Peace Project Water Use Plan

Physical Works Terms of Reference

- GMSWORKS#20 WLL Dust Soil Mapping

Addendum 2

March 15, 2010
A2 Addendum to GMSWORKS#20 WLL Dust Soil Mapping

A2.1 Addendum Rationale

Addendum 1 to this project described a pilot project to develop a model of individual beach dust emission potential. A preliminary model has been completed to be used as a management tool for predicting in near real-time which beaches are likely to erode and emit dust. However, the contractor has recommended that we conduct one more field season of data gathering to improve the model’s reliability and statistical validity. The data gathering will be limited to using the PI-SWERL portable dust emissivity testing machine to measure potential dust emissions on selected beaches.

The contractor has provided the following summary of the proposed work:

1. range of potential dust emissions at beaches throughout the reservoir; and
2. location, textural characteristics, associated threshold wind speed and potential emissions from “hot spots” where a large percentage of the total atmospheric dust loading may originate.

The PI-SWERL provides an effective methodology for the assessment of the potential regional dust emissions as well as the identification of ‘hot spots’ in relation to textural and surface conditions. This will provide key information as to which beaches are most emissive and identify the physical characteristics of the beaches that lead to high emissions.

This proposed work provides a cost effective means to characterize and quantify the range of PM10 dust emission potential for Williston Reservoir beaches.

A2.2 Revised Workplan for GMSWORKS#20 WLL Dust Soil Mapping

The revised workplan for this project includes all of the work described in Addendum 1 plus the additional work described below.

Methodology:

Set up the PI-SWERL at selected beaches for several days to conduct emission tests. Approximately 25 tests per beach will be conducted to capture the variability of erosion thresholds.

Dust emission fluxes, and the relationship between wind speed and emission will be measured following the same procedures used in 2009.

At each test site surface soil samples will be taken for the measurement of soil moisture and grain size distribution. Moisture determinations will be carried out at the Williston field laboratory with the grain size analyses being undertaken at the University of Guelph.

These data will be linked with last year’s data, including the remote sensing imagery, and incorporated into the wind erosion model.
A2.3 Revised deliverables for GMSWORKS#20 WLL Dust Soil Mapping

- The preliminary 2009 model will be finalized and designed for use by non-experts.
- All data collected, in electronic form, in appropriate format.
- A draft report, including drafts of all elements required in the final report.
- Presentation of final results to the Tsay Keh Dene First Nations community, Chief, and Council.
- A final report including:
  - Executive summary
  - Description of study site, methodology, modelling/analytical techniques, results and discussion
  - Instructions for use and application of the model by non-experts
  - Data collected, presented in tabular and graphical form
  - Recommendations for future work

The final report will be provided in hard-copy and electronically in Microsoft Word and pdf format. The required maps and figures will be included as embedded objects in the report. All maps and figures will also be provided in their native format as separate files. All photos will be submitted electronically.

A2.4 Revised Schedule

Fieldwork will begin in April/May 2010. The preliminary report is due in November 2010 and the final project report in February 2011.

A2.5 Budget for GMSWORK #20 WLL Dust Soil Mapping Additional Work

The costs for the additional work proposed in this Addendum is $93,788.

A2.6 Revised Project Budget for GMSWORKS #20 WLL Dust Soil Mapping

Project Total is $376,168.

Estimated total costs include

- Expenditures through February 28, 2010
- The additional work described in section A.2.5
- $52,800 estimated for work that was originally planned for completion in 2009. This amount does not reflect an additional funding request, it is a schedule change for work planned for 2009 that will be completed in 2010 following further analysis of data by the contractors involved in this work.