

CMG ENVIRONMENTAL, INC.

October 21, 2002

Ronald C. Slager, Jr.
Raytheon Company
1001 Boston Post Road
Mail Stop MS-1-2-1567
Marlborough, MA 01752

**Re: Public Commentary on September 26, 2002 Draft
Application for Risk-Based Disposal Approval
Former Raytheon Facility, 430 Boston Post Road, Wayland MA
CMG ID 2002-003**

Dear Mr. Slager:

For the record, the Wayland Board of Selectmen has retained me to provide technical review of document submittals and other activities at the above-referenced property (the Site) on behalf of the Town of Wayland.

The following are my comments on the September 26, 2002 Draft Application for Risk-Based Disposal Approval prepared by Environmental Resources Management (ERM) on the Site. Since the purpose of this document is to seek approval from the U.S. EPA under the Toxic Substances Control Act [specifically, 40 CFR 761.61(a)(3)], I will refer to it as the "draft TSCA Application" hereinafter.

I have prefaced my comments according to ERM's heading designations for ease of comparison, and used uppercase roman numerals to identify each comment.

2.1.4 September 2001 – Phase II – Comprehensive Site Assessment

Nature & Extent of Impact to Wetland Surface Water

I) On page 11, the draft TSCA Application states that "copper in surface water and possibly sediment appear to be primarily related to background or 'local conditions' as defined in MA DEP guidance." The preceding text indicates the source of this condition is leaching of copper from town water supply lines due to low pH. As subsequently noted on page 25 of the draft TSCA Application, the Massachusetts Contingency Plan definition of *background* includes "... releases to groundwater from a public water supply system ..." but does not include such releases to surface water or sediment. Furthermore, DEP provided relevant guidance on the topic of background in risk assessment in their Interim Final Policy WSC/ORS-95-141 "Guidance for Disposal Site Characterization – In Support of the Massachusetts Contingency Plan" (July 1995). This guidance provides only three cases where chemicals can be excluded from risk assessment:

- When present at a low frequency of detection and in low concentration.
- When present at 'background' concentrations and there is no evidence that their presence is related to activities at the site, or

600 CHARLTON STREET, SOUTHBRIDGE, MA 01550
PHONE (508) 765-8510
FAX (508) 765-8515

- The chemicals are field or laboratory contaminants.

Therefore, it seems inappropriate to discount elevated copper concentrations in surface water and sediment from "future risk management decisions for the Site" based on DEP guidance, especially considering ERM cites elevated copper levels as one of the likely causative agents in the area of readily apparent harm (ARAH).

4.5 FEASIBILITY OF ABATEMENT TO BACKGROUND

II) Page 25 of the draft TSCA Application, ERM presents a table including 'average background' concentrations of Site contaminants of environmental concern. They state that the Phase II Comprehensive Site Assessment report provides "additional details regarding the calculation of Site background concentrations for wetland soil/sediment." However, Table 18 in the Phase II report indicates the calculated 'background' level for PCBs as 1.8 mg/Kg, while the table on page 25 of the draft TSCA Application indicates 0.88 mg/Kg. Furthermore, the Phase II report indicates ERM calculated PCB background using four sediment samples. CMG calculates background based on these four samples as either 1.12 or 1.08 mg/Kg (depending on whether one uses the method detection limit or half the method detection limit for sample location SS-2, where laboratory analysis did not identify any PCBs). In addition, in previous discussions Raytheon and ERM agreed not to use sample location GMS-7 (1.80 mg/Kg) because it exhibited significantly more PCB than the other samples used in background calculation. Calculating the PCB background without sample GMS-7 yields either 0.89 or 0.85 mg/Kg. Therefore, there is unclear how ERM arrived at 0.88 mg/kg as a background concentration for PCBs in the Site wetland.

PCBs are completely anthropogenic, synthetic compounds that do not occur in nature. Therefore, any discussion of background levels must consider that the true 'background' level of PCBs is zero. It is more appropriate in the context of urban environments to describe PCB concentrations as 'widespread.'

DEP and EPA guidance require that one conduct statistical data quality analysis on the set of results used to establish background (or widespread) concentrations, including calculations of statistical power and confidence. Neither the Phase II report nor the draft TSCA Application includes these data statistics. It does not seem likely that three (or four) data points are enough to support risk management decisions for the Site with appropriate statistical power and confidence.

The Town of Wayland requests that Raytheon provide the data set used to determine widespread PCB concentrations (beyond Site boundaries); the results of statistical analysis on this data set, including calculated power and confidence values; and comparison of the calculated summary statistics to EPA or DEP published values. Given the relevance of the widespread average PCB concentration as a surrogate 'background' value, we believe it is important to back it up with rigorously defensible data.

4.6 ANALYSIS OF NET ENVIRONMENTAL BENEFITS FOR REMEDIAL SCENARIOS

4.6.3 Remedial Scenarios

III) At the May 3 PIP meeting, Raytheon told the public that they have considered several scenarios for PCB remediation in the Site wetlands area, not just the three presented for discussion (the ARAH only, the 'expanded ARAH,' and the area needed to achieve background). However, page 26 of the draft TSCA Application enumerates only these three scenarios. The

same three scenarios appear on page 29 and elsewhere in the draft TSCA Application. Since these three scenarios are the only ones carried through the Net Environmental Benefits Analysis (NEBA; see Section 4.6 and Appendix A), it appears to be circular logic to defend the portion of the site defined as "the area proposed for remediation" as the best choice based on NEBA.

Wayland requests that Raytheon and ERM consider other scenarios, such as removing sediment at all areas that exhibit greater than widespread 'background' concentrations (whatever we finally determine that value to be), 2, 4, or 6, ppm total PCBs, and run these scenarios through the NEBA process. It may be that one of these incremental scenarios would produce a greater net environmental benefit than the remediation of the 'area proposed for remediation' would. If you have already conducted a NEBA for these (or similar) scenarios, the Town requests that you document this in the TSCA Application.

4.6.4 Implementation of NEBA Approach

IV) On page 30, the draft TSCA Application states that "staging and access costs are associated only with Scenario 1." At face value, this seems to indicate that ERM did not consider removal of wetland soils under Scenarios 2 and 3 would also involve 'staging and access costs.' Section 5.3.3 of Appendix A states that "staging and access areas do not apply to Scenarios 2 and 3, because scenarios are analyzed on an incremental basis, and no staging or additional access is needed once the first scenario is included." However, it would appear that Scenario 2, which comprises 1.53 total acres, would involve about 2½ times as much staging effort as Scenario 1 (0.60 acres), and Scenario 3 (5.20 acres total) would involve almost 9 times as much. Therefore, it seems evident that Scenarios 2 and 3 must necessarily involve greater staging costs, even if no greater access costs. Wayland requests that Raytheon either explain why you have not considered these incremental environmental costs for Scenarios 2 and 3, or revise your NEBA calculations to reflect consideration of these costs.

4.6.5 Services Under Natural Attenuation

PCBs

V) On page 31, the draft TSCA Application states that "potential PCB effects are examined only in the area outside of the ARAH. Thus, net environmental benefits from remediation of PCBs only are examined in Scenario 3." However, Scenario 2 involves remediation of 0.93 acres outside of the ARAH. The Town requests that Raytheon explain why you have not considered 'service suppression' for Scenario 2.

Metals

VI) On page 32, the draft TSCA Application states that "the Shannon-Weiner diversity index is lower for Zone 1 than for the other zones." However, the tabulated values (*Diversity Measures by Zone*) are all negative numbers. Therefore, the values for Zone 1, which are smaller in magnitude than those of Zones 2 through 4, are higher than the other ones, not lower. (Note: Table 4-3 in Appendix A presents essentially the same values, except the latter table has positive values, and truncates these values at two decimal places. These two tables cannot both be correct.) Wayland requests that you provide a correction.

VII) The draft TSCA Application describes five field sampling zones in the Site wetlands. However, the only figure illustrating the locations of these five zones is Figure 5 on page 4-2 of Appendix A. The Town requests that Raytheon have ERM specifically reference Appendix A,

Figure 5 in the text of Section 4.6.5, or else prepare a separate ERM Figure illustrating the five sampling zones (and refer to this figure in the aforementioned text).

4.6.6 Results

VIII) The NEBA results in Section 4.6.6 (and Appendix A) rely on a conclusion that remediation of wetland areas outside of the expanded ARAH produces zero environmental benefit. It seems evident that of the 11 'wetland services' that Entrix considered in NEBA (see Section 2.1 of Appendix A), at least four would stand to benefit from further reduction of widespread PCB (or metals) concentrations: sediment/toxicant retention, production export, wildlife diversity/abundance, and recreation. (Note: Entrix states in Section 2.2.2 of Appendix A that "In this NEBA, no loss in wetland services was calculated for PCB effects within the area targeted for remediation under the Phase III for the Site. That is, all analyses for this area are based on metals.")

Wayland requests that Raytheon fully consider the negative effects of residual PCBs and metals remaining at the Site under all remediation scenarios in the NEBA for the Site, and conversely the net environmental benefit to be gained by mitigating such residual PCB and/or metals concentrations. We request that you provide documentation for NEBA of additional, incremental excavation scenarios, because this seems to us the best way to determine what size the appropriate area to remediate should be.

4.7 SELECTION OF REMEDIAL ACTION OBJECTIVES

IX) The Town agrees with the "additional locations targeted for removal" listed on page 34 of the draft TSCA Application, where measured total PCB concentrations range from 4.70 ppm (or only 1.89 ppm if you count the 12-18" sample from T-7-A) to 61 ppm. Nevertheless, it is a consistent source of puzzlement why Raytheon has not considered extending the remediation area to encompass other sample locations that exhibit total PCBs within this concentration range, namely T-8-1 (4.80 ppm), T-10-9 (8.46 ppm), T-10-12 (6.46 ppm), T-12-8 (6.56 ppm), T-14-C (5.70 ppm), and T-15-2 (5.12 ppm).

At the October 3 PIP meeting, Raytheon stated that you have considered other remediation areas intermediate in size between Scenario 2 and Scenario 3. However, there is no documentation of these intermediate scenarios in the draft TSCA Application. As indicated under comment VIII, the Town requests that you provide documentation for NEBA of additional, incremental excavation scenarios.

6.5 VERIFICATION SAMPLING PLAN/CLOSURE DOCUMENTATION

6.5.2 Sample Locations, Depths and Frequency

X) Page 52 of the draft TSCA Application indicates Raytheon/ERM intends to collect all post-excavation soil/sediment grab samples from a depth of 7.5 cm (approximately 3 inches). Since the remediation plan calls for removal of the 18 inches above this, it seems more reasonable to collect confirmatory samples from the (newly-exposed) soil or sediment surface. Collecting samples from three inches deeper is well-suited to answering whether remediation should extend to 21 inches, but will not necessarily verify that remediation was successful at 18 inches. Wayland requests that you amend the remediation plan to collect soil/sediment grab samples from the exposed surface (0 to 1 inch below grade) following excavation.

XI) The proposed remediation plan does not include any sidewall sampling at grid cells that abut the excavation perimeter. The Town requests that you amend the plan to include sidewall

samples where appropriate. (Note: the draft TSCA Application mentions 'perimeter' samples in Section 6.5.4, but Section 6.5.2 does not explain where ERM would collect these, and Section 6.5.3 does not explain how.) The final sampling plan must include information regarding the frequency, location, and depth of sample collection for sidewall samples. It must also provide contingencies for expanding the remediation area if these sidewall samples do not meet target cleanup goal criteria (e.g., less than 210 mg/Kg total lead). At the October 3 PIP meeting and previously, Raytheon assured the public that you would expand the area of remediation as necessary to meet target cleanup goals. The Town believes that this is the appropriate place to provide a written commitment to document these assurances.

XII) The sampling plan calls for compositing nine grab samples from each cell and submitting the composite samples for PCB analysis. While this will substantially reduce the number of individual analyses, it also means that one grab of the nine could approach 18 ppm (if the other eight were below detection limits) and yet you could deem that cell 'remediated' based on the target cleanup goal of 2 ppm. To avoid this situation, one must calculate an allowable threshold based on statistical analysis of data accuracy and precision, below which you will need to analyze individual grab components of the composite sample to determine which (if any) exceed the target cleanup goal. Our preliminary evaluation of this issue suggests that the 'individual analyses indicated' threshold would be close to 1 mg/Kg, which is close to the 'background' (widespread) concentration and not far above the analytical method detection limit. Wayland requests that Raytheon explain how you will avoid this situation (including the statistical analysis you will use), or why you believe it is not significant.

Figures

XIII) Figure 9 of the draft TSCA Application has several errors in the depicted PCB concentrations. Sample T-8-3 should be 5.80 mg/Kg, not "ND"; T-8-6 should be 4.01, not 4.1 mg/Kg; and T-8-7 should be 4.42, not 4.5. The total PCB concentrations for T-8-A (3.72 mg/Kg), T-8-1 (4.80), T-8-5 (0.97), and T-12-8 (6.56) are omitted. In addition, the values for T-8-7 and T-8-12 should be centered below the sample locations (as are all other PCB results). For consistency, ERM should delete the PCB concentration values beneath T-5-10 and T-7-11. The legend box on Figure 9 indicates total PCB 'background' concentrations are 1.1 mg/Kg average and 1.8 mg/Kg maximum; see comments numbered II and XVI for additional commentary on this issue. The Town requests that you provide a correction.

XIV) Figures 10 through 14 of the draft TSCA Application each indicate "Total PCB Concentrations" in the Legend box (lower left), although these figures illustrate "Total EPH in Sediment," "Trivalent Chromium in Sediment," "Total Copper in Sediment," "Total Lead in Sediment," and "Areas Targeted for Abatement of OHM in Wetlands Soil/Sediment," respectively. For consistency, ERM should delete the total copper concentration values beneath T-5-10 and T-7-11 on Figure 12, and the total lead value beneath T-5-10 on Figure 13. Wayland requests that you provide a correction.

Appendix A, Net Environmental Benefit Analysis

2.0 HABITATS AND SERVICES AT THE WAYLAND SITE

2.2 Risk Assessments and Service Indicators

2.2.1 Metals and Plant Productivity

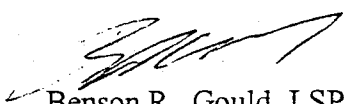
XV) Page 2-2 of this appendix ends abruptly with the words "This diversity measure etc" and the following page does not continue this topic. It appears that Entrix or ERM has not yet completed this section. Please forward the remainder of Section 2.2.1 to the Town for review.

3.0 REMEDIAL SCENARIOS

XVI) Page 3-1 in Appendix A states that "Remediation of all locations with concentrations above 2 ppm will result in a residual average PCB concentration equal to background levels of 1.1 ppm of PCBs." How did Entrix arrive at this value? Is it area-weighted? Does this presume remediation will result in a restored area with an average PCB concentration of 2 ppm, or that remediation will remove PCBs to below detection limits? Wayland requests that you document your calculations to support Entrix's conclusion. Comment II above also provides pertinent information on the topic of background (widespread) PCB concentrations, which has been a subject of extensive previous commentary and discussion.

I thank you in advance for your timely response to this commentary on behalf of the Town of Wayland. I also wish to express my appreciation on behalf of the Town for informally extending the public comment period, allowing us to offer this commentary.

Sincerely,
CMG ENVIRONMENTAL, INC.


Benson R., Gould, LSP, LEP
Principal

cc: Environmental Resources Management (John C. Drobinski, P.G., LSP)
Mr. Devens Hamlen, Wayland
Mr. J. Andrew Irwin, Wayland
Ms. Anette Lewis, Wayland
Massachusetts DEP (Pat Donahue, Larry Immerman, Karen Stromberg)
National Parks Service (% Jamie Fosberg)
Mr. Lewis Russell, Wayland
Mr. Harvey and Ms. Linda Segal, Wayland
Wayland Board of Health PIP Repository (% Steve Calichman, Health Director)
Wayland Board of Selectmen (% Executive Secretary Jeff Ritter)
Wayland Business Center, LLC (% Paula Phillips, Congress Group Ventures)
Wayland Conservation Commission (% Brian Monahan)
Wayland Public Library PIP Repository (% Louise Brown)