

Subcommittee on Sedimentation
of the
Advisory Committee on Water Information

*****DRAFT*** Meeting Minutes of January 13, 2004**

The Subcommittee on Sedimentation's (SOS) second meeting as a subcommittee under the Advisory Committee on Water Information (ACWI) was held from 8:40 a.m. to 4:30 p.m. on January 13, 2004, in the Colorado Room, Building 67, Bureau of Reclamation, Denver Federal Center, Colorado. The SOS last met on September 24, 2003 (see http://water.usgs.gov/wicp/SOS_finalminutes-9-24-03.pdf). The following, which includes all critiques and other input on the first draft minutes sent to the SOS, constitutes the draft meeting minutes pending approval by the full committee.

SYNOPSIS OF ACTION ITEMS AND OTHER NOTABLE RESULTS

The following are provided in abbreviated format in the order in which they appear in the meeting minutes.

1. **Next SOS Meeting:** Tuesday, September 14, 2004, USEPA, Washington, D.C.
2. **Electronic Motions:** The SOS agreed to continue to use electronic motions as one means for transacting business between meetings (see appendix H for a description of the procedure).
3. **Technical Committee and the Private Sector:** Doug Glysson and ACWI Executive Secretary Toni Johnson will investigate the legality of private-organization representation on the Technical Committee and report their findings to the SOS as soon as they are available.
4. **FISP MOU:** Glysson offered to work with the Technical Committee toward development of a new MOU.
5. **Technical Committee Business Plan:** The SOS recommends that the Technical Committee develop a business plan in FY04 to implement the FISP vision statement.
6. **Reservoir Information System-II (RESIS-II):** A workgroup, to be led by Jerry Bernard, was formed to resolve the status of progress on RESIS-II and develop a plan or proposal for RESIS-II.

FULL SOS MEETING MINUTES, JANUARY 13, 2004

On behalf of the BOR, Christi Young, welcomed the participants to the BOR building 67. Chair John R. Gray led a role call of meeting participants; received approval of the agenda; and noted that this meeting was the first following distribution of a letter announcing expanded SOS membership opportunities (see the fourth entry from the top at: <http://water.usgs.gov/wicp/acwi/sos/>). Gray also summarized the consensus approach and other means for conducting SOS business as described in the Terms of Reference (see: http://water.usgs.gov/wicp/sos_TORS_9_23_2003.pdf).

NEXT SOS MEETING: September 14, 2004, USEPA, Washington, D.C.

APPENDICES: The following appendices contain:

- A: Meeting participants.
- B: The agenda.
- C: The draft revised Mission Statement for the Federal Interagency Sedimentation Project (FISP).
- D: A letter from the Technical Committee to the SOS regarding the SOS's request for an "action plan" for the FISP's research and development activities (**available in final approved minutes**).
- E: A link to the paper, "The need for surrogate technologies to monitor fluvial-sediment transport" – Proceedings of the Turbidity and Other Sediment Surrogates Workshop, 2002 (available at: <http://water.usgs.gov/osw/techniques/TSS/gray.pdf>).
- F: A list of SOS Committees as of January 13, 2004.

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- G. The minutes of the January 14, 2004, 8FISC/3FIHMC Organizing Committee meeting. (to be added when available)
- H. Description of the “electronic motions” protocol for transacting SOS business between meetings.

AGENDA: The agenda was approved as shown in Appendix A.

USE OF ELECTRONIC MOTIONS: Electronic motions, used since March 17, 2003, to conduct SOS business between meetings, electronic motions remain an acceptable communication and voting medium (per consent of the SOS). This procedure is described in Appendix B.

SOS MEMBERSHIP LIST: The list was updated and re-posted at:
http://water.usgs.gov/wicp/sed_sub_com_addresses_1_21_2004.pdf .

PERSPECTIVES FROM DON FREVERT, CHAIR, SUBCOMMITTEE ON HYDROLOGY: The Subcommittee on Hydrology (SOH) is comprised of 15 organizations, about three-fourths of which are Federal agencies. Their meetings, held quarterly, are usually 2-3 hours long. ACWI meetings are held annually but communicate between meetings, usually via electronic means.

The SOH is taking a “friendly approach” to membership and are not being hard-nosed about meeting attendance, the rules for which are the same as those for the SOS.

The SOH’s scope is limited to surface water. There used to be a ground water subcommittee but it “fizzled out” before Don became active on the SOH.

The Hydrologic Frequency, and Hydrologic Modeling work groups are active. Frequently asked questions regarding Bulletin 17-B and their answers are posted on-line, as is a paper on flood frequency in ungaged watersheds (<http://water.usgs.gov/wicp/acwi/hydrology/Frequency/index.html>). Other two work groups are the Hydrologic Radio Frequency work group (limited to Federal representation by Federal regulations) and the Satellite Telemetry work group.

Federal Interagency Hydrologic Modeling Conferences sponsored by the SOH were held in 1998 and 2002. The next one will be held in 2006 jointly with the 8th Federal Interagency Sedimentation Conference.

Following are SOS members that also serve on the SOH: Chris Knopp (FS), Eric Janes (BLM), and David Wingerd (USACE). It is the hope of the SOS and Don Frevert that these representatives will regularly attend meetings of both subcommittees to enhance information transfer between the SOS and SOH.

PETITIONS TO JOIN THE SOS: None was received. Late in 2003, Gray alerted the Federal Energy Regulatory Commission; National Oceanic and Atmospheric Administration; Sandia National Laboratories; and Tennessee Valley Authority (TVA) of membership opportunities. Other than TVA’s indication of interest and participation in this meeting in a guest status, none opted to seek SOS membership at this time.

Ted Yang, formerly of the BOR and now with Colorado State University (CSU), indicated that CSU’s Hydroscience and Training Center may petition for SOS membership. Jeff Bradley, West Consultants, indicated that the American Society of Civil Engineers, of which he is a member, may also petition for membership. Both were encouraged by the SOS to consider doing so.

Some confusion was expressed on the protocol for seeking SOS membership. The following steps for petitioning for membership were articulated:

1. An organization submits a letter petitioning for membership to SOS Chair at least two weeks before the next SOS meeting.

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2. ACWI Executive Secretary Toni Johnson determines if the petitioning organization qualifies for SOS membership. If so,
3. The letter of petition and supporting information are sent to the SOS membership, and members either vote in person or via electronic motion. Votes are couched in terms of “does anyone object to the petitioning organization’s prospective SOS membership?” Membership status is conferred by a majority vote.

It was proposed that the ACWI codify these requirements on their web site in a blanket arrangement for all ACWI subcommittees.

JOINT 8TH FEDERAL INTERAGENCY SEDIMENTATION, AND HYDROLOGIC MODELING

CONFERENCES: The full meeting of this workgroup was held on January 14 and is summarized as Appendix G (to be added when available). Questions raised on January 13 regarding permanent archival of the proceedings; and the potential to serve historical proceedings on-line; along with some other discussion are included in the minutes of this working group’s meeting of January 14, appendix G.

STATUS REPORT TO THE SOS ON THE FISP: Steve Blanchard reported that the FISP and the Hydrologic Instrumentation Facility (HIF) have worked together to physically move all of the FISP equipment to the HIF in Bay St. Louis, MS. This physical move took place during the last part of September 2003. The HIF is now accomplishing all the sales of FISP equipment. The HIF has established Technical Assistance—Work for Others Agreements with the vendors so that the sales of FISP equipment to the public sector will and has continued through the HIF. The Technical Committee raised several issues related to the move, and the USGS is working to incorporate the Technical Committee suggestions into the operations at the HIF. These suggestions include such things as keeping the FISP inventory sales in a separate book-keeping system (this has been accomplished), providing biannual financial reports on sales status from the HIF to the FISP (this will be done, the first at the spring TC meeting), developing a pricing mechanism for the FISP equipment that will yield income to the FISP for R+D activities (the operation plan is in near final draft), and for technical support for sediment sampler users (this will be part of the operations plan).

The most important item remaining to be accomplished is for the HIF to train personnel to fabricate and calibrate the FISP samplers. The goal is for this to be done in FY04. Until that is accomplished, FISP staff will have to fabricate and calibrate the samplers. The staff of the FISP has been reduced by two FTE. Administrative and secretarial support will be provided by the USGS from USGS HQ and/or the HIF.

The USGS has noted the priorities for the FISP for FY04 that have been specified by the Technical Committee. The USGS will work with the FISP staff to accomplish these priorities in FY04.

TECHNICAL COMMITTEE ACTION PLAN FOR FISP RESEARCH AND DEVELOPMENT

FUNCTIONS: Gray provided the following *synopsis* of Technical Committee Chairman David S. Mueller’s letter to the SOS regarding the action plan requested by the SOS on March 17, 2003. The letter:

1. *Transmits the Technical Committee’s revised version of the FISP Vision Statement.*
2. *Indicates current needs of member agencies are shifting to “new technologies.”*
3. *Indicates that contracting is probably necessary in future, and is tied to funding level. Member agencies should cooperatively fund/conduct projects.*
4. *Lists technical and managerial expertise needed by FISP Staff to address “new technologies.”*
5. *Indicates that there is no compelling reason to move R&D function from USACE Waterways Experiment Station in Vicksburg.*

The Technical Committee agrees on the SOS position on development and standardization of the next generation of sediment measurement and analysis technologies inside and outside FISP.

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The Technical Committee agrees that everything proposed in the paper at:

http://water.usgs.gov/osw/techniques/sediment/sedsurrogate2003workshop/gray_glysson.pdf was within the mission of the FISP and that the FISP is a logical group to implement the proposed actions.

Gray noted that it is clear from the letter and his discussions with several of those knowledgeable on the topic that the Technical Committee felt that the subject was in the province of the SOS (After the meeting, Young provided the following clarification: “The main item the Technical Committee elevated to the SOS is funding with the thought that there was potential for SOS representatives to lobby for additional funding in their respective agencies or as a whole through ACWI or perhaps to get other agencies to participate. Other issues such as conducting a Request for Proposals for alternate locations or making staffing decisions are believed by Technical Committee members to be beyond the authority of the Technical Committee and the SOS because the responsibility for personnel issues and the associated costs lie with USGS and USACE.”).

Young, who is also the BOR’s representative on the Technical Committee, provided some perspectives on this topic. She commented that in the past year it has been very hard for the FISP staff to maintain productivity because of disruptions from the physical relocation of sales functions and low morale stemming from their uncertainty of the future of the project, staff reductions, and change. She went on to say that developing consensus on the future vision for FISP and responding to SOS requests has also been very trying for TC members because of their close working relationship with the FISP staff. Regarding Technical Committee plans to utilize the remaining FISP staff, decisions will have to be made on how best to handle parts of the workload if there is any future attrition. She posed the question to the SOS of whether or not future vacancies in FISP staff should be filled or could that salary be used for contracting out work? She also questioned if the USGS and USACE funding was linked to project FTE levels.

Young believes that the TC has responded to each of the SOS requests as stated in the letter and demonstrated in the revised vision statement and the work priorities itemized in the Technical Committee’s last meeting minutes. She read the list of priorities. High priorities include completing development of a 1-liter point sampler, XD-99, and producing a technology summary. Medium priorities include work on what should be the last isokinetic sampler, the XDH-2, collaboration and coordination, and evaluation support for the LISST-SL. Networking projects were listed as a low priority. She thinks the FISP will make progress in “new technologies,” but “not overnight” (i.e., in the short term). She stressed that significant funding has been contributed to the research and development of the XD-99 and XDH-2 and they must be completed in the next year or two. Many agencies have justified base level funding for the project based on these deliverables; any further delays in completion of the samplers could jeopardize future funding.

Young stated that the Technical Committee considers their work on the FISP vision statement, which started in 2001, as “done.” She recommends that it be considered something of a “living document” subject to periodic review and update. She objected to the formation of a SOS workgroup to work on a vision statement or action plan for FISP, stating that many of the SOS members are not contributors to the FISP and are too far removed from history and current FISP issues to be asked to be responsible for drafting future plans. Young subsequently asked any of the SOS members to direct ideas for the future operation of FISP to the Technical Committee through the SOS chair.

After the meeting, Young provided the following clarification: “By putting in priority items such as collaboration, coordination, and networking into FISP work directives we have also started the shift more directly from a focus on R&D to the clearinghouse of information source as suggested by the SOS. So it is not just new technology that the Technical Committee is trying to focus on, it is a new way to do the business of FISP.”

Römkens inquired as to any impending retirements among FISP staff. No definitive response was forthcoming. He proffered that the FISP might benefit from a change in environment or location, such as at or near a university, so that the FISP could be more directly engaged in a more scientifically stimulating environment.

Jackson, citing the Interagency Sediment Technologies meeting he attended in September 2003, Flagstaff, indicated substantial changes is occurring in sediment-surrogates technologies. The private sector is developing most of

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these technologies in this “new world.” He feels that the FISP should function in a “clearinghouse” role for these technologies, and provide contracting services. He believes that some of the FISP visions statement (see appendix C) are obsolete. He stated that “government laboratories” for evaluating the technologies aren’t needed in some cases, citing testing of a laser technology by the USGS in the Colorado River, Grand Canyon, and elsewhere.

Schmidt indicated the need for testing to compare sensor performance to some accepted standard. He highlighted the need for at least two characteristics: A great deal of agility, and a desire to address new technologies. FISP staff must be cognizant of those who know what is needed regarding new technologies. He and Jackson agree that we cannot “staff for the job.” Schmidt indicated the need for a group located such that it can “get around readily,” observing that Vicksburg is not easy to get in or out of (referring to the *cost* of accessibility). We must admit that we’re not going to have a lot more money with which to work; we should ask, “how can we best leverage the money we have?”

Schmidt also observed “bluntly” that the FISP has not been the best source for a response to the Forest Service’s needs. There has been no change in the Technical Committee approach to managing the FISP since he joined the Technical Committee a decade ago, while the mission of the FISP is in a state of flux. A viable vision of how we are going to do things hereafter is needed. Bill Jackson observed that validation of new technologies is needed. This requires a longer-term and broader vision than what currently exists. Bradley concurred on the need for a longer-term and broader vision (subsequent to the meeting, Jackson proposed the following modification to the FISP Mission Statement to replace the 3rd hollow bullet under the 2nd solid bullet of, “Guiding Principles” as follows: *“Based on the priorities set by the TC, facilitates testing and validation of promising samplers through contract, cooperative agreement, interagency agreement, or other mechanisms using specified procedures, defined standards, and approved protocols. Reviews and formally accepts and certifies the results of all 3rd party instrument testing and validation programs.”*

Glysson asked about the potential for agencies to come up with proposal(s) to address a given project. If, for example, an extra \$30,000 was needed to address a project, what might the success rate be of obtaining the additional funds? Most agencies present indicated that it would be easier to get additional money for specific projects than to get increases in their base funding for the project, although this does not mean that agencies would in fact put up additional funds.

Glysson noted that the FISP Memorandum of Understanding (MOU), which has been rendered inoperable by dint of moving part of the FISP operation to the HIF in Bay St. Louis and because the SOS is now under ACWI, needs to be rewritten. He indicated that this is a Technical Committee obligation, but offered to work with the Technical Committee in this regard.

Glysson also asked for opinions of whether or not the Technical Committee should remain a working group under the SOS, or should the bond between these committees be severed? Also, should the Technical Committee MOU be rewritten to permit non-Federal participation? The MOU could be re-written to include any paying member. A minimum contribution to sit on the Technical Committee of \$10,000 was suggested. Blanchard recommended that the legality of non-Federal organizations sitting on the Technical Committee be discussed with ACWI Executive Secretary Toni Johnson.

ACTION: Glysson will consult with Toni Johnson on the issue of non-Federal participation on the Technical Committee. He also offered to work with the Technical Committee to develop a new MOU.

Robinson inquired on whether the FISP could replace a USGS employee of the FISP with a non-USGS employee, should one of the USGS employees leave the FISP. Glysson pointed out that this would be governed by the contents of a new MOU.

Bernard noted that the Technical Committee oversees the FISP. Technical Committee members are those that contribute funding for the FISP. He questioned the need to having the SOS oversee the Technical Committee. Schmidt sees a need for linkage between SOS and Technical Committee to provide broader oversight of the latter.

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Bradley asked, “if the agencies still approach FISP to take on special projects?” Glysson responded that the USGS and USACE provided most of project needs, most recently the D-99 and 1-liter bag sampler projects. However, the need for these types of projects (designing and building devices that collect a physical water sample) is “pinching out.” Bradley sees a marked difference in the FISP’s viability today compared to FISP 15 years ago.

Bradley noted that possible FISP funding sources need to be expanded beyond just the USGS and USACE , which contribute the large majority of funds to the FISP, and that the FISP needs to become more cognizant of new opportunities for funding.

Gray, observing that the Technical Committee letter does not address some key issues related to an “action plan” – most notably, funding issues (he quoted from an EMAIL from John Potyondy, Forest Service, and from others who have pointed out the fact that this critical issue remains unresolved). Gray reminded the SOS that the committee requested the subject action plan from the Technical Committee at the winter 2003 SOS meeting.

Blanchard indicated that the Technical Committee should focus on implementation of the Vision Statement (appendix C), a concept with which Glysson concurs.

RECOMMENDATION: The SOS will recommend that the Technical Committee develop a business plan in FY04 to implement the FISP vision statement (appendix C).

WORKGROUP REPORT: TURBIDITY AND OTHER SEDIMENT SURROGATES

WORKSHOP FOLLOW-UP: Glysson, speaking on behalf of the workgroup on “Storage of Turbidity Data, Implementation of Recommendations,” indicated that he has been working with ASTM International on the turbidity issue. There will be tightly controlled round-robin test, perhaps in the late summer.

Glysson also noted that preparation of a USGS National Field Manual chapter on turbidity, authored by the USGS’s Chauncey Anderson, is largely complete. There will be a table in that report that matches turbidity measuring devices to the type of measurement each provides (NTU, NTRU, etc.).

WORKGROUP REPORT: NATIONAL SEDIMENT MONITORING NETWORK AND FEDERAL DATA STORAGE AND AVAILABILITY:

Gray used a PowerPoint presentation to demonstrate the need for a nationally consistent fluvial-sediment monitoring program and on-line-accessible database. According to a paper by the USGS and ARS (1998), sediment damages in North America total about \$16 billion (about three-fourths that for the United States) annually. A National Sediment Monitoring and Research (NSMAR) Program might cost \$4M to \$8M. Hence, a 1% reduction in sediment damages in the US from an NSMAR Program would cover the annual costs of the program 40-times over. Gray has communicated with USEPA’s Office of Water on the need for optimally designed and based funded NSMAR Program. The subject was deferred until the full work group could come up with a set of recommendations.

RESERVOIR INFORMATION SYSTEM II (RESIS-II): Bernard reiterated (from past SOS meetings) that RESIS-II is available for the taking. All form 39’s received for surveys performed up through 1992 have been scanned. The issue of homeland security issues related to location-specific information on the forms remains unresolved.

Options on the future include simply “giving the database out” and advertise the location of on-line down-loadable software to use to query the database.

ACTION: Form a RESIS-II workgroup to come up with a plan/proposal, led by Bernard, to include Young and Glysson. Possibly to include a representative from the ARS National Sedimentation Laboratory, and possibly also the NRCS’s Lyle Steffen. The workgroup will need to determine the status of the work on RESIS-II done under the guidance of Bob Stallard, USGS, Boulder, CO.

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CURRENT SOS WEB SITE: Gray announced that the web site had been largely re-worked since September 2003. It now includes a “sediment meetings” entry among other new links. Members are asked to access it and provide suggestions. Gray will ask for an additional node on the web site to link to sediment training opportunities. Glysson notes that the “look” of the ACWI web site may change, but the content of the SOS web site will remain essentially the same.

VISION FOR SOS WEB SITE: Glysson feels that this site needs to be reborn as the SOS. It currently exists under Sedimentation under USGS Water Information Coordination Program. We would like to see the RESIS-II data, as well as an interactive “Notes on Sedimentation” which may be comprised solely of links to current sediment information and contacts in the agencies.

ELECTION OF SOS VICE-CHAIR: Bernard was elected as vice-chair, and will take over for Gray as Chair on September 30, 2004. A new vice-chair will be elected upon Bernard’s ascendancy to the throne.

OTHER BUSINESS: Bradley noted that the next annual American Society of Civil Engineers (ASCE) meeting will take place in Salt Lake City in May 2004. He asks for the SOS to advertise this meeting (the 2004 annual meeting will be in Anchorage). Additionally, Bradley pointed out that there are opportunities to serve on ASCE committees, partly in light of the fact that ASCE has “lost a lot of Federal involvement.”

Bradley described the updated version of ASCE’s “Sedimentation Engineering” (1975) being coordinated by Marcelo Garcia at the University of Illinois at Urbana-Champaign. It is “about a foot tall” and will be published in two volumes. Although there is a desire to have it completed in time for the 2003 annual meeting in Salt Lake City, it may in fact take another 6-9 months before it is available.

Gray noted that he is co-leading an effort with the USGS’s Waite R. Osterkamp to form an International Watershed Research Network (IWRN). Information on the proposed IWRN can be found at: <http://water.usgs.gov/osw/techniques/china.pdf>.

Gray also noted a proposal to form a Bedload Research International Cooperative with Osterkamp and Jonathan B. Laronne, Beer Shiva University, Israel. More information will be presented at the next SOS meeting.

Bernard recommended that the SOS send a letter to each agency head announcing that the SOS is a new FACA committee, and that we are seeking new applications for membership. Bernard and Gray will collaborate on this after consulting with Toni Johnson.

APPENDIX A: Participants in the January 13, 2004, Subcommittee on Sedimentation Meeting.

- | | |
|--------------------------------------|---|
| Larry Schmidt FS (alternate) | Mitra Jha, EPA (acting member) |
| Bill Jackson, NPS (member) | Doug Glysson, USGS (alternate) |
| Matt Römken, ARS (alternate) | Don Frevert, BOR; Chair, SOH |
| Jerry Bernard, NRCS (member) | Ted Yang (guest; BOR, retired) |
| Christi Young, BOR (acting member) | Jeff Bradley (guest, West Consultants) |
| Jim Robinson, IBWC (member) | Brennan Smith, TVA (guest, phone) |
| Bill Carey, BLM (alternate) | Stephen Blanchard, USGS (guest, by phone for FISP-related topics) |
| John Gray, USGS (member), Chair, SOS | |

APPENDIX B: Final agenda for the January 13, 2004, Subcommittee on Sedimentation Meeting.

TUESDAY, JANUARY 13, Colorado Room, Building 67

Time	Topic	Lead
8:30	Welcome to the U.S. Bureau of Reclamation	Young
8:40	Introduction and Welcome to Attendees	Gray

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	Review and Approval of Agenda	
	Overview of organization, status and progress of the SOS	
	Terms of Reference	
9:20	Perspectives from the Chair, Hydrology Subcommittee	Frevert
9:35	Perspectives from others	
10:00	Break	
10:15	Petition(s) to join the SOS	
10:45	Overview of 8 th Federal Interagency Sedimentation and 3 rd Federal Interagency Hydro. Modeling Conferences Work Group (full meeting on Jan. 14)	Glysson, Bernard, Frevert
11:15	Federal Interagency Sedimentation Project (FISP)	Blanchard
11:30	Lunch	
12:30	Technical Committee Response to SOS Request for FISP Research and Development Action Plan	Young et al.
2:00	Turbidity Work Group: Progress and Plans	Glysson, Gray
2:15	Sediment Monitoring and Data Work Group: Progress and Plans	Gray
2:30	Break	
2:45	RESIS-II: On-going saga	Bernard
3:05	SOS Web Site	
	Current	Gray demo
	Future	Glysson
3:20	New Business (tbd)	SOS
4:30	Election of SOS Chair and Vice Chair	SOS
4:45	Wrap-up of main meeting	Chair
5:00	Adjourn	

APPENDIX C: Draft Revised Mission Statement of the FISP

**Federal Interagency Sedimentation Project
Revised Mission Statement
Dated: December 9, 2003**

MISSION

Provide, identify, and evaluate tools and techniques for accurate, standardized, calibrated, cost-efficient, and safe measurement and analysis of sediment properties and transport.

VISION

FISP is the national leader in the identification, evaluation, and development of standardized, calibrated equipment and methods to allow consistent, accurate quantification and analysis of sediment characteristics and transport in surface waters, which support ~~to allow for~~ the proper characterization and management of natural resources.

SCOPE

Activities focus on measurement and analysis of suspended sediment, bedload sediment, bed material, bed topography, adsorbed constituents, and sediment characteristics and surrogates for their measure.

PURPOSE AND NEED

The Nation faces critical concerns that include the influence of fluvial sediment on the navigation of rivers, reservoir storage, aquatic environments, municipal water treatment, streambed and bank stability, and flood impacts. Accurate knowledge of sediment characteristics and transport vitally affects the ability of public agencies to properly respond to sediment-related impacts.

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FISP identifies and seeks solutions to tractable sediment measurement and analysis problems common to participating Federal agencies. Sponsoring agencies and the public gain a distinct advantage from cooperative action that leverages resources and leads to common standards, methods, equipment, and procedures for the measurement and analysis of sediment characteristics and transport.

GUIDING PRINCIPLES

- Works under the guidance of the FISP Technical Committee (TC), a working group of the Advisory Committee on Water Information (ACWI) Subcommittee on Sedimentation (SOS), comprised of representatives from participating Federal Agencies.
- Serves as the primary federal resource for quality-assured equipment and techniques for acquiring sediment and sediment-based water-quality data
 - Develops standardized, calibrated sediment samplers and associated equipment that are non-contaminating to be suitable for water-quality sampling
 - Identifies emerging direct or indirect measurement technologies and provides recommendations to the TC regarding their applicability to mission goals and agency needs
 - Based on the priorities set by the TC, tests selected promising sediment sampling and analysis technologies using standardized criteria under laboratory and field conditions, and recommends appropriate use
- Interacts with other organizations including academia and private industry on research and development to improve the quality and cost effectiveness of sediment-based data
- Builds and maintains institutional knowledge and expertise through staff development, publication of technical reports and user's manuals, and public technology transfer

APPENDIX D: Letter from the Technical Committee to the SOS regarding the SOS's request for an "action plan" for the Federal Interagency Sedimentation Committee's research and development activities ([this pdf file will be placed on-line with the approved meeting minutes](#)).

APPENDIX E: "The need for surrogate technologies to monitor fluvial-sediment transport"—Proceedings of the Turbidity and Other Sediment Surrogates Workshop, 2002 (available at: <http://water.usgs.gov/osw/techniques/TSS/gray.pdf>).

APPENDIX F: Summary of SOS Working Groups, January 13, 2004, Subcommittee on Sedimentation Meeting

- Technical Committee of the FISP (standing workgroup, leadership rotates annually, currently David S. Mueller of the USGS chairs the Technical Committee)
- 8TH Federal Interagency Sedimentation Conference/3rd Federal Interagency Modeling Conference (disbands after the 2006 conference. Glysson, Bernard and Frevert lead).
- Storage of Turbidity Data, implementation of recommendation (Glysson, EPA (Norton to nominate), ASTM, Sadar/Hach; Glysson lead)
- National Sediment Monitoring Network and Federal Data Storage and Availability (Formed at John Gray's request, lead by Gray, includes Mark Weltz, Doug Norton, Doug Glysson; active until recommendation is made to SOS).
- Reservoir Information System Part Two (RESIS-II): Lead by Bernard, includes Young and Glysson.

APPENDIX G: Minutes of the January 14, 2004, 8FISC/3FIHMC meeting.

Doug Glysson will provide when approved by those present at the January 14 meeting.

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APPENDIX H: Protocol for Using Electronic Motions (originally described in a May 9, 2003, memorandum to the SOS from the SOS Chair)

An “electronic motion” without need for a second to that motion is made by any committee member via EMAIL to the Chair. The Chair forwards the motion to all SOS members and alternate members via EMAIL. Each agency is given a deadline to respond to the following choices in their EMAIL response on the motion (par usual, one vote per organization):

1. **Vote to Approve,**
2. **Vote not to Approve,**
3. **Abstain from voting,**
4. **Propose postponement of the vote for reasons that are clearly stated in the response; if appropriate, an alternate electronic motion can be proposed as a subsequent electronic motion.**

If all responses received by the deadline are in categories 1-3 above, a simple majority of respondents determines the outcome of the motion. A single response to postpone the motion will be honored. It will be disseminated to the full committee with follow-up as appropriate. Results of formal electronic outcomes will be summarized as part of the minutes of the next formal meeting of the SOS membership.



Federal Interagency Sedimentation Project



Waterways Experiment Station
3909 Halls Ferry Road
Vicksburg, Mississippi 39180-6199

December 17, 2003

John R. Gray
Chair, Subcommittee on Sedimentation
U.S. Geological Survey
Mail Stop 415
415 National Center
12201 Sunrise Valley Drive
Reston, VA 20192

Dear John,

The Federal Interagency Sedimentation Project (FISP) Technical Committee (TC) met on October 28-30, 2003 in Vicksburg, Mississippi. During this meeting the TC considered three items referred to the TC by the Subcommittee on Sedimentation (SOS).

Item No. 1 - Reference: Letter dated April 9, 2003 from SOS to TC.

“The Technical Committee should prepare an action plan to redefine the mission, function, requisite skills, and location for the R&D activities of the FISP to be completed on or before March 17, 2004, given the focus on new sediment technologies.”

Response:

The TC has taken the previously proposed mission statement and revised it to reflect current and future developments in sediment transport technology (see attached mission statement). The TC also recognized the continued relevance of Section III. A. 1. a. of the Prospectus of the Subcommittee on Sedimentation for the Years 2002-2006 in preparation of this response. The TC response to the function, skills, and location for the R&D activities is found in the following sections, which are modifications and enhancements of information presented in the Prospectus.

Function and Skills: *The FISP was originally created to standardize sediment sampling equipment and procedures to insure the accuracy of data collected and reported by the various Federal agencies active in the water resources arena. The FISP has been most successful in meeting that intended purpose and in providing equipment and repairs to the participating agencies at a reasonable cost. The current needs of the member agencies are shifting from primarily collection of physical samples to in-situ, near real-time measurement of various sediment properties.*

U.S. Geological Survey
U.S.D.I. Bureau of Reclamation

U.S. Army Corps of Engineers
U.S.D.A. Forest Service
U.S. Environmental Protection Agency

U.S.D.A. Agricultural Research Service
U.S. Bureau of Land Management

Because of the wide range of types of equipment required to meet the agency needs, it is unlikely that full-time Project staff will have the breadth of experience needed to effectively develop or evaluate all future equipment. Contracting with individual agencies or private organizations will probably be necessary to provide the technical expertise required to meet the FISP's mission.

The anticipated technical expertise includes but is not limited to:

- *Sediment transport*
- *Hydraulics*
- *Geomorphology*
- *Electrical engineering/ electronics*
- *Instrumentation*
- *Mechanical engineering*
- *Physics (acoustics, optics)*
- *Mathematics and statistics*
- *Experimental design*
- *Field data collection experience*
- *Laboratory data collection and procedure experience*
- *Computer aided design*
- *Computer science*
- *Information technology*
- *Remote sensing*

Because of the need for a broad range of highly specialized expertise, the FISP staff will also become more involved in coordinating and reviewing the results of equipment and methods development projects. The anticipated management skills of the FISP include, but are not limited to:

- *Communication*
- *Project management*
- *Technical writing*
- *Budget management*
- *Program planning*
- *Leadership*
- *Salesmanship*
- *Interpersonal*
- *Property management*
- *Contract management*
- *Procurement/COTR/CO training/authority*

The future FISP level of function and staffing will be dependent upon the level of funding available from the participating agencies and whether or not some of the research and

development activities are done by contract. Member agencies should cooperatively fund and conduct those projects for which they have the greatest need and/or expertise.

Location: *In 1992, the FISP was relocated to the Corps of Engineers Waterways Experiment Station (WES). This relocation resulted in a significant cost savings to the Project due to reduced space costs and access to the wide range of laboratory and shop facilities at WES. The administrative costs are reduced due to the use of existing Engineering Research and Development Center (ERDC) staff on a less than full time basis for some functions. The WES location meets all requirements for research and development work, as well as, calibration and repair. The TC discussed FISP location and concluded there are no compelling reasons to move the research, development, and evaluation portion of FISP from its present location. Warehousing and sales functions for FISP products are currently being transferred to the USGS Hydrologic Instrumentation Facility (HIF).*

Item No. 2 - Reference: Memorandum dated October 3, 2003 from SOS to TC

“The Chair, SOS, is to advise the Technical Committee that the SOS supports development and standardization of the next generation of sediment analysis and measurement methodologies not only within the FISP and the USGS’s Hydrologic Instrumentation Facility, but also among other Federal and non-federal organizations.”

Response:

The TC agrees with the SOS’s position. This agreement is reflected in the TC response to Item No. 1 and in the priorities set by the TC at the October 2003 meeting.

Item No. 3 - Reference: Memorandum dated October 3, 2003 from SOS to TC

“The Chair, SOS, should forward, ‘Attributes for a Sediment Monitoring Instrument and Analysis Research Program,’ by J.R. Gray and G.D. Glysson (http://water.usgs.gov/osw/techniques/sediment/sedsurrogate2003workshop/gray_glysson.pdf) for consideration in the Technical Committee’s deliberations on the [above-mentioned] action plan.”

Response:

The TC agreed that everything proposed in the Gray and Glysson paper was within the mission of FISP and that FISP is a logical group to implement the proposed actions. The TC, however, feels that funding is potentially a big obstacle to the success of the outlined effort. Cost of instruments to be tested are not trivial and some new technologies are much more complicated than isokinetic sampling. Therefore, it is anticipated that academia and other outside assistance will be needed to properly evaluate some of the instruments. Given the current funding and staffing levels of the FISP there are no funds

available to cover these potential costs. However, the TC has adjusted FISP priorities and assigned tasks intended to initiate the activities described in the Gray and Glysson paper.

Sincerely,

David S. Mueller

David S. Mueller
Chair, FISP Technical Committee

cc: Chief, FISP – O’Neal
FISP TC members
SOS members
USGS - Blanchard

Attachment

Federal Interagency Sedimentation Project (FISP)
Revised Mission Statement
December 9, 2003

MISSION

Provide, identify, and evaluate tools and techniques for accurate, standardized, calibrated, cost-efficient, and safe measurement and analysis of fluvial sediment properties and transport.

VISION

FISP is the national leader in the identification, evaluation, and development of standardized, calibrated equipment and methods for consistent, accurate quantification and analysis of sediment characteristics and transport in surface waters, which support the proper characterization and management of natural resources.

SCOPE

Activities focus on measurement and analysis of suspended sediment, bedload sediment, bed material, bed topography, adsorbed constituents, and sediment characteristics and surrogates for their measure.

PURPOSE AND NEED

The Nation faces critical water resources concerns that include the influence of fluvial sediment on the navigation of rivers, reservoir storage, aquatic environments, municipal water treatment, streambed and bank stability, and flood impacts. Accurate knowledge of sediment characteristics and transport vitally affects the ability of public agencies to properly respond to sediment related impacts.

FISP identifies and seeks solutions to tractable sediment measurement and analysis problems common to participating Federal agencies. Sponsoring agencies and the public gain a distinct advantage from cooperative action that leverages resources and leads to common standards, methods, equipment, and procedures for the measurement and analysis of sediment characteristics and transport.

GUIDING PRINCIPLES

- Works under the guidance of the FISP Technical Committee (TC), a working group of the Advisory Committee on Water Information (ACWI) Subcommittee on Sedimentation (SOS), comprised of representatives from participating Federal agencies.
- Serves as the primary Federal resource for quality-assured equipment and techniques for acquiring sediment and sediment-based water-quality data
 - Develops standardized, calibrated sediment samplers and associated equipment that are non-contaminating and suitable for water-quality sampling
 - Identifies emerging direct or indirect measurement technologies and provides recommendations to the TC regarding their applicability to mission goals and agency needs
 - Based on the priorities set by the TC, tests selected promising sediment sampling and analysis technologies using standardized criteria under laboratory and field conditions, and recommends appropriate use
- Interacts with other organizations including academia and private industry on research and development to improve the quality and cost effectiveness of sediment-based data
- Builds and maintains institutional knowledge and expertise through staff development, publication of technical reports and user's manuals, and public technology transfer

THE NEED FOR SURROGATE TECHNOLOGIES TO MONITOR FLUVIAL-SEDIMENT TRANSPORT

John R. Gray, Hydrologist, U.S. Geological Survey, Reston, VA
415 National Center, 12201 Sunrise Valley Drive, Reston, VA 20192

The need for reliable, nationally consistent fluvial sediment data in the U.S. arguably has never been greater since the U.S. Army's Captain Talcott first sampled the Mississippi River in 1838. In addition to the traditional uses for these data, which focused on the engineering aspects related to design and management of reservoirs and instream hydraulic structures, and on dredging, information needs over the last two decades have also included those related to the expanding fields of contaminated sediment management, dam decommissioning and removal, environmental quality, stream restoration, geomorphic classification and assessments, physical-biotic interactions, and legal requirements such as the U.S. Environmental Protection Agency's Total Maximum Daily Load (TMDL) Program.

Ironically, the dramatic rise in the Nation's sediment-data needs has occurred more or less concomitant with a general decline in the amount of sediment data collected by U.S. Geological Survey (USGS). After the end of World War II, the number of sites at which the USGS collected daily suspended-sediment data increased rapidly, peaking at 360 in 1982 (Glysson, 1989; Osterkamp and Parker, 1991). By 1998, the number of USGS-operated daily sediment stations had fallen by 65 percent to 125, with an average of 140 over the 5-year period ending in September 2001 (USGS, 2002). This substantial decrease in sediment monitoring is of particular concern in that the USGS bears primary responsibility for acquisition and management of the Nation's water data including suspended-sediment, bedload, and bottom-material data (Glysson and Gray, 1997). This paper examines some factors behind the decline in collection of new suspended-sediment data, and presents a vision and proposed first step toward reversing the general trend toward reduced Federal sediment-data acquisition.

Traditional Methods for Collecting Suspended-Sediment Data: The samplers, deployment techniques, and methods of sample processing and analysis used to produce the bulk of Federal sediment data have their roots in the Subcommittee on Sedimentation, a Federal cooperative effort that started in 1938, and its subordinate Federal Interagency Sedimentation Project (FISP) (Skinner, 1989; FISP, 2002). The FISP's calibrated depth- and point-integrating isokinetic samplers collect a water sample at a rate within ten percent of the flow velocity incident on the sampler nozzle. When deployed using the Equal-Discharge Increment or Equal-Width Increment Methods, these samplers provide representative samples for subsequent processing and (or) analysis (Edwards and Glysson, 1999). When processed and analyzed using standard methods (USGS, 1998, 1999; American Society for Testing and Materials, 1999), and served online from a nationally consistent database, the most reliable and consistent set of fluvial sediment data are made available to the widest audience.

The previously described equipment, deployment techniques, and analytical methods have been used to provide the bulk of USGS fluvial-sediment data collected since the 1940's (Turcios and Gray, 2001; Turcios and others, 2002). Although these data are widely considered the "best" available – the most accurate, reliable, and comparable – their cumulative accuracy is unquantified, and the manually intensive data-collection techniques are in some cases considered too expensive and, under some circumstances, potentially unsafe to collect. Continuous monitoring using sediment-surrogate technologies may provide a viable alternative to traditional equipment and techniques.

Accuracy: The accuracy (bias and variance) of suspended-sediment concentration and particle-size distribution data is dependent on a number of factors, including instream spatial and temporal variability; the computational time frame; the ability to representatively sample and quantify flows of interest; proper deployment of an appropriate sampler; use of reliable sample-processing and shipping procedures; and use of quality-assured analytical techniques by a certified, reliable laboratory to analyze samples collected in open-channel flows (USGS, 1998). Two key problems associated with traditionally computed daily sediment

records are the need for interpolating between dozens or hundreds of sediment-concentration values to estimate concentration values for unit values (35,040 values per 365-day year for data computations at 15-minute intervals); and the need to estimate concentration values for periods lacking samples. Continuously measured surrogate technologies would provide the unit-value data that could be adjusted based on periodic calibrations to yield more reliable and consistent sediment-load data. Statistical methods could be applied to provide an estimate of the accuracy of those time-series data.

Cost: The cost to collect and manage USGS sediment data is also dependent on a number of factors. These include the gage location, site accessibility, safety requirements, the range in size distribution of suspended sediments, the variability in runoff at the site, and the human and mechanical resources required to collect and process the data. An informal poll of selected USGS offices in 2001 yielded a estimated range of about \$20,000 to \$65,000 gross funds to provide a year's worth of daily suspended-sediment discharge values. Although Osterkamp and others (1998) showed that a sediment monitoring network in the U.S. consisting of 120 daily sites and 2,000 periodic sites would exceed a cost-benefit ratio of unity forty-fold if the data produced by the program resulted in a 1-percent decrease in sediment-related damages, some consider perceived high sediment-data costs to be partly responsible for the decline in Federal data production. Use of appropriate sediment surrogate technologies at a gage would probably reduce the cost of producing sediment data by reducing the number of water-sediment sample analyses and site visits, in both cases from as many as hundreds to about one or two dozen annually. Other benefits would be reduction in time and effort because time-consuming interpolations and concentration estimates would no longer be a common part of the computational process.

Safety: Although equipment and techniques for collection of sediment and flow data are generally quite safe, site conditions may render safe collection of these data difficult or impossible. For example, sampling in poor lighting conditions, from a narrow bridge, and (or) in a debris-laden stream can be unsafe. There are conditions where sediment data cannot and should not be collected manually. Unfortunately, these conditions tend to occur at times where the sediment data would be most influential in a transport computation or managerial decision. Monitoring by sediment-surrogate technologies would automatically provide a continuous concentration time series under many of the circumstances considered unsafe for manual sampling.

In summary, although the traditional equipment and techniques used by the USGS nationwide to collect fluvial sediment data may seem ill-suited for many of the limitations and needs of the 21st century, no alternatives have been documented to work under the range of stream and transport conditions characteristic of the Nation's rivers.

A Vision for Future Federal Sediment-Data Production According to Osterkamp and others (1992; 1998) and Trimble and Crosson (2000), the Nation needs a permanent, based-funded, national sediment monitoring and research network for the traditional and emerging needs described previously, and to provide reliable values of sediment fluxes at an adequate number of properly distributed streamgages. The short-term benefits would include relevant and readily available data describing ambient sedimentary conditions and loads, and the requisite data to calibrate models for simulating fluvial sedimentary processes. The long-term benefits would include identification of trends in sedimentary conditions, and a more complete data set with which to calibrate and verify simulation models. Fundamental requirements for an effective national sediment monitoring and research program would include:

- **A CORE NETWORK OF SEDIMENT STATIONS** that is equipped to continuously monitor a basic set of flow, sediment, and ancillary characteristics based on a consistent set of protocols and equipment at perhaps hundreds of sites representing a broad range of drainage basins in terms of geography, areal extent, hydrology, and geomorphology. The focus of these sites would be measurement of fluvial-sediment yields. It would be most beneficial to collect these data at sites where other water-quality parameters are monitored.

Proceedings of the Subcommittee on Sedimentation's, "Turbidity and Other Sediment Surrogates Workshop," April 30-May 2, 2002, Reno, NV, <http://water.usgs.gov/osw/techniques/turbidity.html>

- **A SUBSET OF THE SEDIMENT STATION NETWORK FOR SEDIMENT RESEARCH** at which testing on emerging sediment-surrogate technologies and new methodologies can take place at a minimum of additional expense. A major focus of this effort would be to identify technologies that provide a reliable sediment-concentration time series that can be used as the basis for computing daily suspended-sediment discharges. A secondary focus would be to identify surrogate technologies for measuring characteristics of bedload, bed material, and bed topography.
- **AN EQUIPMENT AND METHODS ANALYTICAL COMPONENT** that addresses development of equipment and techniques for collecting, processing, and laboratory analysis of sediment samples.
- **A DATA-SYNTHESIS RESEARCH COMPONENT** that focuses on identifying or developing more efficient methods of measuring and estimating selected fluvial sediment characteristics; developing a means to estimate the uncertainty associated in these measurements and estimates; and on performing syntheses on historical and new sediment and ancillary data to learn more about the sedimentary characteristics of our Nation's rivers.
- **A COMMON DATABASE** that can accept all types of instantaneous and time series sediment and ancillary data collected by approved protocols, including specific information on the instruments and methods used to acquire the data.

A First Step: Development and Verification of Sediment Surrogate Technologies for the 21'st Century

Traditional techniques for collecting and analyzing sediment data do not meet all of the above-stated requirements of a national sediment monitoring and research network. Before such a program can become operational, new cost-effective and safe approaches for continuous monitoring that include uncertainty analyses are needed.

An ideal suspended-sediment surrogate technology would automatically monitor and record a signal that varies as a direct function of suspended-sediment concentration and (or) particle-size distribution representative of the entire stream cross-section for any river in any flow regime with an acceptable and quantifiable accuracy. Although there is no evidence that such a technology is even on the drawing board, let alone verified and ready for deployment, the literature is rife with descriptions of emerging technologies for measuring selected characteristics of fluvial sediment (Wren, 2000; Gray and Schmidt, 1998). Considerable progress is being made to devise or improve upon available new technologies to measure selected characteristics of fluvial sediment. Instruments have been developed that operate on acoustic, differential density, pump, focused beam reflectance, laser diffraction, nuclear, optical backscatter, optical transmission, and spectral reflectance principles (Wren et al., 2000). Although some surrogate technologies show promise, none is commonly accepted or extensively used.

Formal adoption of any sediment-surrogate technology for use in large-scale sediment-monitoring programs by the Subcommittee on Sedimentation must be predicated on performance testing. Isokinetic samplers – primarily those developed by the Federal Interagency Sedimentation Project (FISP) and described by Edwards and Glysson (1999) – generally are considered the standard against which the performance of other types of samplers are compared. Ideally, a controlled setting such as a laboratory flume would provide flow and sedimentary conditions enabling direct assessments of the efficacy of the new technology. Even in that case, direct comparisons between an adequate amount of comparative data from the surrogate technology and isokinetic samplers collected for a sufficient time period over a broad range of flow and sedimentary conditions, would be needed to determine if any bias, or change in bias, would result from implementation of the new technology (Gray and Schmidt, 2001).

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