HB

354

Sponsor Statement

HB 354 by Representative Davidson

House Bill 354, "An Act making an appropriation to the Department of Natural Resources for payment as a matching grant for completion of a surface-water data network evaluation for Alaska; and providing for an effective date."

The purpose of this legislation is to improve Alaska's hydrological data base. HB 354 appropriates $242,000 of general fund monies as a pass through grant to the United States Geological Survey to perform a surface-water data network evaluation.

This is a highly cost-effective use of state funds. Alaska has over 40% of the nation's freshwater reserves, yet we have the least data to manage that water: Alaska has one gage per every 7,000 square miles while the Lower 48 has one gage per every 400 square miles. HB 353 would ameliorate this situation by funding a surface-water data network evaluation.

Before more gages are funded, a surface-water data network evaluation would provide a "blueprint" to fund a core network of long-term index gages by 1) assessing the adequacy of existing stream gage network and database and 2) evaluating the adequacy of existing mathematical formulas for estimating stream flows at ungaged sites. The results of this information will be used for prioritizing the location and need for establishing and maintaining stream gages.

Gages are expensive to fund yet streamflow data is needed for a wide variety of purposes: municipal water supply, industry, construction, land use planning, evaluation of movement of toxic substances and spills in the environment, fish and wildlife management, and adjudication of water rights. Lack of streamflow data can result in loss of millions of dollars through under or over designed projects and repair; delays in projects; legal conflicts among users; and can unnecessarly and negatively impact fish and wildlife.

To date, almost all states have completed a surface-water data network evaluation except Alaska. I encourage your support in funding this important study so important so cost-effective decisions can be made by all users of water data in Alaska.

U.S. GEOLOGICAL SURVEY

SURFACE-WATER DATA NETWORK EVALUATION FOR ALASKA

The stream-gaging network evaluation for Alaska will,
-provide a quantitative assessment of the adequacy or "worth" of streamflow data collected at existing and historical gaging sites and,
-provide a technical basis for modifying the existing network to meet the needs of the Alaska water user community.

Streamflow information is required by several State and local agencies, as well as private companies, for the design, construction, and operation of the States infrastructure including dams, roads, bridges, pipelines, railroads etc. This same information is needed by other State and local agencies for water rights appropriation and adjudication, management of in-stream-flows, and management of other natural resources, such as fish and wildlife. Additionally, private citizens and environmental groups require streamflow information for planning and environmental impact assessments.

Streamflow information is collected at single locations on streams. Analysis of a continuous record of streamflow will provide values of mean annual flow, flood and low flows, and other parameters at that point only. In Alaska, this information has been collected at only 155 sites. Streamflow information at ungaged sites must be determined from correlation of short term data collected at that site with data from a long term gaging station, or from equations relating basin characteristics (precipitation, land use, etc.) to flow values. There more than 40,000 streams in Alaska, each with many miles of length, where streamflow information could conceivably be required.

Streamflow collected at a site has an accuracy that can be quantified. Streamflow values determined at an ungaged site have less accuracy, but that accuracy can still be quantified. These accuracies are dependent on many factors, including the length of record at each stream gage and the number of stream gages available for correlation or statistical analysis.

The network evaluation will identify the accuracy now attainable when determining streamflow values at ungaged sites using existing data from current and historical sites. These accuracies will be compared to those required by the water data users of the State. Statistical methods used for the evaluation can also be used to identify the number and location of gaging stations required to meet the accuracy goals of the water users. All of the analyses will be completed using a geographical information system which will facilitate the evaluation, as well as, provide data bases available for use by others.

EXECUTIVE SUMMARY

SURFACE-WATER DATA NETWORK EVALUATION FOR ALASKA

Why does the State need data on streamflow?

Streamflow data are needed for a wide variety of purposes, including:
- o Design of highways, bridges, drainage facilities;
- o Adjudication of water rights;
- o Land-use planning, mapping flood plains, and predicting floods;
- o Evaluation of movement of toxic substances and spills in the environment;
- o Hydropower planning and development;
- o Conservation or preservation of wildlife habitat.

Streamflow data are obtained from:
- o A statewide network of "stream gages," at which streamflow is monitored and estimated on a daily basis, and "crest-stage gages," at which only flood events are monitored;
- o Mathematical expressions that relate data to rivers where gages are not present.

Lack of streamflow data results in:
- o Loss of millions of dollars in construction of underdesigned and overdesigned structures and in repair of transportation facilities and other structures in flood plains;
- o Delays in major developments and projects while needed data are collected;
- o Legal conflicts among potential users of the resources.

The present stream-gage network in Alaska consists of 47 stream gages that are available for estimating flow characteristics throughout the state. Errors in extending information from this small network to the ungaged areas of the state are large, in some cases, so large that reasonable design criteria can not be met.

What are the objectives of the study?

- o To evaluate how well streamflow can be predicted throughout the state;
- o To design a statewide network of stream gages that will provide an adequate base of information;
- o To prioritize gages in the network in terms of data needs of the various users of the data.

How will the objectives be accomplished?

A committee consisting of State, local, and appropriate Federal agencies will be formed to direct the progress of the network analysis, determine geographic priorities, and recommend the limit of acceptable errors.

The network analysis will involve two types of analyses depending on the availability of existing streamflow data:
- o In those areas where there are sufficient data, mathematical relations will be developed;
- o In areas where data are insufficient, the stream-gaging network will be designed on the basis of an inventory and analysis of watershed and climatic characteristics.

How much will the program cost?

The total cost of the project, which will include creation of a large Geographic Information System, will be $484,000. Of this:
- o The State of Alaska will contribute $242,000;
- o The U.S. Geological Survey will contribute Federal matching funds of $242,000.

SURFACE-WATER DATA NETWORK EVALUATION FOR ALASKA

A Proposal by

R.D. Lamke and W.O. Thomas, Jr.

U. S. Geological Survey

Water Resources Division

PROBLEM:

A need exists for a better knowledge of streamflow characteristics for management, planning, and design throughout the State of Alaska. Lamke (1984) indicates that the stream-gaging program in Alaska grew from 16 stations in 1945 to 110 stations in 1983. Currently, the network has only 72 stations. Of these stations, 25 either are not suitable or do not have records long enough to include in an analysis. There still is an increasing need for streamflow data in response to water-resources development within the State. Lamke (1984) described the uses of streamflow data at the stations being operated in 1983 and made suggestions for the cost-effective operation of the network. A previous study by Childers (1970) evaluated the utility of the network in estimating streamflow characteristics at ungaged sites and made recommendations about modifications in the program. At this point in the progression of the network, a new assessment and evaluation of the network is warranted.

OBJECTIVES:

Existing streamflow data collected at stations (both past and present) provide a basis to evaluate the extent of our knowledge of the surface-water resources of Alaska. A network analysis of these data would provide answers to the question "How should the stream-gaging network be improved to provide the needed information on streamflow characteristics"? Examples of streamflow characteristics that are needed by water-resources management agencies include mean flows, low flows, peak flows or flood volumes. The seasonal variability of some flow characteristics will also be significant. Needs for information will be prioritized on the basis of costs and the needs for potential users of the information

The specific project objectives will be to:

1. Evaluate the existing network's utility in providing adequate hydrologic information on peak flows (such as the 50-year peak flow), flood volumes (such as the 30-day 50-year flood volume), low flows (such as the 7-day, 10-year low flow or the 95th percentile on the flow-duration curve) and mean annual and monthly flows. [We should select 3-5 characteristics that would be indicative of peak flows and low flows in addition to the annual and monthly means.]

2. Identify areas where adequate information has been obtained through the existing network.

3. Determine geographic areas or types of watersheds where additional information should be obtained.

4. Recommend improvements in the existing network that would enhance the streamflow data base in Alaska. These improvements should consider costs and potential benefits to users of the data.

BACKGROUND:

Streamflow data are either non-existent or so sparse in about half of Alaska that streamflow characteristics cannot be estimated with sufficient confidence. The gages (both active and discontinued) with records of sufficient length for regional analysis of streamflow characteristics within the State are shown in figure 1.

Figure 1. -- Map showing stream-gaging sites having 10 or more years of record through 1989 water year.

APPROACH:

The network analysis would involve two types of analyses depending on the availability of existing streamflow data. In those areas where there are sufficient data for a rigorous statistical analysis, regional regression analysis will be employed to determine how the existing network should be modified in order to improve the accuracy of estimation of the selected streamflow characteristics. In areas where insufficient data exist, the stream-gaging network will be designed on the basis of an inventory and analysis of watershed and climatic characteristics.

Specifically the approach will be to:

- Update selected streamflow characteristics (such as mean annual flow or 7-day 10-year low flow) at current and discontinued stations. For short-record stations, it may be appropriate to extend records in time, using techniques such as MOVE.1 or MOVE.2 (Hirsch, 1982), if the records were collected in unusually wet or dry periods.

- Update watershed and climatic characteristics at current and discontinued stations using conventional methods or computer-oriented geographical information systems (GIS).

- Use the at-site streamflow data to develop regional regression equations for estimating selected streamflow characteristics on the basis of watershed and climatic parameters.

- Define the error associated with estimating the selected streamflow characteristics using the existing data and regression analysis as a function of the number of stations, the varying record lengths and correlation structure among the stations, and different planning horizons for operation of the network.

- Identify data deficiencies and redundancies in relation to acceptable error.

- Develop a geographical information data base that would include overlays on vegetation cover, digital elevation models, climatic characteristics, physiography, permafrost cover, glacial cover, etc. [This could be for the entire State or just those areas lacking streamflow data.]

- Utilize the geographical information data base to determine where additional (beyond existing network) streamflow data should be collected in hydrologically distinct areas where streamflow data do not presently exist.

- Plan for and design a cost-effective stream-gaging network.

A number of related activities, some of which can be done concurrently, will be necessary to accomplish the objectives. A logical succession of steps are presented below:

1. Review and update computer files (data base). The files and their present state are:

   a. Daily Values File - The Daily Values File is essentially complete and contains few errors for those stations with one or more complete years of record through water year 1989.

   b. Streamflow/Basin Characteristics File (SF/BC file) - The SF/BC file must be updated to include precipitation data from our new precipitation map for those sites not included in ongoing flood frequency and magnitude study. This file must be updated to include, for all stations with 5 or more complete years of record, the statistics for monthly/annual flows, flow durations, and *n*-day low and high flows. (For Alaska stations with 10 or more complete years of record, statistics are up-to-date through the 1989 water year. These same statistics will be updated for selected Canadian stations as well.)

   c. Peak Flow File - This file has been recently updated in connection with a statewide flood-frequency report.

2. Develop a GIS data base to identify areas of the State where streamflow data are needed and to provide input to the regional regression equations.

3. Analysis - The analytical effort will be separated into successive (or at times concurrent) activities. The effort is envisioned to cover:

a. Regionalization of monthly and annual flow statistics, *n*-day low-flow statistics, selected percentiles from flow-duration curve, and *n*-day flood volumes.

b. Network analysis to determine how the stream-gaging program should be modified to minimize the regional standard error of the selected streamflow characteristics.

Regional regression equations will be developed using procedures for generalized least squares (GLS) regression and network analysis described by Tasker (1986), Stedinger and Tasker (1985), Tasker and Stedinger (1989), and Lumb and others, (1990). Computer programs exist for performing the analysis using an interactive hydrologic analysis and data-management system called ANNIE (Lumb and others, 1990).

The objective of the GLS network analysis is to minimize the regional standard error for estimating the selected streamflow characteristics. The preferred network is composed of those stations that minimize the regional standard error for a given predefined budget and can consist of both existing and possible future stations. New stations are selected on the basis of their watershed and climatic characteristics and their contribution to reducing the regional standard error. The relative contribution of each station in reducing the regional standard error is identified in the analysis. The correlation of streamflow characteristics among the stations (measure of redundancy) and the time-sampling error at each station is taken into consideration in selecting stations for the network.

A study using these techniques was conducted in Kansas and documented by Medina (1987). The analysis of different streamflow characteristics may provide different "optimal" networks. The analyses for each of the different streamflow characteristics can combined uaing multi-objective methods described by Cohon (1978).

Various network strategies will be evaluated for short planning horizons (such as 5 years) in order to thoroughly evaluate the tradeoff between increasing the spatial density and (or) the average record length of the network. In a large hydrologically diverse state like Alaska, it may be preferable to operate stations for 5 to 10 years and then move to other locations.

As part of the GLS regression and network analysis, it is necessary to identify stations that are critical to the network and should not be discontinued. The uses of the data generally determine this priority. Therefore, it may be worthwhile to identify the current data uses of all stations in the network similar to a previous study by Lamke (1984). The relative worth or importance of these stations could be defined using a weighting scheme similar to the one suggested by Wahl and Crippen (1984).

Not all data needs are of equal importance. Needs will be discussed with Federal, State, and local agencies in order to obtain the most widely useful data within various funding levels.

c. Analysis of the GIS data base to determine the hydrologic areas and types of watersheds where new stations should be established.

A more subjective analysis will be needed in areas of Alaska where little or no streamflow data presently exist. The use of the GIS data base and analysis is intended to provide guidance on the network design in these areas. An example of using combinations of landform, vegetation, and climatic zones to guide the design of the network is described by Perks and others (1988). The use of GIS to determine basin characteristics is described by Majure and Soenksen (1988). It is envisioned that a multi-dimensional analysis of all the possible combinations of landforms, vegetation and climatic factors will provide guidance on the types of watersheds for which new stations will be established. Information from the regional GLS regression analysis should also provide some guidance in extending the network into areas where little or no streamflow presently exists.

4. A key component of the network analysis will be the formation of an "Advisory Committee" consisting of State, local, and appropriate Federal agencies. This committee, co-chaired by a State representative and a U.S. Geological Survey representative, would:

   a. Direct the progress of the network analysis.

   b. Determine geographical priorities within the State. This would allow the network analysis and the products of the network analysis to be concentrated in those areas with highest priorities.

   c. Determine the limit of acceptable errors for use in data analysis and computations.

   d. Advise all parties concerned of the progress of the network analysis.

5. Preparation of a report describing the study. A Water-Resources Investigations Report will be written to describe the methods used, the results, and a summary of the data bases. This report will evaluate how well the objective (estimation of streamflow characteristics at ungaged sites throughout Alaska) has been met, assess the accuracy and applicability of the findings, identify gaps in the current data-collection program, and designate areas where specific types of additional surface-water data are needed.

   Additionally, the regression equations developed in the study would be packaged in a computer program for easier utility.

MANPOWER:

The Project Chief will be a hydrologist GS-13, surface-water discipline; some technical assistance will be required. Also, support will be needed to help determine and enter data into the computer and for report preparation. These personnel are available within the district and will have other duties during the time the project is ongoing. Some technical support will probably will be requested from Regional and Headquarters surface-water personnel.

COSTS:

The study is planned for 15 months beginning July 1, 1991 and ending September 30, 1992.

	Costs
Labor	$165,260
Travel	5,400
Contractual Services	20,000
Supplies and Materials	6,000
Equipment Purchases	16,000
Vehicles	6,300
Computer	40,500
Reports	11,100
Alaska Common Services	160,200
Headquarters Services	53,240
TOTAL	$484,000

Note: Alaska Common Services include costs of labor, goods, and services which, in order to simplify record keeping, are charged as a general assessment rather than as charges directly to each project. Examples are clerical and administrative support, program management, physical facilities, and utilities.

Headquarters Services include program and technical support from both the Geological Survey's national and regional headquarters.

Total cost of the program is $484,000.

The U.S. Geological Survey will contribute 50 percent of the costs ($242,000) using Federal cooperative monies.

The State of Alaska will contribute the other 50 percent of the costs ($242,000).

REFERENCES:

Childers, J.M., 1970, A proposed streamflow-data program in Alaska: U.S. Geological Survey open-file report, 30 p.

Cohon, J.S., 1978, Multiobjective programming and planning: New York, Academic Press.

Hirsch, R.M., 1982, A comparison of four streamflow record extension techniques: Water Resources Research, v. 18, no. 4, p. 1081-1088.

Lamke, R.D, 1984, Cost-effectiveness of the stream-gaging program in Alaska: U.S. Geological Survey Water-Resources Investigations Report 84-4096, 100 p.

Lumb, A.M., Kittle, J.L., Jr., and Flynn, K.M., 1990, Users manual for ANNIE, a computer program for interactive hydrologic analyses and data management: U.S. Geological Survey Water-Resources Investigations Report 89-4080, 235 p.

Majure, J.J. and Soenksen, P.J., 1988, Using a geographic information system to determine physical basin characteristics for use in flood-frequency equations: Proceedings of the USGS 1988 National Computer Technology Meeting, Phoenix, Arizona, November 14-18, 1988.

Medina, K.D., 1987, Analysis of surface-water data network in Kansas for effectiveness in providing regional streamflow information: U.S. Geological Survey Water-Supply Paper 2303, 28 p.

Perks, A.R., McLaurin, I.S., Harvey, K.D., Wedel, J.H., Johnson, B.N., and Warner, L.A., 1988, Hydrometric data collection and interpretation in the Prairie Provinces and Northwest Territories: Proceedings of the 1988 Annual Conference of the Canadian Society of Civil Engineering, May 23-27, 1988, Calgary, Alberta.

Stedinger, J.R. and Tasker, G.D., 1985, Regional hydrologic analysis -- ordinary, weighted, and generalized least squares compared: Water Resources Research, v. 21, no. 9, p. 1421-1432.

Tasker, G.D., 1986, Generating efficient gaging plans for regional information: Proceedings of the Budapest Symposium, IAHS Publ. No. 158, p. 269-281.

Tasker, G.D. and Stedinger, J.R., 1989, An operational GLS model for hydrologic regression: Journal of Hydrology, 111, p. 361-375, Elsevier Science Publishers B.V., Amsterdam, Netherlands.

Wahl, K.L. and Crippen, J.R., 1984, A pragmatic approach to evaluating a multipurpose stream-gaging network: U.S. Geological Survey Water Resources Investigations Report 84-4220, 13 p.

DEPARTMENT OF FISH AND GAME
POSITION PAPER

BILL NO: HB354

SPONSOR: Representative Davidson

DIVISION: Divisions of Habitat and Sport Fish

Department Position:

The Department of Fish and Game supports passage of HB354.

The USGS currently operates some 72 stream gaging stations in Alaska of which approximately 47 have sufficient duration that they can be used for estimating flow characteristics. Alaska has over 40,000 streams and accurate stream flow estimates are needed for, among other things, engineering, mining, fish habitat protection, flood protection, and hydroelectric development. Over 99 percent of Alaska's streams are ungaged. The USGS can perform a comprehensive evaluation of Alaska's stream gaging network, using federal dollars matched by 50 percent state funding to determine the accuracy of estimated streamflow values at ungaged sites using data from current and historical gages.

The surface-water data network evaluation funded by this bill will benefit several programs in the Department of Fish and Game including fish habitat permitting, special areas planning and permitting, land management planning, instream flow, fisheries enhancement, and fisheries research. The department's ability to determine optimum instream flows for fish and wildlife, evaluate hydraulic projects in fish habitat, define floodplains, design fish hatcheries and other fish enhancement projects, and conduct fisheries research using weirs and traps is hampered because of the inadequate ability to accurately predict stream flows. This evaluation once completed should provide a sound basis to significantly improve our future streamflow predictions and reduce the margin of error. Industry and other water users will also benefit.

COMMISSIONER'S SIGNATURE Ron Somerville for **DATE** 1/17/91

FISCAL NOTE

STATE OF ALASKA
1992 LEGISLATIVE SESSION

BILL NO. HB 354

Revision Date: 12/13/91
Department Affected: Fish and Game
Title: Surface-Water Data Network
BRU: Habitat
Component: Habitat
Sponsor: Representative Davidson
Requestor: House Resources Committee
COMPONENT SERIAL NO. 4 8 6

Expenditures/Revenues: (Thousands of Dollars)

OPERATING	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	0	0	0	0	0	0
CAPITAL	0	0	0	0	0	0
REVENUE FUND SOURCE:	0	0	0	0	0	0

FUNDING: (Thousands of Dollars)

GENERAL FUND						
FEDERAL FUNDS						
OTHER FUND SOURCE:						
TOTAL	0	0	0	0	0	0

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

Estimate of current year impact: None.

ANALYSIS: (Attach a separate page if necessary.)

Prepared By: Kimbal Sundberg
Phone: 267-2334
Division: Division of Habitat
Date: 12/16/91
Approved by Commissioner:
Agency: Department of Fish and Game
Date:

Distribution (by preparer): leg. fin., legislative Sponsor, Requestor, OMB/DOR, Gov. Legis. OSC., & Impacted Agency(ies)

Rev 10/7/91

A.W.R.A.
ALASKA SECTION
P.O. BOX 101184
ANCHORAGE, ALASKA 99510

AMERICAN WATER RESOURCES ASSOCIATION

June 26, 1991.

Cliff Davidson
P.O. Box 746
Kodiak, AK 99615

Dear Representative Davidson:

Water is a resource vital to the well being and continued development of Alaska. The Alaska Section of the American Water Resources Association (AWRA) is comprised of hydrologists, biologists, engineers, geologists, and planners working on various aspects of water resources in Alaska. We work for state and federal agencies, local governments, consultants, industry, and the University of Alaska. Through our work we recognize the need for information about this resource so that cost efficient development decisions can be made.

The intent of this letter is to encourage the legislature to appropriate funds that would allow for the establishment of a statewide stream gaging network. Such a network would allow for the collection of long term hydrological data for selected stream systems and hydrological regions. The Alaska Water Resources Board under Resolution 91-7 (attached) has made a similar recommendation. The implementation of a stream gaging network would tie into House Bill No. 354 which requests funding for an evaluation of the adequacy of existing stream data collection. There are a number of reasons why such a network would be a highly cost effective use of state funds:

1. The U.S. Geological Survey division of the Department of Interior currently has matching funds available for state use in stream gaging efforts up to $300,000 per year (or possibly more). A major portion of these funds is currently unused and represents a wasted state resource.

2. Stream gaging in Alaska to date has almost always been conducted in a reactive mode in relation to specific development projects, community needs, or recreational needs. However, because of natural climatic variation, a historical record of 10-20 years is needed to make accurate decisions based on stream flow data. Therefore, many water use, water supply, and stream engineering decisions made in the past have been based on insufficient information, often resulting in costly miscalculations. For example, many of the culverts on the North Slope haul road have been replaced one or more times because the hydrological data used in the initial design were not adequate. A statewide gaging network would be a step in the direction of advance planning which could avoid some of

these problems. Potential problem areas which would benefit directly from improved stream gaging include:

Engineering design for culverts and bridges (including fish passage provisions)

Community and public water supply

Industrial water supply (e.g., fish processing, aquaculture and mining)

Design of hydroelectric facilities

Instream flow allocation (including flows required for fish and wildlife protection)

Flood prediction

Planning for future commercial and industrial development in all areas of Alaska

3. Establishment of a stream gaging network would necessitate setting priorities on hydrologic data collection needs (see also H.B. 254). Such a process could not help but be beneficial from a statewide planning standpoint. Most stream gaging is currently conducted by the U.S.G.S. Their priorities are established by input from both state and federal agencies. A statewide network would allow the state to have greater control over the location of gaging stations.

4. Because of Alaska's size and topographic/climatic diversity, watershed characteristics within whole regions of the state are virtually unknown. These characteristics are required for accurate hydrologic calculations. A stream gaging network would allow gaging on selected index streams so that regional characteristics could be better established.

5. A historical stream flow record in potential development areas such as ANWR would be very valuable and would send a message to industry that the state is willing to be a cooperator in the collection of technical data that is useful to both parties.

6. Adequate protection of streams and rivers and the fish and wildlife that depend on them is essential for the maintenance of the recreation and tourism industries, as well as the commercial fishing industry. Currently proposed House Bill No. 355 addresses the issue of reservation of instream flows for fish and wildlife.

Field implementation of a stream gaging network could probably be best administered by the U.S. Geological Survey. Network design and priorities could be established by a planning team consisting of representatives from the state, federal and private sectors.

The AWRA, Alaska Section is currently in the process of developing an index of all hydrological data collected in the state. This index will provide a good starting point for design of a gaging network.

We urge you to seriously consider allocating funding to the Department of Natural Resources to be specifically used for matching the USGS cooperative program with the purpose of establishing a statewide stream gaging network. It is our opinion that the end result would be substantial savings in expenditure of state funds in the long run.

Although this year's legislative session is over, the AWRA, Alaska Section would consider it a privilege to work with you during the interim to put together a plan for a stream gaging network.

Thank you for your consideration.

Sincerely,

John W. Morsell
Chairman, Legislative Affairs Committee

cc: Harold C. Heinze, Commissioner, DNR

Phil Carpenter, USGS

Peg Tileston, Alaska Water Resources Board

NOTES TO DECISIONS

Municipality has no duty to purchase third party's property or liability. — A third party owning property that a municipality expressed an interest in buying is at most an incidental beneficiary of any contract between the municipality and the state, assuming, without deciding, that the contractual concept of third party beneficiary rights can apply in the legislative grant situation; there is not a statutory duty for the municipality to purchase the property but discretion to spend or not to spend funds within the parameters set by the legislature; and there is no intentional interference with prospective economic advantage. Ellis v. City of Valdez, Sup. Ct. Op. No. 2844 (File No. S-32), 686 P.2d 700 (1984).

Sec. 37.05.316. Grants to named recipients. (a) When an amount is appropriated or allocated to a department as a grant for a named recipient that is not a municipality, the department to which the appropriation or allocation is made shall promptly notify the named recipient of the availability of the grant and request the named recipient to submit a proposal to provide the goods or services specified in the appropriation act for which the appropriation or allocation is made. At the same time, the department may issue a request for proposals from other qualified persons to provide the same goods or services in the same area. The department shall award the grant to the named recipient unless the Office of the Governor, with due regard for the local expertise or experience of those making proposals, determines that an award to a different party would better serve the public interest. If the grant is awarded to a party other than that named by the legislature, the basis of that action shall be stated in writing at the time the grant is issued and a copy of the written statement shall be sent to the Legislative Budget and Audit Committee. A grant agreement must be executed within 60 days after the effective date of the appropriation or allocation.

(b) The Department of Labor shall require a recipient awarded a grant for a public works project under (a) of this section to comply with the hiring preferences under AS 36.10.150 — 36.10.175 for employment generated by the grant. (§ 2 ch 4 SLA 1982; am § 8 ch 33 SLA 1986; am § 39 ch 106 SLA 1986)

Cross references. — For applicability of subsection (b) to contracts entered into before May 25, 1986, see sec. 10, ch. 33, SLA 1986 in the Temporary and Special Acts.

Effect of amendments. — The first 1986 amendment added subsecti b).

The second 1986 amendment, in sec- tion (a), deleted "or both" following "appropriation act" in the first sentence, deleted "or both" following "goods or services" in the second sentence, substituted "award the grant to" for "contract with" near the beginning of the third sentence, substituted "grant" for "contract" near the beginning of the fourth sentence, substituted "grant agreement must" for "contract shall" near the beginning of the fifth sentence, deleted the former sixth sentence which read, "The purchase of the goods or services, or both, shall be in accordance with AS 37.05.230(a)(3)," and made related grammatical and technical changes.

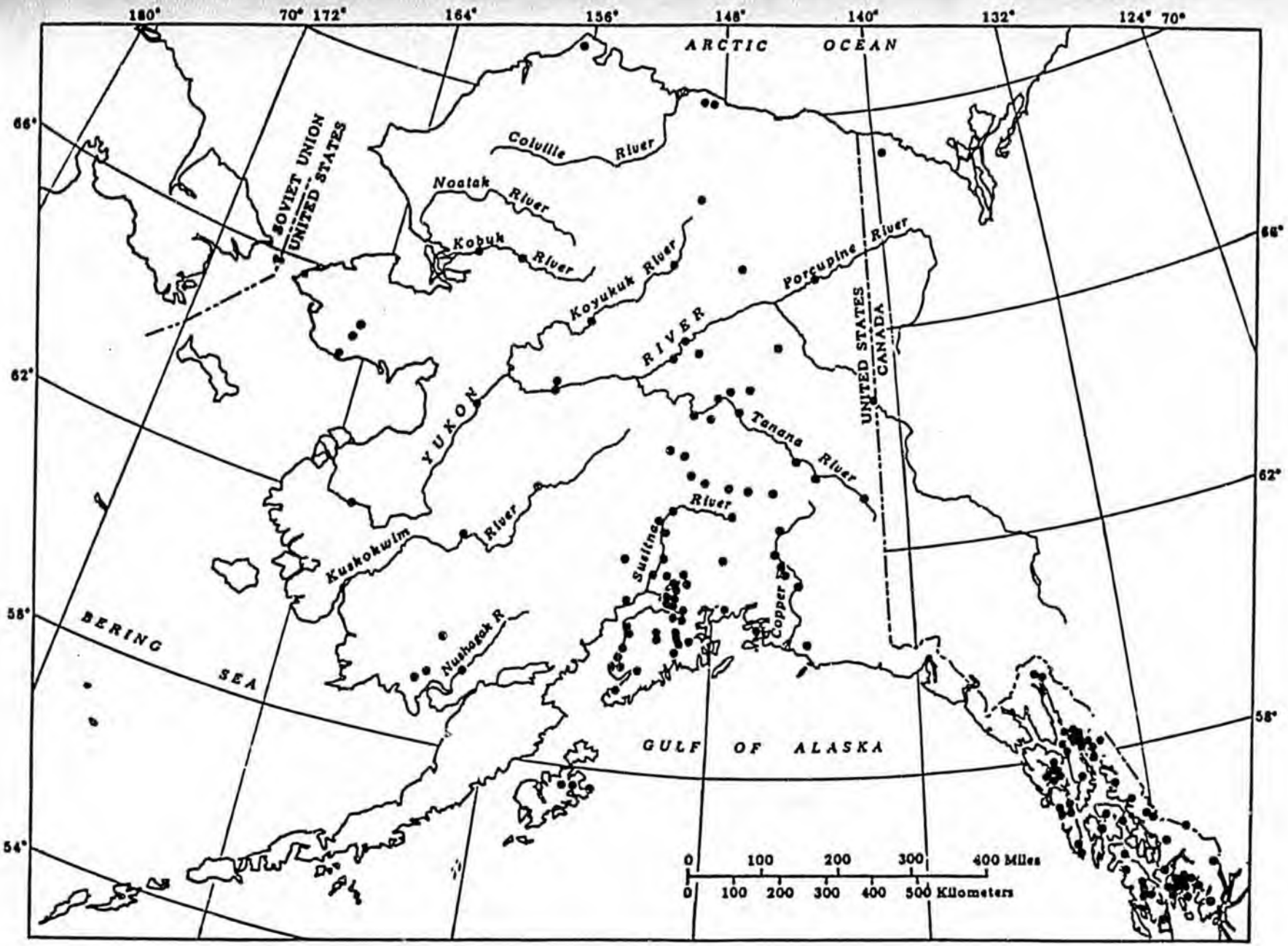


Figure 1.--Stream-gaging sites having 10 or more years of record through 1990 water year.

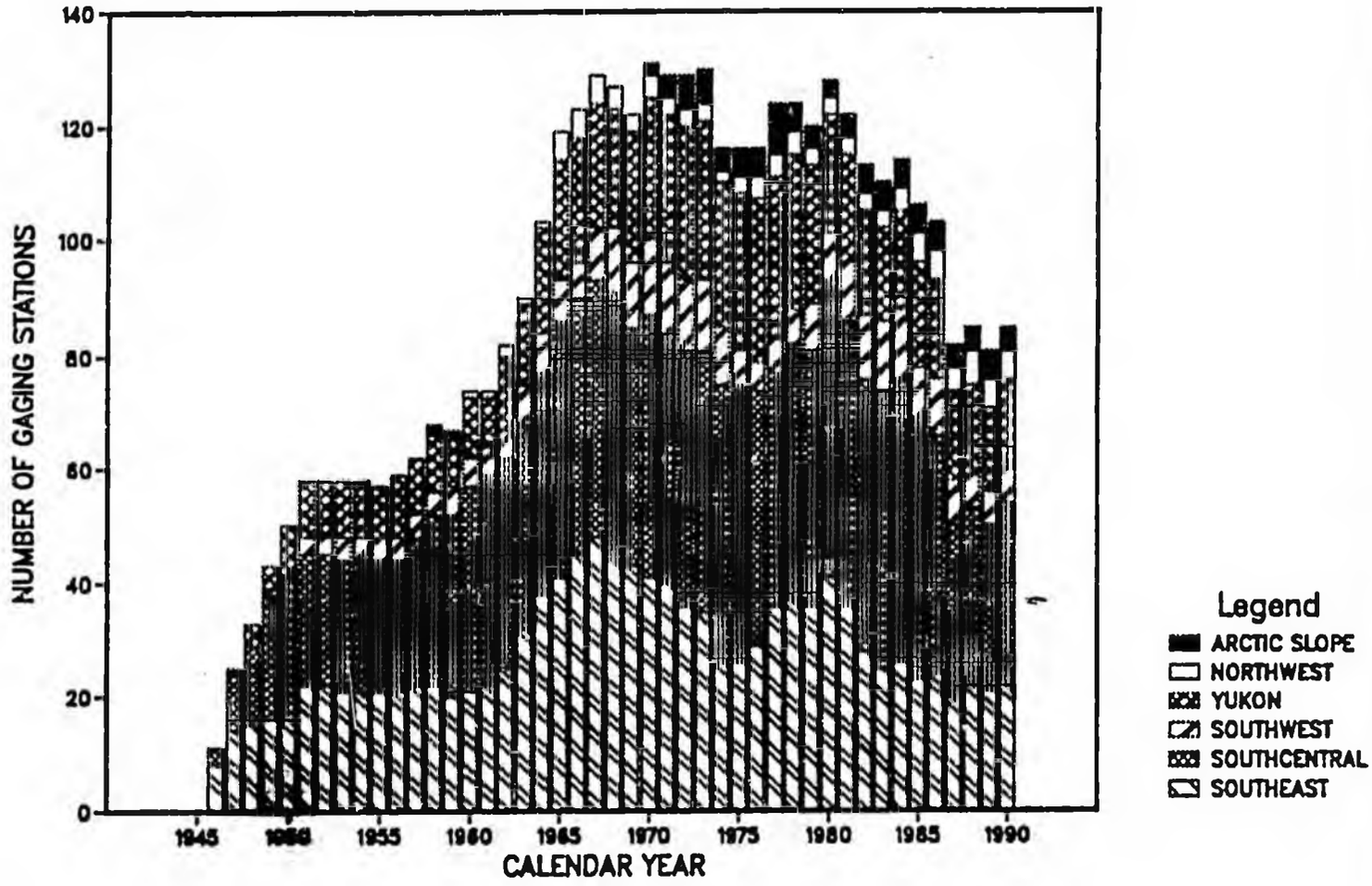
158 Stream-gaging sites in Alaska
2 Stream-gaging sites in Canada

USGS Data Collection Program in Alaska

- The USGS began collecting Hydrologic Data in Alaska in 1906 near Nome
- Surface water statistics:
  - 2,560 sites in National Water Information System data base for Alaska
    - 1,180 streams (96 in Canada)
      - 630 lakes, 33 meteorological sites and 11 estuaries

  This includes:
  - 358 streamgaging stations with 1 or more years of record
  - 230 streamgaging stations with 5 or more years of record
  - 160 streamgaging stations with 10 or more years of record
- During the 1991 water year the USGS collected data at:
  - 85 stream gaging stations
  - 67 crest gage stations
  - 100 wells
  - 12 lakes
  - 24 water-quality sites
- During the current water year the USGS is collecting data at:
  - 97 stream gaging stations
  - The other sites remain about the same
- Ground water Statistics:
  - 17,000 sites in ground-water data base (GWSI) which include about:
    - 6,400 sites in the Municipality of Anchorage
    - 4,120 sites in the Matanuska-Susitna Borough
    - 2,610 sites in the Kenai Peninsula Borough
    - 1,630 sites in the Fairbanks North Star Borough
- Water-quality Statistics:
  - 4,130 sites which include about:
    - 2,100 ground-water sites
    - 1,550 surface-water sites
- The USGS is putting a major effort into publishing the annual report in a timely manner.
- Coordination efforts via "Interagency Hydrology Committee" and the new Division of Water

HISTORY OF STREAM GAGING BY AREAS IN ALASKA



HYDROLOGIC DATA STATIONS OPERATED BY THE U.S. GEOLOGICAL SURVEY — 1992

Station No.	Station name	Drainage area (mi^2)	Period of record	Mean annual flow (ft^3/s)
	DAILY DISCHARGE STATIONS			
	SOUTHEAST ALASKA			
15019990	Tyee Lake outlet nr Wrangell	--	1979-81, 1991-	---
15022000	Harding River near Wrangell	67.4	1951-	737
15024800	Stikine River near Wrangell	19,920	1976-	56,600
15028300	Farragut River near Petersburg	151	1977-	1,636
15039900	Dorothy Lake outlet near Juneau	11	1986-	---
15041200	Taku River near Juneau	6,580	1987-	---
15049900	Gold Creek near Juneau	8.41	1984-	110
15051010	Salmon Creek near Juneau	9.77	1991-	---
15052500	Mendenhall River near Auke Bay	85.1	1965-	1,132
15056090	Goat Lake outlet near Skagway	2.92	1991-	---
15056560	Klehini River near Klukwan	245	1981-1984-	1,489
15072000	Fish Creek near Ketchikan	32.1	1915-36, 1938-	420
15081495	North Fork Staney Creek near Klawock	3.07	1990-	---
15081497	Staney Creek near Klawock	50.6	1989-	---
15083500	Perkins Creek near Metlakatla	3.38	1976-	36.0
15085100	Old Tom Creek near Kasaan	5.90	1949-	39.6
15087520	Hamilton Creek near Kake	65.0	1972-73, 1975-86	350
15087690	Indian River near Sitka	10.1	1980-	103
15101490	Greens Creek at Greens Creek Mine near Juneau	8.62	1989-	---
15101500	Greens Creek near Juneau	22.8	1978-	102
15106920	Kadashan River above Hook Creek near Tenakee	10.2	1968-78, 1980-	64.7
15129000	Alsek River near Yakutat	10,820	1991-	---
15129500	Situk River near Yakutat	36	1988-	---
15129600	Ophir Creek near Yakutat	2.5	1991-	---
	SOUTH-CENTRAL ALASKA			
15200280	Gulkana River near Sourdough	1,170	1973-78, 1982, 1988-	1,130
15214000	Copper River at Million Dollar Bridge near Cordova	24,200	1988-	---
15215992	Heney Creek at canyon mouth near Cordova	1.53	1991-	---
15216000	Power Creek near Cordova	20.5	1913, 1947-	255
15216003	Middle Arm Eyak Lake tributary near Cordova	2.90	1991-	---
15216008	Murcheson Creek near Cordova	0.37	1991-	---
15226000	Solomon Gulch near Valdez	19.7	1948, 1949-[illegible], 1986-	144
15236000	Hobo Creek near Whittier (Golden)	5.53	1913, 1991-	---
15237360	San Juan River near Seward	12.4	1986-	---
15238600	Spruce Creek near Seward	9.26	1967-79, 1991-	76.6
15238648	Upper Nuka River near Homer	~3	1984-	---
15238820	Barbara Creek near Seldovia	20.7	1972-	107
15238982	Battle Creek below glacier near Homer	11.8	1991-	---
15238984	South Fork Battle Creek near Homer	6.5	1991-	---
15238985	Battle Creek near tidewater near Homer	21	1991-	---
15238990	Upper Bradley River near Nuka Glacier near Homer	10	1979-	---
15239000	Bradley River near Homer	54	1955, 1957-	439
15239001	Bradley River below dam near Homer	--	1990-	---
15239050	Middle Fork Bradley River near Homer	9.25	1979-	50.8
15239070	Bradley River near tidewater near Homer	82	1983-	---
15239500	Fritz Creek near Homer	10.4	1963-85, 1985-	13.4
15239900	Anchor River near Anchor Point	137	1965-73, 1978-86, 1991-	202
15258000	Kenai River at Cooper Landing	634	1947-	2,843
15266300	Kenai River at Soldotna	2,010	1965-	5,958
15272280	Portage Creek at Portage Lake near Whittier	39.7	1989	---
15274550	Little Campbell Creek at Nathan Drive at Anchorage	15	1981, 1986-	---
15274600	Campbell Creek near Spenard	13.4	1966-	67.2
15275100	Chester Creek at Arctic Boulevard at Anchorage	27.2	1966-86, 1987-	19.6
15276000	Ship Creek near Anchorage	90.5	1946-	164
15290000	Little Susitna River near Palmer	61.9	1948-	210

Station No.	Station name	Drainage area (mi^2)	Period of record	Mean annual flow (ft^3/s)
	SOUTH-CENTRAL ALASKA--Continued			
15292000	Susitna River at Gold Creek	6,160	1949-	9,821
15292700	Talkeetna River near Talkeetna	2,006	1964-	4,095
15294005	Willow Creek near Willow	166	1978-	410
15294350	Susitna River at Susitna Station	19,400	1974-	49,910
15294585	Montana Bill Creek near pipeline near Kenai	---	1991-	---
15294591	Drift River near Redoubt Volcano near Kenai	102	1991-	---
15294592	Crater Creek near Redoubt Volcano near Kenai	---	1991-	---
15294900	Paint River near Kamishak	205	1983-85, 1990-	---
15295700	Terror River at mouth near Kodiak	45.7	1964 68, 1981-	293
15297485	Kizhuyak River near Port Lions	27.5	1980-	---
	SOUTHWEST ALASKA			
15302000	Nuyakuk River near Dillingham	1,490	1953-	6,246
15302500	Nushagak River at Ekwok	9,850	1977-	23,720
15303011	Wood River tributary near Aleknagik	3.35	1990-	---
15303700	Tatalina River near Takotna	76.9	1987-90, 92-	---
15304000	Kuskokwim River at Crooked Creek	31,100	1951-	41,020
15304393	Browns Creek near Bethel	4.79	1986-	---
	YUKON ALASKA			
15344000	King Creek near Dome Creek	5.99	1975-82, 1983-90, 1992-	1.70
15356000	Yukon River at Eagle	113,500	1911-13, 1950-	83,220
15388960	Porcupine River near international boundary, Yukon Territory	23,100	1986-	---
15453500	Yukon River near Stevens Village	196,300	1976-	118,400
15478000	Phelan Creek near Paxson	12.2	1966-78, 1989-	69.7
15484000	Salcha River near Salchaket	2,170	1909-10, 1948-	1,632
15485500	Tanana River at Fairbanks	---	1973-	19,970
15493000	Chena River near Two Rivers	941	1967-	680
15493700	Chena River below Moose Creek Dam	1,460	1979-	916
15511000	Little Chena River near Fairbanks	372	1966-	207
15514000	Chena River at Fairbanks	1,995	1947-48, 1948-	1,371
15515500	Tanana River at Nenana	25,600	1962-	24,130
15518080	Lignite (Hoseanna) Creek near Healy	48.1	1985-	31.3
15565447	Yukon River at Pilot Station	321,000	1975-	224,300
	NORTHWEST ALASKA			
15635000	Eldorado Creek near Teller	5.83	1988-90, 1992-	---
15743850	Dahl Creek near Kobuk	11.0	1986-	---
15744500	Kobuk River near Kiana	9,520	1976-	15,190
15746980	Ikalukrok Creek above Red Dog Creek near Kivalina	59.2	1991-	---
15746983	Red Dog Mine clean-water ditch near Kivalina	---	1991-	---
15746990	Red Dog Creek above mouth near Kivalina	---	1991-	---
15747000	Wulik River below Tutok Creek near Kivalina	705	1984-	1,039
	ARCTIC SLOPE ALASKA			
15798700	Nunavak Creek near Barrow	2.79	1971-	1.01
15896000	Kuparuk River near Deadhorse	3,130	1971-	1,342
15904800	Atigun River near Pump Station 4	48.7	1991-	---
15906000	Sagavanirktok Tributary near Pump Station 3	28.4	1987-	---
15908000	Sagavanirktok River near Pump Station 3	1,860	1982-	1,295
	FLOOD WARNING STATIONS			
15237900	Salmon Creek near Seward	---	1988-	---
15290100	Little Susitna River near Houston	168	1980-81, 1984-	---

THE U.S. GEOLOGICAL SURVEY STREAM-GAGING PROGRAM IN ALASKA

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey (USGS) is the principal Federal agency that collects water data in the United States. These data are collected in cooperation with State and local governments and other Federal agencies. Water in rivers and lakes is called "surface water." One method of collecting data from surface water is the establishment of a stream-gaging program.

What is a stream-gaging program? It is a network of stream-gaging stations on rivers and lakes that provides data on surface-water resources. These data help planners make decisions on the use and management of these resources.

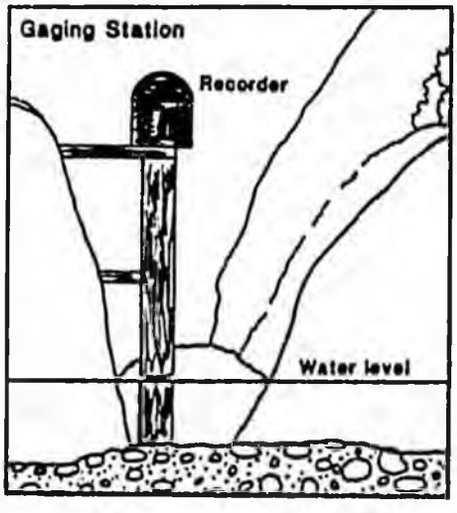
What is a stream-gaging station? It is a particular site on a stream or lake where systematic observations of hydrologic data are collected (see sketch below). The most commonly collected data, called "stages," are measured by recording gage heights (1) manually by an observer, (2) with mechanical instruments on special purpose paper, or (3) with electronic methods into a computer file. A continuous record of discharge at a station can be computed using recorded gage-height and 6 to 12 discharge measurements made at the station each year. The commonly reported data are discharges at a site for each day of the year.

What are surface-water records? Surface-water records consist of data on stage and discharge. Data are also collected at "partial-record stations," such as the network of "crest-stage gages" where only the peak discharge for the year is determined. Water-quality data are collected at many stream-gaging stations.

Stage (gage height) is the height of a water surface above an established datum plane. Stream-gaging stations provide a continuous record of stage.

Discharge is the volume of water that passes a given point at a given time.

Water-quality data report the following types of water characteristics: physical (such as water temperature), biological (such as fecal coliform bacteria), and chemical (such as dissolved iron).



USES OF DATA COLLECTED

What are the data collected at gaging stations used for?

Regional Hydrology: Discharge data at a station whose streamflow characteristics have not been altered by man can be used to develop relationships for a region. The relationship, which is based on streamflow characteristics (stage, discharge) and basin characteristics (geographic traits, climatic data), can estimate streamflow characteristics at ungaged sites on streams within the same region.

Hydrologic Systems: Data can be used to define current hydrologic conditions and to document changes in these conditions. For example, as an urban area becomes increasingly developed, stations can yield data that show changing streamflow characteristics.

Planning and Design: Data from these stations are used to plan and design a specific project, such as a dam or bridge.

Project Operation: Data are used to assist water managers in making operational decisions, such as reservoir releases at hydroelectric power plants and reservoir storage and release at flood-control projects.

Hydrologic Forecasts: Data provide information to various government agencies for flood forecasts.

Water-Quality Monitoring: Continued monitoring of streams can detect physical, chemical, and biological changes in water quality. Some gaging stations in Alaska are part of a nationwide network designed to assess the water-quality of major streams.

Research: Some gaging stations are operated for a particular research water-investigations study, such as those operated for the studying the effects of the Redoubt Volcano eruptions.

Other: Some stations are operated to collect data for legal obligations or for the adjudication of water rights.

THE STREAM-GAGING PROGRAM IN ALASKA

The USGS began its streamflow data collection in the summer of 1906 near Nome, in connection with gold placer mining. During the next few years, data collection expanded on the Seward Peninsula and into the Yukon and Tanana River basins. In 1913, emphasis shifted to reconnaissance of water-power sites in the lower Copper River basin and Prince William Sound area, and eventually in southeast Alaska. Although the USGS discontinued data collection in 1921, private companies and other Federal agencies continued to collect some data in southeast Alaska until 1946.

In 1946, the Alaska District of the USGS was established and the stream-gaging program was initiated with 16 stations. By 1951, 58 gaging stations were operating. The graph below shows the status of the network since 1946. The greatest number of stream-gaging stations was 131 in 1970.

During 1990, water-discharge data were collected at 85 gaging stations and water-quality data at 24 of these. Data were also collected at 66 crest-stage partial-record stations and at 22 lakes. The map below shows the locations of these stations.

Although surface-water records have been compiled in Alaska since the early years of the century, the State is so large that data are sparse for many areas. Northern and western areas of the State, in particular, have few stream gages. More streamflow data are needed in response to the increasing water-resources development within the State.

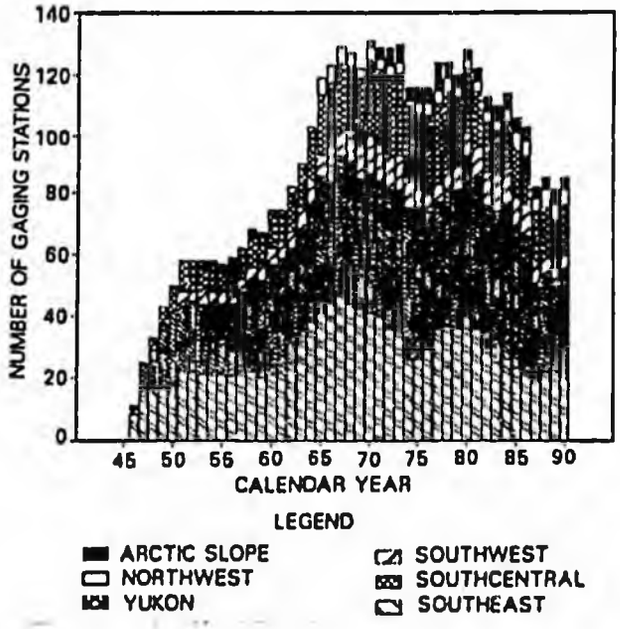
DATA COMPILATION AND REPORTS

How can I acquire streamflow data?

The U.S. Geological Survey publishes the surface-water records obtained at gaging stations. From 1957 to 1971, water resources data for Alaska were published annually by the Survey in Water-Supply Papers. In 1972, a series of Water-Data Reports was started, which merged all water resources data. The most recent of these are referenced below:

U.S. Geological Survey, 1976-91, Water resources data for Alaska, water years 1975-90: U.S. Geological Survey Water Data Reports AK-75-1 to AK-90-1 (published annually).

HISTORY OF STREAM GAGING BY AREAS IN ALASKA



The following report lists all sites in Alaska that had surface-water records up to 1988:

Still, P.J., and Cosby, J.M., 1989, Alaska index: Streamflow, lake levels, and water-quality records to September 30, 1988: U.S. Geological Survey Open-File Report 89-269, 189 p.

The following reports may also be of interest:

Feulner, A.J., and Reed, K.M., 1977, Bibliography of reports by members of the U.S. Geological Survey on the water resources of Alaska, 1870 through 1976: U.S. Geological Survey Open-File Report 77-687, 112 p.

Lamke, R.D., 1984, Cost-effectiveness of the stream-gaging program in Alaska: U.S. Geological Survey Water-Resources Investigations Report 84-4096, 100 p.

Parks, Bruce, and Madison, R.J., 1985, Estimation of selected flow and water-quality characteristics of Alaskan streams: U.S. Geological Survey Water-Resources Investigations Report 84-4247, 64 p.

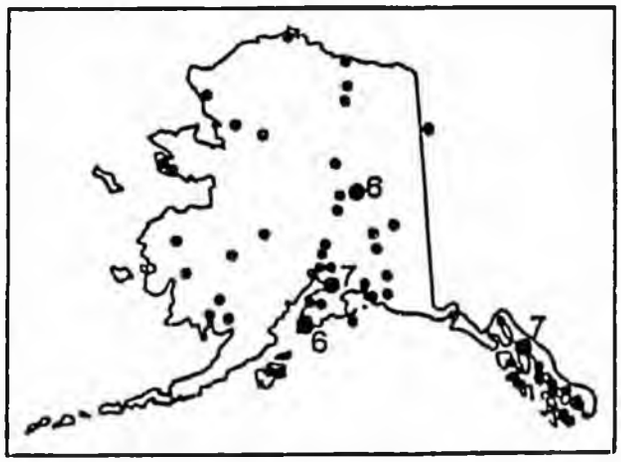
Snyder, E.F., 1990, Activities of the Alaska District, Water Resources Division, U.S. Geological Survey, 1990: U.S. Geological Survey Open-File Report 90-157, 21 p.

_____1991, Location maps and list of U.S. Geological Survey reports on water resources in Alaska, 1950 to 1990: U.S. Geological Survey Open-File Report 91-60, 44 p.

In addition to the reports, most of the surface-water data are available through computerized data-retrieval programs. For information contact:

District Chief
U.S. Geological Survey
4230 University Drive, Suite 201
Anchorage, Alaska 99508-4664
(907)786-7100

by Elisabeth F. Snyder February 1992



Locations of stream-gaging stations in 1990

Stream Gaging for Alaska

Advantages of the U.S. Geological Survey Program

- The U.S. Geological Survey (USGS) has developed, published and uses standard methods for collection, analysis and dissemination of data and information. These standards have been accepted and recognized by the National and International hydrologic communities and ensure the compatibility of widely used analytical techniques.

- The USGS has developed and used a nationwide quality control and quality assurance program to quantify the accuracy of data collected, stored, and published.

- The USGS, a non-regulatory and non-management agency, has a strong reputation for the collection of unbiased data. This data has historically stood up in court after close technical scrutiny.

- Data collected by the USGS in Alaska are published for use by all parties including other Federal agencies, State agencies, local Boroughs, cities, private Alaskan business, and the general public.

- Data collected by the USGS are stored in a local and a national computer data base. These data bases allow easy access to all current and historic USGS data.

- The data base allows timely retrieval of data. Existing software allows for efficient tabling, graphics, data reduction and statistical evaluation of Alaskan data.

- No other comprehensive data base exists in Alaska that allows easy access by not only all Alaskans but all interested parties nation-wide. The USGS data are also available commercially on CD-ROM (laser disks) for ease of use in desk-top applications.

- The USGS data base will be maintained indefinitely.

- The USGS cooperative program provides up to 50% of the costs in joint water-resource programs with State and local government agencies in Alaska.

- The USGS has a local staff of trained hydrologists and hydrologic technicians familiar with all aspects of hydrology in Alaska.

- The USGS has local field offices in Anchorage, Juneau and Fairbanks. Locating field offices in three different areas of the state allows our staff to be aware of local hydrology and associated local problems and needs.

- The USGS has a nationally recognized training program that insures our personnel use the best techniques available to collect water-resource data. This training program is available to cooperators.

- The USGS has the necessary equipment to collect all types of water-resource data.

- The USGS has an ongoing program of research and development of new methods and new instrumentation in the field of hydrology.

- The USGS in Alaska has access to a highly skilled research staff and leading experts in the field of hydrology nationwide capable of addressing the most difficult hydrologic problems. This pool of expertise is unparalleled worldwide.

- The USGS actively seeks out local governmental agencies to share resources and knowledge and cooperate with on water-resource data collection and water-resource studies.

- The USGS collects data from all areas of Alaska.

- The USGS works jointly with Canada to share data and information concerning water-resources common to both countries.

- The USGS works cooperatively with local universities to provide expertise when needed and learn from new ideas generated by the universities.

- The USGS hires local university students in our "Student Coop Program" to help train future Alaskan scientists and inject new ideas in our day-to-day programs.

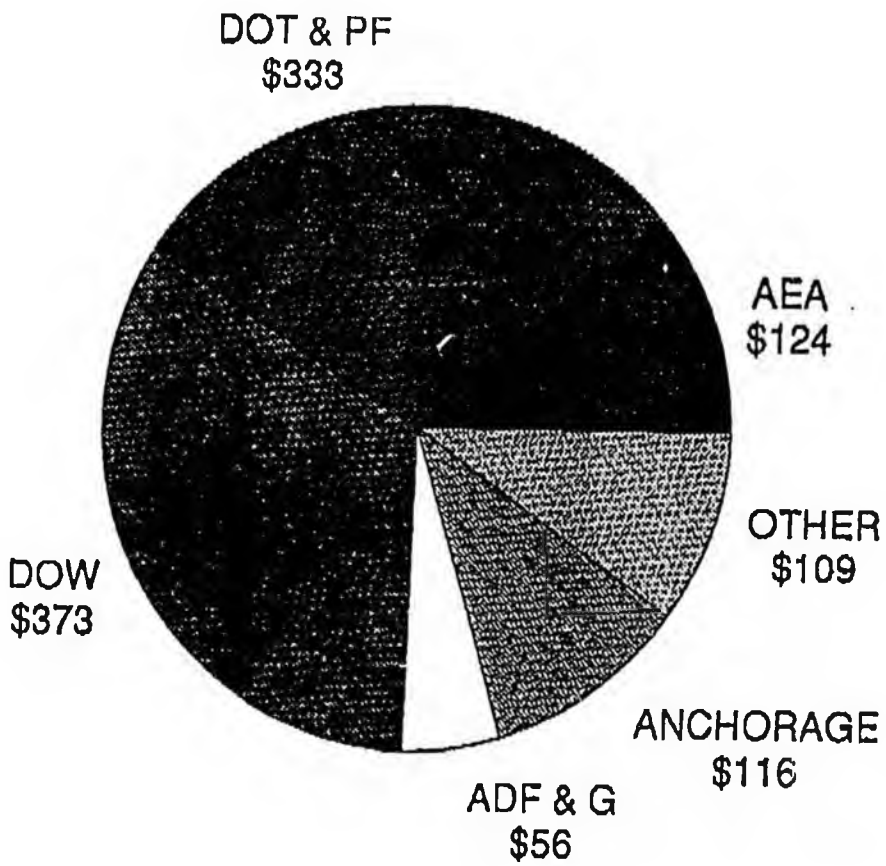
- The USGS hires local high school students to aid career development and job skills.

- The USGS collects data in the most cost effective manner consistent with the quality assurance guidelines.

- USGS programs and presence in Alaska feed monies directly into the Alaskan business community.

- USGS data are often the first stepping stone in detailed studies of hydrology.

COOP FUNDING
(in thousands of dollars)



ALASKA WATER RESOURCES BOARD

Resclution No. 90-13

Matching Funds for Stream Gage Programs

WHEREAS: For many years the U. S. Geological Survey (USGS) has provided matching funds to the state for gaging the amount of water flowing in Alaska's streams; and

WHEREAS: This jointly funded procedure has accounted for the majority of stream flow data available in the state; and

WHEREAS: Over the past several years, the state has reduced the amount of matching funds available for stream flow gages; and

WHEREAS: Stream flow data is important for sound decision-making by both government and business; and

WHEREAS: The joint Senate-House Resources Committee requested that the Alaska Water Resources Board provide information concerning levels of matching funds between USGS and the Department of Natural Resources/Division of Geological and Geophysical Surveys (DGGS) and the Department of Transportation and Public Facilities (DOT/PF).

NOW THEREFORE BE IT RESOLVED: That the Alaska Water Resources Board requests the Department of Natural Resources, the Department of Transportation and Public Facilities and the USGS provide data concerning these matching funds to the Board.

Adopted this 15th day of March, 1990
Alaska Water Resources Board

Peg Tileston

Peg Tileston, Chairwoman
Alaska Water Resources Board

ALASKA WATER RESOURCES BOARD

Resolution No. 90-7

Indian River Stream Gaging, and Coordination of the Stream Gaging Program between the Division of Land and Water Management and the Division of Geological and Geophysical Surveys

WHEREAS: The gathering of accurate stream-flow data on Indian River has been important to support the State's ability to adjudicate all water claims and rights on Indian River; and

WHEREAS: The conclusion of the current water rights adjudication will not determine federal claims to Indian River, which will remain to be quantified or litigated at some future time; and

WHEREAS: The continuous historical record provided by the Indian River stream gage is vital to both that river drainage, and by extrapolation, to numerous other Southeast rivers which have no stream gage records.

NOW THEREFORE BE IT RESOLVED: That the Alaska Water Resources Board urges that the Division of Geological and Geophysical Surveys (DGGS) maintain the Indian River stream gage in its present location with its own funds, federal USGS matching funds, Department of Fish and Game participation, or any workable combination of funds which will assure continuation of the historical record provided by this gage; and

BE IT FURTHER RESOLVED: That the Board urges DGGS to closely coordinate and consult with the Division of Land and Water Management (DLWM) regarding any future plans to abandon stream gauges where an historical record of importance to the State has been established; and

BE IT FURTHER RESOLVED: That the Board urges DGGS to annually coordinate with DLWM concerning locations important for the installation of new stream gages, and the financial support for such installations.

Adopted this 15th day of March, 1990
Alaska Water Resources Board

Peg Tileston

Peg Tileston, Chairwoman
Alaska Water Resources Board

ALASKA WATER RESOURCES BOARD

Resolution No. 90-5

Funding of Stream Crest Gages Along Road Systems by
The Department of Transportation and Public Facilities

WHEREAS: The Alaska Water Resources Board has recently learned that the Alaska Department of Transportation and Public Facilities (DOTPF) has failed to obtain approval for its nominal budget request to continue its program of measuring peak stream flows through bridges and culverts along the State's road system; and

WHEREAS: The data provided by these crest gages is invaluable for the proper design and construction of DOTPF facilities, to insure that all stream and river crossings are adequately sized and properly designed; and

WHEREAS: Matching funds for the crest-gage program have been available through the U.S. Geological Survey's Small Streams program; and

WHEREAS: The nominal cost to DOTPF of the crest-gage program is minuscule when compared to the future costs of repair and reconstruction of state highways and bridges which may be inadequately designed to accommodate peak stream flows, where such data is unavailable; and

WHEREAS: The crest-gage data provided by DOTPF is also vital to the Alaska Department of Fish and Game and the Alaska Department of Natural Resources in fulfilling their statutory responsibilities for land, water, and habitat planning and management, particularly in areas of the state where no comparable data is available from other sources;

NOW THEREFORE BE IT RESOLVED: That the Alaska Water Resources Board urges the Governor and DOTPF make every effort to adequately fund the existing crest-gage stream measurement program, to insure the continuity of this valuable data for many important state functions.

Adopted this 15th day of March, 1990
Alaska Water Resources Board

Peg Tileston

Peg Tileston, Chairwoman
Alaska Water Resources Board

ALASKA WATER RESOURCES BOARD

Resolution 91-12

Statewide Stream Gaging Network

WHEREAS: Stream flow obtained from stream gage data is required to properly manage the state's water resources for such uses as water rights allocation, instream flow reservations, resource development projects, and design of roads, railroads and pipelines; and

WHEREAS: Stream gage data is extremely limited in the state and almost totally lacking in northwest Alaska; and

WHEREAS: At least ten years of continuous data collection at each gage is required to establish good hydrologic data for a stream; and

WHEREAS: Data from index gage sites can be correlated and extrapolated to other similar stream basins regionally; and

WHEREAS: The Division of Geological and Geophysical Surveys (DGGS) is the state agency designated to coordinate and collect basic hydrologic data; and

WHEREAS: The U.S. Geological Survey (USGS) is the primary federal agency designated to coordinate and collect hydrologic data; and

WHEREAS: The DGGS/USGS Cooperative Matching program to fund stream gages and collect flow data has been decreasing annually resulting in decreasing numbers of stream gages.

NOW THEREFORE BE IT RESOLVED:

That the Alaska Water Resources Board recommends the DGGS coordinate with all state agencies needing stream flow data, with interested private organizations, and with the USGS to cooperatively design a statewide stream gage data collection network.

BE IT FURTHER RESOLVED:

That the DGGS and USGS cooperatively prepare a map of the proposed stream gaging network and a report summarizing a list of proposed gage sites prioritized by need, cost for the establishment and maintenance of the gages, rational for choosing the gage locations, and proposed multi-year budget for the gage network.

BE IT FURTHER RESOLVED:

That the DGGS and USGS present the maps and report to the Water Resources Board at its next meeting.

Adopted this 20th day of March, 1991
Alaska Water Resources Board

Peg Tileston

Peg Tileston, Chairwoman
Alaska Water Resources Board

ALASKA WATER RESOURCES BOARD

Resolution 91-7

USGS Matching Funds for Stream Gaging

WHEREAS: The United States Geological Survey (USGS) conducts a $300,000 annual matching grants program available to the State of Alaska for stream gaging; and

WHEREAS: The State of Alaska failed to take full advantage of this program in 1990; and

WHEREAS: Stream gaging is necessary for knowledgeable fish and game management, orderly development, navigation and commerce planning; and

WHEREAS: The State of Alaska can double its much needed data collection activities by funding up to $300,000 in matching funds to the USGS grants.

NOW THEREFORE BE IT RESOLVED:

That the Alaska Water Resources Board recommends that the State of Alaska should fund a budget increment of $300,000 per year to participate in the USGS matching fund program for stream gaging stations.

Adopted this 20th day of March, 1991
Alaska Water Resources Board

Peg Tileston

Peg Tileston, Chairwoman
Alaska Water Resources Board

STATE OF ALASKA

STEVE COWPER, GOVERNOR

DEPARTMENT OF FISH AND GAME

Division of Sport Fish

P.O. Box 20
Douglas, AK 99824
(907) 465-4270

June 14, 1990

Mr. William Long
State Hydrologist
Alaska Department of Natural Resources
Division of Geological and Geophysical Surveys
P.O. Box 772116
Eagle River, AK 99577

and

Mr. Phil Carpenter
District Chief
United States Geological Survey
Water Resources Division
4230 University Drive - Suite 201
Anchorage, AK 99508-4664

Subject: Restoration of State/Federal Funding for Indian River Gage Site

Dear Messrs. Long and Carpenter:

Representatives from the Alaska Department of Fish and Game, Sheldon Jackson College, City of Sitka, U.S. Forest Service, Trout Unlimited, and the U.S. National Park Service met to discuss a proposed cooperative steelhead enhancement project for Sheldon Jackson College. Indian River would supply the water for the project.

I am transmitting this letter at the request of all the participants advocating restoration of the joint state/federal funding program to insure the continued operation of the Indian River gaging station #15087690.

Participants were concerned that the decision by the Division of Geological and Geophysical Survey of the Alaska Department of Natural Resources (DGGS/ADNR) to discontinue funding the state's fifty percent share ($10,000) of operational costs for the Indian River gage jeopardizes its continued operation. The participants indicated that they had not been forewarned that the state had planned to drop its portion of the funding for this important site.

Operation of this gaging station is required to: enable the state to monitor and enforce water rights that are pending adjudication by the ADNR Division of Land and Water Management; serve as an index station for the numerous ungaged systems in coastal southeast Alaska; and

enable Sheldon Jackson College to monitor water availability for the operation of the existing and future hatchery operations. A pending Federal Reserved Water Rights adjudication would also rely on the data generated by this gage.

Participants discussed alternatives and favored the current gaging system over a less reliable datapod system after considering the importance of the data generated at this site as an index station.

In summary, we encourage your agencies to continue the existing operation of this site and would appreciate notification of any planned changes from the status quo.

Sincerely,

Fred Gaffney
Regional Supervisor

cc: Bill Davidson, Sheldon Jackson College
Lowell Tornquist, Sheldon Jackson College
Art Schmidt, Alaska Department of Fish & Game
Christopher Estes, Alaska Department of Fish & Game
Dave Hardy, Alaska Department of Fish & Game
Marlene Campbell, City of Sitka
Jere Christner, US Forest Service
Vic Starostka, US Forest Service
Ivan Jones, Trout Unlimited
Mikki Hellickson, National Park Service

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
ALASKA STATE OFFICE
222 W. 7th Avenue, #13
ANCHORAGE, ALASKA 99513-7599

TAKE PRIDE IN AMERICA

7250 (933)

Representative Cliff Davidson
Chairman, House Resources Committee
State of Alaska
House of Representatives
Box V
Juneau, Alaska 99811

Dear Mr. Davidson:

My staff has reviewed the proposed legislation, House Bills 353, 354 and 355. House Bill 353 concerns the automation and updating of water resource data, House Bill 354 concerns the surface-water data network, and House Bill 355 concerns the reservation of instream flows for fish and wildlife.

The Environmental Protection Agency's (EPA) STORET system has been used successfully nationwide by other Bureau of Land Management (BLM) offices. It has been identified as the best system to track streamflow data. We fully support the completion of the automation process for the State water data base.

We fully support the surface-water data network system proposed in House Bill No. 354. We would like to have a technical representative participate in the cooperative effort to locate new stream gaging sites.

House Bill 355 would guarantee the allocation of instream flow water rights for fish and wildlife. This bill does not specify a formula and procedure for quantifying the amount of water that is reserved for fish and wildlife. This will allow flexibility in the procedure chosen to handle regional variability in flow regimes. It is encouraging that wildlife are also included in this legislation. We support this concept of establishing an instream flow reservation in rivers, lakes and streams important to fish and wildlife.

Thank you for the opportunity to respond to this proposed legislation.

Sincerely,

Edward F. Spang
State Director, Alaska