SARATOGA COUNTY
ENVIRONMENTAL MANAGEMENT COUNCIL

PETER BALET
CHAIRMAN

GEORGE HODGSON
DIRECTOR

December 18, 1998

Mr. Damien Hughes
U.S. EPA Region 2
290 Broadway, 20th Floor
New York, New York 10007

Dear Mr. Hughes:

The Saratoga County Environmental Management Council (SCEMC) is pleased to submit the enclosed comments/questions to EPA's Hudson River PCB Reassessment Peer Review Committee relative to the Phase 2 Data Evaluation and Interpretation Report (DEIR) and Phase 2 Low Resolution Sediment Coring Report (LRC).

Due to the specificity of the enclosed SCEMC comments relating to the aforementioned reports, the Council requests that copies of the enclosed comments/questions be provided in their entirety to the peer review committee for their review and consideration.

The SCEMC applauds EPA's decision to initiate and conduct peer review on Phase 2 Hudson River PCB Reassessment Reports which will undoubtedly provide a superior scientific basis from which to make important future Reassessment decisions.

Sincerely,

Peter M. Balet

Peter M. Balet
Chairman

PMB/cts
Encs.

cc: Mr. Douglas Tomchuk, Project Manager, USEPA
Ms. Ann Rychlenski, Community Relations Coordinator, USEPA
Saratoga County Board of Supervisors
Mr. Darryl Decker, Chr., Government Liaison Group
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SELECTED COMMENTS/QUESTIONS ON EPA PHASE 2 REPORT VOLUME 2C-DATA EVALUATION AND INTERPRETATION REPORT (DEIR) HUDSON RIVER PCB's REASSESSMENT RI/FS FEBRUARY, 1997 FOR PEER REVIEW COMMITTEE

Prepared by David D. Adams, Member Saratoga County EMC and Government Liaison Group

1. The Peer Review Committee is requested to critically review EPA's conclusions that the sediments in the Thompson Island pool have been and are the major source of the PCB load at the Thompson Island dam, the dechlorinated, buried sediments in the Thompson Island pool have been and still are a likely source of the PCB's in the water column based on homolog patterns, and that the level of PCB's in the water will not substantially decline until the sediments are depleted (likely to be decades per EPA) or remediated. The Saratoga County EMC strongly believes these conclusions must be revisited for the following reasons:

    - At the April 1, 1997 meeting of the Liaison Committee members, GE stated that the use of homolog patterns to pinpoint the source of PCB's is not sufficiently definitive and that congener "fingerprinting" is required. GE further stated that their analysis of the congener "fingerprints" in the water samples at Rogers Island and Thompson Island dam agreed and showed the PCB's in the water to be directly related to a non-dechlorinated Aroclor 1242 source. GE also stated the congener "fingerprint" of the dechlorinated sediments in the Thompson Island pool did not agree with the congener "fingerprints" of the water samples.

    - EPA's data shows the PCB load in the water column at the Thompson Island dam to be about the same as the PCB loading at Waterford despite the indicated presence of PCB "hot spots" in sediment deposits between the Thompson Island dam and Waterford. Therefore, EPA's conclusion regarding sediments in the Thompson Island pool as the major source of PCB's to the Hudson River requires that somehow the Thompson Island pool sediments behave differently than the sediments below the Thompson Island dam. However, no rationale or data are presented by EPA to justify such different behavior.

    - EPA's approach predicts that the source of the PCB's in the Thompson Island pool is from buried sediments deposited in 1983 and prior years and not from more recent deposits. This source of the PCB's defies logic in that it is not clear how these deep deposits can both be the source of PCB's in the water and yet remain as "hot spots" over an extended time period. No mass balance calculations are provided to show that this scenario is possible. Logic would seem to dictate that

the sediments most likely to interact with the water are the surfica sediments and not the buried sediments. Also, EPA's scouring analysis indicates very little of the "hot spot" sediments (none in the more highly contaminated deposits) are resuspended even in a 100 year flood which would mean much less or none during normal river flows.

Based on the discussion above, the Peer Review Committee is requested to comment on the following scenario for the source of the PCB's going over the Thompson Island dam:

PCB's, primarily Aroclor 1242 are continuing to flow into the Hudson upstream of Rogers Island from the GE Hudson Falls site/Bakers Falls area. These PCB's, being largely hydrophobic, attach to surficial sediments in the Thompson Island pool. The lower chlorinated PCB's from the surficial sediments are preferentially transferred to the water column as would be expected from the partitioning coefficients for the various homologs. These PCB's then become the source of PCB's seen in the water at the Thompson Island dam, consistent with the "fingerprinting" work done by GE. In this scenario, the buried sediments in the Thompson Island pool became not a source of PCB's to the water but rather a sink for PCB's, removing the PCB's from active contact with the water column as sedimentation continues over time. This scenario is consistent with PCB "hot spots" remaining over long periods of time in the sediment and with the lack of contribution of PCB's to the water column from sediment "hot spots" below the Thompson Island dam.

2. The Peer Review Committee is requested to comment on the ability of EPA's model to handle the significant changes (one might say even a discontinuity) in PCB output to the Hudson River above Rogers Island starting in 1991. Drawing conclusions about the future water concentration of PCB's from water data that is post-1991 and sediments data that pre-dates 1991 seems to be very difficult, if not impossible, and likely to lead to erroneous conclusions. Should EPA divide its modeling effort into pre & post 1991 periods?

3. Based on the discussion in items 1 & 2, the Peer Review Committee is requested to comment on the necessity of EPA evaluating the possibility that continuing PCB inputs from areas above Rogers Island are the principal source of PCB's to the water column at Thompson Island dam and not the buried sediments in the Thompson Island pool. If the source is from PCB's above Rogers Island, then the conclusions at the bottom of page 4-91 of Book 1 of Vol. 2C that the water column PCB level downstream of the Thompson Island dam will not substantially decline unless the sediments, particularly the "hotspot" sediments, in

the Thompson Island pool are depleted or remediated is incorrect. If the source of the PCB's is from above Rogers Island, the correct approach to reducing PCB levels below the Thompson Island dam is to eliminate or significantly reduce the PCB inputs to the Hudson River as GE is now working to do. In fact, there is recent evidence that the GE effort to stop the PCB inputs above Rogers Island is succeeding in reducing water column PCB concentrations at the Thompson Island dam. Certainly the statement on page 4-91 of Book 1 about the rate of depletion of PCBs in the sediment implies sediment removal if remediation is deemed necessary. If sediments in the Thompson Island pool are not the PCB source but rather only are intermediate transport media, removal of the sediment by dredging would not achieve the desired result of reducing PCB's in the water column and indeed may cause just the opposite effect as well as possibly cause major ecological damage to the Hudson River.

In their review of this request and of the scenario postulated in item 1 above, the Peer Review Committee is requested to consider the following information obtained after EPA issued the DEIR:

a. Diversion of the Hudson River flow at Bakers Falls through a hydroelectric power plant exposed seepage through rock fractures into the Hudson River of PCB's in groundwater coming from the area around the GE Hudson Falls site. Ongoing GE efforts to eliminate this seepage of PCB's, while yet to completely eliminate the seepage, have significantly reduced this seepage of PCB's into the Hudson River. The apparent effect of this action has been a reduction of the PCB concentration in water samples taken by GE at the Thompson Island dam since the DEIR was issued and a reduction in PCB levels in recent fish samples from the Thompson Island pool from the levels found in the early 1990's.

b. Transverse water samples for PCB's taken by GE above and below the Thompson Island dam indicate that the EPA samples taken at the Thompson Island dam in quiet water near the shore are biased high by a significant amount.

c. GE sampling along the length of the Thompson Island pool has shown a linear increase in PCB water concentration, indicating a uniform contribution of PCB's to the water from PCB contaminated surface sediment in the Thompson Island pool.

4. Shouldn't congener "finger printing" be applied to PCB data (water columns, sediment and fish data) from the Lower Hudson and the NY/NJ Harbor? The finger printing is necessary to either confirm EPA's contention about the significant PCB input to these areas from the Upper Hudson or show that lower Hudson and NY/NJ harbor sources are the reason for the PCB contamination in these areas.

SELECTED COMMENTS/QUESTIONS ON VOLUME 2C-A LOW RESOLUTION SEDIMENT CORING REPORT, JULY 1998 FOR PEER REVIEW COMMITTEE

Prepared for the Saratoga County Environmental Management Council
By David D. Adams, Member-at-Large

1. P. 1-6 & P. 1-7: The 1988 NYSDEC report concluded there was no major change in PCB distribution in the Thompson Island Pool (TIP) sediments from 1977 to 1984 despite the 1988 report showing a PCB inventory less than half of the 1977 estimate. The 1988 report concluded that "most of the differences between the 1977 & 1984 PCB mass estimates were due to differences in calculation methods and assumptions". This EPA report in later sections cites an inventory decrease of 30% from the estimated 1984 inventory when compared to the 1994 inventory estimated by EPA. Shouldn't EPA either provide its explanation as to why the 1988 NYSDEC conclusion of "no change" is invalid or provide EPA's rationale for why the Hudson River behaved differently from 1977 to 1984 vs. 1984 to 1994, causing no change over the first period and a decrease over the second period?

2. P. 1-7, P 2-15: Before any conclusions can be drawn from the low resolution coring (LRC) data, shouldn't a statistical analysis be done which predicts the ability of the small number of samples taken by EPA in only a few locations to adequately estimate the PCB mass over a large area with very large spatial variations in PCB concentrations? This analysis should include consideration of the fact that the mean values from the NYSDEC data are based upon an order of magnitude greater number of samples than the EPA data. Page 1-7 states the LRC program wasn't designed to duplicate the extensive spatial coverage of the NYSDEC program. Page 2-1 dramatically quantifies this statement by showing that EPA had only 60 core sampling sites in the TIP in the vicinity of the 1984 NYSDEC locations vs. 1200 NYSDEC core sites. The first paragraph on P. 2-15 states that cores taken for the LRC report "do not comprise a spatial coverage sufficient to calculate PCB inventories for these areas directly", yet later in the report these data are used to do precisely that since calculation of a "change" in inventory implicitly carries with it the calculation of the inventory itself. The meager number of EPA cores hardly seems sufficient to quantify the PCB inventory (and therefore changes to the inventory as put forth later in the report) in the face of existing data which show very large spatial variation in PCB concentrations over very short distances in the TIP. EPA's data also show this variation as can be seen in Plate 4-23 which indicates a 100:1 difference in concentration in nearby samples and variations of 10:1 in most, if not all, of Plates 4-21 to 4-28. Certainly, the scope of the EPA sampling program is not sufficient to justify the "alarming" statements made by EPA to the public which accompanied the release of the report and called for a study of immediate remedial action. The Peer Review Committee is also requested to comment on GE's subsequent analysis of the EPA data which concluded that there is much less than a 30% change in PCB inventory when only samples close enough to 1984 sample locations to be free of spatial uncertainty are considered. The Committee's comments are requested on GE's position that EPA

incorrectly calculated the 30% mass change and that a correct calculation would show an unreasonable 80% change.

3. P. 2-10: What is the significance to the modeling effort of the loss of reduction/oxidation potential data and total carbon/total nitrogen data?

4. P. 2-16: The Peer Review Committee is requested to comment on the statement that the presence of PCB maxima in the top-most core layer shows that PCB burial is not occurring. High resolution core profiles have shown relatively low PCB concentrations in the first few inches of sediment with the PCB concentration then rising rapidly to a peak before declining to a low level or zero. Inspection of Fig. 2-7 shows that most of the PCB mass in both of these cores would occur within the top 9 inches (about 23 cm) of the cores but yet show relatively low PCB concentrations within 2 plus inches of the sediment- water interface. Burial may or may not be occurring (the presence of "hot spots" would seem to indicate it is) but reasoning from the presence of a maximum PCB concentration in a homogenized upper 9'' core segment cannot be used to make such a conclusion.

5. P. 2-18 & 2-19: Doesn't an average difference of 36% between replicate samples from the same core sample seem very large? Discussion of why this large difference is unimportant should be provided, especially when the data are later used to estimate a change of only 30%. The discussion here at the end of Section 2.4.1 again raises the question of the adequacy of the LRC data set to draw conclusions about PCB inventory change. The difference of 4:1 in one of the outlier replicate samples and the statement that heterogeneity in concentration as well as the ability to homogenize samples will probably be the main source of analytical uncertainty for the PCB results reinforces the concern about whether the number of LRC samples is sufficient to make the conclusions later stated in this report and in the Executive Summary of the report.

6. P. 4-5, top of page: The Peer Review Committee is requested to comment on EPA's approach comparing 1984 & 1994 data. Discussion in Appendix E raises serious questions as to the ability to make a valid comparison of 1984 and 1994 data due to the differences in analytical methods. Rather than go through manipulations in Appendix E, shouldn't 1994 samples be analyzed by 1984 methods (or as close as possible to 1984) and a correction factor utilized based upon these results obtained for the 1984 data? If possible, the reverse should also be done (analyze 1984 samples using 1994 methods) and the correction factors compared.

7. P. 4-18: Last Paragraph of 4.1.3: The implication that more scour occurs in cohesive sediments than in non-cohesive sediments seems to be at odds with what would be expected. How does EPA reconcile this other than uncertainty in the data (which might well explain other differences, put forth by EPA in this report, between previous data and

1994 data)? If EPA believes scour is occurring, should EPA plan to revise the scour model included in the DEIR which predicted little if any scour?

8. P. 4-21: Does the Peer Review Committee believe the "grab" samples are valid data? The discussion on P. 4-21 about corrections needed for the grab samples is another illustration of uncertainty in the EPA comparison of 1994 data to earlier data. There is no way of knowing if the extrapolation to 12'' is valid or not. It is suggested the grab samples not be included in the analysis. Also, using the concentration of the second layer of the 1994 LRC samples to extend 9'' cores to 12'' is questioned. Based upon the sharp PCB concentration gradient in the range of 9-12" seen in the high resolution cores, this method of extending from 9" to 12" may greatly underestimate the LWA in the 1994 data.

9. P. 4-22: Isn't choosing between two data sets for the same set of samples based on "convenience", rather than an understanding of reason for the differences, unsound science and casts doubt on any conclusions from the analysis? Shouldn't EPA investigate the reasons for the differences and if they are unable to justify a choice based upon this investigation, perform the analysis using both sets of data and compare the results?

10. P. 4-22: Isn't any comparison of PCB inventory based upon the 1976-78 and 1994 data made uncertain by the lack of solid specific weight (SSW) data for the 1976-78 data? The statement here that total PCBs and SSW show very strong correlation is in contradiction to the statement on P. 3-18 that SSW showed a weak trend with PCB concentration. Also the range of variation in the data in Fig. 3-15 and 4-17 is very large making conclusions about correlation's uncertain and no 2σ or 3σ values are given for the SSW to PCB values shown in Table 4-3. EPA needs to do more to show why the SSW values used for the 1976-78 data are reasonable to use, including a level of uncertainty, to make comparisons of PCB inventories between 1976-78 and 1994 meaningful.

11. P. 4-24 & 4-25: Does Fig. 4-18 substantiate the statement that the agreement between the NYSDEC and side-scan sonar classifications of sediment is good. In the "fine sand" bin, which is the largest and most important bin for PCB accumulation, the agreement is less than 50% and no discussion is provided about this difference. Also, comparison of Fig. 3-27 and Fig. 4-18 does not appear to back up the statement that division between fine and coarse-grained sediment is consistent between NYSDEC data and EPA data. Fig. 3-27 shows a high percentage of fine-grained samples for the EPA data vs. 45% for NYSDEC data.

12. P. 4-26: The paragraph at the bottom of the page highlights another uncertainty in comparing 1994 inventory data, namely the uncertainty in the boundaries of the hot spots. Shouldn't EPA gather all the uncertainties in all areas of the report's analysis and provide

an overall error estimate and then evaluate whether any estimate can be made of PCB loss or gain with any degree of confidence?

13. P. 4-33: Doesn't the conclusion at the bottom of this page regarding loss of PCBs require that the 1994 data set accurately replicate the 1976-78 data set? Does the Peer Review Committee agree that for reasons set forth in other comments in this letter, conclusions such as set forth here are not justified by the analysis presented to date as set forth in the EPA report?

14. P. 4-34: The Peer Review Committee is requested to review the statement at the bottom of page 4-34 and at the top of page 4-35 that Profile 2 of Fig. 4-25 shows burial is not occurring. This statement completely ignores the profiles shown by Fig. 4-24 of the high resolution cores which clearly show very low PCB concentrations in the top several inches of sediment, definitely indicating burial. The "peak" in the upper 12" of Profile 2 is undoubtedly due to the mixing of the very high concentrations of PCBs buried several inches below the surface with the low concentration sediments near the surface. The low resolution core profiles provide **no basis** for making any conclusion about whether burial is or is not occurring and statements such as "strong PCB profile evidence for long-term sediment loss or lack of burial" should be deleted from a revised issue of this report.

15. P. 4-35: Statements in the second and third paragraphs on this page seem to be biased toward a conclusion that PCB loss is occurring. Why is it that "long-term storage is clearly not assured" but long-term loss apparently is assured? Why is a PCB inventory increase the result of bad data, while all losses are absolutely true?