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# **WATER QUALITY MANAGEMENT PLANNING PROCESS**

**JUNE, 1976 - NOVEMBER, 1978**

**○ APPROVED WORK PLAN ○**



**PREPARED BY  
THE  
IOWA DEPARTMENT OF ENVIRONMENTAL QUALITY  
WATER QUALITY MANAGEMENT DIVISION  
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## FOREWARD

When Congress passed the Federal Water Pollution Control Act Amendments of 1972, it recognized that some water quality control problems are so complex or severe that they can't be solved by using technology alone. Congress saw that new concepts and techniques would be needed to manage and control water quality efficiently. Incorporated under Section 208 of the Act was the Statewide Water Quality Management Process. This process gives the U.S. Environmental Protection Agency (EPA), the States and local governments a planning tool with great potential effectiveness in the campaign for clean water. Incorporated into the pages that follow is the detailed work plan for the water quality management planning for the State of Iowa. The planning efforts described herein are designed to fulfill the intent of Section 208 of the Act at the end of a two-year planning period.

The planning process will assist in designing management structures to insure that the plan, once completed, is carried out effectively. The result will be a two-pronged approach to water quality problems - one stresses systematic planning to find workable solutions; the other stresses follow-up management to insure that these solutions are carried out properly.

Overall statewide planning will bring together various aspects of water pollution control. It considers the treatment of municipal and industrial wastes. Statewide planning is also an effective mechanism for dealing with nonpoint sources of pollution. Specifically, statewide planning provides a structure with which to coordinate the water programs with other environmental activities. Statewide planning is intended to involve local, regional and State officials and agencies as fully as possible.

Members of various State, regional, and local agencies will take part in the preparation of the Statewide 208 plan. State agencies will oversee planning at the local level to make sure that it's conducted in accordance with the State's water pollution control priorities and goals. Once a 208 plan has been completed and approved, State agencies help to administer the plan by monitoring the progress of the management agencies.



TABLE OF CONTENTS

<u>Work Plan</u>	<u>Page</u>
Activity Series 100 Public Participation	1
Work Element 101 Organize Public Participation Structure	3
Work Element 102 Administration of Public Participation	16
Work Element 103 Utilizing Public Participation	19
Activity Series 200 Water Quality Standards Review & Revision	22
Work Element 201 Beneficial Water Use Designation	24
Work Element 202 Water Quality Criteria Review and Revision	27
Work Element 203 Standard Implementation Policies & Procedures	30
Work Element 204 Standards Hearing and Promulgation	32
Activity Series 300 Wasteload Allocation Verification	35
Work Element 301 Low-Flow Characteristics	39
Work Element 302 Water Quality Model Verification	42
Activity Series 400 Water Quality Assessment	45
Work Element 401 Data Collection and Compilation	46
Work Element 402 Annual Water Quality Report	48
Work Element 403 Identification of Impact of Non-Point Pollution on Iowa's Waters	50

Work Element 404	53
Duration and Frequency of Non-Point Source Problem Conditions	
Work Element 405	55
Correlation Between Recorded Meteorological Events and Non-Point Source Related Water Quality Problems	
Work Element 406	57
Priority Criteria Development	
Work Element 407	59
Development of Indicator Parameters for Monitoring Non-Point Source Effects	
Activity Series 500	61
Nonpoint Pollution Planning	
Work Element 501	63
Computer Analysis of Conservation Needs Inventory (CNI) Data	
Work Element 502	66
Data Gathering	
Work Element 503	69
Technical Assessment	
Work Element 504	72
Classification Map	
Work Element 505	76
Selection of Detailed Subarea Watersheds	
Work Element 506	79
Data Analysis of Detailed Subarea Watersheds	
Work Element 507	84
Non-Point Pollution Control Alternatives	
Work Element 508	89
Mine Assessment and Control Needs	
Work Element 509	94
Non-Point Source Control Strategy Development	
Work Element 510	98
Prioritize Non-Point Control Efforts	
Work Element 511	100
SCS Consultation	
Work Element 512	101
Administration	

Activity Series 600	103
Residual Waste Disposal	
Work Element 601	105
Program Management	
Work Element 602	107
Development of Rules and Guidelines for Disposal of Sewage Sludge in Sanitary Landfills	
Work Element 603	109
Survey of Wastewater Treatment Plants	
Work Element 604	112
Development of Rules and Guidelines Relating to the Utilization of Sewage Sludge on Cropland	
Work Element 605	116
Development of Rules and Guidelines for the Disposal of Sewage Sludge on Land for Disposal Only	
Work Element 606	119
Industrial Sludge Disposal	
Activity Series 700	122
Regional Operation and Maintenance	
Work Element 701	123
Initial Study Organization	
Work Element 702	125
Compile Background Information	
Work Element 703	128
Inventory of Existing Wastewater Facilities	
Work Element 704	130
Evaluate Existing O & M Procedures	
Work Element 705	132
Develop Alternative Plans and Guidelines	
Work Element 706	134
Recommended Plan and Guidelines	
Activity Series 800	136
Program Plan Development	
Work Element 801	138
Priority Listing of Identified Programs or Projects	
Work Element 802	139
Public Review of Preliminary Priority List	

Work Element 803 Outlines and Priorities for all Projects	141
Work Element 804 Distribute Listing for Comments	143
Work Element 805 Final List and Priorities	145
Activity Series 900 Statewide Water Quality Management Plan	147
Work Element 901 Prepare Outline for Preparation of Final Plan	148
Work Element 902 Draft Water Quality Management Plan	153
Work Element 903 Review of Water Quality Management Plans of Designated 208 Agencies	159
Work Element 904 Final Water Quality Management Plan	161



## ACTIVITY SERIES 100

## PUBLIC PARTICIPATION

The purpose of public participation in the water quality management process is to provide local input into the continuing planning process and thereby create a plan sensitive to local needs and values. In order to accomplish this purpose an organization of citizens advisory committees has been established as a mechanism for involving the public. Through the public participation organizations, the public will provide input on issues, problems, and alternatives. Periodic news releases and newsletters will also be used. The public includes all interested or affected parties outside the DEQ and the Iowa Department of Soil Conservation.

The public involvement structure being used began at the local level. Through efforts of DSC, local County Resource Coordinating Committees (CRCC) were established for each county. The CRCC's represent soil conservationists, manufacturers, cities, interested groups, and the general public. From each CRCC, one person was chosen to serve on the Conservancy District Advisory Committee (CDAC). There are six CDACs within Iowa, the boundaries of which correspond to the six river basin planning areas. Each CDAC then selected ten members to serve on its corresponding Basin Advisory Committee (BAC). An additional ten members were selected to serve on each BAC from the various Office of Planning & Programming areawide planning organizations located in each respective river basin. From each of the six twenty-member BACs, members were selected to serve on a Statewide Policy Advisory Committee (SPAC). SPAC consists of two members from each of the six CDACs, one member from each of the 17 areawide planning organizations, plus nine members representing the public at-large, selected by the Iowa Water Quality Commission (IWQC). Each BAC, as well as the SPAC, has a majority representation of chief local elected officials.

The SPAC will advise the IWQC on broad policy matters regarding the issues and the problems the public has related. The BACs are used to receive information regarding planning outputs and present them to their parent organizations. Any comments received can then be forwarded to SPAC for consideration in the statewide planning efforts. BACs will consider the planning outputs as they apply to their specific river basin and relay the issues and problems of the basin to SPAC.

DSC will utilize CRCCs, CDACs, and the Conservancy District Technical Advisory Committee to obtain input and data on various phases of the nonpoint source planning efforts. The use of these advisory committees will enable DSC to incorporate local problems, goals and objectives in their completion of the nonpoint source planning efforts.

In addition to utilizing the BACs and SPAC, DEQ will also be providing the general public with notices of legal proceedings and public hearings.

As mentioned, the term "public" is all-encompassing. However, special coordination and information exchange will be provided to designated planning agencies and other agencies or contractors that have been delegated specific planning responsibilities.

## WORK ELEMENT 101

## Organize Public Participation Structure

OBJECTIVE

To establish a structure for public participation in the statewide water quality management planning process.

DESCRIPTION OF WORK

In the development of a public participation structure, existing organizations will be used as much as possible. However, in order to provide total public involvement, it became necessary to start at the local level and construct an organizational structure to involve more publics.

The State was divided into six major planning areas, corresponding to the river basins of Iowa. For each of these basins, an advisory committee was to be formed. From these six Basin Advisory Committees members were chosen to serve on a Statewide Policy Advisory Committee.

Each Basin Advisory Committee (BAC) is to consist of 10 members elected from the respective Conservancy District Advisory Committee and 10 members from the areawide planning organizations within the boundaries of the basin planning areas. Areawide planning organizations as used in this discussion include the 16 Office of Planning and Programming regional planning agencies plus the Omaha-Council Bluffs Metropolitan Planning Agency (MAPA). Each areawide planning organization will provide one of their BAC members to serve on the Statewide Policy Advisory Committee (SPAC) making a total of 17 members from these organizations on SPAC. SPAC will also consist of 12 members from the six Conservancy District Advisory Committees. Certain restrictions will be placed on the organizations to insure adequate representation plus the required number of chief local elected officials.

In providing the conservancy district membership, ninety-nine county resource coordinating committees will be organized. These committees will allow a broad-based local representation. Six conservancy district advisory committees (CDACs) will be comprised of one selected member representing each of the local county resource coordinating committees from any counties wholly or partially contained within the respective conservancy districts. From each of the six (6) CDACs ten (10) members will be selected to serve on the respective BAC. Further from each of the six (6) CDACs, two (2) BAC members shall be selected to serve on the SPAC.

SPAC will also consist of nine members at-large selected by the Iowa Water Quality Commission. Various agencies, special interest groups, and citizens will be contacted to solicit the names of individuals interested in serving on SPAC. The Commission will review the listing of names obtained and, considering those members already selected by the CDACs and areawide planning organizations, select members that will involve other areas of the public or interest groups, thereby attempting to "round-out" the SPAC by involving all possible areas of interest in the State.

The members selected are shown on the following pages.

## DES MOINES BASIN ADVISORY MEMBERS

Conservancy District Members

Hubert R. Tait  
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RR 1  
Gowrie, IA 50543

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Lee Soil Conservation Dist. Comm.  
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Argyle, IA 52619

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Mayor of Bagley  
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E. Leo Stephas  
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\*Adrian Brinck  
West Point, IA 52656

\*Norm Kading  
Casey, IA 50048

\*Herbert S. Conlin  
City Hall  
Fort Dodge, IA 50501

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Belle Plaine, IA 52208

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Harpers Ferry, IA 52146

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 DM - DES MOINES

C.D.C. - Appointed through Conservancy District Committee  
 R.P.A. - Appointed through Regional Planning Agency  
 W.Q.C. - Appointed by Water Quality Commission

LIST OF TASKS

1. Contact all Areawide Planning Organizations.
  - a) Send letter to all Areawide Planning Organizations requesting that members be appointed to the BAC and SPAC. Explain the requirements for members and the number of members needed.
2. Contact all Soil Conservation Districts.
  - a) Explain the need for organization of the public participation structure and the county resource coordinating committees. Enter into a memo of understanding with respective Soil Conservation Districts within each conservancy district.
3. CRCC Meetings
  - a) Establish and hold CRCC meetings in all counties. Explain the requirements of the public participation structure for membership to the CDAC. Each CRCC to select representatives to serve on their respective CDAC.
4. CDAC Meetings
  - a) Hold meetings of each CDAC to select 10 members to serve on its respective BAC, two of which will also be selected to serve on the SPAC.
5. Members-at-Large
  - a) The Iowa Water Quality Commission will select the nine members to serve at-large on SPAC.
6. Advisory Committees Established
  - a) Through the areawide planning organizations, the CDACs, and the Iowa Water Quality Commission all the members are to be appointed to the six BACs and the SPAC.

WORK PRODUCTS AND SCHEDULES

1. Areawide Planning Organizations
    - a) Send letters June 30, 1976
    - b) Member selection July 1, 1976 - August 30, 1976
- Work Product  
 BAC and SPAC Members Named August 30, 1976

## 2. Conservancy District Advisory Committees

- a) Contact soil conservation districts July 1, 1976
- b) Hold CRCC meetings. August 16, 1976
- c) Hold CDAC meetings. August 30, 1976

Work Product

BAC and SPAC members named

August 30, 1976

## 3. Members-at-Large

- a) Prepare list of individuals to be considered July 1, 1976 - August 16, 1976
- b) Send list to Iowa Water Quality Commission August 16, 1976
- c) Iowa Water Quality Commission selects members September 1, 1976

Work Product

SPAC members at-large selected

September 1, 1976

RESPONSIBILITY

- 1. Contacting areawide planning organizations. DEQ
- 2. Contacting soil conservation districts. DSC
- 3. Conducting CRCC meetings. DSC
- 4. Holding CDAC meetings. DSC
- 5. Selection of members-at-large. DEQ

COORDINATION

This work element must be completed to provide a basis for this activity series.

## WORK ELEMENT 102

## Administration of Public Participation

OBJECTIVE

To administer, coordinate and assist in the activities of the public participation committees.

DESCRIPTION OF WORK

Upon the selection of the members for the BACs and SPAC, DEQ will provide the members with information and materials explaining their function in the 208 planning efforts. DEQ will attempt to train the members in methods of involving the public. DEQ will also provide administrative support in the form of expense reimbursement for the members. Continuing efforts will be provided the advisory committees in the conduct and organization of any meeting. DSC will coordinate with the CRCCs and CDACs in areas of nonpoint source planning efforts.

LIST OF TASKS

1. Committee Coordination and Assistance
  - a) DEQ and DSC will coordinate the initial meetings of the BACs and SPAC through an orientation-training session. This initial meeting will provide members information on conducting their meetings and assist them in selection of any officers for each committee.
  - b) DEQ and DSC will develop a time frame outlining required BACs and SPAC efforts.
  - c) Meetings of BACs and SPAC may be called from time to time for each committee as the committee members see fit. Assistance at some of these meetings will be provided by DEQ and DSC technical or information staff. It is expected that the BACs will meet from 6 to 8 times per year, depending on the necessity for their input on planning decisions. SPAC will meet 8 to 10 times per year, often with the Iowa Water Quality Commission. Continued assistance to these committees will be provided by attending various meetings, presenting materials to them, and answering procedural, technical, or legal questions that they may have.
  - d) DSC will coordinate and assist the CRCCs and CDACs throughout the nonpoint planning efforts. These committees will be used to provide information to DSC on localized nonpoint pollution problems. DSC will provide these advisory committees with various planning outputs relating to nonpoint planning, and will utilize these committees to assist in determining local goals and objectives.



## 2. Responsibility of Members

- a) The advisory committee members will be presented with a statement of charge, outlining their responsibilities in forming channels of communication from and between the public. BAC members will be informed of their role as a link between the public and SPAC. SPAC will be charged with the responsibility of receiving BAC and other public inputs on issues, problems, and planning alternatives. SPAC will make the planning inputs to DEQ and will advise the Water Quality Commission on policy matters.

## 3. Reimbursement Procedures

- a) Committee members will be provided guidelines on the reimbursement of travel expenses to committee meetings. DEQ administrative staff will then coordinate the payment of these expenses.

## 4. Public Participation Manual

- a) A manual will be prepared to assist the committee members in understanding and fulfilling their responsibilities. They will also be provided booklets in which to retain future guidelines or planning outputs.

WORK PRODUCTS AND SCHEDULES

## 1. BAC and SPAC Coordination

<u>Work Product</u>	
Orientation Meeting	September 15, 1976

## 2. Responsibility of Members

<u>Work Product</u>	
Statement of Charge	September 15, 1976

## 3. Reimbursement Procedures

<u>Work Product</u>	
Expense Forms and Schedules	September 15, 1976

## 4. Public Participation Manual

<u>Work Product</u>	
Manual and Booklet	September 15, 1976

## 5. Committee Assistance

<u>Work Product</u>	
Guidance of Advisory Committees	- Continuous -
Schedule for BAC & SPAC Efforts	November 1, 1976

RESPONSIBILITY

- |                                    |             |
|------------------------------------|-------------|
| 1. Orientation meeting.            | DEQ and DSC |
| 2. Statement of charge.            | DEQ         |
| 3. Expense forms and schedules.    | DEQ         |
| 4. Manual and booklet.             | DEQ         |
| 5. Guidance of Advisory Committees | DEQ and DSC |

COORDINATION

This work element requires the completion of work element 101 and will be utilized as background for work element 103 and those of other activity series.

## WORK ELEMENT 103

## Utilizing Public Participation

OBJECTIVE

To establish and maintain communication with the BACs; SPAC; CRCCs; CDACs; other state, local and federal agencies; designated agencies; interested parties and the public concerning information and outputs from other activity series. To obtain public input and comment on issues, problems and policies which are developed during the planning process.

DESCRIPTION OF WORK

Various means of communication will be used in relaying information to the involved committees, agencies and other interested parties about issues, problems, and outputs developed during the planning process.

The BACs and SPAC will receive general information, outputs, or summaries of outputs, and information concerning required policy or program direction decisions. In accordance with the work plan schedule, BACs and SPAC will be expected to review and comment on information and outputs as appropriate and to make recommendations concerning policy and program direction decisions.

CRCCs and CDACs will be involved in the development and review of proposals throughout the nonpoint source planning efforts. These committees will provide DSC with comments and recommendations on issues, problems and alternatives. DSC will consult with these committees in developing and refining nonpoint source planning outputs.

Other advisory committees, state, local, and federal agencies, designated agencies, interested parties and the public will be afforded the opportunity to review and comment on outputs and/or summaries of outputs from the planning process.

Public hearings will also be involved in some of the work elements.

LIST OF TASKS

The list of tasks for this work element does not have specific outputs and schedules since the public involvement effort is a continuing work element. Each work element will discuss how public participation will be utilized in that particular work element.

## 1. Information

- a) Information may be one of three differing types: 1) information of a general nature used to inform, 2) information which requires review and comment, and 3) information requiring a decision on an issue, problem or alternative.
- b) All materials prepared pursuant to any work elements of the Continuing Planning Process for submission to the BACs or SPAC will be coordinated through DEQ.
- c) Materials prepared under contract for any of the work elements will receive DEQ staff review prior to its release to other parties; except that DSC may present information and proposals to CRCCs and CDACs for local input without prior DEQ review.

## 2. Information Distribution

- a) Because much of the information generated by completing the various work elements will be of a technical nature, summaries of these outputs will be prepared to be mailed along with the reports to the BACs and SPAC, so the members will more fully understand the output and how it relates to the overall water quality management plan.
- b) Information requests from other parties may be fulfilled by direct mailing of outputs or summaries of outputs, by use of public information materials, by establishing locations where materials may be reviewed, or by other similar methods.

## 3. Mailing List

- a) A mailing list will be maintained of all BAC and SPAC members as well as other interested parties which desire information on the Statewide 208 planning efforts. It is expected that as the planning process continues, additional publics will be requesting information. The mailing list will be periodically updated in order to provide new parties the necessary information.

## 4. Information Coordination

- a) Requests for information on technical outputs of the planning process may be received from time to time. DEQ will advise the requesting party as to which person or agency to contact.

## 5. Public Information Materials

- a) Materials will be prepared and distributed to the public for their information in following the planning process and making them aware of factors affecting the planning. These materials may be in the form of newsletters, news releases, and brochures relating to the water quality management plan.

## 6. Public Hearings and Legal Notices

- a) The public will be informed of any public hearings that may be required on outputs of the work elements or drafts of portions of the final water quality management plan. Legal notices will also be used to inform the public.

### WORK PRODUCTS AND SCHEDULES

The items discussed under the list of tasks do not have specific schedules to which they may be attached. The work products will be a continuing effort throughout the planning process. Submission of the products and the schedules for such submissions are included in each work element to which they apply.

### RESPONSIBILITY

- |                                      |                             |
|--------------------------------------|-----------------------------|
| 1. Distribution of Information       | DEQ and DSC                 |
| 2. Information Summaries             | DEQ and DSC                 |
| 3. Mailing List                      | DEQ                         |
| 4. Information Coordination          | DEQ and DSC                 |
| 5. Public Information Materials      | DEQ and DSC                 |
| 6. Public Hearings and Legal Notices | Appropriate Regulatory Body |

### COORDINATION

This work element will be coordinated with all other work elements of the planning process. Specific coordination procedures are outlined in the other work elements themselves.

## ACTIVITY SERIES 200

## WATER QUALITY STANDARDS REVIEW &amp; REVISION

Water quality standards are the state's goals for water quality, and serve as one of the bases for the entire water quality management process. The regulatory programs - planning, permits, surveillance, and enforcement - are designed to achieve and maintain water quality at the level established in the standards.

Public law 92-500 sets as the National Goal - the achievement of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water, wherever attainable. The Act further requires that the states review their water quality standards at least every three years, and revise as appropriate to meet the National Goal. This therefore is the work plan for meeting that requirement.

The time schedule involved in this work plan is designed to meet the procedural and water quality management requirements of the Iowa water pollution control statute and Administrative Procedures Act, and Public Law 92-500 and appropriate Federal Regulations (CFR Parts 105, 120, and 130).

Water quality standards must be such as to protect the public health or welfare and enhance the quality of water. Standards must describe that water quality necessary to restore and maintain the chemical, physical, and biological integrity of the state's waters, and protect the beneficial uses. The existing and proposed standards consist of:

- I. Designation of beneficial uses of all streams and lakes. Designated beneficial water use is defined in CFR 120.2 as a classification of appropriate water use to be achieved and protected, and may include but is not limited to such uses as drinking water supply, industrial or agricultural water supply, navigation, recreation in or on the water, and protection and propagation of fish, shellfish, and wildlife.

The proposed review and revision will adhere to principles that result in:

- 1) achievement of the fishable, swimmable National Goal, where attainable;
- 2) at minimum, maintenance of existing designated uses, and upgrading, where appropriate, to reflect actual presently attained water use. Downgrade only if it has been demonstrated that existing designations are not attainable because of natural background conditions, irretrievable man-induced conditions, or that required effluent limitations more stringent than BPT/BAT would result in widespread adverse economic or social impact; and

- 3) assurance that the standards for given segments will permit attainment of standards on downstream segments.

- II. Specification of water quality criteria. Water quality criteria are those standards that are necessary requirements for maintaining a designated beneficial water use, and are stated in terms of qualitative and quantitative limits on various physical, chemical, biological, and radiological parameters of water quality.
- III. An implementing policy. This is the rationale and the technical methods that the state will employ in evaluating water quality and impact of pollution sources, relative to the standards; and the administrative procedures that will be used to control pollution sources, so as to meet the standards.
- IV. An antidegradation policy and implementation procedures. The antidegradation policy will provide that existing beneficial water uses and existing high quality waters be maintained and protected, and that water quality degradation which would interfere with or injure existing uses will not be allowable. Federal regulations provide that the state may choose (after intergovernmental coordination and public participation) to allow lowering of water quality as a result of necessary and justifiable economic or social development, so long as such degradation does not interfere with or injure existing beneficial water uses, and so long as the state achieves the highest statutory regulatory requirements for point sources, and feasible management and regulatory programs for nonpoint sources.
- V. Hearing and Promulgation Procedures. A draft of the beneficial water use designations will be completed by the end of October, 1976, and drafts of the water quality criteria revisions, implementation policy, and antidegradation policy procedures will be completed in December, 1976. Interim reports will be prepared for Commission, BAC, SPAC, and other interested parties consideration throughout the process, so that the Commission will be able to complete their consideration of the entire package in December, and call for a February, 1977, public hearing. The hearing process will be conducted in accordance with the State Administrative Procedures Act and CFR Part 105, and will include the necessary notification and legal publishing procedures, and evaluation and revision periods. The hearing and promulgation schedule provides for rules in effect in June, 1977.

As soon as the standards revisions become effective, they will be immediately employed in the ongoing wasteload allocation and discharge permit activities.

## WORK ELEMENT 201

## Beneficial Water Use Designations

OBJECTIVE

To establish the level of protection to be provided for each stream segment and lake in the State, by designating those segments and lakes for which the Recreation, Aquatic Life, Potable Water Supply, and General Criteria Classifications of water quality criteria will apply.

DESCRIPTION OF WORK

Existing designations for all rivers and lakes will be reviewed and will be revised if appropriate. A DEQ/State Conservation Commission joint staff task force will carry out the review and revision staff work, and will make recommendations to the Water Quality Commission. ISCC will be requested to assign staff from different areas of the state to work with DEQ regional and central office staff, to ensure familiarity with local fishing and recreation uses and physical conditions and characteristics throughout the state. Inasmuch as several local teams will be making subjective judgements, it is necessary that guidelines be established to ensure that the designations will be applied uniformly and consistently statewide. Prior to the review work, therefore, DEQ central office staff will prepare a strategy which will take into account the principles described in the forward to this Activity Series and will include definitions of the various beneficial water uses and guidelines for applying the use classifications to the segments. The guidelines will take into account specifics of water quality background, fishery habitat, physical suitability and present uses for fishing and recreation, existing water supply uses, etc.

Public and governmental comments from the 1973 Standards revision and 1975 basin plan hearings will be reviewed. DEQ planning, permits, and surveillance staff experience will be reviewed to identify questionable or erroneous designations discovered through experience in implementing the existing standards. The public, governmental, and staff comments will be evaluated and considered in preparing the strategy and reviewing and revising the designations.

LIST OF TASKS

1. Reach agreement with the State Conservation Commission for performing the interagency task force review and revision phase of the work.
2. Review the public and governmental comments related to beneficial use designations from the 1973 standards revision and 1975 Phase I Basin Plan hearings, and write a summary.



3. Obtain comments from DEQ planning and permits staff on problem areas and obvious designation errors in the existing standards, and write a summary.
4. Prepare river basin maps and illustrations for task force work tools.
5. Design the strategy for conducting the review and revision, and mail to the task force participants. Along with the work maps, the strategy will include definition of beneficial uses to be protected, guidelines to systematize the project so as to make the designations consistent statewide, and work schedules and itinerary.
6. Joint DEQ/ICC Regional/District staff teams will conduct the review and revision work in the DEQ central office and in the regional offices in Washington, Manchester, and Spencer, according to the strategy prepared in task 5. The task force teams will make revision recommendations for streams and lakes within their own jurisdictions.
7. The DEQ planning staff will assemble the Regional/District team recommendations and prepare a comprehensive statewide report, with the recommended designations in a format suitable for rules, and mail to the Water Quality Commission, BACs, SPAC, and other interested parties.

#### WORK PRODUCTS AND SCHEDULES

- |    |   |                            |
|----|---|----------------------------|
| 1. | DEQ-ICC Interagency Agreement           | July 1 - August 1, 1976    |
|    | <u>Work Product</u>                     |                            |
|    | a) Requests for participation mailed    | July 8, 1976               |
|    | b) Agreement confirmed                  | August 2, 1976             |
| 2. | Public and Governmental Comment Summary | July 1 - July 30, 1976     |
|    | <u>Work Product</u>                     |                            |
|    | Summary report                          | July 30, 1976              |
| 3. | DEQ Staff Assessment                    | July 6 - July 30, 1976     |
|    | <u>Work Product</u>                     |                            |
|    | Summary Report                          | July 30, 1976              |
| 4. | Prepare Maps                            | July 26 - August 13, 1976  |
|    | <u>Work Product</u>                     |                            |
|    | Maps                                    | August 13, 1976            |
| 5. | Design Strategy                         | August 2 - August 13, 1976 |
|    | <u>Work Product</u>                     |                            |
|    | Strategy Mailed                         | August 13, 1976            |

- |    |                                     |                                  |
|----|-------------------------------------|----------------------------------|
| 6. | Task Force Team Work                | September 1 - September 30, 1976 |
|    | <u>Work Product</u>                 |                                  |
|    | Team recommendations prepared       | September 30, 1976               |
| 7. | Designation Recommendations Report  | October 4 - October 29, 1976     |
|    | <u>Work Product</u>                 |                                  |
|    | a) First Draft Summary of Revisions | October 15, 1976                 |
|    | b) Draft of new statewide listing   | October 29, 1976                 |

#### RESPONSIBILITY

DEQ planning staff will be responsible for initiating the request for ICC participation, reviewing and summarizing public and governmental comments, preparing the work maps, preparing the strategy, coordinating and participating in the task force team work sessions, and preparing the statewide recommendations summary and stream designation list. DEQ regional staff will be responsible for participating in the task force team work sessions and for reviewing and correcting the statewide list. ICC will be responsible for coordinating the ICC staff schedules and itinerary, taking lead participation in designating recreation and aquatic life reaches, and reviewing and correcting the statewide list.

#### COORDINATION

The public, intergovernmental, and DEQ staff comments summaries and the task force strategy must be finished and available for inclusion in the status report called for in work element 202. The summary of designation revision recommendations and the draft statewide designation list must be finished and available for BACs, SPAC, and for the Commission when it considers the standards revision package on December 22, 1976.

## WORK ELEMENT 202

## Water Quality Criteria Review &amp; Revision

OBJECTIVE

To establish a set of water quality parameters and limits on those parameters that will define that water quality necessary to maintain and protect the beneficial water uses classified in Work Element 201.

DESCRIPTION OF WORK

The existing criteria will be reviewed, and will be revised, if appropriate. The review process will consist of a preliminary phase and a problem solving phase. In the preliminary phase, DEQ staff will review the public and governmental comments from the 1973 standards revision and 1975 basin plan hearings. DEQ regulatory program staff experience will also be reviewed to identify problem areas encountered in implementing the existing standards. The Administrator's "Quality Criteria for Water" and the EPA Primary Drinking Water Standards will be reviewed and compared to the existing standards, for preliminary determination of the adequacy of the parameters presently addressed and the adequacy of the limits on those parameters. A summary report will be prepared after the preliminary review.

In the second, or problem solving phase, it is intended that a sub-committee of the Commission review the preliminary report and actively participate in the study and resolution of problem areas, prior to full Commission consideration. This phase will, if necessary, include literature review and consultations with and technical assistance from experts from outside the Agency. This approach will permit work to go forward on preparation of a final draft, while allowing longer term evaluation of the thornier problem parameters for inclusion in later stages of the process.

LIST OF TASKS

1. Review the public and governmental comments on water quality criteria from the 1973 standards revision and 1975 basin plan hearings, and write a summary.
2. Review the EPA Administrator's "Quality Criteria for Water" and the EPA Primary Drinking Water Standards, and compare them with the existing state standards to determine whether the present list of parameters and the limits on those parameters are adequate, and write a summary.
3. Obtain DEQ staff comments on problems encountered in water quality planning and in issuing permits, caused by the standards criteria, and summarize.

4. Prepare a status report, to include the summaries resulting from tasks 1, 2 and 3 in this work element, and tasks 2, 3, and 5 in work element 201, and distribute to the Water Quality Commission Standards Sub-Committee, BACs, SPAC, and EPA.
5. The Commission will appoint a sub-committee to actively participate with the DEQ staff in reviewing and revising the standards. The sub-committee and staff will conduct literature review and consultation with outside experts, and revise the criteria. Distribute drafts to the Commission, BACs, SPAC, and EPA.
6. DEQ Water Quality Management and Compliance Divisions staff will review the existing standards copy format for legal requirements and readability, and revise as appropriate.

WORK PRODUCTS AND SCHEDULES

- |    |  |                                     |
|----|--|-------------------------------------|
| 1. | Public and Governmental Comments Summary       | July 7, 1976 - July 9, 1976         |
|    | <u>Work Product</u><br>Summary Report          | July 9, 1976                        |
| 2. | Review EPA Criteria                            | July 12, 1976 - July 23, 1976       |
|    | <u>Work Product</u><br>Summary Report          | July 23, 1976                       |
| 3. | DEQ Staff Assessment                           | July 12, 1976 - July 23, 1976       |
|    | <u>Work Product</u><br>Summary Report          | July 23, 1976                       |
| 4. | Status Report                                  | August 16, 1976 - August 31, 1976   |
|    | <u>Work Product</u><br>Report                  | August 31, 1976                     |
| 5. | Criteria Revision                              | July 28, 1976 - December 10, 1976   |
|    | <u>Work Product</u><br>Sub-Committee Appointed | July 28, 1976                       |
|    | Problem Parameters Identified                  | September 24, 1976                  |
|    | Tentative Recommendations Decided              | October 29, 1976                    |
|    | 1st Draft of Revisions                         | November 24, 1976                   |
|    | Draft in Rules Format                          | December 10, 1976                   |
| 6. | Standards Copy Format Revision                 | October 1, 1976 - November 24, 1976 |
|    | <u>Work Product</u><br>1st Draft               | October 29, 1976                    |
|    | 2nd Draft                                      | November 24, 1976                   |

RESPONSIBILITY

The DEQ planning staff will be responsible for all preliminary review work and draft writing. The Water Quality Commission Sub-Committee will be responsible for criteria problem solving and revision recommendations. The DEQ Compliance Division staff will be responsible for drafting rules format.

COORDINATION

Completion of the August 31 status report is dependent on completion and availability of the summaries produced in tasks 2, 3, and 5 of work element 201.

## WORK ELEMENT 203

## Standards Implementation Policies &amp; Procedures

OBJECTIVE

To explain the rationale used in developing the standards and to define the strategy that will be employed in regulating waste sources and monitoring water quality, to ensure that the water quality criteria are met, that the beneficial water uses are protected and that existing high quality waters are maintained at high quality.

DESCRIPTION OF WORK

The existing antidegradation and policy statements will be reviewed and revised, as found to be appropriate. Implementation procedures will also be added. This section will be designed to describe how water quality management planning, waste source and water quality monitoring, discharge permitting, and enforcement activities will be employed to achieve the goals specified by the standards. The antidegradation section will also describe the rationale that will be used in antidegradation decision making, and will attempt to specify conditions under which degradation will and will not be allowed and to define the limits of allowable degradation.

This work element will also include preparation of the following segment identifications which by federal regulation must accompany the standards when they are submitted to the Regional Administrator for review:

- 1) stream segments, if any, for which these proposed revisions will result in water use designations less restrictive than the "National Goal";
- 2) stream segments, if any, for which these proposed revisions will result in water use designations less restrictive than those in the existing standards;
- 3) stream segments, if any, for which these proposed revisions will result in water quality criteria less restrictive than those in the Administrator's "Quality Criteria for Water".

To make these identifications, the DEQ staff will evaluate the proposed designations and criteria and compare them with existing standards and the effluent limitations and water quality model projections contained in current Phase I basin plans.

The three tasks listed below will each consist of preparation of a first draft, which will be distributed to the Water Quality Commission, BACs, SPAC, and the EPA. After review and comment, a second draft will be prepared and presented to the Commission for action with the water use designation and water quality criteria drafts.

#### LIST OF TASKS

1. Review and revise the standards implementation policy statement and prepare implementation strategy.
2. Review and revise the antidegradation policy statement and prepare implementation procedures description.
3. Prepare the three lists of segment identifications described in the Description of Work.

#### WORK PRODUCTS AND SCHEDULES

1. Standards Implementation Policy & Procedures October 1, 1976 - December 12, 1976
 

<u>Work Product</u>		
First Draft.	Mail to BACs and SPAC	October 15, 1976
Second Draft		December 10, 1976
  
2. Antidegradation Policy and Implementation Procedures November 1, 1976 - December 10, 1976
 

<u>Work Product</u>		
First Draft.	Mail to BACs and SPAC	November 12, 1976
Second Draft		December 10, 1976
  
3. Segment Identification Lists October 18, 1976 - December 10, 1976
 

<u>Work Product</u>		
First Draft.	Mail to BACs and SPAC	October 29, 1976
Second Draft		December 10, 1976

#### RESPONSIBILITY

The DEQ planning staff will be responsible for carrying out this work element.

#### COORDINATION

This work element is independent of other work elements.

## WORK ELEMENT 204

## Standards Hearing and Promulgation

OBJECTIVE

To establish enforceable rules by subjecting the water quality standards draft recommendations developed in work elements 201, 202, and 203 to public hearing, public comment, intergovernmental coordination, and rule making legal procedures.

DESCRIPTION OF WORK

The hearing and promulgation process will be conducted in accordance with the State Administrative Procedures Act and CFR Part 105, so it will include all necessary notification and legal publishing procedures and evaluation and revision periods.

LIST OF TASKS

1. Prior to Commission action on the standards revision recommendations, determine the volume of printing that will be required, and place an order. Deliver drafts to the printer as soon as the Commission approves.
2. After the Commission calls for a hearing, DEQ will prepare legal notices and notification letters, and distribute them (pursuant to CFR 105.7 and the State Administrative Procedures Act) to federal agencies bordering states, and other public and private agencies and organizations.
3. The Water Quality Commission will consider and approve the recommended drafts and call for a February 23, 1977, public hearing. After the hearing, DEQ will prepare a transcript to remain available for inspection upon request, and prepare a summary of intergovernmental coordination and public participation, including a discussion of important comments received.
4. The Commission will evaluate the hearing comments and call for revisions, if found to be appropriate. DEQ will draft the revisions.
5. The Commission will adopt the revised standards. DEQ will implement the legal procedures required by the State Administrative Procedures Act, and will request a statement from the Attorney General that "the standards were duly adopted and enforceable".
6. The Water Quality Commission, acting as the Governor's designee, will submit the standards to the Regional Administrator. The standards package will include the water use designations, water quality criteria, antidegradation and implementing policies and procedures, segment lists from task 203(3), the comments summary from task 204(3), and the Attorney General's statement from task 204(5). EPA will review the standards and approve and publish them.



7. Prior to EPA approval, DEQ will determine the volume of printing that will be required and will place an order. The drafts will be printed when EPA approves them. The printed standards will be distributed widely.

#### WORK PRODUCTS AND SCHEDULES

- |    |  |                                     |
|----|--|-------------------------------------|
| 1. | Printing of Proposed Water Quality Standards | December 1, 1976 - January 17, 1977 |
|    | <u>Work Products</u>                         |                                     |
|    | Printing Ordered                             | December 3, 1976                    |
|    | Delivered to Printer                         | December 23, 1976                   |
|    | Returned from Printer                        | January 17, 1977                    |
| 2. | Notices of Hearing                           | January 3, 1977 - January 21, 1977  |
|    | <u>Work Products</u>                         |                                     |
|    | Notices Distributed                          | January 21, 1977                    |
|    | Proposed Standards to BACs and SPAC          | January 21, 1977                    |
| 3. | Hearing & Evaluation                         | December 22, 1976 - March 23, 1977  |
|    | <u>Work Products</u>                         |                                     |
|    | Approved Drafts                              | December 22, 1976                   |
|    | Hearing                                      | February 23, 1977                   |
|    | Transcript                                   | March 11, 1977                      |
|    | Comments Summary                             | March 11, 1977                      |
| 4. | Revisions                                    | March 23, 1977 - April 27, 1977     |
|    | <u>Work Products</u>                         |                                     |
|    | Commission Revises                           | March 23, 1977                      |
|    | Revised Drafts                               | April 26, 1977                      |
| 5. | Adoption                                     | April 27, 1977 - August 1, 1977     |
|    | <u>Work Products</u>                         |                                     |
|    | Adopted Standards                            | April 27, 1977                      |
|    | Effective & Enforceable Standards            | June 22, 1977                       |
|    | Attorney General's Statement                 | August 1, 1977                      |
| 6. | EPA Review & Approval                        | June 23 - August 23, 1977           |
|    | <u>Work Product</u>                          |                                     |
|    | Approved Standards                           | August 23, 1977                     |
| 7. | Printing & Distribution                      | August 1, 1977 - October 27, 1977   |
|    | <u>Work Products</u>                         |                                     |
|    | Printing Order                               | August 12, 1977                     |
|    | Printed Standards                            | September 26, 1977                  |
|    | Standards Distributed                        | October 27, 1977                    |

RESPONSIBILITY

DEQ and the Water Quality Commission will be responsible for carrying out this work element.

COORDINATION

The work products from work elements 201, 202, and 203 must be finished and available for Commission consideration on December 22, 1976, to start this work element.

## ACTIVITY SERIES 300

## WASTELOAD ALLOCATION VERIFICATION

These work elements are designed to evaluate the mathematical model that was used to aid in setting the wasteload allocations in Phase I Basin Plans, and to update the data base and refine the drought stream flow estimates used in the model. Since basin planning is an on-going process and since conditions affecting the magnitude of both point and non-point wasteloads on streams is continually changing, there will continue to be a need for revising and updating wasteload allocations.

The modeling process is a tool for equating the assimilative capacity of a receiving stream to the allowable waste inputs to the stream. To maintain a given water quality standard, it is obvious that there is a limit to the amount of pollutional waste that can be loaded into a given stream. A large stream or a given stream at high flow can accept more waste than a small stream or a given stream at low flow. On a stream receiving a single point source load, it is relatively easy to determine the maximum allowable input or load, but where two or more sources produce a cumulative affect, the allowable wasteload determination becomes more difficult. Where several large and small loads are located at various distances from each other on the same small stream, the wasteload allocation task becomes very complex. The task is further complicated by the fact that a river, in terms of water quality, is a dynamic system. As a wasteload flows downstream it is being constantly altered by dilution effects of incoming tributary and groundwater flows and by biological and chemical reactions. In order to analyze these complex cause and effect and natural purification relationships, it is necessary to use mathematical formulations to simulate the river system water quality response to the waste inputs - i.e., to model the river.

This kind of modeling lends itself well to computer adaption. The water quality equations are complex and require rather long and involved calculations. The modeling process involves inputting a given wasteload or set of loads and observing the river's response, as simulated by the mathematics. The computer allows the modeler to employ a nearly unlimited number of combinations of wasteload inputs. By repeated trial and error, varying the inputs and observing the responses, the modeler can arrive at some optimum combination of wasteloads that permit maintenance of the stream water quality standards, and yet provide for a maximum equitable load allocation to each waste source.

The mathematical model cannot, and was not intended to, give a precise prediction of water quality in a real stream situation. There are just too many variable and unpredictable factors working in the river system. What it can do, and what it has been used for, is a tool for planning - to permit just such adequate analysis of cause and effect as to provide a solid basis for determining allowable wasteloads and equitable allocation of those loads.

The wasteload allocation serves as one of the basis for plant discharge permits. Permits for every municipal and industrial waste treatment plant include stipulations limiting the volume and concentrations of pollutants allowed in the plant effluent. For those river reaches which the wasteload allocation analysis shows sufficient assimilative capacity, the permits limit the effluent to a quality which can be met by secondary or best practicable treatment (BPT). Where the wasteload allocation analysis shows that secondary or BPT will not allow attainment of stream standards, however, the discharge permits limit the effluent of each waste source to that quality which will not exceed the optimum equitable load for that source, as determined by the wasteload allocation.

The wasteload allocations are also significant in that they affect construction and grant priorities. In general, the lower the allowable wasteload from a plant, the more stringent the treatment requirement for that plant. The construction grant priority ranking formula takes into account treatment requirements of each grant applicant, such that the more stringent the required treatment, the higher the grant priority for the plant.

The model chosen for the Phase I wasteload allocations was an adaption of the Streeter-Phelps dissolved oxygen deficit equations. The Streeter-Phelps model was first developed in the late 1920's, so it is not considered to be a new concept. It is well accepted in a proper application, and is considered to be an appropriate tool for the basin planning purpose. As with any water quality model, however, the mathematical formulas involve constant factors which must be determined for the stream reach which is being modeled. As an example, the model simulates response of stream dissolved oxygen to the waste inputs. When a large enough quantity of an organic waste is added to a stream, the waste tends to use up the oxygen dissolved in the stream water. When the waste's oxygen demand is satisfied, the stream then tends to reaerate (replenish itself with oxygen taken from the atmosphere). The rate of reaeration is dependent upon such factors as slope and depth of the stream, extent of rocks and snags causing turbulence, extent of ice cover, or all those factors which affect the interface of atmospheric air with the water mass. The model simulates this reaeration, but the rate of model reaeration is dependent on mathematical constants the modeler chooses to match the real conditions affecting reaeration. A great deal of scientific research has gone into determining the values of the constants, and it has been found that they vary from location to location and situation to situation, and that little of the research has been done in this section of the country. So the modeler must search and evaluate the scientific literature and then use his judgement in applying the constants to each stream reach. Since several of these judgement factors are used in the model, the accuracy of the final results is in large part dependant on the quality of those judgements.

A major factor influencing the equity of the wasteload allocations is the volume of stream flow used in the model. Since a stream at low flow provides less dilution and cannot therefore assimilate as large a wasteload as a stream at high flow, the low stream flow condition is the more critical and

is a limiting factor in determining allowable wasteloads. The Iowa Water Quality Standards require that streams be protected to the standards level of water quality at all times that the stream flow equals or exceeds a specified statistically determined low flow (7 day  $Q_{10}$ ). This 7 day  $Q_{10}$  duration-frequency value is equivalent to the flow that occurs during drought conditions. The drought flow was used in the Phase I modeling, based on the rationale that a wasteload set to maintain water quality standards at drought flow can be satisfactorily assimilated at higher flows, where the converse would not hold true.

The drought flow values used in the model were obtained from a publication of material compiled by the U.S. Geological Survey, Department of the Interior (USGS). The values are statistical projections of records of actual measurements of streams at low flow. The now existing records cover a period of several decades up to and including the present, but the statistical analyses were made in the late 1960s based on the period of record ending in 1966. It is anticipated that if the 1967 and subsequent years records were included in the statistical analyses it would be found that the drought flow values have changed significantly. Since the model and resultant wasteload allocations are sensitive to stream flows, this work plan proposes to update and refine the low flow data.

The work will be contracted to USGS, since it is the lead governmental agency involved in stream flow measurement and analysis, and has the most complete set of records and best capability for the work. The work will provide the current low flow frequency-duration data described above, and will also provide seasonal low flow analysis and regional analysis to permit estimation of low flows on stream segments where permanent measurement stations and long term historical flow records are not now available.

The major objective of this work element, however, is to evaluate whether or not the model and its application simulate the river system accurately enough to serve the intended purpose of allocation of wasteloads.

The model evaluation work will be done by an outside consultant who must have proven expertise and broad experience in stream water quality modeling, in order to be selected for the work. He will be asked first to evaluate the validity of the basic mathematical formulations employed in the present model, to assess the computer program to which the model is adapted, and to recommend modifications and improvements if appropriate. If the basic concepts are found to be valid, the recommendations from this part of the project can be immediately put into use in the ongoing wasteload allocation work.

The model consultant will also verify and calibrate the model by actual in-the-field water sampling and testing. By comprehensive analysis of waste inputs and resultant water quality in several streams and under different weather and hydrologic conditions, the consultant can determine whether the model does in fact simulate the river system. By plugging in the field tested water quality data and actual simultaneous stream flows, and by trial and error varying the questionable constants, he can also test the validity of the judgements and assumptions used in applying the constants.

Since the objective of the work is to determine whether the model is suitable for its purpose, the project should result in findings that either:

1. The model performs satisfactorily and, with modifications or adjustments of constants if found necessary, it can be used with confidence to set wasteload allocations;
2. Under certain conditions it is suitable and can be used with confidence, but where specified weather conditions, hydrology, stream characteristics, waste volumes, etc. are not compatible, alternative methods of wasteload allocation should be developed and employed; or
3. The model is not suitable, and recommended alternative methods should be developed.

Upon conclusion of the study, and if the model is found suitable, it will be used with whatever modifications are recommended and with the updated and revised drought flow data obtained from the USGS contract, in the ongoing wasteload allocation work for future rounds of permit issuance. If the required modifications and low flow revisions are found to be significant, the present wasteload allocations will be reviewed and existing permits revised as appropriate.

## WORK ELEMENT 301

## Low-Flow Characteristics

OBJECTIVE

To update the low-flow frequency and flow-duration data contained in Iowa Natural Resources Council Bulletin No. 10 by including data collected since 1966. The update will also include low-flow frequency analysis by calendar quarter and regionalization of low-flow data so that selected low-flow parameters may be estimated for ungaged areas.

DESCRIPTION OF WORK

This work element will be accomplished through a contract with the U.S. Geological Survey. The work element is being undertaken cooperatively between the Iowa Natural Resources Council and DEQ.

The low-flow characteristics at gaging stations will be described by frequency and flow-duration tables. These tables will be prepared for annual and seasonal data. Annual low-flow frequency data for gaging stations will be processed to give, for each climatic year, the lowest mean daily discharge for 7, 15, 30, 60, 120, and 183 consecutive days.

To prepare seasonal tables the year will be divided into quarters; January, February, March being the first quarter; April, May, and June the second; etc. Data within each quarter will be processed to supply the frequency of average minimum flows for 7, 15, and 30 consecutive days.

Three flow-duration tables will be prepared for each gaging station. The first table will include the complete record for the year. The second will include daily discharges between April 1 and September 30. The third will be prepared using data between July 1 and August 31.

Selected low-flow parameters at partial-record sites will be tabulated for each station for which adequate data are available.

Regional analysis of low-flow characteristics will be made to determine if acceptable methods can be developed to estimate low-flow characteristics for ungaged areas.

A final report in 8½" x 11" book form will be published in a format which will permit the reader to rapidly and efficiently find the information at or close to his site or interest.

LIST OF TASKS

1. Negotiate and enter into a contract with the U.S. Geological Survey.
2. Develop low-flow frequency and duration characteristics for all complete record gaging stations.
  - a) Prepare frequency and duration curves for all gaging stations having 5 or more years of record using data updated to include the 1976 water year.
  - b) Develop frequency curves by using the log-Pearson type III distribution function.
  - c) Use alternate methods to adjust frequency curves of unusual shape which cannot be closely fitted by theoretical distribution.
  - d) Prepare seasonal frequency and duration curves.
3. Develop low-flow characteristics for partial record sites.
  - a) Develop relations between base-flow measurements made at partial-record sites and concurrent discharges at nearby gaging stations.
  - b) Using these relations, transfer the characteristics at the gaging station to the partial-record site.
  - c) Prepare table of low-flow characteristics for partial-record sites.
  - d) Conduct regional studies with the purpose of developing methods for estimating low-flow characteristics at ungaged sites.
4. Final Report
  - a) Prepare draft of final report.
  - b) Publish final report.
  - c) Summary of final report results to BACs and SPAC.

WORK PRODUCTS AND SCHEDULES

- |    |  |                                    |
|----|--|------------------------------------|
| 1. | Negotiate contract                     | October 1, 1976 - November 1, 1976 |
|    | <u>Work Product</u><br>Signed contract | November 1, 1976                   |

REMAINING WORK PRODUCTS AND SCHEDULES TO BE INCLUDED IN FINAL WORK PLAN AS PER THE CONTRACT YET TO BE NEGOTIATED. ESTIMATED TIME FOR COMPLETION OF THIS WORK ELEMENT IS TWO YEARS.



RESPONSIBILITY

This work element will be completed under a contract with the U.S. Geological Survey. The work element will be jointly funded by DEQ, the Iowa Natural Resources Council and the USGS. Publication of the final report will be the responsibility of the Iowa Natural Resources Council.

COORDINATION

Completion of the work element will be independent of all other activities of this work plan. Outputs of the work element will be utilized in DEQ's ongoing water quality management program.

## WORK ELEMENT 302

## Water Quality Model Verification

OBJECTIVE

To assess the presently used stream water quality mathematical model as to its suitability and adequacy for its intended purpose of setting wasteload allocations, and to generate such conclusions and recommendations as necessary to assure confidence in use of the model, or to show need for development of an alternative methodology for wasteload allocation.

DESCRIPTION OF WORK

The assessment will be conducted by an outside consultant and will consist of an evaluation of the deduction logic of the model and program, and verification and calibration of the model, based on point source discharge and stream sampling during summer and winter low stream flow periods.

The various assumptions and estimates used in the model will be assessed. The assessments may include, but will not be limited to, the following: hydraulic roughness coefficients and methods of measurement of stream width, slope, flow, and velocity; carbonaceous and nitrogenous deoxygenation rates; reaeration rates and gas escape coefficients; ice cover factors; estimation of background flow, temperature, dissolved oxygen, and ammonia nitrogen contributions from ground water and tributary streams; and measurement of point source discharges.

Some of these factors are equivalent to unknowns in indeterminate mathematical equations, such that precise solution or exact definition of values would require research and testing beyond the scope of this study. Time and funding constraints will dictate that such research type activity be kept to a bare minimum, and will require that the consultant rely on experience and model sensitivity testing to make the assessments. The scope and emphasis of model factors assessment will be determined during the consultant contract negotiations phase of this plan.

LIST OF TASKS

1. Select a Consultant
  - a) Advertise for and interview consultants. The successful contractor will be one who specializes in the type of work described in this plan, and who has had wide experience, preferably on streams similar to those in Iowa.

- b) Negotiate scope of work with the consultant selected through the interview process, and sign a contract. Prior to the negotiations, the consultant will have studied the existing model and Phase I basin plans, so as to be able to recommend an appropriate emphasis for the work and scope of assessment of the different model factors. The scope of work will include but not be limited to assessment of the deduction logic of the model and program, assessment of the estimates and assumptions listed above, and identification of the stream reaches to be studied and the extent and timing of sampling.

The contractor will either perform his own laboratory analyses or will sub-contract laboratory work. Laboratory selection and quality control will be specified in the contract.

2. The Contractor will evaluate the deduction logic of the model and program, and will modify accordingly. Prior to finalizing the modifications, the Contractor will prepare an interim report and will meet with DEQ to discuss the findings and recommendations.
3. The Consultant will conduct winter and summer stream and point source discharge sampling studies, including appropriate hydraulics measurements, to verify and calibrate the model. The Contractor will design the study, prepare an interim report, and consult with DEQ prior to sampling. A post sampling interim report will be prepared after the summer study, to show preliminary results and identify need for modification of the winter study plan.
4. DEQ will perform, free of charge to the Contractor, all needed programming, data entry, and computer operation, using the State's IBM System/370's computer system. The Consultant will supply data in useable form for data entry, and DEQ will return the computer results.
5. The contractor will prepare a final report on the varacity of the model, which will include but not be limited to assessment of:
  - a) The suitability of the model for its intended purpose, and confidence levels for model application to different river characteristics and waste loads;
  - b) The various estimates and assumptions, with recommended values for different necessary application conditions;
  - c) The computer program, and recommended modifications, as to both model effectiveness and computer cost effectiveness; and
  - d) Alternative methodology for setting wasteload allocations, if the model is determined to be unsuitable for its intended purpose.
6. A summary of the results of the study will be provided BACs and SPAC.

An interim final report will be prepared by the Contractor and discussed with DEQ prior to preparation of the final report and close of the project.

WORK PRODUCTS AND SCHEDULES

- |  |                                     |
|--|-------------------------------------|
| 1. Consultant Selection                      | October 1, 1976 - December 31, 1976 |
| <u>Work Product</u><br>Consultant Selected   | December 31, 1976                   |
| Scope of work determination                  | January 1, 1977 - February 28, 1977 |
| <u>Work Product</u><br>Signed Contract       | February 28, 1977                   |
| 2. Program Deduction Logic Assessment        | March 1, 1977 - June 30, 1977       |
| <u>Work Products</u><br>Draft Interim Report | May 31, 1977                        |
| Final Interim Report                         | June 30, 1977                       |
| 3. Stream and Discharge Sampling             | June 1, 1977 - March 31, 1978       |
| Summer Sampling                              | June 1, 1977 - September 30, 1977   |
| <u>Work Product</u><br>Draft Interim Report  | October 1, 1977                     |
| Winter Sampling                              | November 1, 1977 - March 31, 1978   |
| 4. DEQ Computer Work                         | March 1, 1977 - August 1, 1978      |
| 5. Model Assessment                          | June 1, 1977 - August 1, 1978       |
| <u>Work Products</u><br>Draft Final Report   | May 1, 1978                         |
| Final Report                                 | August 1, 1978                      |
| 6. Summary of Results to BACs & SPAC         | September 15, 1978                  |

RESPONSIBILITY

- |                                       |            |
|---------------------------------------|------------|
| 1. Consultant Selection               | DEQ        |
| 2. Program Deduction Logic Assessment | Contractor |
| 3. Stream and Discharge Sampling      | Contractor |
| 4. Computer Work                      | DEQ        |
| 5. Model Assessment                   | Contractor |

COORDINATION

This work element is independent of other work elements.

ACTIVITY SERIES 400  
WATER QUALITY ASSESSMENT

Iowa's water pollution control programs have, in past years, concentrated on control of water pollution from point source waste discharges. As a result, considerable information exists on the water quality impacts that pollutant discharges from point sources are having on Iowa's surface waters.

Non-point source water pollution, particularly runoff from agricultural land, has for years been considered to be a significant problem in the State of Iowa. Up until this time however, no one has conducted a thorough assessment of the problem to determine the extent of non-point pollutants in the state's waters and their effects upon the beneficial uses of the surface waters of the state. The purpose of this activity is to conduct a thorough assessment of the non-point source water quality problem utilizing available data. It is realized that all the desired data is not available and further, to obtain the data, several years of data collection would be required.

One problem in conducting an assessment of non-point sources is that data is needed during runoff conditions. Over the years, the water quality program has been geared toward controlling pollution from point sources which are more of a problem during low flows. Consequently the majority of past stream sampling efforts have been at or near low flow conditions. However, some efforts to obtain high flow water quality data have been made. In addition other state and federal agencies have ongoing programs to determine sediment loads in our streams. A major effort of this work series will be to accumulate and interpret existing data and to make an assessment of instream water quality problems resulting from non-point source pollution.

This activity will provide some insight into the seriousness and extent of the water quality problems resulting from point and non-point source pollution. This information will be used to develop a methodology for establishing water quality related priorities.

Although this activity emphasizes non-point source pollutants, completion of the activity will require determination of both the point and non-point source pollutant levels reaching Iowa's waters.

This activity will also provide for development and submission of Iowa's Annual Water Quality Report in accordance with Section 305(b) of P.L. 92-500.

## WORK ELEMENT 401

## Data Collection and Compilation

OBJECTIVE

To collect and compile the data needed for identification of the quantity and quality of pollutants reaching Iowa's surface waters as a result of point and non-point sources.

DESCRIPTION OF WORK

In order to evaluate the actual effects of non-point sources upon the water quality of the state it is first necessary to obtain data on the amounts and types of pollutants actually entering the State's waters, both from point and non-point source activities. This work element will collect all existing available biological, chemical, mineral, and physical data from all known sources and assemble and compile the data in a central data bank for use in future work elements of the water quality assessment activity. This activity will also provide data for the State's Annual Water Quality (305b) Report.

LIST OF TASKS

1. Contact all known data sources and obtain existing water quality data related to point and non-point source activities. Typical data sources are the U.S. Geological Survey, Environmental Protection Agency, Corps of Engineers, Soil Conservation Service, Iowa Conservation Commission, State Hygienic Laboratory, Universities, River Basin Commissions, local governments, etc.
2. Compile, code and enter the data into the STORET System for future evaluation and manipulation.
3. Plot the data stations on appropriate maps.
4. From the plot of data stations, determine areas, such as stream segments or subbasins, which have the most actual data. This information should then be used as an input into the determination of detailed subarea watersheds (Work Element 505).
5. From the data that has been collected, through the use of charts and graphs, prepare a summary of the quantity of the various pollutants that are reaching Iowa's surface waters. This will include, but not be limited to: sediment, nutrients, heavy metals, pesticides, coliform bacteria, etc. The data should, if at all possible, be sorted according to the 800 to 1000 watersheds delineated in the Non-point Source Assessment Activity.

6. Prepare a summary report on the point and non-point source data, including an assessment of the adequacy of the data. Identify data gaps and recommend a program for future data collection efforts. This summary report will be incorporated into the 305(b) Report.
7. Provide the interim report to the BACs and SPAC and other interested parties.

#### WORK PRODUCTS AND SCHEDULES

- |   |                                      |
|---|--------------------------------------|
| 1. Data Collection  | November 1, 1976 - February 1, 1977  |
| 2. Code and enter data into STORET                                      | February 1, 1977 - March 15, 1977    |
| 3. Plot data stations   | February 1, 1977 - February 15, 1977 |
| 4. Listing of stream segments with best available data                  | February 1, 1977                     |
| 5. Compile, analyze and summarize data                                  | February 15, 1977 - April 1, 1977    |
| 6. Preparation of Interim Report  | April 1, 1977 - May 1, 1977          |
| <u>Work Product</u><br>Interim Report                                   | May 1, 1977                          |
| 7. Provide interim report to BACs and SPAC and other interested parties | May 15, 1977                         |

#### RESPONSIBILITY

DEQ will be responsible for accomplishing this entire work element.

#### COORDINATION

Outputs from this work element will be utilized in work elements 402, 403, 405, 406, 407 and 505.

## WORK ELEMENT 402

## Annual Water Quality Report

OBJECTIVE

To prepare an annual water quality report in accordance with Section 305(b) of P.L. 92-500.

DESCRIPTION OF WORK

Utilizing the data collection in work element 401 and all other DEQ data, prepare annual reports which will assess Iowa's water quality management program efforts. The report will present water quality information on an annual basis as a means of defining problems and assessing the ongoing abatement efforts. The report will discuss past, current and future water quality management efforts in terms of what improvements have been made and what is planned for the future. The report will evaluate improvements in beneficial uses of our streams as a result of improved water quality, where such data is available.

The report will chart the progress of the many activities of DEQ's water quality management program, such as; operation permits, construction grants, surveillance inspections, compliance monitoring, operator training, etc. Two annual reports will be prepared during the time frame of this work plan. The second report will also include information developed as a result of the continuing planning process.

LIST OF TASKS

1. Develop an outline for the Annual Water Quality Report.
2. Prepare a draft of the report.
3. Send draft report to BACs and SPAC.
4. Review comments received from BACs and SPAC and incorporate into the report.
5. Prepare final report.
6. Publish final report.
7. Submit report to the U.S. EPA and make distribution of the report to other agencies, the BACs and SPAC, and other interested parties.



WORK PRODUCTS AND SCHEDULES

- |    |   |                                    |
|----|---|------------------------------------|
| 1. | Preparation of outline                            | January 1, 1977 - January 15, 1977 |
|    | <u>Work Product</u><br>Report Outline             | January 15, 1977                   |
| 2. | Preparation of draft report                       | January 15, 1977 - April 15, 1977  |
|    | <u>Work Product</u><br>Draft Report               | April 15, 1977                     |
| 3. | Review of draft report by BACs and SPAC           | April 15, 1977 - May 15, 1977      |
| 4. | Review comments and incorporate into final report | May 15, 1977 - June 1, 1977        |
| 5. | Prepare final report                              | May 15, 1977 - June 15, 1977       |
|    | <u>Work Product</u><br>Script of Final Report     | June 15, 1977                      |
| 6. | Publish Report                                    | June 15, 1977 - June 30, 1977      |
|    | <u>Work Product</u><br>Published Reports          | June 30, 1977                      |
| 7. | Distribution of reports to EPA and others         | June 30, 1977 - July 15, 1977      |

THE SAME SCHEDULE WILL BE FOLLOWED FOR THE 1978 ANNUAL REPORT.

RESPONSIBILITY

DEQ staff will be responsible for conducting this work element.

COORDINATION

Outputs from all other work elements may be utilized in this work element. Various information from other activities within the Water Quality Management Program will also be included in the report.

## WORK ELEMENT 403

## Identification of Impact of Non-Point Pollution on Iowa's Waters

OBJECTIVE

To assess the actual impact non-point source pollution activities are having on Iowa's water quality, including identification of Water Quality Standards violations.

DESCRIPTION OF WORK

Using the data assembled in work element No. 401 and information developed in the non-point source technical assessment report (work element 503), assess the impact on water quality of pollution parameters such as sediment, nutrients chemicals, heavy metals, pesticides, etc. Isolate, if possible, this impact into its point and nonpoint source components. This assessment will include both an analysis of the Water Quality Standards criteria violations as well as an evaluation of the effects upon present and future water uses. This work element will evaluate the effects of non-point source pollution on the stated goal of fishable and swimmable waters by 1983. A portion of this work element is expected to be contracted to the Iowa Conservation Commission.

LIST OF TASKS

1. Negotiate a scope of work and contract with the Iowa Conservation Commission.
2. Ask BACs and SPAC and other parties to provide information on the impacts they feel specified pollutants are having on the State's water quality.
3. Analyze the impacts of pollutants on the aquatic life and recreation uses of Iowa's surface waters. Determine the magnitude of pollutant contribution from point and nonpoint sources.
4. Evaluate the data obtained in work element 401 to determine what Water Quality Standards criteria are being violated.
5. Evaluate other adverse impacts of pollution, such as; increased water treatment costs, sedimentation in reservoirs, agricultural and wildlife watering, etc. Determine the magnitude of pollutant contribution from point and non-point sources.
6. Isolate those stream segments where most significant water quality standards criteria violations are occurring.

7. Isolate those stream segments which have the greatest potential for aquatic life and/or recreational uses but are constrained by water quality.
8. Identify those streams that may not be suitable for aquatic life and/or recreational usage due to some constraint other than water quality.
9. Prepare a draft interim report on the impact of point and non-point source pollution.
10. Submit report to BACs and SPAC and other interested parties for their review and comment.
11. Review comments received and incorporate into the interim report.
12. Prepare interim report.

#### WORK PRODUCTS AND SCHEDULES

- |   |                                       |
|---|---------------------------------------|
| 1. Prepare scope of work and negotiate contract                                   | December 1, 1976 - January 15, 1977   |
| <u>Work Product</u><br>Signed Contract  | February 1, 1977                      |
| 2. Input from BACs and SPAC and other parties                                     | December 1, 1976 - January 1, 1977    |
| 3. Analysis of pollutant impacts upon aquatic life and recreational uses          | February 1, 1977 - June 1, 1977       |
| 4. Determine WQS criteria violations  | February 1, 1977 - June 1, 1977       |
| 5. Evaluate other adverse impacts   | February 1, 1977 - June 1, 1977       |
| 6. Determine segments where most serious criteria violations occur                | June 1, 1977 - July 15, 1977          |
| 7. Determine segments with highest potential for aquatic and/or recreational uses | June 1, 1977 - August 1, 1977         |
| 8. Determine segments least suitable for aquatic and/or recreational usage        | June 1, 1977 - August 1, 1977         |
| 9. Prepare draft interim report   | August 1, 1977 - September 15, 1977   |
| <u>Work Product</u><br>Draft Interim Report                                       | September 15, 1977                    |
| 10. Review by BACs and SPAC and other parties                                     | September 15, 1977 - October 15, 1977 |
| <u>Work Product</u><br>Review Comments  | October 15, 1977                      |

11. Prepare Final Interim Report

October 15, 1977 - November 15, 1977

Work Product  
Final Interim Report

November 15, 1977

RESPONSIBILITY

The Iowa Conservation Commission will have responsibility for tasks 3, 7, and 8, in accordance with the contract. DEQ will have responsibility for the remaining tasks.

COORDINATION

Outputs will be utilized in work elements 404, 405, 406 and 407.

## WORK ELEMENT 404

## Duration and Frequency of Non-Point Source Problem Conditions

OBJECTIVE

To determine the magnitude of water quality problems by evaluating the duration and frequency of pollution from nonpoint sources.

DESCRIPTION OF WORK

Utilizing the information gained in work elements 401 and 403, evaluate and analyze the frequency and duration of water quality problems that limit the beneficial uses of the State's waters. A portion of this work element will be conducted by the ICC under the same contract developed in work element 403.

LIST OF TASKS

1. Analyze the data and assessments in work elements 401 and 403 to establish frequency of non-point source related water quality problems.
2. Assess and analyze seasonal relationship of criteria violations.
3. Assess and analyze any seasonal factors that affect aquatic and/or recreational uses.
4. Analyze long-term frequency factors, such as; do violations occur annually, once every 5 years, once every 10 years, etc., including impacts upon beneficial uses.
5. Prepare tabulations, charts and graphs to show the various frequency relationships.
6. Assess the duration or length of time that water quality problems occur from non-point sources.
7. Assess the duration factors of various criteria violations on aquatic and/or recreational uses. Is there an allowable violation duration for some parameters that would not impair the beneficial uses?
8. Prepare tables, charts and graphs to depict the duration relationships.
9. Prepare an interim report on the duration and frequency of non-point source pollution problems including an analysis of the relationships between frequency and/or duration of violations on beneficial uses.
10. Provide the interim report to the BACs and SPAC and other interested parties for informational purposes.

WORK PRODUCTS AND SCHEDULES

- |   |                                       |
|---|---------------------------------------|
| 1. Analysis of data to establish frequency of problems                        | October 1, 1977 - November 15, 1977   |
| 2. Seasonal relationships of criteria violations                              | October 1, 1977 - November 15, 1977   |
| 3. Seasonal relationships affecting uses                                      | October 1, 1977 - November 15, 1977   |
| 4. Analysis of long-term frequency  | October 1, 1977 - November 15, 1977   |
| 5. Prepare charts, etc.   | November 1, 1977 - December 1, 1977   |
| 6. Assess duration factors of problems  | October 1, 1977 - November 15, 1977   |
| 7. Assess duration factors on uses  | October 1, 1977 - November 15, 1977   |
| 8. Prepare charts, etc.   | November 1, 1977 - December 1, 1977   |
| 9. Interim Report preparation   | November 15, 1977 - December 15, 1977 |
| <u>Work Product</u><br>Completed Report                                       | December 31, 1977                     |
| 10. Provide interim report to BACs and SPAC and other parties for information | January 15, 1978                      |

RESPONSIBILITY

The Iowa Conservation Commission will be responsible for evaluating the effects of frequency and duration of pollution problems on aquatic and/or recreational uses. DEQ will be responsible for the remaining portions of this work element.

COORDINATION

Outputs from this work element will be utilized in work elements 406 and 407.

## WORK ELEMENT 405

Correlation Between Recorded Meteorological Events and  
Non-Point Source Related Water Quality ProblemsOBJECTIVE

To establish a relationship between recorded meteorological conditions and/or events and non-point source pollution of Iowa's streams and lakes.

DESCRIPTION OF WORK

It will first be necessary to determine the meteorological factors that should be looked at in conducting this assessment. Factors such as seasonal precipitation frequencies and/or intensities, normal frost periods, snow melt and runoff coefficients are only a few of the factors that should be considered. After these factors have been determined, the job of this work element will be to collect and analyze recorded data relating to the factors, and then establish a relationship between these factors. The information from work elements 403, 404, 502, 503 and 504 will be utilized in making the correlations.

LIST OF TASKS

1. Establish the meteorological factors that should be considered.
2. Review meteorological data for the factors selected in task No. 1.
3. Obtain and analyze appropriate information from work elements 502, 503 and 504.
4. Establish correlations between various meteorological factors and non-point source pollution problems identified in work element 403 and 404.
5. Prepare an interim report describing how recorded meteorological factors and conditions impact non-point source pollution of Iowa's streams and lakes.
6. Provide the interim report to the BACs and SPAC and other parties for informational purposes.

WORK PRODUCTS AND SCHEDULES

- |  |                                     |
|--|-------------------------------------|
| 1. Determine factors to be considered  | November 1, 1977 - December 1, 1977 |
| <u>Work Product</u><br>List of Factors | December 1, 1977                    |

- |  |                                      |
|--|--------------------------------------|
| 2. Collect meteorological data   | December 1, 1977 - January 15, 1978  |
| 3. Obtain information from 502, 503<br>and 504                           | December 1, 1977 - January 15, 1978  |
| 4. Correlations between meteorological factors<br>and non-point problems | January 15, 1978 - February 28, 1978 |
| 5. Prepare interim report  | February 28, 1978 - April 1, 1978    |
| <u>Work Product</u><br>Completed interim report                          | April 1, 1978                        |
| 6. Send interim report to BACs and SPAC<br>and other parties             | April 20, 1978                       |

RESPONSIBILITY

DEQ staff will be responsible for accomplishing this work element.

COORDINATION

Outputs will be utilized in work elements 406 and 407.



## WORK ELEMENT 406

## Priority Criteria Development

OBJECTIVE

To develop specific criteria that can be used to establish water quality related priorities for implementation of point and non-point source controls.

DESCRIPTION OF WORK

Utilizing all the information obtained from work elements 403, 404 and 405, develop criteria for use in evaluating the water quality related priorities for point and non-point source controls. The criteria should include, but not be limited to, the following factors: seriousness of the problem on public health, impact upon aquatic resources, frequency and duration of the problem, impact on recreational uses, State and Federal goals and objectives, etc.

LIST OF TASKS

1. Meet with the various BACs and SPAC and other interested parties to obtain their input into what factors should be considered in developing priority criteria.
2. Evaluate all the various factors that should be considered and put together a list of the factors that should be considered in establishing priority criteria.
3. Prepare a draft of suggested criteria for establishing priorities.
4. Submit the draft criteria to BACs and SPAC and other interested parties.
5. Incorporate comments from committees and prepare final criteria.

WORK PRODUCTS AND SCHEDULES

- |  |                              |
|--|------------------------------|
| 1. Meet with BACs and SPAC   | May 1, 1978                  |
| 2. Evaluate factors to be considered in establishing priority criteria | May 1, 1978 - May 15, 1978   |
| 3. Prepare draft criteria  | May 15, 1978 - June 15, 1978 |
| <u>Work Product</u><br>Draft Criteria                                  | June 15, 1978                |

- |   |                               |
|---|-------------------------------|
| 4. Submit to BACs and SPAC and other interested parties | June 20, 1978                 |
| 5. Incorporate comments and prepare final criteria      | July 1, 1978 - August 1, 1978 |
| <u>Work Product</u>                                     |                               |
| Final Criteria  | August 1, 1978                |

RESPONSIBILITY

DEQ will be responsible for accomplishing this work element.

COORDINATION

This work element will be used in developing priorities for control of point and non-point source pollution.

## WORK ELEMENT 407

Development of Indicator Parameters for Monitoring  
Non-Point Source EffectsOBJECTIVE

To establish some simplified means of monitoring the effects of non-point source pollution.

DESCRIPTION OF WORK

Evaluate the various non-point source parameters that are affecting water quality as indicated from work elements 402, 403, 404 and 405 and derive a common indicator parameter or parameters that can be used in future monitoring efforts. It should be kept in mind that it will be important both to identify water quality violations and to assess the improvement upon water quality of various control practices. Develop a "water quality index" for use in assessing water quality.

LIST OF TASKS

1. Review the outputs from work elements 402, 403, 404 and 405 to determine parameters that should be considered.
2. Develop relationships between the various parameters.
3. Review other state-of-the-art information on indicator parameters from other states and EPA.
4. Review the various water quality indexes that have been developed by other states.
5. Prepare a paper on feasibility and advisability of using indicator parameters.
6. Prepare paper on the feasibility of developing a water quality index for use in Iowa.
7. Prepare an interim report on this work element.
8. Send the report to BACs and SPAC and other interested parties for information.

WORK PRODUCTS AND SCHEDULES

1. Review outputs from 402, 403, 404 and 405      May 1, 1978 - May 15, 1978

- |    |   |                               |
|----|---|-------------------------------|
| 2. | Development parameter relationships                       | May 15, 1978 - June 1, 1978   |
| 3. | Review other outside data and information                 | May 15, 1978 - June 1, 1978   |
| 4. | Review water quality indexes                              | May 15, 1978 - June 15, 1978  |
| 5. | Paper on feasibility of indicator parameters              | June 1, 1978 - June 15, 1978  |
| 6. | Paper on feasibility of water quality index               | June 15, 1978 - July 1, 1978  |
| 7. | Prepare interim report                                    | July 1, 1978 - August 1, 1978 |
|    | <u>Work Product</u><br>Report Complete                    | August 1, 1978                |
| 8. | Send report to BACs and SPAC and other interested parties | August 5, 1978                |

RESPONSIBILITY

DEQ staff will be responsible for accomplishing this work element.

COORDINATION

Outputs from this work element will be utilized in Iowa's ongoing water quality management program.

## ACTIVITY SERIES 500

## NONPOINT POLLUTION PLANNING

As published in 41 Federal Register, p. 7964, (February 23, 1976) nonpoint sources are found to be characterized by three elements: "First, the pollutants are conveyed by water, the source of which is uncontrolled by any person; that is, the water pollution results from precipitation, natural flooding or snowmelt. Second, the pollution itself is not traceable to a discrete, identifiable source such as a facility or industrial process... Third, the control of nonpoint source water pollution is generally best achieved by planning and management techniques rather than by end-of-pipe treatment to remove pollutants. End-of-pipe treatment, designed to meet specified effluent limitations, is often inappropriate for pollution control for nonpoint sources. Instead, planning and management techniques control and abate the nonpoint pollution before it is created and thus effectively limit and prevent pollutants from reaching navigable waters."

The general objectives of Iowa's nonpoint planning efforts are: (1) to assess both location and degree of nonpoint water pollution problems within Iowa; (2) to ascertain causal factors and processes which contribute to these nonpoint pollution problems; (3) to suggest technical, economic, and socially feasible control alternatives for the detailed problems, and (4) to use publicly supplied information to augment the previously listed objectives.

The nonpoint pollution planning will provide significant data and outputs covering the entire state. All information will be aggregated and analyzed within drainage boundaries. Due to funding limitations, in-depth studies will only be completed for the Iowa-Cedar and the Western Iowa planning areas at this time. These basins will be subdivided into smaller drainage units for detailed efforts, which can then be extrapolated and some inferences developed for the larger drainage units. By keying the depth of detail and efforts inversely to the drainage area size, the critical watershed with great potential as a pollution source can be identified efficiently and effectively. The required control alternatives can then be developed for the most critical watersheds first, thereby providing for the greatest positive impact on water quality in a manner that is cost effective and attainable at the earliest possible date.

The nonpoint pollution planning efforts of the Statewide Water Quality Management Plan will be based on public information and involvement. The paramount charge of nonpoint pollution planning is interfacing public information and attitudes with technical measures designed to mitigate nonpoint source water quality problems. Technical assessments of both nonpoint source water quality problems and potential control alternatives must have public support before meaningful results will be achieved.

The Department of Soil Conservation will foster and maintain a positive public attitude toward nonpoint pollution planning by establishing mechanisms which allow for a circular flow of information and opinions between the public and the involved state agencies. The structural support for this local public involvement will be 99 County Resource Coordinating Committees and 6 Conservancy District Advisory Committees. These committees will provide review and input relating to the above referenced objectives for the nonpoint portion of the Statewide Water Quality Management Plan.

The nonpoint pollution planning efforts will result in proposed implementation procedures in the area of nonpoint pollution control alternatives, management agencies and funding which have technical, economic, and social constraints weighted in a manner which allows that degree of public acceptance necessary to gain implementation of the nonpoint portion of Iowa's water quality management plan.

## WORK ELEMENT 501

## Computer Analysis of Conservation Needs Inventory (CNI) Data

OBJECTIVE

Adjust the CNI data to reflect updated cropland and forestry acres to allow tabulation of current land use and gross erosion for approximately 40 major drainage areas delineated in the 1970 CNI Report.

DESCRIPTION OF WORK

During the initial period of June through October 31, 1976, an updated report of the Conservation Needs Inventory (CNI) data will be completed. The updated report compiled from CNI drainage unit data will tabulate current rural land use and gross erosion for approximately 40 major drainage areas delineated in the CNI report. The 1970 report based on 1967 data will be updated through work conducted by the Economic Research Service (ERS), USDA, Ames, Iowa, with coordination and field spot checking done under the supervision of the Department of Soil Conservation.

The updating of the data will call for adjusting the CNI land use to reflect the 1974 crop acreages. The acreages of the forests will be adjusted to correspond with the Forest Service's (USDA) 1975 Field Survey. An updated computer analysis will then be made with the adjusted data to prepare information on current rural land use. Using this adjusted data and the Universal Soil Loss Equation, a report will be compiled of the gross soil erosion for each of the delineated river basins.

The final report will contain information on current rural land use and gross soil erosion for the delineated major drainage areas, with a breakdown of the data by counties within these major drainage areas. The resulting data will facilitate in understanding what the status of gross erosion and land use is by these major drainage areas and what areas should be viewed as most critical at this time. This will then help to decide which areas should receive priority for further detailed studies.

The public, through the public participation procedures, will be afforded opportunities to review, comment, and contribute input concerning the interim outputs, status report, final report, etc., throughout the process of this work element.

LIST OF TASKS

1. Agreement with Field Advisory Committee for the Southern Iowa River Basin Study for updating of CNI data.

2. Review preliminary data.
3. ERS adjust CNI data to 1974 crop acreages and 1975 forestry acreages.
4. Field spot checking and coordination with data output as required.
5. Calculation of gross erosion for various river basin based on available data.
6. Prepare periodic progress reports and interim outputs.
7. CDACs review progress reports and interim outputs and comment as appropriate.
8. Breakdown of data by counties within major drainage basins.
9. Preparation of draft report.
10. Review and comment on draft report by CDACs, BACs and SPAC.
11. Preparation of final report incorporating comments received from CDACs, BACs and SPAC.
12. Submission to DEQ of final work element output.

#### FINAL WORK PRODUCT

A final report indicating updated figures for cropland and forestry acreages for the 1970 CNI Report. The report will contain information on current rural land use and gross soil erosion for the delineated major drainage areas, with a breakdown on the data by counties within these major drainage areas.

#### WORK PRODUCTS AND SCHEDULES

- |   |                 |
|---|-----------------|
| 1. Agreement with Field Advisory Committee for the Southern Iowa River Basin Study to expand CNI data for use in 208 planning. Receipt of preliminary information from ERS indicating and explaining format of computer reports, methodology for updating 1970 CNI data, further results to be obtained, etc. | June 15, 1976   |
| 2. Status report of progress to date and sample results of work outputs. Using updated 1974 data, calculation of gross erosion for river basins will be initiated. Continued field spot checking and coordination.  | August 15, 1976 |
| 3. CDACs review status report and sample results of work outputs.   | August 30, 1976 |



- |    |  |                   |
|----|--|-------------------|
| 4. | Status report of progress to date and draft of format for final report.  | October 15, 1976  |
| 5. | Draft report summarizing and tabulating current rural land use and gross erosion for the major drainage areas delineated in the published 1970 Conservation Needs Inventory. | October 31, 1976  |
| 6. | Review and comment of draft report by CDACs, BACs, SPAC and appropriate agencies.  | November 15, 1976 |
| 7. | Preparation of final report and submission to DEQ.   | December 1, 1976  |

#### RESPONSIBILITY

DSC will contact and work with Field Advisory Committee for Southern Iowa River Basin Study and ERS.

ERS will adjust acreage data and manipulate CNI tapes.

DSC will work with ERS in conducting necessary field spot checking.

CDACs, BACs, SPAC and other appropriate bodies will review and comment.

DSC will prepare and submit final report.

#### COORDINATION

Output of this work element will be used in completing work elements 502, 504, 505, and 506.

## WORK ELEMENT 502

## Data Gathering

OBJECTIVE

Develop a tabular index outlining sources of pertinent known data and characteristics for approximately 800 to 1,000 delineated subarea watersheds.

DESCRIPTION OF WORK

The total data gathering process will ultimately lead to development of a tabular index for each of the six (6) major planning areas identifying sources of pertinent known data and characteristics for approximately 800 to 1,000 delineated subarea watersheds of the state.

The DSC staff will solicit pertinent information concerning these subarea watersheds from all sources available. These may include: County Resource Coordinating Committees, Conservancy District Advisory Committees, BACs, SPAC, federal agencies, state agencies, local agencies, interest groups, farm organizations, and local people.

The information obtained from these sources will be indexed under the appropriate subarea watershed, major drainage area, and major planning areas. As additional work elements are carried out, the planning agency(ies) and others will be able to obtain information from this index relative to particular areas in which they are interested.

The public, through the public participation organizations, will be afforded opportunities to review, comment, and contribute input to this work element.

LIST OF TASKS

1. Review the outputs of the computer analysis of CNI data.
2. Prepare a list of pertinent information such as cropping patterns, soil factors, and topography which will be identified for all subarea watersheds.
3. Develop a procedure for identifying sources of relevant information.
4. Solicit pertinent information to be used as a data base from all sources available such as: County Resource Coordinating Committees, Conservancy District Advisory Committees, BACs, SPAC, federal agencies, state agencies, local agencies, interest groups, farm organizations, and local people.

5. Contact each soil conservation district in the state to solicit any known available data for watersheds in that district.
6. Prepare reports of work accomplished and distribute to CDACs and agencies for review.
7. Analyze and incorporate as appropriate, any feedback from these sources.
8. Initiate an appropriate numbering system for the subarea watersheds.
9. Organize all information gathered for subarea watersheds and develop an index.
10. Incorporate into this index system any appropriate information from the designated areawide 208 studies.
11. Submit draft report to CDACs, BACs and SPAC for review and comment.
12. Prepare final report and make the subarea watershed information available for use in other work elements.

#### FINAL WORK PRODUCT

A final indexed record system for six (6) major planning areas organized by subarea watersheds outlining the sources of significant data and pertinent characteristics gathered during this work.

#### WORK PRODUCT AND SCHEDULES

1. Initiate efforts to identify significant parameters to be indexed. Initiate data collection activities. Identify possible sources of information. July 15, 1976
2. Progress report of progress to date to CDACs and CRCCs. Review inputs and modify as necessary. Solicit further input from CRCCs and CDACs relative to possible sources of information. August 30, 1976
3. Review outputs of CNI study and prepare progress report. Draft format of report of data gathering information. Review and comment by CDACs. November 1, 1976
4. Submit progress report to DEQ indicating work accomplished to date. Develop index and numbering system to organize information gathered through this work element. Continued efforts toward data gathering. November 1, 1976

5. Review appropriate information from designated areawide 208 studies. December 1, 1976
6. Draft report prepared indicating work outputs. Review by CDACs, BACs, and SPAC. Comments and inputs solicited. January 30, 1977
7. Incorporate comments and inputs into report. Prepare final report. Review by CDACs, BACs, and SPAC made available. Make information available for use in other work elements. May 1, 1977

#### RESPONSIBILITY

DSC staff is responsible for accomplishing this work element.

Technical committees and CDACs will assist in gathering and reviewing data for subarea watersheds.

DSC will indicate to DEQ on October 31, 1976, by status report that portion of this work item which has been completed.

DEQ will review and comment as appropriate.

#### COORDINATION

These work element outputs will be used in work elements: 504 (Classification map), 505 (Selection of Detailed Subarea Watersheds), and 506 (Data Analysis of Detailed Subarea Watersheds).

## WORK ELEMENT 503

## Technical Assessment

OBJECTIVE

A report based upon current research and expertise concerning effects on water quality in Iowa of the (1) dominant agricultural production methods; (2) agri-chemical and nutrient pollutants; (3) chemical and sediment transport mechanisms; and (4) any other pertinent technical information, as it relates to water quality.

DESCRIPTION OF WORK

This work element will consist of developing a report based on all available information from research, reports, and professional judgements and experiences analyzing statewide Iowa's agricultural methods, likely agri-chemical pollutants, and transport mechanisms, as they relate to water quality. The relative magnitude of the problems and possible control needs will be of prime concern.

Also, included in the report will be a general overview of the severity of urban and industrial stormwater runoff pollution sources and inferences drawn as to possible control needs. This portion of the report will be based on a review of available data, including information from the designated areawide 208 studies.

It is anticipated that tasks of this work item will be achieved through a sub-contract. It is expected that the completion of this work element will require a period of approximately 10 to 12 months. To insure that achievement of this work element is in accordance with the desired objectives, the sub-contractor will be expected to furnish interim outputs or status reports concerning progress being made.

Progress reports and interim outputs will be forwarded to appropriate agencies and the CDACs for their review and comment. Comments received will be reviewed and, if appropriate, incorporated into the final report.

LIST OF TASKS

1. Consult with an appropriate sub-contractor in order to determine and detail types of material and information desired through the technical assessment work element.
2. Meet with representatives of the sub-contractor to discuss (a) the needed information, and (b) the possibility and terms of a sub-contract.

3. Draw up an appropriate sub-contract and submit to DEQ for review and approval.
4. Submit sub-contract to EPA for review and approval.
5. Sign sub-contract with appropriate sub-contractor.
6. Sub-contractor will periodically indicate to DSC, by means of interim outputs or progress reports, the work underway and progress being made.
7. Sub-contractor will forward interim outputs to DSC for review and comment.
8. DSC will forward copies of outputs and reports to DEQ.
9. Forward, as appropriate, interim outputs to CDACs and the Conservancy District Technical Advisory Committee for review, comment, and further input.
10. Analyze and append, if necessary, any input received through the review procedures.
11. Sub-contractor will submit upon satisfactory completion of the contract, the final report to DSC.
12. Draft of the final appended report to appropriate committees, agencies, and individuals for their review.
13. Analyze and append, if necessary, any input received from this review.
14. Submit final report to DEQ.

#### FINAL WORK PRODUCT

A final report analyzing, statewide, Iowa's agricultural production methods, potential agri-chemical and nutrient pollutants, transport mechanisms, and urban and industrial stormwater runoff as they relate to water quality. Report will ultimately analyze and draw inferences as to the seriousness of the problems and possible control needs.

#### WORK PRODUCTS AND SCHEDULES

- |   |                  |
|---|------------------|
| 1. Consult with prospective sub-contractor concerning detail of types of material and information desired. Discuss possibility and terms of sub-contract. | December 1, 1976 |
| 2. Prepare the subcontract and submit to DEQ and EPA for review.  | February 1, 1977 |
| 3. Subcontract approved, signed and efforts toward technical assessment as per sub-contract initiated.  | March 15, 1977   |

4. Inform CDAs concerning details of sub-contract and initial efforts of technical assessment work element. May 1, 1977
5. Sub-contractor indicate by progress report the work underway. July 1, 1977
6. CDACs be informed of work underway. Opportunity for input and comments. August 1, 1977
7. Status report prepared and forwarded for review by CDACs. Comments and inputs solicited. November 1, 1977
8. Progress report prepared and forwarded for review by CDACs. Comments and inputs solicited. Subcontractor prepare and submit final report to DSC. March 1, 1978
9. DSC will review final report from sub-contractor. April 1, 1978
10. DSC forward draft of final report to CDACs, BACs, SPAC, agencies, and others for review and comment. June 1, 1978
11. Analyze and incorporate any input received from this review. Prepare final report. Make information available for use in other work elements. July 1, 1978

#### RESPONSIBILITY

DSC will be responsible for entering into a sub-contract with an appropriate sub-contractor for completion of tasks as detailed above.

DEQ will be responsible for review and approval of the sub-contract and for its submission to EPA.

EPA will be responsible for review and approval of the sub-contract.

DSC will be responsible for the administration and supervision of the sub-contract.

CDACs, BACs, SPAC, Conservancy District Technical Advisory Committee and others will review and comment on report as appropriate.

DSC will be responsible for providing a final appended report to DEQ.

#### COORDINATION

Output from this work element will be used in completing work elements: 506 (Analysis of Detailed Subarea Watersheds), 507 (Nonpoint Pollution Control Alternatives), and 509 (Strategy Development).

## WORK ELEMENT 504

## Classification Map

OBJECTIVE

Determine and classify the erosion potential of the delineated subarea watersheds within the two (2) identified planning basins and develop a map illustrating this information.

DESCRIPTION OF WORK

This work element will use information from work elements 501 and 502. Potential erodibility of the subarea watersheds will be determined by examining combinations of soil types, topography, precipitation, and agricultural production practices which exist within each watershed.

After the potential erosion determinations are completed, a classification system which will allow inter-watershed comparison of potential erosion will be formulated. This classification system will use the soil loss limits established by the Soil Conservation Districts of Iowa as a reference in the evaluation of the severity of erosion potential within each subarea watershed.

Progress reports, draft outputs and methodologies will be afforded review by public participation committees, special subcommittees, and public agencies. Input and comments from these sources will be reviewed and incorporated as appropriate.

LIST OF TASKS

1. Review relevant outputs from work element 501 (Computer Analysis of CNI Data).
2. Retain information from review of work element 501 (CNI Computer Analysis) that will be of use in completing this work element.
3. Review relevant outputs from work element 502 (Data Gathering).
4. Retain pertinent information from review of work element 502.
5. Take appropriate steps to supplement, if necessary, information from work element 502. This may include field checking, consulting with local agencies, officials, SCS personnel, or soils experts.
6. Compile soil loss limit regulations from Soil Conservation Districts.



7. Determine acceptable method to be used to determine the erosion potential of each subarea watershed.
8. Develop a scheme of classification, based upon the calculated potential erosion rates, to be used in preparation of the classification map.
9. Seek appropriate comments from the existing Conservancy District Technical Advisory Committee concerning both potential erosion calculation and classification.
10. Incorporate any pertinent comments from this technical review.
11. In response to the Conservancy District Technical Advisory Committee review make appropriate amendments to the classification map.
12. Prepare progress reports for review by CDACs.
13. Submit progress reports for DEQ review.
14. Review comments received from review bodies and make any appropriate revisions.
15. Proceed with determination of potential erodibility for all subarea watersheds in the two (2) identified planning basins.
16. Research various alternatives of best base map to be used for final map.
17. Determine the erodibility classification for each of the delineated sub-area watersheds on final map.
18. Submit draft of final map to appropriate review committees and agencies and technical review bodies.
19. Submit final work element to DEQ.

#### FINAL WORK PRODUCT

A map classifying the erosion potential of delineated subarea watersheds for the two (2) identified planning basins.

#### WORK PRODUCTS AND SCHEDULES

1. Review relevant outputs of CNI computer analysis and Data Gathering work elements and retain information to be used toward completion of this work element. December 1, 1976
2. Review additional outputs from Data Gathering work efforts. Initiate efforts to supplement information from Data Gathering work element. Inform CDACs of the proposed work and status to date. Solicit comments and input. February 1, 1977

3. Review existing soil loss limit regulations of soil conservation districts as they may relate to this work element. Develop a method(s) to be used to determine erosion potential of each subarea watershed. May 1, 1977
4. Develop scheme of classification to be used in preparing classification map. Seek comments and inputs from Conservancy District Technical Advisory Committee concerning potential erosion calculation and scheme of classification. July 1, 1977
5. Prepare progress report for review by CDACs, agencies, and others. Solicit comments and inputs. August 1, 1977
6. Review comments and inputs received and incorporate, as necessary, these inputs into the work element plan. Determine final procedure to be used for determining potential erodibility and developing classification map. Initiate potential erodibility and classification work efforts for the two (2) identified planning areas. September 1, 1977
7. Prepare progress report and indicate to CDACs procedures to be used and progress to date. Solicit input and comments. Initiate efforts to determine alternatives for base map to be used for final classification map. Continue efforts toward determining potential erodibility and classification of the subarea watersheds within the two major planning areas. November 1, 1977
8. Review inputs received and revise, if necessary, work element efforts. December 1, 1977
9. Prepare progress report and indicate to CDACs progress to date. Solicit input and comments. Continue efforts toward determining potential erodibility and classification of the subarea watersheds within the two (2) identified planning areas. March 1, 1978

10. Review comments and inputs received and revise, as necessary, work element efforts. Initiate efforts toward determining the erodibility classification for each of the delineated subarea watersheds within the two (2) identified planning areas on the final map.

April 1, 1978

11. Prepare draft of final classification map and submit to appropriate review committees, agencies, and technical committees. Solicit input and comments.

June 1, 1978

12. Review, as necessary, draft of final classification map and prepare final classification map for the delineated subarea watersheds in the two (2) identified planning areas. Make information available for further use in nonpoint study efforts.

August 1, 1978

#### RESPONSIBILITY

DSC will be responsible for reviewing pertinent information gathered through other work element efforts.

DSC will develop a method to be used to determine and classify the erosion potential of the subarea watersheds.

DSC will be responsible for soliciting input from technical experts as to possible procedures to be used and whether selected method(s) will be acceptable.

DSC will be responsible for developing base map and final map to be used for work element output.

DSC will be responsible for submitting status reports, draft outputs and final work product to appropriate review bodies.

Public participation committees will review and comment, as necessary, on various work element outputs.

Technical agencies and/or committees should review and comment on various work element methodologies and outputs.

#### COORDINATION

Outputs from work elements 501 and 502 will be used for input to this work element. Outputs of this work element will be considered in completion of work elements; 505 (Selection of Detailed Subarea Watersheds), 506 (Data Analysis of Detailed Subarea Watersheds), 507 (Nonpoint Pollution Control Alternatives), and 509 (Strategy Development).

## WORK ELEMENT 505

## Selection of Detailed Subarea Watersheds

OBJECTIVES

To select representative watersheds which can be studied in sufficient detail to permit the development of recommended best management practices and/or systems alternatives.

DESCRIPTION OF WORK

Select subarea watershed areas for which detailed studies are proposed to be conducted. Criteria for selecting these watersheds will include: (1) drainage area of nearly uniform size (approximate size to be, but not limited to, 10 to 20 square miles); (2) a minimum of one watershed representative of each land resource area (LRA) contained in each of the respective planning areas; (3) the selected watersheds within each LRA shall have more significant erosion potential; (4) counsel of the involved soil conservation districts and Conservancy District Advisory Committees before making the final watershed selection; and (5) availability of pertinent water quality data. (This work element will be confined to two (2) identified planning areas in compliance with the CPP and contract #76-5500-01.)

LIST OF TASKS

1. Identify the LRA's within each planning area and list in a suitable table.
2. Develop a suitable map which illustrates the planning area boundaries, LRA boundaries and the subarea watershed delineations.
3. Guided by the procedure outlined in the "description of work" develop a list of subarea watersheds that have appropriate characteristics for detailed study.
4. Review available data, including outputs from work elements 502 (Data Gathering), 503 (Technical Assessment), and 401 (Data Collection and Compilation) and as appropriate incorporate this information into tabular format.
5. Develop a list, for each LRA, that ranks the subarea watersheds for detailed studies based on information available at this time.
6. Review the priority list with the appropriate soil conservation district(s) and local county resource coordinating committee(s).

7. Review the priority list with the appropriate conservancy district advisory committees and BACs.
8. Select subarea watersheds for detailed study basing the choices on outputs of the above tasks.
9. Submit final report to DEQ.

#### FINAL WORK PRODUCT

A report indicating the watersheds that have been selected for detailed study.

#### WORK PRODUCTS AND SCHEDULES

1. Identify the LRA's within each planning area and list in a suitable table. Initiate development of a suitable map which illustrates the conservancy district boundaries, LRA boundaries and subarea watershed delineations. Inform CDACs of proposed work plan for this work element. Solicit input and comments. November 15, 1976
2. Review comments and inputs received from CDACs. Incorporate as necessary. Initiate development of a list of subarea watersheds that have appropriate characteristics for detailed study. December 15, 1976
3. Review available data, including outputs from work elements 502 and 503, and as appropriate incorporate this information into tabular format. January 1, 1977
4. Develop a list for each LRA, within the two (2) identified planning areas, that ranks the subarea watersheds for detailed studies. Review the priority list with the appropriate soil conservation districts, CRCCs, CDACs, and BACs, as appropriate. Solicit input and comments. February 1, 1977
5. Review inputs and comments received and revise priority list, as appropriate. Select subarea watersheds for which detailed study is proposed, based on outputs of the listed tasks. March 1, 1977
6. Prepare and submit final report to DEQ. March 15, 1977

RESPONSIBILITY

DSC staff responsible for delineating the LRA's.

DSC staff responsible for developing a suitable map.

DSC staff responsible for developing a list of subarea watersheds.

DSC staff responsible for developing a table of appropriate information.

DSC staff consult with DEQ relative to prioritization of subarea watersheds for detailed study.

DSC staff responsible for developing the subarea priority list.

DSC staff will make the necessary contacts with the soil conservation districts and conservancy district advisory committees.

DSC, in consultation with DEQ, will make selection of subarea watersheds.

DSC will submit the report to DEQ.

COORDINATION

Outputs from work elements 502 (Data Gathering), 503 (Technical Assessment), and 401 (WQ Data Collection) will be used in completing this work element.

Outputs from this work element will be used in completing work element 506 (Data Analysis of Detailed Subarea Watersheds).

## WORK ELEMENT 506

## Data Analysis of Detailed Subarea Watersheds

OBJECTIVES

To gather pertinent information specific to the selected watersheds in sufficient detail to permit development of a report indicating the recommended and needed watershed specific best management practices and/or systems alternatives for the studied watersheds.

DESCRIPTION OF WORK

This work element will review and analyze the outputs from work element 501 (developed through contract #76-5500-01) and 502 (Data Gathering) to provide correlation with the more detailed watershed specific data. The watersheds studied will be those subarea watersheds selected in work element 505 (Selection of Detailed Subarea Watersheds). (As per work element 505, this will be done in the two (2) identified planning areas).

The data gathered and analyzed may include, but not limited to, cropping patterns, crop rotations, tillage operations, management techniques, land treatments applied, soils factors, topography and climatic factors. These data will be gathered in sufficient detail to allow a comprehensive review of the potential contribution of selected watersheds to nonpoint pollution.

Based on the findings of the detailed studies DSC will prepare a draft report indicating the technical recommendations of needed best management practices and/or systems alternatives which are watershed specific. The draft report will be presented and reviewed with the involved CRCCs, CDACs, soil conservation district commissioners, and the Conservancy District Technical Advisory Committee for reactions and comments. A final report, incorporating the input of these committees, will be prepared indicating recommendations of needed best management practices and/or systems that are feasible, effective, and most acceptable.

LIST OF TASKS

1. Review, analyze and tabulate from previous efforts (work elements 501 and 502) data pertinent to the specific watersheds that are being studied.
2. Develop methodologies and procedures for collecting and recording detailed data.
3. Identify specific data such as cropping patterns, crop rotations, tillage operations, management techniques, land treatment applied, soils factors, topography and climatic factors which will be recorded for each studied watershed.

4. Develop a system to insure the orderly and efficient storage and retrieval of collected data.
5. Review proposals from tasks #2, 3 and 4 with the Conservancy District Technical Advisory Committee.
6. Modify proposals from tasks #2, 3 and 4, if necessary, to incorporate the inputs received from members of the Conservancy District Technical Advisory Committee.
7. Consult with the appropriate County Resource Coordinating Committee(s) explaining the initiation of watershed studies and the methodology that will be used to seek local input and cooperation for the study.
8. Release through local news media, such as television, radio, newspapers, periodicals, or local extension service offices, a report indicating that a study is to be undertaken, reasons for the study, types of information to be gathered, methodology and ultimate objective of the study.
9. Establish needed field contacts for conducting the watershed studies.
10. Initiate data gathering as detailed in and in accordance with the output from task #6.
11. Adjust data gathering methodologies to suit the specific watershed area, local people involved, types of problems and accessibility of desired information.
12. Periodically develop progress reports to be presented and reviewed with appropriate County Resource Coordinating Committee(s) and the Conservancy District Technical Advisory Committee.
13. Adjust the work efforts as appropriate in response to inputs from the various committees.
14. Continue to gather detailed data as completely as time and funds allow.
15. Prepare an interim report detailing the severity of the potential nonpoint pollution generated within the respective watersheds studied.
16. Review the interim report with the involved technical committees and CRCCs and CDACs.
17. Gather information and analyze types of best management practices and/or systems currently being used, their effectiveness, acceptance by local people, economic costs, anticipated useful life and ability to solve particular problems.
18. Environmental, social, and economic effects will be assessed for the best management practices and/or systems currently being used.



19. Determine on an individual watershed basis management practices and/or systems alternatives best suited to control nonpoint pollution and most readily acceptable to the local people.
20. Prepare a draft report summarizing results and conclusions to this point.
21. Release summary of study results to local media. Review draft report with appropriate technical Committees, CDACs, BACs, and SPAC, and other interested parties.
22. Review and incorporate, as necessary, inputs resulting from review process.
23. If substantial revisions are made to the draft report, review again with the appropriate committee(s).
24. Prepare final report and submit to DEQ.

#### FINAL WORK PRODUCT

A final report, based on the detailed studies, indicating watershed specific recommendations of needed best management practices and/or systems alternatives for the selected watersheds within the two (2) identified planning areas.

#### WORK PRODUCTS AND SCHEDULES

1. Review, analyze and tabulate from previous efforts (501 and 502) data pertinent to the specific watersheds that are to be studied as per result of work element 505. Work to develop methodologies and procedures for collecting and recording detailed data. Identify specific data which will be recorded for each studied watershed and develop a system to insure the orderly and efficient storage and retrieval of the collected data. April 15, 1977
2. Review proposals of methodologies and procedures to be used for this work element study with CDACs, agencies, and Conservancy District Technical Advisory Committee. Solicit input and comments. May 1, 1977
3. Review comments received and modify, if necessary, to incorporate these comments into work efforts. May 15, 1977
4. Consult with the appropriate CRCCs explaining the initiation of the studies and the methodology that will be used. Establish needed field contacts. Initiate data gathering efforts as detailed. July 1, 1977

5. Release through local news media information outlining the study being undertaken, reasons for study, types of information to be gathered, methodology and ultimate objectives of the study. Adjust data gathering methodologies as may be necessary. Prepare and present progress report to appropriate CRCCs, CDACs, and technical committees for review and comment. August 1, 1977
6. Adjust work efforts, as necessary, in response to inputs from the various committees. Continue gathering detailed data. August 15, 1977
7. Prepare progress report indicating work efforts being accomplished. Solicit input and comment from CDACs. November 1, 1977
8. Adjust work efforts, as necessary, in response to inputs from various committees. Continue gathering detailed data. Initiate efforts toward gathering information and analyzing types of best management practices and/or systems (BMP/s) being used, effectiveness, costs, etc. Initiate efforts to determine on an individual watershed basis BMP/s alternatives best suited to control nonpoint pollution and most readily acceptable to the local people. Initiate efforts toward preparation of draft report summarizing results and conclusions. November 15, 1977
9. Prepare interim report detailing the severity of the potential nonpoint pollution generated within the studied watersheds. Allow appropriate CRCCs, CDACs, and technical committees opportunity to review and comment. Continue work efforts toward gathering information and analyzing types of BMP/s being used, costs, effectiveness, environmental and social costs and benefits, etc. March 1, 1978
10. Adjust work efforts, as necessary, in response to inputs from various committees. Continue work efforts. March 15, 1978
11. Prepare progress report for review by CDACs, BACs, and SPAC. Solicit input and comments. Continue work efforts. Prepare draft report summarizing results and conclusions. June 1, 1978
12. Adjust work efforts, as necessary, in response to inputs from various review committees. July 1, 1978

13. Release of study results to local media. Review of final draft report by CDACs, BACs, SPAC, agencies, and others. August 1, 1978
14. Prepare final report and submit to DEQ. August 15, 1978

#### RESPONSIBILITY

DSC will have all technical and administrative responsibilities for this work element.

DSC, in consultation with DEQ, will prepare summary of study results for release to media.

The indicated public participation and technical committees will be responsible for timely and appropriate responses to status and draft reports.

#### COORDINATION

Outputs from work element 501 (Computer Analysis of Conservation Needs Inventory Data) (developed through Contract #76-5500-01) and work elements 502 (Data Gathering) and 503 (Technical Assessment) will be used in completing this work element.

Outputs from this work element will be used in completing work elements 507 (Nonpoint Pollution Control Alternatives) and 509 (Strategy Development).

## WORK ELEMENT 507

## Nonpoint Pollution Control Alternatives

OBJECTIVES

To determine for all subarea watersheds within each Land Resource Area (LRA) the most effective alternatives of various best management practices and/or systems for controlling nonpoint pollution. Also, to determine the least cost and most publicly acceptable set of nonpoint pollution control alternatives suitable for subarea watersheds within each land resource area. Determination will be limited to the two (2) identified planning areas studied.

DESCRIPTION OF WORK

This work element will draw upon many sources of information including, but not limited to, outputs from work elements 502 (Data Gathering), 503 (Technical Assessment), 504 (Classification Map) and 506 (Data Analysis of Detailed Subarea Watersheds) for the development of an integrated set of recommendations for each planning area studied. A report will be prepared based on this data which will detail recommended best management practices and/or systems alternatives by LRA within the identified planning area studied.

This report will attempt to determine nonpoint pollution control alternatives that are simultaneously acceptable to the public, technically feasible, and consistent with the knowledge gained through the other work items of this work plan.

LIST OF TASKS

1. Review, analyze, and perform necessary tabulation of information from outputs developed in work element 502 (Data Gathering).
2. Review, analyze, and perform necessary tabulation of information from outputs developed in work element 503 (Technical Assessments).
3. Maintain communication with sub-contractor concerning interpretation, use and correlation of work element 503 (Technical Assessments) outputs as they relate to outputs developed under work elements 504 (Classification Map) and 506 (Data Analysis of Detailed Subarea Watersheds).
4. Develop methodologies and procedures for integrating, extrapolating and expanding watershed specific best management practices and/or systems alternatives to represent their appropriate LRA regions.
5. Review initial efforts with the Conservancy District Technical Advisory Committee.

6. Incorporate comments and adjust procedures, as appropriate, based on responses from members of the Conservancy District Technical Advisory Committee.
7. Initiate the work effort in conformance with the methodologies and procedures developed.
8. Field check preliminary results with technical experts to determine the effectiveness of techniques being used to develop realistic, reliable and meaningful results.
9. Adjust methodology and procedures, if necessary, to assure that acceptable results will be attained.
10. Review preliminary results with CDACs to keep them aware of the study direction and to determine the direction public support is taking.
11. Continue efforts to identify and specify needed best management practices and/or systems alternatives for the respective LRA regions.
12. Determine the technical services cost associated with different control alternatives.
13. Determine the significant economic factors such as, but not limited to, construction costs; construction opportunity costs; recovery costs; management costs; maintenance costs; replacement costs; and discount rates, as appropriate.
14. Gather the necessary cost information in response to the determination of significant economic factors.
15. Incorporate the economic data with the results achieved thus far in identifying best management practices and/or systems alternatives.
16. Determine the environmental, social, and economic effects of the identified best management practices and/or systems alternatives.
17. Review interim outputs with appropriate CDACs and others to assure that final results will be acceptable and useful in actual field conditions.
18. Adjust study procedures, if necessary, based on responses from the participants in the review committees and groups.
19. Continue the work effort to integrate, extrapolate, and expand data and social factors.
20. Field check available outputs to confirm that realistic, reliable, and meaningful results are being developed.
21. Prepare a draft report for public and technical review.

22. Present and review the draft report with the Conservancy District Technical Advisory Committee.
23. Present and review the draft report with appropriate Conservancy District Advisory Committees.
24. Review and incorporate, as needed, inputs from the participating committees.
25. Prepare draft report.
26. Release summary of study results to local media. Review and comment on draft report by CDACs, BACs, SPAC and others.
27. Modify draft report as necessitated by responses of review committees.
28. Submit final report.

#### FINAL WORK PRODUCT

A final report, based on outputs from detailed studies and additional analysis for area-wide recommendations for the most effective set of best management practices for nonpoint pollution control.

This report will attempt to determine nonpoint pollution control alternatives that satisfy cost, public opinion, technical feasibilities, and pollution control constraints.

#### WORK PRODUCTS AND SCHEDULES

- |   |                   |
|---|-------------------|
| 1. Initiate efforts to develop methodologies and procedures for integrating, extrapolating and expanding watershed specific best management practice systems alternatives to represent their LRA. | October 1, 1977   |
| 2. Review methodologies and procedures with Conservancy District Technical Advisory Committee. Solicit input and comments.  | November 1, 1977  |
| 3. Incorporate comments and adjust procedure, as necessary.   | November 15, 1977 |
| 4. Review, analyze, and perform necessary tabulation of information from outputs developed in work elements 502 and 503.  | December 1, 1977  |
| 5. Maintain communication with subcontractor concerning interpretation, use, and correlation of work element 503 outputs as they relate to outputs of work element 504 and 506.                   | January 1, 1978   |

6. Check preliminary results with technical experts to determine effectiveness of techniques being used to develop realistic, reliable and meaningful results. February 1, 1978
7. Adjust procedures and methodologies as necessary. February 15, 1978
8. Review preliminary results with CDACs to inform them of the study and determine the direction of public support. Solicit input and comments. March 1, 1978
9. Adjust these results pursuant to CDACs comments. Continue work element efforts. March 15, 1978
10. Determine various significant costs associated with different control alternatives and gather the necessary cost information. May 1, 1978
11. Incorporate the economic data with the results achieved thus far in identifying the best management practice system alternatives. May 15, 1978
12. Prepare interim output for review with appropriate CDACs and others. Solicit comments. June 1, 1978
13. Adjust studies, as appropriate, relative to comments received. Continue efforts to integrate, extrapolate, and expand the data result. June 15, 1978
14. Field check available outputs. July 1, 1978
15. Prepare a draft report for public and technical review. Release summary of study results to local media. Solicit comments and input. August 1, 1978
16. Revise, as necessary, relative to comments received. August 15, 1978
17. Prepare final report for this work element. August 15, 1978

#### RESPONSIBILITY

DSC will have all technical and administrative responsibilities for this work element.

DSC, in consultation with DEQ, will prepare summary of study results for release to local media.

CDACs, BACs, SPAC and technical committees will be responsible for timely and appropriate responses to progress and draft reports.

#### COORDINATION

Outputs from work elements 502 (Data Gathering), 503 (Technical Assessment), 504 (Classification Map) and 506 (Data Analysis of Detailed Subarea Watersheds) will be used in completing this work element. Additionally, work element 510 (SCS Consultation) will be utilized in this work element.

Outputs from this work element will be used in completing work element 509 (Strategy Development).



## WORK ELEMENT 508

## Mine Assessment and Control Needs

OBJECTIVE

An assessment of mine and quarry sites within the major planning areas and the severity of nonpoint pollution associated with each. Further, recommendations as to the actions and/or regulations needed to abate physical and chemical pollution from these sites.

DESCRIPTION OF WORK

Efforts will be directed toward locating as many mining operations within the major planning areas of the state as possible, assessing the operational status of each mine, listing the type of operation involved with each active mine and the material extracted. In addition, the type and severity of nonpoint pollution problem(s), if any, associated with each identified mine will be determined. Once the assessment has been accomplished, maps will be prepared showing the locations, types of operations and severity of nonpoint pollution problems associated with each. These maps will be an easily accessible and interpretable system of conveying information to familiarize the public with the situation.

Initially, the study will require the DSC Mines and Minerals Division staff to review appropriate literature and information available that relates to pertinent water quality and nonpoint pollution problems. The DSC staff (in coordination with other experts in the technical field) will determine the proper procedures to be used in locating and assessing the sites. Once the necessary procedures are developed, the DSC staff will be responsible for conducting the required assessments and field evaluations in accordance with the developed procedures.

Once the initial assessment has been completed, the study efforts will be directed at determining the measures needed to control the assessed nonpoint pollution problems. Various technical reports and studies, and existing local, state, and federal regulations will be reviewed to determine their importance and effect (if any) on the assessed nonpoint pollution problems. As the review of this material proceeds, efforts will be made toward developing alternatives that may be needed to abate physical and chemical pollution problems. Certain areas may be outlined and recommended for further research.

LIST OF TASKS

1. DSC staff determine various types of operations to be assessed.
2. Review pertinent information available concerning nonpoint pollution from various types of operations.

3. Review Mines and Minerals Division and other state agency files for information relevant to this work element study.
4. Determine location within each county of various known operations.
5. Develop procedures for assessing the nonpoint pollution problem(s) associated with the various mining operations in Iowa.
6. Assess any existing nonpoint pollution problem(s) associated with the particular mine sites.
7. Determine type or types of mining operations associated with each site, i.e. (strip, dredging, underground, hydraulic, etc.).
8. Determine status of mines as to whether active or abandoned.
9. Develop procedures to classify the mine sites within the major planning areas as to their nonpoint pollution severity.
10. Prioritize the mining nonpoint pollution problems within the major planning areas.
11. Prepare progress reports indicating progress to date in work element study.
12. Review literature, various state laws, federal laws, etc., relating to rules and regulations adopted for abatement of erosion and acid mine drainage.
13. Review rules and regulations adopted in Iowa relative to mine operations.
14. Determine control needs and alternatives for the various nonpoint pollution problems within the major planning areas.
15. Seek appropriate comments from technical experts concerning needed rules and regulations.
16. Develop proposals of actions needed to abate physical and chemical pollution from mine sites.
17. Research various alternatives of best base map to be used for map locating the various mine sites.
18. Decide on best alternative and develop base map locating mine sites and classifying nonpoint pollution seriousness.
19. Develop draft report of final work product.
20. Submit draft report to appropriate review committees and agencies and technical review bodies.
21. Review comments and make appropriate revisions.

22. Submit final work product to DEQ.

#### FINAL WORK PRODUCT

A report outlining the various mining operations within the major planning areas and classifying the seriousness of nonpoint pollution associated with each. Within the report will be recommendations for procedures and/or regulations needed to abate the physical and chemical pollution from these sites. The final report will include a map showing the location of the various mine sites, status of each and classifying the seriousness of pollution associated with each.

#### WORK PRODUCTS AND SCHEDULES

1. Determine various types of operations to be assessed. Have initiated a review of pertinent information available concerning nonpoint pollution from various types of mining operations. January 1, 1977
2. Review pertinent information available and agency files for information relevant to this work element study. February 15, 1977
3. Develop procedures for assessing the nonpoint pollution associated with the various mining operations. March 1, 1977
4. Develop procedures to classify mine sites within the major planning areas as to their nonpoint pollution severity. Initiate efforts to locate, determine types, and determine status of various mine operations. April 1, 1977
5. Review, with appropriate technical experts, the procedures developed. Solicit input and comments. April 15, 1977
6. Prepare progress report for review by CDACs. Solicit comments and input. Continue mine assessment efforts. May 1, 1977
7. Adjust procedures, as appropriate, relative to comments received. June 1, 1977
8. Prepare status report indicating progress to date. November 1, 1977
9. Initiate efforts to review literature, laws, etc. relating to rules and regulations adopted for abatement of mine associated nonpoint pollution. Continue mine assessment efforts. January 1, 1978

10. Prepare interim report indicating results, mine assessment efforts and prioritize the mining nonpoint pollution problems within the major planning areas. Solicit comments and input from CDACs, BACs, SPAC, technical committees and others. Initiate efforts to determine control needs and alternatives for the various mine related nonpoint pollution problems. June 1, 1978
11. Revise, as necessary, pursuant to comments and input received. June 15, 1978
12. Determine control needs and alternatives for the various mine related nonpoint pollution problems. July 15, 1978
13. Develop draft report to present control needs and alternatives for public and technical review and comment. Research various alternatives and develop base map to be used for locating mine sites and classifying their nonpoint pollution seriousness. August 1, 1978
14. Review comments, make appropriate revisions, and prepare final report. Submit report to DEQ. September 15, 1978

#### RESPONSIBILITY

DSC staff will be responsible for reviewing appropriate literature and information sources.

DSC staff will be responsible for locating the various known mine operations and determining status of each.

DSC will determine the nonpoint pollution problems associated with each mine site.

DSC will review current state and federal laws and determine possible control needs.

DSC will solicit input from CDACs, BACs, SPAC, agencies, and technical experts.

DSC will work to develop procedures needed to abate physical and chemical pollution from mine sites.

DSC will prepare final map locating and classifying the various mining operations.

Various technical experts will aid in developing procedures needed to assess problems and develop control needs.

CDACs, BACs, and SPAC will review outputs and offer suggestions as to revisions needed.

COORDINATION

No coordination with other work elements of this Activity Series.

## WORK ELEMENT 509

## Nonpoint Source Control Strategy Development

OBJECTIVE

Develop strategy for implementation programs to control nonpoint source pollution in a manner responsive to public goals and objectives.

DESCRIPTION OF WORK

Efforts of this work element will be directed at developing strategy for initiating implementation programs for the nonpoint source control alternatives identified in work element 507. The necessary techniques may include the development of rules, regulations and proposed legislation relating to control measures, management agencies and funding provisions.

The public participation organization will be used to solicit input from the public concerning their positions on possible techniques for initiating nonpoint control programs.

At such time as the most acceptable strategies are established, a report outlining the same will be prepared.

LIST OF TASKS

1. Review outputs of nonpoint work elements.
2. CDACs, BACs, SPAC, technical experts, and agencies will review outputs of interim and completed nonpoint work elements.
3. Solicit input, as appropriate, from CDACs, BACs, SPAC, technical experts, and other agencies concerning work element outputs.
4. Review all comments from the review bodies and work to develop strategies for implementation.
5. Assess existing legal authorities as to their ability to carry out nonpoint pollution management.
6. Assess existing statutes that could provide financing arrangements for strategy implementation.
7. Work with various agencies, technical experts, lawyers, and others concerning various alternative strategies.
8. Summarize the progress to date in the areas of control needs and an assessment of the ability of existing institutions to perform their functions.
9. Solicit input from CDACs, BACs, SPAC, agencies, and technical experts on needed rules, regulations or proposed legislation for control programs, management agencies, and funding.

10. Identify and develop legislative proposals needed to enable full implementation of the nonpoint management programs.
11. Identify and develop proposals needed for financing management programs.
12. Develop tentative priorities for implementation programs.
13. SSCC and IWQC will review and jointly approve the legislative or financing proposals and program priorities developed.
14. CDACs, BACs, and SPAC review, comment, and provide input concerning the legislative or financing proposals and program priorities developed.
15. Based upon public input, select alternative strategies for obtaining nonpoint pollution control needs.
16. Prepare a draft report of proposed and prioritized strategies to implement rules, regulations, legislation and funding programs.
17. SSCC and IWQC will review and jointly approve draft report.
18. This draft report will be reviewed by appropriate CDACs, BACs, SPAC, agencies, technical experts, and others.
19. Review comments from these review bodies and revise the draft as necessary.
20. Prepare final report.
21. Submit final report to SSCC and IWQC for approval.

#### FINAL WORK PRODUCT

A report outlining the recommended strategies needed to initiate control programs such as development of rules, regulations, and proposed legislation relating to control measures, management agencies, and funding provisions to carryout the identified nonpoint control alternatives.

#### WORK PRODUCTS AND SCHEDULES

1. Initiate efforts for this work element. February 1, 1978
2. CDACs, BACs, SPAC, technical experts, and agencies will review outputs of nonpoint work elements and develop their input and comments. March 1, 1978
3. Review comments received and work to develop strategies for implementation. April 15, 1978

4. Prepare report summarizing existing legal authorities and statutes and progress to date in the areas of control needs and ability of existing institutions to perform these functions. May 15, 1978
5. Solicit input from CDACs, BACs, SPAC, agencies, and technical experts on needed rules, regulations, proposed legislation, etc., for nonpoint pollution control programs. June 1, 1978
6. Utilizing these public inputs, identify and develop legislative proposals to enable full implementation and financing provisions of nonpoint management programs. July 1, 1978
7. SSCC and IWQC will review and jointly approve the legislative or financing proposals and program priorities developed. July 15, 1978
8. Solicit input and comments of CDACs, BACs, SPAC, agencies, and technical experts on these proposals and prioritization of alternative strategies for obtaining nonpoint pollution control needs. Prepare draft of final report. August 15, 1978
9. SSCC and IWQC will review and jointly approve draft report. September 1, 1978
10. Solicit input and comments of CDACs, BACs, and SPAC on draft of final report. September 15, 1978
11. Review comments and inputs and prepare final report. October 1, 1978
12. SSCC and IWQC will review and approve final report. October 15, 1978

#### RESPONSIBILITIES

DSC will have all technical and administrative responsibilities for this work element.

CDACs, BACs, SPAC, technical committees and agencies will be responsible for contributing input, review, comments, and aid in development of strategies for control programs.

SSCC and IWQC will review and jointly approve outputs as outlined in the list of tasks.



COORDINATION

Outputs of nonpoint work elements will be reviewed and utilized in completing this work element. The assistance of an informed and involved public will be utilized to assure that rational, realistic, and reasonable implementation programs follow the completion of this work element in a timely manner.

## WORK ELEMENT 510

## Prioritize Nonpoint Control Efforts

OBJECTIVE

Prioritize areas for implementation of the identified nonpoint source control measures.

DESCRIPTION OF WORK

The effort of this work element will be to combine and coordinate the outputs of work elements 406 and 509 in order to develop a methodology for establishing priorities for water quality related nonpoint source control programs. In response to stream segments which have significant in-stream nonpoint pollution problems, efforts will be made to determine "early action" areas for implementation of nonpoint source control measures. This effort will be confined to the two identified planning basins.

LIST OF TASKS

1. Review work element outputs of work series 400 and 500.
2. Considering the criteria specified in work element 406, prepare a recommended priority list of stream segments needing nonpoint source control.
3. Considering the prioritized stream segments identified and outputs from work element 507 determine and list "early action" subareas recommended for implementation of control measures.
4. IWQC and SSCC review and comment on the recommended priority list.
5. Review comments and inputs and revise priority lists as appropriate.
6. Prepare interim report outlining the priority lists for release to CDACs, BACs, SPAC, and others for review, comment, and input.
7. Review comments and inputs received and revise priority areas as appropriate.
8. Develop final report outlining prioritized areas for implementation of control measures.
9. IWQC and SSCC review and approve final report.

FINAL WORK PRODUCT

A final report outlining prioritized areas within the 2 identified planning areas to be considered for implementation of nonpoint source control measures.

WORK PRODUCT AND SCHEDULES

1. Prepare priority list of stream segments. July 15, 1978
2. Prepare list of areas recommended for implementation of control measures and submit for SSCC and IWQC review. August 1, 1978
3. Based on SSCC and IWQC comments prepare interim report outlining the priority lists and submit for review by public participation organization. September 15, 1978
4. Based on all comments and input develop final report outlining prioritized areas for implementation of control measures. October 1, 1978
5. SSCC and IWQC approve final report. October 10, 1978

RESPONSIBILITIES

DEQ and DSC will review work element outputs of Activity Series 400 and 500.

DEQ, in consultation with DSC, will recommend a priority list of stream segments.

DSC, in consultation with DEQ, will recommend a priority list of "early action" subareas.

IWQC and SSCC will review and jointly approve the recommended priority lists and final report.

CDACs, BACs, SPAC, and others will review, comment, and provide input on recommended priority lists.

DSC and DEQ will review comments and prepare final report.

COORDINATION

Outputs of work elements from Activity Series 400 and 500 will be utilized in developing this report. This work element will suggest priority areas for initiation of the implementation process.

## WORK ELEMENT 511

## SCS Consultation

OBJECTIVE

To obtain technical expertise for the various nonpoint study work elements through consultation with SCS staff most familiar with the specific problems addressed in each work element.

DESCRIPTION OF WORK

Primary purpose of this work element will be to obtain SCS technical assistance in completing the various nonpoint pollution work elements. Throughout the nonpoint pollution planning process, various work elements will require the technical expertise of individuals well acquainted with agricultural practices. Through consultation with SCS personnel, study efforts and work element products will be more technically complete and comprehensive.

LIST OF TASKS

Major task of this work element will consist of consulting with SCS staff concerning the nonpoint efforts as work element studies progress. The majority of the nonpoint study tasks will involve problems and situations with which SCS personnel are familiar and trained. Therefore, it is imperative that this close communication, coordination, and consultation between SCS and DSC exist.

WORK PRODUCTS AND SCHEDULE

There will be no formal written work product solely for this work element. However, efforts of this work element will allow more technically complete and comprehensive outputs from the other nonpoint work elements, and will be utilized throughout the entire nonpoint pollution study period.

RESPONSIBILITY

DSC will be responsible for consulting with SCS staff concerning the nonpoint pollution work elements.

SCS will be responsible for assisting DSC in completion of technical aspects of the various nonpoint pollution work elements.

COORDINATION

Outputs of this work element will be utilized in completing the other nonpoint pollution work elements.

## WORK ELEMENT 512

## Administration

OBJECTIVE

Effective administration of the nonpoint study efforts of the 208 program as outlined in the Continuing Planning Process Document and the Detailed Work Plan.

DESCRIPTION OF WORK

The efforts of this work element consist of administering the day-to-day activities and total study procedures of the nonpoint portion of the statewide 208 planning process. The administration efforts will ultimately be most influential in determining the degree of completion of the objectives of the nonpoint pollution planning efforts. Further, the intent of the administrative efforts will be to establish the general direction and results expected from the program, coordinate the study activities, integrate, where appropriate, the designated 208 area nonpoint plans into the statewide nonpoint plan, insure mechanisms for public involvement in the planning process, and incorporate various technical recommendations and public input into final statewide nonpoint pollution plans.

LIST OF TASKS

1. Personnel administration.
2. Accounting of payroll and support functions.
3. Negotiating and administering sub-contract(s).
4. Negotiating with DEQ.
5. Preparation of periodic reports to submit to DEQ.
6. Maintaining record keeping systems.
7. Securing and administering data storage and retrieval systems.
8. Administration of public participation organization activities.
9. Prepare interim progress reports as required through work elements and sub-contract.
10. Develop prioritization procedures for various work efforts.
11. Supervise preparation of final reports concerning nonpoint planning efforts.

12. Insure comprehensive and complete nonpoint planning efforts.
13. Integrate, where appropriate, the designated 208 study area nonpoint results into the nonpoint pollution plan.

#### WORK PRODUCTS AND SCHEDULE

There will be no independent work product for this element, only the achievement of the Section 208 statewide nonpoint pollution planning efforts.

#### RESPONSIBILITY

The DSC will be responsible for accomplishing the above listed tasks and completion of the nonpoint pollution planning efforts as specified.

#### COORDINATION

This work element is relevant to the completion of all other work elements and the nonpoint pollution portion of Iowa's Water Quality Management Plan.

## ACTIVITY SERIES 600

## RESIDUAL WASTE DISPOSAL

Sewage sludge is generated by wastewater treatment plants at an average rate of 70 pounds of dry sludge per person annually and the volume is increasing geometrically with the population growth. A population of 10,000 would generate one ton of dry sludge per day. With implementation of the Water Quality Act of 1972, there is an anticipated 3 to 5 fold increase in sewage sludge volume that will have to be disposed of in sanitary landfills, spread on the land or incinerated.

Water treatment plants generate softening plant sludges, diatomite filter sludges, coagulant sludges, brine wastes and filter washwater sludge. These sludges are normally disposed of by three basic methods: (1) disposal of the sludge directly into a stream, (2) place the sludge in drying beds or lagoons to dry and then deposit it in a remote area, and (3) disposing of the sludge into the sanitary sewers to be treated as wastewater. In general, water treatment sludges contain mostly inorganic matter and cause few odor problems even when the water has a high concentration of organic material. Disposal at sanitary landfills and field spreading are becoming popular as methods of water treatment plant disposal while lagooning and dilution are becoming impractical because of limited land availability and water pollution regulations.

Industrial sludges can be divided into two categories; (1) toxic and non-toxic industrial sludges. Presently the Land Quality Management Division of the Department of Environmental Quality handles each industrial sludge disposal problem individually. This system has worked satisfactorily for toxic industrial sludges. Non-toxic sludges have been handled similarly but the question is whether or not they should be. General guidelines for non-toxic sludges may be more appropriate. In addition, guidelines may be developed for toxic sludges.

Improperly handled residual wastes can cause surface and groundwater pollution, affect soil fertility and affect human health. For these reasons, sludge disposal methods must be environmentally acceptable, economically sound, usable for the foreseeable future and aesthetically acceptable.

Rules for the disposal of sewage sludge in a sanitary landfill have been developed and were reviewed by the Solid Waste Disposal Commission on August 25, 1976. The guidelines for sewage sludge disposal in a landfill are currently being reviewed by the Water Quality Management Division and should be available to the public soon.

The first objective of this study is to find out if a problem with residual waste disposal exists in Iowa and to what extent the problem does exist. With this information, guidelines and/or rules can be developed which will protect the public, protect the environment, and offer economical solutions to the problem of residual waste disposal. The guidelines and/or rules would cover disposal site locations, types of sludges, sludge volumes and methods of disposal.



## WORK ELEMENT 601

## Program Management

OBJECTIVE

Maintain communication and coordination between the Land and Water Quality Management Divisions. Allow those involved to be cognizant of the schedule so that the schedule will be met.

DESCRIPTION OF WORK

Hold necessary meetings to discuss schedules, results, remaining work and other factors to insure that the work elements are being accomplished. Review all completed work activities and determine whether program modifications are necessary. Determine roles of Land Quality and Water Quality Divisions in planning and implementation.

LIST OF TASKS

1. Manage the program
  - a) This task will be continued throughout the length of the Residual Waste Disposal Series. A determination will be made of what modifications should be made in the program and the methods available to carry out those modifications. Determine each Division's responsibilities and roles during planning phase.
2. Implement Program
  - a) Determine each Division's responsibilities and roles in the implementation phase.

WORK PRODUCTS AND SCHEDULES

1. Manage Program
  - a) Inter-division meetings August 1, 1976 - August 1, 1978
  - Work Product  
Program Managed and Completed August 1, 1978
2. Implement Program
  - a) Inter-division meetings August 1, 1976 - August 1, 1978
  - Work Product  
Continuing Program Outlined August 1, 1978

RESPONSIBILITY

1. Inter-division meetings

Land Quality and Water Quality  
Management Divisions

COORDINATION

This work element will provide input into the entire program.

## WORK ELEMENT 602

Development of Rules and Guidelines for Disposal of  
Sewage Sludge in Sanitary LandfillsOBJECTIVE

Provide rules and guidelines for disposal of sewage sludge in sanitary landfills to insure that the disposal is environmentally safe and not a health hazard to the sanitary landfill operator.

DESCRIPTION OF WORK

Rules have been drafted by Land Quality Management Division staff and reviewed by the Solid Waste Disposal Commission. Public hearings will be arranged and attended. A final copy of the rules will be developed for final adoption.

The final draft of the guideline is complete. It is currently being reviewed by the Land Quality Management Division. Comments will be incorporated into the final copy and the final copy made ready for distribution.

LIST OF TASKS

1. Rules
  - a) Present rules to Solid Waste Disposal Commission for approval and incorporate their comments into the final draft.
  - b) Set date for and hold public hearing. Incorporate comments from public hearing into rules.
  - c) Present revised rules to the Commission for comment and approval.
  - d) Rules filed.
2. Guidelines
  - a) Review the final draft of the guidelines and incorporate the comments into the final copy.
  - b) Make copies ready for distribution.

WORK PRODUCTS AND SCHEDULES

## 1. Rules

- |    |   |  |
|----|---|--|
| a) | Develop draft rules   | July 14, 1976 - August 1, 1976<br>(completed)                                |
|    | <u>Work Product</u><br>Draft Rules  | August 1, 1976 (completed)   |
| b) | Draft rule review   | August 1, 1976 - August 25, 1976   |
|    | <u>Work Product</u><br>Commission Review  | August 25, 1976  |
| c) | Rule adoption   | August 25, 1976 - February 15, 1977  |
|    | <u>Work Product</u><br>Public Hearing<br>Develop Final Draft of Rules<br>Commission Adoption<br>Rules Effective | October 13, 1976<br>November 1, 1976<br>January 1, 1977<br>February 15, 1977 |

## 2. Guidelines

- |    |   |                                     |
|----|---|-------------------------------------|
| a) | Develop draft guidelines                        | Completed                           |
|    | <u>Work Product</u><br>Draft Guidelines         | Completed                           |
| b) | Draft guidelines review                         | Present - December 15, 1976         |
|    | <u>Work Product</u><br>Commission Review        | December 15, 1976                   |
| c) | Finalize guidelines                             | December 15, 1976 - January 1, 1977 |
|    | <u>Work Product</u><br>Final Copy of Guidelines | January 1, 1977                     |

RESPONSIBILITY

- |    |                            |  |
|----|----------------------------|--|
| 1. | Commission Review          | Solid Waste Disposal Commission                                |
| 2. | Public Hearing Arrangement | Compliance Monitoring Division                                 |
| 3. | Rules Revision             | Compliance Monitoring and<br>Land Quality Management Divisions |
| 4. | Guideline Review           | Land Quality and Water Quality<br>Management Division          |

COORDINATION

Independent

## WORK ELEMENT 603

## Survey of Wastewater Treatment Plants

OBJECTIVE

Develop a concise and understandable survey form to be used by DEQ staff to determine how wastewater treatment plants are disposing of sewage sludge. Determine the validity of the survey form so that the usefulness of the requested information can be resolved. Revise the survey form and surveying procedure based on evaluation of the gathered information. Complete survey data collection for a cross-section of municipalities disposing of sewage sludge. Gather survey data together for ease of analysis. Analyze data to determine whether a problem exists and scale the program according to the problems.

DESCRIPTION OF WORK

List the information that should be collected in the survey. Research DEQ files to find what data is already available. Decide what type of survey form should be used and develop it. Select and list a representative cross section of Iowa municipal wastewater treatment plants. Send survey forms or personally interview plant operators. Review the gathered information to determine if the survey forms and procedure are adequate. The results of the initial survey will be used to revise the survey form. Methods of conducting the survey will be completed for selected Iowa municipalities disposing of sewage sludge. A record will be kept of the survey forms submitted and a follow-up made of those not submitted.

The data on the final survey forms will be compiled and summarized. The wastewater treatment and sludge disposal practices will be categorized to see if sewage sludge disposal problems can be isolated to certain types of plants or sludge disposal practices.

LIST OF TASKS

1. Initial Survey.
  - a) Decide on the information that should be requested on the initial survey. Work up and distribute the initial survey form to several selected wastewater treatment plants.
  - b) Review initial survey forms to insure that they were completed correctly. List and study the submitted data to determine if adequate information is being obtained through use of the survey.
2. Final Survey
  - a) Modify the survey form as necessary to provide pertinent information and to make the form easy to complete and submit. Discuss

methods by which the survey can be conducted and decide on which method will be employed.

- b) List the municipal wastewater treatment plants to be surveyed. Establish a schedule for receiving the surveys and a check off list for municipal wastewater treatment plants as their survey forms are submitted.
- c) Conduct survey according to method decided upon. Contact the wastewater treatment plants from whom the survey forms have not been received after the scheduled submittal time. Contact by phone, letter, personal contact, or through the DEQ regional office.
- d) List and summarize the data on the survey forms. Categorize the results according to size and type of wastewater treatment plants and sludge disposal practices. Analyze the compiled data. Submit a working paper outlining the results of the survey to BACs and SPAC for their information.

#### WORK PRODUCTS AND SCHEDULES

##### 1. Initial Survey

- |    |                           |  |
|----|---------------------------|--|
| a) | Inter-divisional meetings | August 14, 1976 - September 25, 1976   |
|    | <u>Work Product</u>       |  |
|    | Initial Survey Form       | September 25, 1976                     |
| b) | Conduct initial survey    | September 25, 1976 - November 20, 1976 |
|    | <u>Work Product</u>       |  |
|    | Initial Survey Results    | November 20, 1976                      |

##### 2. Final Survey

- |    |   |                                      |
|----|---|--------------------------------------|
| a) | Develop revised survey form and procedure | November 20, 1976 - December 4, 1976 |
|    | <u>Work Product</u>                       |                                      |
|    | Final Survey Form                         | December 4, 1976                     |
|    | Survey Procedure                          | December 4, 1976                     |
| b) | Establish survey schedule                 | December 4, 1976 - December 18, 1976 |
|    | <u>Work Product</u>                       |                                      |
|    | List of Plants to be Surveyed             | December 11, 1976                    |
|    | Schedule for Receiving Surveys            | December 18, 1976                    |
| c) | Conduct survey                            | December 18, 1976 - April 9, 1977    |
|    | <u>Work Product</u>                       |                                      |
|    | Completed Survey Forms                    | April 9, 1977                        |

d) Summarize and Analyze Data

April 9, 1977 - April 23, 1977

Work Product

Program Assessment Working Paper

April 23, 1977

Survey Results to BACs & SPAC

April 23, 1977

RESPONSIBILITY

- |                                |  |
|--------------------------------|--|
| 1. Inter-divisional meetings   | Land Quality and Water Quality Management Divisions                              |
| 2. Review initial survey forms | Land Quality and Water Quality Management Divisions and Office of Administration |
| 3. Review revised survey forms | Land Quality and Water Quality Management Divisions and Office of Administration |
| 4. Establish survey            | Land Quality Management Division and Regional Offices                            |
| 5. Conduct survey              | Land Quality Management Division and Regional Offices                            |
| 6. Summarize and Analyze Data  | Land Quality and Water Quality Management Divisions                              |

COORDINATION

This work element will provide information which will be utilized in completing the remaining work elements.

## WORK ELEMENT 604

Development of Rules and Guidelines Relating  
to the Utilization of Sewage Sludge on CroplandOBJECTIVE

Collect relevant, up-to-date data that will be used in finalizing the program.

Develop rules to promote and regulate the utilization of sewage sludge on land to minimize the environmental and health risks associated with sewage sludge utilization.

Provide a guideline outlining how sewage sludge can be used to its best advantage and still be disposed of in an environmentally acceptable manner. These guidelines will aid in maintaining soil fertility, maximizing yields, avoiding contamination of surface and groundwater and providing protection from possible pathogenic contamination.

DESCRIPTION OF WORK

Conduct personal interviews, file searches and literature surveys to compile the needed data. The research work will gather information for use in the remaining Work Elements.

Draft rules for sewage sludge utilization on cropland and present the draft to the appropriate Commission for comments and approval. Incorporate the Commission's comments into the final draft. Arrange and attend public hearings. Develop final copy of the rules and implement rules.

Develop a guideline to be used by farmers which includes data pertaining to soil cation exchange capacities, plant toxicity levels and the heavy metals content of sewage sludge. Draft guidelines will be reviewed by Land Quality Management Division and Water Quality Management Division staff. Their comments will provide input into the final draft of the guidelines. The completed guidelines will be distributed to wastewater treatment plant operators and interested farmers.

LIST OF TASKS

1. Data Collection
  - a) Outline the information needed to complete the various aspects of the program.
  - b) Research Water Quality Management Division files, conduct personal interviews, and conduct a literature survey of material available in the state library, DEQ library and other sources of literature. Divide the collected data to reflect the breakdown of work elements.



## 2. Rules

- a) Draft sewage sludge utilization rules.
- b) Determine appropriate Commission to act on rules, submit draft rules to the Commission for approval and comment and incorporate Commission comments into draft.
- c) Submit draft to BACs and SPAC for review.
- d) Incorporate BACs and SPAC comments into rules.
- e) Set dates for and hold public hearings. Incorporate comments from public hearings into rules.
- f) Present revised rules to the Commission for review and approval.
- g) Incorporate Commission comments into rules.
- h) File rules.
- i) Distribute rules to wastewater treatment plants and other interested parties.

## 3. Rules Implementation

- a) Draft and review a list of responsibilities for Land Quality Management Division and Water Quality Management Division. Discuss list of responsibilities and approve. Each Division will implement its assigned responsibilities.

## 4. Guidelines

- a) Determine what information would be useful to a plant operator or farmer in determining the optimum use of sewage sludge on cropland and work that data into a draft guideline.
- b) Review of the draft by Land Quality Management Division and Water Quality Management Division staff. Consider a joint publication with the ISU Extension Service. Have sketches for text drawn. Contact ISU Extension for appropriate input.
- c) Submit draft to BACs and SPAC for review.
- d) Incorporate BACs and SPAC comments into rules.
- e) Submit to Commission for comment and approval.
- f) Finalize the text and make copies for distribution.

WORK PRODUCTS AND SCHEDULES

## 1. Data Collection

## a) Data Collection

February 26, 1977 - May 7, 1977

Work Product

Collection of Data Complete

May 7, 1977

## 2. Rules

## a) Develop Draft Rules

February 26, 1977 - April 1, 1977

Work Product

Draft Rules

April 1, 1977

## b) Draft Rule Review

April 1, 1977 - July 1, 1977

Work Product

Commission Review

June 1, 1977

BACs and SPAC Review

July 1, 1977

## c) Rule Adoption

July 1, 1977 - December 15, 1977

Work Product

Public Hearing

August 15, 1977

Develop Final Draft of Rules

September 1, 1977

Commission Adoption

November 1, 1977

Rules Effective

December 15, 1977

## 3. Guidelines

## a) Develop Draft Guidelines

February 26, 1977 - May 1, 1977

Work Product

Draft Guidelines

May 1, 1977

## b) Draft Guidelines Review

May 1, 1977 - August 1, 1977

Work Product

BACs and SPAC Review

June 1, 1977

Commission Review

August 1, 1977

## c) Finalize Guidelines

August 1, 1977 - November 15, 1977

Work Product

Final Copy of Guidelines

November 15, 1977

RESPONSIBILITY

- |                         |   |
|-------------------------|---|
| 1. Data Collection      | Land Quality Management Division  |
| 2. Rules                | Land Quality, Water Quality Management<br>and Compliance Monitoring Divisions |
| 3. Rules Implementation | Land Quality and Water Quality Management<br>Divisions                        |
| 4. Guidelines           | Land Quality and Water Quality Management<br>Divisions                        |

COORDINATION

This work element may provide input into work element 605.

## WORK ELEMENT 605

Development of Rules and Guidelines for the Disposal of Sewage  
Sludge on Land for Disposal OnlyOBJECTIVE

The objective of this work element is to develop rules and guidelines regulating sewage sludge disposal on land so that no public health hazard exists and the potential for surface and groundwater pollution is minimal.

DESCRIPTION OF WORK

Rules governing the land disposal of sewage sludge for disposal only will be drafted. The draft rules will be reviewed by WQMD and LQMD staff of DEQ. Comments from all entities will be incorporated into the final draft. The final draft will be presented to the Commission for their approval. Their comments will be incorporated into the final draft. Public meetings will be arranged and attended. The final copy of the rules will be developed.

Develop a guideline that can be used by the wastewater treatment plant operator and the engineer to determine what methods are available in disposing of sewage sludge on land. Draft guidelines will be reviewed by Land Quality Management Division and Water Quality Management Division staff. Their comments will provide input into the final draft of guidelines. The completed guidelines will be distributed to wastewater treatment plant operators and consulting engineers.

LIST OF TASKS

1. Rules
  - a) Collect data relative to drafting rules for sewage sludge disposal on land for disposal only and draft rules using that data.
  - b) Determine appropriate Commission to act on rules and present the rules to that Commission for comment and approval. Incorporate Commission comments into final draft.
  - c) Submit draft rules to BACs and SPAC for review and comment.
  - d) Set date for and hold public hearing. Incorporate comments into rules.
  - e) Present rules to Commission for review and approval.
  - f) File rules.

## 2. Guidelines

- a) Determine what information would be useful to a plant operator in determining the optimum method of disposing of sewage sludge on land and work that data into a draft guideline. Review of draft by LQMD and WQMD staff.
- b) Submit to BACs and SPAC for review and comment.
- c) Submit to Commission for approval.
- d) Finalize the text and make copies for distribution.

WORK PRODUCTS AND SCHEDULES

## 1. Rules

- |   |   |
|---|---|
| a) Develop draft rules  | February 26, 1977 - May 7, 1977   |
| <u>Work Product</u><br>Draft Rules  | May 7, 1977   |
| b) Draft Rule Review  | May 7, 1977 - August 1, 1977  |
| <u>Work Product</u><br>Commission Review<br>BACs and SPAC Review  | July 1, 1977<br>August 1, 1977  |
| c) Rule Adoption  | August 1, 1977 - January 15, 1978   |
| <u>Work Product</u><br>Public Hearing<br>Develop Final Draft of Rules<br>Commission Adoption<br>Rules Effective | September 15, 1977<br>October 1, 1977<br>December 1, 1977<br>January 15, 1978 |

## 2. Guidelines

- |  |                                   |
|--|-----------------------------------|
| a) Develop Draft Guidelines                                      | February 26, 1977 - June 1, 1977  |
| <u>Work Product</u><br>Draft Guidelines                          | June 1, 1977                      |
| b) Draft Guidelines Review                                       | June 1, 1977 - September 1, 1977  |
| <u>Work Product</u><br>BACs and SPAC Review<br>Commission Review | July 1, 1977<br>September 1, 1977 |

c) Finalize Guidelines

September 1, 1977 - December 15, 1977

Work Product

Final Copy of Guidelines

December 15, 1977

RESPONSIBILITY

- |                         |   |
|-------------------------|---|
| 1. Data Collection      | Land Quality Management Division  |
| 2. Rules                | Land Quality, Water Quality Management<br>and Compliance Monitoring Divisions |
| 3. Rules Implementation | Land Quality and Water Quality Management<br>Division                         |
| 4. Guidelines           | Land Quality and Water Quality Management<br>Division                         |

COORDINATION

This work element will receive input from work element 604.

## WORK ELEMENT 606

## Industrial Sludge Disposal

OBJECTIVE

Determine the need to survey sources of sludge other than municipal sludge. Find the sources of industrial sludge and what types are being generated. Develop rules and guidelines to insure the environmentally safe and hazard-free disposal of industrial sludges.

DESCRIPTION OF WORK

Investigate the potential sources of sludge and determine if these are a problem in Iowa. Determine what information would be required and work this into a survey format. Submit the survey form to appropriate industries, compile the data and analyze it to determine the need for rules and/or guidelines.

Research available literature, DEQ files, and utilize personal interviews to find the most environmentally acceptable and hazard free methods of disposal. Develop rules, submit them to the appropriate Commission, arrange and attend public hearings and develop the final copy of the rules.

Collect data which applies to the safe disposal of industrial sludges and convert this data into guideline form so that it can be easily understood and followed.

LIST OF TASKS

1. Evaluation of Problem
  - a) Define sludges.
  - b) List the Iowa industries that would generate sludges.
  - c) Determine what information should be obtained in a survey to find whether or not the disposal of sludges is a problem in Iowa. Devise a survey form requesting the pertinent information and determine the method for conducting the survey. Set a schedule for submittal, compile the forms submitted and follow-up on those not submitted. Summarize and analyze the data submitted on the survey forms.
2. Rules
  - a) Collect data and analyze it to determine the best methods of industrial sludge disposal.
  - b) Based on the data analysis, develop a first draft of the rules.

- c) Determine the appropriate Commission to act on the rules and present the first draft to the Commission for comment and approval. Incorporate Commission comments into final draft of the rules.
- d) Submit draft to BACs and SPAC for review and comment.
- e) Incorporate BACs and SPAC comments into rules.
- f) Prepare rules for presentation at public hearing. Set date for and hold public hearing. Incorporate comments into the rules.
- g) Present revised rules to the Commission for comment and approval.
- h) File rules.

### 3. Guidelines

- a) Develop and review a draft guideline using the data summarization.
- b) Submit to BACs and SPAC for review and comment.
- c) Incorporate BACs and SPAC comment into guidelines.
- d) Submit to Commission for comment and approval.
- e) Incorporate comments of review into final copy of the guidelines and make ready for distribution.

## WORK PRODUCTS AND SCHEDULES

### 1. Survey

- |                                       |  |
|---------------------------------------|--|
| a) Problem Evaluation                 | September 10, 1977 - November 12, 1977 |
| <u>Work Product</u>                   |  |
| Definition of Sludges                 | September 17, 1977                     |
| List of Industries Generating Sludges | October 1, 1977                        |
| Information Required on Survey        | October 29, 1977                       |
| Survey Form and Survey Procedure      | November 12, 1977                      |
| b) Set a Submittal Deadline           | November 12, 1977 - November 19, 1977  |
| <u>Work Product</u>                   |  |
| Schedule for Survey Submittal         | November 19, 1977                      |
| c) Summarize and Analyze Data         | November 19, 1977 - January 21, 1978   |
| <u>Work Product</u>                   |  |
| Analysis of the Problem               | January 21, 1978                       |



2. Rules
- a) Develop Draft Rules January 21, 1978 - March 1, 1978
- Work Product  
Draft Rules March 1, 1978
- b) Draft Rule Review March 1, 1978 - June 1, 1978
- Work Product  
Commission Review May 1, 1978  
BACs and SPAC Review June 1, 1978
- c) Rule Adoption May 1, 1978 - October 1, 1978
- Work Product  
Public Hearing June 15, 1978  
Develop Final Draft of Rules July 15, 1978  
Commission Adoption August 15, 1978  
Rules Effective October 1, 1978
3. Guidelines
- a) Develop Draft Guidelines February 1, 1978 - April 1, 1978
- Work Product  
Draft Guidelines April 1, 1978
- b) Draft Guidelines Review April 1, 1978 - July 1, 1978
- Work Product  
BACs and SPAC Review May 1, 1978  
Commission Approval July 1, 1978
- c) Finalize Guidelines July 1, 1978 - September 1, 1978
- Work Product  
Final Copy of Guidelines September 1, 1978

RESPONSIBILITY

1. Survey Land Quality and Water Quality Management Divisions and Regional Offices
2. Rules Land Quality, Water Quality Management and Compliance Monitoring Divisions
3. Guidelines Land Quality and Water Quality Management Divisions

COORDINATION

Independent

## ACTIVITY SERIES 700

## REGIONAL OPERATION AND MAINTENANCE

In many areas of the state, cities and towns are finding it expensive, both in terms of manpower and monies, to operate and maintain sanitary sewage treatment facilities. This regional operation and maintenance (O & M) study will investigate the possibilities of regionalizing the resources used in O & M of sewage treatment facilities to minimize costs and yet maintain the required levels of waste treatment and provide necessary sampling and monitoring to comply with state and federal requirements.

This study will involve conducting an inventory of the existing types and conditions of sewage treatment facilities in a 6 county area of north-central Iowa. Transportation distances, climatological factors, economic conditions, facility costs, operation and maintenance needs, and manpower training needs will be considered in determining the most feasible regionalization program. This program will consider institutional arrangements and cost management factors in combining the resources of communities into a regionalized program.

Major outputs of this study are the development of guidelines for the establishing O & M programs in other areas of the state and a functioning, ongoing O & M program. The guidelines will provide methodology for determining if other areas can reasonably implement O & M programs. Outputs of this study may provide information to other program efforts regarding identification of necessary vocational and occupational training for operators and determining if state and federal requirements for the adequate operation of sewage treatment plants are being met.

## WORK ELEMENT 701

## Initial Study Organization

OBJECTIVE

To establish study procedures and program restraints. To establish and provide effective utilization of a local citizens committee, designed to provide local governmental input to local policy decisions relevant to the regional operation and maintenance study (O & M) of the region's wastewater treatment facilities.

DESCRIPTION OF WORK

The applicable laws and regulations and trends will be researched, restrictions developed. Similar O & M programs, if available, will be evaluated. Study procedures will be developed. Establish a MIDAS citizens committee for local governmental input on the O & M study and identify their responsibilities.

LIST OF TASKS

1. Establish Citizens Committee
  - a) The use of a citizens committee is intended to insure acceptance of the O & M recommendations at a local level and to also provide input on the data and information needed as background in developing alternative plans.
2. Research and Evaluation
  - a) Review trends and philosophies of waste treatment management.
  - b) Review the laws and regulations of the state, federal and local agencies. Check local and city ordinances.
  - c) Seek and review similar studies for O & M programs.
3. Develop Study Procedures
  - a) Prepare an outline of the program to develop guidelines for O & M programs and the strategy to be used in the development of an O & M program.
  - b) Review study procedures with local citizens committee.

WORK PRODUCTS AND SCHEDULE

1. Establish Citizens Committee
  - a) Initiate selection of committee members. September 30, 1976
  - Work Product  
Citizens committee selected. October 15, 1976
2. Research and Evaluation
  - a) Review trends, laws, and similar studies. November 1, 1976 - November 30, 1976
3. Develop Study Procedures November 1, 1976 - November 30, 1976
  - Work Product  
Study Procedures November 30, 1976

RESPONSIBILITY

1. Establishment and coordination of local citizens committee. MIDAS
2. Gather trends, philosophies, laws and direction of local governments regarding waste treatment management. MIDAS
3. Other Tasks. Consultant

COORDINATION

This element establishes the guide for the remaining elements of this Activity Series.

## WORK ELEMENT 702

## Compile Background Information

OBJECTIVE

To compile and define various background elements related to operation and maintenance.

DESCRIPTION OF THE WORK

Compile and tabulate, graph, map or otherwise represent relevant background information. Research available population, transportation network, economic and climatological information. The background information will then be present in a form for evaluation, evaluated and summarized for use in later study elements.

LIST OF TASKS

1. Population.
  - a) Past census and recent population studies will be researched.
  - b) Populations will be tabulated by city, county, rural (by county).
  - c) Population projections for each element will be coordinated with recently developed official state population projections.
  - d) Land area in each element will be established from existing literature, plats, maps, etc.
  - e) Densities for the political element will be established.
  - f) Densities will be mapped.
  - g) Centroids by region, county and where appropriate by lesser area will be established and mapped.
  - h) Summary of population data will be prepared.
2. Transportation
  - a) Maps of existing surfaced road network for the region will be prepared from existing maps, plats, etc.
  - b) Road surface condition will be established from existing maps where available and from inspection where maps are not available. This will be used to establish all-season routes between treatment works.

- c) Distances between treatment works will be determined from maps and placed on maps.
  - d) Summary of transportation network available will be prepared.
3. Economic Conditions
- a) Data will be gathered from existing records and reports on property evaluations, tax levies, income, land values by political entity, where available. Estimates based on similar areas will be made where sufficient data is not available.
  - b) Economic data will be tabulated.
  - c) Summary of economic conditions will be prepared.
4. Climatology
- a) Data from U.S. Dept. of Agriculture information station (approx. 9 in MIDAS) regarding precipitation, temperatures, soil freezing, snowfall, etc. will be tabulated.
  - b) Summary of climatic conditions will be prepared.

#### WORK PRODUCTS AND SCHEDULE

1. Population
- a) Tabulation of existing and projected populations. December 1, 1976 - December 30, 1976
  - b) Preparations of density and centroid maps. December 1, 1976 - December 30, 1976
- Work Product  
Population Summaries December 30, 1976
2. Transportation
- Work Product  
Map Summary of Network. December 30, 1976
3. Economic Conditons
- Work Product  
Tabulation and Summary December 30, 1976
4. Climatological Conditions.
- Work Product  
Tabulation and Summary December 30, 1976

RESPONSIBILITY

1. Gathering and tabulating projection population data. MIDAS
2. Gathering and tabulating economic data. MIDAS
3. All other work tasks. Consultant

COORDINATION

The information gathered and evaluated will be used in completing work elements 704, 705, and 706.

## WORK ELEMENT 703

## Inventory of Existing Wastewater Facilities

OBJECTIVE

To prepare an inventory of existing wastewater generation units, wastewater treatment facilities, operation and maintenance practices, manpower, and other equipment, facilities and practices presently employed.

DESCRIPTION OF WORK

An inventory of existing wastewater related elements will be made. Data will be gathered from DEQ records, questionnaires, on-site inspections, interviews with local officials, etc.

LIST OF TASKS

1. Inventory existing wastewater generating units from existing maps, aerial photos, land use plans, etc. Categorization of units will include residential, commercial, industrial and insitutional.
2. Inventory wastewater treatment plants.
  - a) Type
  - b) Size
  - c) Age
  - d) Design degree of treatment
  - e) Future plans
3. Inventory operation and maintenance procedures.
  - a) Manpower
  - b) Testing facilities
  - c) Budget
  - d) Other facilities and equipment

WORK PRODUCTS AND SCHEDULE

1. Inventory of existing wastewater generating units, treatment facilities, and operation and maintenance procedures.

January 1, 1977 - February 1, 1977

Work Product  
Inventory Report

February 1, 1977



RESPONSIBILITY

1. Provide data for inventory of wastewater generating facilities.
2. Other tasks.

MIDAS

Consultant

COORDINATION

The findings of this element will be compared with findings of element 704 and used as a basis for elements 705 and 706.

## WORK ELEMENT 704

## Evaluate Existing O &amp; M Procedures

OBJECTIVE

Evaluate the operation and maintenance needs of the existing facilities. Evaluate the adequacy of existing operation and maintenance procedures.

DESCRIPTION OF WORK

The needs for operation and maintenance will be described for each facility based on needs and regulations defined by state regulations, local conditions and accepted operation and maintenance requirements and then compared with existing operation and maintenance practices.

LIST OF TASKS

1. Define operation and maintenance needs for each facility.
  - a) Manpower
  - b) Testing
  - c) Equipment
  - d) Certification
  - e) Other facilities or equipment
2. Compare needs with existing practices.
3. Summarize differences between needs and existing practices.

WORK PRODUCTS AND SCHEDULE

1. List of the O & M needs for each facility. February 15, 1977 - March 15, 1977
  2. List of differences (surplusses or deficiencies). March 15, 1977 - March 30, 1977
- Work Product  
Summary March 30, 1977

RESPONSIBILITY

1. All Tasks.

Consultant.

COORDINATION

Items of work in 701, 702, and 703 will be used to prepare this item of work.  
Items 705 and 706 will be developed based on this item.

## WORK ELEMENT 705

## Develop Alternate Plans and Guidelines

OBJECTIVE

To prepare and evaluate various alternative plans and guidelines for regional operation and maintenance.

DESCRIPTION OF WORK

Alternative plans and guidelines will be prepared based on work elements 701, 702, 703, and 704 and prepared in a form to be evaluated. Evaluation of alternatives will be made for workability and economics by the consultant. Workable alternatives will be presented for public/community evaluation.

LIST OF TASKS

1. Prepare alternative plans.
2. Prepare alternative guidelines for other plan developments.
3. Evaluate each plan and guideline for workability and economics.
4. Present alternatives for citizen committee evaluation.

WORK PRODUCTS AND SCHEDULE

- |  |                              |
|--|------------------------------|
| 1. Develop plans and guidelines                            |                              |
| a) Alternative plans of original O & M for the MIDAS area. | April 1, 1977 - June 1, 1977 |
| b) Alternative guidelines for preparing such plans.        | April 1, 1977 - June 1, 1977 |
| c) Evaluation of plans and guidelines.                     | June 1, 1977 - June 30, 1977 |
| <u>Work Product</u><br>Plans and Guidelines                | June 30, 1977                |

RESPONSIBILITY

- |   |            |
|---|------------|
| 1. Preparation and evaluation of plans and guidelines.  | Consultant |
| 2. Presenting and coordinating public participation through citizen's committee and BACs and SPAC and other interested parties. | MIDAS, DEQ |

COORDINATION

Items of work elements 701, 702, 703, and 704 will be used to prepare this element.

Results of this element will be used to prepare 706.

## WORK ELEMENT 706

## Recommended Plan and Guidelines

OBJECTIVE

To prepare for presentation recommended plan and guidelines.

DESCRIPTION OF WORK

The alternative plans and public comments will be evaluated and a recommended plan will be prepared. Guideline comments will be prepared based on alternative guidelines and public comment.

LIST OF TASKS

1. Review alternative plans and guidelines.
2. Review comments.
3. Select most desirable plan and guidelines.
4. Adjust plan and guidelines per comments.
5. Prepare plan and guidelines.
  - a) Organization structures
  - b) Personnel and equipment
  - c) Methods of deriving revenue
  - d) Implementation
  - e) Manpower and cost savings

WORK PRODUCTS AND SCHEDULE

- |    |                                       |                                      |
|----|---------------------------------------|--------------------------------------|
| 1. | Review plans, guidelines and comments | September 1, 1977 - October 30, 1977 |
|----|---------------------------------------|--------------------------------------|

<u>Work Product</u>	
Recommended Plan and Guidelines	October 30, 1977

RESPONSIBILITY

- |    |   |            |
|----|---|------------|
| 1. | Final comments on proposed O & M alternative plans and guidelines.                        | MIDAS      |
| 2. | Provide technical documentation for final policy recommendations on O & M implementation. | Consultant |

COORDINATION

All previous elements will be used to prepare this element.

ACTIVITY SERIES 800  
PROGRAM PLAN DEVELOPMENT

In anticipation of additional federal funding, additional areas of study relating to water quality management planning will be developed. The detailed work plan for this activity is prepared in accordance with the draft regulations as published in the Federal Register, Vol. 41, No. 140, Tuesday, July 20, 1976. Since the mentioned regulations are not final, changes may be made in the detailed work plan and timetable presented herein upon promulgation of final regulations.

Although this activity series is developed in anticipation of additional funds being made available in the near future, this activity series will be utilized whenever additional funds become available or program changes become necessary throughout the planning period.

Program plan development will involve the compilation of existing projects and programs recommended by various state, regional and local agencies as well as additional programs and projects recommended through the public participation structure for statewide planning. The scope of work allocated to the various projects will depend on the funds available and the priority or need for the program or project. The outputs of this activity series will be the development of mini-work plans for the programs or projects receiving high priority for funding.

Considerable public input will be utilized in the compilation and prioritizing of the projects recommended for future water quality management planning.

Several areas of study already identified as possible programs for future funding are:

- a. Guidelines and ordinances for insystem discharges and sewer construction;
- b. Stream surveys on water quality limited segments;
- c. Nonpoint source assessment in additional planning areas of the state;
- d. Regional operational and maintenance programs;
- e. Management plans for existing sewer plans;
- f. Land development plans;
- g. Regional wastewater treatment programs;
- h. Groundwater protection;



- i. Flooding problems at wastewater facilities;
- j. Sink hole studies;
- k. Sedimentation study on fish hatcheries; and
- l. Hazardous waste disposal surface and groundwater effects.

Because the time for initiating work on this activity series is not known at this time, the schedule for each of the various work elements are presented in terms of the days required for completion.

## WORK ELEMENT 801

## Priority Listing of Identified Programs or Projects

OBJECTIVE

To prepare a priority list of the identified programs and projects which are recommended for funding.

DESCRIPTION OF WORK

Programs and projects which various agencies or governmental units have recommended funding will be reviewed, including completion of nonpoint source assessment for additional planning areas. An outline of each of these projects will be prepared. These outlines will then be reviewed as to their relationship to the statewide water quality needs. A preliminary priority list will be prepared indicating which projects should be funded first based on available funding.

LIST OF TASKS

1. Outline Projects
  - a) Prepare an outline of the identified programs and projects.
2. Priority Listing
  - a) Prepare a preliminary priority list of the various programs based upon the needs of the water quality program for the state.

WORK PRODUCTS AND SCHEDULES

1. Listing of Identified Projects
  - a) Outline of Projects
  - b) Prioritize Projects

Work Product

Preliminary priority list of projects	15 days
---------------------------------------	---------

RESPONSIBILITY

- |   |                               |
|---|-------------------------------|
| 1. Outlines of Projects                 | DEQ and DSC                   |
| 2. Prioritize Non-Point Source Projects | DSC, in consultation with DEQ |
| 3. Prioritize all Projects              | DEQ, in consultation with DSC |

COORDINATION

This work element will be used to complete work element 802.

## WORK ELEMENT 802

## Public Review of Preliminary Priority List

OBJECTIVE

To provide the public an opportunity to review the prepared listing of projects and submit additional programs or projects for funding.

DESCRIPTION OF WORK

Using the mailing list of BAC and SPAC members, state agencies, and other interested parties, DEQ will distribute the preliminary listing of projects as prepared in work element 801. The publics receiving this listing will be asked to review and comment on the projects and their priorities. They will also be asked to submit any additional projects for consideration in later work elements. DEQ should receive these additional project requests and comments on the original priority listing.

LIST OF TASKS

1. Mail Listing
  - a) Distribute to the BACs and SPAC as well as other interested parties, the preliminary priority listing of identified projects.
2. Public Review
  - a) Allow the public time to review the preliminary listing of projects and formulate any comments. Also request the public to consider any additional projects not listed.
3. Comments to DEQ
  - a) The BACs and SPAC and other parties will forward their comments on the list to DEQ. Additional projects requested for funding will also be sent to DEQ.

WORK PRODUCTS AND SCHEDULES

1. Public Review of List
2. Additional Projects for Funding

Work Product

Receive comments on list and additional projects 30 days

RESPONSIBILITY

- 1. Mailing of Preliminary List DEQ
- 2. Public Comment and Additional Requests Public Participation

COORDINATION

This work element utilizes the outputs of work element 801. Outputs from this work element will be used in work element 803.

## WORK ELEMENT 803

### Outlines and Priorities for all Projects

#### OBJECTIVE

Using all projects requested to be funded, prepare a draft priority list and a mini-work plan for each project receiving high priority.

#### DESCRIPTION OF WORK

Upon completion of work element 802, DEQ will have available the projects that the public feels should be funded for statewide water quality management planning. For each of these projects, an outline will be prepared defining the scope of the project, what is to be done, the costs associated with it, and the schedule for its completion. Once the outlines are done, they will be reviewed for their contribution to the State's overall planning efforts and prioritized. By this time, available funding should be known and a determination can be made on possible project funding. For those projects likely to be funded, mini-work plans will be developed.

#### LIST OF TASKS

1. Project Outlines
  - a) For all projects outlines will be prepared defining the scope of work of each project and its cost.
2. Review and Prioritize
  - a) The outlines will be reviewed as to their relationship to the statewide water quality management planning, their costs, and their time constraints.
  - b) Based on the review, the various projects will be prioritized in order to determine which projects and to what extent each could be funded and fully utilized in the water quality plan.
3. Development of Mini-Work Plans
  - a) For projects likely to be funded, mini-work plans will be developed.

#### WORK PRODUCTS AND SCHEDULES

1. Preparation of Project Outlines
2. Prioritize Projects

##### Work Product

Draft priority list.

## 3. Mini-Work Plans

45 days

RESPONSIBILITY

- |   |                                  |
|---|----------------------------------|
| 1. Preparation of Project Outlines      | DEQ, DSC, or requesting entities |
| 2. Prioritize Non-Point Source Projects | DSC, in consultation with DEQ    |
| 3. Prioritize All Projects              | DEQ, in consultation with DSC    |
| 4. Develop Mini-Work Plans              | DEQ, DSC, or requesting entities |

COORDINATION

Completion of this work element is necessary for work element 804.

## WORK ELEMENT 804

## Distribute Listing for Comments

OBJECTIVE

To obtain final public input on the scope of work of the requested projects and their comments on the priority listing.

DESCRIPTION OF WORK

DEQ will distribute the mini-work plans, outlines, and priority listings of projects to the BACs, SPAC and other interested parties for final comments. The public participation will allow interested persons to suggest any changes in the scope of work and the priority placed on any project. They will also have an opportunity to reaffirm their individual positions on the various projects.

LIST OF TASKS

1. Distribute Mini-Work Plans Outlines and Priority List
  - a) Mail the outlines for all projects and their priorities to the BACs, SPAC and other interested parties. Include mini-work plans for high priority projects.
2. Public Review
  - a) Permit the public to review the outlines and mini-work plans (scope of work, costs and time) and make any comments on priority list.
3. Comments to DEQ
  - a) The BACs and SPAC or other interested parties will forward their comments to DEQ

WORK PRODUCTS AND SCHEDULES

1. Comments on mini-work plans, outlines and priority list

Work Product

Receive public comments

30 days

RESPONSIBILITY

1. Mailing of Mini-Work Plans, Outlines and Priority Listing DEQ

2. Public Comment

Public Participation

COORDINATION

Completion of this work element is necessary for the initiation of work on element 805.



## WORK ELEMENT 805

## Final List and Priorities

OBJECTIVE

To prepare a final priority list of projects for additional funding.

DESCRIPTION OF WORK

All comments resulting from work element 804 will be reviewed. Based on these comments, a final priority list and any appropriate revisions in the mini-work plans as to cost, manpower and time requirements will be made. Upon completion of this, DEQ will present the priority list of projects to the Iowa Water Quality Commission for final approval. Once approved, or approved as amended by the Commission, the listing and work plans will be submitted to EPA with a request for the additional funding. The approved listing will be distributed to BAC and SPAC members and interested parties.

LIST OF TASKS

1. Review Mini-Work Plan
  - a) Based on public comments, the mini-work plans will be reviewed and revised, if appropriate.
2. Review Priority Listing
  - a) Based on public comments, the priority of each of the projects will be reviewed and adjusted, if necessary.
3. Present List to Commission
  - a) After reviewing the mini-work plans and priority listing, the final listing of projects will be presented to the Commission for their approval.
4. Commission Approval
  - a) The Iowa Water Quality Commission, considering the public's comments will approve, or amend and approve, the final mini-work plans and priorities.
5. Request for Funding
  - a) Upon Commission approval, the final listing will be sent to EPA, requesting the funds to conduct the various planning projects.

WORK PRODUCTS AND SCHEDULES

1. Prepare final listing of projects and priorities.
2. Commission approval of listing.
3. Final listing sent to EPA.

Work Product

Final list of projects and priorities

15 days

RESPONSIBILITY

- |   |                               |
|---|-------------------------------|
| 1. Final listing of project and priorities. | DEQ, in consultation with DSC |
| 2. Commission's approval.                   | Iowa Water Quality Commission |
| 3. Approved listing to EPA.                 | DEQ                           |

COORDINATION

Upon completion of the various work elements (801-805), DEQ, as the responsible agency will incorporate the projects into the statewide water quality management planning process.

## ACTIVITY SERIES 900

## STATEWIDE WATER QUALITY MANAGEMENT PLAN

The State of Iowa's Continuing Planning Process is intended to comply with Section 130 and 131 of 40 CFR of the revised policies for the Continuing Planning Process. The Federal Water Pollution Control Act, as amended, (Public Law 92-500), sets forth in Section 208 the requirements for the development and implementation of areawide waste treatment management plans. These management plans must be prepared for all areas of the State. Where areas have no designated areawide planning agencies under Section 208, the State shall act as the planning agency. This document must be prepared in accordance with the guidelines and rules for management plan preparation as set forth in Part 131 of 40 CFR.

Initial continuing planning process efforts were completed under the requirements of Section 303(e) of P.L. 92-500. These efforts resulted in the basin plans for the State which are now referred to as Phase I plans and represent an initial effort in the planning process. The continuation of the process is essentially what is required under Section 208. This is termed Phase II planning, 208 planning, or Continuing Planning Process.

Under the leadership of the Iowa Department of Environmental Quality (DEQ), the water quality planning process will provide the technical data and management guidance for the attainment and protection of water quality throughout Iowa. This planning process will provide information necessary for State Water Quality Management Plans, the State Strategy, annual program planning, revised water quality standards, assessment and projection of water quality, and other planning requirements pursuant to the mandates of the Federal Act.

Iowa's decision-making process, utilizing public participation, will provide planning outputs, which will be received, reviewed, approved and integrated to form the State Water Quality Management Plan. Interim outputs will continue to be developed until November 1, 1978, when the Water Quality Management Plans will be adopted in accordance with applicable federal regulations and submitted to the U.S. Environmental Protection Agency. Areawide plans will be adopted as parts of the State's Water Quality Management Plans.

## WORK ELEMENT 901

## Prepare Outline for Preparation of Final Plan

OBJECTIVE

To develop an outline for preparation of the Statewide Water Quality Management Plan.

DESCRIPTION OF WORK

The development of an outline for use in preparing the water quality management plan will provide guidance to the planning agencies in assuring that the broad goals of the planning process are met. Those broad goals are to insure that the necessary institutional arrangements and management programs are established; to make and implement coordinated decisions designed to achieve water quality goals and standards; to develop a statewide water quality assessment; and to establish water quality goals and standards which consider overall state and local policies and programs. The development of a process which provides for necessary institutional and management programs to make coordinated decisions relating to water quality will also be outlined.

The outline will insure that existing water quality related programs are considered in development of the plan. Existing programs to be considered will include, but not be limited to, monitoring programs, municipal facilities program, National Pollutant Discharge Elimination System, and other state, federal and local planning programs. The requirements for a state strategy assessing water pollution problems over a 5-year period will also be covered in developing the plan outline.

In development of the outline, various alternatives for the final format of the plan will be considered. These alternatives will include development of only one statewide planning document, development of a major statewide document and supplementary document for each major planning area, or development of separate documents for each planning area. A major consideration in the development of the plan outline will be the manner in which work products from the planning process will be incorporated into the final plan.

By outlining the preparation of the final plan, assurances can be given that all required areas of the planning efforts are included. The areas to be outlined for plan preparation and the work elements to be considered in those areas are as follows:

1. Planning boundaries:

Boundaries used in Phase I basin plans, which correspond to the conservancy district boundaries, will be maintained as Phase II planning areas. Certain smaller planning areas, such as, but not limited to, the sub-watersheds used in nonpoint source planning (Series 500), will be identified. Designated areas and areas requiring facility planning may also be shown. Locations of water quality and effluent limited stream segments (Series 200), significant dischargers, and fixed monitoring stations will be identified.

2. Water quality assessment and segment classification:  
The results of the water quality assessment (Series 400) will assist in the preparation of the State's Section 305(b) report. Segment classifications will be reviewed and revised as necessary in Series 200. The water quality assessment process will identify critical pollutant parameters (Series 400) which will later be combined with the results of the model verification (Series 300) to determine maximum daily pollutant loads.
3. Inventories and projections:  
Municipal and industrial projections and inventories contained in the basin plans will be maintained, with changes being made as more accurate data becomes available either through the existing National Pollutant Discharge Elimination System or the current facilities plan program efforts. Population projections will be updated as appropriate, based on DEQ's projection revisions conducted under the 106 program.
4. Nonpoint source assessment:  
Series 400 will consider an assessment of water quality problems caused by nonpoint sources of pollution. The description of the problem, the waters affected, and the seriousness of the water quality effects will be identified by using existing stream data. The identification of the nonpoint source areas contributing to the problem will be addressed in Series 500. The nonpoint source assessment will also be used in the preparation of the State's Section 305(b) report.
5. Water quality standards:  
Reviewed and revised water quality standards will be developed in Series 200. These standards will become the hub of existing and proposed program efforts, such as but not limited to, permits, wasteload allocations, facility plans, water quality assessment, treatment needs, and stream classifications.
6. Total maximum daily loads:  
Using the water quality standards (Series 200), the revised low-flow data and model verification (Series 300), and the water quality assessment (Series 400), total maximum daily loads can be determined. Seasonal variations can also be derived from information collected in Series 400. The pollutant levels from nonpoint sources as determined in the water quality assessment (Series 400), will provide data on background pollutant levels for use in establishing allocations for point sources. The model, as refined in Series 300, will be utilized in establishing maximum daily loads.
7. Point source load allocations:  
Once the total maximum daily loads are determined and point and nonpoint loads separated, point source load allocations can be made. These allocations will be revised from those contained in the current basin plans. The strategy and schedule for making such revisions will be outlined in the plan.

Each allocation will incorporate allowances for economic and population growth over a five-year period. Once point source load allocations are determined, they will be used in the ongoing operation permit program efforts and the National Pollutant Discharge Elimination System. Point source load allocations for dischargers located in designated areas will be made by DEQ. The completion of these allocations will be based upon the planning efforts of Series 200, 300, and 400. Wasteload allocations are continuously being updated as part of ongoing program efforts and will continue to be updated during the planning period as resources permit. Allocations made after completion of the 2-year planning process will be made in accordance with the strategy contained in the plan.

8. Municipal waste treatment system needs:

Municipal waste treatment system needs are currently outlined in the Phase I basin plans. These needs were based on the wasteload allocations made at that time. As the point source load allocations are revised as a part of the continuing planning efforts, the allocations and hence the needs of municipal waste treatment systems will be adjusted. Existing state program efforts, such as operation permits, facility plans, and construction grants, are based on the treatment needs identified. Existing programs also consider alternative disposal systems, funding requirements, and financial arrangements for funding. These efforts will be expanded and complemented by the 208 planning program. Current strategies for evaluating wastewater collection and treatment system needs will be reviewed and five and twenty-year strategies for the revision of these needs will be developed. In considering the needs of these systems, required load reductions to attain and maintain water quality standards (Series 200), will be reviewed. Twenty-year population forecasts are being revised as part of current program efforts and will be used in evaluating treatment needs. Preliminary Step I and Step II construction grant program efforts will be utilized in any revision of system needs and priority ranking; likewise any changes in treatment needs arising from 208 planning efforts will be coordinated with current efforts.

9. Industrial waste treatment systems needs:

Phase I planning provided initial needs analysis for industrial waste treatment systems. If total maximum daily loads and hence point source load allocations are altered during the planning process, these needs will be reviewed and revised as necessary. As industrial needs change, the current state programs of operation and construction permits will be updated to reflect these changes. Any change in effluent limitations required by the 20-year planning period in meeting water quality standards will be reflected in program strategy and implementation changes. If industrial sources discharging to municipal treatment facilities are required to change their effluent limits, these revised limits will be reflected in the needs for municipal waste treatment systems.

10. Nonpoint source control needs:

Through the nonpoint source assessment efforts (Series 500), an identification and evaluation of the measures required to achieve the desired level of water quality through application of best management practices on the land can be made. The nonpoint source areas for which control measures may be needed to improve water quality may consider, but not be limited to, agriculture runoff, silviculture, mining, construction, land disposal of wastes, and hydrologic modifications. The controls applied to the various sources of nonpoint pollution will be evaluated based on their ability to improve water quality. As a part of the Series 500 evaluation, the strategies, implementation programs, and management agencies necessary to achieve the desired controls will be identified.

11. Residual waste disposal needs; land disposal needs:

Series 600 will identify the necessary programs, guidelines and regulations governing the disposal of municipal and industrial residual wastes on and in the land. From the planning efforts, the control strategies, implementation programs, and management agencies will be identified. Ongoing program efforts in the state already consider the land disposal of animal wastes and control of mining residue.

12. Urban and industrial stormwater system needs:

Since current state program efforts involve an evaluation of these needs, they are not directly addressed in the 208 planning process. Existing programs are addressing the problems associated with combined sewers, overloaded sewers from sewer line extensions, and their effects on associated water quality. In the facility plans/construction grants programs evaluations are made of stormwater control systems, including construction costs, operation costs, and nonconstruction control measures. Continued emphasis in this area will be developed through the current state program and any identifiable needs will be delineated in the final plan.

13. Target abatement dates:

Existing regulatory programs for point sources include abatement dates and procedures. These may be adjusted as results of other planning efforts relating to municipal and industrial needs are completed. Abatement dates or schedules of compliance for nonpoint source control measures will depend upon the control alternatives identified through the 500 Series. Once an acceptable control strategy is developed, abatement dates, along with regulatory programs, can be identified. Residual waste disposal studies (Series 600) will lead to development of rules and regulations and associated abatement programs and dates. Each program effort resulting in abatement schedules will also set forth requirements which would be necessary to assure adequate progress towards meeting the identified schedules.

14. Regulatory programs:

The plan will identify 1) existing state and local regulatory programs, and 2) proposed or new programs resulting from the planning efforts. The planning process will also identify any legislative, administrative, or financial programs developed or proposed to be developed.

15. Management agencies:

The planning process will identify, wherever possible, the agencies which will be responsible for implementing the program requirements arising from the planning process. Many of the programs identified through the planning process will be managed by existing state or local agencies. Any management agency identified under the plan must have, or must provide assurance that it is seeking, adequate authority and capability to carry out its assigned portions of the approved plan. These management agencies will be responsible for carrying out the programs identified as necessary to achieve the water quality goals and objectives.

16. Environmental, social, economic impact:

Throughout the planning process, the agency or agencies responsible for various planning elements will be considering the environmental, social, and economic impacts of certain outputs, especially any resulting regulatory programs. In certain cases the impacts of carrying out portions of the plan will be analyzed by the planning agency involved. Other considerations of the impact of the final plan will be provided by the public through the public participation procedures, public hearings, and impact statements, where necessary. These efforts will assist in determining the acceptability of carrying out the plan.

LIST OF TASKS

1. Prepare an outline of the content and format to be used in the preparation of the final Statewide Water Quality Management Plan.
2. Submit outline to BACs, SPAC, and other interested parties.
3. Review comments received and develop final plan outline.

WORK PRODUCTS AND SCHEDULES

## 1. Prepare Outline

Work Products

- |  |                  |
|--|------------------|
| a) Draft outline                               | October 1, 1977  |
| b) Outline to BACs, SPAC, & interested parties | October 15, 1977 |
| c) Comments received                           | November 1, 1977 |
| d) Final outline prepared                      | December 1, 1977 |

RESPONSIBILITY

1. Outline of Statewide Water Quality Management Plan  
DEQ, in consultation with DSC

COORDINATION

This work element will be used in work elements 902, 903, and 904.



## WORK ELEMENT 902

## Draft Water Quality Management Plan

OBJECTIVE

To develop a draft of the Statewide Water Quality Management Plan. The plan will integrate information gathered during the two-year Section 208 planning process with existing water quality related programs. The plan will identify the strategies, implementation programs, and management agencies necessary to carry out various portions of the plan.

DESCRIPTION OF WORK

When the various Activity Series are completed, a water quality plan identifying appropriate strategies, implementation programs, and management agencies will be developed. While not all of the Activity Series being studied will necessarily result directly in strategy development, they will provide guidelines and planning outputs to be used in the water quality program efforts.

The existing water quality programs will serve as the basis for the development of a substantial portion of the Statewide Water Quality Management Plan. Before inclusion into the plan, existing control strategies and implementation programs will be reviewed and revised, as appropriate, based on the results of the Phase II planning. In some instances, new strategies and implementation programs will need to be developed to integrate Phase II planning results into the final plan. Also, some of the Phase II planning efforts will result in new control strategies and implementation programs, which must be incorporated into the final plan.

The plan outline developed in work element 901 will be used in developing a draft plan. All outputs of the Phase II planning will be reviewed, along with appropriate information from current water quality program efforts. Based on the review, a determination will be made as to the appropriate information to be included in the plan. A draft of the plan will then be developed.

The draft plan will identify all strategies, implementation programs, and management agencies necessary to carry out various aspects of the plan. Due to time and resource limitations, application of many of the Phase II planning results will not be possible until after the Phase II planning period. In these instances, the plan will outline the strategy to be followed in applying these results. The plan will contain both 5 and 20-year water quality strategy programs.

Work element 901 addresses the sixteen areas which are to be discussed in the final plan. The strategies and implementation programs resulting from 208 planning efforts are best discussed in terms of the planning efforts actually being undertaken.

1. Public Participation.

The public participation process will provide indications of environmental, economic, and social impacts resulting from other planning efforts. The impacts as related by the public, or as determined by the planning entities, will directly affect the strategies developed by the various Activity Series. The water quality management plan will outline how the public was involved in plan development, and will recommend appropriate strategies for continued public participation in future planning and implementation efforts.

2. Water Quality Standards.

Following their adoption, the revised water quality standards (Activity Series 200) will be applied and incorporated into discharge permits, revisions of the wasteload allocations, the water quality assessment efforts, and other program efforts. The strategy which will be followed in applying the revised water quality standards to other program efforts will be developed as part of the draft plan.

Future revisions of water quality standards will be based, in part, upon the results of the Phase II planning in the areas of, but not limited to, water quality assessment, nonpoint source assessment, and wasteload allocation verification.

3. Wasteload Allocation Verification.

This Activity Series will result in two definitive outputs. One, revised low flow data for Iowa's streams, and second, a refined model for determining wasteload allocations. These outputs will be used in making revised wasteload allocations to point sources for use in permits and grants programs. Due to time constraints, revising the wasteload allocations in the Phase I basin plans will not be completed at the end of the Phase II planning period. However, sufficient data will be available at that time to allow the formulation of a strategy and program, including a time schedule, outlining how and when the revised allocations will be completed and how these revised allocations will be integrated into ongoing program efforts. It should be emphasized, however, that wasteload allocations are continuously being updated as part of existing water quality program efforts.

4. Water Quality Assessment.

A major effort of this Activity Series is the collection and compilation of existing water quality data. This data will be used to accomplish several goals, some resulting in strategy development.

A summary report on data collection will be prepared and will include an assessment of the adequacy of the data, identification of data gaps, and recommendations for future data collection efforts. This summary report will be used as the basis for developing a recommended strategy for improved monitoring of the quality of Iowa's waters.

Through the assessment of existing water quality data, an evaluation will be made, of both point and nonpoint sources of pollution, to determine the impact of different pollutants on water quality. Particular emphasis will be placed on defining the impact of nonpoint pollutants on the aquatic and recreational uses of the surface waters. This assessment will be incorporated as appropriate into the plan. The results of the assessment will also be used in refining other areas of the plan, such as relating wasteload allocations to the impacts various pollution sources have on the streams. This assessment will also be valuable in future water quality standards revision.

The assessment of existing water quality data will also lead to the development of a method of prioritizing stream segments for water quality improvement. This methodology, as it applies to point sources, will be incorporated into current program efforts as appropriate. The prioritization methodology will also be integrated, through the efforts of Activity Series 500, into a prioritization of nonpoint control efforts.

An additional result of this Activity Series will lead to the development of a water quality index to be used in assessing nonpoint source pollution. This index will also be incorporated into the plan as appropriate, outlining a strategy of how the index will be used in future program and/or planning efforts.

#### 5. Nonpoint Pollution Planning.

The planning efforts detailed in the nonpoint source assessment consider various phases of the planning on a statewide basis. Due to current resource constraints, other portions will be limited to the Iowa-Cedar and Western Basin planning areas.

Conservation needs data and other data such as, but not limited to, cropping patterns, soil factors, and topography will be collected for all sub-area watersheds of the state. Also to be investigated on a statewide basis are such factors as dominant agricultural production methods, agri-chemical and nutrient pollutants, and chemical and sediment transport mechanisms. The work products resulting from these statewide planning efforts will be reviewed and a determination made as to which materials from these work products should be included in the water quality management plan. A written narrative containing the selected materials will be prepared and incorporated into the plan.

This assessment will also result in classification maps for the two selected planning basins, illustrating the erosion potential of delineated subarea watersheds. These maps will allow the evaluation and selection of subareas with critical erosion potential. Upon combining the erosion patterns with the technical assessment of such items as sediment transport to the streams, detailed watersheds will be selected for detailed study. Once these detailed watersheds are selected, indepth studies will be made of the sources of nonpoint pollution in those areas.

As a result of this indepth study in the waterdheds, alternatives will be developed which would control the identified nonpoint sources of pollution. These alternatives can then be prioritized on the basis of potential for water quality improvement and public acceptance. The work products resulting from these planning efforts will be reviewed and a determination made as to which materials from these work products should be included in the water quality management plan. A written narrative containing the selected materials will be prepared and incorporated into the plan.

Based on these study efforts, alternative strategies for controlling water quality related nonpoint sources of pollution will be developed. These alternate strategies will be analyzed as to their environmental, economic, and social impacts, resulting in a nonpoint source control program acceptable to the people of the state balanced with the greatest benefit to improved water quality. Upon selection of the strategy for controlling nonpoint sources of water pollution, the necessary implementation programs, such as but not limited to, rules, regulations and proposed legislation, as well as the necessary management agencies, funding needs, and a timetable for implementation will be identified. Once developed, the strategy, implementation programs, and implementation priorities will be included in the water quality management plan. Changes in the narrative and format of these work products will be made as necessary to insure compatibility with the remainder of the plan. However, no changes will be made which modify the substance of the strategy, implementation programs, or implementation priorities.

6. Residual Waste Disposal.

Activity Series 600, relating to the disposal of municipal and industrial residual wastes, will culminate in the development of rules, regulations and guidelines relative to the identified disposal practices and problems. Through the use of survey forms, field checking, and technical literature, proposals for disposal, on and in the land, of residual wastes will be developed. Program research along with public participation and public hearings, will establish the most environmentally, economically, and socially acceptable disposal techniques. Once acceptable disposal techniques are identified, the necessary strategies for program implementation will be investigated. In the case of the disposal of municipal residual waste, the necessary statutory authority exists, and appropriate rules, regulations, and guidelines which identify the implementation strategies, timetables for compliance, management agencies, and necessary financial and insitutional arrangements will be developed. The disposal of municipal sludges may be tied to the current operation permit programs in order to insure compliance with the newly developed strategy. In the case of industrial sludges, authority exists to regulate its disposal on public lands. Additional statutory authority is and will be sought to regulate on-site disposal of industrial sludges. The strategies developed from this Activity Series which relate the disposal of residual wastes affecting water quality will be incorporated into the final plan. The information gathered on the existing disposal practices, problems, etc., will also be incorporated into the plan as appropriate.

7. Regional Operation and Maintenance Study.

The planning efforts in this area of study will result in two major outputs. One will be the development of guidelines to be used in determining the

feasibility of implementing regional operation and maintenance (O & M) studies in appropriate areas of the state. Secondly, it is hoped that through the development of these guidelines and by employing them, an ongoing O & M program can be established.

The strategy resulting from this study will be that of incorporating, as appropriate, the O & M guidelines into the final plan, hopefully resulting in more economical methods of satisfying the municipal waste water treatment requirements of current and future program efforts.

By-products of this study may include, but not be limited to, the identification of operator training needs, refined sampling and analytical programs, and insites into financial and institutional constraints or requirements. If these areas are identified as being deserving of consideration in overall water quality management planning, they, as well as any associated strategies and implementation programs, will be incorporated into the plan, as well as existing programs, as appropriate.

8. Program Plan Development.

While this planning effort may not necessarily result in a strategy to be incorporated into the final plan, it is in itself a strategy to determine future program adjustments and direction as may be required during and upon completion of the planning process. This Activity Series will permit the review and evaluation of the other planning activities throughout the planning process. This strategy may be employed at such times as additional funding becomes available or as program priorities change or if currently proposed planning activities require adjustment. Any results of using this strategy will be reflected in the final plan.

LIST OF TASKS

1. Determine materials to be included in plan.
2. Develop a draft of the Statewide Water Quality Management Plan, identifying the strategies, implementation programs, and management agencies necessary to carry out the plan.

WORK PRODUCTS AND SCHEDULES

- |    |                             |                            |
|----|-----------------------------|----------------------------|
| 1. | Develop Draft of Final Plan | July 1 - September 1, 1978 |
|    | <u>Work Product</u>         |                            |
|    | Draft of Final Plan         | September 1, 1978          |

RESPONSIBILITY

- |    |   |                                |
|----|---|--------------------------------|
| 1. | Determination of format materials to be included in plan. | DEQ and DSC                    |
| 2. | Develop draft of plan.                                    |                                |
|    | a) Nonpoint source portion of plan.                       | DSC, in consultation with DEQ. |
|    | b) Remainder of plan.                                     | DEQ, in consultation with DSC. |

3. Develop final plan.

DEQ, in consultation with DSC.

COORDINATION

This work element will use the outline developed in work element 901 and provide input into work element 904.

All Activity Series and their work elements will be used in completion of this work element.

## WORK ELEMENT 903

Review of Water Quality Management Plans  
of Designated 208 AgenciesOBJECTIVE

To review the water quality management plans developed by the two designated 208 agencies for compatibility with the state's overall plan and to incorporate the designated agency plans into the Statewide Water Quality Management Plan.

DESCRIPTION OF WORK

Through other program efforts, DEQ is providing guidance and technical assistance to the designated 208 agencies and is coordinating the designated agency activities with the statewide planning efforts. Through these activities, DEQ is attempting to assure compatibility between the designated agency plans and the statewide plan. However, since the designated agency plans will be completed prior to completion of the statewide plan, total compatibility cannot be assured.

When the statewide water quality management plan is developed, DEQ will review the areawide plans developed by the designated 208 agencies to determine their compatibility with the statewide plan. The DSC will be requested to review the nonpoint source pollution portion of the plans for compatibility with the nonpoint portion of the statewide plan.

If conflicts are found to exist between the designated agency plans and the statewide plan, DEQ will consult with the affected designated agency and request that the areawide plan be modified to be compatible with the statewide plan.

DEQ will incorporate, as appropriate, the areawide plans into the draft Statewide Water Quality Management Plan being developed in work element 902. This will include integrating the priorities developed in the areawide plans into the basin and statewide water quality management plans.

LIST OF TASKS

1. Review the areawide water quality management plans developed by the designated 208 agencies for compatibility with the Statewide Water Quality Management Plan.
2. If necessary, consult with the designated 208 agencies and request modifications in the areawide water quality management plans to bring them into conformance with the statewide plan.

3. Incorporate, as appropriate, the areawide plans into the draft Statewide Water Quality Management Plan. Integrate, as appropriate, areawide priorities into basin and statewide priorities.

#### WORK PRODUCTS AND SCHEDULES

1. Review of areawide plans August 1, 1978
2. Modification of areawide plans

#### Work Product

- a) Incorporation of areawide plans  
into a draft of statewide plan September 1, 1978

#### RESPONSIBILITY

DEQ will be responsible for overall review of the areawide plans and their incorporation into the statewide plan.

DSC will assist in the review of the nonpoint portion of the areawide plans and in integrating areawide nonpoint priorities into basin and statewide priorities.

Designated 208 agencies will be responsible for modifying areawide plans as necessary to conform to the statewide plan.

#### COORDINATION

This work element provides input into development of the draft Statewide Water Quality Management Plan (work element 902).



## WORK ELEMENT 904

## Final Water Quality Management Plan

OBJECTIVE

To prepare the final Statewide Water Quality Management Plan for submission to EPA.

DESCRIPTION OF WORK

Submit the draft water quality plan developed in work element 902 to the BACs, SPAC, other agencies, and other interested parties for review and comment. Review the comments received on the draft plan and make appropriate changes in the plan. Submit the plan to the IWQC for review. Incorporate any changes requested by the Commission and obtain Commission approval of the final plan. Submit the final plan to EPA.

LIST OF TASKS

1. Submit draft plan to IWQC and SSCC for review and joint approval.
2. Submit draft plan to BACs, SPAC, other agencies, and other interested parties for review and comment.
3. Hold public hearing.
4. Review comments received on draft plan and make appropriate changes in plan. Develop final plan.
5. Submit plan to IWQC and SSCC for approval.
6. Submit plan to EPA.

WORK PRODUCTS AND SCHEDULES

- |   |                                  |
|---|----------------------------------|
| 1. IWQC and SSCC review and jointly approve.    | September 1 - September 10, 1978 |
| 2. Public Review & Comment of Draft Plan        | September 10 - October 10, 1978  |
| 3. Public Hearing                               | October 10, 1978                 |
| 4. Incorporate Public Comments into Final Plan. | October 10 - October 25, 1978    |
| 5. Final Plan Approval by IWQC and SSCC         | October 25, 1978                 |
| 6. Submit Plan to EPA                           | November 1, 1978                 |

RESPONSIBILITY

DEQ, in consultation with DSC, is responsible for all tasks of this work element.

IWQC and SSCC will review and jointly approve the draft and final Statewide Water Quality Management Plan for submittal to EPA.

COORDINATION

Completion of this work element results in submission of the final water quality management plan to EPA.