

Michigan Stream Team Meeting Minutes January 14, 2009

Attendees:

Ralph Reznick
Joe Rathbun
John Suppnick
Chad Kotke
Pat Fowler
Pat Durack
Andrea Ania
Jim Hazelman
Jim Watling
Bethany Matousek
Valerie Strassberg

Cyndi Rachol
Steve Rheaume
Travis Dahl
Sharon Hanshue
Kristine Boley-Morse
Chris Freiburger
Dave Fongers
Jim Selegan
Sean Duffy
Coreen Strzalka

Commitments/Action Items:

- **Ralph** will send out the text and graphics of the USGS report to all the Team's agencies by Friday January 30. **Cyndi** has asked for comments on the draft USGS report by February 6.
- **Joe** will send the list of ungaged/good bug locations to the Team prior to the next meeting, and will also send the draft text describing how to survey an ungaged location to the Team.
- **Travis** will get information on the ACOE's use of acoustic doppler profilers for measuring sediment loads.
- **Whole team** will get **Chris** ideas and needs for sediment transport data, to discuss at the next meeting.

Next meeting:

Either March 3 or 5, 2009, 9:00 – 12:00; location to be announced

Meeting Minutes

The meeting was held at the U.S. Fish and Wildlife Service office in Lansing. Introductions were made, and the meeting proceeded through the agenda.

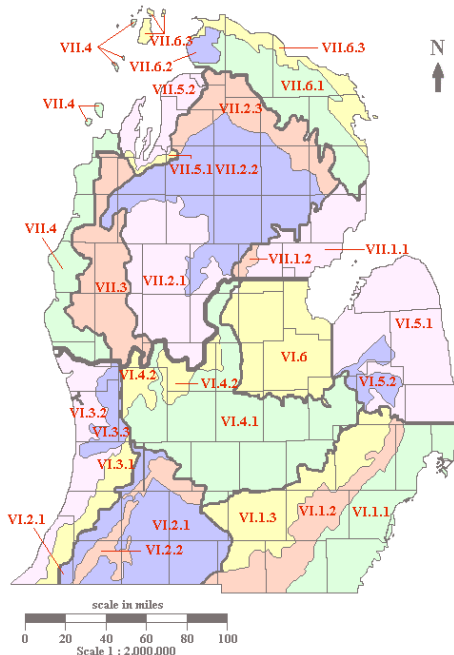
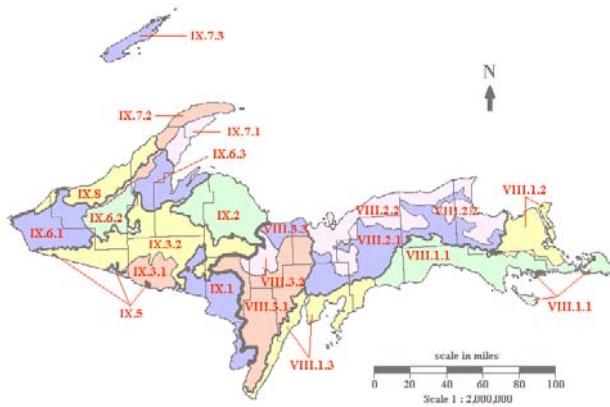
Item 1 – Regional Reference Curve Project Update

Cyndi and **Kristine** led a discussion of the reference curve project, including a power point presentation illustrating the draft curves. Surveys were completed at 38 locations across the state, and 4 types of curves were shown and discussed:

- Drainage area (DA) vs. bankfull width (Wbf)
- Drainage area vs. bankfull depth (Dbf)
- Drainage area vs. bankfull cross-sectional area (Abf)
- Drainage area vs. bankfull discharge (Qbf)

As a first cut at stratifying the data, they were divided by ecoregion (Albert's 1995 USDA version, not the similar EPA Level 3 ecoregions). Due to data density and comparable land uses, the data were divided into 2 geographic strata:

- The Southern Lower Michigan ecoregion (ecoregion VI in the map below)
- A combination of three ecoregions for the rest of the state; Northern Lacustrine-Influenced Lower Michigan (VII), Northern Lacustrine-Influenced Upper Michigan and Wisconsin (VIII), and Northern Continental Michigan, Wisconsin, and Minnesota (IX)



It was acknowledged that the northern strata may be too broad and diverse, and future data collection may split it up.

Correlation coefficients were strongest for the DA vs. Wbf and DA vs. Abf plots in both geographic regions ($r^2 = 0.6$ to 0.7) and for DA vs. Qbf ($r^2 > 0.8$), and weaker for the DA vs. Dbf plots ($r^2 < 0.3$).

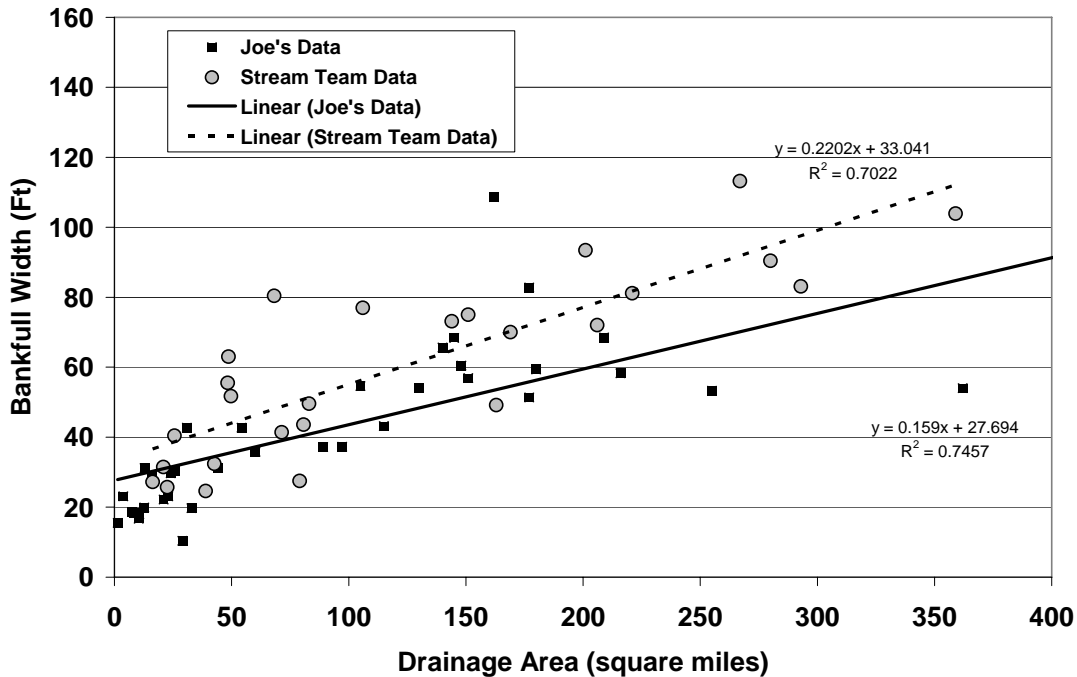
These plots triggered much good discussion:

- **Dave** suggested that plots be made of Qbf vs. the three channel dimensions.
- **Pat F.** suggested that historic land use changes altered width to depth ratios, which might explain the poor DA vs. Dbf relationships.
- **Jim** recommended that the data be stratified by valley type. **Cyndi** said the data for this were not collected, though very few of the surveyed locations were confined.
- There were several questions about the 95% confidence intervals (CIs) vs. scatter of the plotted points, though these may have been misplaced as CIs are related more to the strength of the regression line than to the scatter of the constituent data points (according to **Bob Day** of MDEQ).
- There was also much discussion of whether these ecoregions are too broad.
- There was some discussion of the calculation of Manning's n using Jarrett's method, and suggestions were made for alternate approaches.
- It was noted that there is generally good agreement between the calculated Qbf and the 1.5 year and 2 year return intervals at the gages, with a few exceptions that may be explainable.
- **Dave** volunteered to calculate curve numbers for each of the gage stations in the data set, and later he and **Cyndi** worked together to do so and did not find that it helped the regressions. Update: This has been completed and was not found to improve interpretation of the data.
- **John** wondered if locations where the hydrology is dominated by spring snow melt might yield a strong regression.
- **Valerie** recommended looking at Will Harmon's presentation at the 2008 North Carolina Stream Restoration conference; the link is here:

http://www.bae.ncsu.edu/programs/extension/wqg/srp/2008conference/final_agenda.html

- **Joe R.** pointed out that the DA vs. Wbf relationship for Southern Michigan is comparable to data he collected around 2000 from sites with "excellent" macroinvertebrate communities from a similar ecoregion (EPA's Level 3 Southern Michigan-Northern Indiana Till Plain ecoregion; graph below). This supports the Team's earlier proposal to collect additional data for the curves from ungaged locations with healthy biological communities.

RRC Data for Southern Lower Michigan; Stream Team vs. Rathbun; DA < 400 square miles



- It was agreed that the Team wants to survey additional stations to fill in geographic gaps, though currently there is no funding to support this. **Joe** will get the list of ungaged/good bug locations to the Team prior to the next meeting, and will also send the draft text describing how to survey an ungaged location to the Team.
- **Jim** noted that there might be Planning and Assistance funds from US ACOE to support additional surveys. It requires a 50% match, is available to state, city or county governments, and in-kind contributions count as match.
- **Report reviews:** two reports will come from this work; the USGS report and **Kristine's** thesis. **Ralph** will be the gatekeeper on reviews, and **Chris** suggested that there be one set of comments for each of the Team's agencies, which would be forwarded to **Ralph**. **Ralph** will send out the text and graphics of the USGS report to all the Team's agencies by Friday January 30. **Cyndi** asked for comments on the draft USGS report by February 6. **Kristine** will prepare a draft of her thesis by March 2009.

Item 2 – Alternatives for Sediment Rating Curve Development

Cyndi lead a discussion of the need for sediment rating curves. The idea was introduced at an earlier meeting, as desirable for predicting sediment loads in dam removal projects. USGS has used acoustic doppler current profilers (ADCP) to measure sediment transport, in Missouri, and there are two such units

in Michigan. She wasn't sure if there are limits on their application vs. river size, or sediment size. **Travis** noted that the ACOE has used similar units in Mississippi and Illinois, and will get information on the results.

Steve R. and **Cyndi** are looking into the ADCP data collected by USGS-MI in the last 5 years, and whether it can be used to estimate sediment transport.

John noted that the many sand traps around the state could provide an estimate of sediment transport rates, and **Travis** noted the same is true for the 91 Great Lakes harbors the ACOE works on.

Chris proposed that the Team establish a subcommittee to assess the everyone's interests and needs for sediment transport data. Get ideas to Chris, and we'll discuss at the next meeting.

Sharon suggested we invite Dana Infante of MSU to a future meeting to talk about her sediment transport work.

Item 3 – October Rosgen Training in Michigan

Chris said that the course in Marquette will be limited to the usual 40 attendees; that Minnesota hoped to send 20; that 7-8 people from DEQ would attend, plus 1 from NRCS and 5 from MDOT, and that he was awaiting word from other agencies. **Pat F.** will get feedback from the USFS staff. **Chris** needs a head count by January 28. Stream Team members probably won't help with the course, like we did with the Verry/Aadland courses, since Rosgen wants the team leaders to have taken all 4 of his courses.

It is expected that the second Rosgen course will be given in Minnesota in 2010, and that again the government agency staffs would be given first shot at attending it.

Item 4 – Additional Training Alternatives for 2009

Due to budget problems, there are no current plans to conduct further training beyond the Rosgen courses. **Jim** and **Valerie** mentioned that the Stewardship Network sponsors monthly 1-hour presentations via a webcast. It was agreed that training on the regional reference curve results might be valuable to several audiences.

Ralph and **Valerie** will work on short-term training ideas.

One big-picture idea discussed was a North Carolina-style conference on stream restoration in Michigan.

Item 5 – Issues of Importance from Those in Attendance

Jim noted that the Great Lakes Commission will sponsor a webinar on a web-based toolkit for assessing sedimentation and erosion, on January 28.

Dave will add the US ACOE logo to the survey protocol document, and their name to the list of agencies.

Update: **Ralph** circulated an apology for our recent email snafu, and **Dave** has set up a closed Listserv that will prevent the problem from reoccurring.

Next Meeting:

The next Stream Team meeting will be on **either March 3 or 5, 2009**, from 9:00 to 12:00. The location will be announced.

(Recorded by Joe Rathbun, MDEQ)

**Michigan Stream Team Meeting Minutes
March 3, 2009**

Attendees:

Ralph Reznick
Joe Rathbun
Pat Fowler
Pat Durack
Andrea Ania
Jim Watling
Bethany Matousek
Tracy Bronson

Cyndi Rachol
Kristine Boley-Morse
Chris Freiburger
Dave Fongers
Jim Selegan
Sean Duffy
Coreen Strzalka

Commitments/Action Items:

- **Chris will talk to RiverMorph about storing our reference curve data files in their database.**
- **Pat D. will produce a list of items that could be included on natural channel design project fact sheets, for discussion at the next meeting.**
- **Joe will create a field check list of qualitative indicators of channel stability, for review at the next meeting.**
- **Joe will provide lists of “excellent” macroinvertebrate sites to certain Team members who requested them.**

Next meeting:

Tuesday May 5, 2009, 9:00 – 12:00, at the U.S. Fish and Wildlife Service office in East Lansing

Meeting Minutes

The meeting was held at the U.S. Geological Survey office in Lansing. Introductions were made, and the meeting proceeded through the agenda.

Item 1 – Regional Reference Curve Project Update

Cyndi and **Kristine** led a discussion of the two reference curve project reports; the USGS report and Kristine's thesis. Reviews of the USGS report are proceeding, and comments have been consistent, including comments on the Manning's n calculation procedure. Several techniques were discussed, and all have their pros and cons. **Cyndi** has to have the next draft completed by March 6. **Kristine** will defend her thesis on April 16, and two weeks prior to that will

have a draft copy available for her committee and for the Stream Team. Review comments should go directly to Kristine.

When the two reports are finalized, they will be posted on the Stream Team web site.

Still to be settled is a permanent repository for the RiverMorph data files and field photographs. Options include USGS, DEQ, or RiverMorph's database. **Chris** will call RiverMorph to discuss that option.

Also to be settled are issues related to adding "outside" data to the curve database; who we'll accept it from, who will enter the data, etc.

Item 2 – Update on the Rosgen Training

It looks like the Michigan Stream Team agencies will fill out their allotted 20 spaces in this Fall's Rosgen class, as will the Minnesota agencies. There are also ~ 15 others on the waiting list from outside the Michigan and Minnesota agencies. There will be 3 free spaces, 1 for Minnesota and 2 for Michigan, and these need to be assigned. The course lectures will be held at NMU, and field work will be on the rivers surveyed in the course of Sandy and Luther's previous courses (Escanaba River, Little Garlic River, Iron River, etc.). A block of rooms will be available at the Ramada in downtown Marquette, as for previous courses.

Item 3 – Additional Training for 2009 and 2010

No additional training in Michigan is anticipated for 2009. The second Rosgen course will be held in Minnesota in 2010, under a similar arrangement to this year's course. A subcommittee of **Coreen**, **Chris**, **Jim S.**, and **Ralph** will discuss training options in Michigan in 2010. **Kristine** suggested a monthly series of short talks for Section 319 coordinators, and **Cyndi** suggested they could be webinars. **Jim S.** suggested a small workshop on using our regional curves.

Coreen said MDOT will present a 3-day culvert design course, at the State Secondary complex, April 21-23. She has since sent out additional information:

"This course provides participants with the recommended design procedures for the hydraulic design of culverts. Material for the 3-day course comes primarily from "Hydraulic Design of Highway Culverts," Hydraulic Design Series No. 5 (HDS-5), which is provided to participants. "Hydraulic Design of Energy Dissipators for Culverts and Channels" (HEC-14) is discussed, but not provided. Culvert Hydraulic Design/Analysis Computer Program (HY-8) is discussed and demonstrated. However, this is not a "hands-on" computer course. A portable hydraulic flume is set up in the classroom for the participants to observe hydraulic principles and the hydraulic effects of culverts, improved inlets, pipe slope, material roughness, and various

end treatments. The participants measure velocity, discharge, and headwater in the flume under various conditions and use the information to make actual design calculations.

Upon completion of the course, participants will be able to:

- *Identify design alternatives based on culvert type, material, shape, and service-life considerations*
- *Describe the factors that govern inlet and outlet control and describe how each factor influences culvert performance*
- *Calculate tailwater depth and velocity and describe how tailwater affects culvert performance*
- *Design conventional culverts using HDS-5*
- *Improve culvert performance for inlet control culverts by designing an improved inlet using HDS-5*
- *Evaluate culvert outlet velocity and the need for energy dissipators, and select alternative energy dissipators using HEC-14*
- *Identify appropriate computer programs for culvert and energy dissipator design”*

Contact Coreen for details.

Kristine also mentioned a geomorph training module that could be posted on the Stream Team website; the link is here: <http://www.fgmorph.com/>

Item 4 – Expansion of the Reference Curves to Ungaged Streams

Continuing discussions from previous meetings, it was agreed that the current gage-based curves are less than ideal because of geographic gaps (SE Michigan, most of the UP, Thumb area, etc.) as well as a lack of data from smaller streams.

Prior to the meeting **Joe** sent out an outline of the gage-based field protocol with comments on which activities could be dropped or made optional at ungaged sites (below).

Discussion of this table yielded the following:

- There are enough MDEQ “excellent” macroinvertebrate sites in most parts of the state that we will start with just those locations.
- Identifying bankfull at ungaged sites will be crucial, and this should involve good documentation of the indicators used (including photos) and detailed transect measurements to illustrate all changes in grade in the near-bank area.
- **Cyndi** suggested doing a transect and pebble count at a second riffle, and this was accepted.

Comparison of Survey Field Protocol for Gaged and Ungaged Sites

Activities at Gaged Sites	Activities at Ungaged Sites
<i>Preliminary Activities</i>	
Acquire & analyze gage data	Drop
Gage recon, including BF calibration	Site recon, including BF identification – do at same time as full field survey Add qualitative stream stability indicators?
<i>Full Field Survey</i>	
Mark BF indicators	Same
Long pro	Same
Riffle cross-section	Same
Additional cross-sections (optional)	Optional
Reach-average pebble count	Same?
Riffle pebble count	Same
Pool pebble count*	Optional
Photographs	Same
Planimetric & meander geometry	Optional – can be done later if needed?
BF velocity check	Drop – need gage data

* Routinely performed, but not actually in protocol

- Prior to the next meeting, **Joe** will create a field checklist of the qualitative stream stability indicators developed for the DEQ Nonpoint Source Unit's grantees, to document evaluations of channel stability.
- It would be desirable to shoot cross-channel transects out to the flood-prone width, though this is difficult in some situations. A hand-held laser rangefinder can be useful. Alternatives for this information include contour maps or County GIS systems.
- **Kristine** suggested establishing multiple benchmarks throughout the survey reach, including at bridges and transects.
- **Dave** offered to calculate the 1.5 or 2-year discharge at ungaged sites. It was noted that we'll need drainage areas at these sites, too.
- Since most Team members do not have the RiverMorph software, **Cyndi** and **Kristine** will process the field data from ungaged sites.
- For data submitted from outside the Stream Team, it will be important to document the qualifications of the surveyor(s). This requires further discussion.

It was agreed that, if possible, Team members should make commitments to survey several ungaged sites this field season. If funding is available, **Kristine** could spend part of this year surveying ungaged sites. **Cyndi** noted that a USGS co-op employee might be available this field season. **Joe** will provide lists of "excellent" macroinvertebrate sites found by MDEQ to the following Team members:

- Andrea = NE Lower Peninsula
- Jim S. = north branch of the Clinton River
- Pat D. = SE Michigan
- Sean = NE and NW Lower Peninsula, and the Keweenaw Peninsula

Where possible the list will be restricted to biosurveys conducted in the last 5 years, though sometimes it is necessary to use older data.

Joe and **Ralph** hope to survey a couple of ungaged sites in the UP this summer. **Joe** will also review data from several reference streams he surveyed last year for the stamp sand remediation project in Keweenaw County for their suitability for the reference curves. These include a couple of small E channels, a stream type that is missing from the existing curves.

Jim S. noted that since we'll be continually adding data to the curves, they should be referred to as "provisional."

Item 5 – Presentation of Stream Morphology Projects of Interest at Future Meetings

Ralph proposed that future meetings might include discussions of previous or ongoing stream morphology projects, and this idea was well-received. **Pat D.** and **Pat F.** suggested that we could start with projects conducted by Team members, and then perhaps expand to consultants.

Related to this, **Pat D.** suggested that a list of natural channel design projects performed by State and Federal agencies could be posted to the Stream Team website. **Sean** suggested they could be written up as short fact sheets. It was noted that all such projects funded by Section 319 are required to produce a short fact sheet, so some examples are available. **Kristine** noted that we need to be careful to not imply that these projects are approved by the Stream Team.

Item 6 – Issues of Importance from Those in Attendance

Chris noted that most the sediment transport subcommittee met on Feb. 23, and will meet again on March 23, to discuss data needs that could be met by USGS's proposed sediment load monitoring. Contact Chris with any recommendations.

Jim S. is starting a long-term project to calibrate the Rosgen Bank Erosion Hazard Index (BEHI) and near-bank stress estimates with quantitative bank erosion measurements using bank pins and bank profiles. The study will last 3-5 years, may extend outside of Michigan, and field work will start in 2010.

Dave met with **Cyndi** to assess whether stratifying the reference curve data by watershed curve number would be useful; it was not. **Ralph** noted that he

recently discussed reference curves with Will Harmon, who recommended stratifying by average annual yield (CFS/acre) of the upstream watershed.

Finally, it was just announced that former Stream Team member **Joe Haas** will return to Michigan next month to work for the US Fish and Wildlife Service in Lansing. His availability for Stream Team activities is yet to be determined.

Next Meeting:

The next Stream Team meeting will be on **May 5, 2009**, from 9:00 to 12:00, at the U.S. Fish and Wildlife Service office in East Lansing.

(Recorded by Joe Rathbun, MDEQ)

**Michigan Stream Team Meeting Minutes
May 5, 2009**

Attendees:

Ralph Reznick

Joe Rathbun

Pat Fowler

Heather Rawlings

Andrea Ania

Jim Watling

Kristine Boley-Morse

Jim Selegan

Coreen Strzalka

Chad Kotke

Calvin Creech

Commitments/Action Items:

- **By mid-June Joe will complete text on surveying unged sites for the Team field protocol.**

Next meeting:

To be determined.

Meeting Minutes

The meeting was held at the U.S. Fish and Wildlife Service office in Lansing. Introductions were made, and the meeting proceeded through the agenda.

Item 1a – Regional Reference Curve Project Update

Kristine defended her thesis a couple of weeks ago, and congratulations were unanimous. She sent out a draft of her thesis to the Team, and needs comments by Monday May 11. The document focuses on stream classification of the streams that were surveyed; 39 of 43 were C streams, 2 were Es and 2 were Bs. The preponderance of C streams is partly due to the geographic distribution of sites (many in the southern Lower Peninsula) and their location in each watershed (more or less in the middle, as opposed to in the headwaters or near the river mouth). Curve data is not included in the thesis, though she could incorporate that information into the final report that is still to be prepared. A journal article may also come from this work.

It was noted that the USGS report will present reference curves for the southern Lower Peninsula; there are too few data in the northern Lower Peninsula and the Upper Peninsula.

Item 1b. Data Collection in 2009

Lack of funds will limit the number of reference curve sites surveyed this year. **Ralph** said that he and **Joe** would survey a couple of “excellent” biota sites in the Keweenaw this summer, for both the curve project and the stamp sand remediation project. **Kristine** will survey 4 sites on the St. Joseph River (the one shared with Indiana). **Andrea, Heather** and staff from NRCS will survey sites on the Thunder Bay River and the Black River.

Item 2. Field Checklist of Qualitative Stream Stability Indicators

Joe had earlier sent out a draft field checklist of qualitative stream stability indicators, based on a guidance document used by the DEQ’s Nonpoint Source Unit. He received several comments, and asked for any others by the end of the month, after which he will send out the final checklist.

It was noted that the Team’s field protocol has not been updated to accommodate surveys at ungaged sites. **Joe** agreed to work on that text, and by mid-June will submit a draft to **Kristine** and **Cyndi** for a preliminary review, to be followed by a review by the full Team.

Item 3. Reference Reach Database

Kristine said that she has packaged up the field notes, etc. from the curve project. **Calvin** and **Chad** discussed creating GIS layers of the curve sites that would link to Excel spreadsheets of the data, files of pictures, etc., which could be hosted on the Center for Geographic Information’s (CGI) website or the DEQ’s nonpoint source unit’s website. **Chad** will look into CGI’s capabilities. **Calvin** suggested that Google might be a useful tool for this effort.

This issue will be a topic at the next meeting.

Item 5. Sediment Workshop in 2010

Jim has not been able to find any books describing how to assess the age, source, depositional history, etc., of bedded sediment deposits, so he’s proposing a 2-3 day workshop on field interpretation of sediment deposits/strata. Most of the course would be in the field. ACOE could pay for speakers, the Team and perhaps a university could be co-sponsors, and it might be held in the Traverse City area. **Jim** will put together an agenda and a list of potential speakers. **Chad** said he would contact faculty from the GVSU geology department if needed. **Heather** noted that folks on the Jordan River are quite interested in this topic.

Item 4. Outcome of Sediment Subcommittee Meeting

Ralph asked for comments on the meeting summary he sent out earlier (Box 1).

Box 1. Stream Team Sediment Subcommittee Meeting Notes

Stream Team Sediment Subcommittee Meeting Notes March 24, 2009

The following Michigan Stream Team members met to discuss the need for regional sediment discharge information of Michigan streams.

Jim Selegan, Chris Freiburger, Cynthia Rachol, Ralph Reznick (Pat Fowler had met with Chris and provided comments previously).

The subgroup identified the following needs that regional sediment curves could provide;

- What is a normal bedload for bankful?
- What is range of variability of sand in a river system then determine when it is excessive.
- Typical Sediment load.(bedload and suspended) for dam removals.
- Typical Sediment load.(bedload and suspended) for equipment in stream.
- Development of BEHI Curves.
- Does Bedload change by ecoregion, stream/valley type, etc.?
- What is percent of washoff vs. erosion?

The group thought 2 types of curves would be needed;

1. Suspended solids vs. flow
2. Bedload vs. flow

Item 6. Natural Channel Design Project Factsheet Template.

Pat D. could not attend the meeting, but earlier provided a draft factsheet in Box 2.

Ralph noted that the North Carolina natural channel design checklist from North Carolina is also useful. Either or both could be posted on the Team website.

Discussion of this topic will be postponed to a later meeting.

Item 7. Issues of Importance to Those in Attendance

Kristine will send out a link to an introduction to fluvial geomorphology website, which might be posted on the Team website.

Pat F. announced he is moving to Kentucky. Best wishes, and appreciation for his contributions to the Team, were expressed by all.

Ralph and **Joe** noted that it is probably time for the Team to have a new Chair and minute-taker, and that this should be accomplished by the end of the summer.

Box 2. Natural Channel Design Project Factsheet Template

This is a proposed list of variables for a quick reference to sites in Michigan, which stream restoration/mitigation has been applied. The goal is to identify these sites using Google maps. This is based on Dan Mecklenburgs work at Google Maps link below and Dave Rosgen's delineative criteria for stream classification based on morphological descriptions:

Link:

<http://maps.google.com/maps/ms?msa=0&msid=107960685558029914341.00045a90ae405a3b29b59&ie=UTF8&z=6>

Proposed List

- Landform/soils
- Channel materials
- Slope range
- Width/depth ratio
- Entrenchment ratio
- Sinuosity
- Drainage area
- Watershed
- Stream order
- Stream power
- Base width ratio (if self forming channel method used) /This is the base channel width(bankful shelf width) divided by the channel bankful width.
- First Growing season
- Project description: should include if it a constructed channel or self forming channel. Reason why work was done.
- Link for photos and a link for design information

The date and place of the next Team meeting will be determined at a later date.

**Michigan Stream Team Meeting Minutes
December 17, 2009**

Attendees:

Ralph Reznick
Joe Rathbun
Heather Rawlings
Jim Watling
Maria Pepler
Mary Weidel
Sharon Hanshue
Cyndi Rachol

Jim Selegan
Coreen Strzalka
Chad Kotke
Calvin Creech
Faith Fitzpatrick
Bethany Matousek
Travis Dahl

Commitments/Action Items:

Faith and Marie will make a short presentation on their stream stability method comparison, conducted in the course of developing reference curves for Wisconsin.

Next meeting:

The next Team meeting will be on Wednesday, February 17 at US FWS in Lansing, from 9:00 to 12:00 AM.

Meeting Minutes

The meeting was held at the NRCS office in Lansing. Introductions were made, and the meeting proceeded through the agenda.

Item 1a – Regional Reference Curve Project Report – What do we do it?

Cyndi led a discussion of the reference curve report issued by USGS (Scientific Investigations Report 2009-5133), and noted that the paper version of the report (but not the version on the USGS website) has a typo; figures 4 and 5 on p. 6 have the same caption. Long-term data storage was again discussed, with RiverMorph being one obvious option. Photos will also have to be archived. Paper copies of the field forms have to go to DEQ, as per the grant. **Cyndi** said she'd look into converting the RiverMorph files to .dbf files.

Ralph led a discussion of how to get the report to a wider audience. One option is to write up a short fact sheet on how to use the curves (including examples of improper uses), which could be sent to potential users. MDEQ's Nonpoint Source Program does that for its projects. Others mentioned making presentations on the project to MDEQ-LWMD, MDOT, MDNR statewide

biologists meetings, etc. It was agreed this requires further discussion at a future meeting.

Cyndi noted she'll be making a poster presentation on the curve project at the Upper Midwest Stream Restoration Conference this spring in La Crosse, WI.

Item 2. Expansion of the Regional Reference Curves to ungaged streams

In 2009 **Heather** and **Andrea** surveyed an "excellent macroinvertebrate" site in the Thunder Bay River watershed, and **Jim** surveyed a site. All agreed that it's necessary to do the same extensive reconnaissance that was performed at the gaged locations; just because a site has good bugs doesn't mean its channel is natural and stable. Ideally each of the Team member agencies could do 1 or 2 sites every year, perhaps in the course of their regular work.

The following agencies hope to survey additional ungaged locations in 2010:

- MDNR will do 1 or 2 sites
- In the course of other projects, MDEQ will do 1 or 2 sites in the Traverse City area, and have data for 2 candidate sites on the Keweenaw Peninsula

Sean noted that consultants and others outside the Team will have data to contribute to the curve database, too, and their data will require a QA review. It was agreed that developing a QA checklist for "outside" data should be a task for the Team in 2010.

Mary stated that ACOE can provide a 50:50 match grant through MDEQ for collecting data at additional ungaged locations. One option for the grant would be to route money through county drain commissions, perhaps to USGS and the Calhoun Conservation District. She and **Ralph** will investigate this possibility, including identifying partners and survey sites. **Coreen** will look into whether MDOT can participate. Huron Pines and Conservation Resource Alliance are also possible partners.

Travis noted that universities might assist with the surveying; for example, Ferris State has a surveying program, and MSU has recently started a channel morphology project on the Red Cedar River. **Heather** noted that US FWS is hiring 2 MSU students this summer.

One unanticipated potential difficulty at some sites is endangered species; **Heather** noted that US FWS staff cannot automatically conduct instream field work where listed species like the Hungerford's crawling water beetle are found.

It was noted that data from ungaged streams will have to be processed and stored. **Cyndi** noted that USGS is discussing a searchable database of channel

morphology data. Similarly, **Marie** noted that she, **Cyndi, Faith**, and staff from the US Forest Service have completed a reference curve project in Wisconsin, and are pursuing a Great Lakes Restoration Initiative grant to establish a pilot searchable database for all USGS channel morphology data.

Joe offered to identify more 'excellent' biota sites for other parts of the state; current lists cover the northern lower peninsula, southeast Michigan, and parts of the UP.

Item 3. Report on the Rosgen Class in the UP, and the upcoming class in MN in 2010

There were various reactions to the Rosgen #1 course held in Marquette last October:

- Bethany: good, cold, fun, CRA was there which was good
- Sean: long days
- Calvin: the practice site on the Escanaba was difficult
- Anonymous: who was the guy doing pebble counts in shorts?

Rosgen #2 will be held in Minnesota in October 2010, with a certain number of seats held for attendees from Michigan agencies.

Heather noted that the US FWS version of Rosgen courses #1 and #2 (and perhaps #3) will be held in 2010 at the FWS training center in Shepardstown, WV.

Item 4. Additional Training for 2010 and 2011

No progress has been made on training given by the Stream Team, though **Coreen** noted that the MDOT training center is still available to us at no cost. **Travis** suggested that we could use ungaged sites in any training we give, and then add the data to the curve database.

Faith said that USGS will conduct a fluvial geomorphology course in Madison, WI in mid-April 2010, and after the meeting she sent a flyer describing the course to the Team. The course emphasizes process and theory rather than the field measurements emphasized in the Rosgen courses. Tuition is \$1,100. **Update:** MDEQ has applied for grant money from EPA to bring this course to Michigan in 2011.

Sean noted that training or some kind of explanation is needed for the regional reference curve project.

Item 5. Sediment Issues

Ralph called sediment transport the Stream Team's next frontier.

5a. Report on National Subcommittee on Sedimentation (SOS)

Joe summarized the latest SOS meeting, in State College, PA in October. A draft document for assessing sediment issues associated with dam removal projects has been prepared, and needs a lot more work before the final draft is due to the Interior Department in late 2010. The document is built around decision-making flow charts and rules of thumb developed by the committee members (some of whom have taken out 100-200+ dams). **Joe** will see if the next draft could be made available to the Team for review. After the document is released, training on its use may be provided through professional conferences or regional workshops.

5b. Stream Team Sediment Subcommittee – Regional Sediment Curve Development

The subcommittee met a couple times in 2010.

Jim is working on a project to establish monitoring locations around the Great Lakes, at which the bank erosion hazard index (BEHI) and the Pfankuch erosion risk protocol will be calibrated using bank pins and the Near Bank Stress protocol.

Faith has conducted a comparison of stream stability assessment methods, including the State of Pennsylvania's bridge scour protocol. She recommended doing the erosion measurements at reference curve sites, and places with historic sediment transport data.

Cyndi and **Jim** will measure bedload and suspended load at a couple of sites in the Boardman River, and DEQ will establish sites for toe pin monitoring in and around Kids Creek in Traverse City, around Lansing, and at the stamp sand remediation project on the Keweenaw Peninsula.

5c. Sediment Workshop by ACOE

Jim reviewed the fluvial sediment stratigraphy workshop he's hosting in Traverse City in August 2010. Its goal will be to improve field skills in identifying and interpreting sediment stratigraphy field indicators. It will last 4 days; be free except for a nominal fee to cover coffee breaks and such (\$100?); and will be limited to ~ 25 people.

Item 6. Project Presentations at Meetings in 2009

Suggestions for short project presentations were solicited for future Team meetings. At the next meeting, **Faith** and **Marie** will review the stream stability method comparison they conducted in the course of developing reference curves for Wisconsin. Other suggestions included:

- Kalamazoo River dam removals (**Chris**)
- Dead River restoration (**Ralph**)
- Battle Creek River meander restoration (**Chris**)
- Stamp sand remediation project (**Joe, Ralph** and **Chad**)
- **Jim's** work on the Ontonagon
- The mussel relocation protocol that **Jessica** is working on, and **Joe's** paper on the same subject

Item 7. New Chair and Notetaker

The need for a new chair (replacing **Ralph**) and notetaker (replacing **Joe**) was discussed. **Sharon** volunteered to take meeting notes. **Update:** after the meeting, **Cyndi** agreed to take over as Team chair. **Thanks to both!!**

Item 8. Issues of importance from those in attendance

Mary said a class on HEC-RAS modeling will be offered at the Detroit COE District Office, from February 1-5, 2010. There is no cost, and the course will be taught by the COE's Hydraulic Engineering Center staff. Contact Mary for more information; 313-226-3393; mary.t.weidel@usace.army.mil.

Joe noted that the University of Wisconsin is tentatively planning to give its 3-day dam removal short course in late spring 2010 somewhere on the east coast; New Jersey, Philadelphia, and New Brunswick are the current possible sites.

The next Team meeting will be on Wednesday February 17 at US FWS in Lansing, from 9:00 to 12:00 AM.

(Notes taken by Joe Rathbun)