

**St. Regis Paper Company Site  
Cass Lake, MN**

**Response to U.S. EPA's May 26, 2011  
Technical Review Comments  
on April 14, 2011 Revised Final Feasibility Study Report – Soils**

International Paper is responding to the United States Environmental Protection Agency (EPA) letter dated May 26, 2011 approving with modifications the April 14, 2011 submission of the Feasibility Study (FS) Report for the St. Regis Paper Company Site. This response along with EPA's May 26, 2011 letter will be attached to the final FS Report.

As an initial matter, International Paper objects to the nature and timing of the approval with modifications. International Paper has been working cooperatively with EPA on the FS Report since early 2008. A number of the "modifications" EPA is purporting to approve as part of the FS Report involve important technical and/or regulatory issues that are not appropriate for a final approval letter where International Paper's ability to address the issues is limited to this response to the comments. Moreover, EPA's effort to force a response in less than two weeks is unreasonable and inconsistent with the provisions of the FS-AOC and CERCLA.

International Paper provides specific responses to all of the comments in EPA's May 26, 2011 letter below. As a general response, International Paper continues to be concerned that EPA is making last minute determinations and changes that are not supported by the record or the technical data that was developed for the Site. For instance, EPA should not be adding Remedial Action Objectives at this late date. In addition, EPA continues to mischaracterize the Tribal HSCA and now, as part of the final approval, is seeking to incorporate the Tribal HSCA in a way that is inappropriate and inconsistent with conclusions of the HHERA and the extensive Site-specific technical work undertaken as part of that EPA directed effort. Overall, EPA has failed to provide International Paper with a reasonable opportunity to address some of these important last-minute issues that have been raised, and EPA has continued to direct changes to the technical documents, including this final FS Report, that International Paper believes are inappropriate, inconsistent with CERCLA and not well supported by the Site-specific technical work and data collected at the Site.

***EPA General Comment***

*In comments to Barr dated February 28, 2011, EPA stated that Institutional Controls and Five- year Reviews are required for any site if the clean up goal does not allow for unrestricted use. EPA then discussed the Leech Lake Band's Hazardous Substance Control Act (HSCA) and its impact on Alternative 5. Barr rightly replied that EPA has not made a formal determination that the Band's HSCA is an ARAR for soil remediation at the St. Regis Site. Barr then states that there is no basis for the conclusion that property that exceeds the Tribal HSCA is not acceptable for unrestricted use if it has been remediated to risk-based PRGs. If the HSCA is determined to be an ARAR by EPA, then those risk-based standards become PRGs for the site. Therefore, Five-Year Reviews and Institutional Controls will be required for all of the soil remedy alternatives that either do not meet HSCA PRGs or do not allow for unrestricted use. This would include all alternatives listed in the FS*

*Report, including Alternative 6A which would require ICs and Five-Year Reviews due to continued groundwater contamination and the on-site vault.*

### **International Paper Response**

International Paper objects to the Tribal HSCA cleanup values being characterized as “risk-based standards,” and further objects to EPA’s apparent application of the Tribal HSCA values as PRGs for the site. At most, if the Tribal HSCA is determined to be an ARAR by EPA, the HSCA cleanup values would be ARAR-based PRGs. As EPA is well aware, International Paper has also objected to the Tribal HSCA being considered an ARAR.

International Paper continues to object to EPA seeking to impose a cleanup level based on the Tribal HSCA Ordinance or considering the Tribal HSCA Ordinance as a formally adopted ARAR, Moreover, International Paper continues to believe that there is no basis for the conclusion that property that exceeds the Tribal HSCA Ordinance is not acceptable for unrestricted use if it has been remediated to risk based PRGs. EPA’s contrary conclusion is inconsistent with the site-specific HHERA and is neither reasonable nor necessary to protect public health and the environment. ICs being required by EPA and associated with this issue will be confusing and misleading to the property owners and prospective property purchasers. In addition to the underlying direction being inappropriate and inconsistent with the Site-specific data and technical work, there does not appear to have been any consideration of the ability to implement this requirement. International Paper objects on these bases and suggests that it may be challenging to implement these ICs depending on what is required by EPA. For example, International Paper knows of no mechanism to compel property owners to add on-property ICs (Real Property Notification/Affidavit, Environmental Restrictive Covenant) to private property.

*The Remedial Action Objective (RAO) to prevent the potential for future transfer of site-related Contaminants of Concern (COCs) in surface soil from presenting an unacceptable risk to human health through runoff and/or windblown dust to nearby residential property and roads should be modified to include OU2. OU2 is a part of the former operations area as described in the September 11, 2008, Administrative Order on Consent (FS-AOC). In addition, there are potential risks to workers digging in the OU3 contaminant plume area as well as the potential risks from digging in the OU1 plume area. The OU3 RAOs should be modified to add potential future groundwater risks to construction workers from digging in the contaminant plume area.*

### **International Paper Response**

International Paper objects to adding RAOs to OU2 and OU3 this late in the process. These RAOs are not identified in the FS-AOC, could have been addressed many months ago and go beyond any unacceptable risks identified in the HHERA. EPA has not provided any new information or any other bases for concluding that future off-site transfer of COCs from OU2 at any significant levels will occur. In addition, it is illogical that workers will construct below ground utilities or any other non-remedial excavations in a dump. The dump is outside the City of Cass Lake and adopting an ordinance prohibiting excavation without the use of appropriate safety precautions will be challenging to impose and enforce. Engineering controls in the form of warning signs can be used.

*As I discussed with Tom Mattison in a telephone conversation last week, EPA estimates that the use of the BNSF rail line to transport contaminated soil off-site would result in an estimated savings of 50% from the truck transportation costs of Alternative 6A. Please either confirm this figure or provide information that would justify the use of another figure.*

### **International Paper Response**

International Paper and BNSF Railway Company have conducted a preliminary evaluation of the cost of rail transport for Alternative 6A. The preliminary evaluation shows that the cost of rail transport will be higher than the cost of trucking. Rail transport will introduce several complications related to short term impacts (e.g., dust at transfer points), implementation (e.g., securing permission to construct an off-loading facility near the landfill) and cost predictability. See Attachment A to this Response to Comments for the results of the preliminary cost evaluation of rail transport.

The following paragraph is provided as an addition to **Section 5.2.6 Alt. 6 – Cost** after the first partial paragraph on the top of page 81.

“At the U.S. EPA’s direction in comments to the Revised Final Feasibility Study Report, International Paper and BNSF evaluated the cost of transporting the contaminated soil by rail to the landfill. The results of the cost evaluation indicated that the cost of rail haul would be higher than the cost of truck haul and that the project would likely take longer to complete. Thus, the cost estimate for this alternative in Appendix F is based on truck haul.”

*EPA has continuing concerns regarding the calculation of background concentrations. The background concentrations for LPAHs and HPAHs appear to have been calculated based on a*

*reduced data set, however, the corresponding B(a)PE value for the same sample was apparently not identified as an outlier; and the B(a)PE background concentration of 1.6 mg/kg was apparently calculated based on the full data set of 18 results. Please confirm EPA's evaluation of the dataset and if so, explain why data was removed as outliers from only some COC background calculations.*

### **International Paper Response**

In light of EPA's concerns about the background values presented in the Revised Final FS Report and its appendices, International Paper has (a) provided additional information below regarding the available background data set and the results of an evaluation of the presence or absence of statistical outliers in these data and (b) reviewed and, where needed, made corrections to the calculations of the 95<sup>th</sup> percentile background values.

#### Background Outlier Evaluation

The potential for statistical outliers to exist in the background data set was considered in the background analysis performed for the FS. As EPA is aware, the available data set for local background soil concentrations consists of 18 sample results collected from reference area sampling locations, all of which were previously approved by EPA. Two of these samples were collected and analyzed by EPA's contractor during EPA's 2001 Removal Site Evaluation. The other 16 samples were collected during the 2004 site investigation conducted by International Paper in support of the HHERA. The proposed sampling locations were submitted to EPA, with supporting rationale, by email correspondence on September 30, 2004, and the locations were verbally approved by Tim Drexler of EPA on the same date. EPA's acceptance of these locations is also documented in a December 2, 2004 letter from Tim Drexler to Tom Ross of International Paper addressing several modifications and clarifications to the Unilateral Administrative Order for the HHERA. In general, the reference locations included in the data set were selected to reflect a range of land uses in the local vicinity of Cass Lake, at locations that were neither known nor expected to have been influenced by former operations and/or conditions at the Site or from other point sources of hazardous substances.

Evaluations of outliers in a data set are generally based on parametric tests (Johnson et al. 2007; NIST 2010), which require that the data fit a defined distribution. Non-parametric outlier tests do exist, but they need larger sample sizes ( $N > 60$ ) than available in the reference soils data set for this site ( $N = 18$ ). To determine whether the soil reference data fit a parametric distribution, data for each of the four analytes was evaluated using the Shapiro-Wilk test for normality (Johnson et al. 2007; R

Development Core Team 2009). The raw data were not normally distributed (Shapiro  $P < 0.05$ ), therefore they were log-transformed (natural logarithm) and re-tested with the Shapiro test (the four values equal to zero for B(a)PE were discarded for this evaluation). The results presented in Table 1 indicate that the natural logarithm of the reference data for each chemical groups is normally distributed, therefore the data themselves fit a log-normal distribution.

Table 1. Results for the statistical evaluation of the distribution shape and outlier analysis for reference soils from Cass Lake.			
Analyte	Distribution Fit	Shapiro Test (P value) <sup>1</sup>	Grubb's Test for Outliers (P value) <sup>2</sup>
TEQdf (ng/kg)	log-normal	0.24	1.0
B(a)PE (mg/kg)	log-normal	0.75	0.78
LPAHs (mg/kg)	log-normal	0.94	0.73
HPAHs (mg/kg)	log-normal	0.34	0.75
Notes:			
<sup>1</sup> The distribution is considered log-normal for a $P > 0.05$ in a Shapiro-Wilk test.			
<sup>2</sup> The largest value is an outlier if $P \leq 0.05$ in a Grubb's test.			

These data are displayed in Figure 1 (next page) using Tukey box plots, one for each chemical group, constructed on the reference data set after transformation by natural logarithm. This graphical representation shows nearly symmetrical box plots with centered medians, consistent with the determination of a log-normal distribution; no Tukey outliers are present for any of the chemical groups.

Since the log-transformed data were determined to fit a normal distribution, a Grubb's test (NIST 2010; Komsta 2010) for outliers could be conducted to determine whether the highest values in the data set for each chemical group are statistical outliers; a one-tailed test was conducted for one high outlier for each chemical group separately based on the assumption of normality. The results (Table 1) indicate that the data set do not contain statistical outliers at the high end (all P values were greater than 0.05). Based on this analysis, and also in light of the sample location considerations summarized above, no outliers were identified or removed from the background data set for any chemical group.

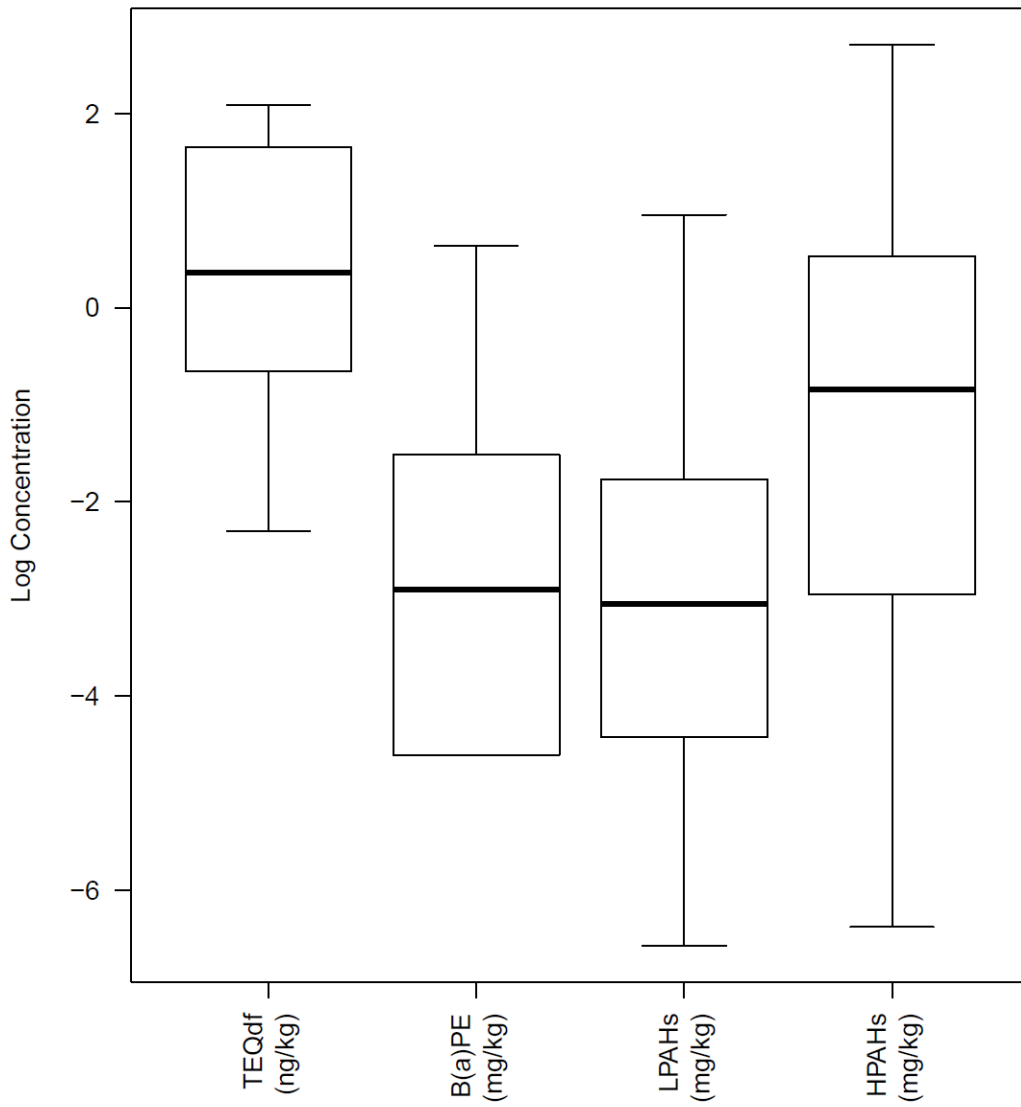


Figure 1  
Boxplots for Concentrations of TEQdf, B(a)PE, LPAHs and HPAHs in Reference Soils for Cass Lake.  
Concentrations were log-transformed because data for all analytes were log-normally distributed.  
There were no Tukey outliers for any of the analytes.

### Review of 95<sup>th</sup> Percentile Background Calculations

Based on the above findings regarding the absence of outliers in the data sets, all calculations of the 95<sup>th</sup> percentile background values for the FS Report used all 18 available results for each of the four chemical groups presented in Table 4 of Appendix B. Our review of the original calculations confirmed that the values for B(a)PE and TEQ<sub>DF</sub> were properly calculated according to the method of Hyndman and Fan (1996), as described in the text and footnote on p. 4-2 of Appendix B to the Revised Final FS Report. (Specifically, this method is “Type 8” in Hyndman and Fan’s compilation of methods for calculating sample quantiles and is their recommended preferred approach.)

Therefore, no changes in the 95<sup>th</sup> percentile background values for B(a)PE and TEQ<sub>DF</sub> are necessary. We have determined, however, that the 95<sup>th</sup> percentiles presented in the Revised Final FS Report for LPAHs and HPAHs were inadvertently calculated using a different statistical procedure (Hyndman and Fan’s “Type 3”, which assigns the quantile to the nearest even order statistic) than was described in the text. To address this discrepancy, the LPAH and HPAH 95<sup>th</sup> percentile background values have been recalculated using the cited “Type 8” method. The resulting 95<sup>th</sup> percentiles are 2.1 mg/kg for LPAH and 12.5 mg/kg for HPAH. An erratum to the FS covering this change has been prepared and is provided as Attachment B to this Response to Comments.

### **EPA Specific Comments**

#### **EPA Comment**

*Introduction - On page nine, the first paragraph, please edit to state that Barr received the data validation report for the Band's dioxin/furan data for the DRM property Brownfields Assessment.*

#### **International Paper Response**

The data validation report for the dioxin/furan data was received on April 13, 2011, one day before the Revised Final FS Report was to be transmitted to EPA and almost four years after the samples were collected. The data set was incorporated into the Revised Final FS Report. International Paper reserves the right to reject any data that is inconsistent with the QAPP or with the National Functional Guidelines. The last sentence in the referenced paragraph will be revised as follows:

“A data validation report for dioxins/furans was received from the U.S. EPA on April 13, 2011.”

**EPA Comment**

*Section 2.2 - Please modify the RAO for OU2 to include prevention of runoff and windblown soil and dust contamination to nearby residential OU7 areas. OU2 was part of the former operations area as described in the FS-AOC. This change will modify alternative descriptions by making alternatives that do not include cover or excavation of OU2 to PRGs to prevent potential migration of COCs inconsistent with the RAO. In addition, add potential future groundwater exposure to workers digging in the OU3 plume area.*

**International Paper Response**

See response to the General Comment on this issue for International Paper's objections to this requirement.

Notwithstanding those objections, and without waiving any objections, in accordance with EPA's direction, the following RAO will be added to all text and tables describing RAOs for OU2:

“Prevent the potential for the future transfer of Site-related COCs in OU2 surface soil to present an unacceptable potential risk to human health through runoff and/or windblown dust to nearby residential property and roads.”

The following RAO will be added to all text and tables describing RAOs for OU3:

“Prevent unacceptable potential risk from future exposure to Site-related COCs in OU3 groundwater through ingestion, inhalation and dermal adsorption routes of exposure during below ground construction by workers in the area of contaminated groundwater in the former dump pit area.”

Adding this RAO to OU3 will change Figure 3-6 (attached) to show an area of unacceptable risk to below ground workers and will add approximately \$5,000 (10 signs @ \$500/sign) to the cost of all alternatives except Alternative 1.

**EPA Comment**

*Section 5.2.2 Alt. 2 -Overall Protection of Human Health and the Environment - Based on the modification to the RAO for OU2, modify the second paragraph to state that this alternative is inconsistent with the RAO for OU2 to prevent migration of COCs to nearby residential properties via windblown dust or surface water erosion of soil.*

**International Paper Response**

See response to EPA General Comment on this issue for International Paper's objections to this requirement. Notwithstanding those objections, and without waiving any objections, in accordance with EPA's direction, the third sentence in the referenced paragraph will be revised to read:

“This is consistent with the remedial action objectives for OU3 but is inconsistent with the remedial action objective for OU1 and OU2 to prevent potential migration of COCs to nearby residential properties via windblown dust or surface water erosion of soil.”

In addition, adding this RAO to OU2 will result in the following revision to the second sentence in the first paragraph of **Section 5.2.3, Alt. 3 – Overall Protection of Human Health and the Environment** (p. 62):

“This is inconsistent with the remedial action objectives for OU1 and OU2. Covering soil to meet residential PRGs goes beyond the remedial action objectives for OU3.”

Parallel changes will be provided in **Section 5.2.7, Alt. 7 – Overall Protection of Human Health and the Environment** (third paragraph, p. 82) and in **Section 5.2.8, Alt. 8 – Overall Protection of Human Health and the Environment** (first paragraph, p. 85).

**EPA Comment**

*Section 5.2.3 Alt.3- Overall Protection of Human Health and the Environment - On page 62, bottom paragraph, EPA disagrees that covering areas that exceed the HSCA PCP clean up level in OU2 does not provide any additional protection to the environment. The application of cover to this area to the level of the HSCA further reduces the potential for exposure to residual levels of PCP to workers and ecological receptors. Please revise the paragraph.*

### **International Paper Response**

International Paper continues to object to both the timing and the underlying action of EPA applying the Tribal HSCA Ordinance cleanup level for PCP to OU2. To the extent that EPA is seeking to impose a cleanup level based on the Tribal HSCA Ordinance, International Paper is not aware of any determination that the Tribal HSCA Ordinance has been formally adopted as an ARAR for the Site, which should be a prerequisite. Moreover, International Paper should be provided an opportunity to address, object to and/or challenge any such ARAR determination. Further, PCP is a chemical of concern in OU2 soils for ecological receptors only. It is not a chemical of concern for human health exposures. The risk-based ecological PRG of 31 mg/kg for PCP is an EPA Ecological Soil Screening Level (EcoSSL) that is protective of soil invertebrates, the only receptor group for which unacceptable risks from exposure to PCP were identified in the HHERA. Therefore, unacceptable risks in OU2 will be sufficiently addressed by excavation of soils exceeding the EcoSSL, and additional remedial actions are not needed to meet the protectiveness criterion. Also, as discussed in the text of the FS, clearing of the established trees to place a vegetated cover over a large area of OU2 will have permanent adverse effects on habitat and carbon storage. Additionally, there will be significant short-term environmental impacts associated with clearing the forested area.

Notwithstanding these objections, and without waiving any objections, in accordance with EPA's direction, the second sentence of this paragraph will be deleted.

### **EPA Comment**

*Section 5.2.4 Alt. 4 - The section title is labeled as "5.24". Please revise to "5.2.4"*

### **International Paper Response**

The section title will be revised.

### **EPA Comment**

*Section 5.2.4 Alt. 4 - On the bottom of page 65, the second sentence states that ICs are not needed for areas that exceed the Level 1 PRGs-R since these areas will be covered. This is not correct. ICs will be needed in order to ensure the protectiveness of the cover. Please revise the statement.*

### **International Paper Response**

There are several references in the May 26, 2011 EPA comments to ICs and FYRs. Part of the confusion comes from the different types of ICs that are described in the revised Final FS Report

(e.g., ICs to not allow residential land use in OU1-3, ICs to protect the integrity of a soil cover, ICs to notify property owners/purchasers that soil exceeds HSCA clean up levels, ICs if access is denied or soil exceeding PRGs is left below a depth of two feet, etc). As the EPA added requirements for new ICs late in the FS process, the text lost some clarity as to the type of IC that is being discussed. All of the EPA comments regarding ICs and FYRs can be addressed with clarifying language.

The sentence referred to in the EPA comment will be deleted. The need for ICs with this alternative are correctly described in Table 5-1 and Appendix G.

#### **EPA Comment**

*Section 5.2.4 Alt. 4- Overall Protection of Human Health and the Environment - The bottom of the first paragraph states that applying a cover to residential properties in this alternative is inconsistent with the results of the technology screening in Table 3-4. EPA disagrees with this statement and the limitations and screening comment in Table 3-4 that a cover should be excluded from consideration for residential properties. For residual levels of contamination on residential properties between HSCA clean up levels and the Level2-PRGs-R, EPA considers a cover to be protective of human health when incorporated with proper ICs. Please revise this paragraph and the table.*

#### **International Paper Response**

This comment is inconsistent with the following June 19, 2009 EPA comment on the Draft Alternatives Screening Technical Memorandum – Soils.

*“Alternatives involving only covering (horizontal barrier) or shallow cleanup (excavation) may not be appropriate for residential use. Tables 3-1 and 3-2 should be revised as necessary to more fully and completely consider land use in the presentation and evaluation of remedial alternatives.”*

This portion of the table titled Remedial Technology and Technology Process Option Summary, was thus revised in the Draft FS Report and did not change in the Final FS Report and in the Revised Final FS Report. It seems that EPA is now directing that the table be revised to justify a conclusion that for residual levels of contamination on residential properties between the HSCA cleanup levels and the Level 2-PRGs-R, EPA considers that a cover is protective of human health when incorporated with proper ICs. International Paper does not understand this change in EPA’s direction on this matter. International Paper continues to believe that this element of Alternative 4 (covering

soil on residential property) will be difficult to implement. As EPA is aware, despite everyone's best efforts, it was not possible to get 100% compliance with the covering of soil on private property during the 2006 Interim Action.

In accordance with EPA's direction, the language in Table 3-4 and in the referenced paragraph will be revised as directed.

**EPA Comment**

*Section 5.2.5 Alt. 5 -Long-term Effectiveness and Permanence - Please revise the statement made in paragraph one that 5-Year Reviews and ICs will not be required. As stated earlier, Five Year Reviews will be required for any remedy that does not allow for unrestricted use.*

**International Paper Response**

See response to EPA's General Comment on this issue for International Paper's objections to this requirement. Notwithstanding these objections, and without waiving any objection, in accordance with EPA's direction, the referenced sentence will be deleted. The ICs for this alternative are described in Table 5-1 and Appendix G.

**EPA Comment**

*Section 5.2.5 Alt. 5- Cost - On page 75 the bottom paragraph states that when excavation and restoration are complete there will be no 5-Year Reviews. Please revise this in the same manner as EPA's previous comment.*

**International Paper Response**

See response to the previous comment. The sentence will be deleted.

**EPA Comment**

*Section 5.3 Overall Protection of Human Health and the Environment - Modify the third bulleted RAO to add OU2. In addition, remove the last sentence of the paragraph following the bullets. Excavation and covering of soil exceeding residential PRGs in OU2 is consistent with the modified RAO for OU2.*

**International Paper Response**

International Paper has a continuing objection to adding RAOs at this late date that are not included in the FS-AOC and that are inconsistent with the HHERA.

Notwithstanding these objections, and without waiving any objection, in accordance with EPA's direction, OU2 will be added to the third bulleted item and the last two sentences in the first paragraph after the bullets will be modified to read as follows:

“This meets the remedial action objectives for OU3, but not OU1 and OU2. The excavation or covering of soil exceeding residential PRGs in industrial/commercial areas in OU3 in Alternatives 3, 4, 5, 6 and 8 goes beyond the remedial action objectives for this operable unit.”

*On page 90, please delete the last sentence of the second paragraph regarding EPA's conclusion on site-wide averaging.*

**International Paper Response**

This statement is not consistent with EPA comments on the January 14, 2010 Final FS Report. International Paper is unaware of any new data or computations supporting this statement. Has EPA completed additional computations showing that this statement is not true?

In accordance with EPA's direction, the referenced sentence will be deleted and a similar sentence will be deleted from the last paragraph in **Section 5.2.3, Alt. 3 – Protection of Human Health and the Environment** (page 63).

*In the fourth paragraph on this page please modify the second sentence to state: "With the exception of Alternative 1, all alternatives provide for possible future industrial/commercial development in the industrial/commercial areas..."*

**International Paper Response**

The sentence will be changed.

*On page 92, please modify the first sentence of the page to include Alternative 5 to the list of Alternatives that will require ICs.*

**International Paper Response**

Alternative 5 cannot be added to this sentence since the ICs being described refer to protecting the integrity of a soil cover and Alternative 5 does not include a cover. The following two sentences will be added to replace the referenced sentence:

“Alternatives 2, 3, 4, 7 and 8 will require institutional controls on OU1, OU2, and OU3 to protect the integrity of the soil cover since soil exceeding PRGs will be covered in these alternatives. All of the alternatives, except Alternative 1, will require some form of institutional control as described in Appendix G.”

*Please delete the last sentence of the fourth paragraph. Cover to meet the LLBO HSCA clean up value for PCP provides a higher level of protection of human health and the environment by reducing exposure to residual levels of PCP.*

**International Paper Response**

See response to EPA’s General Comment on this issue for International Paper’s objections to this requirement. Despite these objections, in accordance with EPA’s direction, this sentence will be deleted.

**EPA Comment**

*Section 5.2.8 Alt. 8 - Long-term Effectiveness and Permanence - Please revise this paragraph to state that if the LLBO HSCA is determined by EPA to be an ARAR for the site, 5-Year Reviews will be required.*

**International Paper Response**

International Paper will not speculate about actions that would be required if the LLBO HSCA is determined to be an ARAR for the Site since EPA has not made such a determination even though identification of ARARs is required at the ASTM step in the FS process.

**EPA Comment**

*Section 6.1 Summary Introduction - Please correct the Level 3 industrial/commercial PRG for BaPe from 4.1 mg/kg to 41 mg/kg.*

**International Paper Response**

The PRG will be corrected.

**EPA Comment**

*Section 6.3 Summary of Major Conclusions - On page 101, modify the first sentence of the second full paragraph to include Alternative 5 to the list of alternatives that will require ICs if the LLBO HSCA is determined to be an ARAR for the site.*

**International Paper Response**

The referenced sentence describes ICs that will be needed to protect the integrity of a soil cover. Alternative 5 does not include a cover so it is excluded from the list of alternatives that will require this form of IC. International Paper will not speculate on what would be needed if the HSCA is determined to be an ARAR. International Paper believes this paragraph does not warrant revision. As referenced in the paragraph, the institutional controls applicable to each alternative are described in Appendix G.

**EPA Comment**

*Section 6.2 Remedial Action Objectives and Evaluated Alternatives - Modify the third bullet on page 98 to add OU2 (see previous comments).*

**International Paper Response**

See previous response to EPA's General Comment on this issue. The third bullet will be modified to add OU2.

**EPA Comment**

*Tables - Table G-1: Please revise this table to address the fact that ICs will be required on all alternatives, at a minimum, due to the on-site vault and the presence of groundwater contamination.*

**International Paper Response**

Including ICs for the onsite vault is a new requirement that will be added to Table G-1 for OU2 in Alternatives 5 and 6 by adding footnotes 1 and 2. Appropriate ICs for the onsite vault (footnotes 1 and 2) are already included for OU2 in Alternatives 2, 3, 4, 7 and 8). An IC for the presence of groundwater contamination is included for OU1 for all alternatives except Alternative 1 (footnote 3). This IC will be added to OU3 for all alternatives, except Alternative 1, as directed by EPA.

*In addition, please edit the footnotes to replace "U.S. EPA/MPCA" in all places with "U.S. EPA and all appropriate governmental entities".*

#### **International Paper Response**

The footnote will be changed.

#### **EPA Comment**

*Appendix B. Section 4.1. Pages 4-1 and 4-2 - Section 4.1 describes the approach taken to calculate site-specific background concentrations. Table 4 presents sample-specific results for TEQdf, B(a)PE, LPAHs, and HPAHs. The background concentrations, calculated as 95th percentiles according to the method of Hyndman and Fan (1996), appear to be correct for TEQdf, LPAHs, and HPAHs. It should be noted, that while not explicitly stated in Section 4.1, the background concentrations for LPAHs and HPAHs appear to have been calculated based on a trimmed or reduced data set. Specifically, the LPAH (2.6 mg/kg) and HPAH (15 mg/kg) values for the sample REF-06-(4-12) appear to have been identified as outliers and removed from the data set prior to calculating background concentrations. However, the corresponding B(a)PE value (1.9 mg/kg) for this same sample was apparently not identified as an outlier; and the B(a)PE background concentration of 1.6 mg/kg was apparently calculated based on the full data set of 18 results.*

*The approach taken regarding identification, documentation, and consideration of outliers as part of the background concentration calculation must be discussed and documented as part of Appendix B. Specifically, the basis for retaining PAH results which contributed directly to the calculation of a B(a)PE concentration for the sample REF-06-(4-12) which were apparently removed as outliers as part of the LPAH and HPAH background calculation.*

#### **International Paper Response**

See response to EPA General Comment on this issue and Attachment B.

## References

Johnson G., Ehrlich R., Full W., Ramos S. (2007). Principal Component analysis and receptor models in environmental forensics; In Introduction to Environmental Forensics 2nd ed., Brian Murphy, Robert D. Morrison (eds.). Academic Press, pp. 207-261.

Komsta, Lukasz (2010). outliers: Tests for outliers. R package version 0.13-3. <http://CRAN.R-project.org/package=outliers>.

NIST/SEMATECH (2010). e-Handbook of Statistical Methods, <http://www.itl.nist.gov/div898/handbook/>, 6/3/2011. Chapter 1.3.5.17: <http://itl.nist.gov/div898/handbook/eda/section3/eda35h.htm>.

R Development Core Team (2009). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL <http://www.R-project.org>.



## **Attachment A to June 8, 2011 Response to EPA Comments on Revised Final FS Report**

### **Cost to Transport Soil by Rail—Alternative 6A**

At the request of EPA, a preliminary cost estimate was developed using rail transportation for Alternative 6A, which involves the largest volume of contaminated soil transported to the landfill. The cost for rail transport was determined to be more expensive than the cost of trucking. In addition, the duration of contaminated soil load out is anticipated to be several years longer for rail compared to trucking. In addition to cost issues, there are implementation issues with transportation of site soils by rail. For instance, there will need to be additional dust control and final cleanup measures taken at the rail spurs and securing approvals to construct a rail spur for soil unloading may be difficult.

Representatives of the BNSF were consulted to help complete the cost estimate. The rail scenario is assumed to involve construction of a rail spur at the Site in OU1 and in the vicinity of Big Lake, Minnesota, about 10 miles from the Veolia landfill near Buffalo, Minnesota (formerly the Onyx Landfill). This landfill was assumed for all cost estimates in the Revised Final FS Report.

The soil would be transported by rail most of the way to the landfill. It is assumed that BNSF rail routes would be used to Big Lake via Duluth/Superior and the Twin Cities, or via North Dakota and Fargo. The soil would be transferred from the rail cars to trucks at the Big Lake spur and taken the rest of the way into the landfill. As shown on the attached cost table, the cost for rail transport (\$37/ton) is estimated to exceed the cost for trucking (\$27/ton) for Alternative 6A, including rail spur construction, rail car rental, and other necessary efforts. Rail transportation of contaminated soil would be expected to increase the cost of Alternative 6A to \$212 million, compared to \$201 million for truck transport in the Revised Final FS Report.

It should be noted that transfer from rail cars to trucks would be expected at other landfills since International Paper and BNSF are not aware of any Minnesota (or Midwest) landfill with rail access directly into the disposal area and that can take contaminated soil. Construction of a new rail spur at any landfill with rail access onto the property is anticipated to be necessary due to the number of rail cars and duration of the project with this alternative. Out-of-state landfills are expected to present additional complications for approving soil disposal and rail transportation costs to out-of-state landfills (as well as soil disposal at an out-of-state landfill) are expected to be higher than the landfill option that is included in the attached table.

Description	Qty	Unit	Unit Cost	Extension	Total	Assumptions/Comments
<b>OU1 (Former Wood Treating Plant Area)</b>						
<b>OU1 Site Preparation</b>						
Access Negotiation, Follow up for OU 1	1	LS	\$ 30,000	\$ 30,000		Professional judgment and experience from previous site projects
Tree Clearing in OU1	23	Acre	\$ 9,825	\$ 229,550		Cut and chip medium, trees to 12" diam. and grub stumps and remove. RS Means for Site Work and Landscape 2010.
<b>OU1 Sampling</b>						
Test Untested Areas	540	Samples	\$ 4,000	\$ 2,160,000		Assumes 60 grids are untested in OU-1 at three depth intervals, and 180 grids at two more depth intervals. Sample cost for dioxins/furans, extended PAHs and PCPs. Includes sampling and data review.
Verification Sampling	155	Sample	\$ 2,000	\$ 310,588		About 2 per excavated acre. Dioxins/furans, extended PAHs and PCPs, excluding sampling cost.
Landfill Profile Sampling	200	Ea	\$ 1,100	\$ 220,000		Professional judgment. Number of samples will vary depending on the landfill requirements.
<b>Area to be Excavated in OU1</b>						
OU1 Area Owned by IP (Area 3)	27	Acre				Obtained from GIS files
Area Available for Excavation	23	Acre	85%			Estimated percent of area not involving buildings, pavement, etc.
Area Exceeding PRGs to be Excavated	23	Acre	100%			Estimated percent exceeding PRGs based on existing data and planned additional testing
Average Depth of Excavation	8	Ft				
Excavation Volume	301,549	C.Y.				
OU1 Area Owned by BNSF (Area 2)	35	Acre				Obtained from GIS files
Area Available for Excavation	34	Acre	95%			Estimated percent of area not involving buildings, pavement, etc.
Area Exceeding PRGs to be Excavated	34	Acre	100%			Estimated percent exceeding PRGs based on existing data and planned additional testing
Average Depth of Excavation	6	Ft				
Excavation Volume	325,958	C.Y.				
OU1 Area Owned by City/Others Exceeding PRGs to be Excavated (Area 1)	26	Acre				Obtained from GIS files
Area Available for Excavation	22	Acre	85%			Estimated percent of area not involving buildings, pavement, etc.
Area Exceeding PRGs to be Excavated	21	Acre	95%			Estimated percent exceeding PRGs based on existing data and planned additional testing
Average Depth of Excavation	4	Ft				
Excavation Volume	133,003	C.Y.				
Railroad North Area Owned by BNSF	26	Acre				
Area Available for Excavation	24	Acre	95%			
Area Exceeding PRGs to be Excavated	23	Acre	95%			
Average Depth of Excavation	0.67	Ft				
Excavation Volume	24,989	C.Y.				
<b>OU1 Total Excavation Volume</b>	785,000	C.Y.				
Excavate, Stockpile, and Load soil	1,177,500	ton	\$ 12.0	\$ 14,130,000		
<b>Construct RR siding &amp; loading area in OU 1 Area 2</b>	1	LS	\$ 800,000	\$ 800,000		4000' foot long siding, BNSF constructs switch from existing track. Construct soil loading ramp along entire length.
Land acquisition or leasing for RR siding near landfill	1	LS	\$ 100,000	\$ 100,000		Placeholder cost for land and permitting
Construct RR siding & loading area near landfill	1	LS	\$ 800,000	\$ 800,000		4000' foot long siding, BNSF constructs switch from existing track. Construct soil loadout ramp along entire length.
Rail car rental of 100 cars	96	months	\$ 130,000	\$ 12,480,000		Assumes about 18,000 tons per month is shipped. Each rail car make 2 round trips per month and each rail car is assumed to rent at \$1300/month
Dust control at transfer facilities	96	month	\$ 2,000	\$ 192,000		watering, covering stockpiles
Pre-post investigation at off-site rail siding	1	LS	\$ 100,000	\$ 100,000		shallow soil testing studies
Scrape up shallow soil at unloading spur and dispose at landfill	10,000	ton	\$ 23	\$ 230,000		Assumes top one foot of soil is impacted by operations
Soil transfer from site areas onto rail	1,177,500	ton	\$ 2	\$ 2,355,000		Using scaled front end loader
Rail transportation	1,177,500	ton	\$ 20	\$ 23,550,000		Preliminary estimate from BNSF. Assumes shipper-owned rail cars and non-hazardous soil.
Soil transfer from rail to truck	1,177,500	ton	\$ 4	\$ 4,710,000		Using backhoe
Truck transportation to landfill	1,177,500	ton	\$ 2.10	\$ 2,472,750		Siding location is assumed to be 10 miles from landfill
<b>Development of cost per ton for Rail for other Operable Units</b>						
OU2 soil	200,550	ton				
OU3 soil	183,900	ton				
OU7 soil	173,550	ton				
Total Soil quantity and rail/trucking/handling costs for other Operable Units	558,000	ton	\$ 28.10			On-site transfer to rail, rail shipping, off-site transfer from rail to trucks, trucking to landfill (see above line items for OU1 soil)
Subtotal for other operable units	\$ 15,679,800					
Subtotal for OU1 costs from above	\$ 47,789,750					
Total Rail transportation scenario cost and corresponding unit price (all OUs)	\$63,469,550		\$37			Planning unit cost for Rail to be used for other operable units (includes one-time cost for rail infrastrucre and ongoing costs for dust control, rail car rental, etc
<b>OU1 Excavated Soil Disposal</b>	1,177,500	ton	\$ 9	\$ 10,597,500		Unit costs adapted from 2004 contaminated soil removal from City owned property on site and recent conversations with contractors (transportation to Onyx landfill, Buffalo, MN).
<b>OU1 Restoration</b>						
Borrow Soil Purchase, Placement and Compaction	722,400	C.Y.	\$ 21.50	\$ 15,531,600		Spread 6" Thick. RS Means Site Work & Landscape Cost Data 2010 (5 mile haul, compaction)
Borrow Soil Analysis	100	Ea	\$ 2,000	\$ 200,000		Based on 50 samples for topsoil sources and 50 samples for soil sources. Dioxins/Furans extended PAHs and PCPs.
Top Soil Purchase and Placement	62,600	C.Y.	\$ 39.90	\$ 2,497,740		Spread 6" Thick. RS Means Site Work & Landscape Cost Data 2010
Seeding and Mulching of Topsoil	101	Acre	\$ 3,290.00	\$ 331,519		Spread 6" Thick
Pave Cass Forest Products Heavy Machinery Area	0	SY	\$ 39.05	\$ -		Assumes area is excavated, backfilled, and covered with gravel (cost included in above lines)
Pave unpaved roads	0	SY	\$ 39.05	\$ -		Assumes roads are excavated, backfilled, and cover with gravel (cost included in above lines)
Repair Nearby Roads Potentially Affected by Large Scale Hauling	1	LS	\$ 50,000	\$ 50,000		Assumed cost for minor pavement repairs and re-grading of gravel roads.
Engineering Controls	20	Signs	\$ 500	\$ 10,000		Assumed costs for signs, etc.
<b>OU1 Vegetation Maintenance (1st Year)</b>	101	Acre	\$ 1,500	\$ 151,148		Professional judgment cost that is highly dependent on weather and season.
<b>OU1 Mobilization/Demobilization</b>				\$ 7,846,856		10% of remediation cost.
<b>OU1 Subtotal</b>					\$ 102,086,251	
<b>OU2 (Southwest Area)</b>						
<b>OU2 Site Preparation</b>						
Tree Clearing OU2 Eco Exc. Area & Commercial Areas to be Covered	18	Acre	\$ 9,825	\$ 177,384		Cut and chip medium, trees to 12" diam. and grub stumps and remove. RS Means for Site Work and Landscape 2010.
<b>OU2 Sampling</b>						
Untested Area Sampling	90	Samples	\$ 4,000	\$ 360,000		Assumes 18 existing grids are untested, plus 4 more depths at the 18 grids. Dioxins/furans PAHs and PCPs. Includes sampling and data review.
Verification Sampling	30	Samples	\$ 2,000	\$ 60,000		Dioxins/furans, extended PAHs and PCPs. Excluding sampling costs.
Landfill Profile Sampling	20	Ea	\$ 1,100	\$ 22,000		Professional judgment. Number of samples will vary depending on the landfill requirements.
<b>Soil Excavation in OU2 for Eco PRGs</b>						
OU2 Area	28	Acre				Obtained from GIS files
OU2 Area Minus Existing Vault Area	21	Acre				
OU2 Area Available for Excavation	21	Acre	100%			Estimated percent of area not involving buildings, pavement, etc.

Description	Qty	Unit	Unit Cost	Extension	Total	Assumptions/Comments
89 OU2 Area Exceeding Eco PRGs to be excavated	2.1	Acre	10%			Estimated percent exceeding PRGs based on existing data and planned additional testing
90 Depth to be Excavated	3	ft				Assumed average depth of excavation to achieve remedial goal.
91 Volume of Soil to be Excavated	10,300	C.Y.				
92 Excavate, Stockpile and Load soil	15,450	ton	\$ 12.0	\$ 185,400		
93						
94 <b>OU2 Excavated Soil Transportation</b>	15,450	ton	\$37	\$ 565,027		
95 <b>OU2 Excavated Soil Disposal</b>	15,450	ton	\$ 9	\$ 139,050		Unit costs adapted from 2004 contaminated soil removal from City owned property on site and recent conversations with contractors (transportation to Onyx landfill, Buffalo, MN).
96						
97 <b>OU2 Restoration for Eco Area</b>						
98 Borrow Soil Purchase, Placement and Compaction	8,600	C.Y.	\$ 21.50	\$ 184,900		Spread 6" Thick. RS Means Site Work & Landscape Cost Data 2010 (5 mile haul, compaction)
99 Borrow Soil Analysis	4	Ea	\$ 2,000	\$ 8,000		
100 Top Soil Purchase and Placement	1,700	C.Y.	\$ 39.90	\$ 67,830		Spread 6" Thick. RS Means Site Work & Landscape Cost Data 2010
101 Seeding and Mulching of Topsoil	2.1	Acre	\$ 3,290.00	\$ 6,988		RS Means Site Work & Landscape Cost Data 2010
102 Top Soil Analysis	1	Ea	\$ 2,000	\$ 2,000		
103 Grade Ground Surface to Provide Adequate Drainage	1	LS	\$ 20,000	\$ 20,000		
104						
105 <b>OU2 Excavation in Commercial/Industrial Areas</b>						
106 OU2 Area	28	Acre				Obtained from GIS files
107 OU2 Area Minus Existing Vault Area & Eco Area	19	Acre				
108 OU2 Area Available for Excavation	19	Acre	100%			Estimated percent of area not involving buildings, pavement, etc.
109 OU2 Area Exceeding PRG and HSCA	19	Acre	100%			Estimated percent exceeding PRGs based on existing data
110 Depth to be Excavated	4	ft				Assumed average depth of excavation to achieve remedial goal.
111 Volume of Soil to be Excavated	123,400	C.Y.				
112 Excavate, Stockpile and Load soil	185,100	ton	\$ 12	\$ 2,221,200		
113						
114 <b>OU2 Excavated Soil Transportation</b>	185,100	ton	\$ 37	\$ 6,769,354		
115 <b>OU2 Excavated Soil Disposal</b>	185,100	ton	\$ 9	\$ 1,665,900		Unit costs adapted from 2004 contaminated soil removal from City owned property on site and recent conversations with contractors (transportation to Onyx landfill, Buffalo, MN).
116						
117 <b>OU2 Restoration for Commercial/Industrial</b>						
118 Borrow Soil Purchase, Placement and Compaction	107,900	C.Y.	\$ 21.50	\$ 2,319,850		
119 Borrow Soil Analysis	50	Ea	\$ 2,000	\$ 100,000		
120 Top Soil Purchase and Placement	15,500	C.Y.	\$ 39.90	\$ 618,450		Spread 6" Thick. RS Means Site Work & Landscape Cost Data 2010
121 Seeding and Mulching of Topsoil	19.1	Acre	\$ 3,290.00	\$ 62,893		RS Means Site Work & Landscape Cost Data 2010
122 Top Soil Analysis	10	Ea	\$ 2,000	\$ 20,000		
123						
124 <b>OU2 Vegetation Maintenance For All Areas (1st Year)</b>	21.2	Acre	\$ 1,500	\$ 31,861		
125						
126 <b>OU 2 Mobilization/Demobilization</b>				\$ 589,676		
127 <b>OU2 Subtotal</b>					\$ 16,197,763	
128						
129 <b>OU3 (City Dump Area)</b>						
130 <b>OU3 Site Preparation</b>						
131 Access Negotiation, Follow up for OU3	1	LS	\$ 5,000	\$ 5,000		
132 Tree Clearing in OU3	26	Acre	\$ 9,825	\$ 254,163		Cut and chip medium, trees to 12" diam. and grub stumps and remove. RS Means for Site Work and Landscape 2010.
133						
134 <b>OU3 Sampling</b>						
135 Test Untested Areas	45	Samples	\$ 4,000	\$ 180,000		Assumes grids are tested around currently identified area of concern (3 depths). Sample cost for dioxins/furans, extended PAHs and PCPs. Includes sampling and data review.
136 Verification Sampling	16	Sample	\$ 2,000	\$ 32,000		About 2 per excavated acre. Dioxins/furans, extended PAHs and PCPs, excluding sampling cost.
137 Landfill Profile Sampling	100	Ea	\$ 1,100	\$ 110,000		Professional judgment. Actual number of samples will be based on landfill requirements.
138						
139 <b>Area to be Excavated in OU3--Dump Area</b>						
140 OU3 Area Exceeding PRGs to be Excavated	8.0	Acre				City Dump Area where previous samples exceeded PRG
141 Depth to be Excavated	8	ft				Assumed average depth of excavation to achieve remedial goal.
142 Volume of Soil to be Excavated	103,300	C.Y.				
143 Excavate, Stockpile and Load soil	154,950	ton	\$ 12	\$ 1,859,400		
144						
145 <b>Area of OU3--Forested Area</b>						
146 OU3 Area Exceeding PRGs to be Excavated	18	Acre	15%			City Dump Area where previous samples exceeded PRG
147 Depth to be Excavated	0.67	ft				Assumed average depth of excavation to achieve remedial goal.
148 Volume of Soil to be Excavated	19,300	C.Y.				
149 Excavate, Stockpile and Load soil	28,950	ton	\$ 12	\$ 347,400		
150						
151 OU3 Soil Excavation--Total Volume	122,600	C.Y.				
152						
153 <b>OU3 Excavated Soil Transportation</b>	183,900	ton	\$ 37	\$ 6,725,468		
154 <b>OU3 Excavated Soil Disposal</b>	183,900	ton	\$ 9	\$ 1,655,100		Unit costs adapted from 2004 contaminated soil removal from City owned property on site and recent conversations with contractors (transportation to Onyx landfill, Buffalo, MN).
155						
156 <b>OU3 Restoration for Commercial/Industrial</b>						
157 Borrow Soil Purchase, Placement and Compaction	101,700	C.Y.	\$ 21.50	\$ 2,186,550		
158 Borrow Soil Analysis	50	Ea	\$ 2,000	\$ 100,000		
159 Top Soil Purchase and Placement	20,900	C.Y.	\$ 39.90	\$ 833,910		Spread 6" Thick. RS Means Site Work & Landscape Cost Data 2010
160 Seeding and Mulching of Topsoil	26	Acre	\$ 3,290.00	\$ 85,109		RS Means Site Work & Landscape Cost Data 2010
161 Top Soil Analysis	20	Ea	\$ 2,000	\$ 40,000		
162						
163 <b>OU3 Vegetation Maintenance (1st Year)</b>	26	Acre	\$ 1,500	\$ 38,803		Professional judgment cost that is highly dependent on weather and season.
164						
165 <b>OU3 Mobilization/Demobilization</b>				\$ 571,534		10% of remediation cost.
166 <b>OU3 Subtotal</b>					\$ 15,024,437	
167						
168 <b>OU7 (Residential Area)</b>						
169 <b>OU7 Site Preparation</b>						
170 Access Negotiation, Follow up, Replace Landscaping in OU7	118	Properties	\$ 5,000	\$ 590,000		Professional judgment cost for access coordination, yard debris removal, shallow utilities, landscape replacement, follow-up concerns, etc. Number of properties based on properties that exceed and assuming more untested properties will fail based on % exceedance.
171 Tree Clearing in Northern Residential Areas	16	Acre	\$ 9,000	\$ 147,456		Cut and chip medium, trees to 12" diam. and grub stumps and remove. Total cost equals - \$9000/acre. RS Means for Site Work and Landscape 2009.
172 Site Preparation for DRM area by OU2	1	LS	\$ 120,000	\$ 120,000		Initial assumptions regarding access, site clearing, etc.
173						
174 <b>OU7 Sampling</b>						
175						

Description	Qty	Unit	Unit Cost	Extension	Total	Assumptions/Comments	
176 Test Untested Areas	220	Sample	\$ 2,000	\$ 440,000		Assumes 19 existing properties are untested in OU-7, plus two more depth at 19 properties. Sample cost for dioxins/furans, extended PAHs and PCPs. Includes sampling and data review.	
177 Verification Sampling	354	Sample	\$ 2,000	\$ 708,000		Dioxins/furans, extended PAHs and PCPs, excluding sampling cost.	
178 Landfill Profile Sampling	20	Ea	\$ 1,100	\$ 22,000		Professional judgment. Actual number of samples will be based on landfill requirements.	
179							
<b>180 Soil Excavation in OU7 Area</b>							
181 OU7 Total Area, Including DRM property	54	Acre				Obtained from GIS files and Figure 2 of DRM report	
182 OU7 Area Available for Excavation	43	Acre	80%			Estimated percent of area not involving buildings, pavement, etc.	
183 OU7 Area Exceeding PRGs to be excavated	38.9	Acre	90%			Estimated percent exceeding PRGs based on existing data and planned additional testing	
184 Depth to be Excavated	1	ft				Assumed average depth of excavation to achieve remedial goal.	
185 Volume of Soil to be Excavated	62,700	C.Y.					
186 Additional Volume of Soil from OU1 Transferred Area	8,000	C.Y.				Additional volume from 8" depth to 2' depth associated with block transferred from OU1 zoned residential	
187 Additional Volume of Soil from DRM Area	3,900	C.Y.				Additional volume from 1' depth to 4' depth associated with strip of land transferred from IP (50' x700')	
188 Total Volume of Soil Excavated in OU7 Area	74,600	C.Y.					
189 Excavate, Stockpile and Load soil	111,900	ton	\$ 110	\$ 12,309,000		Adapted from unit cost from EPA's feasibility study for the south Minneapolis residential yard remediation (\$75/CY).	
190							
<b>191 Soil Excavation in Residential Area North of Railroad</b>							
192 Total Area	59	Acre				Obtained from GIS files	
193 Area Available for Excavation	35	Acre	60%			Estimated percent of area not involving buildings, pavement, etc.	
194 Area Exceeding PRGs to be excavated	35	Acre	100%			Estimated percent exceeding PRGs based on existing data and planned additional testing	
195 Depth to be Excavated	0.67	ft				Assumed average depth of excavation to achieve remedial goal.	
196 Volume of Soil to be Excavated	38,000	C.Y.					
197 Excavate, Stockpile and Load soil	57,000	ton	\$ 110	\$ 6,270,000		Adapted from unit cost from EPA's feasibility study for the south Minneapolis residential yard remediation (\$75/CY).	
198							
<b>199 Soil Excavation in Northern Residential Area</b>							
200 Total Area	82	Acre				Obtained from GIS files	
201 Area Available for Excavation	57	Acre	70%			Estimated percent of area not involving buildings, pavement, etc.	
202 Area Exceeding PRGs to be excavated	3	Acre	5%			Estimated percent exceeding PRGs based on existing data and planned additional testing	
203 Depth to be Excavated	0.67	ft				Assumed average depth of excavation to achieve remedial goal.	
204 Volume of Soil to be Excavated	3,100	C.Y.					
205 Excavate, Stockpile and Load soil	4,650	ton	\$ 110	\$ 511,500		Adapted from unit cost from EPA's feasibility study for the south Minneapolis residential yard remediation (\$75/CY).	
206							
207 OU7 and Residential Areas Soil Excavation--Total Volume	115,700	C.Y.					
208							
209 <b>OU7 Excavated Soil Transportation</b>	173,550	ton	\$ 37	\$ 6,346,955			
210 <b>OU7 Excavated Soil Disposal</b>	173,550	ton	\$ 9	\$ 1,561,950		Unit costs adapted from 2004 contaminated soil removal from City owned property on site and recent conversations with contractors (transportation to Onyx landfill, Buffalo, MN).	
211							
<b>212 OU7 Restoration</b>							
213 Clean Fill Purchase, Placement and Compaction	53,600	C.Y.	\$ 21.50	\$ 1,152,400		Spread 6" Thick. RS Means Site Work & Landscape Cost Data 2010 (5 mile haul, compaction)	
214 Clean Fill Analysis	20	Ea	\$ 2,000	\$ 40,000			
215 Top Soil Purchase and Placement	62,100	C.Y.	\$ 39.90	\$ 2,477,790		Spread 6" Thick. RS Means Site Work & Landscape Cost Data 2010	
216 Seeding and Mulching of Topsoil	77	Acre	\$ 3,290.00	\$ 253,102		RS Means Site Work & Landscape Cost Data 2010	
217 Top Soil Analysis	20	Ea	\$ 2,000	\$ 40,000		Based on 1 sample per 1000 C.Y. Analyses for dioxins/furans, extended PAHs and PCPs.	
218							
219 Pave unpaved roads						The road in OU7 are included with OU1 above	
220							
221 <b>OU7 Vegetation Maintenance For All Areas (1st Year)</b>	77	Acre	\$ 1,500	\$ 115,396		Professional judgment cost that is highly dependent on weather and season.	
222							
223 <b>OU 7 Mobilization/Demobilization</b>				\$ 2,394,664		10% of remediation cost excluding transportation and disposal costs.	
224 <b>OU7 Subtotal</b>					\$ 35,500,214		
225							
226							
227 <b>Subtotal Site Preparation and Contractor Costs</b>						\$ 168,808,664	
228							
		<b>Annual Quantity</b>	<b>Units</b>	<b>Unit Cost</b>	<b>Annual Cost</b>	<b>Net Present Value, 30 years at 7% rate</b>	
229 <b>Operation, Maintenance, &amp; Monitoring Costs</b>							
230 Vegetated Soil Cover Maintenance in OU1, OU2, & OU3	4.5	acres	\$ 7,500	\$ 33,721	\$ 418,443	Assumes 2% of vegetated soil covers in OU1, 2, & 3 require new grading/seeding/initial maintenance each year	
231 Maintenance of Engineering Controls	1	LS	\$ 1,000	\$ 1,000	\$ 12,409	Assume periodic maintenance/replacement of signs, etc.	
232 Monitoring of Forested Wetland East of OU1	1	LS	\$ 15,000	\$ 15,000	\$ 186,136	Assumes monitoring will be conducted/reported in conjunction with existing long-term site monitoring of groundwater	
233 Pavement maintenance	0	LS	\$ -	\$ -	\$ 0	It is assumed that street maintenance will be city's responsibility. They currently grade roads and maintain other streets.	
234 <b>Subtotal Operation, Maintenance, and Monitoring costs</b>						\$ 616,988	
235							
<b>236 Associated Professional Services</b>		<b>Qty</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Extension</b>	<b>Total</b>	
237 Remedial Design	1	LS	\$ 2,500,000	\$ 2,500,000		Professional judgment (assumes RD is focused only on shallow soil remediation).	
238 RA Construction Oversight/Project Management/Admin.	5	Years	\$ 500,000	\$ 2,500,000		Professional judgment. Cost scaled from previous Removal Actions at Site and experience with other Superfund Remedial Actions.	
239 <b>Ongoing coordination of soil loadout after 5 years</b>	4	Years	\$ 50,000	\$ 200,000			
240 Reporting	1	LS	\$ 2,000,000	\$ 2,000,000		Professional judgment. Cost for monthly and final implementation reports, etc.	
241 <b>Subtotal</b>						\$ 7,200,000	
242							
243							
244 <b>Total Present Value Cost</b>						\$ 176,625,652	
245 <b>Contingency</b>				20%		\$ 35,325,130	

**Total Estimated Present Value Cost with Contingency \$ 212,000,000**

Range	Cost	Assumptions/Comments
+50%	\$ 320,000,000	Anticipated accuracy range for FS cost estimates consistent with EPA guidance for conducting RI/FS under CERCLA. The accuracy range is associated with the most likely cost of the project based on the level of design that has been completed and the uncertainties in the project as scoped (e.g., quantity uncertainties for soil cover areas pending additional testing, variability in transportation and disposal cost for other potential MN RCRA subtitle D landfills, minor variability in project schedule/phasing, etc.). Does not include costs for future scope changes that are not part of the planned project or risk contingency (e.g., additional media cleanup, generation of RCRA C hazardous wastes, change in technologies such as incineration, new contaminants of concern or operable unit areas, etc.)
-30%	\$ 150,000,000	

**Attachment B**

**ERRATA-Calculation of PAH Reference Values  
June 8, 2011**

**Revised Final Feasibility Study Report – Soils, St. Regis Paper  
Company Site, Cass Lake, Minnesota, April 14, 2011**

**TEXT**

<b>Location in Text</b>	<b>Correction</b>
Page 33	Sentences 5 and 6 of Paragraph 2 are replaced with the following: “The volume of soil requiring remediation with the lowest Eco-PRGs is no different than the volume of soils requiring remediation based on the invertebrate EcoSSL PRGs.”
Page 61	The first two full sentences on this page are deleted.
Page 96	The last two sentences of the penultimate paragraph on this page are deleted.

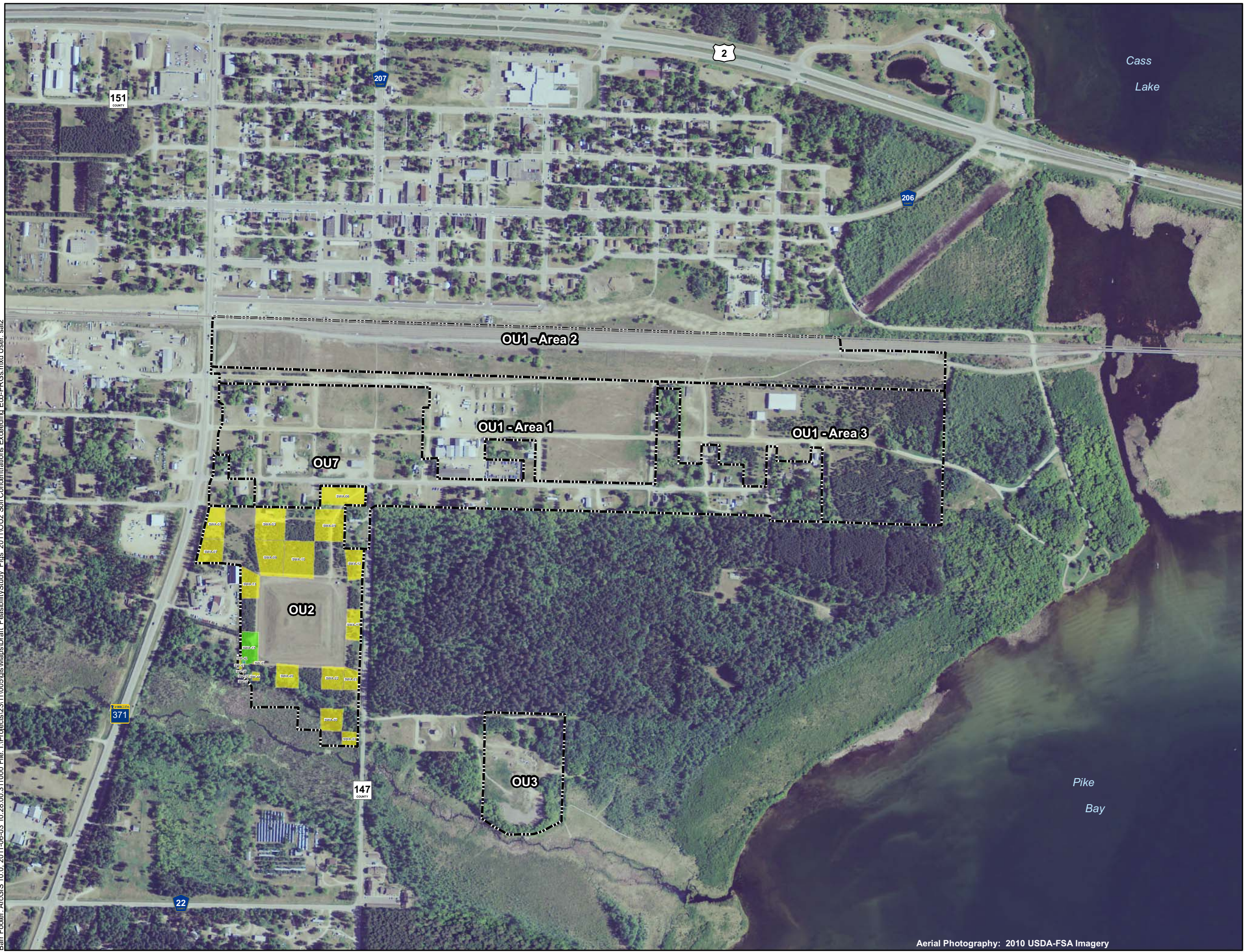
**TABLES**

<b>Table Number</b>	<b>Correction</b>
Table 2-6	Table 2-6 is revised to specify a corrected background soil concentration of 12.5 mg/kg for HPAH.
Table 2-7	Table 2-7 is revised to specify a corrected background soil concentration of 12.5 mg/kg for HPAH.
Table 3-2	Table 3-2 is corrected to specify an area of 2.1 acres and a volume of 10,300 CY under Eco-PRGs – Lowest for OU2.
Appendix B, Table 4	Appendix B, Table 4 is revised to specify corrected 95 <sup>th</sup> percentile background soil concentrations of 2.1 mg/kg for LPAH and 12.5 mg/kg for HPAH.

**FIGURES**

<b>Figure Number</b>	<b>Correction</b>
Figure 3-7	The shading of areas SW-03, SW-32, SW-44, SWA-05, SWA-12, SWA-20, SWA-22, on Figure 3-7 is revised to yellow (revised figure is attached).

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- Area > Invertebrate Eco-PRGs
- Area > Lowest Eco-PRGs
- Area ≤ Lowest Eco-PRGs

**Invertebrate Eco-PRGs**  
 HPAHs: 18 mg/kg  
 PCP: 31 mg/kg

**Lowest Eco-PRGs**  
 HPAHs: 12.5 mg/kg  
 PCP: 2.8 mg/kg

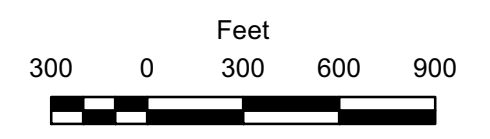


Figure 3-7

OU2 Soil Concentrations  
 Exceeding Eco-PRGs

St. Regis Paper Company Site  
 Revised Final Feasibility Study - Soils