**Draft Agenda -Lake Superior Watershed Ditch and Culvert Design Workshop**

**Wednesday March 6th Day 1 Start- 9:00**

Welcome – John Jereczek MNDNR 9:00-9:15

Overview and Introduction Watersheds, Streams, and Discharge

Unique Aspects of How North Shore Streams Flow and 9:15-9:45

Respond to Storms – Molly Wick, UMD, 30 min

How Stormwater Runoff Affects Stream Fish and Their Food 9:45-10:15 Dr. Valerie Brady, UMD NRRI, 30 min

Break- 10:15-10:30

 Rationale for Alternative Crossing Design Approach- 10:30- 11:15

 Marty Rye, PE USFS, 45 min

Permitting- Cliff Bentley, Hydrologist MNDNR, 30 min 11:15-11:45

Lunch On Site, 60 min 11:45- 12:45

Tools and Examples

Climatic data – Steve Gohde, NWS, 15 min 12:45-1:00

 Rainfall Atlas 14 - Nancy Johnson Dent, PE BARR Eng. - 30 min

1:00-1:30

Hydrology Design Tools- Tom Hollenhorst, Ecologist EPA, 30 min 1:30- 2:00

 Methods for Assessment and Design of Road-Stream Crossings

                Inventory and Assessment

                No Slope Tailwater Control for Low Gradient Streams

                Stream Simulation for High Gradient Streams

Dale Higgins. Hydrologist USFS,

Mark Fedora, Hydrologist USFS, 150 min 2:00-4:30

Adjourn 4:30

**Thursday March 7th Day2 Start 8:00 am**

Practical Planning and Application

Introduction- Cliff Bentley, Hydrologist MNDNR, 15 min 8:00-8:15

Understanding Sediment Flow, Water Flow & Land Use Change    8:15 – 9:45

Sandy Verry, USFS Hydrologist, ret. Emeritus, 90 min

Break 9:45-10:00

The Risky Business of R.I. and MESBOAC- Sandy Verry , 90 min

10:00-11:30

Workshop culvert design exercise, HY8 application

Using field data and check flows- Sandy Verry , 60 min 11:30-12:30

 Adjourn 12:30

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