Niblett Environmental Associates Inc.
Biological Consultants

MEMO August 11, 2011

Lisa Keable

Renewable Energy Biologist
Ministry of Natural Resources
Sault Ste. Marie District
64 Church Street, ON
P6A 3H3

Re: 2011 Fall Salmonid Spawning Assessment Protocol- Lizard Creek

Dear Lisa Keable,

NEA is pleased to submit the final "2011 Fall Salmonid Spawning Assessment Protocol- Lizard Creek" to MNR. Thank you for contributing to development of this protocol and we look forward to reporting the survey results to MNR.

Sincerely,

Amanda Smith

Amanda Smith
Fisheries Biologist,
Niblett Environmental Associates
Phone (705) 878-9399 ext. 204

2011 FALL SALMONID SPAWNING ASSESSMENT PROTOCOL

1.0 Introduction

Spawning assessment will be conducted in selected reaches of Lizard Creek and the Serpent River. The survey will include two survey methods, visual observation and egg collection to determine the presence/absence of spawning salmonids. Visual observation surveys will monitor for spawning indicators, such as: the presence of adult fish, the occurrence of active spawning (fish present on redds) and signs that spawning has taken place (spawning depressions or redds). The egg collection surveys will determine the presence/absence of active spawning in Lizard Creek.

2.0 Site Location:

Assessments will be conducted in four (4) sites (Figure 1).

1. Lizard Creek: Reach 1, entire reach
2. Serpent River, south of Hwy 17 to the east end of the island.
3. Serpent River, River Road, MNR Chinook spawning area
4. Serpent River, Handispot Road, MNR Chinook spawning area

Site 1 and 2 were used in the 2009 fall salmonid spawning assessment by NEA, and will be retained for repeat sampling in 2011. Site 2 and 3, were selected as baseline sites to determine if salmon are present downstream of the project area. All sites encompass MNR Chinook spawning areas (Figure 1).

3.0 Survey Methods

3.1 Assessment Schedule

Visual Observation and Egg Collection will be conducted during the typical spawning season for Chinook and pink salmon, when fall water temperatures range between 20-10°C (Scott and Crossman 1973) since spawning periods are unknown in the watershed. Visual surveys will be conducted once per week when water temperatures range between 20-10°C in the fall of 2011. Eggs traps will be deployed during the second week of assessment and checked every subsequent week until temperatures fall below 10°C, when the traps will be pulled at 7°C (Table 1). Visual

surveys will always be conducted prior to deploying and checking eggs traps to avoid spooking or disturbing spawning fishes.

Table 1: Salmonid Spawning Assessment Schedule

Assessment Schedule 2011	Visual Observation to be Conducted for all Sites	Egg Collection to be Conducted on Lizard Creek
1st visit (20°C)	Yes	No – Site Assessment
2nd (20-10°C)	Yes	Traps Deployed
3rd- nth (20-10°C)	Yes	Traps checked and redeployed
Final (7°C)	Yes	Traps checked and pulled

3.2 Visual Observation

Visual surveys will be performed at all four (4) spawning assessment locations.
Surveyors will be looking for the presence of adults, active spawning and signs that spawning has taken place. Since the spawning time period for Chinook and pink salmon is unknown in Lizard Creek surveys will be conducted when water temperatures range between 20-10°C in the fall of 2011.

A qualified crew, a fisheries biologist and aquatic technician, will conduct all surveys. The crew members will walk on the watercourse bank to avoid disturbing potential spawning habitat. If this is not practical or unsafe based on environmental conditions, both people will walk on one bank. If there is a necessity to walk in the creek bed itself, the crew will walk only in habitat not utilized by spawning salmonids.

Effort will be recorded as the number of minutes surveyed per crew member. The start, finish and elapsed survey time will be recorded for each site and sample. The minimum visual survey effort is estimated to be 120min/field crew member.

The following information will be collected when spawning indictors are observed:

- Date, time and UTM location
- Environmental site observations
- Water temperature
- Photo documentation
- Species and behavior (e.g. digging activity, staging, fish on redd, spawning)

- Fish condition and size
- Redd dimensions (length and width)
- Carcass condition (fresh, eaten, decomposed)

3.3 Egg Collection

Egg baskets and egg traps will be deployed in Site 1 of Lizard Creek. Egg collection will occur on Lizard Creek to ensure a rigorous level of sampling effort has been conducted directly downstream of the project tailrace and proposed Hydro facility. The increased sampling effort will allow biologist to confirm with a high degree of confidence the presence or absence of salmonid spawning in Reach 1 of Lizard Creek.

Egg traps, an 18" fabric hoop and/or fabric wrapped cinder block will be deployed within or immediately downstream of spawning habitat in Reach 1. The number of traps deployed will depend on the accessibility of spawning habitat areas within the watercourse at the time of sampling. Since environmental conditions (e.g. flow rate and water depth) fluctuate seasonally, the number of traps and specific locations within Site 1 will be determined at the time of deployment. Ideally, eight (8) traps will be deployed.

Traps will be pulled once a week to be carefully examined for the presence of eggs. Eggs will be counted, collected and reared in the laboratory for species identification.

Effort will be recorded as the total number of days each trap was deployed. The trap set and pulled dates will be recorded for each site and sample.

3.4 Equipment:

- Egg traps
- Hand-held Global Positioning System (GPS)
- Field data sheets
- Digital camera
- Measuring Tap
- Thermometer

4.0 References

Scott, W. B., and E. J. Crossman. 1973. Freshwater fishes of Canada. *Fish. Res. Bd. Canada Bull.* 184:184-191