

F I N A L R E P O R T

JOINT WATER STUDY SUBCOMMITTEE

January, 1983

The Joint Water Study Subcommittee of the Senate and House Committees on Natural Resources was established by the Legislative Council pursuant to 1982 Iowa Acts, chapter 1199, section 98, to study matters related to statewide water resources planning, the development of a water resource data base, water use, flood plain management, and the organization and administration of water resource and flood plain management laws and programs. The Joint Water Study Subcommittee was authorized five meeting days and the following members were appointed:

Senator Forrest V. Schwengels, Co-chairperson  
Representative Victor Stueland, Co-chairperson  
Senator James E. Briles  
Senator Julia B. Gentleman  
Senator James V. Gallagher  
Senator Norman Rodgers  
Representative James Anderson  
Representative Marvin Diemer  
Representative Paul Copenhaver  
Representative William Sullivan

At its first meeting on August 16, 1982, the Subcommittee received testimony from the Iowa Geological Survey on matters relating to the collection of information on water wells as provided in House File 2382 (1982 Iowa Acts, chapter 1085) and the establishment of a plan for comprehensive water information system as required under House File 2463 (1982 Iowa Acts, chapter 1199). The Joint Subcommittee also received testimony from the Water, Air and Waste Management Commission and members of the transition team which is in the process of preparing for the consolidation of the Department of Environmental Quality and the Iowa Natural Resources Council into the Department of Water, Air and Waste Management. The Subcommittee also received testimony from the State Conservation Commission relating to a study which assessed the current and potential roles of low-head dams with particular attention to low-head dams at Palisadis-Kepler State Park and at Bonaparte on the Cedar River and the Des Moines River, respectively.

At the second meeting on September 27, 1982, the Subcommittee again received testimony relating to plans for the proposed new Department of Water, Air and Waste Management and the development of plans for the water resource programs and services. Mr. Stephen Ballou, Executive Director, Department of Water, Air and Waste Management, presented material on the proposed organization and proposed budget for the new department. The Subcommittee received comments from Mr. Jim Webb, Director, Iowa Natural Resources

Council, relating to the proposed new department and its proposed budget. Mr. Bill Crews, Administrative Assistant, Office of the Governor, discussed the litigation pending regarding the proposed diversion of water from the Missouri River to Wyoming for use in a coal slurry pipeline. The Subcommittee also received testimony from Mr. Donald Koch, State Geologist, concerning the development of the water resources information system and from Mr. Kent Norton, President, Iowa Water Well Association, relating to groundwater pollution problems resulting from improperly drilled wells and abandoned wells.

At its meeting on November 15-16, 1982, the Subcommittee received additional water resource testimony from a number of sources. Mr. Doyle McCully, Chief of Engineering Services, United States Corps of Engineers, outlined the principal duties of the Rock Island District and discussed the basic procedures of authorizing and building water projects. Mr. John Steeler, Manager, Midwestern States Groundwater Project, National Conference of State Legislatures, presented background material on how groundwater management programs are developed and carried out in other states. Mr. Steeler was accompanied by Ms. Linda Bruemmer, Senior Hydrologist, Minnesota Planning Board, and Mr. James Power, Director, Bureau of Technical and Support Services, Kansas Department of Health and Environment, who described groundwater protection and quality programs in Minnesota and Kansas, respectively. Mr. Peter Hamlin, Director, Compliance Division, Department of Environmental Quality, described the operations of the field staff of the Department and outlined the increased emphasis to be placed on field operations under the new department. Mr. Donald Koch, State Geologist, updated the Subcommittee on the development of the water resources information system, described the various programs being carried out by the Survey, and provided a tour of the Iowa Geological Survey facilities for the Subcommittee and guests. The Subcommittee also received testimony from a representative of Layne-Western Company, Inc. which specializes in technical services and water drilling services for industrial and municipal corporations, Archer-Daniels-Midland Corn Sweeteners, the Iowa Engineering Society, Shive-Hattery and Associates, an engineering consulting firm, Deere and Company, and the Iowa Water Well Association. The Subcommittee viewed a 30-minute film entitled "America's Wetlands" presented by representatives of Environmental Protection Agency, Region VII and completed the two-day meeting by receiving a presentation from Dr. William J. Hausler, Jr. and Dr. Roger C. Splinter relating to the duties and responsibilities of the University Hygienic Laboratory and by touring the facilities of the Oakdale Campus Laboratory.

At its final meeting on December 15, the Subcommittee received additional testimony from the Iowa Water Well Association concerning current methods used in the construction of bored wells. The Subcommittee also received a plan for a comprehensive water data system submitted by the Iowa Geological Survey pursuant to 1982 Iowa Acts, chapter 1199, section 60. The four bill drafts

received from the Water, Air and Waste Management Commission at the November meeting were discussed and amended.

After discussion of the bill drafts and plan, the Subcommittee made the following recommendations to the Committees on Natural Resources:

1. Consideration of the plan for a comprehensive water data system submitted by the Iowa Geological Survey.

2. A bill for an Act relating to the rule-making authority of the water, air and waste management commission and providing an effective date. This bill will allow the Commission to adopt rules before July 1, 1983, but the rules will not become effective before July 1, 1983.

3. A bill for an Act relating to the powers and duties of the department of water, air and waste management. This bill makes technical and substantive changes to 1982 Iowa Acts, chapter 1199, which consolidates the Department of Environmental Quality and the Iowa Natural Resources Council.

4. A bill for an Act providing for procedures, forms, and fees for permits and conditional permits issued by the department of water, air and waste management.

5. A bill for an Act relating to the permit and enforcement authority of the department of water, air and waste management for public water supply systems.

# PLAN FOR A COMPREHENSIVE WATER DATA SYSTEM

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PLAN FOR A COMPREHENSIVE WATER DATA SYSTEM  
IOWA GEOLOGICAL SURVEY  
WORKING DRAFT -- NOT FOR PUBLICATION  
December 9, 1982

I. EXECUTIVE SUMMARY

Section 60 of House File 2463 instructed the State Geologist to prepare a plan for the development of a comprehensive state water data system to monitor the state's water resources on a continuous basis and provide data to the Department of Water, Air and Waste Management to assess the needs of Iowa's water users and develop a general plan. This document presents the IGS plan.

Key elements of the plan are:

- An interagency data system management structure;
- Cooperative review of existing state and federal programs which collect and report water resources data;
- Recommendations for new data collection programs where critical data voids exist in the present water data base;
- A strategy to enhance the efficient transfer, use, and application of water data in Iowa based on interagency cooperation and communication; and
- Data communications, retrieval system and data storage improvements to enable IGS to handle the increased data processing workload.

The philosophy behind this plan is to build from existing resources to allow for immediate improvement in accessibility to existing computerized data files; and to establish an ongoing review by the executives of participating agencies. A first priority for gaining accessibility to data is the upgrading of

data communications links between the Iowa Geological Survey and others. The planned development would make IGS communications compatible with those currently used by others, so that data transfer arrangements can be similar for all.

Herein it is recommended that an executive-level Advisory Committee be formed to review, set development priorities for, and coordinate budgeting initiatives for data collection and management programs that must be bolstered in order to provide adequate information for water resource assessment. The committee will include two legislators and one person from:

- Governor's Office
- Department of Air, Water and Waste Management
- Conservation Commission
- Department of Soil Conservation
- Iowa Geological Survey
- Department of Agriculture (State Climatologist)
- University (State) Hygienic Laboratory
- Comptroller's Data Processing

Secondly, a Technical Coordinating Committee will review and make recommendations on data system hardware, software and communications development.

Because data availability is of such importance to the effectiveness of the data system, sections IV and V of this document are devoted to study methods and available data from current collection programs. We hope the study method descriptions in section IV will be of interest and will indicate the importance of data collection program expansion as compared with relatively minor upgrades in the areas of data management and interpretation.

Section VII outlines the sequence of significant tasks and events in the implementation of this plan. Special emphasis is placed on the concept of a "process" of data program review and improvement, as contrasted with the "system" for actual data manipulation. The ongoing commitment to evolving an effective program is encouraged by forming committees that oversee all program aspects from budget preparation to program review.

## II. INTRODUCTION

## A. Legislative Mandate

House File 2463, section 60, declares:

"By January 15, 1983, the State Geologist shall prepare and submit to the General Assembly a plan for a comprehensive water information system to be managed by the Iowa Geological Survey for monitoring on a continuous basis the quantity and quality of the water resource in this state."

Section 16 of the bill charges the Department of Water, Air, and Waste Management with assessing the needs of Iowa's water users and developing a general plan of water allocation using data provided by the Iowa Geological Survey and implies which types of data should be included in the system:

"... the Department with the duty and authority to assess the needs of all water users at five-year intervals for the twenty years beginning January 1, 1983, and ending December 31, 2003, utilizing a data base developed and managed by the Iowa Geological Survey, and prepare a general plan for water allocation in the state considering the types of water resources available in this state designed to meet the specific needs of the water users."

These sections of H.F. 2463 define the scope of the water information system which is the subject of the present document.

## B. Goals and Objectives

H.F. 2463 implies that the water information system actually has two goals:

- \* to provide comprehensive information on a continuous basis on the status of the quality and quantity of the state's water resources, and
- \* to provide information on the availability and use of water in Iowa that is pertinent to developing



strategies for water allocation.

These goals require similar types of water resource data, much of which is currently available. However, the second goal implies careful assessment of present and future supply and demand for water in a specific geographic context. This type of "water budget" analysis demands more data than is available through existing programs. For example, water consumption data is of great importance in evaluating and managing water resources, but a statewide effort to gather such data has not been initiated. Data availability is only one of several issues to be dealt with if the data system is to succeed. For this reason, a large portion of this document is devoted to water resource evaluation methods, data collection programs, and the organizational mechanisms needed to maintain an effective and useful water resource information base.

A comprehensive data system includes personnel, machines, computer programs, communications arrangements, and -- most important -- an underlying design or plan for how they all work together. Given that the intended products of the system are necessary and useful, the best measure of its performance is utilization, and a key objective is to remove obstacles to utilization. To encourage implementation and effective use within a reasonable amount of time, several basic principles or rules must be followed:

- \* Information about available data and services must be readily available to potential users and be up-to-date.

- \* Data formats, organization, accuracy, and coverage must be consistent with the user's needs.
- \* Data seekers must have access to assistance by personnel trained in the interpretation of data and applications, in addition to data processing specialists.
- \* An inter-agency mechanism must exist to establish priorities for data program improvements to be submitted for budget review.

### C. Philosophy of the Plan

The concept of a water resources data system managed by the Iowa Geological Survey was introduced by the Task Force on Data Base and Needs, associated with the publication in 1978 of the Iowa Framework Water Plan. The data system was originally intended to comprise a water database residing at Comptroller's Data Processing, managed by the Iowa Geological Survey. Since then, specific user needs and limited resources have resulted in an evolution away from the database orientation and towards a data reference and data transfer service approach. In other words, instead of acquiring and holding all available data, the Iowa Water Resources Data System (IWARDS) is a service that keeps track of where data are, and assists clients in obtaining the data they need. This arrangement has been modified on at least one occasion when other agencies contracted with IGS specifically for data coding, processing, and transfer on a fairly large scale. Such contracts enabled the IGS to temporarily add a Data Entry Operator and a Programmer to its staff for the purpose of fulfilling IWARDS clients' requests. Through the past five years the IWARDS project has been integrated into the general IGS mission of providing data and interpretive assistance. Indeed, the development of a plan for a water resources data system

cannot be divorced from the general direction and developmental goals for data processing at the IGS. For this reason, we emphasize that the present document primarily addresses changes to the present IGS data system configuration that are pertinent to water resources planning needs.

Finally, with regard to the philosophy of the plan, it cannot be stressed too strongly that a data system can only be useful if it contains data needed by the clients and can deliver it in a usable format within a reasonable amount of time. Thus, the present document stresses the need for an inter-agency advisory group that will involve itself in setting priorities for new data collection activity, based on a continuing assessment of needs and resources, particularly for the applications specified in H.F. 2463.

#### D. Scope of the System

Data indexing, inventory and referral services will be performed for all data relevant to the general requirements set out by H.F. 2463. Staff at the Iowa Geological Survey will prepare and maintain such a directory in cooperation with those agencies that produce and/or use data. As proprietor of this directory, the IGS will be able to supply data search assistance to various clients, thereby saving time for other agencies. The directory will supply needed information for inter-agency reviews of data collection programs -- showing gaps, duplications, and areas for potential joint activity.

There are a number of factors of data collection that affect data usefulness for a given purpose -- including spatial and temporal variability of water resource phenomena. IGS staff with the assistance of experts in experimental design and with representatives of user agencies, will investigate the nature of and potential for an optimized data collection network. (One which provides acceptable data for all intended uses at minimum cost.) Costs can be reduced by modifying site locations and parameters analyzed, by who collects where and when, and in how data are recorded and transferred. Even if an optimized system cannot be implemented, the study will provide background for a sound critique of collection practices and improvements.

## III. ADMINISTRATION AND INTER-AGENCY COOPERATION

## A. Management Structure

To promote the utility, effectiveness and timely implementation of the system, this management structure will be implemented (Figure III.1).

1. A ten-member, executive-level Advisory Committee, to facilitate interagency cooperation, will define agency commitments, policies and priorities, and define budget requirements. The Committee should have two legislative members and one member from each of the following state agencies and institutions:

- Governor's Office
- Water, Air, and Waste Management
- Conservation Commission
- Department of Soil Conservation
- Iowa Geological Survey
- Department of Agriculture (State Climatologist)
- University (State) Hygienic Laboratory
- Comptroller's Data Processing

2. A Technical Coordinating Committee selected by the Advisory Committee from technical staff of the above listed agencies. The Coordinating Committee's responsibilities would include technical liaison between participating agencies and the IGS system manager, attending to the details of system design, implementation, and operation, and effecting the priorities and policies set by the Advisory Committee. The Coordinating Committee would also work with the various federal agencies operating water data programs in Iowa.

As the program manager, the Iowa Geological Survey will establish program guidelines for the data system, review data collection activities and networks, adopt policy and priorities, develop system operating budgets, operate the system. The IWARDS Manager will represent IGS on the Technical Coordinating Committee.

### B. Program Development and the Budgetary Process

Improvements in the availability and access to data for resources planning cannot be manifested without implementing new procedures that will require staff and equipment. The forum for review of proposed program development is the budget process and the presentations of funding requests by each agency to the Advisory Committee. The basic principle to be followed by the Advisory Committee is that each agency should explicitly endorse the funding requests of other agencies that entail direct services to itself. For example, an agency receiving water quality data from another state agency should support efforts by that agency to automate its operation. This places a responsibility on data system management to aggressively pursue its function of setting priorities, recommending program improvements, and reviewing results. It also underlines the importance of executive-level participation in the Advisory Committee -- participation by the same officials that make the budgetary presentations.

Thus, the cycle of activity begins with review and priority setting by the Advisory Committee, moves through the preparation of budget requests and back again to review by the committee. Figure III.2 offers a schematic of the interaction among organizational elements. The Technical Coordinating Committee is comprised of other agencies' counterparts to the IWARDS Manager, and has the role of assessing system development needs. These are reported to the Advisory Committee, as are the assessments of

data or other system product needs by individual agencies. The Advisory Committee issues recommendations for project developments which are translated into funding requests for individual agency budget requests. Given the approval of these requests, the Advisory Committee oversees the implementation and performance evaluation of the system.

More specific project management responsibilities are outlined below. These functions are supervised internally by IGS, and progress reports are made to the Advisory Committee at appropriate intervals.

- \* Develop and document data descriptions (dictionaries)
- \* Design and implement routines and procedures for retrieving cross-referencing, and merging data from various sources into base files.
- \* Allocate staffing and other resources for the development and maintenance of necessary skills and data processing tools.
- \* Participate in planning, interagency coordination, and review.
- \* Prepare progress reports and documentation of available services and data files.
- \* Collaborate with hydrologists and other agencies' professionals in the preparation of a water resource assessment data file that can be utilized to report the status of water resources around the state.

## IV. TECHNIQUES FOR RESOURCE AND DEMAND ASSESSMENT

## A. Resource assessment with available data

This section generally describes study methods IGS and the Department of Water, Air and Waste Management may use in response to the requirements of H.F. 2463. Hydrologic principles and the "water budget" model are explained and then a discussion is given of the resource data considered to evaluate new water supply demands in specific locations.

## B. Surfacewater Resources Assessment

There is a fundamental hydraulic equation which states:

$$\text{Inflow} - \text{Outflow} = \text{Change in Storage}$$

This relation is basic to water budgeting -- determining what withdrawals can be sustained, how much is consumed, what replenishment occurs, and what remains for for additional development. Although the process is simple in theory, without good data its application can be difficult.

From a surfacewater source, water availability is defined in terms of the source's capability to provide water to meet specific demands on a "firm" basis. For the process, the characteristics of the demand must be considered -- water quality, point of withdrawal, water consumption, rate and volume of withdrawal, and stream flow protection.



Within a drainage basin surfacewater discharge is governed by the following equation:

Precipitation - Evapotranspiration - Infiltration = Discharge

Only two variables in this equation can be measured with precision -- Precipitation and Discharge. Evapotranspiration is indexed by measurement and calculation, and Infiltration is conventionally derived as a residual. Stream discharge can be measured hourly, daily, monthly or on an annual basis. When statistically analyzed, these data are used to characterize a stream's flow regimen -- period and duration of flow, high, low, mean flow, etc. These characteristics best indicate a stream's capability to sustain a supply of water.

In considering a stream as a source of supply, its average discharge is the theoretical upper limit of available water. However, this primary assessment does not account for streamflow variability. With natural flow, availability is defined within the limits of the withdrawal that can be sustained 365 days per year throughout a series of years. In assessing the capability of a stream to meet existing demands, or to consider its potential for supplying new development demands, the overall water budget of the stream must be defined. The process of budget analysis is generally defined as shown in Figure IV.1. As given in Figure IV.1, equation (1), the adjusted gross available water is that which remains after amounts have been deducted for existing exempt and non-regulated withdrawals and, that reserved for protecting instream flow. Simply stated, the adjusted gross available water at a given point along a stream is the difference

between the flow that would allow the greatest sustained withdrawal and the flow that is protected (the minimum "protected flow" under the Iowa Water Rights Law). water available for allocation.

Figure IV.1. Equation (2) has been added to refine the budgeting process and to place regulated water withdrawals in perspective with other streamflow demands. Regulated withdrawals can be non-consumptive or consumptive and because of this may or may not deplete streamflow. In terms of budgeting, those withdrawals that are depleting are of primary concern, the important aspect of regulated withdrawals is that they alone pertain to that part of the resource that can be managed. Under the Water Rights Law, water withdrawal permits can be granted, denied, modified, or cancelled. Therefore, through time, the use of water by regulated users can potentially increase, decrease, or obviously remain reasonably constant. Equation IV.1b reflects in a simplified way those changes in net available water owing to regulation of withdrawals. Net water available for allocation at a particular time and location is the difference between the adjusted gross available and regulated withdrawals and associated returns. In actual practice, the relationships are not as simple, but the main components are represented by the equation.

As suggested in the previous discussion of the budgeting process, there are several kinds of information that become essential to the decision maker. The information pertains to three fundamental categories: streamflow characteristics, water allocation, and water use. Their primary data elements are

outlined below. (There is a fourth obvious category -- water quality -- which is not discussed but is simply listed to facilitate the general presentation.)

#### STREAMFLOW CHARACTERISTICS

- Continuous streamflow discharge records (data from permanent gaging stations measuring daily discharges)
- Streamflow discharge partial records (data from non-permanent gaging stations -- established to monitor low and peak flows on shorter term)
- Statistically processed discharge information which characterizes streams flow regimen and relates to stream reach
- Statistically processed streamflow information characterizing streamflow with basins or regions relative to precipitation, physiographic characteristics, and time.

#### WATER ALLOCATIONS

- Records and surveyed information on allocated water in terms of source of withdrawal, rate, and volume
- Records on protected flows indexed to specific river reaches
- Records on stream classification indexed to river reaches
- Records on protected watersheds and river reaches (conservation and preservation)

#### WATER USE

- Records and surveyed information concerning water use and actual withdrawals relative to source, point of withdrawal, rates, volumes, and purpose.
- Records and surveyed information on return flows relative to receiving streams, point of return, rates, volumes, and quality
- Records and data concerning consumption and streamflow depletion relative to rates, volumes, and stream reach

#### WATER QUALITY

(includes physical, biological, and chemical characteristics)

- Records on ambient water quality in streams

- Information on quality at points of effluent discharge
- Information on fluvial sediment
- Information on water quality related to discharge and river reach

### C. Groundwater Reserves Assessment

The relations between inflow, outflow and change in storage for groundwater systems are shown in Figure IV.2. The variables in this equation are difficult to measure and fortunately all are not necessary to assess conditions in a ground-water system with respect to time. For instance, if a particular system is not pumped an equilibrium will be achieved between storage, inflow, and outflow. And, storage will be in proportion to the system's volume and water levels (hydraulic heads) measured throughout the system.

Like streams, ground-water systems are dynamic hydraulic systems. The volume of water stored in them is subject to the same variables that affect streamflow -- rainfall, evapotranspiration, man's withdrawals, etc. However, the basic difference between underground and surfacewater systems is a function of time. Because water moves very slow in underground systems in comparison to that at the surface, the impact of variability is much less in ground-water systems. Generally in larger aquifer systems, short term changes in inflow and outflow

have only negligible impact aquifer storage. For this reason, ground-water supply sources are often favored where sustainability and dependability are key user considerations.

Ground-water reservoirs (aquifers) seldom conform to drainage basins or convenient accounting units such as political boundaries. The most logical accounting unit for an aquifer is its geologic boundaries. Unfortunately, when a ground water system's boundaries overlap state boundaries, state control is more limited. Only a few kinds of information are generally available to assess the reserves of an aquifer and its capability to sustain user demands. Basically these are the spatial distribution of the aquifer, its thickness, its water saturated thickness (water-level surface), and the values for two key hydrologic parameters -- the coefficients of storage and transmissivity. The latter are essential in determining an aquifer's yield performance, and in defining what pumping stresses will potentially develop in an aquifer from sustained pumping relative to time and distance from a center of pumping.

Reserves of most aquifers can be estimated by determining the areal extent and saturated thickness. This volume is converted to Available Water in Storage by multiplying by the aquifer's storage coefficient (a number which normally ranges between 0.2 and 0.0001). The storage coefficient of an aquifer is the volume of water taken in or released from storage per unit of surface area per unit change in hydrostatic head.

Because recharge to ground-water systems is a seldom known quantity, water-level conditions are considered to be the best index of storage changes taking place in given systems. Therefore, the monitoring of water levels within aquifers or aquifer systems becomes very important at the first level of assessment. For example, in small, limited aquifer systems there may be considerable seasonal fluctuation in water levels. These are usually relatively insignificant in larger regional aquifers. All aquifers respond to the impacts of pumping. The relation between rate of pumping and water levels is in direct proportion. In large regional aquifers local depressions (drawdown stress) may develop on the aquifer's water surface in the immediate vicinity of a pumping center. However, little general decline may be observed regionally. In smaller aquifer systems local stresses may occur in addition to general declines in water levels throughout the expanse of the system.

In evaluating conditions within an aquifer two things are traditionally examined. One, year to year water level trends which indicate the relative balance between withdrawals, recharge, and storage. If the water-level surface of an aquifer is relatively constant throughout a period of time, the aquifer's rate of recharge is not being exceeded. Conversely, if withdrawals exceed the rate of recharge, the static water surface of the aquifer will decline. Periodic and annual rates of decline can be used to index the rate that pumping exceeds recharge. Continual and relatively rapid declines connote "ground water mining" or excessive pumping.

The fact that the rate of travel of ground-water is slow -- from only a few inches to a few feet per year in some formations -- is an important consideration in aquifer assessment. When conditions in aquifers or ground-water systems are assessed, distance and time considerations become exceedingly important. For example, water-level monitoring might define a point at which heavy pumping has depressed an aquifer's water surface by several tens to a couple hundred feet. Is this in itself significant? If the aquifer has a 2,000 foot total static water column and the impact of drawdown is unnoticeable beyond a mile or two, it may not be. However, wide ranging regional water level declines are quite another matter. Where only local stresses occur, as in the example, well interference and well spacing becomes the more important issue.

Where well interference and well spacing are at issue, each new development must be evaluated in terms of local drawdown impact. These must be evaluated in terms of both short and long term effects. The conventional approach is to determine the impact of the new development (well) in terms of the proposed rate of water withdrawal and the drawdown it will produce with respect to time and distance. New or added drawdowns and their potential to interfere with existing wells can be approximated by mathematical calculation provided the rate of pumping and the coefficients of storage and transmissivity for the aquifer are known.

These coefficients are also applied to predict aquifer

performance, development potential, and the effects of different pumping regimens. In practice, graphs can be developed that characterize the effect of pumping on aquifers if the coefficients of storability and transmissivity are known. The method usually considers two important relations; drawdown versus time, and drawdown versus distance (see Figure IV.3). The plots are used to predict the amount of drawdown expected in a pumping well or center (maximum drawdown shown on graph-ordinate) at some distance at a given increment of time. Such information is very helpful in determining the interference potential of wells and in predicting spacing requirements for wells. As an example consider Figures IV.4a and IV.4b. In Figure IV.4a, no overlap of drawdown cones (cones of depression) occurs and the two wells do not interfere. However, in Figure IV.4b the cones of depression do overlap and the wells interfere with each other. As a result, at a given pumping rate, each well will create a greater total drawdown than if their drawdown cones did not overlap. Where wells are tightly grouped in a locality, the net drawdown effect is equal to the algebraic sum of the individual drawdowns.

#### D. Groundwater Budgeting Considerations

The process of ground-water budgeting is analogous to that discussed earlier for surface-water. Although both are replenishable resources, they are finite, and experience has taught that demand is capable of exceeding natural replenishment by orders of magnitude.

In discussing surface-water development a maximum upper



limit was established that was bracketed between the protected flow and a flow above the protected flow which could sustain a particular withdrawal -- the firm flow. In ground-water developments, the firm flow of streams has an analog which is defined as the "safe yield." The safe yield of a ground-water system is the development the system can satisfy without jeopardizing the system's capability to supply water at a uniform sustained rate and not causing significant system dewatering. Ideally, the safe yield would not exceed the system's recharge capability. But, with current water management practices -- to allow more water to be developed -- safe yields may be defined such that withdrawals can exceed recharge where the long term effects of such withdrawals allow only very predictable and slow rates of aquifer water level decline. The key consideration here is that allowable declines will not be accompanied by physical changes in the aquifer that will impair its overall productivity.

For groundwater, Figures IV.5a and IV.5b, terms are the same as for surfacewater with except that available groundwater is stored water, no return flows are considered, all withdrawals are consumptive (with respect to the aquifer pumped), and uniform protection for aquifers comparable to stream flow protection is minimal (among the ground-water systems pumped in Iowa only the Jordan Aquifer is protected by regulation).

#### E. Groundwater Data Applications

The preceding discussion of resource assessment and budgeting is based on determining how much total water is available for extraction, how much is being extracted, and how ground-water systems respond to pumping. Because the method of such analyses are indirect a large body of hydrologic and related data must be assessed and includes:

- Geologic data relative to the position, thickness, and extent of water-bearing materials and rock formations
- Hydrologic characteristics of water-bearing formations
- Geographic distribution of pumping and centers of pumping related to the sources developed
- Magnitude of pumping by source and use of water
- Water allocated from ground-water resources in terms of rate and volume and related to source

#### F. Conjunctive Water Resource Allocation

To this point surface- and groundwater resources have been discussed as being distinct and separate. Hydraulically they are not, and decisions to equitably allocate water among a full range of beneficial users requires that they be considered conjunctively -- components of a single resource. Within specific geographic areas those making allocation decisions must address several questions:

- \* What is the condition of available resources?
- \* What is the pattern of demand?
- \* Are there sources that are stressed?
- \* How much water is available to further development?  
From which sources? In what areas?
- \* What future demand is anticipated (volume, rate, type of

use)?

- \* What are the practical limits of future development?
- \* Which uses have the highest priority?

For an example of the allocation thought process consider an area where good quality potable water is available from four sources -- a stream and three aquifers (Figure IV.6a). Compare the sources' given yield ranges with typical yield demands shown in Figure IV.6b.

By making comparisons it is easy to identify which options (sources) are available to meet particular demands. If constraints are added for certain supply sources, the focus of development alternatives is narrowed. Aquifer B is an alluvial aquifer so it is associated with the stream. This assures that large scale water uses must locate along the stream. Over-allocation of water from the alluvium could cause diminished streamflow.

A pattern emerges that places large water developments in competition for the same water, i.e., large community supply, rural water systems, small community supply, and irrigation withdrawals. This is not atypical of actual Iowa situations. The problem for those who must allocate water is "Which users should have priority?" Of course, if there is adequate water for all needs there is no problem. However, allocation decisions are usually long term and therefore each new development must be scrutinized for its long term impact. Here reliance must be

placed on information that explains how much withdrawal can be sustained by the supply and still maintain a proper balance between natural supply and withdrawal demands. Within any natural system there are finite limits which cannot be exceeded either in terms of volume or rate.

Finally, a common, sometimes overlooked, constraint in the allocation process is cost. Consider Aquifer C in the matrix. It would appear capable of supplying a wide range of uses. But, if this source could only be tapped by exceedingly deep wells most of listed users probably could not afford to develop this source. This is not an uncommon problem in Iowa and high development costs are often compounded by long term, high pumping costs.

## V. DATA AVAILABILITY

## A. Problem Areas

1. Current water data programs in Iowa have been designed to:

- protect the public's health, welfare, and safety,
- conserve and protect the aqueous environment,
- monitor compliance in respect to established regulatory programs for environmental protection and preservation, and water development and use,
- collect base-line information concerning the quantity, quality, extent, and variability of the state's water resource, and,
- develop plans and strategies through which the state's water can be applied to the full, equitable, and uninterrupted benefit of the people of Iowa.

Existing data from these programs is a mix of information with a wide range of applications. In some cases these data sets are too program-specific to produce information useful in the more general enterprise of determining how much water is available, how good it is, and how much is used and allocated. Within agencies specific data is needed to measure compliance with regulatory statutes and water management program objectives. The application of data at this level is essential to assessing and managing man's impact on the resource and the accompanying variability his activities produce with respect to the quantity and quality of the basic resource. Man's activities compound natural variability and must be evaluated and accounted for. This is best accomplished at specific levels of detail. However,

methods and standards need to be defined to assure that such details can be integrated into the broader information base.

As these data sets are considered for integration into a broader information base, care must be exercised to assureee:

- that data quality and integrity is defined,
- that the data is in a compatible format (the format of the comprehensive data base should take precedence) ,
- that if the information is proprietary in nature it receives adequate access protection,
- and, that the contributor provides the interpretive expertise relative to the range of the data's applications.

In addition to these basic considerations, these specifically oriented data programs should be evaluated in terms of efficiency, effectiveness, and in terms of other existing programs they might accommodate or possibly be accommodated by.

2. The transfer and comparison of data from agency to agency is hampered by the numerous ways in which data is aggregated, identified, and stored. This problem should receive the attention of the Technical Coordinating Committee and the System Manager so that measures are taken to promote consistency in this area.

3. The requirements for reporting data are as varied as the programs they support. This can be a problem in integrating new information into a broader data base, particularly where components of the data base must be updated and aggregated at periodic intervals. This problem requires evaluation by

individual agencies, the Technical Advisory Committee, and the System Manager.

4. In any information system, data quality control is critical. And, with the mix of programs that are anticipated as sources of information for the Iowa Water Data System, a strategy needs to be developed to insure data quality control. This will require cooperation between agencies and their operatives that collect, report, and code data, agency technicians reporting data to the centralized data base, the Technical Coordinating Committee, and the System Manager.

B. Status and Recommendations for High-Priority Developments in Data Collection

Currently, five water programs are producing data that will form the nucleus of the water resources data base. These are:

- The streamflow gaging program operated by the U.S. Geological Survey (in cooperation with the state and Corps offff Engineers, principally)
- The ground water studies program operated by the Iowa Geological Survey (with cooperation by the U.S. Geological Survey)
- the water rights program operated currently by the Iowa Natural Resources Council (DWAWM under H.F. 2463), and
- the public water supply program operated currently by the Department of Environmental Quality

1. Stream Gaging Program

The USGS has measured and published data on stream-flow conditions in Iowa since about 1900. The program is operated by the Iowa District Office, Water Resources Division, and is funded

by cost-sharing agreements with the state and municipal governments and funds transfers from the U.S. Army Corps of Engineers. The data collection network is presently comprised of:

128 permanent, continuous, daily record gaging stations (not including 16 COE stations)

424 low-flow, partial-record stations, and

134 crest stage, partial-record stations

(Chemical quality data is collected at 10 permanent gaging sites, and at 326 partial-record stations.)

Prior to 1960 these data were published each five years, and since 1960 have been reported on an annual basis. The data are now available from the U.S. Geological Survey's Water Storage and Retrieval System (WATSTORE). WATSTORE's capabilities include:

- data in machine readable form
- computer-printed tables
- computer-printed graphics
- digital data plotting, and
- statistical data analysis

The Iowa Geological Survey is computer-linked with the WATSTORE system.

The state's streamflow data base is probably adequate to satisfy most near term needs and should be maintained at least at its current level. However, in the near term, the network should be evaluated in respect to efficiency and overall effectiveness. A cursory examination indicates that there are several stations with records exceeding 50 years and some located below streamflow



control structures.

The entire streamflow gaging network should be reevaluated for efficiency and effectiveness by the state and USGS. Stations should be relocated or new stations established where data is critically lacking. Water quality sampling sites should be coordinated to match needs of existing state programs where efficiency and economy would be enhanced.

## 2. Groundwater Studies Program

Since its establishment in 1855, the Iowa Geological Survey has been studying the distribution, mode of occurrence, and quality of Iowa's ground water resources. Since the early 1930s the Iowa and United States Geological Surveys have operated a ground water investigation program in Iowa.

These activities have produced a voluminous data file on water wells in the state, data files on ground water quality, and the production characteristics of aquifers, and numerous published reports on the occurrence and distribution of ground water. The majority of the data in the ground water data base has been assembled from a variety of sources; well drillers, communities, engineering consultants, private developers, and other state agencies. Only to meet specific program needs has it been necessary for IGS and USGS to seek funds to operate field programs to collect data. However, with increasing competition for ground water and the need for more specific data related to more comprehensive water management, enhanced data collection is soon to be a requisite priority. Particularly, when it is

considered that the majority of the data presently being collected is submitted voluntarily by a variety of contributors.

The existing hydrogeologic data base is best defined as being regional in scope, with limited application in dealing with site specific problems. IGS presently has records and drill cutting samples from over 27,000 individual wells. Over 20,000 of these have been studied in detail and geologic logs have been prepared for them. IGS has companion water level and production test data for about 12,000 of these and correlative water quality data for about 4,000. The drilling samples for both studied and unstudied wells are repositied in the IGS sample library. Water levels are currently monitored continuously only at about 37 sites. About half of the wells monitored are shallow, glacial drift wells. The monitoring program is an element of the USGS/IGS cooperative program.

In addition to their cooperative groundwater investigations the USGS and IGS have been working together for several years to computerize state water data. Presently three files exist: a geologic file, a water quality file and the groundwater site inventory. The first is maintained in-house while the latter two are stored at Reston, Va. in the USGS data system. The water quality file contains over 12,000 analysis records from more than 4,000 sites; and the site inventory has location and production data for more than 1800 sites.

The state's existing ground-water data base is primarily regional in scope and although it is very useful at this scale

the system requires considerable upgrading for it to be sensitive and applicable to the more specific problem of water allocation.

The state's groundwater data base is ground-water levels is poor and because of its importance in determining conditions in aquifers needs to be expanded. This could possibly be accomplished at least cost by requiring water-level reporting under the Public Water Supply and Water Rights Programs. Field investigations to collect specific hydrologic data are cost intensive. Each year private developers support a considerable amount of this activity and some is reported voluntarily. It would be in the best interest of the state if all well information from drilling and testing was reported. Consideration should be given to legislation requiring the reporting of data by all well developments -- including drilling samples. To supplement well development data that is reported to the state, field research projects should continue to be supported which provide base-line data on aquifers performance, hydrologic parameters, and water quality. The activities relating to the computerization of ground-water data should be accelerated and enhanced to provide an interactive data file that can relate wells, water sources, well production, and water quality.

-- Methods should be developed by computer modeling to characterize the performance both regional and small local aquifers with a minimum of high cost drilling and field evaluation. The University (State) Hygienic Laboratory is the

primary analyst and source for ground-water quality data in the state. Its position should be maintained and consideration should be given to automate its process of data reporting to obviate data encoding costs required by users of its data.

### 3. Water Permit Program (Iowa Natural Resources Council)

Iowa's Water Law was passed in 1957 and its function is outlined in Chapter 455A of the Iowa Code. Chapter 445A gave the Iowa Natural Resources Council broad authority in the areas of water planning, regulation, flood-plain management, and water use. These responsibilities have transferred to the Department of Water, Air, and Waste Management under H.F. 2463. Of particular importance to the state's water information data base is the information garnered by the INRC Water Permit System. From 1957 through 1982 the Water Permit System has regulated the development and use of water on most uses of water exceeding 5,000 gallons per day. Existing uses in this category prior to the promulgation of the Water Law in 1957 were exempted unless in subsequent years their withdrawals increased in excess of 100,000 gallons per day or 3%, whichever the greater. On this basis, INRC has required permits on all new water developments in excess of 5,000 gallons per day, since 1957. In addition, the Council established minimum in-stream flow standards to protect the state's streams and rivers from overdraft during periods of critical low flow. The Council also established guidelines and a permit system for the storage of surfacewater.

From these programs the state has a data base which

identifies the location of water use and storage, the purpose of the water use and the amount of water allocated for the use. There are stipulations in all water permits which require that the user report actual withdrawals. The unfortunate problem with these data and the Water Rights Program in general is that only a portion of large scale water users are regulated and required to report data -- a very significant number of users were "grandfathered" in 1957.

Iowa's Water Rights Law has served the state well and has been looked to as a model by other states. However, as the situation stands, the law only regulates a portion of the water used in the state. And, this creates situations where allocation decisions must be made where frequently little data is available concerning existing water use.

The Iowa Water Rights Law should be perpetuated, however, from standpoints of equitability and the formulation of consistent water allocation policies all large scale water users should be incorporated into the water permit system.

All large scale withdrawals or diversions of water should be documented according to location, source of supply, volume and rate of use permitted, and purpose of use.

Good information on the use of water in Iowa is presently not available and a strong program to correct this deficiency should be established as a part of the water permit system. Water use should be defined in terms of location, purpose, source, rate/volume, and classified with respect to consumptive or non-consumptive use categories.

#### 4. Public Water Supply Program

Iowa began operating a program to monitor the quality of water distributed by public systems in the mid 1920s. The first regulations for this program were established in the early 1930s. The program has essentially continued to the present. Adjustments were made in the program when the state assumed primacy for the federal Safe Drinking Water Act, Public Law 93-523.

Iowa's program under 93-523 was instituted by the Department of Environmental Quality in 1977, and currently operates on an annual budget of approximately \$126,000 in state funds and \$392,000 in federal funds. These figures do not include approximately 200,000 annual dollars that are borne by the state's water utilities for water quality analysis and bacteriological testing.

As operated under 93-523 the public water supply program has three primary elements:

- the establishment of water supply design and construction standards (water supply system engineering),
- field surveillance and service related to systems operations, and,
- compliance monitoring with respect to the water quality standards of the Safe Drinking Water Act.

Throughout its years of operation the public water supply program has produced the bulk of statewide data on raw and delivered water from public supplies. These data have resulted from water quality analyses performed and reported by the University (State) Hygienic Laboratory to the State Health

Department and the Department of Environmental Quality since its establishment in 1972. Through the years, the Iowa Geological Survey has received the same body of information. Data pertinent to the Safe Drinking Water Act are reported to the U.S. Environmental Protection Agency through using Model State Information System (MSIS).

As operated by DEQ, the program also receives a wealth of other data with respect to water supply systems and the withdrawal and use of water. However, under the present program these data are only supplied by utilities on a voluntary basis.

Iowa's public water supply program is essential to the health and welfare to that sector of the state's population that it serves and must be perpetuated. In recent years the adequacy of the program or elements of the program have been jeopardized by available funding and it is important that solutions for these problems be found. Elements of the program need to be strengthened to generate greater overall program continuity and to provide better information relative to the use and development of water in Iowa. To promote program continuity and enhancement, utilities should be required to provide operations data that would include information on water treatment, rate and volume of water withdrawals, distribution losses, use of water, and water-level conditions in wells. Authority to require reporting of "grandfathered" water users was provided in H.F. 2463.

##### 5. Raw Water Analyses from Public Supplies

The University (State) Hygienic Laboratory analyzes samples from each public groundwater source every three years, and samples from each public surfacewater source annually. The Department of Environmental Quality, and more recently, the Iowa District Office, U.S. Geological Survey have cooperated by collecting samples for analysis. Reports are distributed to communities involved, and to the DEQ and the IGS. Delivered, or finished, water samples are actually analysed also. the reports, called 'Complete Minerals and Metals Analysis' usually include tests for heavy metals and radiation, and form the bulk of data in the U.S. Geological Survey's Water Storage and Retrieval (WATSTORE) system. It is also the data used by IGS to typify and predict water quality in Iowa's major aquifer systems.

#### 6. Other Sources for Water Resource Data

There are other data programs that can provide useful information for water resource studies. Many of these are listed and summarized in Appendix A. The data programs singled out for brief discussion above are those which most nearly approach the content, scale and coverage required for planning. These will be carefully evaluated by the Advisory Committee in Fiscal 1984 and 1985.



## VI. HARDWARE, SOFTWARE AND COMMUNICATIONS

## A. General

The Iowa Geological Survey will manage data for monitoring current water resources conditions and for assessing the impact of new demand. Data processing requirements include the ability to store and update records, selectively retrieve and display related data from several files; create, sort, and/or merge subrecords and subfiles; and reorganize and/or reformat records for input to various applications programs. There is also a need to display data or analysis results in map formats, and to transfer data and messages among several remote data processing sites.

The Iowa Geological Survey presently has the ability to meet many of the data system requirements for water resources studies as mandated by H.F. 2463. Upgrades will be required in communications, on-line software, data storage capacity, and data file types (e.g., development of a new data file containing summary data on water resources conditions throughout the state.)

## B. Present System

As shown in Figure VI.1., the IGS computer configuration is based on a Perkin-Elmer 32-bit mini-computer system with one Megabyte of main memory, one fixed and one removable 67 Megabyte disc drive, 800 bpi 45 ips 9 track tape drive, and 11" electrostatic printer/plotter. Adjunct equipment includes a digitizer tablet (45" x 60") and 19" storage tube graphics terminal, and a color image processor and monitor. Nine video terminals are currently linked to the system. System software includes OS32 (operating system) and MTM (terminal monitor), HASP emulator, and the standard assortment of system utilities. The applications programming language supported on the system is FORTRAN VII. Three large applications programs are currently in use on the system. These include GEOTAB, the locally-developed on-line geologic data display package; ELAS, an image classification, analysis and display package provided by the National Aeronautics and Space Administration; and SURFACE II, a mapping and geographic analysis package developed by the Kansas Geologic Survey. Major on-line files include the Geologic Data File with 11,245 records and the Water Quality File, with 10,930 entries. Satellite image data, climatic data, soils and other data are stored on tapes.

Two of the video terminals are switchable to ports on the University of Iowa's Weeg Computer Center. The systems most used at Weeg are the IBM 370 and PRIME. These provide statistical

packages and output options such as high-resolution color plots and mailing labels. Communications with the Comptroller's Data Processing and other IBM hosts is accomplished by HASP workstation emulating software.

### C. System Needs

Evaluating data availability for a given study can be very time-consuming. Major decisions on the method of study will often hinge on availability and suitability of data. To improve the researcher's access to data, the retrieval software should quickly screen the data base and display records pertinent to a particular area of interest. Once the data-availability obstacle is surmounted, there are a number of statistical and geographic analysis programs available but each usually has unique input data format requirements. Efficiency and usefulness of these programs would be enhanced if data selected by on-line retrieval could be processed for input to applications programs in a more or less automated manner. To this end, the following software developments are planned:

- \* A retrieval system option of saving the selected data; and \*  
Pre-programmed routines to reformat retrieved data for input to selected applications programs.
- \* A computer-based directory of data;
- \* On-line retrieval software; and

\* More automation in the preparation of data sets for applications;

Figure VI.2. depicts the files and program functions associated with the present and planned on-line retrieval software called GEOTAB. At present, only geologic data are handled by GEOTAB. While this level of development is useful to an extent, manual research of files is still necessary for many routine information requests. Completion of the asterisked elements on Figure VI.2. will place additional water-related data into the interactive system.

Figure VI.3. is a schematic of the Communications arrangement including upgrades that are proposed in this document. IGS presently has a HASP Remote Job Entry workstation with IBM-compatible hosts for batch processing. This facility is used to make data retrievals from the U.S. Geological Survey's WATSTORE system and in transactions with the Comptroller's Data Processing system at Des Moines. Especially because other agencies will be involved in the transfer and application of data managed by the IGS, we recommend strongly that IGS communications be upgraded to be compatible with those of the cooperating agencies. This entails acquisition of IBM 3270 Control Unit emulator software to run on the IGS computer, a MODEM, and a local leased phone line to connect with the existing multi-drop line serving other agencies in Iowa City. With this equipment in place, the

communications arrangement as shown in Figure VI.3. would enable transfer of data files among regional offices and the IGS, and allow IGS to manage files at CDP. Other sites, such as regional offices of the Department of Water, Air and Waste Management, would be able to communicate with and utilize the files managed by IGS, since the proposed communications scheme for IGS is compatible with their existing configuration.

Table VI.1. summarizes upgrades required for the IGS data system in order to meet the mandate of H.F. 2463. Some of them were discussed above. In addition, there is a need for workstations for two persons who will be employed to develop software, operate and maintain programs and files, enter data, and manage the directory and data reference documents. To handle the increased volume of direct-access files served by the on-line retrieval software, an additional disk drive will be required, as will a 1600 bpi tape drive to replace the present 800 bpi model that is becoming obsolete. A communications multiplexor, power supply and MODEM are required to support the additional terminals on the Perkin-Elmer 3220 computer.

Hardware, software and communications acquisitions, independent of staffing, are estimated to cost as follows:

*two terminals @ \$1800 ea.	\$ 3,600.00
*1600 bpi tape transport	20,000.00
*Expansion disk drive	19,000.00

*Communications Multiplexor	2,600.00
*Power supply	1,800.00
*MODEM	2,500.00
*BSC/3270 communications package	10,000.00
	<hr/>
TOTAL	\$ 59,500.00

## VII. IMPLEMENTATION

Table VII.1 outlines significant tasks and accomplishments over the period of the next three biennia. Fundamentally, the data system and communications should be operational at the planned level by the end of the first biennium; and plans should be under active consideration for enhancement of existing data collection programs and initiation of efforts in new areas such as water use.

## APPENDIX A. PRELIMINARY INVENTORY AND ASSESSMENT OF DATA

## I. Primary Data Components of Water Information System

## A. Streamflow

## 1. Quantity/Streamflow

- a. Continuous record (daily) stream gaging
- b. Partial record gaging stations
  - i) low flow
  - ii) crest stage

\* PROGRAM: USGS cooperative gaging program COE, State, Municipalities, et. al., (WATSTORE)

## 2. Quality

- a. USGS water quality and sediment stations (at gaging stations and NASQAN sites).
- b. COE sponsored programs on Des Moines, Iowa, and Cedar Rivers.
- c. DEQ NPDES compliance monitoring program (MONITOR system)
- d. UHL/DEQ EQAP (quarterly monitoring program?)
- e. UHL river reach studies (?)

## B. Lakes/Impoundments

## 1. Quantity (Stage)

- a. USGS gaging program (2 stations only remain)
- b. COE operations records, Locks & Dams
- c. Municipal reservoirs
- d. Conditions -- lakes controlled by Conservation

Commission

and County Conservations Boards.

- e. Private developments, other (?)

## 2. Quality

- a. Operating COE programs on reservoir quality
- b. SCS sediment studies
- c. Operating Conservation Commission programs
- d. Municipal/DEQ Public Water Supply Program
- e. EPA?

## C. Ground Water

## 1. Quantity

- a. Water level data
  - State/Federal program poor, limited information

maintained

by municipalities and industry. (NEEDS

STRENGTHENING).

-- Regional aquifer studies have established a

baseline.

-- Suggest elements of this enterprise be introduced

under

public water supply or water permit programs.

- b. Data on aquifer parameters

-- Some of this data is available in existing USGS/IGS

files and

published reports. (NEEDS STRENGTHENING.)

-- More data needs to be collected on well production

and



- should be  
 data  
 response to  
 recognized  
 process.
2. Quality
- supply  
 aquifers.  
 collection  
 distri-  
 (?).  
 private  
 WAWM.  
 the  
 used,  
 information  
 quality  
 to  
 quality
- aquifer hydraulic parameters.  
 -- Aquifer performance testing and data reporting  
 mandatory under permit water system and/or public  
 water supply program.  
 -- A system of models should be developed utilizing  
 generated under a. and b. to evaluate system(s)  
 withdrawals and, primary emphasis given to  
 and potential areas of pumping stress.  
 -- This information is the key to the allocation
- a. IGS/USGS programs which utilize DEQ/UHL public water  
 program water quality data to evaluate conditions in  
 -- With return of this program to the state, data  
 is probably adequate at public level -- rural water  
 bution systems should be drawn into this program
- b. There is no good program for collecting data in the  
 sector -- this should be investigated with UHL and
- c. USGS water quality monitoring network proposal (?).  
 -- As relates to water use, will this be responsive to  
 question(s): How much of what quality is being  
 and where?  
 -- What must be done within the constraints of the  
 system to determine, regionally, how much of what  
 ground water is available to future development or  
 sustain the existing demand?  
 -- Pumping stress within given systems can alter the  
 distribution of water.
- D. Water Withdrawal/Use
1. Pumping volumes/rates
  2. Location of pumping
  3. Water source
  4. Type use, application, populations served
  5. Spacing/density of points of withdrawals
  6. Trends in use
  7. Consumption, return flow, points of return
  8. Efficiency of distribution system (accountable system)

losses)

9. Status of water allocation by accounting units by:
    - i) purpose
    - ii) source
    - iii) rate/volume
    - iv) location
  10. Demand Projections
- E. Weather and Climate
1. Trends/cycles (daily/annual/historical)
  2. Evapotranspiration
  3. Evaporation
  4. Soil moisture
  5. Precipitation distribution (daily/annual/historical)

PROPOSED MANAGEMENT STRUCTURE

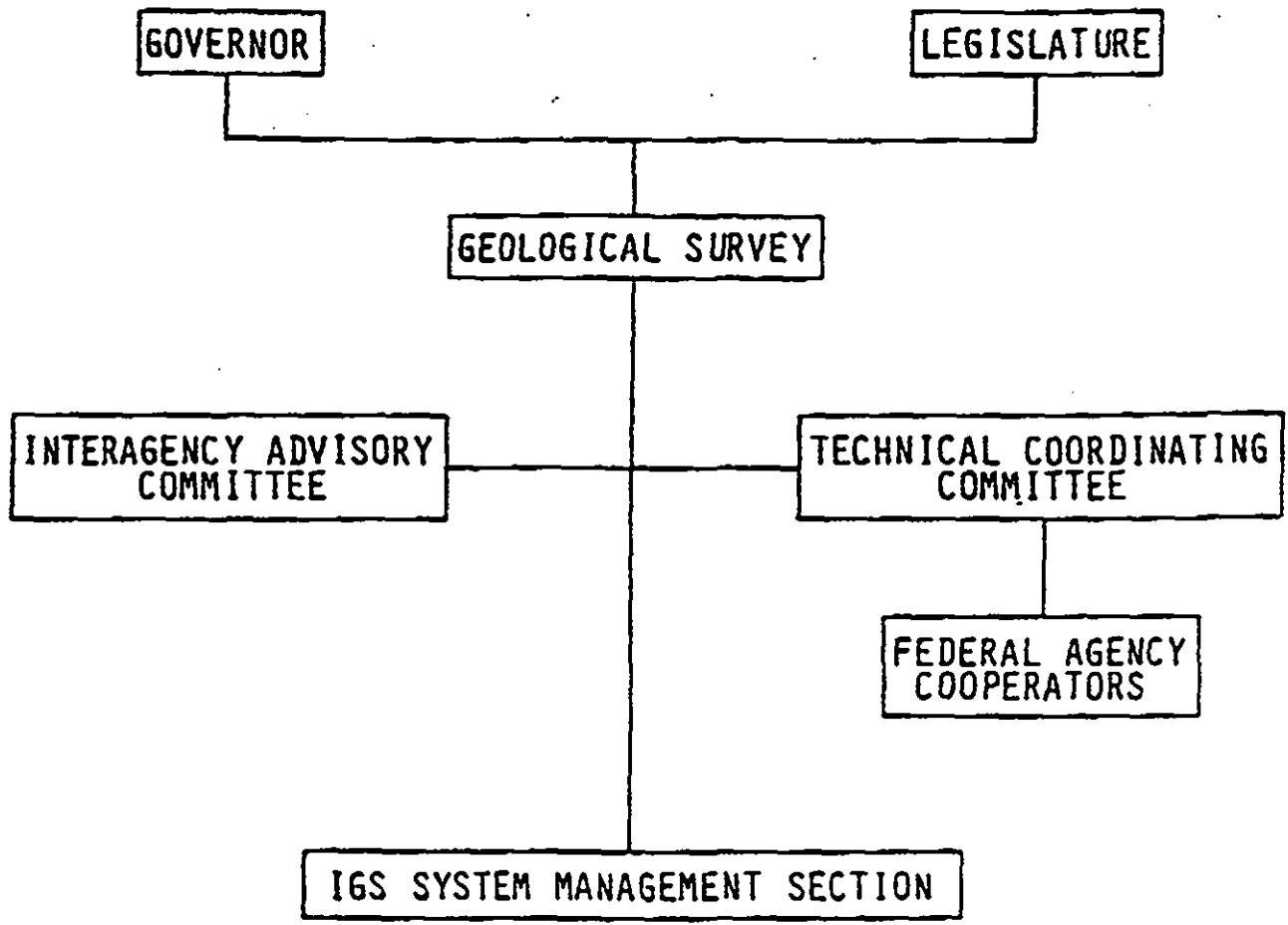


Figure III. 1.

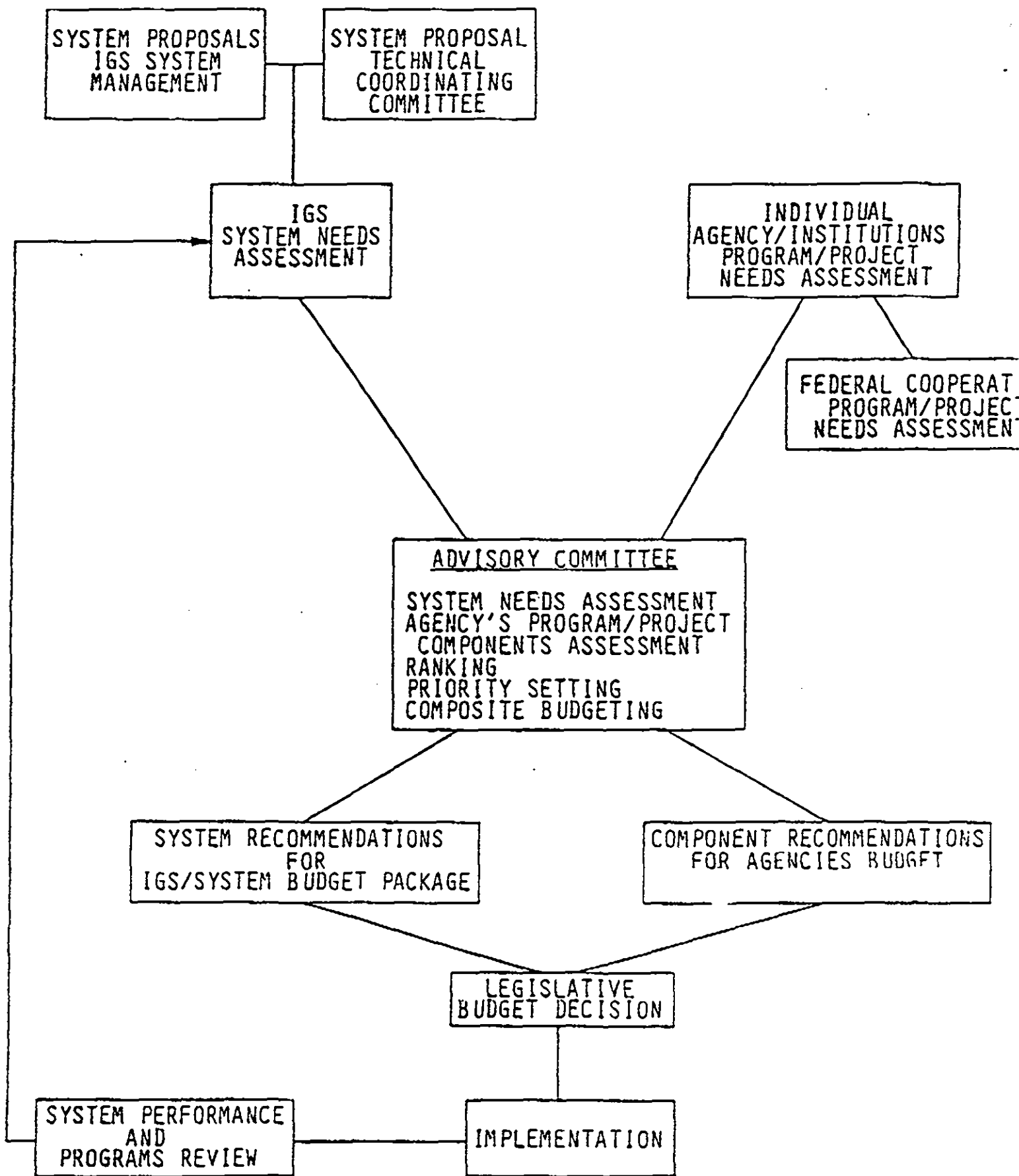


FIGURE III.2

$$(1) \quad \left( \begin{array}{c} \text{GROSS AVAILABLE WATER} \\ \text{AS} \\ \text{STREAMFLOW} \end{array} \right) - \left( \begin{array}{c} \text{EXEMPT AND} \\ \text{NON-REGULATED} \\ \text{WITHDRAWALS} \end{array} - \begin{array}{c} \text{RETURNS} \\ \text{TO} \\ \text{STREAMFLOW} \end{array} \right) - \left( \begin{array}{c} \text{IN-STREAM} \\ \text{FLOW PROTECTION} \end{array} \right) = \begin{array}{c} \text{ADJUSTED} \\ \text{GROSS AVAILABLE} \\ \text{WATER} \\ \text{AS STREAMFLOW} \end{array}$$

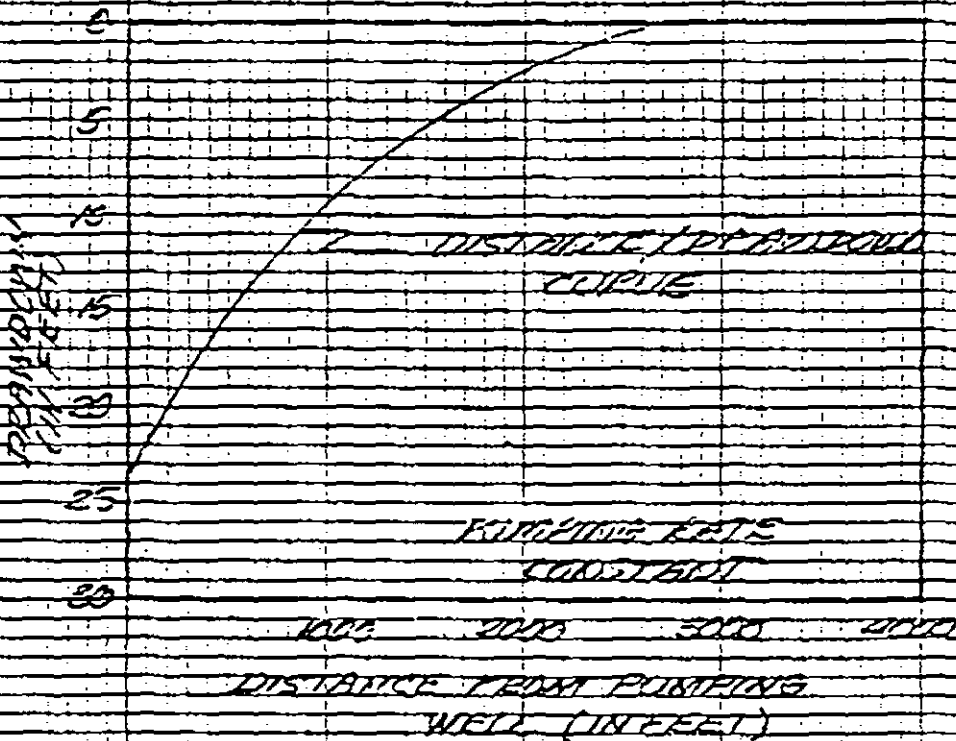
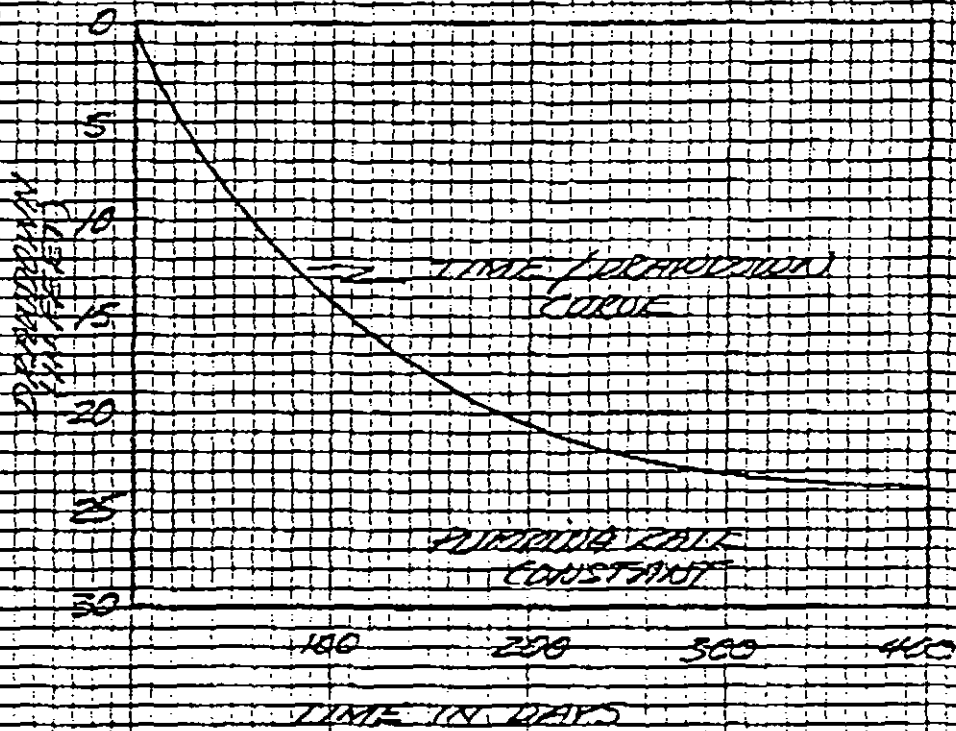
$$(2) \quad \left( \begin{array}{c} \text{ADJUSTED GROSS} \\ \text{AVAILABLE WATER} \\ \text{AS STREAMFLOW} \end{array} \right) - \left( \begin{array}{c} \text{ALLOCATED AND} \\ \text{REGULATED} \\ \text{WITHDRAWALS} \end{array} - \begin{array}{c} \text{RETURNS} \\ \text{TO} \\ \text{STREAMFLOW} \end{array} \right) = \left( \begin{array}{c} \text{NET} \\ \text{AVAILABLE} \\ \text{ALLOCABLE} \\ \text{WATER} \end{array} \right)$$

FIGURE IV.1

$$\begin{array}{c} \text{INFLOW} \\ \text{(SUBSURFACE INFLOW + VERTICAL RECHARGE)} \end{array} - \begin{array}{c} \text{OUTFLOW} \\ \text{(NATURAL SURFACE DISCHARGE + SUBSURFACE OUTFLOW + PUMPAGE)} \end{array} = \begin{array}{c} \text{(WATER IN STORAGE)} \end{array}$$

FIGURE IV.2

FIGURE 11.3



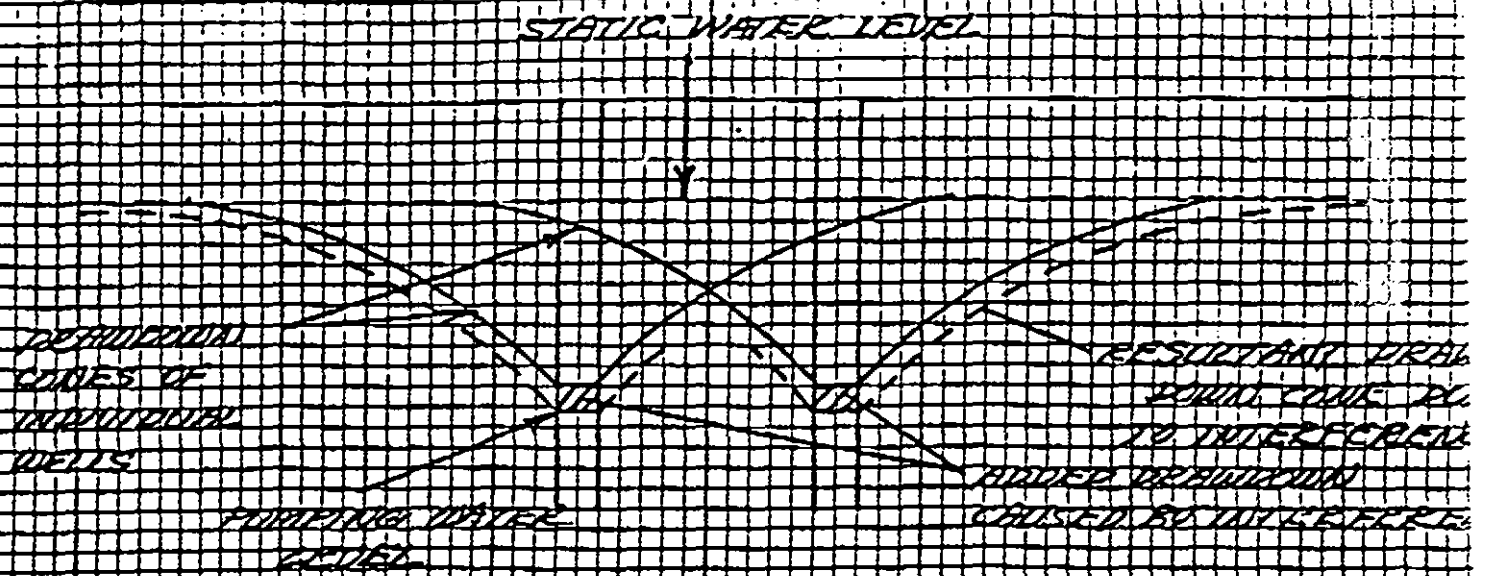


FIGURE IV.4b

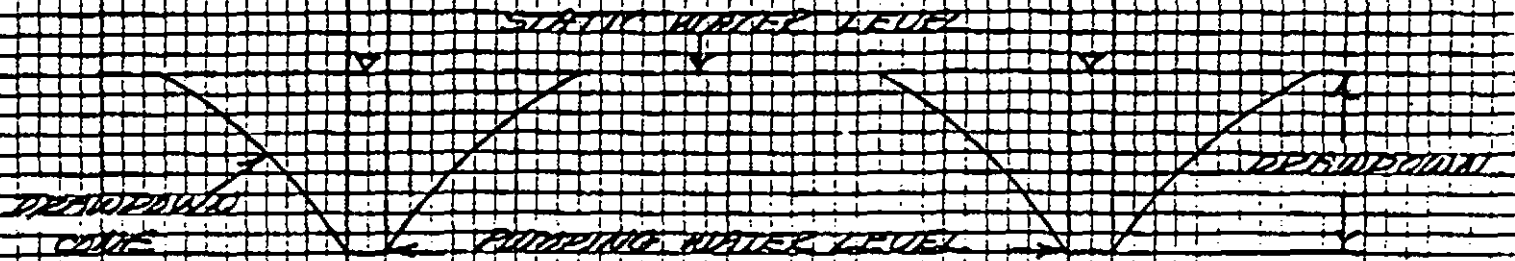


FIGURE IV.4a

a. 
$$\left( \begin{array}{c} \text{GROSS AVAILABLE} \\ \text{WATER} \\ \text{AS GROUND WATER} \\ \text{IN} \\ \text{STORAGE} \end{array} \right) - \left( \begin{array}{c} \text{EXEMPT AND} \\ \text{NON-REGULATED} \\ \text{WITHDRAWALS} \end{array} \right) - \left( \begin{array}{c} \text{HEAD/OTHER} \\ \text{PROTECTION} \end{array} \right) = \left( \begin{array}{c} \text{ADJUSTED GROSS} \\ \text{AVAILABLE} \\ \text{GROUNDWATER AS} \\ \text{IN} \\ \text{STORAGE} \end{array} \right)$$

b. 
$$\left( \begin{array}{c} \text{ADJUSTED GROSS} \\ \text{AVAILABLE} \\ \text{GROUND WATER} \\ \text{IN STORAGE} \end{array} \right) - \left( \begin{array}{c} \text{ALLOCATED} \\ \text{AND} \\ \text{REGULATED} \\ \text{WITHDRAWALS} \end{array} \right) = \left( \begin{array}{c} \text{NET} \\ \text{AVAILABLE} \\ \text{ALLOCABLE} \\ \text{GROUND WATER} \end{array} \right)$$

FIGURES IV.5a and IV.5b



Source

Maximum Yield Potential  
(in gallons per Minute)

	5-10	10-50	50-200	over 1000
Stream				X
Aquifer A	X			
Aquifer B			X	
Aquifer C		X		

*FIGURE IV.6a*

Large Community	over 1,000
Small Community	100 to 200
Rural Water System	100 to 200
School or Commercial Establishment	25 to 50
Rural Domestic Supply	5 to 10
Livestock Operation	25 to 50
General Crop Irrigation	600 to 800

*FIGURE IV.6b*

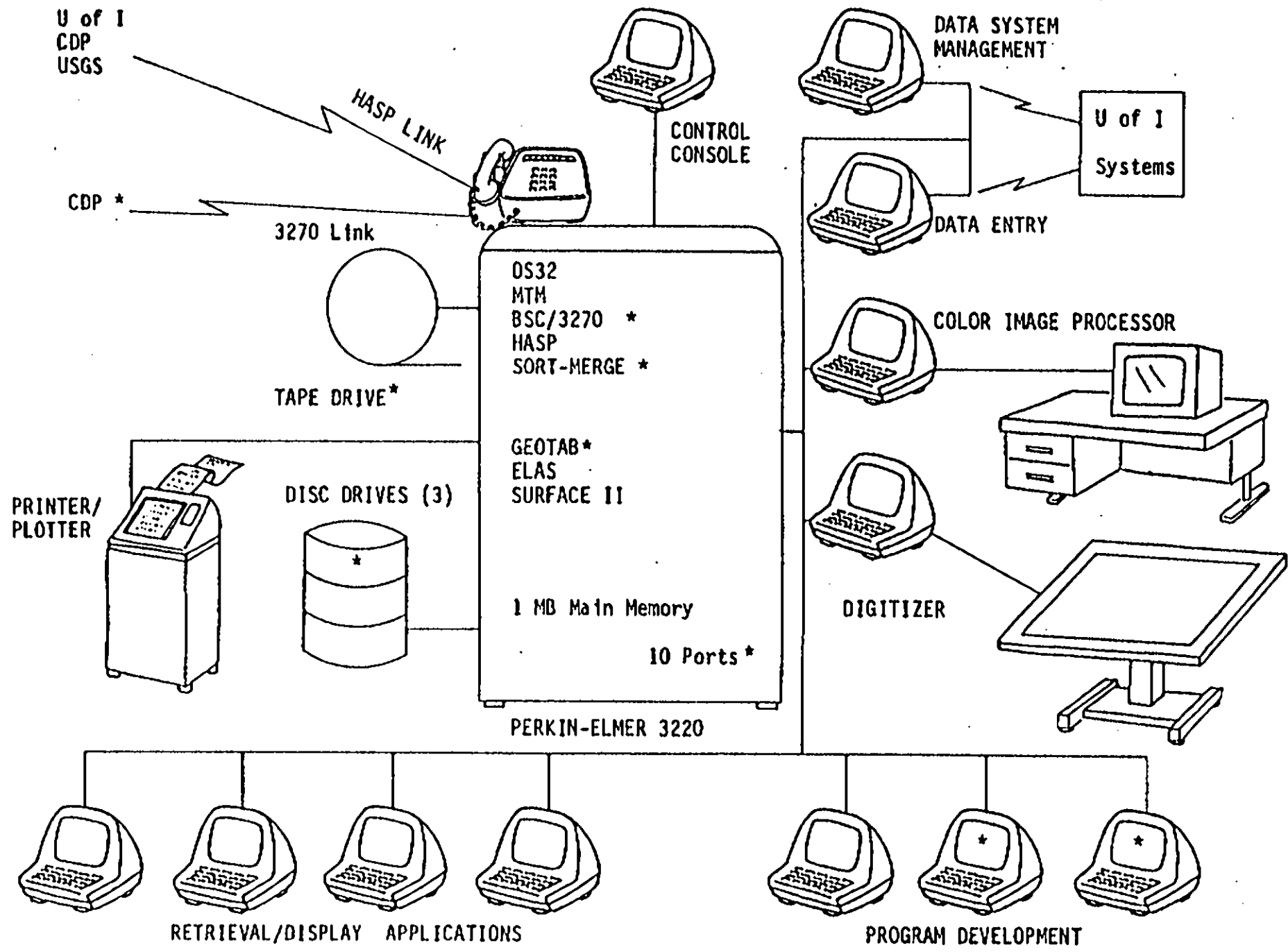


FIGURE VI.1

PLANNED IOWA GEOLOGICAL SURVEY COMPUTER SYSTEM 11/82 (\* Denotes Future Development.)

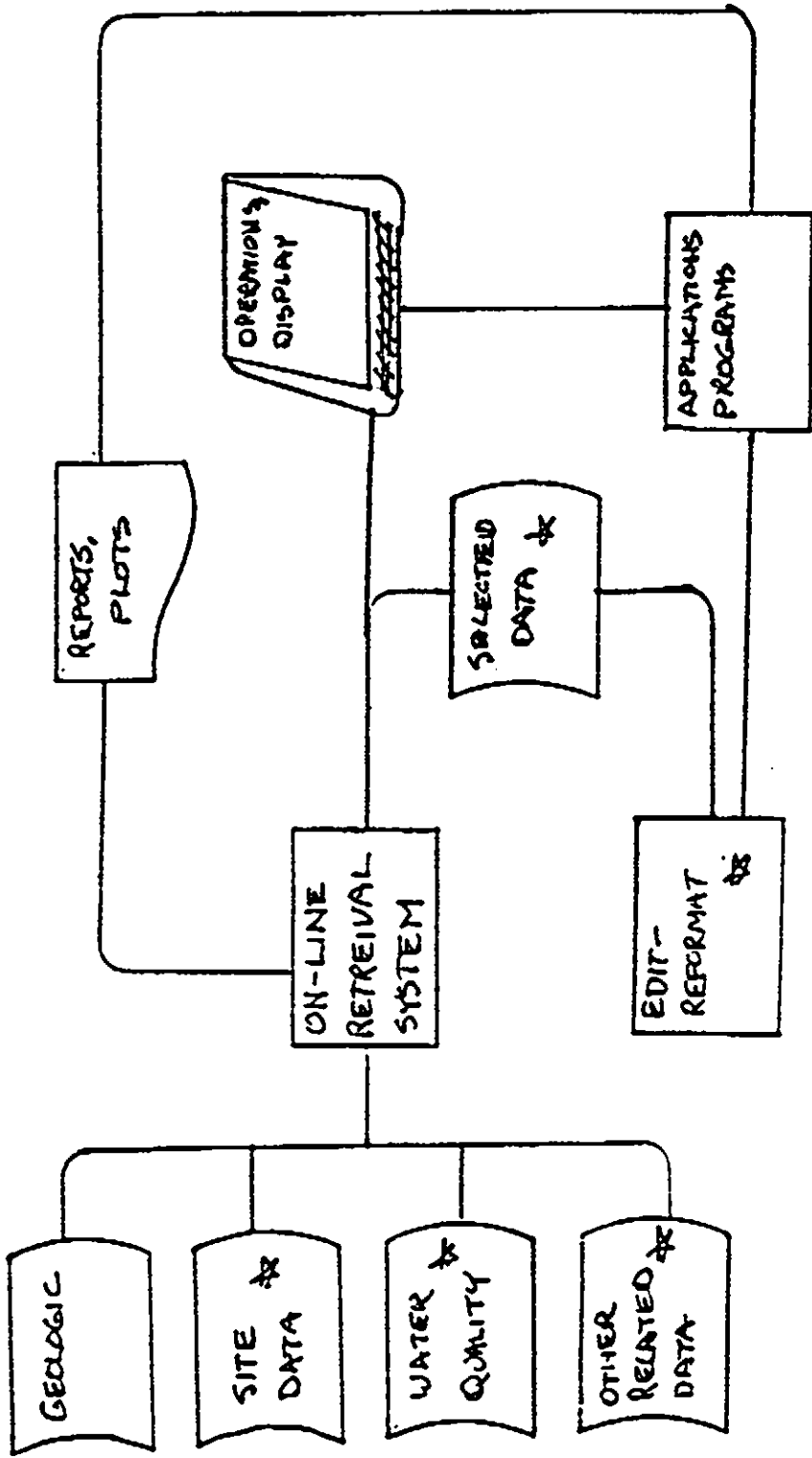
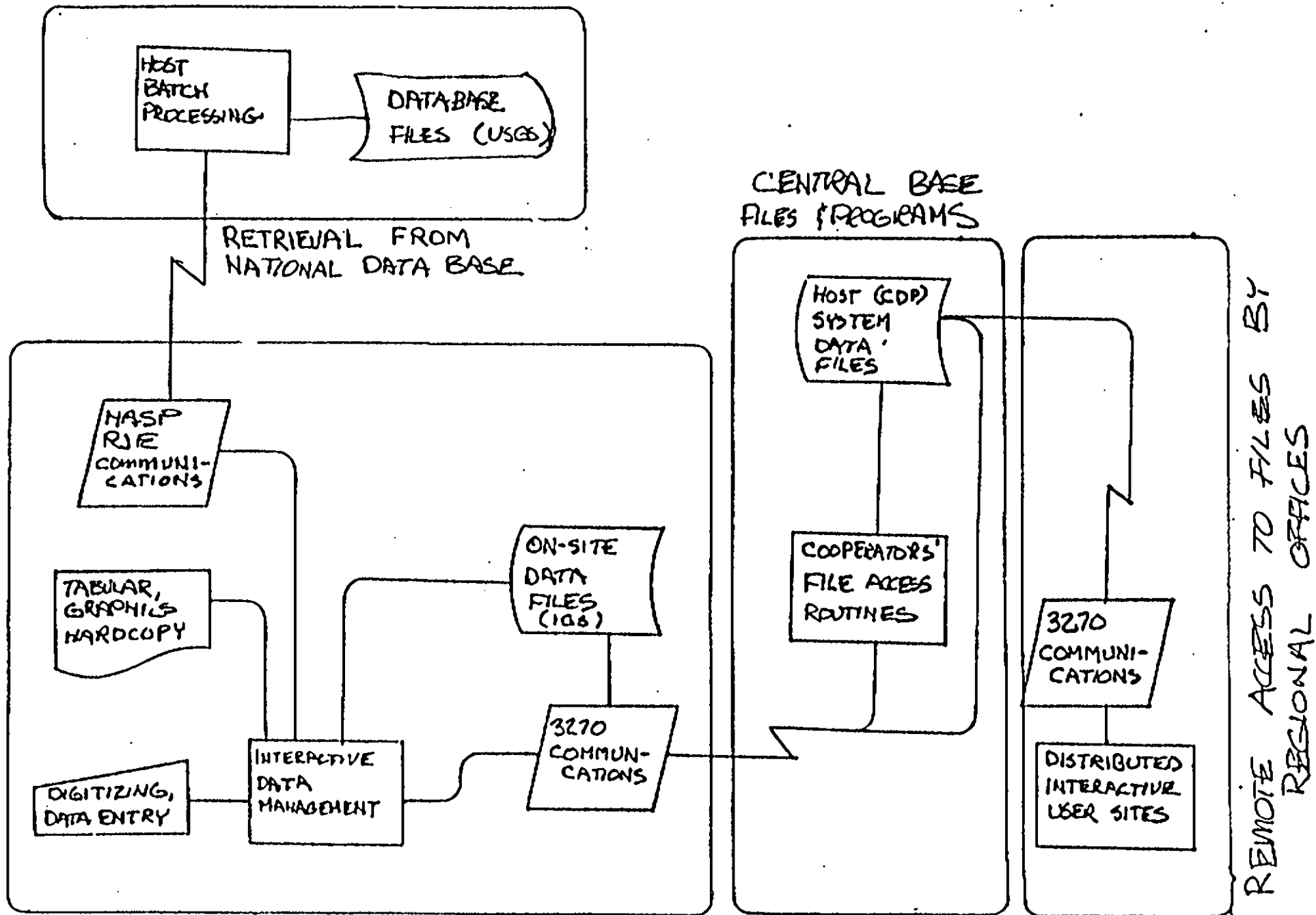


FIGURE VI.2 ON-LINE RETRIEVAL



DATA MANAGEMENT BY IDWA GEOLOGICAL SURVEY

- WORK STATIONS (TERMINALS & COMMUNICATIONS DEVICES) FOR TWO PROGRAMMERS
- ADDITIONAL PERIPHERAL MEMORY
- EXTENSION OF ON-LINE RETRIEVAL SYSTEM TO HANDLE SITE DATA FILE AND WATER QUALITY FILE (PRESENTLY ONLY GEOLOGIC DATA FILE IS ON-LINE)
- CREATION OF FILE-HANDLING ROUTINES TO AUTOMATE ADAPTATION OF BASE DATA TO APPLICATION PROGRAMS
- UTILITY SOFTWARE ACQUISITION (SORT/MERGE ROUTINES)
- COMMUNICATIONS SOFTWARE TO LINK TERMINALS TO CENTRAL COMPUTER IN DES MOINES
- DATA DIRECTORY AND DATA DICTIONARY TO BE DEVELOPED FOR REFERENCE TO ALL AVAILABLE DATA RELATED TO WATER BUDGET AND RESOURCE ASSESSMENT STUDIES
- DEVELOPMENT AND DOCUMENTATION OF PROCEDURES FOR RETRIEVING ALL DATA AVAILABLE FROM COOPERATORS

TABLE U1.1      SUMMARY OF  
RECOMMENDED DATA SYSTEM  
UPGRADES

1984  
FISCAL 1983-84

1985  
FISCAL 1984-85

1986  
FISCAL 1985-86

1987  
FISCAL 1986-87

PROGRAM EVALUATION/SYSTEM IMPLEMENTATION

PROGRAM DEVELOPMENT

PROGRAM IMPLEMENTATION

PROGRAM/SYSTEM OPERATION AND MAINTENANCE

ADVISORY COMMITTEE

Data Programs Review  
Administrative Plans  
Priorities  
Recommendations  
Legislative Recommendations  
I.D. Special Appropriations

Coordinate and Implement System Administration Plan  
Coordinate and Develop System/Program Budget Decision Packages  
Develop Aggregate System/Program Budget

Coordinate Programs Implementation and Operation  
Review Systems Operation

Coordinate and Review Programs/System Operation  
Program/System Recommendations  
Coordinate and Develop System Program Budget Decision Packages  
Develop Aggregate System/Program Budget

TECHNICAL COORDINATING COMMITTEE

Implement Communications Plan  
Establish Data Conventions  
Identify User Needs and Services  
Develop Quality Control Strategies  
Coordinate With Federal Cooperators

Maintain Communications System and Update Communications Plan  
Provide Inputs for System Operations Review and Budget Preparation Process

Maintain Communications System and Update Communications Plan

Maintain Communications System and Update Communications Plan  
Provide Inputs for System Operations Review and Budget Preparation Process

IGS DATA SYSTEM MANAGEMENT

Implement Hardware and Communications  
Develop Software, Train Staff  
Acquire, Enter, Manage, and Transfer Data  
Develop Data Dictionary

Recommend System Development Plans

Implement Hardware and Communications

Recommend System Development Plans

ONGOING

Implement On-Line System  
Implement Technical Coordinating Committee Recommendations

ONGOING

Data Directory

Data File Inventory  
User's Guide

Activity Report

Activity Report

Table VII.1 WATER INFORMATION SYSTEM (IWARDS) PLANNING/IMPLEMENTATION/OPERATIONS SCHEDULE

PROPOSED SENATE/HOUSE FILE \_\_\_\_\_

BY (PROPOSED COMMITTEES ON  
NATURAL RESOURCES BY WATER  
STUDY SUBCOMMITTEE BILL)

Passed Senate, Date \_\_\_\_\_ Passed House, Date \_\_\_\_\_

Vote: Ayes \_\_\_\_\_ Nays \_\_\_\_\_ Vote: Ayes \_\_\_\_\_ Nays \_\_\_\_\_

Approved \_\_\_\_\_

## A BILL FOR

1 An Act relating to the rule-making authority of the water, air  
2 and waste management commission and providing an effective  
3 date.

4 BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF IOWA:

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1 Section 1. 1982 Iowa Acts, chapter 1199, section 96,  
2 subsection 2, is amended to read as follows:

3 2. After July 1, 1982, the governor may appoint the members  
4 of the water, air and waste management commission, appoint  
5 the executive director of the department of water, air and  
6 waste management, and may authorize the water, air and waste  
7 management commission to organize and plan for the transfer  
8 of powers, duties, records, equipment, personnel, and other  
9 property as applicable. If the water, air and waste management  
10 commission is authorized to organize and plan as provided  
11 in this subsection, the commission may adopt rules pursuant  
12 to chapter 17A as necessary for the orderly implementation  
13 of 1982 Iowa Acts, chapter 1199. A rule adopted under this  
14 subsection shall not become effective before July 1, 1983.  
15 The governor may select the executive director of the  
16 department of environmental quality or the director of the  
17 Iowa natural resources council to serve as executive director  
18 of the department of water, air and waste management without  
19 reappointment or confirmation.

20 Sec. 2. This Act, being deemed of immediate importance,  
21 takes effect from and after its publication in The Fairfield  
22 Daily Ledger, Inc., a newspaper published in Fairfield, Iowa,  
23 and in The Clinton Herald, a newspaper published in Clinton,  
24 Iowa.

25 EXPLANATION

26 This bill authorizes the water, air and waste management  
27 commission to adopt rules relating to the implementation of  
28 1982 Iowa Acts, chapter 1199, before July 1, 1983, when most  
29 of the sections of chapter 1199 become effective. However,  
30 the rules shall not become effective before July 1, 1983.

31 This bill takes effect upon publication.

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PROPOSED SENATE/HOUSE FILE \_\_\_\_\_

BY (PROPOSED COMMITTEES ON NATURAL  
RESOURCES BY WATER STUDY SUBCOM-  
MITTEE BILL)

Passed Senate, Date \_\_\_\_\_ Passed House, Date \_\_\_\_\_

Vote: Ayes \_\_\_\_\_ Nays \_\_\_\_\_ Vote: Ayes \_\_\_\_\_ Nays \_\_\_\_\_

Approved \_\_\_\_\_

## A BILL FOR

1 An Act relating to the powers and duties of the department  
2 of water, air and waste management.

3 BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF IOWA:

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1 Section 1. Section 455B.105, subsection 3, Code 1983,  
2 is amended to read as follows:

3 3. Adopt, modify, or repeal rules necessary to implement  
4 ~~the-provisions-of~~ this chapter and the rules deemed necessary  
5 for the effective administration of the department. A ~~rule~~  
6 ~~adopted-under-this-chapter-to-carry-out-a-federal-regulation~~  
7 ~~shall-not-become-effective-if-the-rule-is-more-restrictive~~  
8 ~~than-required-by-the-federal-regulation-unless-the-rule-is~~  
9 ~~approved-by-enactment-of-the-general-assembly.~~ It is the  
10 intent of the general assembly that the commission exercise  
11 strict oversight of the operations of the department. The  
12 rules shall include departmental policy relating to the  
13 disclosure of information on a violation or alleged violation  
14 of the rules, standards, permits or orders issued by the  
15 department and keeping of confidential information obtained  
16 by the department in the administration and enforcement of  
17 ~~the-provisions-of~~ this chapter. Rules adopted by the executive  
18 committee before January 1, 1981 shall remain effective until  
19 modified or rescinded by action of the commission.

20 Sec. 2. Section 455B.171, subsections 19, 21, and 22,  
21 Code 1983, are amended to read as follows:

22 19. "Public water supply system" means a system for the  
23 provision to the public of piped water for human consumption,  
24 if the system has at least ~~twenty~~ fifteen service connections  
25 or regularly serves at least ~~one-hundred~~ twenty-five  
26 individuals. The term includes any source of water and any  
27 collection, treatment, storage, and distribution facilities  
28 under control of the operator of the system and used primarily  
29 in connection with the system, and any collection or  
30 pretreatment storage facilities not under such control which  
31 are used primarily in connection with the system.

32 21. "Private water supply" means any water supply for  
33 human consumption which has less than ~~twenty~~ fifteen service  
34 ~~connections or~~ and regularly serves less than ~~one-hundred~~  
35 twenty-five individuals.

1 22. "Private sewage disposal system" means a system which  
2 provides for the treatment or disposal of domestic sewage  
3 from four-or-fewer-dwelling-units the equivalent of less than  
4 sixteen individuals and which does not discharge to a water  
5 of the state.

6 Sec. 3. Section 455B.172, subsection 2, Code 1983, is  
7 amended to read as follows:

8 2. The department is the state agency designated to carry  
9 out the state responsibilities related to private water sup-  
10 plies and private sewage disposal systems for the protection  
11 of the health of the citizens of this state. The commission  
12 shall adopt guidelines minimum standards and provide model  
13 standards for private water supplies and private sewage dis-  
14 posal facilities for use of the local boards of health. Each  
15 local board of health is the agency to regulate private water  
16 supplies and private sewage disposal systems. Each local  
17 board of health shall adopt standards relating to the design  
18 and construction of private water supplies and private sewage  
19 disposal facilities, which standards shall not be lower than  
20 the minimum standards adopted by the commission.

21 Sec. 4. Section 455B.183, subsections 1 and 3, Code 1983,  
22 are amended to read as follows:

23 1. The construction, installation or modification of any  
24 disposal system or public water supply ~~distribution~~ system  
25 or part thereof or any extension or addition thereto except  
26 those sewer extensions and water supply distribution system  
27 extensions that are subject to review and approval by a city  
28 or county public works department pursuant to this section  
29 and private sewage disposal systems. ~~A-permit-shall-be-issued~~  
30 ~~for-the-construction,-installation-or-modification-of-a-public~~  
31 ~~water-supply-distribution-system-or-part-of-a-system-if-a~~  
32 ~~qualified,-registered-engineer-certifies-to-the-commission~~  
33 ~~that-the-plans-for-the-system-or-part-of-the-system-meet-the~~  
34 ~~requirements-of-federal-law-or-regulations.--The-permit-shall~~  
35 ~~state-that-approval-is-based-only-upon-the-engineer's~~

~~1 certification that the system's design meets the requirements~~  
~~2 of all applicable federal laws and regulations.~~

3 3. The operation of any waste disposal system or public  
4 water supply ~~distribution~~ system or any part of or extension  
5 or addition to such system. This provision shall does not  
6 apply to any pretreatment system the effluent of which is  
7 to be discharged directly to another disposal system for final  
8 treatment and disposal or any private sewage disposal system.

9 Sec. 5. Section 455B.261, subsections 1, 10, and 11, Code  
10 1983, are amended to read as follows:

11 1. "Flood plains" means the area adjoining a river or  
12 stream which has been or ~~is~~ may be covered by flood water.

13 10. "Permit" means a written authorization issued by the  
14 department to a permittee which ~~is~~ authorizes diversion,  
15 storage, or withdrawal of water limited as to quantity, time,  
16 place, and rate ~~of diversion, storage, or withdrawal~~ in  
17 accordance with the policies and principles of beneficial  
18 use as specified in this part or authorizes construction,  
19 use, or maintenance of a structure, dam, obstruction, deposit,  
20 or excavation in a floodway or flood plain in accordance with  
21 the principles and policies of protecting life and property  
22 from floods as specified in this part.

23 11. "Permittee" means a person who obtains a permit from  
24 the department authorizing the person to take possession by  
25 diversion or otherwise and to use and apply an allotted quan-  
26 tity of water for a designated beneficial use, and who makes  
27 actual use of the water for that purpose or a person who  
28 obtains a permit from the department authorizing construction,  
29 use, or maintenance of a structure, dam, obstruction, deposit,  
30 or excavation in a floodway or flood plain for a designated  
31 purpose.

32 Sec. 6. Section 455B.261, subsection 16, Code 1983, is  
33 amended by striking the subsection.

34 Sec. 7. Section 455B.262, Code 1983, is amended by strik-  
35 ing the section and inserting in lieu thereof the following:

## 1 455B.262 DECLARATION OF POLICY AND PLANNING REQUIREMENTS.

2 1. It is recognized that the protection of life and  
3 property from floods, the prevention of damage to lands from  
4 floods, and the orderly development, wise use, protection,  
5 and conservation of the water resources of the state by their  
6 considered and proper use is of paramount importance to the  
7 welfare and prosperity of the people of the state, and to  
8 realize these objectives, it is the policy of the state to  
9 correlate and vest the powers of the state in a single agency,  
10 the department, with the duty and authority to assess the  
11 water needs of all water users at five-year intervals for  
12 the twenty years beginning January 1, 1985, and ending December  
13 31, 2004, utilizing a data base developed and managed by the  
14 Iowa geological survey, and prepare a general plan of water  
15 allocation in this state considering the quantity and quality  
16 of water resources available in this state designed to meet  
17 the specific needs of the water users. The department shall  
18 also develop and the commission shall adopt no later than  
19 January 1, 1985, a plan for delineation of flood plain and  
20 floodway boundaries for selected stream reaches in the various  
21 river basins of the state. Selection of the stream reaches  
22 and assignment of priorities for mapping of the selected  
23 reaches shall be based on consideration of flooding  
24 characteristics, the type and extent of existing and  
25 anticipated flood plain development in particular stream  
26 reaches, and the needs of local governmental bodies for  
27 assistance in delineating flood plain and floodway boundaries.  
28 The plan of flood plain mapping shall be for the period from  
29 January 1, 1985, to December 31, 2004. After the commission  
30 adopts a plan of flood plain mapping, the department shall  
31 submit a progress report and proposed implementation schedule  
32 to the general assembly biennially. The commission may modify  
33 the flood plain mapping plan as needed in response to changing  
34 circumstances.

35 2. The general welfare of the people of the state requires

1 that the water resources of the state be put to beneficial  
2 use to the fullest extent possible, and that the waste or  
3 unreasonable use, or unreasonable methods of use of water  
4 be prevented, and that the conservation of water resources  
5 be encouraged with the view to their reasonable and beneficial  
6 use in the interest of the people, and that the public and  
7 private funds for the promotion and expansion of the beneficial  
8 use of water resources be invested to the end that the best  
9 interests and welfare of the people are served.

10 3. Water occurring in a basin or watercourse, or other  
11 natural body of water of the state, is public water and public  
12 wealth of the people of the state and subject to use in  
13 accordance with this chapter, and the control and development  
14 and use of water for all beneficial purposes is vested in  
15 the state, which shall take measures to encourage full  
16 utilization and protection of the water resources of the  
17 state.

18 Sec. 8. Section 455B.263, subsection 7, Code 1983, is  
19 amended to read as follows:

20 7. The commission shall procure flood control works and  
21 water resources projects from or by cooperation with any  
22 agency of the United States, by cooperation with the cities  
23 and other subdivisions of the state under the laws of the  
24 state relating to flood control and use of water resources,  
25 and by cooperation with the action of landowners in areas  
26 affected by the works or projects when the ~~commissioner~~  
27 commission deems the projects to be necessary for the  
28 achievement of the policies of this state.

29 Sec. 9. Section 455B.264, Code 1983, is amended to read  
30 as follows:

31 455B.264 ~~JURISDICTION--DIVERSION-OF WATER~~ JURISDICTION AND FLOOD PLAINS.

32 1. The commission has jurisdiction over the public and  
33 private waters in the state and the lands adjacent to the  
34 waters necessary for the purposes of carrying out this part.  
35 The commission may construct flood control works or any part

1 of the works. In the construction of the works, in making  
2 surveys and investigations, or in formulating plans and  
3 programs relating to the water resources of the state, the  
4 commission may cooperate with an agency of another state or  
5 the United States, or with any other person.

6 2. Upon application by any person for permission to divert,  
7 pump, or otherwise take waters from any watercourse,  
8 underground basin or watercourse, drainage ditch, or settling  
9 basin within this state for any purpose other than a  
10 nonregulated use, the executive director shall investigate  
11 the effect of the use upon the natural flow of the watercourse,  
12 the effect of the use upon the owners of any land which might  
13 be affected by the use, and whether the use is consistent  
14 with the plan of water allocation priorities for this state,  
15 ~~and shall hold a hearing.~~

16 3. Upon application by any person for approval of the  
17 construction or maintenance of any structure, dam, obstruc-  
18 tion, deposit, or excavation to be erected, used, or main-  
19 tained in or on the flood plains of any river or stream, the  
20 department shall investigate the effect of the construction  
21 or maintenance project on the efficiency and capacity of the  
22 floodway ~~and on the plan of water allocation priorities for~~  
23 ~~this state.~~ In determining the effect of the proposal the  
24 department shall consider fully its effect on flooding of  
25 or flood control for any proposed works and adjacent lands  
26 and property, on the wise use and protection of water  
27 resources, on the quality of water, on fish, wildlife, and  
28 recreational facilities or uses, and on all other public  
29 rights and requirements.

30 Sec. 10. Section 455B.265, Code 1983, is amended to read  
31 as follows:

32 455B.265 PERMITS FOR DIVERSION, STORAGE, AND WITHDRAWAL.  
33 If the department determines after due investigation that  
34 the diversion, storage, or withdrawal of water will not be  
35 detrimental to the public interests, including drainage and

1. levee districts, or to the interests of property owners with  
2 prior or superior rights who may be affected, the department  
3 shall grant a permit for the diversion, storage, or withdrawal.  
4 Permits may be granted for any period of time not exceeding  
5 ten years except permits for the storage of water which may  
6 be granted for the life of the structure unless revoked by  
7 the commission. All existing storage permits are extended  
8 for the life of the structure unless withdrawn for good cause.  
9 Permits may be granted which provide for less diversion,  
10 storage, or withdrawal of waters than set forth in the  
11 application. A permit granted shall remain as an appurtenance  
12 of the land described in the permit through the date specified  
13 in the permit and any extension of the permit or until an  
14 earlier date ~~if~~ when the permit or any extension of the permit  
15 is ~~modified-or~~ canceled under section 455B.271. Upon  
16 application for a permit prior to the termination date  
17 specified in the permit, a permit may be renewed by the  
18 department for any period of time not to exceed ten years.

19 Sec. 11. Section 455B.269, Code 1983, is amended to read  
20 as follows:

21 455B.269 TAKING WATER PROHIBITED. A person shall not  
22 take water from a natural watercourse, underground basin or  
23 watercourse, drainage ditch, or settling basin within this  
24 state for any purpose other than a nonregulated use except  
25 in compliance with the sections of this part which relate  
26 to the withdrawal, diversion, or storage of water. However,  
27 existing uses may be continued during the period of the  
28 pendency of an application for a permit.

29 Sec. 12. Section 455B.270, Code 1983, is amended to read  
30 as follows:

31 455B.270 RIGHTS PRESERVED. ~~This part does~~ The sections  
32 of this part which relate to the withdrawal, diversion, or  
33 or storage of water do not deprive any person of the right  
34 to use diffused waters, to drain land by use of tile, open  
35 ditch, or surface drainage, or to construct an impoundment



1 on the person's property or across a stream that originates  
2 on the person's property if provision is made for safe con-  
3 struction and for a continued established average minimum  
4 flow when the flow is required to protect the rights of water  
5 users below.

6 Sec. 13. Section 455B.271, unnumbered paragraph 1, Code  
7 1983, is amended to read as follows:

8 Each permit issued under ~~this-part~~ section 455B.265 is  
9 irrevocable for its term and for any extension of its term  
10 except as follows:

11 Sec. 14. Section 455B.275, subsections 1 and 4, Code 1983,  
12 are amended to read as follows:

13 1. A person shall not permit, erect, use or maintain a  
14 structure, dam, obstruction, deposit, or excavation in or  
15 on a floodway or flood plains, which will adversely affect  
16 the efficiency of or unduly restrict the capacity of the  
17 floodway, or adversely affect the control, development,  
18 protection, allocation, or utilization of the water resources  
19 of the state, and the same are declared to be public nuisances.  
20 However, this subsection does not apply to dams constructed  
21 and operated under the authority of chapter 469.

22 4. The department may maintain an action in equity to  
23 enjoin a person from erecting or making or permitting to be  
24 made a structure, dam, obstruction, deposit, or excavation  
25 other than a dam constructed and operated under the authority  
26 of chapter 469, for which a permit has not been granted.  
27 The department may also seek judicial abatement of any  
28 structure, dam, obstruction, deposit, or excavation erected  
29 or made without a permit required under this part. The  
30 abatement proceeding may be commenced to enforce an  
31 administrative determination of the department in a contested  
32 case proceeding that a public nuisance exists and should be  
33 abated. The costs of abatement shall be borne by the violator.

34 Notwithstanding section 93A.11, a structure, dam, obstruction,  
35 deposit, or excavation on a floodway or flood plain in an

1 agricultural area established under chapter 93A is not exempt  
2 from the sections of this part which relate to regulation  
3 of flood plains and floodways.

4 Sec. 15. Section 455B.276, unnumbered paragraph 1, Code  
5 1983, is amended to read as follows:

6 The commission may establish and enforce rules for the  
7 orderly development and wise use of the flood plains of any  
8 river or stream within the state and alter, change, or revoke  
9 the rules. The commission shall determine the characteristics  
10 of floods which reasonably may be expected to occur and may  
11 establish by order encroachment limits, protection methods,  
12 and minimum protection levels appropriate to the flooding  
13 characteristics of the stream and to reasonable use of the  
14 flood plains. The order shall fix the length of flood plains  
15 to be regulated at any practical distance, the width of the  
16 zone between the encroachment limits so as to include por-  
17 tions of the flood plains adjoining the channel, which with  
18 the channel, are required to carry and discharge the flood  
19 waters or flood flow of the river or stream, and the design  
20 discharge and water surface elevations for which protection  
21 shall be provided for projects outside the encroachment limits  
22 but within the limits of inundation. Plans for the protection  
23 of projects proposed for areas subject to inundation shall  
24 be reviewed as plans for flood control works within the purview  
25 of section 455B.277. An order establishing encroachment  
26 limits shall not be issued until due notice of the proposed  
27 order is given and opportunity for public hearing given for  
28 the presentation of protests against the order. In  
29 establishing the limits, the commission shall avoid to the  
30 greatest possible degree the evacuation of persons residing  
31 in the area of a floodway, the removal of residential  
32 structures occupied by the persons in the area of a floodway,  
33 and the removal of structures erected or made prior to July  
34 4, 1965, which are located on the flood plains of a river  
35 or stream but not within the area of a floodway.

1 Sec. 16. Section 455B.277, unnumbered paragraph 1, Code  
2 1983, is amended to read as follows:

3 All flood control works in the state, which are established  
4 and constructed after ~~July 17, 1983~~ April 16, 1949, shall be  
5 coordinated in design, construction, and operation according  
6 to sound and accepted engineering practice so as to effect  
7 the best flood control obtainable throughout the state. A  
8 person shall not construct or install works of any nature  
9 for flood control until the proposed works and the plans and  
10 specifications for the works are approved by the ~~commission~~  
11 department. The ~~commission~~ department shall consider all  
12 the pertinent facts relating to the proposed works which will  
13 affect flood control and water resources in the state and  
14 shall determine whether the proposed works in the plans and  
15 specifications will be in aid of and acceptable as part of,  
16 or will adversely affect and interfere with flood control  
17 in the state, adversely affect the control, development,  
18 protection, allocation, or utilization of the water resources  
19 of the state, or adversely affect or interfere with the state  
20 comprehensive plan for water resources or an approved local  
21 water resources plan. In the event of disapproval, the  
22 ~~commission~~ department shall set forth the objectionable  
23 features so that the proposed works and the plans and  
24 specifications for the proposed works may be corrected or  
25 adjusted to obtain approval.

26 Sec. 17. Section 455B.278, subsection 1, Code 1983, is  
27 amended to read as follows:

28 1. The commission shall adopt, modify, or repeal rules  
29 establishing procedures by which permits required under this  
30 part shall be issued, suspended, revoked, modified, or denied.  
31 The procedures shall include provisions for application,  
32 an a schedule of application fee fees sufficient to pay all  
33 or part of the administrative costs of the permit process,  
34 public notice and opportunity for public hearing, and contested  
35 cases. Public notice of a decision by the executive director

1 to issue a permit shall be given in a manner designed to  
2 inform persons who may be adversely affected by the permitted  
3 project or activity.

4 Sec. 18. Section 455B.279, subsection 1, Code 1983, is  
5 amended to read as follows:

6 1. The commission may issue any order necessary to se-  
7 cure compliance with or prevent a violation of this part or  
8 the rules adopted pursuant to this part. The ~~attorney-general~~  
9 ~~shall, on request of the department, institute any legal~~  
10 ~~proceedings necessary in obtaining compliance with an order~~  
11 ~~of the commission~~ department may request legal services as  
12 required from the attorney general, including any legal  
13 proceeding necessary to obtain compliance with this part and  
14 rules and orders issued under this part.

15 Sec. 19. Section 455B.441, Code 1983, is amended to read  
16 as follows:

17 455B.441 PURPOSE AND GUIDELINES. The purpose of this  
18 part is to protect the public health and the environment by  
19 providing a procedure for establishing appropriate sites and  
20 properly designed facilities for the treatment, storage and  
21 disposal of hazardous waste. It is the intent of the general  
22 assembly that in the implementation of this part the department  
23 of ~~environmental-quality~~ water, air and waste management shall  
24 emphasize alternatives to land burial of hazardous waste  
25 whenever possible with emphasis on the following management  
26 methods in the following order: source reduction, reuse,  
27 resource recovery, incineration, and detoxification.

28 Sec. 20. Section 455B.442, subsection 2, Code 1983, is  
29 amended to read as follows:

30 2. "Hazardous waste" means a hazardous waste as defined  
31 in section 455B.411, subsection 2 and listed by the ~~environ-~~  
32 ~~mental-quality~~ commission under section 455B.412, subsection  
33 2.

34 Sec. 21. Section 455B.442, subsections 3 and 4, Code 1983,  
35 are amended by striking the subsections.

1     Sec. 22. Section 93A.4, subsection 4, Code 1983, is amended  
2 to read as follows:

3     4. The state department of agriculture, office for plan-  
4 ning and programming, department of soil conservation, state  
5 conservation commission,  ~~Iowa-natural-resources-council~~, de-  
6 partment of environmental-quality water, air and waste manage-  
7 ment, geological survey, state agricultural extension service,  
8 and the Iowa development commission shall, upon request, pro-  
9 vide to each county commission any pertinent land use informa-  
10 tion available to assist in the compiling of the county land  
11 use inventories.

12     Sec. 23. Section 93A.11, subsection 2, Code 1983, is  
13 amended to read as follows:

14     2. WATER PRIORITY. In the application for a permit to  
15 divert, store, or withdraw water and in the allocation of  
16 available water resources under a water permit system, the  
17  ~~Iowa-natural-resources-council~~ department of water, air and  
18 waste management shall give priority to the use of water  
19 resources by a farm or farm operations, exclusive of irriga-  
20 tion, located in an agricultural area over all other uses  
21 except the competing uses of water for ordinary household  
22 purposes.

23     Sec. 24. Section 467D.6, subsection 1, Code 1983, is  
24 amended to read as follows:

25     1. Exercise supervision over the water resources of the  
26 conservancy district, including water in any basin,  
27 watercourse, or other body of water in the conservancy  
28 district, and have authority to adopt and repeal, with approval  
29 of the department, and enforce rules, except those rules  
30 relating to water resources under the authority of the  
31 department of environmental-quality water, air and waste  
32 management, as necessary to achieve the objectives of this  
33 chapter as set forth in section 467D.1.

34     Sec. 25. 1982 Iowa Acts, chapter 1199, section 94, subsec-  
35 tions 1, 2, and 4, are amended to read as follows:

1 1. A rule adopted, permit or order issued, or approval  
2 given under chapter 108, 109, 111, 112, 357A, 358A, 414, 427,  
3 455A, 467A, 467C, or 467D, before the effective date of this  
4 Act and in force just prior to the effective date of this  
5 Act, by the Iowa natural resources council or its director  
6 remains effective until modified or rescinded by action of  
7 the department of environmental-quality water, air and waste  
8 management or its executive director unless the rule, order,  
9 permit, or approval is inconsistent with or contrary to this  
10 Act.

11 2. A rule adopted, permit or order issued, or approval  
12 given by the state department of health or the commissioner  
13 of public health relating to private water supply systems,  
14 private sewage disposal systems, or water wells under chapter  
15 135, before the effective date of this Act and in force just  
16 prior to the effective date of this Act remains effective  
17 until modified or rescinded by action of the department of  
18 environmental-quality water, air and waste management or its  
19 executive director unless the rule, order, permit, or approval  
20 is inconsistent with or contrary to this Act.

21 4. A rule adopted, permit or order issued, or approval  
22 given by the environmental quality commission or the executive  
23 director of the department of environmental quality under  
24 chapter 455B, 455C, and section 427.1, subsection 32, before  
25 the effective date of this Act and in force just prior to  
26 the effective date of this Act remains effective until modified  
27 or rescinded by action of the water, air and waste management  
28 commission or its executive director unless the rule, order,  
29 permit, or approval is inconsistent with or contrary to this  
30 Act.

31 Sec. 26. 1982 Iowa Acts, chapter 1199, section 94, is  
32 amended by adding the following new subsection:

33 NEW SUBSECTION. The repeal of chapter 455A of the 1981  
34 Code does not legalize a structure, dam, obstruction, deposit,  
35 or excavation erected or made while that chapter was in effect.

## 1 EXPLANATION

2 This bill amends chapter 455B relating to the powers and  
3 duties of the department of water, air and waste management  
4 and makes corresponding amendments to the Code.

5 Section 1 strikes a limitation on the rule-making authority  
6 of the department which states that a rule adopted to carry  
7 out a federal regulation shall not become effective if the  
8 rule is more restrictive than required by the federal regula-  
9 tion unless the rule is approved by the general assembly.

10 Section 2 amends the definition of public water supply  
11 system to conform to federal law. The definitions of private  
12 water supply and private sewage disposal system are also  
13 amended to complement the definition of public water supply  
14 system.

15 Section 3 requires the commission to adopt minimum standards  
16 for private water supplies and private sewage disposal  
17 facilities.

18 Section 4 deletes a requirement that permits be issued  
19 for water distribution systems without departmental review,  
20 exempts private sewage disposal systems from permit require-  
21 ments, and replaces the term "water supply distribution sys-  
22 tem" with "public water supply system".

23 Section 5 restores the definition of flood plain to include  
24 areas of possible future flooding and expands the definitions  
25 of permit and permittee to include approvals of projects or  
26 activities on flood plains or floodways.

27 Section 6 strikes the definition of impounded or stored  
28 water which is not used in the chapter and is inconsistent  
29 with the concept of beneficial use.

30 Section 7 changes the time period covered by the plan for  
31 water allocation priorities and requires the department to  
32 undertake mapping of certain flood plains and floodways as  
33 proposed in a plan which the commission must adopt by January  
34 1, 1985.

35 Section 8 makes a technical correction by changing the

1 word "commissioner" to the word "commission".

2 Section 9 removes a requirement for a public hearing on  
3 an application for a permit to divert, pump, or take water  
4 and a requirement that the investigation of an application  
5 for the construction or maintenance of a structure, dam,  
6 obstruction, deposit, or excavation on a flood plain be based  
7 on its effect on the plan for water allocation priorities.

8 Section 10 corrects a grammatical error and provides that  
9 a permit to divert, withdraw or store water will remain an  
10 appurtenance to the land described in the permit through the  
11 date specified even if the permit or an extension of the per-  
12 mit is modified.

13 Sections 11 and 12 restrict internal reference to "this  
14 part" to certain sections relating to the withdrawal,  
15 diversion, or storage of water.

16 Section 13 specifically refers to the section under which  
17 water permits are issued.

18 Section 14 specifically identifies a "dam" and an "obstruc-  
19 tion" as items along with "structures", "deposits", and "exca-  
20 vations" which cannot be allowed to adversely affect a  
21 floodway. Also, the verb "permit" is included to parallel  
22 other language which makes it unlawful for a person "to suffer  
23 or permit" a prohibited flood plain project. The section  
24 also provides that the cost of abating a prohibited activity  
25 or construction, excavation or deposit is borne by the violator  
26 and that an obstruction, dam, excavation or deposit in an  
27 agricultural area established under chapter 93A (land use)  
28 is not exempt from regulation.

29 Section 15 strikes the word "due" from the term "due no-  
30 tice". The term "due notice" is no longer defined in the  
31 chapter.

32 Section 16 restores the date "April 16, 1949" to section  
33 455B.277 to avoid confusion as to which flood control works  
34 are subject to design, construction and operation require-  
35 ments. The term "department" is substituted for the term



1 "commission" in the section.

2 Section 17 authorizes the adoption of a schedule of ap-  
3 plication fees sufficient to pay all or part of the costs  
4 of the permit process. The section also specifies that public  
5 notice of a decision to issue a permit should be given par-  
6 ticularly to persons who may be adversely affected by the  
7 permitted project or activity.

8 Section 18 authorizes the department to request legal ser-  
9 vices from the attorney general when necessary to obtain com-  
10 pliance with chapter 455B and its rules and orders, not only  
11 after an order has been issued by the commission.

12 Sections 19, 20 and 21 make corrections to the hazardous  
13 waste law adopted in 1981. References to department of  
14 environmental quality and environmental quality commission  
15 are changed or deleted.

16 Sections 22, 23, 24, and 25 correct references to the Iowa  
17 natural resources council and the department of environmental  
18 quality in chapter 93A (land use), section 467D.6, and 1982  
19 Iowa Acts, chapter 1199, section 94.

20 Section 26 provides that the repeal of chapter 455A of  
21 the 1981 Code does not legalize a structure, dam, obstruction,  
22 deposit, or excavation erected or made improperly or illegally  
23 while the chapter was in effect.

24 This bill takes effect July 1 following its enactment.

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PROPOSED SENATE/HOUSE FILE \_\_\_\_\_

BY (PROPOSED COMMITTEES ON  
NATURAL RESOURCES BY  
WATER STUDY SUBCOMMITTEE  
BILL)

Passed Senate, Date \_\_\_\_\_ Passed House, Date \_\_\_\_\_

Vote: Ayes \_\_\_\_\_ Nays \_\_\_\_\_ Vote: Ayes \_\_\_\_\_ Nays \_\_\_\_\_

Approved \_\_\_\_\_

## A BILL FOR

1 An Act relating to procedures, forms, and fees for permits and  
2 conditional permits issued by the department of water, air  
3 and waste management.

4 BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF IOWA:

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1 Section 1. Section 455B.105, Code 1983, is amended by  
2 adding the following new subsection:

3 NEW SUBSECTION. a. Adopt, by rule, procedures and forms  
4 necessary to implement the provisions of this chapter relating  
5 to permits or conditional permits. The commission may also  
6 adopt, by rule, a schedule of fees for permit and conditional  
7 permit applications and a schedule of fees which may be  
8 periodically assessed for administration of permits and  
9 conditional permits. In determining the fee schedules, the  
10 commission shall consider:

11 (1) The reasonable cost to the department of reviewing  
12 applications and issuing, implementing, and enforcing permits  
13 and conditional permits, excluding court costs associated  
14 with enforcement actions.

15 (2) The relative benefits to the applicant and to the  
16 public of permit and conditional permit review, issuance,  
17 and enforcement.

18 (3) The typical costs of the projects or activities for  
19 which permits or conditional permits are required.

20 b. The fees collected by the department under this  
21 subsection shall be remitted to the treasurer of state and  
22 credited to the general fund of the state.

23 Sec. 2. Section 455B.134, subsection 3, unnumbered  
24 paragraph 1, Code 1983, is amended to read as follows:

25 Grant, modify, or deny permits for the construction of  
26 all new or modified air contaminant sources and ~~for~~ related  
27 control equipment, for the operation of major stationary  
28 sources, and conditional permits for electric power generating  
29 facilities subject to chapter 476A and other major stationary  
30 sources, subject to the rules adopted by the commission.

31 The department shall furnish necessary application forms for  
32 such permits.

33 Sec. 3. Section 455B.173, subsection 5, Code 1983, is  
34 amended by striking the subsection.

35 Sec. 4. Section 455B.278, subsection 1, Code 1983, is

1 amended to read as follows:

2 1. The commission shall adopt, modify, or repeal rules  
3 establishing procedures by which permits required under this  
4 part shall be issued, suspended, revoked, modified, or denied.  
5 The procedures shall include provisions for application, an  
6 ~~application-fee-sufficient-to-pay-the-administrative-costs~~  
7 ~~of-the-permit-process,~~ public notice and opportunity for  
8 public hearing, and contested cases.

9 Sec. 5. Section 455B.305, Code 1983, is amended to read  
10 as follows:

11 455B.305 CERTIFICATION OF PLANS BY DIRECTOR. The executive  
12 director shall ~~certify-if-disposal-projects-operated-or-planned~~  
13 ~~to-be-operated-by-or-for-cities,-counties-and-those-operated~~  
14 ~~by-private-agencies-meet-the-standards-provided-for-by-this~~  
15 ~~part-1-of-division-IV-and-the-rules-of-the-commission,-by~~  
16 ~~issuing-a-permit-for-existing-disposal-projects-which-fully~~  
17 ~~comply,-and-for-planned-sanitary-disposal-projects-whose-plans~~  
18 ~~fully-comply,-with-all-provisions-of-said-part-and-rules~~  
19 ~~issued-pursuant-thereto.--Permits-shall-be-issued-for-existing~~  
20 ~~disposal-sites-which-have-not-met-all-the-provisions-of-said~~  
21 ~~part-and-rules-issued-pursuant-thereto,-if-a-comprehensive~~  
22 ~~plan-for-compliance-within-the-time-limitations-required-by~~  
23 ~~said-part-is-developed-by-a-city,-county-or-private-agency~~  
24 ~~and-is-approved-by-the-executive-director.--Every-city-or~~  
25 ~~county-of-this-state-and-every-private-agency-involved-in~~  
26 ~~the-final-disposal-of-solid-waste-shall-qualify-for-a-permit~~  
27 ~~by-the-first-of-July-1975-or-be-subject-to-such-legal-actions~~  
28 ~~authorized-by-section-455B-307~~ issue, revoke, suspend, modify,  
29 or deny permits for the construction and operation of sanitary  
30 disposal projects.

31 Permits A permit shall be issued ~~without-fee~~ by the  
32 executive director or at ~~his-or-her~~ the executive director's  
33 direction, by a local board of health, for each sanitary  
34 disposal project operated in this state. ~~Such-permits~~ The  
35 permit shall be issued in the name of the city or county or,

1 where applicable, in the name of the public or private agency  
2 operating ~~such~~ the project. Each sanitary disposal project  
3 shall be inspected annually by the department or a local board  
4 of health. The permits issued pursuant to this section shall  
5 be in addition to any other licenses, permits or variances  
6 authorized or required by law, including, but not limited  
7 to, the provisions of chapter 358A. A permit may be suspended  
8 or revoked by the executive director if a sanitary disposal  
9 project is found not to meet the requirements of ~~the-provisions~~  
10 ~~of~~ part 1 of this division or rules issued under part 1 of  
11 this division. The suspension or revocation of a permit may  
12 be appealed to the commission.

13 Sec. 6. Section 455B.334, Code 1983, is amended to read  
14 as follows:

15 455B.334 WASTE DISPOSAL SITE. The commission may approve  
16 or prohibit the establishment and operation of a nuclear waste  
17 disposal site in this state by a private person. In  
18 determining whether to grant or deny a ~~license~~ permit to  
19 establish and operate a nuclear waste disposal site, the  
20 commission shall consider the need for a nuclear waste disposal  
21 site and the existing physical conditions, topography, soils  
22 and geology, climate, transportation, and land use at the  
23 proposed site. If the commission decides to issue a ~~license~~  
24 permit to establish and operate a nuclear waste disposal site,  
25 it shall establish, by rule, standards and procedures for  
26 the safe operation and maintenance of the proposed site.  
27 The commission shall also require the ~~licensee~~ permittee to  
28 provide a sufficient surety bond or other financial commitment  
29 to insure the perpetual maintenance and monitoring of the  
30 nuclear waste disposal site.

31 Sec. 7. Section 455B.335, subsections 1 and 2, Code 1983,  
32 are amended to read as follows:

33 1. Shall enforce any rules adopted under ~~the-provisions~~  
34 ~~of~~ this part 2 of division IV and furnish a copy of ~~such~~ the  
35 rules to each applicant for ~~any-license~~ a permit required

1 under said this part.

2 2. May ~~license~~ issue a permit to any person transporting,  
3 handling, or storing any radioactive material under rules  
4 adopted by the commission.

5 Sec. 8. Section 455B.415, subsection 1, Code 1983, is  
6 amended to read as follows:

7 1. Except as provided in subsections 2 and 4, a person  
8 shall not construct or operate a facility for the treatment,  
9 storage or disposal of a hazardous waste listed under section  
10 455B.412, subsection 2 unless the owner or operator has  
11 obtained a permit for the facility from the executive director.

12 Sec. 9. Section 455B.148, Code 1983, is repealed.

13 EXPLANATION

14 This bill establishes uniform authority for the issuance  
15 of permits and the collection of fees for permits issued by  
16 the department of water, air and waste management. The bill  
17 authorizes, but does not require, the water, air and waste  
18 management commission to establish fee schedules for permits  
19 issued by the department. Current law requires fees for  
20 wastewater, water withdrawal, flood plain construction, and  
21 water supply permits, prohibits fees for solid waste disposal  
22 permits, authorizes fees for air pollution sources, and is  
23 silent on fees for nuclear waste and hazardous waste  
24 facilities.

25 The bill also provides that a permit is required before  
26 construction of a hazardous waste facility and that major  
27 stationary sources (air pollution sources which emit or have  
28 the potential to emit one hundred tons or more of air pollutant  
29 per year) are subject to operating conditions in permits.

30 The bill takes effect July 1 following its enactment.

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PROPOSED SENATE/HOUSE FILE \_\_\_\_\_

BY (PROPOSED COMMITTEES ON  
NATURAL RESOURCES BY WATER  
STUDY SUBCOMMITTEE BILL)

Passed Senate, Date \_\_\_\_\_ Passed House, Date \_\_\_\_\_  
Vote: Ayes \_\_\_\_\_ Nays \_\_\_\_\_ Vote: Ayes \_\_\_\_\_ Nays \_\_\_\_\_  
Approved \_\_\_\_\_

## A BILL FOR

1 An Act relating to the permit and enforcement authority of the  
2 department of water, air and waste management for public  
3 water supply systems.

4 BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF IOWA:

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1 Section 1. Section 455B.174, subsection 4, unnumbered  
2 paragraph 1, Code 1983, is amended to read as follows:

3 Approve or disapprove the plans and specifications for  
4 the construction of disposal systems or public water supply  
5 ~~distribution~~ systems except for those sewer extensions and  
6 water supply distribution system extensions which are reviewed  
7 by a city or county public works department as set forth in  
8 section 455B.183. The executive director shall issue, revoke,  
9 suspend, modify or deny permits for the operation,  
10 installation, construction, addition to or modification of  
11 any disposal system or public water supply ~~distribution~~ system  
12 except for sewer extensions and water supply distribution  
13 system extensions which are reviewed by a city or county  
14 public works department as set forth in section 455B.183.  
15 The executive director shall also issue, revoke, suspend,  
16 modify or deny permits for the discharge of any pollutant.  
17 The permits shall contain conditions and schedules of  
18 compliance as necessary to meet the requirements of this part  
19 of this division and the federal Water Pollution Control Act.  
20 A permit shall not be issued to operate or discharge from  
21 any disposal system unless the conditions of the permit assure  
22 that any discharge from the disposal system meets or will  
23 meet all applicable state and federal water quality standards  
24 and effluent standards and the issuance of the permit is not  
25 otherwise prohibited by the federal Water Pollution Control  
26 Act. All applications for discharge permits are subject to  
27 public notice and opportunity for public participation  
28 including public hearing as the commission may by rule require.  
29 The executive director shall promptly notify the applicant  
30 in writing of the executive director's action and, if the  
31 permit is denied, state the reasons for denial. The applicant  
32 may appeal to the commission from the denial of a permit or  
33 from any condition in any permit if the applicant files notice  
34 of appeal with the executive director within thirty days of  
35 the notice of denial or issuance of the permit. The executive



1 director shall notify the applicant within thirty days of  
2 the time and place of the hearing.

3 Sec. 2. Section 455B.175, unnumbered paragraph 1, Code  
4 1983, is amended to read as follows:

5 If there is ~~conclusive~~ substantial evidence that any person  
6 has violated or is violating any provision of this part of  
7 this division, or of any rule or standard established or  
8 permit issued pursuant thereto; then:

9 Sec. 3. Section 455B.183, Code 1983, is amended to read  
10 as follows:

11 455B.183 WRITTEN PERMITS REQUIRED. It ~~shall-be~~ is unlawful  
12 to carry on any of the following activities without first  
13 securing a written permit from the executive director, or  
14 from a city or county public works department if ~~such-legal~~  
15 the public works department reviews the activity under this  
16 section, as required by the commission:

17 1. The construction, installation or modification of any  
18 disposal system or public water supply ~~distribution~~ system  
19 or part thereof or any extension or addition thereto except  
20 those sewer extensions and water supply distribution system  
21 extensions that are subject to review and approval by a city  
22 or county public works department pursuant to this section.  
23 A permit shall be issued for the construction, installation  
24 or modification of a public water supply ~~distribution~~ system  
25 or part of a system if a qualified, registered engineer  
26 certifies to the commission that the plans for the system  
27 or part of the system meet the requirements of federal law  
28 or regulations. The permit shall state that approval is based  
29 only upon the engineer's certification that the system's  
30 design meets the requirements of all applicable federal laws  
31 and regulations.

32 2. The construction or use of any new point source for  
33 the discharge of any pollutant into any water of the state.

34 3. The operation of any waste disposal system or public  
35 water supply ~~distribution~~ system or any part of or extension

1 or addition to such system. This provision ~~shall~~ does not  
2 apply to any pretreatment system the effluent of which is  
3 to be discharged directly to another disposal system for final  
4 treatment and disposal.

5 Upon adoption of standards by the commission pursuant to  
6 section 455B.173, subsections 7 to 9, plans and specifications  
7 for sewer extensions and water supply distribution system  
8 extensions covered by this section shall be submitted to the  
9 city or county public works department for approval if the  
10 local public works department employs a qualified, registered  
11 engineer who reviews the plans and specifications using the  
12 specific state standards known as the Iowa Standards for Sewer  
13 Systems and the Iowa Standards for Water Supply Distribution  
14 Systems that have been formulated and adopted by the commission  
15 pursuant to section 455B.173, subsections 7 to 9. The  
16 reviewing engineer shall be a full-time employee of the  
17 governmental subdivision and the qualifications of that  
18 engineer shall be submitted to the executive director or ~~his~~  
19 the executive director's designee for approval prior to issuing  
20 written permits. The local agency shall issue a written  
21 permit to construct if all of the following apply:

22 a. The submitted plans and specifications are in  
23 substantial compliance with departmental rules and the Iowa  
24 Standards for Sewer Systems and the Iowa Standards for Water  
25 Supply Distribution Systems.

26 b. The extensions primarily serve residential consumers  
27 and will not result in an increase greater than five percent  
28 of the capacity of the treatment works or serve more than  
29 two hundred fifty dwelling units or, in the case of an  
30 extension to a water supply distribution system, ~~such the~~  
31 extension will have a capacity of less than five percent of  
32 ~~such the~~ system or will serve fewer than two hundred fifty  
33 dwelling units, ~~and~~.

34 c. The proposed sewer extension will not exceed the  
35 capacity of any treatment works which received a state or

1 federal monetary grant after 1972<sup>+</sup>-and.

2 d. The proposed water supply distribution system extension  
3 will not exceed the production capacity of any public water  
4 supply ~~distribution~~ system constructed after 1972.

5 After issuing a permit, the city or county public works  
6 department shall notify the executive director of such issuance  
7 by forwarding a copy of the permit to the executive director.  
8 In addition, the local agency shall submit quarterly reports  
9 to the executive director including such information as  
10 capacity of local treatment plants and production capacity  
11 of public water supply ~~distribution~~ systems as well as other  
12 necessary information requested by the executive director  
13 for the purpose of implementing this chapter.

14 Plans and specifications for all other waste disposal  
15 systems and public water supply ~~distribution~~ systems, including  
16 sewer extensions and water supply distribution system  
17 extensions not reviewed by a city or county public works  
18 department under this section, shall be submitted to the  
19 department before a written permit may be issued. The  
20 construction of any such waste disposal system or public water  
21 supply ~~distribution~~ system shall be in accordance with  
22 standards formulated and adopted by the commission pursuant  
23 to section 455B.173, subsections 7 to 9, or otherwise approved  
24 by the department. If it is necessary or desirable to make  
25 material changes in such the plans or specifications, revised  
26 plans or specifications together with reasons for the proposed  
27 changes must be submitted to the department for a supplemental  
28 written permit.

29 Prior to the adoption of statewide standards, the department  
30 may delegate the authority to review plans and specifications  
31 to those governmental subdivisions if in addition to compliance  
32 with subsection 3 ~~that~~ the governmental ~~subdivision~~-agrees  
33 subdivisions agree to comply with all state and federal  
34 regulations and ~~submits-a-plan~~ submit plans for the review  
35 of plans and specifications including a complete set of local

1 standard specifications for such improvements.

2 The executive director may suspend or revoke delegation  
3 of review and permit authority after notice and hearing as  
4 set forth in chapter 17A if the executive director determines  
5 that a city or county public works department has approved  
6 extensions which do not comply with design criteria, which  
7 exceed the capacity of waste treatment plants or the production  
8 capacity of public water supply ~~distribution~~ systems or which  
9 otherwise violate state or federal requirements.

10 The department shall exempt any public water supply system  
11 from any requirement respecting a maximum contaminant level  
12 or any treatment technique requirement of an applicable  
13 national drinking water regulation ~~insofar as~~ if these  
14 regulations apply to contaminants which the commission  
15 determines are harmless or beneficial to the health of  
16 consumers, ~~when~~ and if the owner of a public water supply  
17 system determines that funds are not reasonably available  
18 to provide for controlling amounts of those contaminants which  
19 are harmless or beneficial to the health of consumers.

20 EXPLANATION

21 This bill replaces references to "water supply distribution  
22 system" with the term "public water supply system" to eliminate  
23 a discrepancy between the authority of the department of  
24 water, air and waste management to adopt rules for the issuance  
25 of permits for "public water supply systems" in section  
26 455B.173 and the authority to issue permits for "water supply  
27 distribution systems" in sections 455B.174 and 455B.183.

28 The bill also corrects erroneous references to "director"  
29 rather than to "executive director" which is the correct title  
30 for the chief administrative officer of the department.

31 The bill also changes the standard for determining when  
32 enforcement action by the executive director may commence.  
33 The term "conclusive" is changed to the term "substantial"  
34 as an adjective to describe the "evidence" required to show  
35 that a violation has occurred or is occurring.

36 The bill takes effect July 1 following its enactment.