

UPPER MISSISSIPPI RIVER BASIN STATES CWP COOPERATOR'S ROUNDTABLE SUMMARY

NOVEMBER 1-2, 2007

FIVE FLAGS HOLIDAY INN, DUBUQUE, IA

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Summary: In cooperation with the Upper Mississippi River Basin Association, the Interstate Council on Water Policy and the US Geological Survey organized the "first Cooperative Water Program (CWP) Cooperator's Roundtable" for the "five Upper Mississippi River Basin States in Dubuque, IA." This roundtable was the "fourth in a series of" regional stakeholder meetings, the purpose of which is to extend information about the USGS stream gauging and cooperative water science programs and create an opportunity for stakeholders to help strengthen those programs.

The program included presentations by USGS staff on the purposes, history and capabilities of the CWP and some of the challenges facing it. Several Cooperator representatives presented excellent descriptions of the scientific contribution that the CWP data collection and interpretive investigations have made and the benefits they bring to state and local water management. The reception and exploration of the National Mississippi River Museum and Aquarium were very enjoyable and the meeting concluded with a discussion and exchange of ideas for building a stronger Cooperative Water Program with USGS.

Welcome and Program Overview: Peter Evans, (director of the ICWP, welcomed the 123 participants and drew their attention to the contents of the [meeting book](#), described the program and emphasized the value of the "reach-out" sessions at the end of the meeting. He also described the rowing "number one" or "one" and states that have endorsed letters to Interior Secretary Kempthorne in "full implementation of the National Streamflow Information Program (NSIP) and continuing increases to the CWP budget."

Mie Wells welcomed the participants on behalf of the UMRBA Board of Directors. Mie is also the (deputy) director of Missouri (Department of) Natural Resources and a member of the ICWP Board of Directors.

Each of the "five USGS Water Science Center" directors introduced themselves and described some of the science posters on display during the Roundtable.

- Robert Middlemiss Brown, (director of the Iowa Water Science Center)
- Robert Wolmes, (director of the Illinois Water Science Center)
- Steve Stoner, (director of the Minnesota Water Science Center)
- Mie Sliker, (director of the Missouri Water Science Center) and
- Charlie Peters, (director of the Wisconsin Water Science Center)

Historical Background and Significance of the USGS Streamgaging Network: Bob Birsch, Associate USGS (director of the Water (discipline, described the long history of the Cooperative Water Program (CWP), dating back into the late 19th Century and its specific funding designation within the USGS budget starting in the 1920s. Today, there are about 922 Cooperators nationwide, who participate directly with USGS in support of one or more stream gauging stations or water resource investigations.

Approximately 92% of those Cooperators, or 91% of the national total, are located in the five Upper Mississippi River Basin UMRB states*

Bob also highlighted several reasons why the CWP is especially important to the USGS:

- the CWP partnership with other water agencies provides approximately 25% of all the funding available to USGS stream gaging in the 1 UMRB states, the USGS budget provides approximately \$1M and the Cooperators add another \$2M for other data collection and interpretive studies
- the collaboration with the CWP Cooperators in data collection and interpretive investigations provides the opportunity to anticipate future issues and opportunities and the data, science and models that will be needed by resource managers
- the Cooperators' expertise and professional involvement motivates USGS to sustain high levels of relevance to water resource management challenges and cost efficiency*

When Cooperators partner with the USGS, they have access to the water discipline experts, of course, but also to experts in sedimentology, hydrology, geology and analytical techniques. The USGS Hydrologic Instrumentation Facility in Bay St. Louis, Mississippi also supports the CWP. At that facility, new techniques and equipment for measuring streamflow, groundwater movement, water quality, etc, are subjected to extensive testing under a wide variety of circumstances before the equipment is put to use in the field.

Unfortunately, the loss of stream gauges with long records (20 years) is pushing up toward 1200 per year again, after getting a little funding in the first years of this decade. The Interior Department was able to help the CWP this year, within the continuing resolutions adopted by Congress instead of an appropriations bill. The CWP received an additional \$9M and the National Streamflow Information Program (NSIP), a subset of about 1,922 gauges that serve specific national purposes within the larger set of over 22,000 stations nationwide, received an additional \$1M. The President's budget request for FY2011 would reduce CWP funding from \$10M to \$8M, and the Congress is still working on these budget plans: the House bill would reduce the CWP budget by \$9M and increase the NSIP budget by \$1M and the Senate Appropriations Committee would sustain the CWP at its current level of approximately \$10M and increase the NSIP budget by \$2M to about \$9.5M.

Bob also discussed several other developments of interest to the water community and importance to the USGS water science programs, including a report produced by a Federal Interagency Subcommittee on Water Availability and Quality referred to as the [SWAJ report](#), which identifies water concerns that warrant greater attention among Federal agencies and programs. As our national population and economy expand and its communities and land uses develop, this report identifies three primary challenges, all of which bear significantly on the future of both the CWP and the NSIP:

- to measure and account for water resources
- to develop methods that will allow expansion of fresh water supplies while using existing supplies more efficiently and
- to develop and improve predictive water management tools*

Bob chaired the SWAJ and described its ongoing consideration of a National water census, based in part on a 2002 report to Congress on a conceptual plan for a National Assessment of Water Availability and Use and a recent pilot project assessing water availability and use in the Great Lakes region.

Overview of the Cooperative Water Program from the National Perspective: Ward Stautman is the National Coordinator of the CWP. His [presentation](#) described the national scope and purpose of the CWP, showing that it developed over the past 99 years around a 12:12 cost share relationship between USGS and the water resource agencies in state, tribal and local government, representing a shared

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- state, tri 'al and local a # ency "unds \$@>2M%

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+he CWP has served an i # portant role in esta 'lishin national protocols and standards "or data)uality and consistency and in ,ee pin USGS scientists "ocused on the chan in needs and priorities o" water resource # ana e # ent at all levels o" overn # ent and in the 'usiness co # # unity*

Overview of the National Streamflow Information Program from the National Perspective: Mi , e .orris is the . ational Coordinator o" the . SIP* 5 is [presentation](#) added a sense o" the pro ress that USGS strea # a in pro ra # s have # ade, showin that a 'out : 2 ? o" the active strea # a in stations are providin real4ti # e data today* Shi "tin priorities and variation in so # e o" the Cooperators & 'ud ets durin the 9 : : 2s caused su ""icient concern over the nationwide loss o" lon 4record a es that Con ress authori !ed USGS to i # ple # ent its desi n "or a . ational Strea # "low In "or # ation Pro ra # \$. SIP% in ; 229* Based upon an assess # ent 'y the USGS, the . SIP was desi ned to sta 'ili !e a 'ase networ , o" strea # a es at critical points with a relia 'le co # # it # ent o" "ederal "unds to assure su ""icient data will 'e availa 'le "or the "ollowin purposes:

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Appro-i # ately A ; 22 o" the =,122 active a es operated 'y USGS within the CWP and . SIP # eet one or # ore o" those "ive national needs* Bederal "unds appropriated "or the . SIP in ; 22> were su ""icient to provide "ull support "or A1 ; stations and partial support "or another ; >> stations, as illustrated on pa e A < o" the [#eetin 'oo.](#)7 this # eans that # ore than ; ,122 o" the A ; 22 . SIP a es \$i *e* , a 'out I 2 ? % are supported with a co # ' ination o" Cooperator and USGS "unds* Appro-i # ately 9I1 o" those =,122 active strea # a es were at ris , o" discontinuation, addin to the set o" # ore that 9222 discontinued since ; 222 \$shown on another # ap included in the #eetin 'oo , %* Knly > strea # a es within the 1 Upper Mississippi River Basin states appeared to 'e on the Fthreatened listG at the ti # e o" this Roundta 'le and, "ro # a national perspective, the Missouri River Basin "aces the reatest challen e due to cut 'ac , s in "undin 'y the Corps o" On ineers and Bureau o" Indian A ""airs*

+he capa 'ility o" our co # 'ined strea # a e networ , to # eet the "ive essential, national oals has declined in recent years as a result o" an increasin insta 'ility in the networ , caused 'y a loss o" critical

stream gauges due to the way the stream gauges in programs are funded. New issues, public interest and new technologies have increased the demand for streamflow information.

Meanwhile, several efforts undertaken by USGS in response to Cooperators' concern over the cost of the USGS stream gauge programs. Budget data from our USGS Water Science Centers were compared with data from the Washington Department of Ecology, the Colorado Division of Water Resources and the Lower Colorado River Authority to identify the reasons for differences in their program cost and, hopefully, to identify the most efficient ways to reduce the cost of CWP services without reducing quality or customer satisfaction. USGS found it to be very difficult to compare data compiled from the different agencies' budget and accounting systems that compatibility was amplified by the difference and variety of purposes that the USGS and non-federal programs are intended to serve.

Budgetary presentation of the .SIP is estimated to cost \$99.5M this would cover the reactivation of about 2 discontinued stream gauges, installation of about 1 new stream gauge, flood hardening of the existing stream gauges to assure their continuity through at least a 9224yr flood event and providing real-time data transmission at all .SIP stream gauges. Future operation and maintenance of the .SIP network, of about 12 stream gauges is estimated to cost \$92.1M/year.

Cooperative Monitoring Network in the Upper Mississippi River Basin States: [see presentation](#)

[#materials](#) for this session were very useful and are available online. They included presentations regarding surface water, water quality, ground water, and an example from the State of Illinois.

Surface Water Gary Johnson is a Supervisory Hydrologist in the Illinois WSC. Gary set the stage with a description of the monitoring network that USGS has developed for the five states and the observation that every plan for sustainable management of water resources and protection of our communities requires accurate, long-term hydrologic data, careful interpretation of that data, and ways to share the results in information.

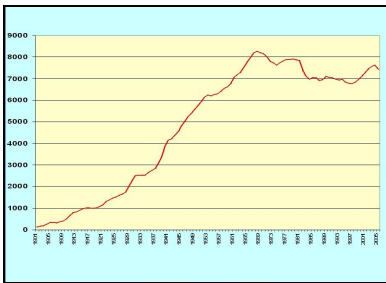
(data from the CWP and .SIP stream gauges, water quality stations and ground water wells carries extra value as a result of the USGS' national standards and protocols for stream gauge installation, maintenance, data collection and quality control in processing it. (Decision makers, managers and others rely on high quality data with sufficient consistency over many years and from one location or region to another to support more reliable application, interpretation and extrapolation where alternatives in areas without adequate measurements must be evaluated. USGS regularly provides these data online in real-time and in annual data summaries.

Stream gauges are used in support of a wide variety of applications:

- U.S. WS flood forecasts and warnings
- Urban hydrology studies
- Groundwater monitoring
- Hurricane surge monitoring
- Agricultural and drinking water supply monitoring
- Coastal and riparian habitat protection
- Calibration and
- Reservoir planning and operation
- Recreation
- Hydroelectric power generation
- Wastewater effluent discharges

Gary described a variety of traditional and newer stream gauge technologies including acoustic doppler, hydroacoustic and radar equipment and described the sensitive efforts required to safely maintain these stations and the rating curves needed to assure accuracy throughout the monitoring network. * +oo often, however, stream gauge measurements are shut down and the continuity of their record is interrupted because of inadequate financial support.

The number of long-term stream gauging stations operated by USGS across the nation and in these five UMRB states is illustrated below:



	IA	IL	MN	MO	WI
Continuous Record Sites	142	189	106	197	182
Partial Record Sites	87	22	99	39	106
Total	229	211	205	236	288

Water Quality (Ale Blevins, Supervisory Hydrologist in the Missouri WSC, focused on the water quality network, in the five states) (Ale described the continuous and periodic water quality WJ% sampling sites, showing maps of their locations in the five UMRB states and illustrating the technologies that USGS employs [presentation materials](#), beginning with slide LA>*) The most significant WJ concerns in the UMRB states varies, in terms of top priorities or the selection of sampling criteria and locations, but they include monitoring the presence and concentrations of agricultural fertilizers, chemicals and waste, urban runoff and sewer overflow contaminants, pesticides and oils, bacterial and viral pathogens, etc., the suite of fewer in contaminants including hormones, anti-biotics, trace organics and other substances that waste treatment plants do not remove completely, mercury and other human health and ecological risks.

Most Significant WQ Issues	IA	IL	MN	MO	WI
Agricultural Organic Chemicals		X			
Biofuels Crop Conversion	X				
Climate Change Effects			X		
Emerging Contaminants (hormones, pharmaceuticals, antibiotics)	X	X	X	X	X
Human Health Risks					X
Managing Nitrates, Pesticides & Waste from Animal Feeding Ops	X				
Mercury Cycling					X
Nutrient Enrichment		X	X	X	X
Sediment		X	X	X	X
Source Water Protection			X		
Temperature				X	
Urban "Combined Sewer Overflows" (CSOs)				X	
Continuous Sampling Sites	7	3	7	18	9
Periodic Sampling Sites	14	5	31	96	60
Total Sites	21	8	38	114	69

The water quality monitoring network, continues to be expanded in Minnesota, Missouri and Wisconsin supported with Federal funding drawn principally from the ASJA and AWJA programs and the Cooperative Water Program. Sampling and analytical technologies, of course, are also improving rapidly and enhancing the source detection and management options available to Cooperators. The SPARKW model developed by USGS is providing many new management options at the local and watershed scales and plays a significant role in assessing nutrient control strategies throughout the Upper Mississippi River Basin in the efforts to reduce anoxic conditions in the Gulf of Mexico.

Ground Water 4Chuc, (unnin , Ground Water Specialist in the Wisconsin WSC, descri 'ed the #onitorin o" roundwater in the Upper Mississippi River Basin states* Althou h the #easure#ent techni)ues and purposes are co##on a#on these "ive states, there is reater variation in the e-tent o" the round water #onitorin networ, than "or the sur"ace "low and water)uality ele#ents* +hose di""erences are illustrated in the [presentation slides](#) \$startin at slide L1=%%* Increasin ly, solute4transport #odels are used to si#ulate su'sur"ace #i ration and 'ehavior o" round water conta#inants* Water level data o" su""icient duration and "re)uency o" #easure#ent are needed to cali 'rate and evaluate the relia 'ility o" the "low co#ponent o" these #odels 'e"ore realistic si#ulations o" conta#inant transport can 'e #ade*

A Cooperator Perspective 4+he concludin presentation in this session was #ade 'y Arlan 8uhl, (ivision o" Plannin Mana er at the Illinois (epart#ent o" .atural Resource&s K""ice o" Water Resources* Arlan descri 'ed the relationship his a #aintains with USGS and the support that the CWP provides in their decisions and #any local overn#ent, watershed and private decisions \$[presentation slides](#)* As in all "ive o" the states, that relationship and support is adapted to the needs o" state and local a #encies and supports a wide variety o" decisions 'y or ani!ations, 'usinesses and individuals* +hey #onitor I> strea#"low "orecast points in and near the Illinois 'oundaries supported 'y three o" the . KAA River Borecast Centers \$. orth Central, Khio River and Cower Mississippi%, all o" which depend on . SIP and CWP data* Many o" the levees in Illinois were 'uilt 124>2 years a o and national review o" "lood protection in the a"ter#ath o" 6 atrina has raised #any sa"ety certi"ication)uestions, which will re)uire "lood ris, assess#ent* Until levee certi"ication can 'e reviewed, real4ti#e data and "lood "orecastin are vital tools in hundreds o" co##unities \$not /ust in this part o" the country%*

Illinois has over <2 ecosyste# partnerships throu hout the state that in"or# and coordinate diverse interests in watershed #ana e#ent* With so #any pu'lic interest or ani!ations, 'usinesses and citi!ens #onitorin strea#"low conditions and usin USGS data as an authoritative 'asis "or plannin and decision #a,in , the relia 'ility o" the CWP and . SIP are widely appreciated* O""orts to protect erodi 'le lands under the "ederal Conservation Reserve Pro ra#s and pro#ote ecolo ical i#prove#ents have helped to i#prove water)uality conditions in the Illinois River Basin and #onitorin these watersheds is #anded 'y Con ress to #easure the e""ects o" these pro ra#s*

(ata collection over the past ;1412 years has ena 'led very worthwhile research* Blood "re)uency analyses have 'een per"or#ed periodically* O)uations "or pea, dischar e have 'een updated when additional record 'eca#e availa 'le* In4strea#"low needs have 'een derived "ro# "low data* Cow "low statistics have 'een updated and ta,e on reater credi 'ility with each new year&s data set* Strea#"low records allow "or the co#putation o" 'ase"low and sedi#ent transport co#putation has 'een per"or#ed when strea#"low records are availa 'le*

+here are other pro ra#s and pro/ects, however, which su""er when their data de#ands cannot 'e #et* Illinois and #any other states are not a 'le to collect enou h data to #ap all the necessary "loodplains with su""icient relia 'ility* +hey do not have enou h data to assess the e""ectiveness o" water)uality BMPs or CROP pro ra# e""orts* +M (Cs cannot 'e accurately deter#ined in #any 'asins without additional data, causin re ulatory a #encies and per#ittees to e-trapolate and #a,e decisions with #uch less certainty than they would pre"er \$in li ht o" the environ#ental ris,s and capital invest#ents at sta,e%* More data is necessary to "ully #ana e the interstate and re ional plannin initiatives o" states in the Upper Mississippi River Basin*

+he USGS and Illinois hold an annual Cooperators& con"erence that is well attended7 the pro ra# a enda varies each year, 'ut the conclusions have 'een "airly consistent:

9* Co##unication o" the "ederal need "or data needs to i#prove7

;* Ris, #ana e#ent depends on havin ood data to assess and #ana e the ris,7 we need to clearly articulate this need 'etter7

A* We need stream flow and stage data to sustain the integrity of our decisions and services regardless of whether you are in Illinois or any other state, those data needs are very similar. Each USGS office is autonomous, which leads to better service for the state, but administratively leads away from collaboration. When watersheds cross statelines, we need to find ways to collaborate.

Science in Support of Water Management Decisions in the Upper Mississippi River Basin States: A

Cooperator from each of the five UMRB states made a presentation on Friday morning about their resource challenges and their relation with the CWP. In addition, a USGS scientist described the value these relations hold for the nourishment of responsive and relevant expertise.

Robert Biebel, Special Projects Environmental Engineer, Southeastern Wisconsin Regional Planning Commission-- Southeastern Wisconsin Regional Groundwater Management and Water Supply Planning: A Cooperative International Report. Bob presented an [overview](#) of his Commission's collaborative assessment of future water supply development options for the approximately 5 million people living in Southeastern Wisconsin. Current sources for the public water supply depend primarily on withdrawals from Lake Michigan and regional groundwater aquifers. The growing dependence on groundwater has caused a substantial reduction in head, alteration of flow patterns within the confined sandstone aquifers and significant public concern over the quantity and quality of future supplies and the impact on stream flow. In collaboration with Wisconsin (DNR), seven counties and several water utilities in Southeastern Wisconsin, the University of Wisconsin and the USGS, they developed an inventory of their supplies and a model of their aquifer system, identified trends in regional water uses, identified additional data needs, assessed the magnitude of specific quantity and quality parameters and proposed a series of options for public discussion.

Graphical presentation of the aquifer system characteristics and impacts over the past century is very effective in building public awareness and support for the selection of future supply elements and investment in the institutional changes and infrastructure needed to deliver those supplies and assure their sustainability.

Karen Kosky, Kane County, Illinois-- Broke through to 504RAS: A Local Stormwater Management Projects Utilizing USGS Expertise. Karen's [presentation](#) described three projects Kane County has initiated with good success involving USGS with other federal, state and local agencies to assess complicated problems and plan solutions ranging from flood risk, analysis and reduction to dam removal and stream channel stabilization.

Bloodin in 9: :> on the Bo- River through public and regulatory concern to focus on the need to update floodplain hydrology and hydraulic models in the first large scale watershed model in the report for Kane County with significant concerns raised by BOMA and the Illinois OPA and (DNR) this required assessing the effectiveness of Kane County's stormwater control ordinance and design new capability to safely detain floodwaters. On a in the USGS in this assessment helped assure that the science behind the risk, assessment, the watershed model and the end user interfaces would enhance both public understanding and regulatory acceptance of the results.

The dam removal on Brewster Cree, occurred on a HMCA camp property due to dam safety concerns and involved collaboration with USGS, the US Fish and Wildlife Service, Illinois (DNR and OPA, the Southeastern Illinois Regional Planning Commission and the Bo- River Local Partnership. The four acre reservoir was largely filled with sediment accumulated since 1950 and was contained by a spill dam with significant structural integrity limitations. Initial plans to remove the structure appeared too costly and USGS monitoring proved invaluable in planning an experimental approach that reduced the cost by about 25%.

The third project involved a study of the Kishwaukee River Watershed in western Kane County, where projected development is substantial, flood risk, assessment was needed and the study was likely to involve neighboring counties. In cooperation with the Illinois State Water Survey and the DNR, the

USGS helped optimize the morphologic characterization of the hydrologic and hydraulic modeling of the larger area within the budget available*

Dick Champion, Director, City of Independence, Missouri Water Pollution Control-- ACWA, Urban Issues, and the USGS Cooperative Water Program* The management and protection of water supplies by the City of Independence has undergone significant changes, including the acquisition of a private water utility and the inheritance of stormwater control responsibilities by its municipal wastewater authority* This has increased their appreciation for the watershed perspective in managing water resources and the need for reliable measures of both surface and groundwater*

The City is seeking to enhance the reliability of their water supplies and to achieve as much as possible through nonregulatory means* Recognizing that government agencies cannot solve all the problems alone, they have become increasingly active in the National Association of Clean Water Agencies (NACWA), and formerly the Association of Metropolitan Sewerage Agencies* (i.e., described the NACWA organization, their strategic alliance with the Water Environment Federation and their new Memorandum of Understanding with (U.S. Unlabeled as examples of their effort to advance the cause of Free Infrastructure* Encouraged participants to endorse NACWA's Clean Water Pledge and keep alert for the organization of the Clean Water America Alliance)

Mary Skopec, Iowa Department of Natural Resources-- Impacts of Agriculture on Water Quality in Iowa* The economic contributions of agricultural production are essential to the general welfare in Iowa and the (I.R. is committed to reversing historic environmental impacts as the state's population continues to grow and to expect better protection of water quality, habitat and recreation opportunities* Mary's [presentation](#) described the state's appreciation for USGS stream gauging, groundwater monitoring and modeling capabilities as it prepares to update its statewide water plans for the first time since 1991;*

As an example, Iowa has about 122,222 miles of drainage tile that improve soil moisture for cultivation* However, the hydrologic and erosive impacts to stream channels and the associated habitat have been substantial* In addition, water quality impacts from roads, unsewered communities and other sources are impairing the suitability of many of the state's waters for their designated uses (e.g., drinking water, primary contact recreation, aquatic life, fish consumption, etc)* Broad a national perspective, Iowa is experiencing considerably more frequent and frequent water quality conditions than other states*

With corn prices at record levels and incentives for ethanol production increasing, Iowa State University is projecting that 9 million acres may be withdrawn from the Conservation Reserve Program, resulting in significant losses in water quality and habitat protection* The challenge in decisions facing the state's citizens, government agencies and political leadership in the next few years demands a clear understanding of current conditions and mitigation opportunities, as well as the potential consequences and options for additional development* In that context, the USGS Water Science Center in Iowa is assisting in the prioritization of stream gauging and groundwater monitoring network commitments and in the use of state-of-the-art modeling tools to assess current and future conditions at locations where no stream gauges or monitoring wells exist*

Shannon Lotthammer, Minnesota Pollution Control Agency-- Science Support for Conditions Monitoring in Minnesota* Shannon described [Minnesota's efforts](#) to implement a monitoring strategy adopted in 2002 that was designed to integrate data from many agencies in determining whether MPCA's water quality protection efforts are protecting their designated uses* USGS partnership in the state's assessment of long-term trends in pollutant loading, ground water movement and watershed dynamics (chemical, physical and biological) has been especially helpful* USGS assistance in more controversial assessments, such as the development of nutrient criteria and the assessment of conditions leading to the Interstate 49 bridge collapse highlighted the extraordinary value of their Cooperative relationship*

Minnesota has committed over \$1.5 billion per year toward the implementation of its 2002 Clean Water Act, the goal of which is to protect, restore, and preserve the quality of Minnesota's surface waters by

providing authority, direction and resources to achieve and maintain water quality standards for surface waters as required by section 201 of the Federal Clean Water Act. Minnesota PCA's budget for FY 2014: will enable the fully implemented strategy for monitoring the agency is currently developing the implementation strategy to include all major watershed loading sites, 122 stream sites and 922 lake assessments while providing support for citizen/local monitoring efforts and remote sensing programs.

James Stark, USGS Minnesota Water Science Center— The Value of CWP Cooperator Relations to USGS Scientists and Managers. The water data and science responsibilities of the USGS require extensive awareness of and adaptation to the current and future needs of citizens, program managers and political leaders at every level of government. The relationships between USGS and the Cooperators provide the connection that enables USGS to sustain that awareness and anticipate the information needed to make more intelligent water management and land use decisions, even as those decisions require more cooperative and public support requires greater understanding and better explanation of surface and ground water systems.

USGS described a [series of e-a-ples](#) in which USGS scientists and managers are learning from their involvement with cooperating agencies to make the results of CWP interpretive studies more useful, while making the analytical and interpretive tools more effective and easier to use and adapt. Currently, it is the Cooperators who lead the identification of key issues and data needs and in determining the appropriate scope and objectives of the data collection and interpretive efforts. USGS is re-energized in new ground in many different areas of scientific research and application, including hydrology, sedimentology, geomorphology, seismology and geochemistry, and surface and ground water hydrology. It is the connection with Cooperators and current needs that provides USGS with an essential opportunity for integrating the utility of these sciences. These advances show up in many ways, including new hydrologic models, better sampling and measurement techniques, the analysis of instream flow and climate change and in the presentation of real-time data on the Internet. The Cooperators also play an essential role in evaluating the usefulness of the models, reports and other products.

Anticipating future challenges in issues and decision making needs in the future, USGS will depend upon these collaborative opportunities to continue assisting Cooperators in quantifying and forecasting water availability, understanding ecosystems and climate change, assessing a variety of hazards and understanding environment and human health concerns.

Break-Out Group Discussion of Opportunities & Priorities: The participants divided into two groups to explore opportunities for both the USGS and the Cooperators to improve the CWP. The two groups met for a half hour, one led by Brent Coe, Director of Minnesota (DNR) and the other by Greg Good (Illinois OPA) to respond to two questions and prioritize the results. Those questions and the coordinated [results](#) are available, but the **highest ranking recommendations were:**

For USGS consideration:

- Get access to 12% match and increase USGS funding for new work,
- Reduce 5% overhead cost
- Enhance inter-agency coordination of data collection
- Improve sediment monitoring and analysis programs
- Better recognize synergy of USGS and state monitoring programs
- Simplify and reduce cost of reports and consider new methods for producing reports quickly, especially for small studies
- Stay on cutting edge, advancing the available technology, and continue technology transfer to Cooperators,
- Continue pushing for more timely release of data and information on web, final and provisional

- 5 old regular, statewide meetings with Cooperators co# #unity to review needs, opportunities, priorities?

For CWP Cooperators' consideration:

- Advocate "ull . SIP i#ple#entation and continuin increases "or the CWP?
- Cooperators can need to 'e #ore vocal with policy #a,ers Ein"lential people?
- Pro#ote 'ase "undin "or USGS to separate overhead "ro# CWP cost share a ree#ents?
- I#prove accessi 'ility o" data "or electronic trans"er o" in"or #ation?
- (iscuss strea# a e issues and priorities with #ore or ani!ations and data users #ore o"ten?
- Identi"y and pro#ote awareness o" #ore sources o" water data? deal with "undin i#plication?
- 5 elp USGS avoid CWP a ree#ents that are too s#all to 'e cost4e""ective?

Be"ore the #eetin ad/ourned, Bo' 5 irsch responded to so#e o" the 'rea, 4out #eetin results? he and Ward Stau 'it! e-pressed their appreciation "or the ti#e and ener y that the Cooperators and USGS sta"" put into the presentations, the discussion and reco# #endations*

+he #eetin #aterials, includin the presentation slides, are availa 'le to anyone who is interested "ro# any o" the "ive Water Science Centers, "ro# the Upper Mississippi River Basin Association or "ro# the Interstate Council on Water Policy*

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