



## Sustainable Development

Environmental Stewardship Division  
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June 12, 2018

Jayne Sheppard, P.Eng.  
Canadian Kraft Paper Industries Ltd. (CKPI)  
Box 1590  
The Pas, MB R9A 1L4  
Email: [jayne.sheppard@ckpi.com](mailto:jayne.sheppard@ckpi.com)

Dear Jayne Sheppard:

**Re: Canadian Kraft Paper Industries Ltd. - Land Application of Industrial Sludge (Pilot Study) – Minor Alteration Approval - Environment Act Licence No. 1339 RR**

I am responding to the April 20, 2018 Notice of Alteration request and additional information submitted by Canadian Kraft Paper Industries Ltd. (CKPI) on May 25, 2018, May 29, 2018, and June 4, 2018, relative to a request for alteration to the October 27, 2017 Notice of Alteration approval, which altered Environment Act Licence No. 1339 RR (licence), originally issued for operation of the Development being an existing 400 tonne per day Kraft Pulp Mill and the proposed 500 tonne per day Bleached Kraft Mill at The Pas, Manitoba. The April 20, 2018 submission and subsequent additional information submitted on May 25, 2018, May 29, 2018, and June 4, 2018 are considered a Notice of Alteration pursuant to Section 14 of The Environment Act.

Per the October 27, 2017 Notice of Alteration approval, approximately 690 bone dry tonnes of biosolids generated from the north settling basin of the Development were land applied on Site 2A located on portions of 27-56-26WPM as identified in Schedule "A" of this letter.

The intent of the April 20, 2018 Notice of Alteration request and subsequent submitted additional information is five-fold:

1. to land apply biosolids generated from the north settling basin (approximately 3000 bone dry tonnes), south settling basin (approximately 3000 bone dry tonnes), and aerated lagoon (approximately 2000 bone dry tonnes) of the Development on portions of 23, 24, 26 and 27-56-26 WPM as identified in Schedule "A" of this approval at a proposed rate on locations [i.e., Site 2A, 2B, 2C, 2D, Capped Landfill (ii) and (iii), Front of Lagoon (vi) and south of water treatment plant (iv)] as shown below in Table 1.

**Table 1: Proposed Application Rates and Locations**

| Phases of Removal of Biosolids                        | Site                         | # of Hectares | Rate  | Bone Dry Tonne of material (tonnes) | Source of Biosolids                   |
|---|------------------------------|---------------|---|-------------------------------------|---------------------------------------|
| 1   | 2A                           | 3.2           | 345.7 tonne/Ha mix with yard waste 1:1 @ 1' | 1106.24                             | North Settling Basin                  |
| 1   | 2B                           | 0.72          | 691.4 tonne/Ha @ 1'                         | 497.8                               |                                       |
| 1   | 2C                           | 0.89          | Test plots                                  | 218.4                               |                                       |
| 1 or 2 or 3   | Capped landfill 1 (ii)       | 6.9           | 691.4 tonne/Ha or 1'                        | 4770.7                              | Lagoon, North or South Settling Basin |
| 3   | Capped landfill 2 (iii)      | 3.5           | 345.7 ton/Ha or 6"                          | 1209.9                              | Lagoon                                |
| <b>Total Qunatity of Biosolid Application in 2018</b> |                              |               |   | <b>7584.7</b>                       |                                       |
| Contingency   | 2D                           | 1.3           | 156 ton/Ha or 3"                            | 202.8                               |                                       |
| Contingency   | Front of lagoon (vi)         | 0.6           | 156 ton/Ha or 3"                            | 93.6                                |                                       |
| Contingency   | South of water treament (iv) | 2.8           | 156 ton/Ha or 3"                            | 436.8                               |                                       |
| <b>Total Contingency</b>                              |                              |               |   | <b>733.2</b>                        |                                       |

- to land apply biosolids generated from the aerated lagoon, and from the north and south settling basins of the Development to the disturbed industrial lands located on the CKPI site and on top of the existing capped landfill as identified in Schedule "A" of this authorization as a growing media for growing native grasses using a bull dozer for two depths of application (i.e., 6" to 1') or a manure spreader for a depth of application less than 6" for dust controlling purposes;
- to construct berms at each site to minimize potential nutrient run-off;
- to confirm that Clause 20 of the October 27, 2017 Notice of Alteration approval does not apply to the sites of this project as the requirements of Clause 20 of the October 27, 2017 Notice of Alteration approval pertain to agricultural land only; and
- to alter reporting date for Clauses 16 and 17 of the October 27, 2017 Notice of Alteration to December 30 of any year.

Upon review of the April 20, 2018 Notice of Alteration requests and additional information submitted on May 25, 2018, May 29, 2018, and June 4, 2018, I am satisfied that the identified changes in the environmental effects of the pilot study are insignificant. Therefore, pursuant to Section 14(2) of The Environment Act, I hereby approve the implementation of the proposed pilot study activities as described in the April 20, 2018 Notice of Alteration request and additional

information submitted on May 25, 2018, May 29, 2018, and June 4, 2018 with the following conditions:

### **DEFINITIONS**

In this letter,

**"biosolids"** means accumulated organic solids, resulting from wastewater treatment processes, that have received adequate treatment to permit the material to be recycled;

**"Licencee"** means Canadian Kraft Paper Industries Ltd.

**"odour nuisance"** means a continuous or repeated odour, smell or aroma, in an affected area, which is offensive, obnoxious, troublesome, annoying, unpleasant or disagreeable to a person:

- a) residing in an affected area;
- b) working in an affected area; or
- c) present at a location in an affected area which is normally open to members of the public; if the odour, smell or aroma
- d) is the subject of at least 5 written complaints, received by the Director in a form satisfactory to the Director and within a 90-day period, from 5 different persons falling within clauses a), b) or c), who do not live in the same household; or
- e) is the subject of at least one written complaint, received by the Director in a form satisfactory to the Director, from a person falling within clauses a), b) or c) and the Director is of the opinion that if the odour, smell or aroma had occurred in a more densely populated area there would have been at least 5 written complaints received within a 90-day period, from 5 different persons who do not live in the same household.

### **GENERAL REQUIREMENTS**

1. The Licencee shall not stockpile biosolids at any location prior to being introduced to the pilot study activities.
2. The Licencee shall not cause or permit an odour nuisance to be created as a result of the pilot study, and shall take such steps as the Director may require to eliminate or mitigate an odour nuisance.
3. The Licencee shall land apply the biosolids to Site No. 2A, 2B, 2C, 2D, Capped Landfill 1(ii), Capped Landfill 2(iii), Front of lagoon (vi), and south of water treatment plant (iv) located on portions of 23, 24, 26 and 27-56-26 WPM as identified in Schedule "A" of this authorization as a growing media for growth of native grasses (i.e., Fowl Blue grass, Slender Wheatgrass, Sheep Fescue, Red Clover, Rough Hair Grass, and Timothy), as proposed in the April 20, 2018 Notice of Alteration request, for dust control purposes at application rates in accordance with Table 1 of this approval letter.
4. The Licencee shall confirm that native grasses are grown on portions of 23, 24, 26 and 27-56-26 WPM after the biosolids are applied.

5. The Licencee shall submit a Notice of Alteration request with information on proposed application rates if the biosolids are land applied for crop production or pasture production purposes.
6. The Licencee shall transport biosolids in containers in such a manner to prevent loss of biosolids and associated liquids to the satisfaction of an Environment Officer.
7. The Licencee shall notify the assigned Environment Officer prior to the commencement of removal, transportation and land application of biosolids. The notification shall include the intended starting date of the activities and the name of the contractor responsible for the activities.
8. The Licencee shall locate all fuel storage and equipment servicing areas established for the construction and operation of the Development a minimum distance of 100 metres from any waterbody, and shall comply with the requirements of Manitoba Regulation 188/2001 respecting Storage and Handling of Petroleum Products and Allied Products Regulation or any future amendment thereof.
9. The Licencee shall apply the biosolids originating from the aerated lagoon, and from the north and south settling basins of the Development to the disturbed lands as identified in Schedule "A" of this authorization using a bulldozer(s) or by a manure spreader(s) at depths in accordance with Table 1 of this approval such that it is acceptable to an Environment Officer.
10. The Licencee shall, during all biosolids land application activities, comply with the requirements of Manitoba Regulation 62/2008 respecting Nutrient Management or any future amendment thereof.

#### **SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS**

11. The Licencee shall not permit the application of biosolids:
  - a) between November 10<sup>th</sup> of any year and April 10<sup>th</sup> of the following year, unless otherwise authorized in writing by the Director;
  - b) to frozen soil;
  - c) less than 75 metres from any occupied residence (other than the residence occupied by the owner of the land on which the sludge solids are to be applied);
  - d) less than 400 m from a residential area;
  - e) less than 8 metres from a major wetland, bog, marsh or swamp;
  - f) less than the distance between the water's edge and the high water mark from a wetland, bog, marsh or swamp other than a major wetland, bog, marsh or swamp;
  - g) less than 15 metres from a first order waterway;
  - h) less than 30 metres from a second, or higher order waterway;
  - i) less than 50 metres from any groundwater well used for drinking water purposes;  
or
  - j) on land that is subject to flooding.
12. The Licencee shall not apply biosolids on lands within 100 metres of an identifiable boundary of an aquifer which is exposed to the ground surface;

13. The Licencee shall not apply biosolids on sites [i.e., 2A, 2B, 2C, 2D, Front of Lagoon (vi), and South of Water Treatment Plant (iv)] as identified in Schedule “A” of this authorization:
- a) with a depth of clay or clay till of less than 1.5 metres between the soil surface and the water table;
  - b) where, prior to the application of biosolids, the soil pH is less than 6.0;
  - c) where the surface slope of the land is greater than 5 percent;
  - d) where, prior to the application of biosolids, the level of nitrate- nitrogen exceeds 100 kilograms per hectare in the upper 60 centimetres of the soil; or
  - e) where, prior to the application of biosolids, the concentration of sodium bicarbonate extractable phosphorous, as P, exceeds 60 micrograms per gram in the upper 15 centimetres of the soil.
14. The Licencee shall:
- a) construct berms around the perimeter of the disturbed lands, where biosolids will be applied and as identified in Schedule “A” of this authorization, which may be subjected to melting of snow or precipitation events in order to effectively contain the biosolids contaminated runoff within the property boundary to the satisfaction of the assigned Environment Officer; and
  - b) contain, collect, and redirect the biosolids contaminated runoff to the Licencee’s aerated wastewater treatment lagoon or other wastewater treatment facilities approved by the Director to the satisfaction of the assigned Environment Officer.
15. The Licencee shall apply biosolids onto disturbed lands [i.e., 2A, 2B, 2C, 2D, Front of Lagoon (vi), and South of Water Treatment Plant (iv)] as identified in Schedule “A” of this authorization such that the cumulative weight per hectare of each heavy metal in the soil, as calculated by adding the amount of each heavy metal in the biosolids applied to the background level of the same metal, does not exceed the following levels:\*

| <b><u>Metal</u></b> | <b><u>Kilogram per Hectare</u></b> |
|---------------------|------------------------------------|
| Arsenic             | 21.6                               |
| Cadmium             | 2.5                                |
| Chromium (total)    | 115.2                              |
| Copper              | 113.4                              |
| Lead                | 126                                |
| Mercury             | 11.9                               |
| Nickel              | 90                                 |
| Zinc                | 360                                |

\*Calculated values shall be based on a soil bulk density of 1200 kilograms per cubic metre and a soil depth of 15 centimetres. Analysis for heavy metals must be carried out in accordance with Schedule “C” of this Notice of Alteration approval.

16. The Licencee shall not allow cattle to pasture on lands on which biosolids have been applied.

17. The Licencee shall apply biosolids to each site in such a manner that they are placed and spread so as to form a homogenous cover layer.
18. The Licencee shall not remove the biosolids generated from the aerated lagoon, and from the north and south settling basins to areas other than the sites approved in accordance with this Notice of Alteration approval.
19. The Licencee shall maintain the resulting above ground biomass in such manner that it does not create potential threats to the environment, public health or wildlife.

### **MONITORING AND REPORTING**

20. The Licencee shall submit to the Director, not later than the 31<sup>st</sup> day of December in the year of biosolids applications, the details of the biosolids sampling and analysis programs used to determine the sources, volumes, and solids contents of the biosolids removed on a daily basis and the sources, volume and the solids contents of biosolids applied to each field.
21. The Licencee shall submit to the Director, not later than the 31<sup>st</sup> day of December in the year of biosolids application, the details of the field monitoring programs for sites [i.e., 2A, 2B, 2C, 2D, Front of Lagoon (vi), and South of Water Treatment Plant (iv)] as identified in Schedule "A" of this approval on the biosolids disposal operations used to determine:
  - a) the sodium bicarbonate extractable phosphorous, as P, in the upper 15 centimetres of the soil;
  - b) the nitrate-nitrogen and total nitrogen in the upper 60 centimetres of the soil;
  - c) the pH of the soil; and
  - d) the presence of clay and clay till to a depth of 1.5 metres when it is land applied.
22. The Licencee shall submit to the Director, not later than the 31<sup>st</sup> day of December in the year of biosolids application, the details of the field monitoring programs for all sites as identified in Schedule "A" of this approval on the biosolids disposal operations used to determine:
  - a) the number of hectares in each site that can receive biosolids in accordance with the Notice of Alteration approval;
  - b) the number of hectares on which biosolids were applied on a daily basis;
  - c) the surface slope of the land;
  - d) the depth of biosolids application in each site; and
  - e) the effectiveness of biosolids as a growing media.
23. The Licencee shall conduct a monitoring and analysis program that is acceptable to the Director, and in accordance with Schedules "B" and "C" of this Notice of Alteration approval to determine:
  - a) the composition of the biosolids generated from the aerated lagoon, and from the north and south settling basins before it is land applied as a growing media;
  - b) the composition of the biosolids after it is land applied as a growing media and that the samples are obtained at the end of the growing season;

- c) the background levels of selected soil parameters for each parcel of land [i.e., 2A, 2B, 2C, 2D, Front of Lagoon (vi), and South of Water Treatment Plant (iv)]; and
  - d) the native grasses grown on land on which biosolids have been applied as a growing media.
- 24. The Licencee shall, on or before the 31<sup>st</sup> day of December of each year that this Notice of Alteration approval is in effect, submit to the Director a report, which will include the following:
  - a) details of the biosolids land application programs carried out during the previous 12 month period including:
    - i) a description of each parcel of land on which biosolids were distributed;
    - ii) the background levels of soil parameters as listed in Schedule "B" of this Notice of Alteration approval, for each parcel of land [i.e., 2A, 2B, 2C, 2D, Front of Lagoon (vi), and South of Water Treatment Plant (iv)];
    - iii) the dry weight of biosolids applied per hectare;
    - iv) the weight of each heavy metal, in milligrams per kilogram of soil, added to each parcel of land for the metals listed in Schedule "B" of this Notice of Alteration approval; and
    - v) the cumulative weight, in kilograms per hectare, of each heavy metal for each parcel of land [i.e., 2A, 2B, 2C, 2D, Front of Lagoon (vi), and South of Water Treatment Plant (iv)] as calculated by adding the amount of each heavy metal applied to the background level of the same metal;
  - b) the amount of nitrogen, phosphorus, and potassium which was added per hectare for each parcel of land;
  - c) the results of analysis of the biosolids and soil required by this Notice of Alteration approval;
  - d) a copy of the analytical procedures used and the results of analysis of reference materials in accordance with Schedule "C" of this Notice of Alteration approval; and
  - e) the type of native grasses grown on land on which biosolids were applied.
- 25. The Licencee shall undertake the following:
  - a) annual soil testing of each field [i.e., 2A, 2B, 2C, 2D, Front of Lagoon (vi), and South of Water Treatment Plant (iv)] for Nitrate N (0- 24") and phosphorus using the Olsen-P test (0- 6") for 3 years following biosolids application;
  - b) annual testing of biosolids composition for all sites where biosolids were applied, in accordance with Schedules "B" and "C" of this Notice of Alteration approval for 3 years following biosolids application; and
  - c) submit to the Director on or before the 31<sup>st</sup> day of December of each year following a year when application of biosolids occurred.
- 26. The Licencee shall, upon completion of this pilot study, submit an Environment Act Proposal for the Land Application of Biosolids generated from the Development in order to obtain an Environment Act Licence for any future land applications of biosolids generated at the Development.
- 27. This Notice of Alteration approval replaces the October 27, 2017 Notice of Alteration approval.

**Respecting the Termination of this Authorization**

28. This Notice of Alteration authorization shall terminate on the 30<sup>th</sup> day of April, 2022 or upon issuance of an Environment Act Licence for land application of biosolids generated at the Development.

Should you have any questions concerning this approval, please contact Asit Dey, Environmental Engineer at (204)945-2614 or at [asit.dey@gov.mb.ca](mailto:asit.dey@gov.mb.ca).

Yours sincerely,



Tracey Braun, M.Sc.  
Director

- c. Don Labossiere/Tim Prawdzik/ Cristal Huculak, Environmental Compliance and Enforcement  
Siobhan Burland Ross/Asit Dey/Eshetu Beshada, Environmental Approvals Branch  
Public Registries



**SCHEDULE “A” to June 12, 2018 Notice of Alteration Approval**



Figure 1: Site 2 A, B, C, and D

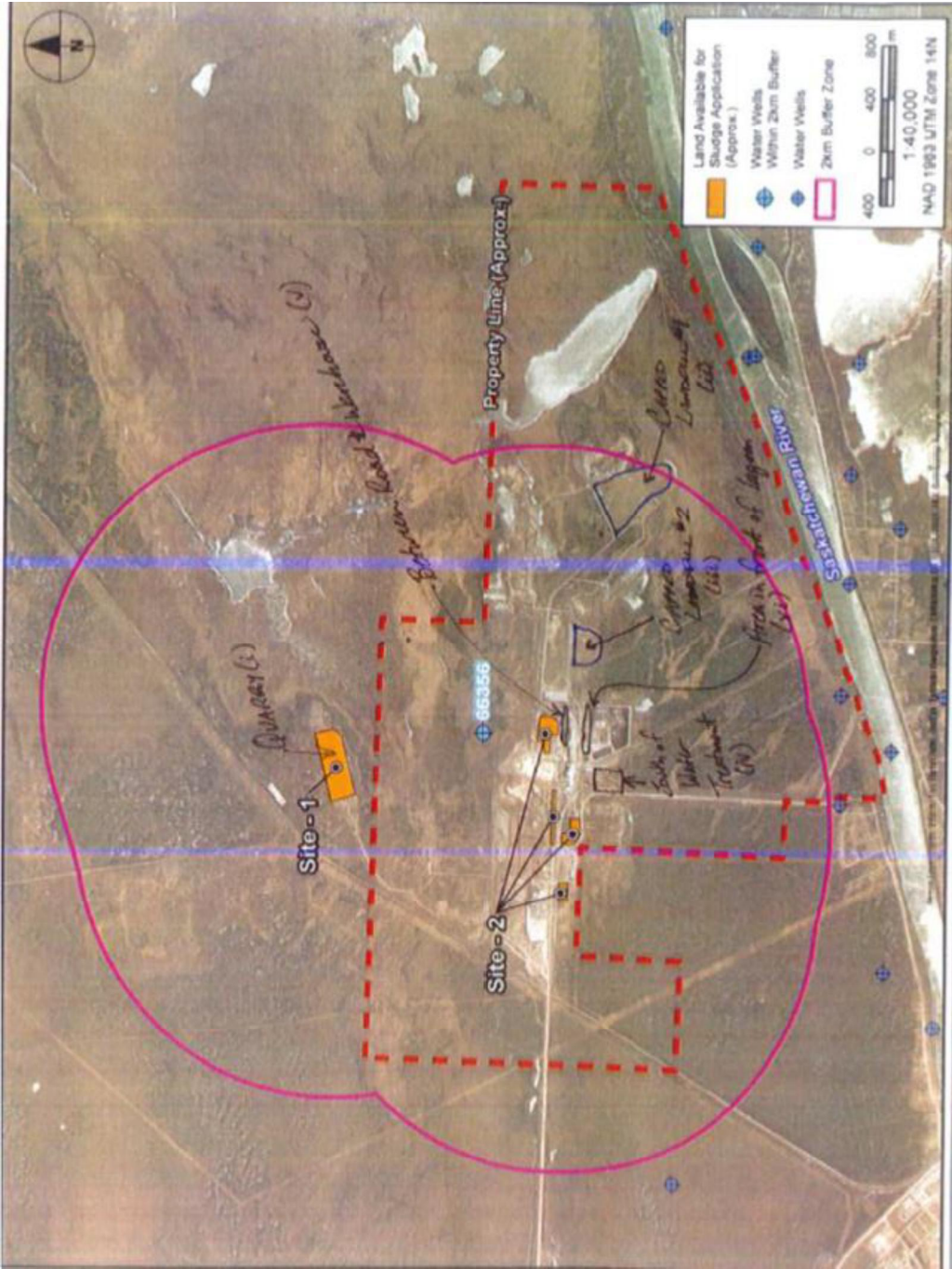


Figure 2: Sites, Front of Lagoon (vi), and South of Water Treatment Plant (iv), Capped Landfills (ii and iii)

## **SCHEDULE “B” to June 12, 2018 Notice of Alteration Approval**

### **Biosolids and Sludge Solids**

1. A representative sample of biosolids and sludge solids shall be collected from each cell of the wastewater treatment lagoon from which biosolids and sludge solids will be removed. A representative sample of biosolids and sludge solids shall be a composite of sludge samples taken from a minimum of 5 locations distributed over the surface of the cell.
2. The sample of biosolids and sludge solids shall be analyzed for the following parameters:\*

|    |  |    |           |
|----|--|----|-----------|
| a. | conductivity   | j. | lead      |
| b. | pH   | k. | mercury   |
| c. | total solids   | l. | nickel    |
| d. | volatile solids  | m. | potassium |
| e. | nitrate nitrogen   | n. | cadmium   |
| f. | total Kjeldahl nitrogen  | o. | copper    |
| g. | ammonia nitrogen   | p. | zinc      |
| h. | organic nitrogen   | q. | chromium  |
| i. | total phosphorus by very strong acid digestion<br>(EPA 3050b or EPA 200.2) | r. | arsenic   |

\*Analysis for heavy metals must be carried out in accordance with Schedule “C” of this Notice of Alteration approval.

### **Soil**

1. Composite samples from each field onto which biosolids and sludge solids will be applied shall be taken prior to application of biosolids and sludge solids. Each field of twenty-four hectares or less shall be sampled from a minimum of twelve representative sites or a minimum of one sample site per two hectares for larger fields. Each sample site shall be sampled from 0 to 15 centimetres and from 0 to 60 centimetres. The entire core extracted for each sample shall be collected. All samples from similar depths within a field shall be bulked in one container for thorough mixing prior to analysis yielding two samples per field.
2. Soil samples from 0 centimetres to 15 centimetres shall be analyzed for the following:  
\*

- |    |   |    |          |
|----|---|----|----------|
| a. | pH  | g. | cadmium  |
| b. | potassium                                       | h. | chromium |
| c. | nickel  | i. | copper   |
| d. | mercury   | j. | lead     |
| e. | zinc  | k. | arsenic  |
| f. | sodium bicarbonate extractable phosphorus, as P |    |          |

\*Analysis for heavy metals must be carried out in accordance with Schedule “C” of this Notice of Alteration approval.

3. Soil samples from 0 to 60 centimetres shall be analyzed for the following:
- a. nitrate nitrogen
  - b. total nitrogen

Crops

- 1. The type of crop grown on lands on which biosolids and sludge solids have been applied during the previous 3-year period shall be listed along with the legal description of the land and the date of application of sludge solids.

## **SCHEDULE "C" to June 12, 2018 Notice of Alteration Approval**

The analysis for all metals shall be carried out in accordance with the following requirements:

1. Soil and sludge samples shall be prepared using non-contaminating grinding and sieving procedures such as agate or porcelain mortar and pestle along with nylon sieves. Soil samples shall be ground to at least 100 mesh size prior to digestion or sample pretreatment.
2. Analysis for heavy metals must be carried out following strong acid digestion.
3. The laboratory performing these analyses shall operate an acceptable quality assurance program including the following:
  - a) Samples of reference material shall be analyzed to monitor the accuracy of the sludge and soil analyses and each set of ten or less samples of sludge or soil shall include, a minimum of the following:
    - i) For sludge samples:
      - one NIST domestic sludge sample (SRM 2781);
    - ii) For soil samples:
      - one NIST Estuarine Sediment sample (SRM 1646a); or
      - one NIST San Joaquin Soil sample (SRM 2709); or
      - a replacement reference soil sample, acceptable to the Director, with analyte concentrations that reflect values found in the field samples; and
  - b) Field duplicates of samples shall be analyzed based on a frequency of one in each set of ten or less field samples and that the acceptance criteria for duplicate analysis should be within  $\pm 10$  percent.
4. A copy of the analytical procedures and the analytical results for the reference materials, and any other controls used in the analysis, shall be submitted with the field sample results.
5. If the analytical results of the reference materials do not meet the following criteria, the soil and/or sludge samples must be re-analyzed:

|            |   |
|------------|---|
| - Arsenic  | $\pm 35$ percent from the reference value                                       |
| - Cadmium  | $\pm 25$ percent from the reference value (for values above 1 $\mu\text{g/g}$ ) |
| - Cadmium  | $\pm 35$ percent from the reference value (for values below 1 $\mu\text{g/g}$ ) |
| - Chromium | $\pm 25$ percent from the reference value                                       |
| - Copper   | $\pm 25$ percent from the reference value                                       |
| - Lead     | $\pm 25$ percent from the reference value                                       |
| - Mercury  | $\pm 35$ percent from the reference value                                       |
| - Nickel   | $\pm 25$ percent from the reference value                                       |
| - Zinc     | $\pm 25$ percent from the reference value                                       |