



ADVISORY COMMITTEE ON WATER INFORMATION

HYDROLOGY SUBCOMMITTEE

MINUTES

Jan 20, 2000

The meeting was held in room 4145 of the Interior Building. Tom Yorke, Chairman, called the meeting to order at 1:00 pm. The following members attended the meeting

Name	Organization
Glenn Austin	National Weather Service
Martin Becker	Defenders of Property Rights
Steven Chase	Federal Highway Administration
Tom Dietrich	National Weather Service
Mike Grimm	Federal Emergency Management Agency
Dave Farrell	Agricultural Research Service
Don Frevert	Bureau of Reclamation
William Merkel	Natural Resources Conservation Service
Douglas James	National Science Foundation
Will Thomas	Assoc. of State Floodplain Managers
Tom Yorke	US Geological Survey
Don Woodward	Natural Resources Conservation Service

David Conrad, National Wildlife Federation, attended as a guest.

The Chairman called for a review of the agenda. Minutes of the October 12, 1999 meeting were approved with some minor changes that were distributed to members by email

Frequency Analysis: Don Woodward and Martin Becker reported on the frequency analysis work group meeting, which was held on the morning of January 20, 2000. Ten members of the work group were present and they made the following assignments:

1. Each member was asked to provide within 30 days at least one frequently asked question (FAQ) and response.

2. Will Thomas and Mike Grimm will take the lead in preparing guidance for methodology to estimate base-flood levels in ungaged areas.
3. The work group solicited definitions on what constituted regulated flow so they could take up this issue at the next meeting.

The next meeting of the work group will be the same day as the July meeting of the Subcommittee on Hydrology. The election of the Chair and Vice Chair was deferred until the next meeting.

Removing Dams: Martin Becker requested a discussion of the issues related to removing dams. Don Woodward reported that the NRCS has 15,000 dams in place that are 25 ft or higher or have 5,000 acre-ft of storage. Some of the dams are no longer effective because the sediment pool has filled. Other dams have new development downstream. The Lucas Bill (106th HR 728) ([Attachment 1](#)) provided for modifications of PL 566 to evaluate old dams and address dam maintenance and removal issues. Pesticides stored in sediment can present problems

Don Frevert indicated that the Bureau of Reclamation does not have any dams scheduled for removal. The process for removal probably would be similar to building one. Congress would need to authorize the dismantling or removal. Safety issues would be a major consideration.

In Pacific Northwest, salmon fisheries are a driving issue. Payments to tribes may be required if the salmon fishery is destroyed. David Conrad will provide the Subcommittee with a list of websites with more information about removing dams.

Hydrologic Modeling: Don Frevert reported that the work group met at the Corps of Engineers on January 19-20, 2000. Five members participated on the 19th and 7 members attended on the 20th. New participants in the work group are King Boynton and Minnie Dinell from EPA. They are associated with the Models 2000 group. The work group continued to plan for a modeling workshop in 2000 and a conference in 2002. The workshop, with about 50 attendees, will be held in Tucson, AZ, on November 8-9. The attendees will develop the focus of the conference in 2002. The work group plans to meet on April 25 in Florida and June 20 at Ft Collins, CO.

Glenn Austin reported that the National Weather Service was planning a model calibration conference. They will provide more details later.

The National Watershed Conference is scheduled for May 20-23, 2001, in Richmond, VA

Real-time Precipitation Data: Will Thomas had requested information on the availability of real-time precipitation data. Glenn Austin reported that data are available from the IFlow network in the northeast, ASOS (NWS primary stations at airports), and WSI (a private company). Glenn will provide a list of urls; Don Woodward will provide the url for Snotel data. Tom Yorke asked about the FourWinds data that many TV stations report on during the weather segment of their News Hour. Glenn indicated that the stations did not make these data available

ASTM and ISO Hydrography Standards: Tom Yorke reported that the USGS participates in the development of both ASTM and ISO standards for hydrometric determinations. He

distributed a list of ASTM standards and will distribute a combined list of ASTM and ISO standards ([Attachment 2](#)). He asked the Subcommittee to review the list and let him know of any standards of interest to their respective agencies

Streamgaging Task Force: Tom Yorke distributed a list of goals for a National Streamgaging Network that was developed by the Streamgaging Task Force of the Advisory Committee on Water Information. The goals are currently being circulated for comment. The Subcommittee discussed the goals and suggested other goals and modifications to those on the list. Tom requested that additional comments be sent to him as soon as possible. The Task Force will be finalizing the goals before the next ACWI meeting in May. An updated list of goals is included as [Attachment 3](#).

Information Exchange: Doug James distributed draft copies of the National Assessment on Water Resource. Comments should be sent directly to Doug. He also reported that the Committee on Hydrologic Science, under the Water Science and Technology Board of the National Academy of Sciences, has completed their first year of operation. They prepared the report, "Hydrologic Science Priorities for the U. S. Global Change Research Program". Copies of the report may be obtained by and email to: sdparker@nas.edu. The plan for the coming year is to develop, through workshops or other means, research strategies related to:

1. Effective use of hydrologic research for watershed management, flood damage mitigation, hazardous waste disposal, reservoir management, and wetland restoration.
2. Quantification of flow and transport through the unsaturated zone.
3. Integration of research to solve important ecological/hydrological problems.
4. Utilizing recent advances in remote sensing and computational modeling to help manage complex hydrologic systems at the watershed and larger scales.
5. Cycling of water, energy, and carbon through hydrologic systems at high latitudes

Glenn Austin briefed the Subcommittee on the upcoming Inter-Departmental Hurricane Conference in Houston in February. The conference will include a workshop on inland flooding. Glenn also reported that the Hurricane Floyd assessment available in mid-February.

The meeting was adjourned at 3:30 pm. The next meeting will be held at 1:30 pm on April 6, 2000. The tentative dates for other meetings this year are July 6 and October 5.

ATTACHMENT 1: The Lucas Bill, 106th, HR 728
The Small Watershed Rehabilitation Amendments of 1999 (Introduced in the House

HR 728 IH

106th CONGRESS
1st Session
H. R. 728

To amend the Watershed Protection and Flood Prevention Act to authorize the Secretary of Agriculture to provide cost share assistance for the rehabilitation of structural measures constructed as part of water resource projects previously funded by the Secretary under such Act or related laws.

IN THE HOUSE OF REPRESENTATIVES
February 11, 1999

Mr. LUCAS of Oklahoma (for himself and Mr. WATKINS) introduced the following bill; which was referred to the Committee on Agriculture, and in addition to the Committees on Resources, and Transportation and Infrastructure, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

A BILL

To amend the Watershed Protection and Flood Prevention Act to authorize the Secretary of Agriculture to provide cost share assistance for the rehabilitation of structural measures constructed as part of water resource projects previously funded by the Secretary under such Act or related laws.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled.

SECTION 1. SHORT TITLE.

This Act may be cited as the 'The Small Watershed Rehabilitation Amendments of 1999'.

SEC. 2. REHABILITATION OF WATER RESOURCE STRUCTURAL MEASURES CONSTRUCTED UNDER CERTAIN DEPARTMENT OF AGRICULTURE PROGRAMS.

The Watershed Protection and Flood Prevention Act (16 U.S.C. 1001 et seq.) is amended by adding at the end the following new section

'SEC. 14. REHABILITATION OF STRUCTURAL MEASURES NEAR, AT, OR PAST THEIR EVALUATED LIFE EXPECTANCY.

'(a) **DEFINITIONS-** For purposes of this section:

'(1) **REHABILITATION-** The term 'rehabilitation', with respect to a structural measure constructed as part of a covered water resource project, means the completion of

all work necessary to extend the service life of the structural measure and meet applicable safety and performance standards. This may include (A) protecting the integrity of the structural measure, or prolonging the useful life of the structural measure, beyond the original evaluated life expectancy, (B) correcting damage to the structural measure from catastrophic event, (C) correcting the deterioration of structural components that are deteriorating at an abnormal rate, or (D) upgrading the structural measure to meet changed land use conditions in the watershed served by the structural measure or changed safety criteria applicable to the structural measure.

`(2) COVERED WATER RESOURCE PROJECT- The term 'covered water resource project' means a work of improvement carried out under any of the following:

`(A) This Act.

`(B) Section 13 of the Act of December 22, 1944 (Public Law 78-534; 58 Stat. 905).

`(C) The pilot watershed program authorized under the heading 'FLOOD PREVENTION' of the Department of Agriculture Appropriation Act, 1954 (Public Law 156; 67 Stat. 214).

`(D) Subtitle H of title XV of the Agriculture and Food Act of 1981 (16 U.S.C. 3451 et seq.; commonly known as the Resource Conservation and Development Program).

`(3) ELIGIBLE LOCAL ORGANIZATION- The term 'eligible local organization' means a local organization or appropriate State agency responsible for the operation and maintenance of structural measures constructed as part of a covered water resource project.

`(4) STRUCTURAL MEASURE - The term 'structural measure' means a physical improvement that impounds water, commonly known as a dam, which was constructed as part of a covered water resource project.

`(b) COST SHARE ASSISTANCE FOR REHABILITATION-

`(1) ASSISTANCE AUTHORIZED- The Secretary may provide financial assistance to an eligible local organization to cover a portion of the total costs incurred for the rehabilitation of structural measures originally constructed as part of a covered water resource project. The total costs of rehabilitation include the costs associated with all components of the rehabilitation project, including acquisition of land, easements, and rights-of-ways, rehabilitation project administration, the provision of technical assistance, contracting, and construction costs, except that the local organization shall be responsible for securing all land, easements, or rights-of-ways necessary for the project.

`(2) AMOUNT OF ASSISTANCE; LIMITATIONS- The amount of Federal funds that may be made available under this subsection to an eligible local organization for construction of a particular rehabilitation project shall be equal to 65 percent of the total

rehabilitation costs, but not to exceed 100 percent of actual construction costs incurred in the rehabilitation. However, the local organization shall be responsible for the costs of water, mineral, and other resource rights and all Federal, State, and local permits.

`(3) RELATION TO LAND USE AND DEVELOPMENT REGULATIONS-

As a condition on entering into an agreement to provide financial assistance under this subsection, the Secretary, working in concert with the eligible local organization, may require that proper zoning or other developmental regulations are in place in the watershed in which the structural measures to be rehabilitated under the agreement are located so that--

`(A) the completed rehabilitation project is not quickly rendered inadequate by additional development; and

`(B) society can realize the full benefits of the rehabilitation investment.

`(c) TECHNICAL ASSISTANCE FOR WATERSHED PROJECT REHABILITATION- The Secretary, acting through the Natural Resources Conservation Service, may provide technical assistance in planning, designing, and implementing rehabilitation projects should an eligible local organization request such assistance. Such assistance may consist of specialists in such fields as engineering, geology, soils, agronomy, biology, hydraulics, hydrology, economics, water quality, and contract administration.

`(d) PROHIBITED USE-

`(1) PERFORMANCE OF OPERATION AND MAINTENANCE- Rehabilitation assistance provided under this section may not be used to perform operation and maintenance activities specified in the agreement for the covered water resource project entered into between the Secretary and the eligible local organization responsible for the works of improvement. Such operation and maintenance activities shall remain the responsibility of the local organization, as provided in the project work plan.

`(2) RENEGOTIATION- Notwithstanding paragraph (1), as part of the provision of financial assistance under subsection (b), the Secretary may renegotiate the original agreement for the covered water resource project entered into between the Secretary and the eligible local organization regarding responsibility for the operation and maintenance of the project when the rehabilitation is finished.

`(e) APPLICATION FOR REHABILITATION ASSISTANCE- An eligible local organization may apply to the Secretary for technical and financial assistance under this section if the application has also been submitted to and approved by the State agency having supervisory responsibility over the covered water resource project at issue or, if there is no State agency having such responsibility, by the Governor of the State. The Secretary shall request the State dam safety officer (or equivalent State official) to be

involved in the application process if State permits or approvals are required. The rehabilitation of structural measures shall meet standards established by the Secretary and address other dam safety issues. At the request of the eligible local organization, personnel of the Natural Resources Conservation Service of the Department of Agriculture may assist in preparing applications for assistance.

`(f) JUSTIFICATION FOR REHABILITATION ASSISTANCE- In order to qualify for technical or financial assistance under this authority, the Secretary shall require the rehabilitation project to be performed in the most cost-effective manner that accomplishes the rehabilitation objective. Since the requirements for accomplishing the rehabilitation are generally for public health and safety reasons, in many instances being mandated by other State or Federal laws, no benefit-cost analysis will be conducted and no benefit-cost ratio greater than one will be required. The benefits of and the requirements for the rehabilitation project shall be documented to ensure the wise and responsible use of Federal funds.

`(g) RANKING OF REQUESTS FOR REHABILITATION ASSISTANCE- The Secretary shall establish such system of approving rehabilitation requests, recognizing that such requests will be received throughout the fiscal year and subject to the availability of funds to carry out this section, as is necessary for proper administration by the Department of Agriculture and equitable for all eligible local organizations. The approval process shall be in writing, and made known to all eligible local organizations and appropriate State agencies.

`(h) AUTHORIZATION OF APPROPRIATIONS- There are authorized to be appropriated to the Secretary \$60,000,000 for each of the fiscal years 2000 through 2009 to provide financial and technical assistance under this section.

`(i) ASSESSMENT OF REHABILITATION NEEDS- Of the amount appropriated pursuant to subsection (h) for fiscal years 2000 and 2001, \$5,000,000 shall be used by the Secretary, in concert with the responsible State agencies, to conduct an assessment of the rehabilitation needs of covered water resource projects in all States in which such projects are located.

`(j) RECORDKEEPING AND REPORTS

`(1) SECRETARY-The Secretary shall maintain a data base to track the benefits derived from rehabilitation projects supported under this section and the expenditures made under this section. On the basis of such data and the reports submitted under paragraph (2), the Secretary shall prepare and submit to Congress an annual report providing the status of activities conducted under this section

`(2) GRANT RECIPIENTS- Not later than 90 days after the completion of a specific rehabilitation project for which assistance is provided under this section, the eligible local organization that received the assistance shall make a report to the Secretary

giving the status of any rehabilitation effort undertaken using financial assistance provided under this section.'

ATTACHMENT 2: ISO and ASTM Hydrography standards

ISO STANDARD

ISO 748:1997 - Measurement of Liquid Flow in Open Channels - Velocity-Area Methods

ISO 772:1996 - Hydrometric Determinations - Vocabulary and Symbols Bilingual Edition

ISO 1070:1992 - Liquid Flow Measurement in Open Channels - Slope-Area Method

ISO 1088:1985 - Liquid Flow Measurement in Open Channels - Velocity-Area Methods - Collection and Processing of Data for Determination of Errors in Measurement

ISO 1100-1:1996 - Measurement of Liquid Flow in Open Channels - Part 1: Establishment and Operation of a Gauging Station

ISO 1100-2:1998 - Measurement of Liquid Flow in Open Channels- Part 2: Determination of the Stage-Discharge Relation

ISO 1438-1:1980 - Water-Flow Measurement in Open Channels Using Weirs and Venturi Flumes - Part 1: Thin-Plate Weirs

ISO 2425:1974 - Measurement of Flow in Tidal Channels

ISO 2537:1988 - Liquid Flow Measurement in Open Channels - Rotating Element Current-Meters

ISO 3454:1983 - Liquid Flow Measurement in Open Channels - Direct Depth Sounding and Suspension Equipment

ISO 3455:1976 - Liquid Flow Measurement in Open Channels - Calibration of Rotating-Element Current-Meters in Straight Open Tanks

ASTM STANDARD

D 3858-90 Standard Practice for Open-Channel Flow Measurement of Water by Velocity-Area Method

D 4410-92A, Terminology for Fluvial Sediments

D 5130-90 Standard Test Method for Open-Channel Flow Measurement of Water Indirectly by Slope-Area Method

D 5674-95 Standard Guide for Operation of a Gauging Station

D 5541 Standard Practice for Developing a Stage- Discharge Relation for Open channel flow Measurement Devices

D 4242-92 Standard Test Method for Open-channel Flow Measurement of Water with Thin-Plate Weirs

D 4409-91 Standard Test Method for Velocity Measurement of Water in Open Channels with Element Current Meters

D 5073-90A Standard Practice for Depth Measurement of Surface Water

ISO 3716:1977 - Liquid Flow Measurement in Open Channels -Functional Requirements and Characteristics of Suspended Sediment Load

ISO 3846:1989 - Liquid Flow Measurement in Open Channels by Weirs and Flumes - Rectangular Broad-Crested Weirs

ISO 3847:1977 - Liquid Flow Measurement in Open Channels by Weirs and Flumes - End-Depth Method for Estimation of Flow in Rectangular Channels with a Free Overfall

ISO 4359:1983 - Liquid Flow Measurement in Open Channels - Rectangular, Trapezoidal, and U-Shaped Flumes

ISO 4360:1984 - Liquid Flow Measurement in Open Channels by Weirs and Flumes - Triangular Profile Weirs

ISO 4362:1992 - Measurement of Liquid Flow in Open Channels - Trapezoidal Profile Weirs

ISO 4363:1993 - Measurement of Liquid Flow in Open Channels - Methods for Measurement of Suspended Sediment

D 4411-93 Standard Guide for Sampling Fluvial Sediment in Motion

ISO 4364:1997 - Measurement of Liquid Flow in Open Channels - Bed Material Sampling

D 4823-88 Standard Guide for Core-Sampling Submerged, Unconsolidated Sediment

ISO 4365:1985 - Liquid Flow in Open channels - Sediment in Streams and Canals - Determination of Concentration, Particle Size Distribution and Relative Density

D 3977-80 Standard Practice for Determining Suspended Sediment Concentration in Water Samples

ISO 4366:1979 - Echo Sounders for Water Depth Measurements

ISO 4369:1979 - Measurement of Liquid Flow in Open Channels - Moving-Boat Method

ISO 4371:1984 - Measurement of Liquid Flow in Open Channels by Weirs and Flumes - End Depth Method for Estimation of Flow in Non-Rectangular Channels with a Free Overfall (Approximate Method)

ISO 4373:1995 - Measurement of Liquid Flow in Open Channels - Water-Level Measuring Devices

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ISO 4374:1990 - Liquid Flow Measurement in Open Channels - Round-Nose Horizontal Broad-Crested Weirs

D 5614-94 Standard Test Method for Open-Channel Flow Measurement of Water Using Broad-Crested Weirs

ISO 4375:1979 - Measurement of Liquid Flow in Open Channels - Cableway System for Stream Gauging

ISO 4377:1990 - Liquid Flow Measurement in Open

Channels - Flat-V Weirs

ISO 6416:1992 - Measurement of Liquid Flow in Open Channels - Measurement of Discharge by the Ultrasonic (Acoustic) Method

D 5389-93 Standard Test Method for Open-Channel Flow Measurement of Water by Acoustic Velocity Systems

D 4408-84 Standard Practice for Open Channel Flow Measurement by Acoustic Means

ISO 6419-1:1984 - Hydrometric Data Transmission Systems - Part 1: General

ISO 6419-2:1992 - Hydrometric Telemetry Systems - Part 2: Specification of System Requirements

ISO 6420:1984 - Liquid Flow Measurement in Open Channels - Position Fixing Equipment for Hydrometric Boats

D 5906-96 Standard Guide for Measuring Horizontal Positioning During Measurements of Surface Water Depths

ISO/TR 7178:1983 - Liquid Flow Measurement in Open Channels Velocity-Area Methods - Investigation of Total Error

ISO 8333:1985 - Liquid Flow Measurement in Open Channels by Weirs and Flumes - V-Shaped Broad-Crested Weirs

ISO 8363:1986 - Liquid Flow Measurement in Open Channels - General Guidelines for the Selection of Method

ISO/TR 8363:1997 - Measurement of Liquid Flow in Open Channels - General Guidelines for Selection of Method

ISO 8368:1985 - Liquid Flow Measurement in Open Channels - Guidelines for the Selection of Flow Gauging Structures

ISO/TR 9123:1986 - Liquid Flow Measurements in Open Channels - Stage-Fall-Discharge Relations

ISO 9195:1992 - Liquid Flow Measurement in Open Channels - Sampling and Analysis of Gravel-Bed Material

ISO 9196:1992 - Liquid flow Measurement in Open Channels - Flow Measurements under Ice Conditions

ISO/TR 9209:1989 - Measurement of Liquid Flow in Open Channels - Determination of the Wetline Correction

ISO/TR 9210:1992 - Measurement of Liquid Flow in Open Channels - Measurement in Meandering Rivers and in Streams with Unstable Boundaries

ISO/TR 9212:1992 - Measurement of Liquid Flow in

Open Channels - Methods of Measurement of Bedload Discharge

ISO 9213:1992 - Measurement of Total Discharge in Open Channels - Electromagnetic Method Using a Full-Channel- Width Coil

ISO 9555-1:1994 - Measurement of Liquid Flow in Open Channels - Tracer Dilution Methods for the Measurement of Steady Flow - Part 1: General

ISO 9555-2:1992 - Measurement of Liquid Flow in Open Channels - Tracer Dilution Methods for the Measurement of Steady Flow - part 2: Radioactive Tracers

IOS 9555-3:1992 - Measurement of Liquid Flow in Open Channels - Tracer Dilution Methods for the Measurement of Steady Flow - Part 3: Chemical Tracers

ISO 9555-4:1992 - Measurement of Liquid Flow in Open Channels - Tracer Dilution Methods for the Measurement of Steady Flow - Part 4: Fluorescent Tracers

ISO/TR 9823:1990 - Liquid Flow Measurement in Open Channels - Velocity-Area Method Using a Restricted Number of Verticals

ISO/TR 9824-1:1990 - Measurement of Free Surface Flow in Closed Conduits - Part 1: Methods

ISO/TR 9824-2:1990 - Measurement of Free Surface Flow in Closed Conduits - Part 2: Equipment

ISO 9825:1994 - Measurement of Liquid Flow in Open Channels - Field Measurement of discharge in Large Rivers and Floods

ISO 9826:1992 - Measurement of Liquid Flow in Open Channels - Parshall and SANIIRI Flumes

D 1941-91 Standard Test Method for Open-Channel Flow Measurement of Water with Parshall Flume

ISO 9827:1994 - Measurement of Liquid Flow in Open Channels by Weirs and Flumes - Streamlined Triangular Profile Weirs

ISO/TR 11328:1994 - Measurement of Liquid Flow in Open Channels - Equipment for the Measurement of Discharge Under Ice Conditions

ISO 11329:1998 - Hydrometric Determinations - Measurement of Suspended Sediment Transport in Tidal Channels

ISO/TR 11330:1997 - Determination of Volume of Water and Water Level in Lakes and Reservoirs

ISO/TR 11332:1998 - Hydrometric Determinations - Unstable Channels and Ephemeral Streams

ISO/TR 11627:1998 - Measurement of Liquid Flow in Open Channels - Computing Stream Flow Using an Unsteady Flow Model

ISO 11655:1995 - Measurement of Liquid Flow in Open Channels - Method of Specifying Performance of Hydrometric Equipment

ISO/TR 11656:1993 - Measurement of Liquid Flow in Open Channels - Mixing Length of a Tracer

ISO/TR 11974:1997 - Measurement of Liquid Flow in Open Channels - Electromagnetic Current Meters

D 5089-90 Standard Test Method for Velocity Measurements in Open Channels with Electromagnetic Current Meters

ATTACHMENT 3: Streamgaging Network Goals

Advisory Committee on Water Information Streamgaging Task Force

The Streamgaging Task Force of the Advisory Committee on Water Information has been charged with defining the requirements of a National Streamgaging Network. Listed below are 14 goals identified by the Task Force. These goals will be presented to the ACWI for endorsement in May 2000. The Task Force will then use the goals in a network analysis model to assess where additional streamgaging stations are needed. The Task Force will consider the following options for additional stations:

1. Upgrade the data delivery of stations operated by organizations other than the USGS
2. Reactivate former USGS stations
3. Build new stations

National Streamgaging Network Goals

1. Provide stage and discharge data for each NWS service location and each NRCS forecast site. Metric: Operate a streamgaging station at each service location and forecast site or within 5 rivers miles upstream or downstream
2. Provide data for accurate determination of base flood (1-percent annual chance) discharges and base flood elevations for each "participating" community in the National Flood Insurance Program.
Metric: Operate a streamgaging station or crest-stage gage on the major rivers or streams affecting the participating NFIP community. The station should be no more than 5 miles upstream or downstream of the community's corporate limits and not be affected by

significant tributary inflow.

3. Provide representative discharge data for each of the major river basins in the Nation.
Metric: Operate streamgaging stations at the head and terminus of each hydrologic accounting unit. Drainage area of the stations should not be less than 90 percent or more than 110 percent of the accounting unit. For units with multiple rivers draining to closed basins or oceans at least 50 percent of the drainage area of the unit should be gaged
4. Provide river discharge data to meet the operational requirements of river basin compacts and Supreme Court decrees.
Metric: Operate a streamgaging station at each site mandated by the compact or decree.
5. Provide river discharge data at each point where major rivers cross international, state, and tribal boundaries.
Metric: Operate a streamgaging station on or near crossings when the drainage area of the river is greater than 400 square miles. Drainage area of the stations should not be less than 90 percent or more than 110 percent of the drainage area at the crossing.
6. Provide streamflow data for representative parts of the Nation for flow estimation and long-term trend assessments.
Metric: Operate a discharge station that is unaffected by regulation in each of the polygons formed by the intersection of Hydrologic Accounting Units and Ecoregions
7. Provide river discharge data for all watersheds that have 25 percent of their reaches with impaired water quality based on EPA's 303(d) listing of impaired streams.
Metric: Operate a discharge station on a reach of a river that represents at least 25 percent of the drainage area of each of the hydrologic cataloguing units (8-digit HUCs) with impaired water quality.
8. Provide river discharge data at all locations with Point Source Discharge Elimination System permits that exceed 5 percent of the average annual discharge.
Metric: Operate a discharge station within 5 river miles upstream or downstream of the permitted discharge.
9. Provide stage or discharge data for rivers that are used for canoeing, kayaking or rafting in order for river sports enthusiasts to determine when the rivers are safe for paddling.
Metric: Operate a discharge or stage-only station on all river reaches that have been identified by the American Whitewater Affiliation as suitable for paddling. Stations should be located at points where the river's drainage area is between 75 and 125 percent of the drainage area at the upstream end of the identified reach
10. Provide river discharge data for all rivers draining parcels of Federal land that are equal to or greater than 1,000 square miles.
Metric: Operate a streamgaging station at the point where the river leaves Federal land. Station should be located no more than 10 river miles upstream or downstream of the boundary.

11. Provide discharge data for all major rivers with diversions that represent 25 or more percent of the average annual flow of the river.
Metric: Operate a streamgaging station in the lower third of each hydrologic cataloguing unit where the surface-water use in 1995 was equal to or greater than 25 percent of the flow of the unit.
12. Provide river discharge data for the inflow and outflow of all reservoirs with more than 50,000 ac-ft of storage.
Metric: Operate one or more streamgaging stations on inflows to the reservoir so that at least 75 percent of the contributing area of the reservoir is gaged. Operate a stage and discharge station below the reservoir.
13. Provide streamflow data for coastal rivers that support a migratory fish population.
Metric: Operate a discharge station on each coastal river listed as habitat for migratory fish by the National Marine Fisheries Service and with a drainage area greater than 400 square miles.
14. Provide river discharge data for all rivers that are used for commercial navigation.
Metric: Operate a discharge and/or stage gage at 100-mile intervals on rivers that are used for commercial navigation. For rivers with locks and dams, a gage should be operated in each pool.

Streamgaging Task Force

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