



December 7, 2018

To: Madeline Wall, Reserve Silica Cleanup Site Manager, madeline.wall@ecy.wa.gov
Tim O'Connor, Reserve Silica Cleanup Site Manager, <mailto:tioc461@ecy.wa.gov>

Re: State of Washington Department of Ecology Draft Agreed Order No. DE 16052 and Public Participation Plan in response to the Department's Publication [18-07-021](#) ("*Reserve Silica - Comment Period for Agreed Order*")

Ms. Wall and Mr. O'Connor,

Please accept comments herein on the subject documents from the Greater Maple Valley Unincorporated Area Council (GMVUAC). We research and strive to develop solutions on issues of interest to people who live in King County's Rural Area.

We strongly support the set of comments submitted to DOE by Rural Area citizens Michael and Donna Brathovde on November 21, 2018. Their research and insights over the years on this site are invaluable to our community and we strongly suggest the Department of Ecology (DOE) consider them carefully. In addition, we provide the following comments:

1. Groundwater Issues (prepared by Marcia Knadle, Member of the GMVUAC Environment Committee; Retired EPA Region 10 hydrogeologist, WA Geologist and Hydrogeologist License #1730; mknadle1@aol.com).

The various reports lack groundwater flow maps, which reflects a lack of widely distributed water level monitoring points. We found just one water-level contour map, which covered only the Plant Site lot roughly downgradient of the Infiltration Ponds area, in the Nov. 2017 Draft Remedial Investigation (RI). A major goal of the RI should be to develop a robust hydrogeologic conceptual site model, and we believe additional wells (at least piezometers) will be necessary. In particular, an overall understanding of each groundwater flow zone is needed across the site, especially, if any sort of groundwater modeling is contemplated.

There are four major areas of concern where groundwater has been investigated. The Dale Strip Pit has 6 wells, of which 2 are shallow and 4 are in bedrock. Two of the wells are likely upgradient, so that leaves few wells to evaluate impacts to groundwater. The wells are mostly located along a line, which limits the development of reliable groundwater head maps. That said, the bedrock geology here very likely imposes aquifer anisotropy to the extent that groundwater flow is not necessarily perpendicular to head gradient anyway, so it is clear that additional wells would likely be valuable in assessing these effects.

The Lower Disposal Area (LDA) and Infiltration Pond area have similar issues regarding the layout of wells limiting the ability to evaluate groundwater flow directions, both in bedrock (for the LDA) and in the shallow zone. The wells are either mostly along a line or are clustered in a very small area. The Nov. 2017 Draft RI includes wells in the Plant Area that were not evaluated in DOE's 2016 Site Hazard Assessment, even though one exceeded the Model Toxics Control Act (MTCA) B arsenic level, albeit just barely.

We find no information in the various reports as to how wells were sampled or how the samples were handled, both of which can have a large effect on inorganics concentrations. This is typically included in sampling and analysis plan sections of work plans, but should be summarized in the reports where chemical data is presented.

We have seen logs for at least the shallow zone wells, and they appear to be appropriately screened, although 15-foot screens are a bit longer than the norm.

We agree (see the Brathovdes' comments) that, given the wide variety of site uses over the years, at least initial groundwater and surface water sampling should include the full list of pollutants that may have been disposed on site. It is important to cast a wide net initially to ensure that no important contaminants of concern (COCs) are missed.

Moreover, looking back at DOE's 2016 Site Hazard Assessment, we believe the analysis of which concentrations found in groundwater exceed MTCA B levels doesn't include an important issue regarding Manganese. Nor does Manganese appear to have been analyzed in all areas of the site. From DOE's Cleanup Levels and Risk Calculation's (CLARC's) "*Cautions and Limitations*" page:

- **Manganese** — CLARC provides pre-calculated standard Method B or C formula values for manganese. The formula value for manganese depends on the reference dose (RfD). The reference dose was obtained from the U.S. Environmental Protection Agency's Integrated Risk Information System (IRIS), but was not modified as recommended by the EPA. The recommended modification depends on the route of exposure. EPA recommends that a modifying factor of "1" should be used when assessing exposure from food and that a modifying factor of "3" should be used when assessing exposure from drinking water or soil. This modification factor is based on the increased exposure of children to manganese-contaminated water and soil. Please consult IRIS for a more complete description of the basis for the modification factors. As noted, the RfD for manganese listed in CLARC and used to pre-calculate the formula values for standard Method B and C has not been adjusted. If the modifying factor of "3" for manganese is used, then the formula values for standard Method B and C for soil and ground water would be one-third the value presented in CLARC (our emphasis above).

That would make the appropriate Groundwater Method B level for evaluating Manganese in groundwater 747 ug/L instead of 2240 ug/L. That level has been exceeded on site, so Manganese should be retained as a contaminant of concern.

2. Modeling and Monitoring (prepared by Peter Rimbos, Chair of the GMVUAC Growth Management Committee; Retired Boeing Principal Engineer and Project Manager, primbos@comcast.net).

There is insufficient definition of what the Potentially Liable Parties (PLPs) must do to *model, validate, analyze, and re-evaluate* contaminant flows through various geological layers over time and under various circumstances. We see no *feedback mechanisms* called for by DOE to use such modeling to better understand events that may occur over time that were *not* predicted. In any good system where one wants to understand the physical behaviors occurring, one needs to continually refine the conceptual model used to predict what could occur, so the why's and how's can be better understood. We don't see any of this called for.

Further, the *monitoring*, which is called for, is not required to be linked to any of the model work, such that it will not be understood the why's and wherefore's of the monitoring results. This could lead to dead-ends where it will not be known how to fashion a true cleanup plan that will work over time.

How will DOE be able to understand the behaviors of future contamination flows and why they are occurring and ensure contaminants are contained (or completely removed from the site)?

Reference: Exhibit B, Task 1. Remedial Investigation (RI) Work Plan — (our emphasis below)

p. 2 of 9, para. 3: "The Work Plan shall describe general facility information; site history and conditions; including previous operations; past field investigations, including any data collection and analysis of soils, air, groundwater, surface water, and sediments;

a conceptual site model showing contaminants, migration pathways in all environmental media, potential receptors, and screening levels based on the conceptual site model; geology and groundwater system characteristics; past, current, and future land use; identification of natural resources and ecological receptors; hazardous substances and their sources, etc., in compliance with WAC [173-340-350](#) and WAC [173-204-560](#).” and p. 3 of 9, para. 4: “ * Develop a preliminary conceptual site model for the Site including evaluation of all potential pathways and potential receptors that may exist for contaminants of concern at the Site.”

3. Work Plan (prepared by Rhys Sterling, Chair of the GMVUAC Environment Committee; P.E., J.D., Attorney at Law; Former DOE Supervisor, Environmental Quality Section, Eastern Regional Office; rhysobart@hotmail.com).

The Draft Agreed Order and Public Participation Plan should be amended to include a required public comment period regarding and relating to the forthcoming Work Plan, so that members of the Public have an opportunity to review and comment on it before it is implemented as part of the RI / Feasibility Study.

To ensure the Public Participation Plan addresses and includes public notice and an opportunity for the public to submit comments to DOE on the draft Work Plan *before* it is finalized, we suggest the following modified excerpt from DOE’s November 30, 2018, e-mail be included in the final Public Participation Plan:

“The proposed RI Work Plan will be made available to the public for review and comment before it is finalized and implemented. Because Work Plans are generally not subject to formal public review and comment, in addition to posting notice on its Document Repository for Reserve Silica Corporation website the Department will send a Notice of Draft Work Plan Availability to only those individuals and entities who have submitted written comments on the Draft Agreed Order and/or Public Participation Plan. The Department will consider all public comments received and appropriately include such comments in the final Work Plan.”

We wish to continue an open dialogue with DOE officials on Reserve Silica site cleanup. Thank you in advance for your careful consideration of our comments.

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