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Project No. 09-067-04E

September 28, 2009

**VIA EMAIL ([fmason@starfieldres.com](mailto:fmason@starfieldres.com))**

Ms. Allison Rippin Armstrong  
Director of Environment and Permitting  
Starfield Resources Inc.  
130 Adelaide Street West, Suite 2210  
Toronto, ON M5H 3P5

Dear Ms. Rippin Armstrong:

**Re: Interim Report for the Treatment and Discharge of Accumulated Storm and Melt Water from the Fuel Storage Containment Area, Starfield Resources Ferguson Lake Camp.**

As requested, True Grit Consulting Ltd. (TGCL) is pleased to provide this Interim Report for the above noted project.

#### **Background Information**

TGCL has been retained by Starfield Resources Inc. (Starfield) to provide environmental consulting services involving the treatment of accumulated stormwater and meltwater from a lined earthen bermed fuel storage containment area at the Ferguson Lake Camp. TGCL provided initial consultations regarding the specification of appropriate treatment technologies as well as on-site services involving the commissioning of the system, collection and analysis of before treatment and after treatment water samples and determination of removal efficiencies of the system based on the water quality results in order to determine the required media replacement frequency.

This Interim Report is intended to serve as a basis for regulatory review and subsequent approval for the continuous discharge of treated effluent as outlined in correspondence to Starfield from Indian and Northern Affairs Canada (INAC).

#### **Methodology**

A total of six (6) representative water samples (BT1 to BT6) were collected at different locations from the accumulated stormwater within the containment area upon arrival at Ferguson Lake and prior to commissioning the treatment system for laboratory analysis.

A depth survey of the accumulated water was then completed using a graduated depth measuring device in order to facilitate an estimate of the total accumulated stormwater volume.

The treatment system was then assembled and located on the berm of the containment area on a sloped and lined gravel pad to ensure that any leakage would be directed back to the containment area. The system was commissioned and accumulated water was treated and discharged back to the containment area for a total period of six (6) hours in order to facilitate the collection of confirmatory effluent samples for laboratory analysis.

A total of four (4) representative water samples (AT1 to AT4) were collected from the discharge pipe of the treatment system during the six (6) hour test treatment period.

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The results of the laboratory analysis of the un-treated and treated water were used to confirm the treatment efficiency of the system and to calculate the required media replacement frequency to ensure that treated water continuously meets discharge criteria provided by INAC.

## Results

### Analytical Results

The results of the laboratory analysis of the water samples are provided in Table 1 (attached). Laboratory Analytical Certificates are attached. The results indicate that the un-treated water exceeded the discharge criteria for toluene and F3-F4 hydrocarbons only, based on average concentrations. The average concentrations of remaining discharge criteria parameters were below the discharge limits.

The average concentrations of all discharge parameters in the treated effluent were below the discharge criteria.

### Volume

Depth survey results indicate that the estimated volume of accumulated water, ignoring displacement, is approximately 200,000 liters. Based on a pumping rate of 10 USGPM (54,509 liters/day), the total estimated volume of water can be pumped out in approximately 3.7 days. Actual pumping times are anticipated to be lower as displacement from existing storage tanks and drums will result in a lower volume of water than estimated.

### Removal Efficiency

#### *Theoretical*

Based on Case Studies provided by the system manufacturer, the following petroleum hydrocarbon removal efficiencies can be anticipated from the system.

<b>Parameter</b>	<b>Removal Efficiency</b>
Oil and Grease	98.6 %
Benzene, Toluene, Ethylbenzene and Xylenes	99.9 %
Petroleum Hydrocarbon Fractions F1-F4	99.4 %

#### *Actual*

Actual removal efficiencies are calculated from analytical results for pre-treatment and post-treatment water samples. As the results for most parameters are below laboratory detection limits for treated samples, actual removal efficiencies are difficult to calculate and therefore theoretical removal efficiencies are considered to be accurate. The exception, Oil and Grease, has a calculated actual removal efficiency of 55%.

### Media Saturation Time

Based on information provided by the system supplier, the TM100 and Activated Carbon Media have the following saturation values for Petroleum Hydrocarbon parameters.

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Thank you for the opportunity to be of service to Starfield Resources. Should you have any questions or require further information, please do not hesitate to contact the undersigned at 807.626.5640, Ext. 228.

Sincerely,

**TRUE GRIT CONSULTING LTD.**

A handwritten signature in black ink, appearing to be "Gus Hunt", written over a horizontal line.

Gus Hunt  
[ghunt@tgcl.ca](mailto:ghunt@tgcl.ca)

Attachment: Table 1: Summary of Water Analytical Results  
Laboratory Analytical Certificates

CC: Mr. Fred Mason, Starfield Resources Inc.