Brathovde Public Comments on documents supporting Reserve Silica Agreed Order # DE 16052
including:
DOE Preliminary Data Gaps document dated January 30, 2018
and
Aspect Consulting Site Definition memorandum dated September 4, 2018

Comments submitted November 21, 2018 by Michael and Donna Brathovde

In addition to our formal public comments on the Reserve Silica draft Agreed Order (AO) and Public Participation Plan, we would like to submit the following comments on DOE's Preliminary Data Gaps document dated January 30, 2018; and on Aspect Consulting's technical memorandum on "Site" definition, dated September 4, 2018. These two documents are foundational to the draft Agreed Order # DE 16052.

DOE "Preliminary Data Gaps" document, dated January 30, 2018

We compliment DOE on compiling this preliminary list of Data Gaps. However, we do have some additional Data Gaps we would suggest should also be evaluated in the RI. They include:

Site-Wide Gap #3 – The Covington Well Field is also in close proximity to Kent Springs, and downgradient for groundwater flow below the contaminated infiltration ponds. Covington Well Field and Kent Springs are major sources of municipal water for these two cities. City of Kent has been actively involved in the Reserve Silica issues, but we do not know if Covington Water District has any awareness of these issues, or of any potential risk to their water supply from contaminates on Reserve's property. If they are not involved, Covington Water District should be contacted to provide input on this project.

Plant Site Data Gap 3 – Note, there was a major transformer installation located approximately where the wheel wash is now located in the Dale Coal Company days (1926-1955). We have a map and photo of this installation, if that would be of help to DOE.

Plant Site/Former Settling Ponds Gap #10 – We believe there is a real need for more test wells (besides AMW-1) in the SW end of this area to better understand the extent of contaminated groundwater flow beyond the infiltration ponds and wells MW-5A and MW-6A. This area would appear to be the most likely pathway for potential contamination of Ravensdale Creek and the downgradient Kent Springs and Covington Well Field municipal water supplies. We feel the MTCA RI process should also test for ASARCO roadbed slag-contamination from years of pumping the wastewater from the truck wheel wash to this settling pond area.

Lot 3 Data Gap – As described in our January 9, 2018 comments on Reserve's independent RI, we feel the eastern portion of this lot should be tested for hazardous substances associated with industrial waste "fertilizers" (e.g., Cal-Mag, Ag Mag and Al Mag) and CKD-based liming agents. Use of these hazardous waste "products" were being aggressively promoted by Reserve Industries (L-Bar Products), their predecessor (Industrial Mineral Products – IMP), and by Holnam (predecessor of Holcim; and generator of the CKD dumped at Ravensdale) in the early sand-mining days of this property; and could explain the unusual state of the current forest growing on this lot. Any contamination on this Lot also has the potential to impact the adjacent Lake Sonia wetland complex, and Lot 4.

Lot 4 Data Gap #2 – Past studies have documented contaminated surface water flows west of the South Pond and LDA leachate collection/interception structures. It would seem the Powell property (adjacent to Lot 4 and south of the Baja lot) should also be tested for CKD-related contaminants.

Lot 6 & Lot 1 (& Baja parcel) Data Gap – The northern portions of these three lots along the Ravensdale-Black Diamond Road accommodated an extensive industrial coal processing complex from 1926 until demolished in 1955. Besides the usual coal washing, sorting and storage facilities, this complex also included multiple rail spurs, a forge, machine shops,

blacksmith shops, oil house, powder house, sulfur storage building, generator house, boilers and a briquetting plant - among other facilities. We have a map showing the location of these facilities we would be happy to provide DOE. It would seem, given practices common in the 1920's – 1950's, there is a very high likelihood hazardous wastes were "*deposited, stored, disposed of, or placed, or otherwise come to be located*" on the industrial processing portions of these lots. It would seem these areas should be tested for hazardous wastes commonly associated with these kinds of operations during this time period.

Aspect Consulting's technical memorandum re: "Site" Definition, dated September 4, 2018

We STRONGLY disagree with this technical memorandum and the resulting proposal that the MTCA cleanup "Site" be limited to Lots 5 and 6 (and possibly the Plant Site). Aspect's characterization of Lots 1 – 4 being "*undisturbed, native, vegetated/forested properties*" is grossly misleading. And their statement that the reason DOE included these lots within the preliminary MTCA "Site" was "*simply because they were, at the time of the 2016 Site Hazard Assessment, within the boundaries of a larger lot, now defined by Lot 5 and 6, where hazardous substances are suspected or confirmed to be present*" is irrelevant. There are very compelling reasons for including portions of these four lots within the preliminary MTCA "Site" for purposes of the Remedial Investigation (RI). The independent RI executed by Aspect and submitted to DOE in November 2017, did not address <u>any</u> of these four lots – and thus provides no basis for eliminating these lots from the "Site". We would like to further comment on Aspect's "Rationale" for eliminating these lots as stated in this Sep 4, 2018 memorandum.

Lot 1 – Aspect indicates that "*except for the presence of a graded access road* [Lot 1 is] *undisturbed forest land. No historical activities occurred on these parcels; however, portions of* [this lot] *may have been harvested for timber in the early – to mid-1900's.*" The reality is that the NW portion of this lot accommodated many of the Dale Coal Company coal processing facilities, including three railroad spurs, from 1926 until their demolition in 1955. The NE portion of this lot is a huge coal tailings pile, which a prior Reserve environmental consultant, GeoEngineers (July 22, 2015), characterized as "*These tailings may result in contamination by heavy metals, carcinogenic polycyclic aromatic hydrocarbons (cPAHs), and other associated contaminants depending on the makeup of the tailings material.*" Note that portions of this tailings pile burned for multiple years during the Dale Coal Co. tenure. The northern portion of this lot is also underlain with mine tunnels, gangways and workings from the 1903 – 1915 time period; while the southeastern portion of the lot is underlain by some relatively shallow ("water level") mine workings from the 1899-1903 period. This SE portion of this lot also contains the upper reaches of two major strip mines, that were mined in the late 1940's – early 1950's. The lower reaches of these two mine "trenches" are currently being filled with imported fill material up to the property boundary by the neighboring landowner. The lot also contains ~ 3500' of roads, with strong evidence that ASARCO slag may have been utilized in the bedding and surfacing of these roads. As for harvest history, there is some evidence that this area was first logged in the late 1800's; and was logged again in the 1930's, and a third time in the 1970's, followed by replanting as part of the Northern Pacific/Burlington Northern/Plum Creek Black Diamond commercial forestry operating block. Given this history, Aspect's classification of this lot as being "*undisturbed forest land*" is grossly misleading; and their rationale for excluding this lot from the MTCA "Site" – "*There are no documented or suspected historical activities … that suggest a potential source of hazardous substances or represent a potential risk to human health or the environment*" must be rejected as patently false. At minimum, the northern half of this lot, and the roads, should remain within the MTCA "Site" pending further evaluation in the Remedial Investigation.

Lot 2 – As with Lot 1, Aspect classifies this as "*undisturbed forest land*". While this is somewhat closer to the truth than Lot 1, this lot does share the same harvest history as Lot 1; and also contains ~3900' of roads that may well contain ASARCO slag. The southernmost portion of this lot is also within the BPA powerline right-of-way, and is thus not forestland at all. And the southern half of this lot is underlain by the Dale No. 7 mine works. There have been some reports of past dumping into the adits (airshafts, borings, supply access shafts, etc.) of the Dale No. 4 and Dale No. 7 mines. Given this history, we recommend that Lot 2 remain within the "Preliminary Site" pending further RI investigation. At minimum, the roads on this Lot must remain in the "Preliminary Site".

Lot 3 – The western half of Lot 3 is a large wetland, feeding Lake Sonia, Ginder Lake, Rock Creek, Lake Sawyer and ultimately the Green River. The eastern portion of this lot shared the same harvest history as Lots 1 and 2 (as well as neighboring lands) – all part of the NP/BN/Plum Creek Black Diamond commercial forest operating block.

Aspect claims "*There are no documented or suspected historical activities on Lot 3 that suggest a potential source of hazardous substances or represent a potential risk to human health or the environment.*" They further indicate that this assertion is "*confirmed by the undisturbed vegetation on that lot.*" But as described in our January 9, 2018 comments on the independent RI; and as noted by former forestry consultants hired by Reserve (International Forestry Consultants [Feb 2012] and American Forest Management [May 2016]), for some unexplained reason, the forest conditions on this lot are dramatically different from the conditions on adjacent lots with the same soil and topographic conditions, and managed under the same forest management regimen. A possible explanation for this dramatic difference could be that the forest on this lot may have been treated with an industrial waste "fertilizer", or with a CKD-based liming agent, that were aggressively being promoted by Reserve Industries (L-Bar Products), and by Reserve's predecessor on this site, Industrial Mineral Products (IMP), and by Holnam (predecessor to Holcim, and generator of the CKD deposited on this site) during the 1980's. Both these "products" were later determined to contain hazardous wastes that, under some conditions, could have a lethal impact on certain plants. Given the unexplained cause of the dramatic difference in forest conditions on this lot compared to similar adjacent forests, and the aggressive promotion of these industrial waste "products" by Reserve Industries and their predecessors in years past, the RI should test the eastern portion of this lot for COC's known to be associated with Cal Mag, Ag Mag, Al Mag-type products, and with CKD-based liming agents.

Aspect also claims that "*as long as the DSP remains capped the possibility of contaminated surface water flowing from this source to Lot 3* [and the Lake Sonia wetland network] *is nil.*" That assertion may be hard to justify given the ongoing failures we've seen with attempts to control run-off from the capped LDA. But if the eastern portions of Lot 3 <u>were</u> found to contain hazardous wastes from past fertilizer or liming treatment (or other sources), this could represent a significant contamination risk to public waters of the Green River WRIA, separate from the risk posed from the infiltration ponds. As such, Lot 3 should NOT be eliminated from the MTCA "Site" pending additional testing in the RI.

Lot 4 – Aspect concedes that "*the thin strip of land that extends parallel to the west boundary of the Subject Property*" "r*equires additional monitoring as part of the Remedial Investigation work that remains related to the CKD-filled LDA.*" We wholeheartedly agree with this, as past studies have indicated contaminated leachate flowing on to this area. As such, this portion of Lot 4 should definitely remain within the MTCA "Site", pending additional study. Given this history, we also strongly suggest that the adjacent Powell property also be tested for CKD-related COC's as part of the RI.

Aspect dismisses the risk of contamination to Lot 4 from bedrock groundwater movement from the LDA, the DSP and from the Inert Waste Landfill (Lot 5) because "*bedrock groundwater flow direction is towards the north along north-northwest bedrock bedding plane fractures*". However, <u>if</u> soil contamination from hazardous waste "fertilizers" or CKD-based liming agents, or any other source, were to be confirmed on Lot 3 (see above), groundwater flows could directly transfer COC's to Lot 4 as well.

Aspect also dismisses the risk of contamination of Lot 4 from surface water flows from the upgradient DSP and the Inert Waste Landfill (Lot 5) because, upon closure of the Inert Waste Landfill, both these sources will be capped, and hence "*there will be no source of surface water runoff that could cascade onto Lot 4.*" Again, based on experience with the LDA, this may be an overly optimistic assumption.

Lot 4 south of the BPA easement also contains ~1000' of the Lower Haul Road. Limited testing performed under the independent RI confirmed the presence of ASARCO slag in the road bed (up to 6' deep) and road surface. CKD was also noted in samples adjacent to this road (up to 11' deep). And while the independent RI did not test the portion of the road running through Lot 4, the two closest samples tested just north of this Lot, showed the highest concentrations of COC's of all the road tests. Slag was also noted to be mixed with "*abundant organics*" and "*abundant woody debris*".

Prior testing of ASARCO slag by US EPA concluded that when slag is in proximity to organic wastes "*the decomposition of the wood releases organic acids which cause the metals bound to the slag to be released into the groundwater.*" (US EPA, 1994). As such, there certainly appears to be a risk that Lot 4 south of the BPA easement may well contain COC's associated with ASARCO slag, and with CKD, that should be tested for as part of the RI. Pending results of these tests, Lot 4 south of the BPA easement should not be excluded from the MTCA "Site".

Lot 5 (Inert Waste Landfill) – We concur with Aspect's recommendation that this Lot remain within the MTCA "Site".

Lot 6 (CKD Landfills) – We concur with Aspect's recommendation that this Lot remain within the MTCA "Site". RI testing of this site should also test for COC's associated with ASARCO slag, and COC's likely to be associated with the extensive coal processing facilities on the north end of this site from 1926 – 1955 (see comments on DOE Preliminary Data Gaps).

Another concern we have relates to the future potential risk of bedrock groundwater contamination from CKD within the capped DSP. The unlined DSP in which CKD was deposited, lies directly above the underground Dale No. 4 mine workings from 1926 through 1946. The Dale No. 4 and the Dale No. 7 mines were "water level" mines that shared a common mine portal and access tunnel. As a "water level" mine, the underground tunnels and workings were constructed in such a manner as to allow groundwater within the mine to flow naturally through the mine and mine tunnel, and exit to the surface at the mine portal (located on the north end of Lot 6). This design avoided the necessity of 24/7 operation of huge pumps to deal with extensive groundwater within the mine, which was a major on-going issue with the Ravensdale mines. Water flow through the Dale No. 4 and Dale No. 7 mine works, exiting at the Dale Portal, continues to this day. The Dale Portal is ~800' distant, and upgradient from Ravensdale Lake and Ravensdale Creek.

Past geologic and hydrogeologic studies by consultants for the PLP's have concluded that the bedrock fault lying just north of the DSP would serve as an effective barrier to the northward flow of any CKD-contaminated bedrock groundwater – thus protecting Ravensdale Lake and Creek should groundwater come into contact with CKD in the DSP at some point in the future. However, if groundwater should eventually find its way from the DSP into the underlying Dale No. 4 mineworks, the Dale tunnel would provide a direct path for this contaminated groundwater to breach the protective bedrock fault – spilling CKD-contaminated water directly to the surface, immediately above Ravensdale Lake. We are unsure of the vertical separation between the bottom of the CKD-filled DSP pit, and the top of the underlying Dale No. 4 mine workings. But it seems highly plausible that eventually groundwater will make its way from the pit to the underlying tunnels. Should this occur, this would represent a major CKD-contamination risk to Ravensdale Lake, Ravensdale Creek, and downstream municipal water sources.

Recent testing of the surface flow at the Portal has shown no indications of contamination by the CKD in the capped DSP. This is highly encouraging. Nonetheless, we feel it is imperative that the outflow of the Dale Mine portal continue to be monitored on a regular, on-going basis; and a plan, which could be quickly implemented to address this potential contamination source, should be developed as part of the cleanup process.

Plant Site – We concur with Aspect's recommendation that this Lot remain within the MTCA "Site", pending additional study. We do have concerns regarding Aspect's suggestion that any contamination found on the Plant Site "*will be handled separately than the remainder of the Subject Property where historic mining and landfilling activities occurred.*" While many of the expected COC's on the Plant Site are unique from COC's expected in the mining and landfilling portions of this site, they are likely not materially different from the expected COC's from the coal processing areas of Lots 1, 6 and Baja from the Dale Coal Co. days. And the Plant Site is downgradient from known and prospective sources of CKD-, ASARCO slag- and other industrial waste-contaminated ground and surface water sources south of the Ravensdale-Black Diamond Rd. Some of these contaminants have already migrated off-site (e.g., Baja property), and the exact extent of migration is unknown. The Plant Site represents the last geography between the areas known to be contaminated by CKD, and the extremely porous, high hydrologic-conductivity, Recessional Outwash till that underlies the surface and sub-surface flows leading to Kent Springs and Covington Well Field sources of municipal water. As such,

the Plant Site is a critical parcel for monitoring the spread of known contaminants; and prospectively, for mounting a last defense to contain this spread. As such, we strongly advise against splitting off the Plant Site from the MTCA cleanup of the remainder of this property.

Summary – We strongly disagree with Aspect's assessment and resulting recommendation that the MTCA "Site" be limited to Lot 6 (CKD Landfill), Lot 5 (Inert Waste Landfill), and possibly the Plant Site. Their stated rationale for eliminating Lots 1 – 4 from the "Site" is erroneous and misleading. While there are portions of each of these four lots that are unlikely to require cleanup under MTCA rules, we highly recommend retaining the entire property, including the Baja-owned parcel, as part of the MTCA "Site" pending further study as part of the Remedial Investigation under this Agreed Order.

[*Note: in addition to the above comments on DOE's Preliminary Data Gaps document, and Aspect Consulting's Sep 4, 2018 memorandum on Site definition, we are also submitting comments on the draft Agreed Order DE 16052.]*