Local Bridge Asset Management

Rebecca Curtis, P.E.
Michigan Department of Transportation
Bridge Management Engineer

March 2016
Local Agency Bridge Asset Management

- Bridge Inventory, Inspection and Load Rating
- Bridge Funding
- Bridge Preservation
Local Agency Bridge Inventory

- Michigan has approx. 11,000 bridges
  - Local Agency
    - Over 6,500 bridges
    - 85.6% good or fair
    - Over 1000 posted bridges
# Local Agency Bridge Inspection

## NBI Condition Ratings

<table>
<thead>
<tr>
<th>Score</th>
<th>Condition Description</th>
<th>Maintenance Candidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 – 7</td>
<td>Excellent to Good Condition</td>
<td>Routine maintenance candidate.</td>
</tr>
<tr>
<td>6 – 5</td>
<td>Satisfactory or Fair Condition</td>
<td>Preventative maintenance and minor rehabilitation candidate.</td>
</tr>
<tr>
<td>4</td>
<td>Poor Condition</td>
<td>Major rehabilitation or replacement candidate. (Nearly one third of Poor bridges are posted for reduced loads.)</td>
</tr>
<tr>
<td>3 – 2</td>
<td>Serious or Critical Condition</td>
<td>Emergency repair and high priority major rehabilitation or replacement candidate. Unless closely monitored it may be necessary to close such bridges until corrective action can be taken. (The majority of Serious and Critical bridges are posted for reduced loads.)</td>
</tr>
<tr>
<td>1 – 0</td>
<td>Imminent Failure or Failed Condition</td>
<td>Replacement candidate. Bridge is closed to traffic.</td>
</tr>
</tbody>
</table>
Local Agency Load Rating

BRIDGE ANALYSIS GUIDE
2005 Edition
with
2009 Interim Update
Part 1

MICHIGAN DEPARTMENT OF TRANSPORTATION
CONSTRUCTION AND TECHNOLOGY SUPPORT AREA

Guides and Advisories

- Michigan Structure Inventory and Appraisal of Bridges
- Corrugated Metal Pipe Analysis Spreadsheets (BA-2012-03)
- Guidance for the use of "Field Evaluation and Documented Engineering Judgment" Ratings (BA-2012-02)
- Modifications and Improvements to Load Rating and MBIS/MBRS (BA-2012-01)
- Local Agency Load Rating Prioritization and Coding (BA-2011-02)
- Load Rating Compliance with NBIS (BA-2010-03)
- Load Rating Gusset Plates on Non-Load-Path Redundant Steel Truss Bridges (BA-2009-01)
- Bridge Analysis Guide
MDOT has grandfathered legal loads

We have 25 identified legal loads for rating as well as the 3 AASHTO vehicles
Local Agency Bridge Funding

- Federal Funds
- Michigan Transportation Funds
- Local Bridge Fund
  - Regional Bridge Councils
Local Agency Bridge Funding

2015 Local Bridge Fund Projects

- 338 bridge applications received for a total request of $260 million
- 89 Projects selected by the Regional Bridge Councils (26% of total project applications)
- $48 million (18% of total application requests)
Bridge Preservation

- What is Bridge Preservation?

(Source - NHI Bridge Preservation Webinar)
What is the value of Bridge Preservation?

Bridge Condition Forecast System - Asset Management vs Worst First
All Roadway Bridges (MDOT and Local Agency)

- Measured
- Worst First
Bridge Asset Management Training

Asset Management Guide for Local Agency Bridges in Michigan

sponsored by Michigan Transportation Asset Management Council
prepared by TranSystems Corporation

May, 2011
Bridge Asset Management Training

Asset Management Guide for Local Agency Bridges Training Course

<table>
<thead>
<tr>
<th>2016 Training Dates</th>
<th>8:00 AM - 2:30 PM</th>
<th>Sign-in starts at 7:30 AM</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 14 &amp; 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>November 1st</td>
<td>Lower Peninsula</td>
<td>Locations TBD</td>
</tr>
</tbody>
</table>

2016 Training Dates

September 14 & 15  Lower Peninsula Locations TBD
November 1st

Instructors

Chris Gilbertson, Ph.D., P.E., is a Senior Research Engineer at the Center for Technology & Training at Michigan Technological University. His efforts are focused on the Bridge Load Rating Program which offers technical assistance to local agencies and their consultants while conducting load ratings using AASHTOWare Bridge Rating.

Al Kaltenthaler, P.E., S.E., is the Vice President and Senior Associate for TranSystems Corporation in East Lansing. Al is a former member of TAMC Bridge Committee. He has 32 years of engineering experience. Al received a B.S. in Civil Engineering from University of Akron. He has been the project manager for dozens of MDOT bridge design, rehabilitation, inspection, and load rating projects.

Registration

Public agency registration fee: $20
Private company registration fee: $50
Register at ctt.mtu.edu/Training.

Registrations must be made in advance. Sign-in and the continental breakfast begins at 7:30 AM.
Questions? Email ctt@mtu.edu

No-shows and cancellations within three business days of the session will be charged the full registration fee. Substitutions will be accepted. The Center for Technology & Training’s (CTT) continuing education policy is available here.
Project Selection

FY 2017 LOCAL BRIDGE PROGRAM
BY DOLLAR VALUE

FY 2017 LOCAL BRIDGE PROGRAM
BY NUMBER OF PROJECTS
Questions?

Rebecca Curtis, P.E.
Michigan Department of Transportation
Bridge Management Engineer

March 2016
Accela Project Update

March 30, 2016

Thomas Benner
Systems Manager
Operational Services and Central Licensing
Quick History

- 2006 License Consolidation Project started in June
- 2007 Central Licensing Unit created in October
- 2008 Work with Michigan Business One Stop started in July
- 2009 One Stop launched in March
- 2012 Inspection Consolidation Project started in November
- 2013 Work on Licensing/Inspection system started in February
- 2014 Contract with Accela initiated in June; work began in October
- 2014 One Stop discontinued in September
Quick History cont’d

• 2015 Phase 1 work continued throughout the year

• 2016 Phase 1 launched February 2, 2016

• 2016 Phase 2 planning began; agile methodology versus waterfall.
Phase 1

- 6 license types
  - Food Establishments (17,000+)
  - Food Service (35,000+)
  - Nursery (5,500+)
  - Retail Motor Fuel (4,800+)
  - Bottled Water (1,100+ labels)
  - Water Dispensing Machines (675+)
Phase 1

• Inspections
  – Food Establishments
  – Nursery
  – Retail Motor Fuel
  – Complaints
Phase 1

- MDARD staff hours:
  - FY 14 852 hours
  - FY 15 11,618 hours
  - FY 16 10,138 hours (through 3/12/2016)
  - Total 22,608 hours

- ITIF* Spend to date: $2,994,024
  
  *Information Technology Investment Fund

- Remaining ITIF budget: $4,689,036
Welcome to the Citizen Portal
We are pleased to offer our citizens, businesses, and visitors access to government services online, 24 hours a day, 7 days a week.

In partnership with Accela, Inc., we are fulfilling our promise to deliver powerful e-government services and provide valuable information about the community while making your interactions with us more efficient, convenient, and interactive. To use ALL the services we provide you must register and create a user account. You can view information, get questions answered and have limited services as an anonymous user. We trust this will provide you with a new, higher level of service that makes living and working in our community a more enjoyable experience.

What would you like to do today?
To get started, select one of the services listed below:

General Information
- Search for a Licensee
- Licenses

Complaints
Training

• Each division created held training workshops and created training resources that were shared through the intranet SharePoint site. The documents are easily updated as new functionality is identified.

• Scott Davidson in the CLU created several screenshot videos to assist users in visualizing how to navigate the screens
Success Story

An applicant for a food license paid for their application online at 1:39 pm on Thursday, 2/18 and was inspected and licensed through the Accela system by the inspector at 8:15 am on Friday, 2/19.
Efficiency

In the prior systems, a food inspector would approve a license in MilInspector and then send a copy of the inspection report to the CLU for manual entry into License 2000 to issue the license. In Accela, the licenses are issued automatically once the inspector results the inspection as approved.
This report is under development. The data is compiled from several ad hoc reports in the Accela Automation system and is entered into an Access database that is located at S:\MDA_InspectionProject\Accela\Metrics (Note: this location may change). The report does not yet include transactions for renewals or for the bottled water and water dispensing machine program. Questions about this report should be directed to Thomas Benner, bennert9@michigan.gov or 517-284-5744.

Average per day calculated using only work days (excludes weekends and holidays)

|          | Food | MFQ | Nursery | TOTAL | Food | MFQ | Nursery | ACA | TOTAL | On Line $|          |          |          |          |          |          |          |          |          |          |          |
|----------|------|-----|---------|-------|------|-----|---------|-----|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| LICENSES ISSUED |      |     |         |       |      |     |         |     |       |          |          |          |          |          |          |          |          |          |          |          |
| GRAND TOTALS   | 156  | 56  | 26      | 238   | 326  | 50  | 83      | 26  | 485   | $3,449.00 |          |          |          |          |          |          |          |          |          |          |
| AVERAGE PER DAY| 5    | 2   | 1       | 7     | 10   | 2   | 3       | 1   | 15    | $108     |          |          |          |          |          |          |          |          |          |          |

**Dates in DESC Order**

<table>
<thead>
<tr>
<th>Date</th>
<th>LICENSES ISSUED</th>
<th>APPLICATIONS SUBMITTED</th>
<th>INSPECTIONS SUBMITTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/17/2016</td>
<td>6</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>3/16/2016</td>
<td>6</td>
<td>5</td>
<td>0</td>
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<tr>
<td>3/15/2016</td>
<td>7</td>
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<td>0</td>
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<tr>
<td>3/14/2016</td>
<td>11</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>3/12/2016</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Complaints opened: 1, 4, 6, 7
17,000+ food renewals with online renewal instructions to be delivered just after March 31

Agile methodology pilot for Agricultural Pesticide Dealer license and Christmas tree certification in May/June
Questions?

Michigan Department of Agriculture & Rural Development

Stay connected with MDARD!

Michigan Department of Agriculture

@MichDeptoAg

Mlagriculture
Michigan Commission of Agriculture and Rural Development

Food and Agriculture Month

Presented by:
Jennifer Holton, APR
Director of Communications
March is Food & Ag Month

Governor Snyder proclaims March as Food & Agriculture month in Michigan

- Celebrate our food/ag diversity
- Engage consumers
- Economic successes/opportunities
- Partnerships
March is Food & Ag Month

Partnerships

- Partnered with McDonald’s of MI to highlight the products they purchase from MI farmers.
- This trayliner is used in all McDonald’s stores in the state.
- It was launched on digital media on March 15 for National Ag Day.
March is Food & Ag Month

Partnerships

- Partnered Grand Traverse Pie Company highlighting correlation between education & the food and ag industry.
- Video contest to say the most digits of pie.
- Patrons were given a free slice of ABC pie on March 14.
March is Food & Ag Month

Partnerships

Meet Brandon Song of Goodwill's Farm to Freezer program one of the Michigan companies in attendance today at the 2016 Pure Michigan Ag Summit in Kalamazoo. Let's find out what brought him here today.

#PureMiAgSummit #MiAgMonth
March is Food & Ag Month

Revived MDARD Instagram account in mid-March.

- Highlighting Michigan agriculture facts
- 190 followers to date
March is Food & Ag Month

Top mention earned 739 engagements

Did you know #PureMichigan ranks No.1 in the nation for blueberry production? Now you do! #MiAgMonth @MichDeptoAg pic.twitter.com/vAtHcvtgBX

Michigan Department of Agriculture
Published by Cheri Kay PM · March 3 at 6:07pm ·

Michigan is number 1 for production of blueberries for the entire nation! How do you like to use Michigan blueberries in food? #MiAgMonth

Michigan ranks 1st nationwide for blueberry production #MiAgMonth

105,408 people reached

6,761 Reactions, Comments & Shares

5,044 Like
192 Love
1 Haha
9 Wow
151 Comments
5 Shares

4,474 Post Clicks
770 Photo Views
1646 Post Clicks
1568 Other Clicks

NEGATIVE FEEDBACK:
46 Hide Post
165 Hide All Posts
0 Report as Spam
1 Unlike Page
March is Food & Ag month

Digital Media by the Numbers

• Blueberry graphic is MDARD’s most engaging post on Facebook and the most engaging tweet.

• Pure Michigan’s most engaging tweet for the month of March was the blueberry graphic (739 engagements).

• Spike in Facebook page likes for each infographic posted. Over 200 organic likes 2 days after the blueberry graphic was posted. Average daily organic likes is roughly 9.

• Pure Michigan blog article was a top engaging post of MDARD’s.
Stay connected with MDARD!

Follow MDARD on Facebook, Twitter, Instagram, & YouTube for current information and happenings!
A Family Tradition since 1895

Founded by John C. Clemens

Clemens Family Corporation includes:
  - Clemens Food Group
  - Clemens Real Estate Group

Today – 6th Generation
  - 272 Family Owners
  - 28 Family Employees
Our Mission

We aspire to operate in a way that honors the Lord Jesus Christ as demonstrated through Ethics, Integrity, and Stewardship.
Our Core Values

Our values are the basis of every business decision we make:

– Ethics
  • I’ll do the right thing.

– Integrity
  • I’ll do what I say.

– Stewardship
  • I’ll build a foundation for the future.
Stewardship Commitment

Includes commitment to:
• Team Members
• The Environment
• Animal Care
• Products and Customers
• The Community
About The Clemens Food Group

Based in Hatfield, PA
(30 miles NW of Philadelphia)

Business family - balanced leadership across senior management, board of directors, and owners advisory committee

Shared success with 2,400+ dedicated team members
About Our Business

• The Leader in Customer Solutions

• Serving customers across retail (grocery stores), foodservice (example - SYSCO), exports to other countries, and business-to-business (example - Bush Beans)

• Portfolio of brands that feature high quality fresh and value added pork
Servant Leadership Model
Build enduring greatness through a paradoxical blend of personal humility and professional will.
Need for the Facility

• Pork demand is strong

• SW Michigan is an ideal location

• Michigan’s commitment to pork industry
Central Location to Producer Partners
About Our Partners

Producer partners
- Group of family-owned pork producers, who share Clemens’ commitment to integrity & quality
- All have long standing history in pork production across Michigan, Ohio and Indiana

Public partners
• State of Michigan/Office of the Governor
• Michigan Economic Development Corp
• Michigan Department of Agriculture
• City of Coldwater/Coldwater Township
• Michigan Works
• KCC and Branch County ISD
About The Facility

• 600,000 square-foot facility
• $275+ Million Investment
• Open Fall 2017
• 800+ Jobs
Celebrating The Start: Groundbreaking July 2015
Current Activities

• Facility
  – WWTP & Air Permits Updated
  – Complete Panel Installation of Cut Floor
  – Complete CO2 Pits
  – Utilities Work Begins – Inside & Outside
  – Process Development and Vendor Selection
    • Waste water
    • Trim Blend
    • Offal
    • Headroom
    • Mucosa and Blood Plasma
Coldwater Construction

By the Numbers

<table>
<thead>
<tr>
<th>Manhours</th>
<th>37,078</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cubic Yards of Soil Moved</td>
<td>320,000</td>
</tr>
<tr>
<td>Square Yards of Soil Stabilized</td>
<td>365,356</td>
</tr>
<tr>
<td>EA Storm Structures Installed</td>
<td>25</td>
</tr>
<tr>
<td>Linear Feet of Storm Pipe Installed</td>
<td>7,700</td>
</tr>
<tr>
<td>Tons of Parking Lot Aggregate</td>
<td>30,506</td>
</tr>
<tr>
<td>Tons of Building Pad Aggregate</td>
<td>29,921</td>
</tr>
<tr>
<td>Cubic Yards of Concrete Placed</td>
<td>3,649</td>
</tr>
<tr>
<td>Tons of Rebar Installed</td>
<td>173</td>
</tr>
<tr>
<td>Tons of Steel Erected</td>
<td>599</td>
</tr>
<tr>
<td>SF of Decking</td>
<td>130,000</td>
</tr>
<tr>
<td>Precast Panels Erected</td>
<td>86</td>
</tr>
</tbody>
</table>
CFG – The Talk of the Town - Coldwater Community

EXTRA! EXTRA!
READ ALL ABOUT IT!

Clemens Food Group Buys Coldwater Building
Job Opportunities Coming in 2017

Managerial 46
Professional 37
Technical 11
Sales 7
Clerical 11
Craftsmen* 12
Operators** 585
Laborers*** 41
Clemens Food Group

Upper-Management Timeline

- MWA Internal Training
  - Completed
- Begin Job Awareness Campaign
  - Currently underway
- Application/Screening Period
  - November 15- until filled
- Interviews
  - November 15- until filled
- Hire Dates
  - Beginning March 2016
- Production Start Up
  - 9/5/2017

Mid-Management/Maintenance Timeline

- MWA Internal Training
  - 12/2/2016
- Begin Job Awareness Campaign
  - 12/12/2016
- Application/Screening Period
  - 1/9/2017- 2/28/2017
- Interviews
  - 3/1/2017- 3/31/2017
- Hire Dates
  - 4/3/2017- 4/18/2017
- Production Start Up
  - 9/5/2017

Production Worker Timeline

- MWA Internal Training
  - 3/6/2017
- Begin Job Awareness Campaign
  - 3/27/2017
- Application/Screening Period
  - 4/12/2017- 6/30/2017
- Interviews
  - 7/1/2017- 7/29/2017
- Hire Dates
  - 8/1/2017- 8/12/2017
- Production Start Up
  - 9/5/2017

*Community Information Sessions to be held with MWA assistance November 2016-Start Up
Current Activities

• Workforce Development
  – College Career Fairs.
  – Connecting with employees from closing companies concerning future opportunities with CFG.
  – Interviewing local residents for extended training opportunities at our Pa. location.
  – Building relationships with communities in the surrounding areas around Coldwater.
  – Participating with various philanthropic groups in the area.
  – Continuing to build a data base of potential Team Members to join the CFG team through start up.
Workforce Development Analytics

- 4,000+ visitors to our Coldwater website in 6 months
- 979 Facebook followers
- Over 600 enrolled to receive employment update emails
Excited to Be Your Neighbor!

Visit us at www.CFGColdwater.com to sign up to receive emails and updates

www.Facebook.com/CFGColdwater
GRANT PROJECTS

Michigan Commission of Agriculture and Rural Development

March 30, 2016

Peter Anastor
Agriculture Development Division
AGENDA

- Grant Programs
- Project Outcomes
- Project Presentations
MDARD Grant Programs

- Specialty Crop Block Grant (SCBG)
- Value Added Grants/Regional Food System
- Strategic Growth Initiative (SGI)
• Current active grant portfolio is 109 projects
  – SCBG: 75 projects
  – Value-Added: 13 projects
  – SGI: 19 projects
  – Other: 2 projects
Grant Impact Analysis

• MDARD hired Public Policy Associates, Inc. to provide analytical review of grant programs

• Reviewed 2013 and 2014 Value Added and 2014 Strategic Growth Initiative grantees

• Data review, project surveys, quantitative impact analysis (IMPLAN model)
Project Outcomes

Grant Impact Analysis Findings

• Grantees were highly successful in reaching their planned goals

• Projects were designed to address particular needs in Michigan food production, processing and distribution
Project Outcomes

Grant Impact Analysis Results

• Grants leveraged match expenditures equal to 86% of total award expenditures
• Grants improved capacity building
• Created new jobs
• Generated additional revenue
Project Outcomes

Grant Impact Analysis Recommendations

• Review process should assess plans for measuring and documenting impacts
• Establish reporting requirements with program evaluation in mind
• Identify meaningful benchmarks for projects with long horizon for economic effects
• Consider two-year follow-up study
Great Lakes Pork and Clemens Food Group

- Commissioner Fred Walcott
- Earnie Meily, Clemens Food Group

Uptown Reinvestment and Flint Food Works

- Commissioner Dru Montri
- Sean Garland, Flint Food Works
Synthesis Report Regarding Net-pen Aquaculture in the Great Lakes

January 28, 2015

Departments of:

Agriculture and Rural Development (MDARD)
Environmental Quality (MDEQ)
Natural Resources (MDNR)
Catalyst for the Conversation Regarding Commercial Net-pen Aquaculture in the Great Lakes

The Michigan Departments of Agriculture and Rural Development, Environmental Quality, and Natural Resources (Quality of Life (QOL) Departments) were approached in late 2014 with two proposals for establishing commercial aquaculture netpen operations in northern Lakes Huron and Michigan. While Ontario has established netpen operations in the North Channel and Georgian Bay in Lake Huron, there are no commercial net-pen aquaculture operations in Michigan’s open waters of the Great Lakes. The issue was viewed as a serious and potentially contentious matter and constituted a new use for Michigan’s bottomlands and Great Lakes waters.

Background on Process

To give this precedent-setting issue the level of attention and deliberate evaluation that was required, the directors requested that the QOL departments’ Aquaculture Workgroup develop an ecosystem approach to evaluating the issue. An ecosystem management approach requires considerations of the scientifically based environmental and ecological aspects as well as the social and economic attributes of a proposed management action. In this process, social considerations included the legal authorities and public input. Under that paradigm, the Aquaculture Workgroup:

1) Elicited an independent volunteer Science Panel of experts to evaluate the environmental and ecological considerations. (Environmental and ecological factors)

2) Contracted with three entities to develop an understanding of the economic aspects commercial net-pen development -- product demand, processing, distribution, etc. (Economic factors)

3) Established an internal workgroup to develop a paper on the existing legal authorities regarding the establishment of netpens, such as permitting (water quality, bottomlands, fish health, and stocking) and recognition of the Great Lakes Consent Decree and tribal nation rights. (Social factors)

4) Conducted, after the above information was complete, a public forum to present the information and take public input regarding the social aspects (conflicts, fishing, etc.) and community benefits. (Social factors)

Land-based aquaculture facilities, such as flow through, closed, or recirculating, were beyond the scope of both the process used to address the issue of commercial net-pen aquaculture and this synthesis paper.

Synopsis of the Report Findings

Six reports were produced from this process and provided input for this synthesis.

Science-based review

1) Great Lakes Net-Pen Commercial Aquaculture: A Short Summary of the Science
Regulations-based review
2) A Regulatory Analysis of Proposed Commercial Net-Pen Aquaculture in the Great Lakes

Economics-based reviews
3) Overview of Natural Resource Values Potentially at Risk from Consequences of Net-Pen Aquaculture
4) Expected Economic Impact of Cage Trout Aquaculture on Michigan’s Great Lakes

Stakeholder Input
6) Commercial Net-pen Aquaculture in the Great Lakes Public Input and Comment

**Ecological and Environmental Issues**

The Science Panel provided several recommendations and cautions if Michigan were to move forward with commercial net-pen aquaculture. At the outset the report states that if Michigan were to allow commercial netpens, it should be with great caution and use an agency managed, scientifically structured active adaptive management design to address and evaluate potential concerns as they arise. This view was affirmed by many who provided public input. The adaptive management process as envisioned by the Panel includes the following:

> “The principles of adaptive management for natural resources include experimentation at the relevant management scale, intensive monitoring, and stakeholder involvement (Walters 1986). Thus, the ability to determine the existing ecosystem conditions, monitoring in locations both with and without a perturbation (in this case net-pen aquaculture), understanding the magnitude of change resulting from the perturbation, evaluating the effects of the perturbation (which would necessarily include a rigorous statistical analysis of the data), and then determining appropriate next steps in consultation with stakeholders, thus completing the adaptive management cycle. This cycle should be led and coordinated by a single group for greatest effectiveness; the QOL group may be best positioned to be this body.”

Other provisions included:

- Development of a tool to determine the best locations for commercial netpens as this would be critical to ensuring their safe operation in the Great Lakes. The siting tool should address the technical, legal and social issues of locating netpens. The tool could be similar to the tool developed for siting wind turbines in Michigan waters of the Great Lakes.

- Development of a nutrient tracking modeling tool that would guide placement and understanding of the fate of nutrients contributed by net-pen operation given the inability to collect wastes.

- Use of only fish species that are present in the Great Lakes to avoid a new invasive species.

- Use of sterile/triploid fish to prevent fish escapes from altering the genetics of wild fish in the Great Lakes.

- Use of certified disease-free fish.
• Careful monitoring of netpens by industry to manage for disease, proper use of feed, water quality, ice damage to netpens and over-all integrity of pen systems in the Great Lakes.

• Significant added expertise and capacity from state agencies to properly monitor and manage commercial net-pen aquaculture in the Great Lakes.

During the stakeholder input process, several participants noted a lack of information pertaining to the ecological consequences of netpens in Ontario and in other locations around the world. This information was limited in the reports and inclusion of that additional information would further speak to the importance of implementing the actions noted above to protect the public’s interest in the Great Lakes resource if the state were to allow commercial net-pen aquaculture, even in a limited fashion.

**Legal Authorities in Michigan**

Based on current Michigan law, commercial netpens cannot legally operate in the Michigan portion of the Great Lakes. The Aquaculture Development Act of 1996 (PA 199) states that aquaculture facilities may only be registered by MDARD if they are operating in privately controlled waters. The Great Lakes are not privately controlled waters. Therefore, current state law does not allow the State of Michigan to register a commercial net-pen aquaculture facility in the Great Lakes.

In other permitting actions:

• In order to site a new-pen, a permit would be required under Part 325 of the Natural Resources and Environmental Protection Act (NREPA) (Great Lakes Submerged Lands) would require a permit for placement of netpens in the Great Lakes, mooring buoys, bottom anchors and other materials.
  
  o Part 325 requires a permit for placement of net-pens mooring buoys, bottom anchors and other materials in the Great Lakes. In addition, Part 325 requires an agreement for the use and occupation of Great Lakes public trust waters and bottomlands by commercial net-pen aquaculture facilities.
  
  o A permit and conveyance application can be submitted for review by the DEQ at any time. Part 325 requires a 20-day public notice for both the permit application and the bottomlands conveyance application. In addition, a public hearing would be held to gather additional comments. The DEQ has 90 days from the date of a complete application to make a decision or 150 days if a public hearing is held.
  
  o Part 325 allows a person to appeal a decision by the DEQ through a contested case hearing. The decision from the contested case hearing can then be appealed through the courts.
  
  o The U.S. Army Corps of Engineers requires the same permit and would conduct its own review. Both agencies would have to give approval for any net-pen aquaculture to be sited in the Great Lakes.

• In order to operate and discharge, a National Pollutant Discharge Elimination System (NPDES) would be required from the DEQ under the federal Clean Water Act and Part 31 (Water Resources Protection) of NREPA.
An application for an NPDES permit could be submitted at any time and the DEQ has a statutory timeline of 180 days to make a permitting decision. An NPDES permitting action requires an evaluation of both water quality and treatment technology considerations with the most stringent limitations or requirements applied to the operation. In addition, Antidegradation applies to any NPDES permit action that will result in a new or increased loading of pollutants to surface waters of the state.

The NPDES permit process requires a 30-day public notice. The DEQ expects significant interest in any net-pen aquaculture application received and would hold a public hearing to take comments. Upon consideration of published comments, a decision to issue or deny the permit would be made. Any permitting decision can be appealed through a contested case hearing. The Director of the DEQ is the decision maker on the contested case; however, a challenge of the decision would move the proceedings to the Circuit Court followed by the Court of Appeals and ultimately the Michigan Supreme Court. We expect this would take 5-10 years given recent appeals of NPDES permits.

- A fish stocking permit would be required from the DNR under Part 487 (Sport Fishing) of NREPA. A fish stocking permit in treaty-ceded areas of the Great Lakes would require agreement of the tribal nations to that activity.

- The Great Lakes Fisheries Commission pointed to the agreement amongst states, tribes, and federal agencies called, “A Joint Strategic Plan for Management of Great Lakes Fisheries,” to which Michigan is a signatory. The document calls for consensus among management (state and tribal) jurisdictions about proposed management actions in the Great Lakes that may affect other jurisdictions. This governance structure was pointed to in several instances as one that should not be taken lightly in terms of other states, province, and tribal nation input.

**Economic Assessments**

The U.S. imports about 75 percent of the seafood it consumes. Worldwide, aquaculture provides 50 percent of the fish consumed. In addition, fish is recognized by the U.S. as a key dietary component for those pursuing heathier eating habits. These are opportunities for growth in domestic fish production. However, Michigan faces growth constraints including feed costs (no local producer of feed), insufficient in-State processing capacity, financing and experienced labor. These limitations exist, as noted by others, for both commercial net-pen aquaculture as well as land-based aquaculture enterprises.

The hypothetical best-case modeled results suggest that locating two one million pound commercial netpen aquaculture trout facilities in Michigan could lead to up to 17 direct jobs, an additional 27 jobs from indirect activities (e.g. fish processing) generating annual personal income of $2.5 million. This volume of production would likely contribute $10.3 million in total output provided fish processing is done in Michigan. Critics of this modeled outcome suggest the amounts used to generate these results may be an overestimate given the variability of commercial prices for trout in the market.

The over-all economic impact of recreational fishing in the Great Lakes for Michigan is estimated at about $1 billion per year. Other noted uses include boating and swimming. As a matter of perception, the public input process noted that the tourism industry could be negatively affected because of the viewscape or belief that the water was degraded or not clean for recreational purposes. While some of the economic value for these other sectors would be at risk because of commercial net-pen aquaculture,
we were not able to determine what those actual effects would be. Therefore, we use the economic information to provide general guidance rather than a definitive economic cost-benefit outcome.

Several constituents noted that the economic reports were not as robust as they would have desired and the assessments themselves noted limitations on available data. The agencies worked with the best resources that could be acquired in the short time frame for assessment and recognize that a more robust cost-benefit analysis may have yielded a clearer outcome. However, the analysts providing information for those reports noted the difficulty in obtaining accurate data given the limited sources for the information and a more costly approach may not yield any further certainty.

**Tribal Nation Input**

Nine of the 12 federally recognized tribes participated in a consultation meeting that we held with them in November 2015. Their concerns and comments are recorded in detail in the public input document. The input the state received from the tribes, both verbally and written, expressed serious concern regarding commercial net-pen aquaculture in the Great Lakes because the activity may negatively affect the fishery and water quality. They also pointed out that they should be included in any process for pursuit of this activity.

**Stakeholder Input**

Nearly 1,700 written comments were received by the departments. More than 1,600 were in opposition while 11 letters provided support. Of those in opposition, 90% were an electronically submitted form letter through the Food and Water Watch organization. An additional 117 individual comments were received articulating ardent opposition to commercial aquaculture net-pens from individuals from Michigan, Illinois, and Indiana, tribal nation governments, nongovernmental environmental groups (Michigan United Conservation Clubs, National Wildlife Federation, Michigan Trout Unlimited, etc.), and one Great Lakes State Department of Natural Resources (Indiana). One letter was neutral, but strongly supported adhering to the collaborative governance process for fisheries management in the Great Lakes (Great Lakes Fishery Commission).

Those in opposition point to risks to water quality, the fishery (genetics, disease, escapes), and tourism and many of the issues identified by the Science Panel. Some that were opposed to commercial net-pen aquaculture were supportive of recirculating aquaculture and in some cases also supported flow through aquaculture.

Those in support state the provision of jobs, economic benefits to local economies, and provision of a desired product.

**Other Considerations**

Through the public input process, it was very clear that the state would be challenged to thoroughly evaluate the role of the Public Trust Doctrine in any implementation of commercial net-pen aquaculture in the public waters of the Great Lakes. The QOL Aquaculture Workgroup did not pursue a thorough legal analysis on this issue, but it would be advisable to further understand this aspect of objection.
Program Costs of Implementation

There are no traditional sources of funding to provide for the programming and oversight that commercial net-pen aquaculture would require. New funding would be required to provide for the public’s expectation of oversight and protection of the Great Lakes. The following estimates are provided as an example program based on experience in addressing Great Lakes bottomland development (windpower), monitoring (DNR Fisheries Division Great Lakes Assessment Program), and staffing for program assistance, management, and coordination amongst the QOL agencies and with industry.

**Initial Investment (2 Years to completion):**

- Development of a Commercial Net-pen Aquaculture Siting Tool to include facilitation of an external multi-interest stakeholder group: $350,000
- Development of a Commercial Net-pen Aquaculture nutrient input and tracking model: $500,000
- Development of an Adaptive Management Design and Science Panel: $50,000

Start up costs total: $900,000

**Ongoing Annual Costs to also include Annual Adaptive Management Science Panel Meeting**

- Monitoring program to assess water quality, fish health, genetics, invasive species, nutrients, benthos/zooplankton for control locations and far-field net-pen locations with a statistically robust design (could be contracted or assumed internally): $1,160,000
- MDARD Aquaculture Program (Registration, Inspection, Industry support): $1,000,000
- DEQ Permitting and Assistance: $150,000
- Science Panel Meetings and Support (staff time, travel, meeting support): $25,000

Ongoing annual costs: $2,335,000

Thus startup costs for this program would be approximately $3.33 million with ongoing costs of approximately $2.4 million annually to create a Great Lakes commercial net-pen aquaculture program that would serve the aquaculture industry while providing the people of Michigan with a scientifically based program to regulate and monitor (in addition to any permit- required facility monitoring at netpen locations) for the protection of the Great Lakes. It is possible that the monitoring requirements to fulfill the adaptive management approach could also be included with the self-monitoring requirements for the operator of the facility as specified in an issued NPDES permit.

**Conclusions**

The Michigan QOL agencies do not recommend pursuing of commercial net-pen aquaculture in the Great Lakes at this time for the following reasons:

- Given the ecological and environmental risks and uncertainties, as pointed out by the Science Panel and with further information provided through public input, commercial net-pen
aquaculture would pose significant risks to fishery management and other types of recreation and tourism. Furthermore, both collaborating management interests and tribal nation interests would likely not agree to Michigan moving forward and pose a significant challenge in any attempts to do so.

• The $3.3 million to implement a commercial net-pen aquaculture program by the State to protect the public’s interest in the Great Lakes and provide the stated expected service to the industry are not provided through any conventional funding models available to the QOL agencies. There would need to be a new funding stream identified for this industry effort to support initial costs as well as the $2.33 million needed annually to monitor and maintain the program and protection of the state’s resources. This level of public investment for an estimated return of $10 million (under the modeled scenarios for two facilities) does not appear to be a prudent use of the state’s resources at this time.

• Regulatory authority does not currently exist to issue registrations for commercial aquaculture in the Great Lakes.

It is important to note that MDEQ must make a Part 325 and NPDES permitting decision regardless of the ability to license an aquaculture facility. Any policy decision regarding aquaculture in the Great Lakes must be carefully constructed to prevent a preempting of DEQ’s permitting processes which could result in unnecessary litigation; and to prevent stimulating permit applications. Decisions made in this process have a very high likelihood of legal challenge.

While not recommending the pursuit of commercial net-pen aquaculture in the public waters of the Great Lakes, the state can and will continue to work within existing authorities to assist the industry in development of well-designed flow through, closed and recirculating aquaculture facilities.