansion of the capture zone would reduce compliance outside the capture zone.

OHA14

The other expansion of the capture zone proposed in the draft permit occurs in the southeast portion of the mine footprint, surrounding monitoring well MW-16 and dewatering well D-6. When well D-6 was installed adjacent to MW-16, both wells were located *outside* the 2006 FSEIS capture zone (see Figure 3). This installation is widely understood by Ecology to have been a mistake, because it draws mine contaminants away from the mine footprint and *outside* of the existing capture zone. The Ecology/Crown June 2013 Penalty Settlement Agreement allows MW-16 to be considered within the capture zone and not a point of compliance. Removing MW-16 as a point of compliance effectively expands the capture zone without an explicit redefinition of the zone and without public process. The current draft NPDES permit is the first opportunity for public comment on that decision. If there is a technical reason for expanding the capture zone in the area around MW-16 and D-6, Ecology should include that justification in the fact sheet. The fact sheet contains no mention of this expansion or of MW-16 or D-6. Ecology should provide documentation on the rationale, impacts and authorizations of dewatering well D-6, and provide a justification for its continued use, now that its influence in drawing contaminants away from the mine is understood and accepted.

OHA15

OHA strongly objects to expanding the capture zone due to a negotiated settlement that was based on unrelated issues. OHA is concerned that this decision was based more on political connections than the Clean Water Act's mandate to reduce pollution. This expansion of the capture zone would constitute backsliding from the current permit. Ecology should acknowledge that authorizing the D-6 dewatering well was a mistake and take actions to correct that error, instead of adding another mistake by incorporating the additional area into the capture zone and thereby increasing contamination.

OHA17

OHA16

If Ecology insists on expanding the capture zone in the location of MW-16, OHA is concerned that the expansion is bigger than it should be. No justification has been presented for expanding the capture zone to the extent that it has been expanded in the draft NPDES permit in the southeast section. The final map should reduce the size of the surface expression in this location to the minimum size that can be justified.

OHA18

Removing MW-16 as a point of compliance leaves the southeast section of the mine with no reasonable compliance monitoring. Ecology should require adequate compliance monitoring in the NPDES permit in the southeast portion of the mine, outside the capture zone, to ensure that the capture zone is maintained.

Pacific Groundwater Group has created a 3D visualization (<a href="https://voutu.be/SPE5waXRjfU">https://voutu.be/SPE5waXRjfU</a>) for OHA as part of and in support of the above comments. It begins with a visualization of the Buckhorn Mine underground workings that includes relevant faults and monitoring wells. It transitions to show first the 2006 FSEIS capture zone, then the expansion of the capture zone proposed in the draft NPDES permit, and then OHA's proposed capture zone as seen from the south looking north. OHA's proposed capture zone consists of the draft NPDES depiction on the north, south, and west sides of the site and the 2006 FSEIS depiction on the east side of the site. The visualization then transitions to a view looking southwest from northeast side of Buckhorn Mountain.

OHA19

#### 2. Changes in the Draft NPDES permit (p. 4 of fact sheet):

#2 The fact sheet must provide substantive information rather than simply stating that the new capture zone map is based on modeling and data. The fact sheet should <u>explain</u> the underlying assumptions in the model, any

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#### OKANOGAN HIGHLANDS ALLIANCE 10/21/2013 Continued...

OHA13 The 2007 NPDES Permit did not contain a map of the Capture Zone. Ecology enforcement action taken in 2009 required a map of the capture zone to be included with each DMR. Ecology made a technical decision by including MW-16 and D-6 inside the capture zone. The proposed area of the map is approximately 100 acres smaller than the original 2006 FSEIS map.

OHA14 Based on the delineated capture zone in 1996 FSEIS, Ecology should not have approved D-6 in the Capture Zone.

OHA15 Based on the pumping capacity of the dewatering well D-6, the water is being treated and in many cases the levels of contamination are above background groundwater levels, therefore Ecology made a technical decision to retain D-6 and MW-16 inside the Capture Zone.

OHA16 A capture zone map was not defined or included in the 2007 NPDES permit. The 2014 areal footprint has been reduced approximately 100 acres from the 2007 footprint.

OHA17 It was a technical decision by Ecology that dewatering wells should be inside the capture zone. MW-16 and D-6 were included inside the capture zone D-6 to capture pollutants in groundwater. The Permittee must capture and treat mine generated contaminated groundwater and industrial stormwater inside the Capture Zone perimeter so that surface and groundwater outside the Capture Zone does not exceed limits set in S1.A Table 4, Table 5, Table 6 and Table 7.

OHA18 Due to property (state and federal) ownership surrounding the mine, installation of additional monitoring wells on 3rd party lands could not be completed in the 2014 NPDES permit timeframe. Ecology will pursue a plan of action with the USFS.

OHA19 The footprint of the 2014 Capture Zone is approximately 100 acres smaller than the 2007 footprint, more importantly, this 2014 NPDES Permit has established a defined Capture Zone Map footprint.

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#### **RESPONSES**

### OHA20

supporting data analyses, and should reference the supporting source data. The purpose of the capture zone is to control and treat all water that would come in contact with the mine and mine facilities. In a fractured bedrock environment, this is difficult at best, is not an exact science, and should be approached with conservatism. The capture zone should be considered the minimum area in which contaminants must be captured AND the maximum extent that contaminants are allowed to travel away from the mine facilities. The capture zone should not be expanded without adequate technical justification.

### OHA21

#7 While OHA believes that having a SNOTEL site on Buckhorn Mountain may provide reliable information for required mine monitoring and evaluations, the ultimate responsibility for obtaining the type of data that is available from the SNOTEL site lies with Crown/Kinross, not with the NRCS. If for some reason the NRCS cannot provide the monitoring information required, the permit should clearly state that the information must still be collected by Crown. Such an approach is no different than Golder collecting monitoring data but Crown being ultimately responsible for the data and associated evaluations.

### OHA22

# 12 and 13 It is unclear what is meant by an "imminent danger of a groundwater Capture Zone failure." The capture zone fails when mine contaminants are found outside of it. This is a common occurrence; in fact, it has been continuous since mining began rather than reflecting an emergency condition. The Forest Service has described to OHA that an emergency situation would be if the mine filled with water to the level of the mine adit. That would be an emergency. The Forest Service Emergency Authorization (Appendix D) describes the loss of the capture zone as an emergency. The conditions for use of Outfall 012 should be clearly explained in the final permit and fact sheet.

#### OHA22A

The draft permit fact sheet states that if discharge to the other outfalls exceeds allowable volume limits, emergency outfall 012 may be used. This statement is unclear. Reaching the volume limits of the other discharge locations does not constitute an emergency situation as described by the Forest Service. The permit should clearly describe what would constitute an emergency situation by which Outfall 012 may be utilized.

#### OHA22B

Unfortunately, a capture zone at the Buckhorn Mine has never been established and has not been maintained. Proof of this lies in years of monitoring data that show a departure from background values, for many mine constituents, shortly after mining began with those levels remaining clevated to this day. This is not an emergency situation, it is the normal business of the Buckhorn Mine. The final draft NPDES permit must define what would constitute a contingency and an emergency situation by which Outfall 005 and 012, respectively, can be utilized.

#### 3. Compliance Limits

### OHA23

Groundwater is usually in contact with mineralized rock for longer periods of time than is surface water, and concentrations of major elements and metals can be higher in groundwater as a result. The baseline analysis and final compliance limits for the Buckhorn Mine should be established separately for groundwater and surface water. Seeps and springs could be added to either table, but we took the approach of incorporating them with the groundwater data. See Appendix 1 by Ann Maest, Buka Environmental, and Appendices 2, 3, & 4 by Pacific Groundwater Group

#### 4. Other Comments

#### OHA24

Ecology should explain why Outfall 005 discharge volume would be monitored as it comes out of the holding tank (S2.A.5 in the Draft Permit). OHA recommends that the discharge volumes of all water leaving the treatment facility or the mobile RO be monitored and recorded. The special case for monitoring effluent discharges to 005 would create a cumbersome set of data that would be difficult to analyze. If additional monitoring at the tank is necessary to control turbidity or prevent slope instability and erosion, it should be done and would provide a level of checks and balances. These kinds of controls are not onerous, especially because Outfall 005 is a contingency outfall for emergency purposes only.

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#### OKANOGAN HIGHLANDS ALLIANCE 10/21/2013 Continued...

OHA20 The 2007 NPDES Permit did not contain a map of the Capture Zone. Ecology enforcement action taken in 2009 required a map of the capture zone to be included with each DMR. Regarding scientific justification, Crown submitted a map that was based on most recent (2012 annual meeting) model. Ecology made a technical decision by including MW-16 and D-6 inside the capture zone. The proposed area of the map is smaller than the original 2006 FSEIS map.

OHA21 Crown provided funding for the Gold Axe Camp (#1159) NRCS weather station installation but does not operate the weather station. It is operated by NRCS.

OHA22 The emergency conditions for the use of Outfall 012 are clearly delineated by the US Forest Service and require written concurrence from them.

OHA22A The emergency conditions for the use of Outfall 012 are clearly delineated by the US Forest Service and require written concurrence from them.

OHA22B Emergency conditions are defined based on the groundwater elevation (4875 feet above sea level) and/or exceedances of signature parameters outside the Capture Zone, US Forest Service letter dated September 16, 2013 and February 10, 2014.

OHA23 A two tier approach agreed upon by the permittee and Ecology has been established combining groundwater and spring background values into a single table with surface water background values set in a separate table. Data from the EIS and FSEIS was used to establish background levels.

OHA24 The 2014 NPDES Permit requires monitoring at the MWTP as effluent leaves the plant, not at the holding tank at Outfall 005.

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#### **RESPONSES**

## OHA25

The Buckhorn Mine treatment facility transports tens of millions of gallons annually of contaminated water out of the Buckhorn Mountain watershed by truck to the Kettle Tailings facility. The impacts of removing this water (a concentrated brine waste) has, to our knowledge, never undergone environmental review. In addition, this out-of-basin transfer has no water right, and has not even been tested for levels of contaminants. The volume and contaminant concentrations of brine created at the treatment facility and trucked to the Kettle Tailings Facility should be monitored weekly and reported monthly.

### OHA26

OHA supports the reclassification of potentially acid generating (PAG) Development Rock back to the original definition in the 2006 DRMP (fact sheet, page 17). This should also be included in the permit itself to avoid any confusion.

# OHA27

 The fact sheet says that average discharge at Outfall 002 would be up to 300 gpm, averaged hourly (page 20), but the permit states that the daily average can be 200 gpm, with instantaneous maximum flows up to 300 gpm (Table 3, page 11). These discrepancies are confusing and should be corrected.

#### OHA28

O Spring Freshet – the draft permit (page 7) states that the Spring Freshet is defined as beginning "no later than April 1." However, the limited available data suggest that March 15th would be a more reliable date on which to start monitoring that would include the first flush of contaminants. The permit also says (p. 20, footnote #3): "In addition, beginning March 15th if snow water content over a 3 day period releases at least 0.5 in, 0.2 in, 0.2 inch, Crown will begin freshet sampling." This is confusing. The final permit should be clear that spring freshet monitoring should begin on March 15th.

The NPDES permit should require the mining company to discharge water that is as clean as streams and groundwater were before mining began. There is no reason that higher levels of contaminants should be allowed than were originally present in local streams and groundwater.

Thank you for consideration of these comments. Please keep us informed as to Ecology's actions on this permit.

Regards.

David Kliegman, Executive Director

#### OKANOGAN HIGHLANDS ALLIANCE 10/21/2013 Continued...

OHA25 The brine management plan will address this issue. Brine volume will be reported monthly in the DMR.

OHA26 OHA, Ecology and Crown agreed to retain the amended definition of PAG on October 11, 2013 meeting in Wenatchee.

OHA27 Ecology has clarified the flow limits for Outfall 002.

OHA28 Spring freshet has been defined as beginning on March 15 depending on snow pack water release.

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### **RESPONSES**

# OKANOGAN HIGHLANDS ALLIANCE 10/21/2013 Continued...

OHA29 Thank you for your assistance in the permit development process. A copy of this presentation is available upon request from Ecology.

# Buckhorn Mine Draft NPDES Permit: OHA's Preliminary Comments

For Okanogan Highlands Alliance Ann Maest, PhD; Buka Environmental Steven Swope; Pacific Groundwater Group

Presented to the Washington Department of Ecology and Crown Resources
Wenatchee, Washington
11 October 2013

PRELIMINARY DRAFT