To: Planning Board

From: Dan Hill

Re: Loker Recreation Project – Review of Historic Contamination Issues

Date: February 26, 2021 (rev)

INTRODUCTION

During its review of the proposed Loker Field Project in 2018, the Planning Board learned that the Loker Recreational Area ("Site") was a Dow Chemical Company research facility between 1964 and 1988, that toxic contamination was discovered on the Site after Dow Chemical closed its facility in 1988, and that between 1994 and 2000 Dow managed an environmental remediation effort to bring the Site into compliance with state law governing environmental remediation, which involved the demolition of buildings and the removal of impacted soil. A Response Action Outcome Statement ("RAO") was filed by Dow's Licensed Site Professional ("LSP") on March 30, 2000, signifying the end of remediation efforts.

In its February 26, 2019 Memorandum to the Zoning Board of Appeals, the Planning Board made the following comments:

2. The Board of Health recommended that conditions be imposed on the site plan approval decision to address the potential situation if the abandoned septic system distribution area from the historic uses of the Project site is encountered during excavation or construction. Planning Board recommends that the ZBA solicit input directly from the Health Director on this issue.

5. The [Planning] Board recommends that the ZBA require an independent review of the historical site contamination on the Project site and the remediation activities that were performed by contractors for the former owner, Dow Chemical. The Town should consider retaining a Licensed Site Professional (who hasn't previously been involved in the site) to review the remediation files and provide a professional opinion as to whether the proposed athletic field construction and operation presents any risks to public health, particularly to children, given the historical use of the site.

11. Proposed Condition: The ZBA's Site Plan Approval is contingent on there being no interference from any historic soil or groundwater contamination, including but not

limited to the discovery or exposure of any contaminated soils or water during excavation or construction. If contamination is encountered, the Commission shall immediately stop work and retain a Massachusetts Licensed Site Professional to provide a professional opinion and consulting services to ensure compliance with the Massachusetts Contingency Plan, General Laws Chapter 21E. Further, the ZBA shall re-open the public hearing on the site plan review application to consider any changes to its Site Plan Approval decision to reflect the new information on the Site conditions.

12. The Applicant shall work closely with the Board of Health to ensure that all issues related to past land uses of the property associated with the former Dow Chemical facility have been addressed and the property is safe for recreational use.

Sometime after February, 2019, an LSP was retained by the Town of Wayland Select Board to review the adequacy of the environmental remediation on the Site. The firm, CMG Environmental, Inc., prepared a memorandum dated November 21, 2019. I reviewed that Memorandum at the time, and then shared my opinion with Selectman Doug Levine that the memorandum did not address several substantive issues of concern.

Since this is town-owned land, and a town-sponsored recreational project, it was my opinion that it was important for the Town of Wayland to reach a comfort level with the adequacy of the historic environmental remediation on the Site, to ensure that there is no lingering soil contamination that could present a public health threat, especially to children who are most vulnerable to the effects of exposure to toxic chemicals. To assist the Zoning Board and Select Board in characterizing the outstanding issues, I identified five specific areas of inquiry, which I thought would be appropriate to follow up on. They are:

1. whether during remediation in the late-1990's, or after, soil sampling was done in all of the areas that could be impacted by construction of the soccer field project;

2. whether any of the compound concentrations exceed risk thresholds under current standards even if they did not exceed thresholds in 2000;

3. whether we now have better information on any of the 75 non-natural "tentatively identified compounds" ("TICs") that were discovered on the Site, as referenced in the 2000 RAO, and whether those TICs are toxic at concentration levels found on the Site;

4. whether there is any reason to question the adequacy of the remediation activities conducted on the Site during the 1990's, and whether any additional site investigations are needed to confirm the conclusions stated in the RAO; and

5. whether the proposed soccer facility on the Site is safe given the historic site contamination.

On February 10, 2020, a representative from CMG, Ben Gould, appeared before the Select Board to answer questions. A written summary of that meeting was prepared. I was recently provided a copy of this summary, and have reviewed it. I also reviewed the video recording of that meeting. The following is my current position on these issues.

1. Toxicity Levels in the "Upper Leaching Area" Where the Soccer Field is Proposed.

Background

During the clean-up in the 1990's, soil and groundwater sampling occurred in the areas of the proposed new soccer field and the new parking lot. The proposed soccer field is located in the area of the former "upper leachfield," as shown on the Site Sketch prepared by CDM, attached as Exhibit A. The upper leachfield is one area on the Site where detectable levels of chemicals including volatile organic compounds (VOCs) were discovered in soil samples taken during the remediation in the 1990's. According to the RAO, low concentrations of VOCs were detected in the soils in the upper leachfield, and Metals including cobalt and silver were detected at levels exceeding MassDEP background concentration levels.

A "Method 3 Risk Classification" report was prepared by another consulting firm retained by Dow, and published on February 5, 2000, just before the issuance of the RAO, and a year after DEP reclassified the Site to a Tier 1C. The Report recommended that an Activity and Use Limitation was unnecessary. However, it appears that the risk exposure conclusions were predicated on the assumed future use of the Site as "conservation land." The ATSDR Report stated:

> Current and future exposures to on-site surface soils are not likely to pose a health threat to area residents. The site is planned for use as conservation land in the future. The types of activities that are expected to take place at the site (e.g., trail walking, hiking) are of low intensity with respect to contact with soils. As a result, the frequency that people will visit the site will be fairly low (e.g., one or two days per week for hours at a time). In addition, because the site is planned for use as conservation land and because most of contaminated soils on the site were removed during remedial activities, it is not expected that exposure to residual levels of contamination in the soil would pose a health risk.

> Future and current exposure to subsurface soil contaminants could occur during intrusive activities for onsite remedial workers or future excavation or development of the site. The potential exposure routes would be incidental ingestion, inhalation of and dermal contact with subsurface soils. In the future, the site is planned for use as conservation land. As a result, the types of activities that are expected to occur on this property include activities such as trail walking and hiking. There are no current plans to re-develop the site. It is therefore unlikely that people would be exposed to subsurface soils during excavation or development activities in the future. It should also be noted that most of the contaminated subsurface soils found at the site have been removed. Although unlikely, if exposure to residual levels of contamination in the soil did occur, it is not expected that such exposure would pose a health risk.

The RAO stated that its human health risk characterization, which informs whether restrictions such as an AUL would be appropriate, was predicated on the anticipated future use of the site as conservation land:

> Human Health Risk Characterization
>
> As the reasonably foreseeable future use of the Site is for conservation land, potential human receptors included an adult construction worker, an adult landscaper, an adult dog-walker, an adult community gardener, a child and adolescent site visitor and a child and adolescent pond visitor. Although the Site will not be used for residential housing in the future, risks for a hypothetical future adult and child resident were also evaluated.

It is unclear whether the human health risk classification outcome would have been different if the parties preparing this report assumed from the outset that the upper leachfield would be reused as a soccer field. The ATSDR Report states that children are at a greater risk than adults from certain kinds of exposure to hazardous waste sites.

CMG's Evaluation

In its discussion of "Human Health Risk" in CMG's November 21, 2019 Memorandum, CMG refers to Gradient's February, 2000 human health risk classification. CMG notes that this was limited to "four discreet areas," but none of these areas is the upper leaching field, where the proposed soccer field would be constructed. See, RAO, §7.5.3. It is not clear to me how CMG concluded that Gradient's "no significant risk" determination is relevant if that determination was based on an evaluation of contaminated soils in four areas that do not include the proposed soccer field.

Conclusion

The February, 2020 Summary does not reconcile this discrepancy. In my opinion, it would be reasonable to request an updated "human health risk classification," or a supplement, given that the previous conclusion done in 2000 assumed that the upper leaching area would not be used for active recreation.

2. Has the Town compared the TICs identified in the 1990's remediation with current databases?

Background

The 2000 RAO states that "tentatively identified compounds" ("TICs") were discovered on the Site. These are compounds that, as of 1999, had no toxicity information – their effects on human health were unknown. Many of these are of natural origin, such as decaying plant material. Dow' LSP reported that its chemist determined that 75 TICs discovered on the Site were not of natural origin. §7.5.1.

Over the last 20 years, as scientific knowledge about chemical compounds has advanced, toxicity thresholds have increased for some chemicals. Thus, a concentration of toxicity that may have been deemed acceptable to leave in the ground under a Class A2 RAO in 2000 may be unacceptable under today's standards. Further, advancements in scientific knowledge about TICs may be helpful here – the Town should at least compare the TICs identified by Dow in 1999 by the EPA's current Target Compound List, to see if any of the compounds previously classified as TICs are now known toxic compounds.

CMG's Evaluation

CMG did not address whether the TICs that were identified in 2000 were cross-referenced with the current database of known toxic compounds. It was not clear to me from listening to Mr. Gould's comments whether he cross-referenced the TICs from 2000 with the current database.

Conclusion

In my opinion, it would be prudent to update the research done in 2000.

3. Has the Town compared the compound concentrations identified in the 2000 RAO with the EPA's current Target Compound List?

Background

In 2001, the state Department of Public Health, in cooperation with the federal Agency for Toxic

Substance and Disease Registry (ATSDR)[1] completed a 122-page report evaluating the health risks associated the historic use of the Dow Chemical research facility. The ATSDR Report summarized the remediation activities on the Site. The ATSDR maintains a registry of toxic compounds with their associated toxicity levels -concentrations above which are considered problematic. See, https://www.atsdr.cdc.gov/about/index.html. The federal Environmental Protection Agency also maintains a Target Compound List. Some compounds discovered at the Dow Site were detected at concentrations above the ATSDR comparison values. Many unknown compounds were also detected in the disposal areas.

Toxicity threshold have evolved since 2000. A concentration of toxicity that may have been deemed acceptable to leave in the ground under a Class A2 RAO in 2000 may be unacceptable under today's standards. Thus, contaminated soils that were left on the Site in 2000 may exceed risk thresholds under current standards even if they did not exceed thresholds in 2000.

CMG's Evaluation

CMG did not address whether it compared toxicity levels for the compounds identified in 2000. Mr. Gould stated at the February 10, 2020 meeting that he compared the soil samples from the upper leaching field with the current RCS-1 soil standards, and found no exceedances based on the current standards on *metals*. Query whether he did this exercise with respect to all compounds.

Conclusion

In my opinion, it would be prudent to update the research done in 2000.

4. Is there any reason to question the adequacy of the remediation activities conducted on the Site during the 1990's, and are any additional site investigations needed to confirm the conclusions stated in the RAO; and

5. Is the proposed soccer facility on the Site is safe given the historic site contamination

CMG's Evaluation

CMG did not address whether it reviewed all of the laboratory analyses done by Dow in 1999-2000, which forms the basis of the Class A2 RAO and human health risk classification ("no significant risk"). CMG has not provided a professional opinion as to whether Dow's LSP applied proper methods and procedures in evaluating its data to make these important health risk conclusions.

Further, there was no discussion in CMG's report regarding the most significant class of

1 ATSDR is an agency with the federal Department of Health and Human Services.

emerging contaminants, Per- and Polyfluoroalkyl Substances ("PFAS") and whether any of these compounds were identified in the soils on the Site during the remediation activities in the 1990's. The MassDEP describes PFAS as "a family of chemicals used since the 1950s to manufacture stain-resistant, water-resistant, and non-stick products. PFAS are widely used in common consumer products as coatings, on food packaging, outdoor clothing, carpets, leather goods, ski and snowboard waxes, and more." Probably the most familiar consumer application of PFAS is Teflon, which was manufactured by DuPont. DuPont is now owned by Dow. PFAS is very toxic as low concentrations.

Mr. Gould stated in February, 2020 that he was "certain" that there was no PFAS testing being done on the Site during Dow's tenure. Mr. Gould stated that he couldn't find any testimony from former Dow employees indicating what activities Dow was engaged in at this facility, but he also stated that Dow was not doing research on Teflon, and was focused on "organomercury and organotin compounds." He did not explain how he knows this, or whether Teflon is the only source of PFAS (I don't believe it is). We do know that the Dow facility was a chemical testing and manufacturing facility, and DuPont, which Dow owns, was a known manufacturer of Teflon.

Mr. Gould also stated that testing for PFAS in soils is "difficult" and "not that definitive," and that there are "no current PFAS standards." Mr. Gould stated at the meeting that even if there are PFAS compounds on the Loker Site, his "gut feeling" is that exposure to PFAS compounds will be "greater elsewhere." Mr. Gould stated earlier that he was certain that no PFAS testing has been done at the site, which seems to undermine his conclusion that there isn't a public health concern with PFAS at the Site, since I would assume that a risk assessment would need to be based on the known quantity or concentrations of PFAS.

Conclusion

First, in my opinion, it is prudent for the Town to request a professional peer review of the 2000 laboratory analyses. If CMG thinks that this is unnecessary or unadvisable, it would be reasonable to request an explanation for that opinion.

Concerning PFAS, my limited knowledge on this is that PFAS exposure is primarily a concern with drinking water ingestion, not exposure to PFAS in the ground. My concern is not necessary exposure to children playing on the field, but rather out of concern that the Site may be within the contributing watershed of public or private drinking water supplies.[2] Mr. Gould did not address water testing in his comments.

Mr. Gould's statement that there are no testing standards for PFAS, especially for soils, conflicts

[2] This is not a speculative concern. It appears from looking at GIS maps that the ponds on the Site are hydraulically connected to Natick's public wells just south of the MassPike. There are direct stream connections from the ponds to the wellfields in Natick. The Natick Water Department recently advised its residents that there have been readings showing elevated levels of PFAS in the water being pulled from these wellfields. A hydrogeologist should confirm this.

with information on Mass DEP's website, which states that "[r]evisions to the Massachusetts Contingency Plan establishing notification requirements and cleanup standards for PFAS in soil and groundwater are now final, effective December 27, 2019." Further, MassDEP has specifically adopted "reportable concentrations" and "reportable quantities" for PFAS compounds, and has developed testing protocols. See, https://www.mass.gov/doc/interim-guidance-on-sampling-and-analysis-for-pfas-at-disposal-sites-regulated-under-the/download.

It would be reasonable to ask Mr. Gould to explain his statements that there was no PFAS at this Site during Dow's tenure, that there are no PFAS testing standards, and that soil testing would not be definitive. These statements appear to conflict with known Site information, and with current MassDEP guidance and regulation on PFAS. Unless there is definitive information that Dow was not using or testing PFAS on this Site, I believe it would not be prudent to simply dismiss PFAS as a public health threat on the Site, but instead engage in at least some base level soil and water quality sampling on the Site, or water quality testing downgradient from the site.