

# On-Going Project/Committee Reports

## IHCA- Federal Legislation- Spring 2004

<http://thomas.loc.gov/home/thomas.html>

50 Bills from the 108th Congress ranked by relevance on "*Water Resources*".

- 1 . Hawaii Water Resources Act of [Struck out->] 2003 [<-Struck out] 2004 (Reported in Senate)[\[S.960.RS\]](#)
- 2 . Water Resources Development Act of 2003 (Introduced in House)[\[H.R.2557.IH\]](#)
- 3 . Corps of Engineers Modernization and Improvement Act of 2004 (Introduced in Senate)[\[S.2188.IS\]](#)
- 4 . Water Resources Development Act of 2003 (Reported in House)[\[H.R.2557.RH\]](#)
- 5 . To amend the Water Resources Development Act of 1976 to allow the Secretary of the Army to extend the period during which the Secretary may provide beach nourishment for a water resources... (Introduced in House)[\[H.R.2558.IH\]](#)
- 6 . Hawaii Water Resources Act of 2003 (Introduced in House)[\[H.R.2355.IH\]](#)
- 7 . Hawaii Water Resources Act of 2003 (Introduced in Senate)[\[S.960.IS\]](#)
- 8 . Water Resources Development Act of 2003 (Referred to Senate Committee after being Received from House)[\[H.R.2557.RFS\]](#)
- 9 . Water Resources Development Act of 2003 (Engrossed as Agreed to or Passed by House)[\[H.R.2557.EH\]](#)
- 10 . Army Corps of Engineers Reform Act of 2003 (Introduced in House)[\[H.R.2566.IH\]](#)
- 11 . To amend the Water Resources Development Act of 1986 to expand the authority of non-Federal interests to levy harbor fees. (Introduced in House)[\[H.R.3028.IH\]](#)
- 12 . To amend the Water Resources Development Act of 1992 to authorize the Secretary of the Army to pay the non-Federal share for managing recreation facilities and natural resources to... (Introduced in House)[\[H.R.30.IH\]](#)
- 13 . Elimination of Double Subsidies for the Hardrock Mining Industry Act of 2003 (Introduced in Senate)[\[S.44.IS\]](#)
- 14 . Community Beaches Protection Act (Introduced in House)[\[H.R.2245.IH\]](#)
- 15 . Energy and Water Development Appropriations Act, 2004 (Placed on Calendar in Senate)[\[S.1424.PCS\]](#)
- 16 . Energy and Water Development Appropriations Act, 2004 (Engrossed Amendment as Agreed to by Senate)[\[H.R.2754.EAS\]](#)
- 17 . National Beach Recreation and Economic Benefits Act (Introduced in Senate)[\[S.1653.IS\]](#)
- 18 . United States-Mexico Transboundary Aquifer Assessment Act (Introduced in Senate)[\[S.1957.IS\]](#)
- 19 . Recognizing and affirming the efforts of the Great Lakes Governors and Premiers in developing a common standard for decisions relating to withdrawal of water from the Great Lakes and... (Introduced in House)[\[H.CON.RES.199.IH\]](#)
- 20 . Energy and Water Development Appropriations Act, 2004 (Public Print)[\[H.R.2754.PP\]](#)
- 21 . Energy and Water Development Appropriations Act, 2004 (Enrolled as Agreed to or Passed by Both House and Senate)[\[H.R.2754.ENR\]](#)

- 22 . Whereas water is a scarce resource for Israelis, Palestinians, and Jordanians which can be symbolized as a `time-bomb' waiting to explode if not defused expeditiously; (Introduced in House)[\[H.CON.RES.238.IH\]](#)
- 23 . Musconetcong Wild and Scenic Rivers Act (Introduced in House)[\[H.R.3902.IH\]](#)
- 24 . Restoring the Everglades, an American Legacy Act of 2004 (Introduced in Senate)[\[S.2209.IS\]](#)
- 25 . Whereas the Great Lakes are a priceless and irreplaceable natural resource, constituting the largest system of fresh surface water on Earth, holding 18 percent of the world's fresh... (Introduced in House)[\[H.RES.121.IH\]](#)
- 26 . Restore the Apalachicola River Ecosystem Act (Introduced in House)[\[H.R.1665.IH\]](#)
- 27 . Sand Conservation and Taxpayer Savings Act of 2003 (Introduced in House)[\[H.R.3154.IH\]](#)
- 28 . RARE Act (Introduced in Senate)[\[S.2169.IS\]](#)
- 29 . Small Reclamation Water Resources Project Act of 2003. (Introduced in Senate)[\[S.993.IS\]](#)
- 30 . Arizona Water Settlements Act (Introduced in Senate)[\[S.437.IS\]](#)
- 31 . Arizona Water Settlements Act (Introduced in House)[\[H.R.885.IH\]](#)
- 32 . Western Waters and Surface Owners Protection Act (Introduced in House)[\[H.R.3698.IH\]](#)
- 33 . Western Waters and Farm Lands Protection Act (Introduced in House)[\[H.R.4017.IH\]](#)
- 34 . Anacostia Watershed Initiative Act of 2003 (Introduced in House)[\[H.R.3622.IH\]](#)
- 35 . Anacostia Watershed Initiative Act of 2003 (Introduced in Senate)[\[S.1959.IS\]](#)
- 36 . California Affordable Quantity and Quality Water Resources Projects Act of 2003 (Introduced in Senate)[\[S.1413.IS\]](#)
- 37 . Securing Transportation Energy Efficiency for Tomorrow Act of 2003 (Introduced in House)[\[H.R.1491.IH\]](#)
- 38 . To authorize the Secretary of the Army to carry out a dredging project to increase the depth of Menominee Harbor, Menominee River, Michigan and Wisconsin, from 24 feet to 26 feet. (Introduced in House)[\[H.R.1817.IH\]](#)
- 39 . To direct the Secretary of the Army to release to Clay County, Georgia, a reversionary interest of the United States requiring the non-profit operation of certain land as a retirement... (Introduced in House)[\[H.R.3141.IH\]](#)
- 40 . To reauthorize and improve the Chesapeake Bay Environmental Restoration and Protection Program. (Introduced in Senate)[\[S.829.IS\]](#)
- 41 . Whereas section 208 of the Department of Justice Appropriation Act, 1953 (commonly known as the McCarran Amendment) (43 U.S.C. 666) waived the sovereign immunity of the United States... (Introduced in Senate)[\[S.RES.183.IS\]](#)
- 42 . Israeli-Palestinian Peace Enhancement Act of 2004 (Introduced in House)[\[H.R.3814.IH\]](#)
- 43 . Israeli-Palestinian Peace Enhancement Act of 2003 (Introduced in Senate)[\[S.1944.IS\]](#)
- 44 . Energy and Water Development Appropriations Act, 2004 (Reported in House)[\[H.R.2754.RH\]](#)
- 45 . Energy and Water Development Appropriations Act, 2004 (Engrossed as Agreed to or Passed by House)[\[H.R.2754.EH\]](#)
- 46 . Energy and Water Development Appropriations Act, 2004 (Placed on Calendar in

Senate)[\[H.R.2754.PCS\]](#)

**47 .** To authorize the Secretary of the Interior, acting through the Bureau of Reclamation, to assist in the implementation of fish passage and screening facilities at non-Federal water projects,... (Reported in Senate)[\[S.1307.RS\]](#)

**48 .** Fremont-Madison Conveyance Act (Referred to House Committee after being Received from Senate)[\[S.520.RFH\]](#)

**49 .** Water Supply, Reliability, and Environmental Improvement Act (Introduced in House)[\[H.R.2828.IH\]](#)

**50 .** Fremont-Madison Conveyance Act (Engrossed as Agreed to or Passed by Senate)[\[S.520.ES\]](#)

### **S.561**

**Title: State Water Sovereignty Protection Act** - State Water Sovereignty Protection Act - Directs the United States, when it seeks to appropriate water or acquire a water right in a State, to be subject to all procedural and substantive laws of that State relating to its water rights and uses. Gives consent to join the United States in any State proceeding relating to the allocation or use of a water right. Subjects management and control of water in a State to the laws of such State. Delegates to each State the authority to regulate water. Allows the United States to exercise management and control of water in a State only in compliance with that State's laws. Subjects the United States to the imposition of costs and fees in a proceeding to the same extent as a private person.

**Sponsor:** Sen Crapo, Michael D. [ID] (introduced 3/6/2003)     **Cosponsors:** 5

**Latest Major Action:** 3/6/2003 Referred to Senate committee. Status: Read twice and referred to the Committee on the Judiciary.

### **H.R.2603**

**Title: To impose limitations on the authority of the Secretary of the Interior to claim title or other rights to water absent specific direction of law or to abrogate, injure, or otherwise impair any right to the use of any quantity of water.** Prohibits the Secretary of the Interior from claiming title or other rights to water in a State, other than for Indian reservation lands, absent specific direction of law, or from exercising authority so as to abrogate, injure, or otherwise impair any right to the use of any quantity of water: (1) that has been allocated in accordance with provisions of the Department of Justice Appropriations Act relating to suits for the adjudication of water rights by or pursuant to interstate compact and by a decision of the United States Supreme Court; (2) by requiring a change in the nature of use or the transfer of any right to use water or creating a limitation on the exercise of any right to use water; or (3) by modifying the delivery, diversion, nondiversion, allocation, or storage of any water to be delivered by contract.

**Sponsor:** Rep Pearce, Stevan [NM-2] (introduced 6/25/2003)     **Cosponsors:** 6

**Latest Major Action:** 7/1/2003 House committee/subcommittee actions. Status: Executive Comment Requested from Interior.

### **H.R.1560**

**Title: Water Quality Financing Act of 2003** Water Quality Financing Act of 2003 - Amends the Federal Water Pollution Control Act (FWPCA) to authorize the Administrator of the Environmental Protection Agency to make grants to nonprofit organizations to provide technical and information assistance for rural and small treatment works. Requires establishment of procedures for the competitive award of grants. Extends funding for State- and interstate-managed pollution control programs. Revises eligibility requirements for grants for sewage collection systems to include projects which replace or involve the major rehabilitation of an existing collection system or involve new collection systems. Extends the pilot program for alternative water source projects. Shifts the allocation of sewer overflow control grants to States rather than

municipalities and States. Revises State water pollution control revolving fund provisions concerning: (1) agreements for treatment works capitalization grants; (2) project eligibility; (3) loan payments, subsidization, and administrative expenses; (4) technical and planning assistance for small treatment works; (5) funding allotments; (6) priorities and intended use plans; and (7) Federal oversight review procedures. Increases the limit on amounts authorized for grants for development of management plans and construction of publicly owned treatment works to serve Indians.

**Sponsor:** Rep Duncan, John J., Jr. [TN-2] (introduced 4/2/2003)    **Cosponsors:** 1

**Related Bills:** [H.R.20](#), [S.170](#)

**Latest Major Action:** 7/17/2003 House committee/subcommittee actions. Status: Forwarded by Subcommittee to Full Committee (Amended) by Voice Vote.

### **S.RES.183**

**Title: A resolution commemorating 50 years of adjudication under the McCarran Amendment of rights to the use of water.** Reaffirms the policies and principles of the McCarran Amendment (which waived the sovereign immunity of the United States so that it could be joined in comprehensive State general adjudications of the rights to use water) that have been recognized by Supreme Court decisions. Recognizes that, as a matter of practice, the United States should adhere and defer to State water law. Commends Western States that maintain comprehensive systems for the quantification of rights to use water for all beneficial purposes.

**Sponsor:** Sen Campbell, Ben Nighthorse [CO] (introduced 6/25/2003)    **Cosponsors:** 6

**Latest Major Action:** 10/15/2003 Senate committee/subcommittee actions. Status: Committee on Energy and Natural Resources Subcommittee on Water and Power. Hearings held. With printed Hearing: S.Hrg. 108-271.

### **S.844**

**Title: Water Adjudication Fee Fairness Act of 2003** - Subjects the United States, in any State administrative or judicial proceeding for the adjudication or administration of water rights in which the United States is a party, to the imposition of fees and costs on its claims to water rights under either State or Federal law to the same extent as a private party to the proceeding. Sets forth requirements for reporting by heads of Federal agencies that file or have pending water rights claims.

**Sponsor:** Sen Crapo, Michael D. [ID] (introduced 4/9/2003)    **Cosponsors:** 6

**Latest Major Action:** 4/9/2003 Referred to Senate committee. Status: Read twice and referred to the Committee on the Judiciary.

### **H.R.2557**

**Title: Water Resources Development Act of 2003** - Authorizes and provides for specified water resources development and conservation projects. Directs the Secretary to conduct studies of specified flood damage reduction, streambank and shoreline protection, navigation, environmental improvement, and aquatic ecosystem restoration projects, and authorizes the Secretary to carry out those projects determined to be feasible, in Alaska, Alabama, Arizona, Arkansas, California, Florida, Georgia, Georgia,

Idaho, Illinois, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New York, Pennsylvania, South Carolina, and Washington.

Authorizes the Secretary to establish centers to provide specialized planning expertise for water resources projects to enhance and supplement the capabilities of districts of the Army Corps of Engineers.

Sets forth provisions for: (1) coordination and scheduling by the Secretary for consolidating Federal, State, and local agency environmental assessments, project reviews, and issuance of permits for construction or modification of nonfederal water supply, wastewater infrastructure, flood damage reduction, environmental restoration, or navigation projects that require the Secretary's approval; and (2) expediting environmental reviews of water resources projects subject to studies for development of feasibility or general reevaluation reports.

Modifies provisions authorizing specified water projects in Alaska, California, Connecticut, Florida, Guam, Idaho, Illinois, Indiana, Kentucky, Louisiana, Maine, Michigan, Minnesota, Mississippi, Missouri, New York, New Jersey, Oregon, Pennsylvania, Tennessee, Texas, Virginia, Washington, West Virginia, and Wisconsin.

Provides for: (1) maintenance of navigation channels; (2) watershed management; (3) dam safety; (4) flood mitigation; and (5) additional assistance for authorized projects.....

The project for navigation improvements, **Cook Inlet**, Alaska (**Anchorage Harbor**, Alaska), authorized by section 101 of the River and Harbor Act of 1958 (72 Stat. 299) and modified by section 199 of the Water Resources Development Act of 1976 (90 Stat. 2944), is further modified to direct the Secretary to establish a harbor depth of minus 45 feet mean lower low water for a length of 5,200 feet at the modified Port of Anchorage intermodal marine facility at each phase as such phases are completed and thereafter as the entire project is completed, at a total cost of \$8,175,000. Federal maintenance shall continue for the existing facility until the modified facility is completed. Federal maintenance of the modified project shall be in accordance with such section 101; except that the project shall be maintained at a depth of minus 45 feet mean lower low water for such 5,200 feet, at an estimated annual cost of \$6,000,000. The Secretary shall modify the channel depth to run the entire length of Fire Island Range and Point Woronzof Range maintaining the same width and modifying the depth to minus 45 feet mean lower low water in the existing Cook Inlet Navigation Channel approach to Anchorage Harbor, Alaska, at a total cost of \$21,525,000. The project shall be maintained at a depth of minus 45 mean lower low water, at an estimated annual cost of \$3,000,000.

The maximum amount of Federal funds that may be expended for the project for navigation, **King Cove Harbor**, Alaska, being carried out under section 107 of the River Harbor Act of 1960 (33 U.S.C. 577), shall be \$8,000,000.

The **Thompson Harbor**, **Sitka**, Alaska, element of the project for navigation Southeast Alaska Harbors of Refuge, Alaska, authorized by section 101 of the Water Resources Development Act of 1992 (106 Stat. 4801), is modified to direct the Secretary to take such action as may be necessary to correct design deficiencies in such element, at a Federal expense of \$6,300,000.

The maximum amount of Federal funds that may be expended for the project for navigation, **Tatitlek**, Alaska, being carried out under section 107 of the River and Harbor Act of 1960 (33 U.S.C. 577), shall be \$10,000,000.

Authorizes the Secretary to undertake certain additional measures with respect to specified projects in Alabama, **Alaska**, Arkansas...

The Secretary shall conduct, at Federal expense, a study to determine the feasibility of providing navigation improvements at **St. George**, Alaska. The Secretary shall conduct a study to determine the feasibility of carrying out a project for hydropower, recreation, and related purposes on the **Susitna River**, Alaska.

Section 570 of the Water Resources Development Act of 1999 (113 Stat. 369) is amended-

Notwithstanding section 221(b) of the Flood Control Act of 1970 (42 U.S.C. 1962d-5b(b)), for any project undertaken under this section, a non-Federal interest may include a nonprofit entity, with the consent of the affected local government. Ten percent of the amounts appropriated to carry out this section may be used by the Corps of Engineers district offices to administer projects under this section at 100 percent Federal. The Secretary shall expedite the study for the **Akutan Small Boat Harbor**, Alaska, and upon completion of the feasibility study, shall design and construct the project, if the Secretary determines that the project is feasible. The headlands dredging for the mooring basin shall be considered general navigation feature for purposes of estimating the non-Federal share of the cost of the project. The Secretary shall make repairs to the dike at **Fort Yukon**, Alaska, so that the dike meets Corps of Engineers standards. The Secretary shall assume responsibility for the long-term maintenance and repair of the **Lowell Creek Tunnel**. The Secretary shall conduct a study to determine whether alternative methods of flood diversion in Lowell Canyon are feasible. The Secretary shall carry out, on an emergency basis, necessary removal of rubble, sediment, and rock that are impeding the entrance to the St. Herman and St. Paul Harbors, **Kodiak**, Alaska, at a Federal cost of \$2,000,000.

**Cosponsors:** 3

**Related Bills:** [H.RES.375](#)

**Latest Major Action:** 9/26/2003 Referred to Senate committee. Status: Received in the Senate and Read twice and referred to the Committee on Environment and Public Works.

### **S.2218**

**Title: Reclamation Rural Water Supply Act of 2004** A bill to direct the Secretary of the Interior to establish a rural water supply program in the Reclamation States for the purpose of providing a clean, safe, affordable, and reliable water supply to rural residents and for other purposes, to authorize the Secretary to conduct appraisal and feasibility studies for rural water projects, and to establish the guidelines for any projects authorized under this program.

**Sponsor:** Sen Domenici, Pete V. [NM] (introduced 3/22/2004) **Cosponsors:** (none)

**Latest Major Action:** 3/25/2004 Senate committee/subcommittee actions. Status: Committee on Energy and Natural Resources Subcommittee on Water and Power. Hearings held.

### **H.R.135**

**Title: Twenty-first Century Water Commission Act of 2003** - Establishes the Twenty-first Century Water Commission to: (1) use existing water assessments and conduct additional assessments necessary to project future water supply and demand; (2) study Federal, Interstate, State, and local agency and private entity water management programs directed at increasing water supplies and improving the availability, reliability, and quality of freshwater resources; and (3) consult with representatives of such agencies and entities to develop recommendations consistent with laws, treaties, decrees, and interstate compacts for a comprehensive water strategy that respects the primary role of States in regulating water rights and uses, identifies incentives for ensuring an adequate and dependable supply of water to meet U.S. needs for the next 50 years, considers all available technologies for increasing water supply reliability while safeguarding the environment, suggests financing options, and suggests strategies to conserve existing water supplies. Provides for the appointment of Commission members by the President and congressional leaders. Requires the Commission to hold no less than ten hearings and to transmit interim reports and a final report to the President and specified congressional committees. Requires the Commission to terminate no later than 30 days after it transmits its final report. Authorizes appropriations.

**Sponsor:** Rep Linder, John [GA-7] (introduced 1/7/2003)    **Cosponsors:** 29

**Latest Major Action:** 12/9/2003 Referred to Senate committee. Status: Read twice and referred to the Committee on Environment and Public Works.

#### **H.R.3698**

**Title: Western Waters and Surface Owners Protection Act** To assure that development of certain Federal oil and gas resources will occur in ways that protect water resources and surface owner rights, and for other purposes.

**Sponsor:** Rep Udall, Mark [CO-2] (introduced 12/8/2003)    **Cosponsors:** 1

**Latest Major Action:** 12/15/2003 House committee/subcommittee actions. Status: Executive Comment Requested from Interior.



# State Legislative Update Report 4/04

## Subject WATER : MultiBill Display

BILL	SHORT TITLE	PRIME SPONSOR(s)	CURRENT STATUS	STATUS DATE
<a href="#">HB 87</a>	MINING:INFRASTRUCTURE FUND/WATER STANDARD	CROFT	(H) RES	02/10/03
<a href="#">HB 119</a>	WATER/SEWER/WASTE GRANTS TO UTILITIES	COGHILL	(H) FIN	03/26/03
<a href="#">HB 191</a>	COASTAL MANAGEMENT PROGRAMS	RLS BY REQUEST OF THE GOVERNOR	CHAPTER 24 SLA 03	05/21/03
<a href="#">HB 370</a>	NATURAL GAS: MUNI LAW;ACCESS;WATER SUPPLY	GARA	(H) O&G	01/12/04
<a href="#">HB 395</a>	SHALLOW NATURAL GAS	HARRIS	(H) RES	03/12/04
<a href="#">HB 401</a>	AHFC WATER & SEWER BONDS	RLS BY REQUEST OF THE GOVERNOR	(H) CRA	01/28/04
<a href="#">HB 420</a>	SHALLOW NATURAL GAS RECOVERY ACTIVITIES	OIL & GAS	(H) O&G	02/02/04
<a href="#">HB 515</a>	MUNICIPAL WATER AND SEWER UTILITIES	LABOR & COMMERCE	(H) FIN	03/18/04
<a href="#">HB 524</a>	WASTE MANAGEMENT/DISPOSAL	RLS BY REQUEST OF THE GOVERNOR	(S) RLS	04/05/04
<a href="#">HB 546</a>	POLLUTION DISCHARGE & WASTE TRMT/DISPOSAL	RLS BY REQUEST OF THE GOVERNOR	(H) JUD	04/06/04
<a href="#">HJR 36</a>	MITIGATING GLACIER BAY FISHING CLOSURES	WEYHRAUCH	TRANSMITTED TO (S)	04/06/04

<a href="#">HSCR 1</a>	DISAPPROVING EXECUTIVE ORDER 107	GARA	(H) RES	03/28/03
<a href="#">SB 39</a>	FISH & GAME IN NAVIGABLE WATERS	OGAN	(S) STA	01/22/03
<a href="#">SB 66</a>	MINING:INFRASTRUCTURE FUND/WATER STANDARD	GUESS	(S) RES	02/12/03
<a href="#">SB 88</a>	FOREST RESOURCES & PRACTICES STANDARDS	SEEKINS	CHAPTER 123 SLA 03	06/18/03
<a href="#">SB 143</a>	COASTAL MANAGEMENT PROGRAMS	RLS BY REQUEST OF THE GOVERNOR	(S) RES	03/12/03
<a href="#">SB 279</a>	AHFC WATER & SEWER BONDS	RLS BY REQUEST OF THE GOVERNOR	(H) CRA	04/01/04
<a href="#">SB 295</a>	EXTEND NAVIGABLE WATERS COMMISSION	TERRIAULT	(H) FIN	03/18/04
<a href="#">SB 305</a>	ASSERTING STATE TITLE TO SUBMERGED LAND	TERRIAULT	(H) FIN	03/18/04
<a href="#">SB 310</a>	SHALLOW NATURAL GAS	STEVENS G	(S) CRA	02/09/04
<a href="#">SB 355</a>	WASTE MANAGEMENT/DISPOSAL	RLS BY REQUEST OF THE GOVERNOR	(S) RES	03/12/04
<a href="#">SB 378</a>	POLLUTION DISCHARGE & WASTE TRMT/DISPOSAL	RLS BY REQUEST OF THE GOVERNOR	(S) FIN	04/06/04
<a href="#">SJR 25</a>	FLOODING AND EROSION CONTROL ASSISTANCE	OLSON	(S) RLS	03/31/04
<a href="#">SJR 27</a>	SUBMERGED LAND TITLE DISPUTES	SEEKINS	(H) RLS	03/15/04

[SSCR 1](#) DISAPPROVING EXECUTIVE ORDER 107 ELTON (S) STA 03/10/03

[Alt Information](#)

---

**Subject FISH & GAME (BOTH) : MultiBill Display**

---

BILL	SHORT TITLE	PRIME SPONSOR(s)	CURRENT STATUS	STATUS DATE
HB 24	AGREEMENTS ON MANAGEMENT OF FISH AND GAME	WEYHRAUCH, WHITAKER	CHAPTER 95 SLA 03	06/16/03
HB 48	ANCHORAGE COASTAL WILDLIFE REFUGE	ROKEBERG	(H) CRA	01/21/03
HB 78	UNIFIED PERMIT APPLICATION	KERTTULA	(H) RES	02/05/03
HB 86	INJUNCTIONS AGAINST PERMITTED PROJECTS	FATE	CHAPTER 81 SLA 03	06/12/03
HB 284	FISH & GAME PEACE OFFICER RETIREMENT	CRAWFORD	(H) STA	04/25/03
HB 370	NATURAL GAS: MUNI LAW;ACCESS;WATER SUPPLY	GARA	(H) O&G	01/12/04
HCR 30	REORGANIZE STATE AGENCIES	KOHRING	(H) STA	02/16/04
HJR 2	CONST. AM: SUBSISTENCE	WEYHRAUCH	(H) RES	01/21/03
SB 23	ANCHORAGE COASTAL WILDLIFE REFUGE	STEVENS B	(S) TRA	01/21/03
SB 39	FISH & GAME IN NAVIGABLE WATERS	OGAN	(S) STA	01/22/03
SB 60	UNIFIED PERMIT APPLICATION	GUESS	(S) RES	03/17/03

SB 97	ATTY FEES: PUBLIC INTEREST LITIGANTS	RLS BY REQUEST OF THE GOVERNOR	(S) RLS	04/29/03
SB 127	PRIORITY TREATMENT OF PERMIT APPLICATIONS	OGAN	(S) RES	03/07/03
SB 166	ATTY FEES: HUNTING/FISHING INTERFERENCE	OGAN	(S) RES	04/02/03
SB 318	CONSUMPTIVE USE OF FISH AND GAME	SEEKINS	(S) RES	02/11/04
SJR 2	CONST AM: SUBSISTENCE FISHING AND HUNTING	DYSON	(S) RES	01/21/03

[Alt Information](#)

---

**Subject ENVIRONMENTAL CONCERNS : MultiBill  
Display**

---

BILL	SHORT TITLE	PRIME SPONSOR(s)	CURRENT STATUS	STATUS DATE
HB 59	CLEANUP OF ILLEGAL DRUG SITES	HOLM	CHAPTER 142 SLA 03	07/16/03
HB 78	UNIFIED PERMIT APPLICATION	KERTTULA	(H) RES	02/05/03
HB 81	MOTOR VEHICLE EMISSIONS INSPECTION	MEYER	CHAPTER 97 SLA 03	06/16/03
HB 86	INJUNCTIONS AGAINST PERMITTED PROJECTS	FATE	CHAPTER 81 SLA 03	06/12/03
HB 87	MINING:INFRASTRUCTURE FUND/WATER STANDARD	CROFT	(H) RES	02/10/03
HB 89	FISH HANDLING AND DELIVERY STANDARDS	STEVENS	(H) FSH	02/10/03
HB 113	DISCHARGE PREVENTION	RLS BY REQUEST	(H) FIN	03/14/03

	& CONTINGENCY PLANS	OF THE GOVERNOR		
HB 160	EMISSION CONTROL PERMIT PROGRAM	RLS BY REQUEST OF THE GOVERNOR	CHAPTER 46 SLA 03	06/06/03
HB 187	EXTEND BOARD OF STORAGE TANK ASSISTANCE	RLS BY REQUEST OF LEG BUDGET & AUDIT	CHAPTER 33 SLA 03	05/29/03
HB 191	COASTAL MANAGEMENT PROGRAMS	RLS BY REQUEST OF THE GOVERNOR	CHAPTER 24 SLA 03	05/21/03
HB 192	DNR LEAD RESOURCE DEVELOPMENT PROJECTS	RLS BY REQUEST OF THE GOVERNOR	(H) RLS	04/29/03
HB 196	CARBON SEQUESTRATION	BERKOWITZ	(S) RES	05/17/03
HB 238	MERGE DEC INTO DNR	KOHRING	(H) W&M	04/02/03
HB 314	TRACKING OF PESTICIDE USE	CISSNA	(H) L&C	05/09/03
HB 370	NATURAL GAS: MUNI LAW;ACCESS;WATER SUPPLY	GARA	(H) O&G	01/12/04
HB 395	SHALLOW NATURAL GAS	HARRIS	(H) RES	03/12/04
HB 399	DEPT. OF ENVIRONMENTAL CONSERVATION FEES	RLS BY REQUEST OF THE GOVERNOR	(H) STA	02/04/04
HB 420	SHALLOW NATURAL GAS RECOVERY ACTIVITIES	OIL & GAS	(H) O&G	02/02/04
HB 447	2004 REVISORS BILL	RLS BY REQUEST OF LEGISLATIVE COUNCIL	(S) STA	03/26/04

HB 485	ENERGY PROGRAMS & FUNDS	RLS BY REQUEST OF THE GOVERNOR	(H) CRA	03/18/04
HB 486	MINING RECLAMATION ASSURANCES/FUND	RLS BY REQUEST OF THE GOVERNOR	(S) FIN	04/06/04
HB 522	SMALL CRUISE SHIP DISCHARGES	STATE AFFAIRS	TRANSMITTED TO (S)	04/06/04
HB 524	WASTE MANAGEMENT/DISPOSAL	RLS BY REQUEST OF THE GOVERNOR	(S) RLS	04/05/04
HB 546	POLLUTION DISCHARGE & WASTE TRMT/DISPOSAL	RLS BY REQUEST OF THE GOVERNOR	(H) JUD	04/06/04
HJR 19	FEDERAL DIESEL FUEL REQUIREMENTS	SAMUELS	(H) RLS	04/16/03
HJR 42	EXXON VALDEZ DAMAGE CLAIMS	CRAWFORD	(H) RES	02/16/04
HSCR 1	DISAPPROVING EXECUTIVE ORDER 107	GARA	(H) RES	03/28/03
SB 9	CLEANUP OF ILLEGAL DRUG SITES	GUESS	(S) JUD	02/12/03
SB 27	TRACKING OF PESTICIDE USE	ELLIS	(S) L&C	01/21/03
SB 44	OIL SPILL RESPONSE COST RECOVERY	OLSON	(S) RES	01/29/03
SB 60	UNIFIED PERMIT APPLICATION	GUESS	(S) RES	03/17/03
SB 66	MINING:INFRASTRUCTURE FUND/WATER STANDARD	GUESS	(S) RES	02/12/03

SB 74	DISCHARGE PREVENTION & CONTINGENCY PLANS	RLS BY REQUEST OF THE GOVERNOR	CHAPTER 12 SLA 03	04/29/03
SB 88	FOREST RESOURCES & PRACTICES STANDARDS	SEEKINS	CHAPTER 123 SLA 03	06/18/03
SB 97	ATTY FEES: PUBLIC INTEREST LITIGANTS	RLS BY REQUEST OF THE GOVERNOR	(S) RLS	04/29/03
SB 116	EMISSION CONTROL PERMIT PROGRAM	RLS BY REQUEST OF THE GOVERNOR	(S) FIN	04/07/03
SB 127	PRIORITY TREATMENT OF PERMIT APPLICATIONS	OGAN	(S) RES	03/07/03
SB 142	DNR LEAD RESOURCE DEVELOPMENT PROJECTS	RLS BY REQUEST OF THE GOVERNOR	CHAPTER 23 SLA 03	05/21/03
SB 143	COASTAL MANAGEMENT PROGRAMS	RLS BY REQUEST OF THE GOVERNOR	(S) RES	03/12/03
SB 144	CARBON SEQUESTRATION	FRENCH	(S) STA	03/17/03
SB 149	TIMBER/ TIMBER SALES/ STATE FORESTS	TAYLOR	CHAPTER 153 SLA 03	08/08/03
SB 164	EXTEND BOARD OF STORAGE TANK ASSISTANCE	RLS BY REQUEST OF LEG BUDGET & AUDIT	(S) FIN	04/10/03
SB 233	PESTICIDES & BROADCAST CHEMICALS	ELLIS	(S) HES	05/21/03
SB 275	DEPT. OF ENVIRONMENTAL CONSERVATION FEES	RLS BY REQUEST OF THE GOVERNOR	(S) RES	01/23/04
SB 310	SHALLOW NATURAL GAS	STEVENS G	(S) CRA	02/09/04

SB 337	ENERGY PROGRAMS & FUNDS	RLS BY REQUEST OF THE GOVERNOR	(S) FIN	03/31/04
SB 339	MINING RECLAMATION ASSURANCES/FUND	RLS BY REQUEST OF THE GOVERNOR	(S) FIN	03/04/04
SB 355	WASTE MANAGEMENT/DISPOSAL	RLS BY REQUEST OF THE GOVERNOR	(S) RES	03/12/04
SB 361	SMALL CRUISE SHIP DISCHARGES	RESOURCES	(S) RES	04/01/04
SB 378	POLLUTION DISCHARGE & WASTE TRMT/DISPOSAL	RLS BY REQUEST OF THE GOVERNOR	(S) FIN	04/06/04
SCR 2	CHILDREN'S ENVIRONMENTAL HEALTH	ELLIS	(S) HES	01/23/03
SJR 16	END FEDERAL ETHANOL SUBSIDY	BUNDE	LEGIS RESOLVE 22	07/28/03
SJR 25	FLOODING AND EROSION CONTROL ASSISTANCE	OLSON	(S) RLS	03/31/04
SJR 26	APPEAL WILDERNESS SOCIETY V U.S. F.&W.	WAGONER	LEGIS RESOLVE 37	04/01/04
SJR 28	EXXON VALDEZ DAMAGE CLAIMS	WAGONER	(S) RES	02/11/04
SSCR 1	DISAPPROVING EXECUTIVE ORDER 107	ELTON	(S) STA	03/10/03

Alt Information

---

**Subject PARKS & RECREATION : MultiBill Display**

---



BILL	SHORT TITLE	PRIME SPONSOR(s)	CURRENT STATUS	STATUS DATE
HB 273	PARENTS' WAIVER OF CHILD'S SPORTS CLAIM	MCGUIRE	(H) RLS	03/29/04
HB 345	CAMPSITE FEES: DISABLED VETERANS/SENIORS	FATE	(H) RES	01/12/04
HB 402	LABOR & WORKFORCE DEVELOPMENT FEES	RLS BY REQUEST OF THE GOVERNOR	(H) FIN	03/22/04
HJR 36	MITIGATING GLACIER BAY FISHING CLOSURES	WEYHRAUCH	TRANSMITTED TO (S)	04/06/04
HJR 41	LAND RECREATIONAL VISITOR PROTECTION ACT	KERTTULA	(H) CALENDAR 4/7	04/06/04
SB 16	APPROP: NINILCHIK PEDESTRIAN ACCESS	WAGONER	(S) TRA	01/21/03
SB 132	MINTO FLATS GAME REFUGE & TOWNSITE	LINCOLN	(S) CRA	03/10/03
SB 175	LIABILITY:RECREATIONAL ACTIVITY/BOATS	SEEKINS	CHAPTER 121 SLA 03	06/18/03
SB 190	KENAI RIVER SPECIAL MANAGEMENT AREA	WAGONER	(H) CRA	03/08/04
SB 270	AVALANCHE AWARENESS MONTH	GREEN	CHAPTER 10 SLA 04	03/23/04
SB 278	LABOR & WORKFORCE DEVELOPMENT FEES	RLS BY REQUEST OF THE GOVERNOR	(S) FIN	02/20/04

## **Old Business**

### **TP-47 Project Handouts**

#### Updating the Precipitation Frequency Atlas of the United States

Documents published by NOAA's National Weather Service (NWS) are in serious need of revision and update. They have not been updated since the mid 1960s.

The documents provide key information used extensively by the engineering and environmental communities, to obtain rainfall related criteria for the design of structures ranging from bridges to sewers and drainage systems, for environmental studies and design, and for sediment control by agricultural interests. The documents are key to updating the National Flood Insurance rate maps (FEMA) and pollution control in streams (EPA's NPDES Program).

Design criteria from the documents are included in regulations of many Federal, state and local agencies.

The National Weather Service has historically updated the documents at the request of and with funds provided by other Federal agencies who regulate and oversee construction of infrastructure projects based on the standards. While there is an urgent need for updating, funds have not been provided for a full national update or for Alaska.

The National Weather Service has recently updated the standards for the semiarid southwest (Utah, Nevada, New Mexico, Arizona and southeast California) and is working on updates to thirteen states in and around the Ohio River basin, Puerto Rico, and the Virgin Islands.

Funds are urgently needed to update the remaining areas in order to complete the Precipitation Frequency Atlas of the United States. The cost of updating the remaining areas is \$4M over 3 years. \$1M of this is required for Alaska.

The National Weather Service has assembled a team of critical expertise from several disciplines for current projects due for completion in FY04. Large scale precipitation frequency studies require very specialized and experienced expertise. U.S. procedures are generally regarded as world best practice. The team currently in place has developed the required level of expertise and as well as the cost effective procedures required for such large scale studies. This critical mass of expertise has taken time and money to assemble and should not be allowed to fall apart before updates are completed for the entire country.

NOAA, the parent agency of the National Weather Service, is a component of the Department of Commerce.

# ALASKA PRECIPITATION FREQUENCY STUDY

## **Background**

Current precipitation-frequency studies for Alaska for durations from 1 hour to 24 hours are contained in Technical Paper No. 47 (Miller, 1963) "Probable Maximum Precipitation and Rainfall-Frequency Data for Alaska." For durations from two to ten days, the return frequencies are contained in Technical Paper No. 52 (Miller, 1965) "Two- to Ten-Day Precipitation for Return Periods of 2 to 100 Years in Alaska."

Technical Papers 47 and 52 were based on data through the early 1960s. For durations from 14 hour through 24 hours, only nine stations were available, and only three of these stations had more than 15 years of data. Relations for less than 24 hours were not well founded, and the relations from 2 days and greater need to be re-evaluated. Thus these publications need to be replaced with an updated study.

New statistical techniques for the determination of frequency distributions and objective spatial analyses developed over the past 30 years will be used to develop frequency relations. The extensive adoption of automated procedures by hydrologists, engineers, and others requires that the results of these efforts be made available in a computer compatible format. Therefore, an additional effort will be directed at producing a digital file that is adaptable to as many users as possible.

## **Current Funding Status**

At the national level, the Federal Advisory Committee on Water Information's Subcommittee on Hydrology (SOH) has agreed that federal water agencies should support NOAA's National Weather Service with appropriate funding to complete the update of the Precipitation Frequency Atlas of the United States. They have requested the attached draft motion, which is to go to the Subcommittee's parent body, the Advisory Committee on Water Information (ACWI) (<http://water.usgs.gov/wicp/>) with a recommendation that ACWI endorse it. Federal Water Agencies are supposed to follow ACWI recommendations.

NWS is seeking a partnership between 5-6 Federal agencies to do a full national update. The cost is about \$200K per agency per year over 3-4 years. So far USACE and NRCS are in and NWS will fund a share too.

A potential action that Alaskan organizations could take is to ask appropriate federal agencies to support the recommendation of the Federal Advisory Committee on Water Information's Subcommittee on Hydrology that federal water agencies should support NOAA's National Weather Service with appropriate

funding to complete the update of the Precipitation Frequency Atlas of the United States. Potential federal agencies may include:

U.S. Army Corps of Engineers - regulation, design and construction  
FEMA - National Flood Insurance Program, flood insurance rate map updates  
EPA - pollution discharge regulation  
DOT/FHWA - hydrologic design for road and highway systems  
USDA/NRCS - regulation, design, construction and erosion control  
Bureau of Reclamation - regulation, design and construction  
U.S. Forest Service - burned area remediation studies  
Bureau of Land Management - design and construction

There has recently been some progress with FEMA on funding for precipitation frequency updates. Now would be a good time to make FEMA aware of the need for Alaska updates. The national leaders need to hear from their local people that the need is real and we're doing it for them. The contacts at the national level in FEMA are:

1. Anthony Lowe, FEMA Director
2. Michael Howard, Chief, Risk Identification Branch

It would also be a good idea for memos to be going to the national offices for EPA and DOT.

Since budgets are tight for most or all of these agencies, attached is a one-page fact sheet that can be used when approaching potential funding sources.

More detailed information on the topic can be obtained from the following invited papers (pdf) and presentation (powerpoint):

Transportation Research Board Annual Meeting in Washington (January 2004) (<http://aprfc.arh.noaa.gov/resources/tp47/tp47rpt1.pdf>)

Southeast Regional Conference of the Association of State Dam Safety Officials in Norfolk, VA (April 2004)  
(<http://aprfc.arh.noaa.gov/resources/tp47/tp47rpt2.pdf>)

PowerPoint Presentation for the American Association of Geographers in Philadelphia, PA (March 2004)  
(<http://aprfc.arh.noaa.gov/resources/tp47/tp47pres.ppt>)

## **NWS Climate Reference Network**

### **NWS Climate Services Division and Climate Reference Network**

<http://www.nws.noaa.gov/om/csd/index.shtml>

In response to an increased emphasis on climate by the National Oceanic and Atmospheric Administration (NOAA), as well as the National Weather Service (NWS), the Climate Services Division was officially established in October 2000 as part of the newly formed Office of Climate, Water, and Weather Services. Since its inception, the Climate Services Division (CSD) has been led by Robert Livezey; in May 2002, the division reached its fully staffed level of ten employees.

The mission of NWS Climate Services is to provide vision, direction, and resources to ensure that NWS climate services are easily accessible, well understood, optimally used, and reflect customer needs. In the NWS Climate Services Vision, this is accomplished by providing:

- Real-time monitoring of climate variability (including drought conditions) nationwide down to at least the county level.
- New forecast products that:
  - Link weather and climate on intraseasonal time scales.
  - Are downscaled to local levels.
  - Reflect new insight into warm season precipitation, drought, and the Southwest monsoon.
  - Extend beyond a year to a decade or more.
- User-friendly access for the private and academic sectors to NWS climate models, climate forecast model output, climate guidance products, and knowledge.
- Sustained capability to ensure the accuracy and continuity of the U.S. historical record.
- Fully mobilized regional and field offices for customer outreach, downscaling climate forecasts, product and information dissemination, and integration and quality control of surface observations.

#### *NWS regional and local climate services implementation*

In 2003, NWS began implementing a regional and local climate services infrastructure, designating Regional Climate Services Program Managers (CSPMs) at each of the six regional headquarters as well as a Climate Focal Point (CFP) at each River Forecast Center (RFC), Weather Forecast Office (WFO), and Weather Service Office (WSO). The CSPM in Alaska is Dr. Gary Hufford (271-3886) and the CFP in the APRFC is Dr. Scott Lindsey (266-5157). As NWS established its regional and local climate services, CSD conducted outreach to others in the climate community (including AASC, the Regional Climate Centers [RCCs], and NCDC) to gather feedback on the NWS plans for

climate services as well as to provide information on how the regional and local climate services providers in NWS would fit into the overall climate community. In the first year of NWS regional and local climate services implementation, each region conducted workshops to gather its CFPs for guidance and to communicate with regional and local partners in climate services.

The NOAA Climate Transition Program (NCTP) is a new competitive program to ensure the sustained delivery of user-driven climate research products to operations. The program supports the transition to operations of research that has been identified as valuable by decision-makers, operational information disseminators, and operational climate organizations. NCTP will distribute funds through open competitive grants to local, regional, or national groups, such as universities, RISAs, RCCs, SCs, private sector groups, or other federal agencies, that have a product for which there is a strong stakeholder requirement. Staffing for the program will begin in late 2004. A Federal Registry Notice will be published in 2004, with approvals and appropriations taking effect in early to mid-2005. Three or more projects will be funded in 2005.

NOAA also wishes to increase its collaboration with regional partners through the Cores concept. Regional Core meetings will bring together members of the regional and local climate communities to identify gaps in climate information and services. Meeting participants also will identify new resources for climate research and services, ensure that the NCTP process runs smoothly in their regions, and possibly provide a delivery mechanism for operational services. Meetings will initially be patterned after the Climate Prediction Assessment Science (CPAS) workshops.

NWS Alaska Region hosted a Climate Reference Network (CRN) meeting in March 2003 where over 100 users representing federal, state, and local agencies, as well as private industry, provided input on siting CRN stations and provided their climate information needs. Alaska Region has conducted some applied research with Dr. James Simpson at Scripps Institution of Oceanography on the climate database in Alaska leading to two climate-related articles:

- Simpson, J.J., G.L. Hufford, M.D. Fleming, J.S. Berg, and J.B. Ashton (2002) Long-term climate patterns in Alaskan surface temperature and precipitation and their biological consequences. *IEEE Transactions Geoscience and Remote Sensing*. 40(5): m1164-1184 and
- Simpson, J.J., G.L. Hufford, C. Daly, J.S. Berg and M.D. Fleming (in press) Two views of Alaskan and western Canadian monthly temperature and precipitation. *Arctic* vol 57.

The present status of the Climate Reference Network is that there is a fiscal plan for funding of \$1M/yr for 5 years to put in 18 CRN stations in Alaska. That budget includes everything from surveys through acquisition, deployment, and maintenance. The goal of implementing these 18 CRN stations is to reduce

climate uncertainty to less than 5%. The proposed approach for locating the stations is to establish a loose grid based upon a Monte Carlo grid simulation that relies on locations with electricity and reasonable access. The start of this proposed Alaska deployment program will be FY06. Detailed site selection may begin in summer of 2005 to enable deployment of some sites in FY06.

**Agency Reports**  
**Interagency Hydrology Committee of Alaska (IHCA)**  
**Pike's Landing – Fairbanks**  
**April 8-9, 2004**

**Agency Report – US Army CRREL**  
**U.S. Army Cold Regions Research and Engineering**  
**Laboratory**

Report to the IHCA Spring Meeting, April 8-9, 2004 Pike's Landing Fairbanks

- Working with the Corps Hydrologic Engineering Center (HEC) to include snowmelt into the current version of HEC-HMS (Hydrologic Modeling System, the replacement of HEC-1). Version 3.0 is in Beta testing with a hopeful release date of early 2004. This version has a whole new look from the existing HEC-HMS. HEC says that the release will be for calculation by sub-basins and elevation bands as well as gridded cells from 10m to 10 km.
- Statistical analysis of peak accumulated freezing degree days (AFDD) for all 1<sup>st</sup> order stations in US (coop stations not tested yet). For colder stations, the distribution is nearly normal and adequately described by the mean and standard deviation. Warmer stations (those with AFDD less than zero) didn't fit as well unless the zero years were dropped.
- RADARSAT image analysis to determine ice conditions on rivers showed that large and medium rivers ok, (smaller rivers less than 100m wide not very good) in determining ice presence, smooth ice or rough ice.
- Ship Creek Geomorphic Assessment continues. Baseline bed material characterized from Reservoir to inlet and will do again after current dredging (in reservoir) is completed. New bank restoration/stabilization project completed just upstream of Fish hatchery on Ft. Richardson.
- USARAK interested in baseline water quality monitoring prior to transition to "new" training lands usage (Stryker vehicle). May use Ship Creek as model for all Army lands in AK.
- Eagle River Flats pumping work completed final year of full program. One pump may operate next summer, concentrating on an area where new white phosphorous rounds were found in September.
- Water quality sampling in Knik Arm in May (metals, explosives, phosphorous) off of Eagle River Flats (off Goose Bay for control) showed no detectable levels. This program may continue each spring for 5 years.
- Soil and water characterization, looking for residual contaminants (explosives) from past and current training activities along Gerstle River, Delta River, Jarvis Creek, and Stuart Creek near Fort Greeley.
- Tanana Flats Training Area Access Study has begun to look at methods to access training area all year (ice bridges, ferries, permanent bridges, etc). Being conducted by UAF consortium with CRREL as USARAK reviewer.



April 5, 2004

Dear Colleague:

We invite you to participate in a workshop on “Planning and Design with World Wide Web Resources” on May 11, 2004 at the Anchorage Municipal Permitting building at 4700 Bragaw, Anchorage, AK. The objectives are to determine how different Agencies and organizations can pool their geospatially referenced data (environmental, climatic, resource, hydrologic, and other) to allow the application of analysis and delivery tools with common access by users via the World Wide Web (WWW). This capability will increase productivity of dispersed users with different needs working on problems of common interest. For example, developing environmental impact statements, resource and project management, and infrastructure design and maintenance.

The workshop will focus on the Alaska Engineering Design Information System (AEDIS) <https://m2.crrel.usace.army.mil/aedis/> that was developed over the past three years to integrate geospatial data with analysis and delivery tools for the Alaskan engineering community. Alaska Department of Transportation and Public Facilities (ADoT&PF) engineers and consulting engineers currently use the AEDIS. We are interested in developing partnerships with Agencies and organizations to further the AEDIS’s capabilities and value to a broader range of users and develop new tools through shared resources.

The AEDIS is based on a geographical information system (GIS) accessible using a Web browser to provide data and tools to aid Alaskan engineers. The AEDIS retrieves GIS data from local storage or via the WWW. Data can be displayed directly or tools can operate on data to produce derived parameters. Custom interfaces can be designed to reflect the specialized needs of individual organizations so it is not a “one size fits all” solution. Data can be hosted either by AEDIS or by Agencies and organizations, allowing them to retain control of the data and provide timely updates. Participating organizations have a strong influence on how data and tools are developed and implemented within the AEDIS to provide needed capabilities.

We invite you to examine the AEDIS and see how such a capability can benefit your organization’s work. At the workshop, we will review the current state and future potential of AEDIS, demonstrate practical uses of AEDIS by ADoT&PF, and show how AEDIS is being integrated into the University engineering curriculum. We also invite you to work with us to set the workshop agenda so that your organization’s needs to integrate GIS data with application tools are represented. This is a unique opportunity to affect the direction of an exciting capability through partnership participation at its earliest stages of development. Please register online for the workshop by April 30 at: [http://www.dot.state.ak.us/stwddes/research/train\\_cal.html](http://www.dot.state.ak.us/stwddes/research/train_cal.html). In the comments field of the registration form, please include any topics that you would like addressed or that you would like to present. We encourage short presentations of user needs.

With Best Regards,

Jerome B. Johnson, Ph.D., US Army Cold Regions Research and Engineering Laboratory  
907-353-5179. [Jerome.b.Johnson@erdc.usace.army.mil](mailto:Jerome.b.Johnson@erdc.usace.army.mil)

Clint Adler, P.E., Alaska Department of Transportation and Public Facilities  
907-451-5321, [clint\\_adler@dot.state.ak.us](mailto:clint_adler@dot.state.ak.us)

Orson Smith, Ph.D., P.E., Professor, School of Engineering, Univ. of Alaska, Anchorage  
907-786-1910, [afops@uaa.alaska.edu](mailto:afops@uaa.alaska.edu)

**Agenda**

**Planning and Design with World Wide Web Resources**

May 11, 2004

Anchorage Municipal Permitting building at 4700 Bragaw, Anchorage, AK

Morning Session

- 9:30 Welcome and Introduction
- 9:40 Overview of the Alaska Engineering Design Information System (AEDIS) capabilities and technical design of operation (Jerry Johnson).
- 10:10 The current and potential value of AEDIS for Alaska Department of Transportation and Public Facilities planning and operations (Clint Adler).
- 10:20 The incorporation of AEDIS in engineering training (Orson Smith).
- 10:30 Questions and discussion
- 10:45 Break
- 11:00 Live demonstration of AEDIS and open discussion with participants
- 12:00 Lunch break

Afternoon Session

- 1:00 Strategic planning session of interested participants to discuss issues of partnership participation, data incorporation into AEDIS, tools, and funding.

## Agency Report – US Army Corps of Engineers

### Corps of Engineers Agency Report Spring 2004

**Eklutna River Watershed Study-** Study will concentrate on the lower watershed from the old power supply dam to the inlet. Emphasis will be on fish habitat and removing the old dam which has disrupted the sediment supply to the lower river. The situation is complicated by power and water supply withdrawals at Eklutna Lake.

**Black Lake Environmental Restoration-** Black Lake water levels have fallen as much as a meter since 1950. Habitat for red salmon has deteriorated do to the decline in lake levels and shifts in the location of the major inflow channel. Project will try to prevent further reduction in water surface elevations and raise the winter lake levels to provide better over wintering habitat for the salmon. The project will also attempt to shift the major inflow stream such that it enters the lake further from the outlet then it does currently.

**Cook Inlet Modeling-** The upper portion of Cook Inlet was modeled with a 2D numeric model and a flow table. Do to the complexity of the flow characteristics (3D) of the inlet results are considered qualitative. Actual magnitudes of potential changes brought on by the proposed Anchorage port expansion and the Kink Arm Crossing are will beyond the capability of this effort. However indications from the modeling efforts are that tidal ranges could be effected in Knik Arm, shoaling could increase at the Port of Anchorage and at the Point Mackenzie Dock, and velocities thru the necked down portion of the crossing will increase 2 to 3 times above what they currently are.

**Kenai Floodplain Mapping-** The Kenai River thru Copper Landing, the Anchor River up to the highway crossings, and the Ninilchik River up to the highway will be mapped with 2-foot topo, flood flow frequency's determined, and a backwater model run to determine the 100 year floodplain in these areas.

**Kake Dam-** Realestate issues are still holding up the dam project.

**GAO Erosion Analysis-** Erosion problems at several coastal communities are being investigated to determine when and what kind of help will be needed to provide erosion protection or relocation help.

**North Slope Oil Fields-** Reviewing permit apps. for Alpine Satellite and NPR-A oil field development. Several river and stream crossings are necessary for the development.

**Homer and Dillingham Dredge Disposal Management Plans-** 20-year plans for the disposal of the material dredged from the harbors are being developed. An in-water trial will be conducted at Dillingham this June to see of the material deposited in the harbor could be pumped out into the NUshagak River without causing any environment impacts.

**Duck Creek, Mendenhal River, Chena River, Matanuska River, Ship Creek, and Chester Creek Watershed Studies-** Not much happening at our end.

**Stream gage activities-** Two new gages at Chignik and one new gage Newtok. We had a pretty good cut in funding for our general investigation funded gages. We had to cut the gage at Aniak. The Chena Project O&M gages remained the same.

## Agency Report – USDA Forest Service

Report to the IHCA Spring Meeting, April 8-9, 2004  
Pike's Waterfront Lodge, Fairbanks, Alaska

### USDA Forest Service – Alaska Region



#### October 2003 – April 2004

- 🌲 Memorandum of Agreement (MOA) with the US Geological Survey is nearing signature for regional stream flow gage index stations (Crotteau).
- 🌲 Work with ADEC on updating the MOU between agencies on the Nonpoint Source Pollution Program (Crotteau).
- 🌲 Revision of the USFS Alaska Region Soil and Water Conservation Handbook for BMPs (Crotteau).
- 🌲 Development of a national USFS core set BMP handbook (Crotteau).
- 🌲 Work with ADEC on Source Water Assessment and potentially develop policy that would dovetail with those efforts (Crotteau).
- 🌲 Revision of the Channel Type User Guide for the Tongass National Forest (Dan Kelliher, Supervisor's Office - Sitka)
- 🌲 Report on *Mercury concentrations in fish in Resurrection Creek, Alaska* (Bill MacFarlane, Chugach National Forest)

#### Other

Example from Montana (<http://water.montana.edu/watersheds/default.asp>) Could be a template for Alaska... Alaska Watersheds Online???? ???

## **Agency Report – NRCS**

### **NATURAL RESOURCES CONSERVATION SERVICE AGENCY UPDATE IHCA – April 8<sup>th</sup>-9<sup>th</sup>, 2004 Fairbanks, Alaska**

#### Staff Contacts:

Rob Sampson - NRCS State Engineer  
271-2424x117 [rob.sampson@ak.usda.gov](mailto:rob.sampson@ak.usda.gov)  
Rick McClure – Snow Survey DCO  
271-2424x113 [rmcclure@ak.usda.gov](mailto:rmcclure@ak.usda.gov)

#### **WATERSHED PROJECTS**

- Rika's Roadhouse - NRCS has completed preliminary designs and the environmental assessment to assist Alaska Parks and Recreation in stabilizing erosion along the Tanana River.
- City of Soldotna - Phase V is in construction to treat erosion along the Kenai River.
- City of McCarthy - We will start a hydrologic assessment of McCarthy Creek and the Kennecott River to try and get a handle on bedload transport rates, and management options for the town.
- NRCS is investigating flooding of the Tanana in the Salcha area along with the COE.

#### **Watershed Planning Activities**

- Nightmute Floodplain Study – Surveying will be done this summer, and hydrologic modeling (design storms and water surface profiles) is in progress. The draft report was completed and presented to the village in December 2002.
- A watershed planning effort is underway at Harding Lake, led by the Salcha-Delta Soil and Water Conservation District. Local citizens are interested in raising the lake level. COE provided LIDAR data, and a preliminary water budget has been completed.
- NRCS completed their assessment of relocation sites for Shishmaref. The citizens of Shishmaref have selected the Tin Creek site as their primary relocation site.
- Fish Creek - NRCS is assisting the watershed group to plan and design a scheme to daylight a tributary to this Anchorage Creek.

#### **Emergency Watershed Protection**

- Taiya River - NRCS has completed designs to moderate erosion along the Taiya River. This erosion was exacerbated by the West Creek moraine failure in July 2002. The completed system includes a constructed logjam, and two rock weirs.
- City of Valdez - NRCS has completed a design to protect the dump road. The construction will be completed this summer.
- Village of Metlakatla - NRCS has completed a design to stabilize a hillslope and protect 9 houses in the village. Construction will be this fall.

### SNOW SURVEY ACTIVITIES

*The following is the progress made in Alaska Snow Survey/Water Supply Forecasting Program (SS/WSFP) for the fiscal year 2003*

NRCS appreciates the In-Kind Services provided annually to the Snow Survey Program from each of the agencies and private companies.

- Three new SNOTEL sites are scheduled to be installed this field season: 2 sites in the Bradley Lake Hydro-electric project, and one re-established at Anchor River Divide.
- A 5 year Strategic Plan was developed for new SNOTEL site installations

Currently we are responsible for **34 SNOTEL** sites reporting hourly information to the web site **ambcs.org**. The web site has daily midnight readings since the beginning of the Water Year. We have stored the midnight readings in an annual file available by way of e-mail for previous years of record

An updated Snow Survey site map was made available in July and is on the web site along with updated meta-data files for the SNOTEL sites.

The Alaska staff consists of a Hydro-tech, Statistical Assistant, and Data Collection Officer (DCO). With the increase in SNOTEL sites and new snow courses, a Hydrologist is needed. This position may be advertised and filled as a GS 7/9/11 professional hydrologist, a nte 1 year term appointment with conversion to permanent full time.

## Agency Report – National Weather Service

### Agency Report

*Presented by*

**Larry Rundquist**

**Development and Operations Hydrologist**

**National Weather Service  
Alaska-Pacific River Forecast Center (APRFC)**

**<http://aprfc.arh.noaa.gov>**

**April 2004**

### Management and Staff

Current staffing and contacts are as follows:

Robin Radlein - Regional Hydrologist/Alaska Region & Hydrologist in Charge of APRFC

266-5151 or [robin.radlein@noaa.gov](mailto:robin.radlein@noaa.gov)

Larry Rundquist - Development and Operations Hydrologist

266-5152 or [larry.rundquist@noaa.gov](mailto:larry.rundquist@noaa.gov)

Becky Perry - Hydrotech/Administrative Assistant, 266-5150 or [becky.perry@noaa.gov](mailto:becky.perry@noaa.gov)

#### Hydrologists

Scott Lindsey, 266-5157

Dave Streubel, 266-5156

Ben Balk, 266-5155 Eric Holloway, 266-5154

Jim Coe, 266-5159

#### Hydrometeorological Analysis & Support

##### Forecasters

Jeff Perry, 266-5158

Arleen Lunsford, 266-5153

#### Weather Forecast Office Hydrology Contacts:

Anchorage - John Papineau, Senior Service Hydrologist, 266-5165

Fairbanks - Ed Plumb, Service Hydrologist, 458-3714

Juneau - Mike Mitchell and Aaron Jacobs, Hydro Focal Points, 790-6824

### Operations/Flooding

Rainfall flooding was reported on the Yentna, upper Kenai, and Iliamna rivers in October and in southeast Alaska during November. Freeze-up jam flooding occurred on the Nushagak River at Ekwook and the Kenektok River at Quinhagak in southwest Alaska in November. Minor flooding resulted from rain and snowmelt in Yakutat in early February.

We are currently anticipating an average flood threat during the breakup season this spring associated with a below normal to normal snowpack and ice thickness in many areas, but this is dependent on the weather during April and May. The weather outlook for the April through June period is for higher likelihood of warmer temperatures, but the outlook for April showed no tendency for warmer or cooler temperatures. A later warmup would increase the potential for snowmelt and ice jam flooding.

### River/Rain Gaging network

There was no expansion of our river observer gage network over the winter and we have no specific plans for new sites this year. We had FY03 funding for a coop modernization program to expand our weather gage network. We have purchased six weather stations and are evaluating locations for these gauges. The typical gauge will include wind speed and direction, air temperature, dew point temperature, precipitation, and atmospheric pressure. Additional sensors may include solar radiation, snow depth sensor, and snow pillow.

The NWS has identified five primary sites and five alternative sites for the equipment as shown on the map at <http://aprfc.arh.noaa.gov/resources/harding/coopmodn.jpg> . The five primary and alternative sites that we have identified are listed below. We are in preliminary planning stage for most of these sites and still have to do land management agency coordination and detailed siting tasks for many of the sites.

1. Harding Ice Field (~60 08, ~149 47) - This site is a cooperative effort between NWS, NPS, and USGS. The partner agencies conducted a site reconnaissance on December 2, 2003 (see <http://aprfc.arh.noaa.gov/resources/harding/harding.htm>). Current status is that NPS is working on an EA for the site. This gauge will be installed by USGS/NPS and maintained by NPS,
2. Ninilchik (~60 02, ~151 30) - We are targeting to get a gauge in the Ninilchik River or Deep Creek basin... thus locating it east of the Sterling Highway on the backroads system west of the Caribou Hills. NRCS plans to reactivate their Anchor Divide site about 10 miles SE of our intended location. An existing NWS gauge at Caribou Lake (pcpn, temp, dew pt) would be located about 15 mi ESE of the proposed site.
3. Grindall point (~55 27, ~132 09) - This site was selected primarily for marine forecasting purposes, but will add another rain gauge in the rainy area. It is located near the convergence of Clarence Strait and Behm Canal on the SE most point of the Kasaan Peninsula on Prince of Whales Island. There is a cabin and boat harbor nearby. Apparently, power is available. The site is near sea level. This area is very exposed to a) high winds and large waves from the open waters of Dixon Entrance and b) strong outflow winds from Behm Canal. Human transportation and the movement of goods in this area is highly dependent on public, private, and recreational marine operators and air taxi service. Observations from Grindall Point would improve weather safety information, benefit climate services in southeast Alaska, and provide ground truth data to assess and calibrate NWS forecasts.
4. Sag River DOT Camp (~68 46, ~148 93) - Proposed site at DOT maintenance camp has had data collected in 94-95 and desire is to get this going again. Located in the Sag River basin at the transition from the Brooks Range to the North Slope, it will provide good information for potential road washouts as have occurred in recent years. The proposed location is about 15 miles NE from an NRCS snotel site at Imnaviat Creek. This site location may be abandoned due to the proximity of the NRCS site and depending upon the availability of the UAF gauge network in the area.
5. Wade Creek (~64 10, ~141 27) - This proposed site along the Taylor Highway was selected due to occasional washouts of the Taylor Highway due to heavy rains. Due to lack of info in the area, washouts are normally reported post event. The ability to monitor precipitation in the basin will allow NWS to forecast periods of threatened washouts.

Alternates for the sixth gauge and in case one or more of the above gauges can not be installed are as follows:

- 6a. Denali Highway at Susitna River (~63 06, ~147 31) - This is a data sparse location in the upper Susitna River basin. The priority for this gauge would drop if NRCS puts telemetry on Monahan Flats site where they have been collecting precipitation and snow data for 20 years.



6b. Black Rapids Glacier (~63 33, ~145 51) - This proposed site is in an area that can get significant rains and rapid rises on small streams crossing the Richardson Highway. The proposed location is about 10 miles north of a DOT RWIS Phase II site at Trims Creek maintenance camp.

6c. Judd Lake (~61 34, ~151 33) - This proposed site is located on the west side of Cook Inlet north of Beluga Lake in an upslope area of the Alaska Range that receives moderate precipitation amounts. The site would be within the Kenai radar umbrella. The lake is in the headwaters of the popular remote Talachulitna River.

6d. Wild Lake (~67 30, ~151 35) - This proposed site is located about 35 mi N of Bettles in the Brooks Range in the headwaters of a tributary to the flood-prone Koyukuk River. The area is data-sparse and in the upslope area of the southern Brooks Range.

6e. Eyak Lake Outlet (~60 32, ~145 38) - This proposed site is located 3-4 miles east of the new NWS weather station at the Cordova harbor and ~7 mi WNW of the airport. Possible monitoring of Eyak Lake/River levels. Would help to document Cordova microclimate.

### **ASOS Precipitation Gauge Replacement**

A new sensor will join the Automated Surface Observing System (ASOS) sensor suite later this year to improve measurements of freezing and frozen precipitation accumulation. Testing of the All Weather Precipitation Accumulation Gauge (AWPAG) has been completed. The gauge will be deployed at all locations by September 2004. The AWPAG measures precipitation by weighing the total accumulation in its bucket, which has a capacity of about 56 inches. Some of this capacity is reserved for propylene glycol antifreeze, so the rated capacity is 40 inches of precipitation. Solid precipitation is converted to liquid upon contacting the antifreeze. The bucket sits on a weighing mechanism. An internal microprocessor helps eliminate the effects of evaporation and vibration from wind. The AWPAG rim is heated to prevent ice accumulation.

### **Projects**

We implemented a nationwide change to our operating system from Unix to Linux and made required changes to supporting programs and scripts. We calibrated our hydrologic model for the Situk River and recalibrated the model for the upper Yukon, upper Tanana, Willow, and Mendenhall basins. We experimented with dividing glaciers into two segments within the model to represent the accumulation and ablation zones. We plan to issue a set of experimental products this summer for extended periods that include uncertainty estimates. We are working on a study to establish flood stages for all of our forecast points that will be based on the updated flood frequency information developed by USGS. We have selected the 5-yr recurrence interval flow as the nominal flow for minor flooding until field verification of more accurate flood levels can be done. We are in the process of analyzing the Talkeetna River stage data to change the NWS stage datum and flood stage to be compatible with the USGS gauge. We have been

making upgrades to our web page, including several map graphics for snow information.

### **Airborne Snow Water Equivalent Program**

The National Operational Hydrologic Remote Sensing Center (NOHRSC) maintains an operational Airborne Gamma Radiation Snow Survey Program to make airborne snow water equivalent (SWE) and soil moisture measurements. Each flight line is typically 16 km long and 300 m wide, covering an area of approximately 5 sq. km. Consequently, each airborne snow water equivalent measurement is a mean areal measure integrated over the 5 sq. km. area of the flight line. More background on this program is provided on the NOHRSC web site at:

<http://www.nohrsc.nws.gov/snowsurvey/gammapage.html>

An airborne gamma snow water equivalent (SWE) data collection program was initiated in Alaska in August of 2002 with the collection of background gamma radiation data on 107 flight lines. Additional background flight lines were developed in the summer of 2003. Associated soil moisture data were collected and analyzed.

All Alaska flight lines are scheduled to be flown in mid-April to evaluate the water equivalent of the snowpack on the flight line. The pilots will disseminate the products each evening following the flight. Thus, once they begin the flights in Alaska on or about April 8th, new data is expected on a daily basis, weather permitting, until they complete the survey.

Standard dissemination of the data will be via a SHEF encoded product that will list the flight line number, date, percent of snow cover on the flight line, average SWE for the flight line, and other supportive information that may include comments by the pilots about snow or ice conditions in the vicinity of the flight line. The pilots will note conditions on the SHEF product and they will also take digital photos during the flights if conditions warrant. All information can be found on their web site on the airborne snow survey page and clicking on Alaska Snow Survey in the table in the middle of the page:

<http://www.nohrsc.nws.gov/snowsurvey/>

This information and a list of sites in Alaska is on the APRF

**Agency Report – Bureau of Land Management**

**Report to IHCA, April 8-9, 2004  
Bureau of Land Management**

In cooperation with the Dalton fisheries personnel, NFO hydrologists began collecting data at a new stream gaging site on the South Fork of the Koyukuk River, just down stream of the pipeline. A discharge measurement in mid-March found over 5 feet of ice with less than a half foot of water flowing underneath. Stream gaging will continue on both the Jim and Kanuti Rivers.

Snow surveys at four sites in the White Mountains National Recreation Area, completed in late March, found the snowpack below normal for the fourth year in a row. Eight of the last ten years have been less than average for both snow depth and water equivalent.

A water resources report on the Colville River Special Area will be published by the time of the IHCA meeting. Copies are available from Public Affairs offices in Anchorage and Fairbanks.

The Lake Todatonten snow course was right at normal for the end of February.

Field operations in NPRA - 2003 and continuing in 2004

:

Visited over 30 stream sites to collect baseline stream flows, channel geometry and water chemistry. Established 6 lake sites to monitor long-term lake levels and changes to lake chemistry.

Operated the following gauging stations on Kalikpik R, Inigok Ck, Fish Ck, Judy Ck, Ublutuoch R and Otuk Ck

Operated the following real-time gauging stations (GOES) with meteorological data:

Ikpikpuk R bl Fry Ck: Stage, water/air temp, wind speed/direction, precipitation

Fish Ck Mile 32: Stage, water/air temp, wind speed/direction, precipitation

UAF, in cooperation with BLM, installed a lake monitoring raft, on Lake L9817, eight miles west of Nuiqsut in March 2004. This floating water quality monitoring raft reports real-time D.O. Conductivity, pH and water temperature to a base station in Nuiqsut. This is part of a UAF three-year Tundra Lakes Monitoring Program in cooperation with DOE, BP, Cononco/Phillips (CPAI).

BLM is assisting the collection of breakup field data for studies performed by CPAI related to Fish Ck, Judy CK, and the Ublutuoch R

BLM assisted in operation of the USGS gauging station on the Colville R at Umiat by servicing the gauge and making discharge measurements for use in rating development.

In cooperation with the USGS, the BLM-Anchorage Field Office (AFO) has continued to maintain equipment and monitor river stage and temperature of both the Unalakleet and Anvik Rivers. Each location has proved to be exceptional choices for data collection in development of a hydrologic rating curve.

A successful Properly Functioning Condition (PFC) was performed within the George River basin, Alaska. A total of 1400 miles of reportable units of accomplishment were performed.

#### Issues:

More real-time meteorological data collection is needed in NPRA as well as additional rainfall and snowfall data collection. The NWS observer at Umiat has been discontinued (April 2001) and a long-term automated installation or coop agreement is needed with the current operator of the lodge. The Umiat dataset begins in 1949 and ends April 2001. BLM/USGS installed an air temperature in June 2002 to present at the gauging site but a permanent collection effort should be established at the lodge.

There is a need for long-term monitoring of streamflow of the Colville R near Nuiqsut above the delta at the former gauging site of the USGS. 2003 is the final year breakup (which is required by COE) will be monitored on the Colville River delta. Anywhere from 20-35% of the breakup flows will pass down the Nigliq (west) Channel where there are proposed river crossings as well as a crossing on the main channel at Nuiqsut. This gauge would serve similar needs as the Kuparuk R gauge for design of road and pipeline crossings. Some lobbying effort needs to be done to secure long-term funding for this gauge. The Colville R gauge at Umiat has provided important streamflow data which has helped interpret stage records collected at Nuiqsut. The Colville at Umiat gauge record in 2003 has indicated that this river is very responsive to rainfall events on the north flanks of the Brooks Range. Several flood events rose 8-10 feet in stage in 24 hours. One major event occurred in early October which was a snowmelt event, thanks to increased met data present at Iivotuk.

## Agency Report – US Fish and Wildlife Service

Interagency Hydrology Committee for Alaska  
Agency Report –April 8 and 9, 2004, Fairbanks, AK  
U.S. Fish and Wildlife Service, Region 7, Water Resources Branch

### **Water Resource Investigations**

The Fish and Wildlife Service currently has 30 stream gaging stations in operation.

Becharof Refuge: Egegik River at the outlet of Becharof Lake is being gaged; the project will continue. Project Hydrologist - John Trawicki 786-3474

Togiak Refuge: Stream gaging was initiated in October, 1998, at 20 sites on the Togiak Refuge. At least 15 of these sites will be discontinued at the end of Water Year 2004. Project Hydrologist - Alan Peck 786-3662

Snake River	Kanektok River	Goodnews River
East Fork Arolik River	Arolik River	Upper Goodnews River
Togiak River	Pungokebuk River	MF Goodnews River
Kinegnak River	Unaluk River	Upper MF Goodnews
River		
Quigmy River	Matogak River	Kukukak River
Gechiak River	Ongivinuck River	Igushik River
Osviak River	Faro Creek	

Kodiak Refuge: 9 gages were installed in Oct.of 2000, They were temporarily out of operation due to funding (2001). They are currently operating. Project Hydrologist- Jasper Hardison 786-3458

Akalura River

Karluk River (2)  
South Olga Creek

Ayakulik River  
Dog  
Salmon Creek (2)  
Sturgeon River  
East Fork Uganik River

### **Other Hydrology News**

- X We are collecting water chemistry to establish baseline water quality conditions at select stream gaging stations. Measurements and samples will be taken at stream gaging stations during normal site visits.
- X FY2004 is slightly less than FY2003. There was an 8% reduction in travel spending imposed in FY 2003 and an additional 8% reduction in travel spending for FY2004. Outlook for FY2005 and 2006 is poor.
- X No new water right applications were filed in FY2003.
- X New hydrologist on staff Jasper Hardison.
- X Will be advertising for a permanent seasonal Hydrologist GS-1316.
- X Ecological Services recently hired a hydrologist Bill Rice.
- X Service is holding its first ever national hydrologic workshop in May 2004.
- X Will initiate a stream gage network on the Tetlin NWR this summer.

**Ecological Services and Fishery Resources:**

John: Our Partners for Fish and Wildlife, Coastal, and Fish Passage Programs all provide technical and financial support for projects that benefit water resources/watersheds. The best place for partner agencies to learn about these programs is at <http://alaska.fws.gov/fisheries/restoration/index.htm>. Together, these programs implement more than 100 projects annually in Alaska. Staff are located at 4 Field Offices. Contacts and a few selected projects are listed below:

Fairbanks	Elaine Mayer	Chena Slough Fish Passage Improvements; Salcha River Riparian Restoration
Juneau	Neil Stichert	Pullen Creek (Skagway) Restoration Planning; Sawmill Creek (Haines) Post-Restoration Monitoring
Kenai	Brie Darr	Kenai River Riparian Restoration
Anchorage	Mary Price Restoration John Delapp Bill Rice Breaching	Moose Creek (Chickaloon) Fish Passage Wasilla Creek Conservation Planning Ship Creek (Anchorage) Dam Removal or

**Agency Report – US Geological Survey**

**U.S. GEOLOGICAL SURVEY AGENCY REPORT  
April 2004**

**FISCAL YEAR 2004 STATUS**

Budgets for the U.S. Geological Survey (USGS), Alaska Science Center, Water Resources Office continue to decline. From the peak funding level of \$7.16 million in 2002 there has been a decrease of about \$1.75 million to 2004. Although a substantial part of the decrease can be attributed to the completion of the National Water-Quality Assessment study, decreases are seen in all parts of the program. Because of increased costs, the decrease has been even more severe.

The budget trend in Alaska in part reflects the budget trend nationally for the USGS. In terms of our federally funded streamgaging program (National Streamflow Information Program) funding in actual dollars has been flat to a slight decrease over the past few years. Because costs have increased during this time the amount of work that can be done for those dollars has decreased. At the current rate of cost increases, the amount of work that can be done with flat funding is reduced by one-quarter every three years.

A similar trend is seen in the Cooperative Water Program through which many of our agreements are funded. Nationally, funding appropriated to the USGS for this program has remained fairly constant at about \$60 million, whereas the non-Federal contributions to the program have steadily increased to about \$140 million. With increased costs of the work and no new funding available on the Federal side, cooperators are being asked to pay a larger part of the total cost of work every year. In Alaska, we can no longer offer a 50 percent match for most agreements due to the limited amount of Federal dollars available.

Currently, we are completing several studies for the National Park Service and the Alaska Department of Transportation and Public Facilities (ADOT&PF). One new data-collection project with the Army National Guard has begun in 2004. Potential new projects for 2004 are being negotiated with the Alaska Department of Environmental Conservation, Matanuska-Susitna Borough, and the National Park Service.

**POTENTIAL SCIENCE DIRECTIONS FOR USGS**

**Scour of Streambed at Bridge Crossings**

Streambed scour is the leading cause of bridge failure in the United States resulting in over 60 percent of all failures. Costs associated with repair and the societal repercussions associated with failures are amplified in Alaska, where alternate ground transportation routes between many cities do not exist.

Five scour-critical bridges throughout Alaska are monitored to develop and understanding of the overall processes associated with the initiation, magnitude, and duration of scouring and filling. Sonars mounted on the noses of bridge piers collect streambed elevations hourly, which are then transmitted daily to the USGS and the ADOT&PF using satellite transmitters. The frequency of data transmissions increases when predetermined scour thresholds are exceeded, thus providing ADOT&PF with critical information to help evaluate the safety of these structures during high flows. Preliminary data from the scour monitoring stations illustrates the ephemeral nature of streambed scour, and how after or during a peak, fill can mask potentially dangerous conditions

that would be missed by post flood measurements. Initial data from two sites indicate that scour and fill thresholds are only partially controlled by hydraulic conditions at the bridges. Intensive sediment transport into the bridge reach during high flows overshadows any local scour at the bridge. Streambed scour at the bridge reaches a maximum on the rising limb of the hydrograph before sediment transport from the upstream sections intensifies.

To better understand the reach-scale dynamics affecting scour at bridges a Real-Time Kinematic Global Positioning System interfaced with an echo sounder and acoustical Doppler current profiler are used for high-resolution and high-density data collection for multi-dimensional hydrodynamic modeling and scour evaluations. This suite of instruments simultaneously collects the data needed to generate a bathymetric dataset for modeling purposes and to validate modeled water surface elevations and velocity vectors. Hydrodynamic and sediment transport modeling in conjunction with the scour monitoring data and field measurements of scour will be used to evaluate existing equations for pier and contraction scour.

There has been interest expressed recently to broaden the audience for this type of hydraulic modeling. A proposal was requested by Congressman Don Young's office for modeling the lower 21 miles of the Kenai River and the lower 8 miles of the Kasilof River. There also is strong interest in modeling scour along pipeline crossings of the Trans Alaska Pipeline System.

#### **Coalbed Methane Development**

Coal is abundant and widely distributed in Alaska, yet in a state with such vast energy potential, development of the resource has been on a small scale. Recent economic and technological factors have spurred interest by energy companies and the State to explore development of coalbed methane. Two areas—the Matanuska-Susitna (Mat-Su) Valley and the southern Kenai Peninsula—had large tracts of land leased for exploration in 2003. Citizens and local governments in both areas are concerned with the pace of exploration and development and the lack of basic hydrologic information for evaluating potential consequences.

Currently, little knowledge exists about the quantity, quality, and interconnectivity of shallow aquifers in the Mat-Su Valley or the southern Kenai Peninsula. These aquifers are the source of drinking water for nearly all residents. The Alaska Science Center-Water Resources Office (ASC-WRO) and Central Region Geology Energy Team have submitted a proposal to develop a more thorough understanding of the geohydrologic conditions of the Mat-Su Valley and assess the energy potential of the shallow coalbeds.

Citizens of the southern Kenai Peninsula communities of Homer and Anchor Point have concerns about ground-water resources very similar to the concerns in the Mat-Su Valley. However, in Homer and Anchor Point, their concerns pre-date the coalbed methane issue as leaky underground storage tanks and gravel extraction had locally disrupted some aquifers. As recently as 2002, a group known as the Community Rivers Coalition had lobbied the Congressional delegation for funding so that the USGS could study the water resources of the area. The \$500,000 earmark was in the USGS FY2003 budget until the last day of conference negotiations. With the additional concerns over coalbed methane development the Community Rivers Coalition is again pursuing an earmark for the ASC-WRO to investigate water resources in the area.

#### **Lake Water Quality**



Although there are estimated to be over three million lakes in Alaska there is knowledge about water quality from only a handful of them. As the State's population has increased, more people are living and recreating on and around lakes. The Mat-Su Borough is the fastest growing area of the State and has numerous lakes where development is occurring. Big Lake has the greatest amount of development, where the number of homes surrounding the lake has grown from about 1,000 in the early 1980s to more than 5,000. A study of Big Lake was done by the USGS in the early 1980s and identified hypolimnetic oxygen deficits and high nutrient loads. Such potential exists for many lakes in the Borough. Another water-quality issue in Big Lake is volatile organic compounds from recreational use during both summer and winter.

The Mat-Su Borough Planning Department is in discussion with the ASC-WRO to begin a large-scale assessment of water quantity and quality Borough wide, with an initial focus on Big Lake. Preliminary discussions have identified small amounts of money available in FY2004 that may be matched with Federal dollars to begin work. However, the Borough does not envisage being able to provide adequate funding to meet the scientific needs of the problem and therefore will lobby the Congressional delegation for assistance. The ASC-WRO will work with Dr. Paul Woods, Western Region Limnology specialist to develop a proposal of a multi-year study of lake water quality in the Mat-Su Borough. This proposal will be presented to the Borough in late-winter 2004.

**Table 1.-- Data Collection Program**

Station Type	Alaska District	
	Number of Stations	
	2003	2004
Streamflow gaging station (w/o telemetry)	44	41
Streamflow gaging station (w/ telemetry)	78	82*
Partial record station	0	0
Crest stage gage	56	61
Periodic surface-water quality	5	5*
Continuous surface-water quality monitor	26	26*
Periodic sediment	3	3
Continuous sediment	0	0
Reservoir stage	3	3
Periodic ground water levels	0	0*
Continuous ground water levels	27	27*
Ground water levels w/ telemetry	0	0
Periodic ground-water quality	0	0
Continuous ground-water quality	0	0
Precipitation/meteorological	46	46

\* Does not include proposed Pebble Mine sites

## State Agency Reports

### Agency Report – Dept of Community & Economic Development

Division Report to IHCA Meeting April 8-9, 2004

#### Community Profile Mapping

New Community Profile Mapping projects for Interior Rivers communities (Aniak, Anvik, Chuathbaluk, Crooked Creek, Georgetown, Grayling, Holy Cross, Lime Village, Lower Kalskag, Napamiute, Red Devil, Russian Mission, Shageluk, Sleetmute, Stony River and Upper Kalskag) are complete.

- **Aleutians East Borough** Staff completed the final review of profile maps for the communities of Sand Point, King Cove, Akutan, and Nelson Lagoon.
- **Lake & Peninsula Borough** 15 community maps are in draft form. Need Flood Study for Chignik's.
- **Southeast** RFP out for preparation of 8 southeast communities. Tglinget/Haida Housing Authority and the Alaska Native Health consortium partnership. Staff also reviewed and discussed the aerial photography coverage with staff from Tglinget/ Haida Housing Authority that will be used to prepare the community profiles.
- **Bristol Bay** community profile AutoCAD products being converted to GIS.
- **Lower Kuskokwim** An IAID Letter of Agreement was prepared and signed by the Coastal Villages Region fund and the Department.
- **Bering Straits** An IAID Letter of Agreement was prepared and signed by Kawerak , Inc. Staff has participated in follow up discussions with Kawerak staff addressing the local match requirement and the process that will be followed to initiate the project.

**National Flood Insurance Program.** Prepared a State Business Plan for FEMA in more detail from the 2002 Alaska Flood Map Modernization Plan prepared for FEMA.

**Flood Mitigation Assistance Program.** FMA provides funding to assist the State and communities in implementing measures to reduce or eliminate the long-term risk of flood (or erosion) damage to buildings insurable under the National Flood Insurance Program.

Flood Mitigation Assistance (FMA) project grant for rebuild of on Repetitively & substantially damaged home Mile 3.1 Seward Highway.

## **Agency Report – Dept of Environmental Conservation**

**Alaska Department of Environmental Conservation (DEC)**

**Agency Report**

for the

**Interagency Hydrology Committee for Alaska**

April 8-9, 2004

Fairbanks

### **PACIFIC NORTHWEST WATER QUALITY CENTRAL DATA EXCHANGE (CDX)**

**PROJECT:** Federal, state, local, and tribal entities in the Pacific Northwest (Oregon, Washington, Idaho, British Columbia, and Alaska) face an unprecedented need to share water quality data. To help meet this need, USEPA has funded a project as part of a new national effort to improve access to environmental information and includes a high-level allocation of a \$1 million project budget. Part of this budget was established to develop and test a STORET XML data exchange node for Alaska. The most current “Data Flow Configuration” work product is available at the project website: [http://www.ecy.wa.gov/pnwdx/pnwdx\\_main.htm](http://www.ecy.wa.gov/pnwdx/pnwdx_main.htm)

### **ACWA AWARDS OVER \$900,000 IN GRANTS TO PROTECT AND RESTORE**

**ALASKA’S RIVERS, STREAMS & LAKES:** ACWA is awarding over \$900,000 in grants to fund water protection and restoration projects throughout Alaska. The ACWA partners, Alaska Departments of Environmental Conservation (DEC), Fish and Game and Natural Resources together have awarded millions of dollars in grants to help achieve the state's goal of healthy water quality, water quantity and aquatic habitat. ACWA (Alaska Clean Water Actions) ensures that available resources are focused on the State's areas of greatest need for protection and stewardship, and coordinates State efforts to clean up lakes and streams with pollution problems. For more information about ACWA and the list of priority waters and actions, go to: [http://www.state.ak.us/dec/water/acwa/acwa\\_index.htm](http://www.state.ak.us/dec/water/acwa/acwa_index.htm) Specific grant awards are listed as an attachment to this IHCA Agency report.

### **PUBLIC NOTICE OF ALASKA'S DRAFT 2004 INTEGRATED WATER QUALITY**

**MONITORING AND ASSESSMENT REPORT:** DEC is in the process of drafting Alaska’s Integrated Water Quality Monitoring and Assessment Report (also referred to as the State’s Clean Water Act (CWA) 305 (b) Report and CWA 303(d) Impaired Waterbody List. This information is important to Alaska for describing the nature, status and health of Alaska’s waters and assists Alaska focusing attention on impaired waters in need of recovery actions. The DRAFT document is expected to go to public notice April 15, 2004 for a 30-day public review.

The 2002/2003 Integrated Report is available on line at:

<http://www.state.ak.us/dec/water/wqsar/pdfs/Final%20Integrated%202002-2003%20report.pdf>

Alaska’s 2002/2003 list of 303(d) impaired waterbodies was approved by EPA in February 2004.

**WATER QUALITY STANDARDS:** DEC is preparing a triennial review to address Water Quality Standards that require special consideration to work in Alaska's environment. DEC is researching possible revision to several Water Quality Standards. Current revision projects include (1) improvements to regulatory language for residue criteria and zones of deposit; (2) changing recreation use bacteria criteria to *E. coli* and *enterococci* in place of the current fecal coliform criteria; and (3) doing a scientific review and update of the petroleum hydrocarbon standard. Later this year DEC will also begin considering whether groundwater standards should no longer include aquatic life criteria. DEC will also begin working on an implementation plan

for the state's anti-degradation policy. More information on these changes can be found on the DEC website at: <http://www.state.ak.us/dec/water/wqsar/trireview/trireview.htm> or by contacting Nancy Sonafrank at (907) 451-5170 or [nancy\\_sonafrank@dec.state.ak.us](mailto:nancy_sonafrank@dec.state.ak.us).

**ALASKA'S ENVIRONMENTAL MONITORING & ASSESSMENT PROGRAM (EMAP):**

EMAP is a national program designed "to monitor the condition of the Nation's ecological resources to evaluate the cumulative success of current policies and programs and to identify emerging problems before they become widespread or irreversible" (EPA 1997).

In 2001, the ADEC developed a Cooperative Agreement with the EPA to join collaboratively in the Western States Coastal EMAP. Marine sampling in the Southcentral region was conducted in the summer of 2002 and the completion of the report is scheduled for late 2004. A 2004 marine survey of Alaska's Columbia province (Southeast Alaska) will be conducted this summer. Field sampling will take place in the summer of 2004, with data analysis and interpretation taking the better part of 2005 with a final report due out in 2006. A freshwater study will take place in the summer of 2004 and will help evaluate the biological health of wadeable rivers and streams in the Tanana Watershed. The project will enable Alaska to test the use of freshwater EMAP protocols on a regional basis.

More information can be found by contacting Douglas Dasher (907)-451-2172 or [doug\\_dasher@dec.state.ak.us](mailto:doug_dasher@dec.state.ak.us)

**DEVELOPMENT OF A STATEWIDE WATER QUALITY MONITORING STRATEGY:**

DEC's Water Division is currently developing a statewide water quality monitoring strategy. Staff is gathering information on surface water and groundwater monitoring as well as biomonitoring efforts currently conducted in Alaska by federal and state resource agencies, the tribes and non-profit groups. Staff will be meeting with individuals from these groups in Anchorage and Fairbanks to document current monitoring practices and solicit ideas for better coordination and collaboration on future monitoring roles and activities. A draft monitoring strategy will be available for internal review by July and then will be sent to EPA for their review in September '04. A public review and workshops around the state are planned for the winter of '04-'05. EPA has asked for approximately twenty million dollars in the current federal budget to be proportioned to the states for monitoring, a portion of which may be available for Alaska by spring/summer '05.

**WATER POLLUTION EDUCATION:** DEC is drafting a Water Pollution Education Strategy to fulfill its commitment to EPA via the Performance Partnership Agreement and to create policy for water education. This strategy will also be used to align possible grant applications with overall water pollution education priorities, based on the ACWA stewardship actions and commitments of the PPG. The draft will be available for internal review April 2004 and peer review in early May 2004. For more information contact [Brenda\\_Duty@dec.state.ak.us](mailto:Brenda_Duty@dec.state.ak.us) or at (907) 269-6283.

**LIST  
OF  
SFY 2004  
ALASKA CLEAN WATER ACTION (ACWA) GRANTS**

**Southeast Region**

**Duck & Jordan Creek Watershed Recovery**, (Juneau) Mendenhall Watershed Partnership, \$53,390

Duck and Jordan Creeks are in need of recovery due to water quality concerns with sediment, residues, turbidity, dissolved oxygen, fecal coliform, and altered flows. These were formerly productive streams but have had significant declines in salmon returns in recent years. This project will continue restoration of Duck and Jordan Creeks through remediation actions, public education, and water quality-monitoring to develop and monitor the implementation of best management practices. Contact Clayton Burrows, 907-586-6853.

**Mendenhall Watershed Priority Stewardship**, (Juneau) Mendenhall Watershed Partnership, \$11,126

This project will help Alaska towards one of its priority stewardship needs to develop a model Waterbody Recovery Strategy that communities can use to protect their local watershed. The project will prioritize future stewardship actions within the Mendenhall Watershed. Contact Clayton Burrows 907-586-6853.

**Pederson Hill Creek Watershed Assessment**, (Juneau) Mendenhall Watershed Partnership, \$19,842

Pederson Hill Creek is a priority water in need of recovery, with fecal coliform being a primary water quality concern. Coliform bacteria contamination has been well documented since 1985. This project will update the watershed assessment for Pederson Hill Creek in order to prepare a TMDL and recovery strategy for Pederson Hill Creek. Contact Clayton Burrows 907-586-6853.

**Granite Creek Recovery TMDL Implementation**, City and Borough of Sitka, \$24,850

Sitka will continue the restoration of Granite Creek, for which long-term pollution problems have been identified. Since 2001, with the help of ACWA grants, the City of Sitka has developed a TMDL and restoration strategy and has begun cleaning up the creek. This project implements unfinished tasks in the multi-year Action Plan of the Strategy/TMDL that will result in consistently meeting water quality standards. Environmental benefits include fully restoring water quality through: 1) constructing new road and stormwater drainage improvements, 2) establishing stable and functional stream buffers, 3) verifying effectiveness of numerous sediment controls (ponds, check dams, swales, turbidity controls) through regular water quality monitoring, 4) preparing development guidelines for future growth in the watershed, 5) industrial operator education, 6) environmental audits of compliance with lease terms and 7) maintenance of existing pollution control systems. Contact Mark Buggins, (907) 966-2256.

**Swan Lake Restoration**, City and Borough of Sitka, \$13,600

Sitka will continue to rehabilitate Swan Lake, a priority water in need of protection, by implementing its Watershed Recovery Strategy, TMDL, and Stormwater Control Strategy. Sitka developed and began this work with the help of previous ACWA grants. This project includes dredging of debris, preparing and distributing a brochure of Best Management Practices for stormwater control for local contractors, stenciling storm drains, and water quality and

stormwater monitoring to determine how well the Best Management Practices are working. Contact Mark Buggins, (907) 966-2256.

**Pullen Creek and Skagway Harbor Assessment,** Skagway Traditional Council, \$41,854  
Pullen Creek and Skagway Harbor are priority waters in need of recovery, with metal contamination being a primary water quality concern. Historical studies show elevated levels of lead, zinc, cadmium, copper and mercury. This project, proposed by the Skagway Traditional Council, will collect scientific data on Pullen Creek to document contaminants, review and evaluate existing scientific data for Skagway Harbor to identify data gaps, and determine what actions are necessary for the recovery of both waters from the impaired water body list. Contact Lance Twitchell, (907) 983-4068.

**Effectiveness of Buffers in Supplying Large Woody Debris,** (Southeast Alaska), Sealaska Corp., \$77,000

This project will complete a current study examining the effectiveness of forest buffer zones to provide large woody debris (LWD) to streams and to develop a database for status and trend monitoring of buffer zones on private timberlands in Southeast Alaska. This project provides a regional monitoring network by expanding the database to include private forestlands in northern Southeast Alaska. The Forest Resources & Practices Act (FRPA) requires that buffer zones be retained along salmon streams. Data from northern Southeast Alaska would complement the existing data so the overall study results would be applicable to the entire region. This project will help Alaska achieve one of its priority stewardship actions - to evaluate the effectiveness of Forestry Best Management Practices (BMPs) in meeting state water quality standards and protecting beneficial uses of waters. Contact Ronald Wolfe, 907-586-9277.

**Status & Trends of Fish Habitat on Private Timberlands in SE Alaska,** (Southeast Alaska ) Sealaska Corp., \$74,800

This project will complete a study on the status of fish habitat on private lands in Southeast Alaska. Since 1997, several basins that were surveyed have been logged; therefore, post-logging data should be collected at many of these sites to determine the appropriateness of existing practices in protecting fish habitat. Monitoring will be completed on all basins where pre-logging and pre/post-logging data exist to document status and trends in habitat conditions. This will facilitate an evaluation of BMP effectiveness, and will help Alaska meet one of its priority stewardship actions - to evaluate the effectiveness of Forestry Best Management Practices (BMPs). Contact Ronald Wolfe, 907-586-9277.

**Biological Monitoring & Assessment for Southeast Alaska,** (Southeast Alaska ) UAA – ENRI, \$107,477

This project completes an effort begun in 2001 to evaluate surface water quality to meet ACWA goals by assessing biological, chemical, and physical condition of streams in southeast Alaska. ENRI will collect data to support other agencies, evaluate habitat impacts and effectiveness of restoration efforts, and advance application tools for stewardship of Alaska waters. This project will help Alaska address one of its priority stewardship actions: to identify biological indicators and determine reference conditions that are indicators of healthy biotic communities in Alaska's freshwater systems. Contact Daniel Rinella, 907-257-2734.

**Craig Small Vessel Raw Sewage/Bilge Cleanout,** City of Craig, \$9,220

This project will help Alaska progress toward meeting a priority stewardship action to develop harbor best management practices and a model ordinance that addresses harbor and marina operation & maintenance BMPs. By putting portable pumps/short term storage tanks and disposal facilities in place, Craig will reduce NPS pollution from sewage and contaminated bilge

materials which will result in protection of essential fish habitat (i.e. eelgrass), and protection of local commercial, charter, sport and subsistence fisheries in the waters around the City of Craig. Contact Michael Kampnich, (907)826-3404.

#### Northern/Interior Regions

**Shaw Creek Hydrologic Monitoring & Evaluation**, (Shaw Creek Watershed ),  
Alaska Boreal Forest Council, \$93,346

This project will complete an effort begun in 2001 to gather critical hydrologic information for the Shaw Creek Watershed, a priority water that provides a major fall chum spawning and rearing habitat for the Bristol Bay fishery and Yukon River fisheries. Shaw Creek also has important fish, timber, mining, and recreational resources. Its sustainable development requires understanding of hydrologic processes. In the past ABFC established four automated hydrologic data-collection stations. This project will continue water-quality data collection and continuous hydrologic baseline monitoring of those stations and other sites. Additionally, it will evaluate the information collected to date and characterize critical hydrologic processes to assist management agencies in permitting decisions. Contact Janice Dawe, 907-474-3478.

**Copper River Watershed Baseline Assessment**, (Copper River Watershed ),  
Copper River Watershed Project, \$65,999

The Copper River watershed is a priority water for protection, with water quality being a primary concern. The Copper River Watershed is used for anadromous fish spawning and rearing, subsistence, and recreation. The FishWatch Planning Team, an inter-jurisdictional partnership of state and federal agencies, non-profits, Tribes, and the CRWP will develop a strategy and work plan for conducting a coordinated habitat baseline assessment of the Copper River watershed and continue baseline water quality monitoring. Information gathered on habitat and water quality on tributaries to the Copper River will be provided to state agencies to identify their status and prioritize them for future action, if necessary. This project will also address a statewide stewardship priority by assembling, from existing models, stream protection guidelines for landowners. In addition, it will work help assess Trout Lake. Contact Kristin Smith, 907-424-3334.

#### Mat-Su Region

**Cottonwood Creek TMDL Development**, Matanuska-Susitna Valley, ARRI, \$46,790

Cottonwood Creek is a priority water in need of recovery with foam and debris pollution from urban runoff and development being a primary water quality concern. Significant amounts of foam have been frequently observed in the Creek since 1998. Other recent monitoring indicates elevated temperatures in summer along certain creek stretches exceeding WQS, and FC bacteria counts exceeding the state standard. Much of the creek is in the urbanized area of Wasilla where runoff pollution, septic systems, and riparian zone development are impacting water quality. Past analyses of fish have indicated lesions that may be associated with water pollutants. During summer, portions creek have algal blooms (green) and clear, gelatinous, slimy algae growth which may be associated with increased nutrients (P and N). The primary objective of this project is to continue to evaluate the presence, location, and variability in foam abundance and causes within Cottonwood Creek. Foam will be evaluated to determine whether it is human caused or whether human activities influence natural foam development processes. The secondary objective is to determine whether anthropogenic factors that cause or influence foam abundance are related to other potential water quality problems. Addressing these objectives will lead to the removal of this waterbody from the State's impaired waterbody list either

through the development of a TMDL recovery plan or the implementation of management practices. Contact Gay Davis, 907-733-5432.

**Mat-Su Culvert Inventory and Assessment Project, Matanuska-Susitna Borough, \$13,000**

This project will evaluate information on road crossing structures at anadromous streams and tributaries within the Wasilla and Cottonwood Creek watersheds, recorded via GPS, and add it to the Matanuska-Susitna Borough's GIS database to identify future enhancement projects. The results of this analysis will prioritize crossings for future repairs or capital projects. This project will help Alaska meet one of its priority stewardship actions: to assess fish habitat and passage at culverts on road systems, and prioritize sites and actions needed for protection and restoration. Contact Chuck Kaucic, 907-745-9807.

### **Anchorage Region**

**Chester Creek Spatial & Temporal Distributions of Bacteria, (Anchorage),**

UAA Engineering, \$100,000

Chester Creek is a priority water in need of recovery, with water quality from bacterial pollution being a primary concern. Chester Creek routinely has the highest level of bacterial pollution of Anchorage streams. Using information compiled from past monitoring efforts, this project will develop and implement a monitoring plan to determine the spatial and temporal extents of bacteria in the stream to determine levels, timing, and sources of bacterial pollution. This information will be used to identify the most appropriate best management practices (BMPs) to address the bacteria concerns. William E. Schnabel, (907) 786-1912.

**Ship Creek Gaging, (Anchorage), DNR/Division of Mining, Land, & Water, \$30,000**

Ship Creek is a priority water in need of recovery due to water quality and quantity concerns. Allocated water use is very high which could reduce baseflow and negatively impact aquatic life. This project will establish a gaging station in the lower river to determine if water appropriations are affecting stream baseflow, provide streamflow and water quality data necessary to implement a fecal coliform Total Maximum Daily Load (TMDL) recovery plan, help adjudicate instream flow reservation applications, and help provide flow data necessary to successfully manage the stream to provide for a highly important sport fishery. Contact Mark Inghram, 907-269-8638.

### **Kenai Region**

**Anchor River Watershed Monitoring, (South Kenai Peninsula), Community Rivers Planning Coalition, \$30,000**

The Anchor River is a priority water with water quality concerns for temperature, turbidity and phosphorus. This project will provide online, in-stream monitoring stations located near the mouth of the Anchor River, just above the confluence of the North and South Forks to further research the documented exceedances in water quality standards in the Anchor River, mainly temperature and turbidity. This project will provide real-time baseline data monitoring and presentation, and data analyses. Contact Jessica R. Blackledge 907-235-8177.

**Kenai Peninsula Salmon Streams, Homer Soil & Water Conservation District, \$69,000**

This project addresses Deep Creek, Anchor River, and Ninilchik River, which are priority waters in need of protection, with habitat and water quality being primary concerns. Water quality standards of concern are temperature, turbidity and phosphorus. This project, which addresses



ACWA priority actions for these rivers, will determine the spatial and temporal extent of elevated temperatures; identify warmer tributaries and possible anthropogenic causes; evaluate whether existing turbidity data are representative of natural conditions; collect turbidity data to determine if sediment is related to human activity, determine if elevated phosphorus levels are geologic or anthropogenic, and evaluate stream bank impacts on the Anchor River. Water quality information will be disseminated to facilitate resource management decisions which will lead to the protection of these economically important salmon streams. Contact Shirley Schollenberg, 907-235-8177.

**Kenai River Outreach and Monitoring, Kenai Watershed Forum, \$56,601**

This project addresses the Kenai River, a priority water with water quality and habitat concerns. The project will follow-up on previous studies by addressing two specific water quality concerns, petroleum and fecal coliform, in the Kenai River. The results will address concerns about pollutants entering the Kenai River, refine information about the possible sources of those pollutants, and provide information for future water management actions. Contact Robert Ruffner, 907-260-5449.

**Agency Report – Dept of Fish and Game**  
**ALASKA DEPARTMENT OF FISH & GAME**  
**IHCA AGENCY REPORT**  
**APRIL 8 - 9, 2004**

- **ADF&G continues implementation of restructuring per Executive Order 107 and other directives. An MOU was signed in October 2003 between ADF&G and DNR regarding roles and responsibilities for implementing Executive Order 107 and other land and water project review authorities. The Office of Habitat Management and Permitting (OHM&P) was created within DNR and includes the following responsibilities:**
  - **Title 16 fish passage and anadromous fish stream permitting**
  - **Anadromous Waters Catalog (regulatory function)**
  - **Project-related research and compliance monitoring**
  - **Alaska Coastal Management Program Consistency review and land use plan review**
  - **Forest Resources and Practices Act permitting, monitoring and compliance****Budgets for the remainder and next year are in limbo due to the state shortfall and continuing restructuring.**
- **ADF&G and DNR have rehired the position to continue implementation of three MOUs signed in 2002 to adjudicate pending instream flow reservations previously filed and improve coordination for processing and prioritizing instream flow reservations. Under this agreement three have been adjudicated, a fourth is pending completion and consideration of public notice comments (Montana Creek near Auke Bay).**
- **ADF&G is continuing to participate in Southeast Sustainable Salmon Fund projects and has established 5 of 6 USGS index gage and water quality sites in cooperation with USGS and other federal and state agencies for a 4-year period. A fifth year or longer of funding is still desired. In addition to meeting SSSF project objectives, this project provides an opportunity for other parties to extend these records and use this information to improve hydrologic predictions in SE. We again encourage other agencies to coordinate, build upon and take advantage of this effort. Please contact Joe Klein (267-2148) if you are interested in how you can participate in this effort.**
- **Discussions between core taskforce staff from DNR, RCA, and ADF&G are ongoing regarding implementation of SB 140, which gives Alaska the option to assume jurisdiction from the Federal Energy Regulatory Commission (FERC) over hydropower projects that are 5MW and smaller. Public workshops were held in Anchorage, Juneau and Fairbanks during the first week of February. Keven Klewenow of RCA is the lead and is based in Anchorage. Stakeholder meetings will be initiated during April with the objective of crafting regulations for public review by October 2004. ADF&G filled the vacant hydropower coordinator position last month.**

- **Among the cooperative stream gaging programs with USGS being funded by Sport Fish Division include Peterson Creek and Situk River in addition to those through SSSF project described above.**
- **ADF& G continues to participate on the ACWA process. Various staff are completing tasks until we complete the process of hiring a full-time person. Some of the activities completed or underway include grant reviews and participation in a multi-agency effort to process previously filed ACWA water body nominations. Contact Christopher Estes (267-2142) if questions.**

## **Agency Report – Dept of Military and Veterans Affairs**

**IHCA Agency Report**

**April 8-9, 2004**

**Stewart River Training Area**

**2004-2005 Natural Resource Projects**

- Surface Water Quality Survey USGS
- In-stream Macroinvertebrate Survey in conjunction with UAA ENRI  
Using the standard operating procedures for the Alaska Stream Condition Index, one round of sampling has been conducted. We are planning on a sampling event in November if we can break through the ice. Sampling will occur as often as we can get to the training area (1-3 times / year)
  
- Erosion Hazard Survey NRCS
- Soil Survey NRCS
- Revegetation and Restoration of Maneuver Damage
- Upland Bioengineering for erosion control

**Local Training Areas**

Prioritizing training areas by use and will begin conducting environmental baseline surveys for new areas and environmental surveys of training areas with an established baseline.

## **Agency Report – Dept of Natural Resources**

### **Alaska Department of Natural Resources Division of Mining Land & Water Interagency Hydrology Committee for Alaska April, 2004 Report**

**DNR Water Resources Section Organization** (Gary Prokosch, Chief 269-8645): Please visit at <http://www.dnr.state.ak.us/mlw/water/index.htm> .

- Three sections/functions:
  1. Water Management Section (Kellie Westphal, section head 269-8646)
    - Adjudicates water resources.
    - Total staffing of nine positions; six staff in Anchorage; two in Juneau; and one in Fairbanks.
    - Since the last report all positions are now filled.
  2. Alaska Hydrologic Survey Section (AHS) (Mark Inghram, section head 269-8638)
    - Collects & analyzes hydrologic data.
    - Total staffing of five positions, four in Anchorage, one in Fairbanks.
  3. Dam Safety & Construction (Charles Cobb, entire section 269-8636)
    - Administers state dam safety program.
    - One position statewide, located in Anchorage.

#### **BUDGET:**

- Budget for current fiscal year (FY 04) is largely status quo from last. FY 05 budget for water is scheduled as currently exists in the legislature is to take a \$300K reduction in general fund dollars that are to be replaced by equivalent program receipt authorization increase. The net effect of this is that the entire water section becomes more dependent upon cooperative funding, and or layoff of staff. The remainder of this fiscal year is sufficiently “tight” as to preclude the expenditure of travel dollars allowing a DNR representative at the spring meeting of IHCA.
- FY 05 budgetary process is unfinished, and the Governors budget keeps funding essentially status quo from FY 04. The final Water Section FY 05 budget will not be available until the legislature adjourns in May. Indications are that there could be substantial layoffs in State Government next year. Further consolidations of State services and offices to reduce administrative costs may reorganize offices.
- The Hydrologic Survey Section is funded at only 60% general fund, & therefore is always seeking cooperators.

### **DNR Reorganizations:**

- As previously reported, both the Habitat Division from ADF&G (renamed Office of Habitat, Management & Permitting) and the Alaska Coastal Management Program (ACMP, now in the office of Project Management & Permitting) are both located in DNR.

### **Legislative Update:**

- Various legislation is pending that indirectly pertains to Water. No legislation is pending directly addressing DNR water functions. See attached lists (pages 3-10).

**Current Projects/Issues of interest:** In addition to many on-going projects outlined in previous reports, those itemized below are most timely & of greatest interest.

- AHS Water Data On-Line: This project makes water quality and water quantity data collected by DNR-AHS accessible via the internet. This will provide management agencies and the public with access to data needed to evaluate, protect, and restore Alaska's clean Water Actions (ACWA) waterbodies. A redesigned AHS webpage will be available (target release June, 2004) with access to an enhanced STREAMS database and water quality reports. Features include searches on several parameters, cross linkage between web pages, and hot links to available sources.
- Tuluksak Stream Gaging: A new project to begin this year after break up in cooperation with the village of Tuluksak. This project will gage and instrument the Tuluksak River under a grant from the Bureau of Indian Affairs administered by the Tuluksak.
- Ship Creek Stream Gaging: A new project to begin this season to instrument and gage Ship Creek near the mouth at Anchorage. This project is being funded under an ACWA grant administered by ADEC. Additional work to sample for fecal coliforms will likely be added to the work plan funded under a separate RSA.
- Moose Meadow gaging: Alyeska Resort uses snow making early in the season to allow earlier skiing operations, and extend its season. This project allows for monitoring of the source stream for snow making. This project is nearing completion.
- North Slope Oil Industry & Water: Water used in making of ice roads for winter travel is an integral part of North Slope Oil operations and exploration. DNR is working to both locate lakes where sufficient water is likely to be withdrawn to allow for impact assessment and in the permitting process to allow for the water extraction. DNR is also reviewing plans for erosion control, and bridge revetment repair.

- Instream Flow Reservations: Instream flow reservations have been completed and issued for Glacier Creek, Deception Creek, and the Talkeetna River. These reservations are the first produced as a result of the joint cooperative position funded under agreement between ADF&G and DNR.
- Harding Lake: Harding Lake near Fairbanks has experienced a steady decline in lake levels for many years. AHS hydrologists worked with the local organized committee to assess lake levels and determine historic levels and establish techniques for reestablishment of those historic levels.
- Goodpaster Geochemical: A multi-year cooperative effort with the USGS to characterize the transport of trace metals in a mineralized zone. This year work will be on the west side of Tibbs Creek.
- Dam Safety: As part of the Dam Safety program DNR is charged with assessing the possible safety issues resulting from dam failure.
- Mining Industry support: Provides data collection and analysis for mine sites throughout Alaska. Work with the Large Mine Planning Team is ongoing.

## **Agency Report – Dept of Transportation & Public Facilities**

Alaska Department of Transportation and Public Facilities

- **Culvert Assessment Protocol**
  - Field work complete, office analysis pending, may contract-out
- Stream Gauging Program (coop with USGS)
  - 49 Crest-stage gages and 15 Hydrograph Stations
  - New Peak Flow Regression Analysis – Published
  - Low flow statistics – Published
- Russel Fiord / Situk River Hydraulic Analysis
  - Preliminary flood inundation study complete, resevoir routing and refinement of model is pending.
- Twentymile River Tidal Scour Study start-up, LIDAR survey, and 2-d hydraulic model
- Bridge Scour Investigations (coop with USGS)
  - Salcha River
  - N.F. Chena River
  - Knik River Old Glenn Hwy
  - Chistochina River
  - Tanana River at Nenana
  - Nenana River at Windy
- Bridge Scour Monitoring Program
  - Installed FY01-02
    - Eagle River (Juneau)
    - Kenai River, Soldotna
    - Kasilof River
    - Tok River
    - Slana River
    - Slana Slough
    - Mabel Creek
  - Planned FY03-04
    - Kashwitna River, Parks Hwy
    - Montana Creek, Parks Highway
    - Glacier Creek, Alyeska Rd
    - Low River Lower Keystone Canyon, Richardson Hwy
    - Nenana River at Rex
    - Tanana River at Tok
    - Nenana River at Park Boundary
    - Chatanika River Elliot Hwy
    - Low River Lower Crossing
- Channel Roughness for Steep Alaskan Streams
  - Draft Publication
- Culvert and Fish Behavior Pooled Fund Study – ongoing (Skookumchuck Hatchery)
  - With State of Washington, Oregon, Idaho, Montana, California, others
- Ice Forces on Riprap (UAF) Final Report done
- Evaluation of Bioengineered Streambank Protection in Alaska (Hydraulic Mapping and Modeling) Published
- Inlet Loss Coefficients for Buried Invert Culverts (Utah State University)



- Bed Material Stability in Buried Invert Culverts (Turner-Fairbanks Hydraulics Lab - pending)
- Recent Hydrology and Hydraulic Studies
  - Resurrection River
  - Clear Creek
  - Lost Creek
  - Bear Creek
  - Victor Creek
  - Ptarmigan Creek
  - Falls Creek
  - Hutlinana Creek
  - Caribou Creek
  - Lowe River
  - Stariski Creek
  - Clearwater Creek
  - Kenai River -  
Soldotna
  - Abercrombie Creek
  - Wood River
  - Buckland River
  - WillowCreek
  - Marion Creek
  - Moose Creek
  - Nenana River, Park  
Station
  - Hick's Creek
  - Grayling Creek
  - Yak./Russel Fiord
  - Boston Creek
  - Granite Creek
  - Indian River
  - Wilson Creek
  - Stariski Creek
  - Onemile Creek
  - Ninilchik River

**Agency Report - UAA**  
**Report to the Fall IHCA Meeting October 22-23, 2003**  
**UAA**

- Orson Smith (CE) completed a study of beach erosion at Nikiski extending it to include more wave-induced sediment transport simulations. Heike Merkel “tidal effects on sediment transport in the lower Kenai River” successfully defended her thesis October 31. Alexander Khokhlov will defend on his thesis on the Nikiski Project and Oceana Francis will defend hers on erosion of the Elson Lagoon in Barrow in May. Other projects include Acoustic Doppler circulation and water quality measurements in Seward Harbor for the Army Corps of Engineers and wave measurements at the Seward Marine Center for UAF.
- Flume construction is nearing completion with hopeful water flow in May.
- Bill Schnabel (CE) is studying uptake character of wetlands. Also has greenhouse ready and will be constructing an artificial wetlands with flow from Chester Creek. He also has two students looking at fecal coliforms on Chester Creek.
- Bill Schnabel and Bill Lee (CE) are building lysimeters at Elmendorf to measure the infiltration of moisture through a vegetated landfill cap.
- Craig Woolard (CE) has been involved with several studies on water and wastewater treatment schemes in Arctic native villages.
- LeeAnn Munk (Geology) is studying the geochemistry of trace elements including arsenic in surface water, streambed sediments and groundwater in the Anchorage area. She is also investigating the distribution and environmental effects of metals in the terrestrial and nearshore environments at abandoned copper sulfide mines in Prince William Sound.
- Patricia Hieser (Geology) is continuing her work on a 3 year grant on Lake Clark, Iliamna, and Naknek to look at paleohydrology, salmon history, and landscape dynamics by investigating lake bed sediment cores. This could be helpful in defining if and when Russell Fiord has spilled in the past.

**Agency Report - UAF**

**Report on Research in  
Caribou Poker Creeks Research Watershed**

**Larry Hinzman  
University of Alaska Fairbanks  
Water and Environmental Research Center**

**Report to IHCA April 2004**

CPCRW research combines hydrology, permafrost science and biogeochemistry to better understand disturbance at the landscape scale. For instance, we have quantitatively determined source area for major solutes, dissolved organic carbon, and dissolved organic nitrogen in stormflow periods during the summer months and after the Frostfire prescribed burn (Petroni et al., 2000). Identification of these source areas has allowed us to determine how processes such as weathering in the groundwater system and decomposition in the surface soils affect stream chemistry. We have also discovered that changes in the active layer thickness throughout the summer play a major role in the hydrologic response and the coupling of upland soil and stream chemistry. Furthermore, we are now compiling a complete annual record of hydrology and chemistry to calculate annual flux rates of major solutes and organics from watersheds that differ in permafrost coverage. It appears that annual flux rates of nitrogen at the CPCRW watershed are higher than atmospheric inputs (measured from the on-site National Atmospheric Deposition Program). This is in sharp contrast to watersheds in the temperate U.S or Boreal forests of Canada that retain much of the nitrogen entering with precipitation. These findings demonstrate that boreal forest watersheds in Alaska may be fundamentally different than their counterparts in Canada and the U.S due to a changing climate driving a release of nitrogen from previously frozen soils.

Results from our experimental forest fire have resulted in numerous publications (specifically, see JGR special issue, Hinzman et al., 2003). This experiment has enabled documentation of the role of fire as an important factor controlling landscape change in permafrost regions (Hinzman et al., 2001a). Additionally, it has further enhanced our understanding of the interconnection among disturbance and climate change particularly with respect to permafrost degradation following fire (Yoshikawa et al., 2003a).

Hydrological studies have demonstrated the critical controls that permafrost exerts upon hydrological processes (Bolton et al., 2000; Ishikawa et al., 2001; Knudson et al., 2000). As permafrost becomes thinner, small springs can penetrate the frozen ground and lead to formation of aufeis in the winter and more stable baseflow in the summer (Hinzman et al., 2001b). As permafrost degrades to the point of becoming discontinuous, surface water can infiltrate to groundwater and eventually enter the stream drainage network providing stable baseflow during dry periods and in winter. Soils over permafrost with a thin active layer have higher soil

moistures as compared to permafrost-free soils, all other factors being equal. As permafrost disappears in the upland areas (where soil moisture can infiltrate to deeper groundwater) the ecosystem will become drier. In lowland areas (where groundwater has upward gradients) the ecosystems may become wetter as permafrost degrades. This understanding of hydrological interactions with permafrost has permitted improved modeling of groundwater flow pathways and, consequently, stream chemistry dynamics (Hinzman et al., 2002).

The central hypothesis of the groundwater research in CPCRW was that water emerging from a spring at the base of the north-facing slopes was derived from infiltration on south-facing slopes and displayed a different groundwater source pathway from other shallow springs (Yoshikawa et al., 2003b). This was expected since less water can infiltrate the subsurface on the north-facing slopes where ice rich permafrost forms a hydraulic boundary. Artesian spring water emerging from beneath the permafrost on the north-facing slopes may therefore be derived from sources outside the topographic boundary of the watershed. The groundwater from pingo spring and lower south-facing slopes has unique characteristics from the other springs (White et al., 2002). The source of water of the other springs is more likely to be mixing of younger water. The deeper groundwater (pingo) system survived during the entire Holocene period and intense weathering processes. The south-facing slopes had aspen and birch dominant forest colonies (black spruce in north-facing, and valley bottom) today. The lower- middle south-facing slope is only place to remain permafrost-free over a long time. Over the last 20 years, most of the permafrost has disappeared from the hilltop's black spruce areas. The area's higher elevation is a reasonable place to expect permafrost retreat, as well as increasing groundwater infiltration. As a result, base flow and spring discharge increased. The increasing base flow was compared to 1907 and 1978 reports and 2001 measurements. The TR-6 spring started after 1969, and also C3 springs may start within 50 years as well as pingo spring discharge increase since 1989.

We have developed a model for determination presence or absence of permafrost based upon climatic and terrain data (Yoshikawa et al., 2002). This model is useful for predicting spatial variations in hydrological and ecological processes as impacted by permafrost. Additional research has revealed that the spatial extent of permafrost in CPCRW has decreased by approximately 2% over the last century.

We have made significant advances in the CPCRW and Bonanza Creek with our data collection. The first was the installation of a radio network that transmits data hourly to our data server in Fairbanks. This allows us to share information in real time with the general public and also government agencies. Important data retrieved hourly include measured air temperatures at four different elevations in close proximity to each other. This is a valuable tool for identifying and quantifying our winter temperature inversions. In addition to the four weather stations connected in real time, two cameras have been installed in the watershed. The first camera, attached to our main climate station, gives users a general idea of weather conditions in the watershed. This camera has been operating unattended since May of 2002, with images archived locally at the WERC. This camera could also be used to aid in studying the radiation balance at this site. The long wave and short wave radiometers are in the field of view, allowing a visual inspection of the sensors in order to validate radiation data. The second camera installed at the watershed was in

support of an aufeis monitoring station. This camera allowed researchers to inspect their site and correlate the data measured by their station with the physical growth of aufeis. It was operational for approximately nine months. Using current technology we now have the ability to install a camera at virtually any site in the watershed in support of a research project and acquire images hourly. There are many potential uses for such a system.

The established radio network in the watershed is only in its second year. Currently we are using approximately ten percent of the radio networks data transmission capacity. Future projects should consider adding telemetry capabilities to instrumentation that is installed in the watershed. Data intensive sites such as eddy covariance towers would be able to take advantage of this available bandwidth. Future research into surface energy balance could rely on remote cameras capturing real time images to validate data during winter months. Visual observations from radiation sensors could be used to confirm that sensors were snow and ice-free during the measurements.

- Bolton, W.R., L.D. Hinzman, and K. Yoshikawa. 2000. Stream flow studies in a watershed underlain by discontinuous permafrost. In D.L. Kane (ed) *Water Resources in Extreme Environments*. American Water Resources Association Proceedings. 1-3 May 2000. Anchorage, AK p. 31-36.
- Hinzman, L., M. Fukuda, D. V. Sandberg, F. S. Chapin, III, and D. Dash, FROSTFIRE: An experimental approach to predicting the climate feedbacks from the changing boreal fire regime, *J. Geophys. Res.*, 108(D1), 8153, doi:10.1029/2001JD000415, 2003.
- Hinzman, L.D., K. Yoshikawa, W.R. Bolton and K.C. Petrone. 2002. Hydrologic Studies in Caribou-Poker Creeks Research Watershed in Support of Long Term Ecological Research. *Eurasian Journal for Forest Research*. 5-2:67-71.
- Hinzman L.D., K. Yoshikawa, M. Fukuda, V.I. Romanovsky, K. Petrone and W. Bolton. 2001a. Wildfire in the Subarctic Boreal Forests, Ecosystem Impacts and Response to a Warming Climate. *Tôhoku Geophysical Journal*. 36(2):230-232.
- Hinzman L.D., K. Yoshikawa, D.L. Kane. 2001b. Hydrologic Response and Feedbacks to a Warmer Climate in Arctic Regions. Second Wadati Conference on Global Change and Polar Climate. 7-9 March 2001. Tsukuba Japan.
- Ishikawa, N. N. Sato, K. Kuwauchi, K. Yoshikawa, L. Hinzman. 2001. Characteristics of the water cycle in the discontinuous permafrost region in interior Alaska. *Polar Meteorology and Glaciology*, 15:78-90.
- Knudson, J.A., and L.D. Hinzman. 2000. Prediction of streamflow in an Alaskan watershed underlain by permafrost. In D.L. Kane (ed) *Water Resources in Extreme Environments*. American Water Resources Association Proceedings. 1-3 May 2000. Anchorage, AK p. 309-313.
- Petrone, K.C., L.D. Hinzman, and R.D. Boone. 2000. Nitrogen and carbon dynamics of storm runoff in three sub-arctic streams. In D.L. Kane (ed) *Water Resources in Extreme Environments*. American Water Resources Association Proceedings. 1-3 May 2000. Anchorage, AK p. 167-172.

- White, D., Yoshikawa, K., and D. S. Garland. 2002. Use of dissolved organic matter to support hydrologic investigations in a permafrost-dominated watershed. *Cold Regions Science and Technology*. 35:27-33.
- Yoshikawa, K., W. R. Bolton, V. E. Romanovsky, M. Fukuda, and L. D. Hinzman. 2003a. Impacts of wildfire on the permafrost in the boreal forests of Interior Alaska, *J. Geophys. Res.*, 107, 8148, doi:10.1029/2001JD000438, 2002. [printed 108(D1), 2003]
- Yoshikawa, K., Hinzman, L. D., and Gogineni, P., 2002 Ground temperature and permafrost mapping using an equivalent latitude/elevation model. *Journal of Glaciology and Geocryology*. 24. 5. 526-531.
- Yoshikawa, K., D. White, L. Hinzman, D. Goering, K. Petrone, W. Bolton, and N. Ishikawa. 2003b. Water in permafrost; case study of aufeis and pingo hydrology in discontinuous permafrost. 8th International Conference on Permafrost. Zurich, Switzerland 21- 25 July 2003.