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Subject: Narrow-leaved Gentian Study – 2006 Update Marquette and Baraga Counties, Michigan Prepared for Kennecott Eagle Minerals Company

Jon:

The 2006 update report for the Narrow-leaved Gentian investigation is attached for your information and files.

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# Narrow-leaved Gentian

# 2006 Update

# 1. Introduction

Several Narrow-leaved Gentian (NLG) plants were found along the Salmon Trout River in the vicinity of the Eagle Project during the T & E baseline investigation in 2004 (WCR, 2005). The purpose of the original study in 2005 (Meier, 2005) was to determine the approximate distribution and populations of NLG in the general project area and adjacent areas of northern Marquette County. NLG is listed as a "facultative wetland" species in the State of Michigan, meaning that it can survive in wetland or upland conditions. In this investigation NLG plants were found in very wet conditions along streams and also in dry conditions on the upper fringe of wetlands. The Michigan Natural Features Inventory (MNFI) considers the NLG a species of "threatened" status.

The investigation and this report are intended to document where NLG were actually found in 2006. This was not an exhaustive investigation and the lack of a sighting in any particular area is not intended to infer that NLG do not exist in that area.

# 2. Study Area

The study area included the fringe areas along the Yellow Dog River, the Main Branch Salmon Trout River, and several streams to the west of the Eagle Project area to the Peshekee River (Figures 1, 2, and 3). Areas adjacent to the Triple A Road, West Branch Huron River Road, and Peshekee Grade were investigated. Also included in the investigation area was the area around Harvey Lake (Section 31, T47N-R25W), located on the Sands Plain south of the City of Marquette approximately 30 miles south of the Eagle Project site. The area around Powell Lake (Section 9, T46N-R25W) was investigated in the 2005 survey, but was not included in this survey since NLG were not present in 2005 and were not expected to be present in 2006.

# 3. Results of Investigation

# Yellow Dog River

Flowering NLG plants (Figures 5 and 6) were found in all areas investigated along the Yellow Dog River. This included areas from 0.7 miles downstream to 0.6 miles upstream of the Trail 5 bridge on the left (north) side of the river (Figure 2). The survey along the Yellow Dog River was conducted on August 15 and September 3, 2006. Flowering NLG were observed in very wet areas in heavy organic soil along the Yellow Dog River and in the drier fringe areas in sandy soils several hundred feet from the river (Sections 13 and 14, T50N-R29W) (Figure 2). Additional flowering plants were observed in Section 24, T50N-R29W, south of the Yellow Dog River at the edge of the wetland near the bedrock outcrop. There appeared to be fewer flowering NLG in 2006 than in 2005 in all areas surveyed. Even though the survey was conducted during the middle of the flowering period reported by Chadde in the *"Field Guide to the Endangered and Threatened Plants of Michigan's Upper Peninsula"* (August and September), many flowers were brown and dried.

## Salmon Trout River

NLG were found along the Salmon Trout River in approximately the same areas where they were recorded by Wetland and Coastal Resources in 2004 (WCR, 2005) and also observed in the 2005 survey (Meier, 2005) (Figure 4). This area included the right side (north and east) of the Salmon Trout River from upstream of the ore body to a point just upstream (south) of the County Road AAA (Triple A Road) in Section 11, T50N-R29W. Fewer NLG were observed in 2006 than in 2005.

Area to the West of the Eagle Project

The investigation continued west of the Eagle Project area along the Triple A Road to the West Branch Huron River Road and then on to the Peshekee Grade. These roads traverse western Marquette County, eastern Baraga County and then return to Marquette County at the Peshekee Grade (Figure 3). Flowering NLG were observed at nearly all stream crossings along the road rights-of-way. They were observed in small borrow pits near the roads, sometimes in very dry perched areas in sand and gravel soils. At most locations at least fifty flowering plants were observed and sometimes several hundred plants were observed at single locations. The number of flowering NLG plants was approximately the same as in 2005.

Approximately fifty NLG were also observed south of Lake Arfelin in Sections 21 and 22, T49N-R30W (Figure 3). The habitat in this location was a relatively dry bog adjacent to a small stream.

## Harvey Lake

NLG (several hundred) were observed along the southern shore of Harvey Lake (Section 31, T47N-R25W) in dry sandy soils.

## 4. Conclusion

Flowering Narrow-leaved Gentian plants proliferate in northern Marquette County and northeastern Baraga County. NLG were consistently found along and near streams in both wet organic soil and dry sand and gravel again during the 2006 investigation. NLG occur in the Eagle Project area as well as other areas in the region not near the Eagle Project.

### References

Meier, John G., and North Jackson Company. 2005. Narrow-leaved Gentian. Eagle Project Mining Permit Application, Volume IIF, Environmental Impact Assessment, Appendix F-2. Prepared for Kennecott Eagle Minerals Company, Fall, 2005. 8 pp.

Wetland and Coastal Resources (WCR). 2005. Threatened and Endangered Species Assessment. Eagle Project Mining permit Application, Volume IIF, Environmental Impact Assessment, Appendix F-1. Prepared for Kennecott Minerals Company Eagle Project, Marquette County, Michigan. September, 2005.

#### NARROW LEAVED GENTIAN LOCATIONS-REGIONAL VIEW



#### NARROW LEAVED GENTIAN LOCATIONS - EAST



#### NARROW LEAVED GENTIAN LOCATIONS - WEST



#### NARROW LEAVED GENTIAN LOCATIONS - PROPOSED MINE AREA (T50N - R29W)





