Great Lakes Maritime Transportation
K-12 Education/Outreach Program

GOAL:
To increase awareness and understanding of Great Lakes Maritime Transportation and encourage its inclusion in the K-12 curriculum (in Great Lakes states).

Joan Chadde, K-12 Education Program Coordinator
Western U.P. Center for Science, Math, and Environmental Education
105 Dillman Hall – Michigan Technological University
1400 Townsend Dr., Houghton, MI 49931
Tel: 906-487-3341 Email: jchadde@mtu.edu Website: www.wupcenter.mtu.edu
Program Activities (2006-08)

1. *Conduct one-week summer teacher institute each year (20 participants).

2. Develop Great Lakes Maritime Transportation K-12 Education/Outreach website (linked to the GLMRI website).
   <http://wupcenter.mtu.edu/education/great_lakes_maritime/index.htm>


4. *Develop trunk of classroom resources for teaching about Great Lakes Maritime Transportation – disseminate throughout Great Lakes Basin to museums & schools for programming and loan to teachers.

5. Conduct one-day Teacher-Training Workshops hosted by museums and school districts.
Program Activities (2006-08) cont’d

6. *Develop Pre/Post-Field Trip Lesson Guide in partnership with a Maritime Museum, i.e. Whitefish Point Lighthouse & Great Lakes Shipwreck Historical Society.

7. Provide mini-grants to teachers to develop educational materials, i.e. F is for Freighter children’s book.

8. Publish Great Lakes Maritime Transportation Lesson/Activity Guide using lessons developed by teachers attending summer institutes.

9. Support teachers to make conference presentations at their respective state and regional education conferences.

10. Publicize program activities through conference presentations (NSTA, IAGLR) and articles in journals ---Great Lakes Seaway Review, Great Lakes Shipwreck Historical Society.
Summer Teacher Institute Agenda – Duluth/ Superior

**Day 1**
Northern Great Lakes Visitor Center in Ashland, WI
U.S. Coast Guard facility in Duluth
U.S. Army Corps Maritime Museum & Visitor Center

**Day 2**
Overview of Shipping on the Great Lakes by Duluth Seaway Port Authority
Duluth-Superior Harbor Tour & lunch aboard *Vista Queen* from Barker's Island in Superior, WI
S.S. William A. Irvin freighter and museum
Great Lakes Aquarium

**Day 3**
Canadian National ore docks in Two Harbors
*Edna G.* tugboat tour
Split Rock lighthouse tour

**Day 4**
Midwest Energy Coal transition point
Burlington Northern Santa Fe No. 5 Taconite Facility (BNSF Ore Docks) in Superior, WI
*Balancing Social, Economic and Environmental Aspects of Shipping on the Great Lakes* by Dr. Stewart, co-director, GLMRI

**Day 5**
Tour of Lake Superior Warehousing Co.
Tour Murphy Oil refueling depot
Day 1 - Duluth

- U.S. Coast Guard presentation
- Lake Superior Maritime Museum
Day 2 - Duluth

- Presentations by Duluth Seaway Port Authority
- Duluth-Superior Harbor Tour
- Tour Irvin ship museum

Duluth-Superior harbor tour was fabulous!
Day 3 – Northshore of MN

Tour of historic Split Rock Lighthouse

Awesome! I’ve never been inside a lighthouse before! Great guide.
Day 4 – Superior, WI

BNSF Ore Docks tour of shipping taconite pellets was fascinating.

Midwest Energy Coal tour was phenomenal!
Day 5 – Clure Terminal

Another great tour! I was impressed with how clean the facility was!

Fascinating look at fueling ships!
2006 Summer Institute in Eastern U.P.

**Day 1 – Marquette & Munising, MI**
Tour Cleveland Cliffs’ Tilden Iron Mine & Taconite facility with Dale Hemmila, District Mgr.
Overview of City of Marquette’s Harbor & Economic Development Plan with:
   - Fred Stonehouse, historian, author & Chair of Marquette’s Harbor Advisory Committee
   - Sandy Gayk, Director of Community Development for the City of Marquette
Pictured Rocks National Park Boat Tour

**Day 2 - Munising to Sault Ste Marie, MI**
Whitefish Point Shipwreck Museum & Lighthouse
Soo Locks Boat tour
Soo Locks Visitor Center

**Day 3 - Sault Ste Marie, MI**
U.S. Army Corps tour of Soo Locks (water levels, dredging, lock operation, homeland security)
U.S. Coast Guard Vessel Traffic Service
Edison Sault Electric Co. hydroelectric plant & power canal
Valley Camp freighter museum
Tower of History Lookout and River of History Museum

**Day 4 - Sault Ste Marie, MI & Fayette**
St. Mary’s Paper Mill in Sault Ste. Marie, ON
Historic Fayette State Park (former iron smelting site)

**Day 5 - Escanaba to Houghton, MI**
*Economics of Great Lakes Shipping* by Capt. Mark Phillips, Great Lakes Maritime Academy
*City of Escanaba Port Expansion plan* & harbor tour by Doug Terry, Escanaba City Manager
Day 1 – Marquette & Munising

Excellent tour of Cleveland Cliffs iron ore mine---gave a great perspective on the #1 product moved on the Great Lakes.
Great tour of Soo locks.

Day 2 – Whitefish Point Lighthouse & Museum and Soo Locks Boat Tour
Day 3 – Sault Ste. Marie, MI

Excellent presentation by the Army Corps! Fascinating info! It was amazing to go under the locks! This is a must-have for future classes in GL Maritime Shipping!

Great presentation by U.S. Coast Guard and the Vessel Traffic Service. It was great to get behind the scenes and see the vessel traffic control room. Keep this for future Maritime shipping courses!
Day 4 – Sault Ste Marie, ON & Fayette State Park

Original canoe lock from 1798.

Fayette S.P. provided a powerful example of historic use of GL!
I loved Capt. Mark Phillips (rt.). His presentation was very interesting with loads of information that I can pass on to my students. A good look at the industry today. Enjoyed his discussion of how math is used in navigation. I better understand requirements for employment in the shipping industry, and economics of shipping!!!
Great Lakes Maritime Transportation Trunk

Contents:
- Activity/curriculum guides
- Cargo samples
- videos/CDs/DVDs
- Posters/Maps
- Notebook of lessons

- Children’s literature
- Great Lakes floor map
- Shipping/receiving port maps
- Powerpoint presentations

Disseminate throughout Great Lakes Basin to museums & schools for programming and loan to teachers – 14 disseminated in MI, MN, WI, OH, PA, IN.

Must conduct one teacher workshop to promote use of trunk by teachers – these are happening all over the Great Lakes basin!

Must provide Year #1 lending records.
## Dissemination of Great Lakes Maritime Transportation Trunks in Great Lakes Basin

<table>
<thead>
<tr>
<th>Sites – Year #1</th>
<th>Great Lake</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lake County Soil &amp; Water Conservation District</td>
<td>Erie</td>
<td>Ohio</td>
</tr>
<tr>
<td>2. Wisconsin Maritime Museum</td>
<td>Michigan</td>
<td>Wisconsin</td>
</tr>
<tr>
<td>4. Thunder Bay National Marine Sanctuary</td>
<td>Huron</td>
<td>Michigan</td>
</tr>
<tr>
<td>5. Great Lakes Shipwreck Historical Society</td>
<td>Superior</td>
<td>Michigan</td>
</tr>
<tr>
<td>6. Indiana Dunes National Lakeshore</td>
<td>Michigan</td>
<td>Indiana</td>
</tr>
<tr>
<td>7. Saginaw Valley State University Regional Math/Science Center</td>
<td>Huron</td>
<td>Michigan</td>
</tr>
<tr>
<td>8. Lake Superior Maritime Visitor Center</td>
<td>Superior</td>
<td>Minnesota</td>
</tr>
<tr>
<td>10. Whitefish Dunes State Park (Sturgeon Bay, WI)</td>
<td>Michigan</td>
<td>Wisconsin</td>
</tr>
<tr>
<td>11. Marquette Maritime Museum</td>
<td>Superior</td>
<td>Michigan</td>
</tr>
<tr>
<td>12. Great Lakes Science Center (Cleveland, OH)</td>
<td>Erie</td>
<td>Ohio</td>
</tr>
</tbody>
</table>

4-Superior 4-Michigan 2-Huron 2-Erie 6-Michigan 2-WI, 1-IL, 1-IN, 2-OH
Conduct 1-2 day teacher workshops around GL Basin
i.e. Whitefish Point Lighthouse & Shipwreck Museum Workshop
(2 days – Fall 2007)

Goal: develop pre/post-field trip activity
guide for K-12 teachers/students.

- Each workshop participant required to
  write one lesson.
- Stay at the Whitefish Pt. Lighthouse!
- Earn one graduate credit from MTU
- Received the absolutely best evaluations!
Whitefish Point Lighthouse & Great Lakes Shipwreck Museum
K-8 Lessons & Activities

Edited by Joan Chadde
Western U.P. Center for Science, Mathematics & Environmental Education, Michigan Technological University

Developed with funding from the Great Lakes Maritime Research Institute and support from the Great Lakes Shipwreck Historical Society
What’s next? Future proposed Activities

1. Publish a Great Lakes shipping curriculum for regional and national dissemination, using the 40 lessons developed by 2006 teacher institute participants.

2. Publish “F is for Freighter: ABCs of Great Lakes Shipping”

3. Coordinate educational tour of Great Lakes Maritime Academy’s ship to Great Lakes communities and schools (especially if teacher participated in the institute).

4. Develop 1-hour assembly program on Great Lakes shipping in partnership with the Great Lakes Aquarium that would visit schools throughout the Great Lakes region.
For more information:

Joan Chadde, Workshop Coordinator
Western U.P. Center for Science, Math & Env. Educ.
105 Dillman Hall -Michigan Tech University
1400 Townsend Dr., Houghton, MI 49931
Tel: 906-487-3341  Fax: 906-487-1620
Email: jchadde@mtu.edu