

USE OF THIS GUIDE

This document is a GUIDE that can be used by SCS project planners. It is intended to be flexible, not a "Cookbook" where each step in the "Recipe" is to be followed to develop a plan. However, it is intended to provide enough steps and details that each SCS planner can use it to think through his part of planning a specific project and to prepare his work outline and documentation. In other words, it should contain the major ingredients of the planning "Recipe" with the choice of "Proportions," "Spices," and "Frosting" left up to the "Taste" of the local planning personnel.

"Deliberating is not delaying"

-Ecclesiasticus-

This GUIDE can also be used for the preparation and assembly of substantiating data which we call documentation. Substantiating data of high quality, properly recorded, organized, and filed, contributes to understanding and use of the data. Being able to readily understand and use basic data when revising a plan or in designing a structure is essential. Good planning has always been evidenced by good documentation and we hope this GUIDE will help make preparation and arrangement a little easier.

"Nothing is new except arrangement"

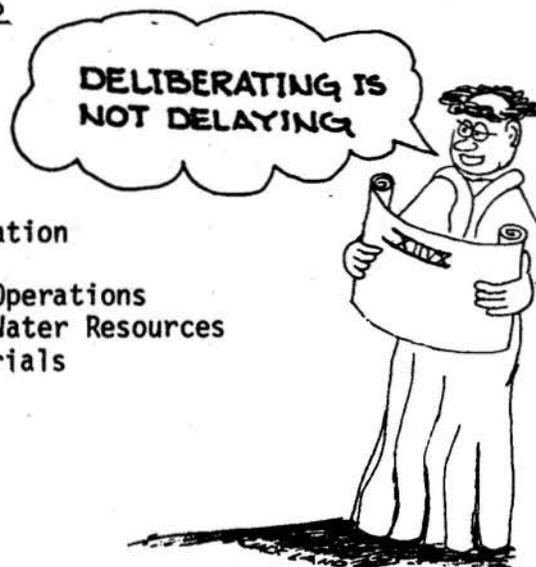


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Study Management	
Biology	
Economist	
Recreation Specialist	
Planning Engineer	
Drainage Engineer	
Water Quality Engineer	
Irrigation Engineer	
Geology Sedimentation	
Geology Engineering	
Hydrology	
Land Treatment	
Range	
Forestry	
Agronomist	
Soil Scientist	
Environmental Specialist	

ABBREVIATIONS

AC	Area Conservationist
ADP	Automatic Data Processing
AE	Area Engineer
A&E	Architects and Engineers
Ag	Agronomist
APHA	American Public Health Administration
APO	Annual Plan of Operations
ASCO	Assistant State Conservationist Operations
ASCWR	Assistant State Conservationist Water Resources
ASTM	American Society of Testing Materials
Bi	Biologist
B&F	Budget and Finance Division
BPR	U.S. Bureau Public Roads
BR	U.S. Bureau of Reclamation
CBD	Commerce Business Daily
CEQ	Council of Environmental Quality
CLO	Contracting Local Organization
CN	Runoff Curve Number
CNI	Conservation Needs Inventory
CO	Contracting Officer
COE	U.S. Corps of Engineers
CPM	Critical Path Method
CS	Contract Specialist
DC	District Conservationist
DE	Design Engineer
DRAIN	Drainage
DrE	Drainage Engineer
EA	Environmental Assessment
Ec	Economist
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EQ	Environmental Quality
ES	Environmental Specialist
E&S	Erosion and Sediment
EVT	Environment Memorandum
FE	Field Engineer
FHA	Flood Hazard Analysis
FIS	Flood Insurance Study
FmHA	Farm Home Administration
FO	Field Office
Fo	Forester
FeS	Field Staff
FS	U.S. Forest Service
F&W	Fish and Wildlife Resource
FWS	U.S. Fish and Wildlife Service



GE	Geologist-Engineering
GR	Government Representative
GS	Geologist-Sedimentation
Hy	Hydrologist
IE	Irrigation Engineer
IRR	Irrigation
IPT	Interdisciplinary Planning Team
LRS	Land Rights Specialist
LT	Land Treatment
M&I	Municipal and Industrial
NCSS	National Cooperative Soil Survey
NED	National Economic Development
NEH	National Engineering Handbook
NEPA	National Environmental Policy Act of 1969
NOAA	National Oceanic and Atmospheric Administration
NPS	U.S. National Park Service
NSH	National Soils Handbook
PCS	Project Control Systems
PE	Planning Engineer
PL	Public Law
P&S	Principles and Standards
PS	Planning Staff
PSL	Planning Staff Leader
PSc	Plant Scientist
RB	River Basin
RC	Resource Conservationist
RC&D	Resource Conservation and Development
RCD	Resource Conservation District
RCPH	Resource Conservation Planning Handbook
REC	Recreation
Rec	Recreation Specialist
Rg	Range Conservationist
SAO	State Administrative Officer
SC	Soil Conservationist
SCE	State Conservation Engineer
SCS	Soil Conservation Service
SL	Study Leader
SLO	Sponsoring Local Organization
SML	Soil Mechanics Laboratory
SO	State Office
SRC	State Resource Conservationist
SS	Soil Scientist

SSS Snow Survey Supervisor
STC State Conservationist
SWB Social Well Being
S&WCD Soil and Water Conservation District

TR Technical Release
TSC Technical Service Center

USDA U.S. Department of Agriculture
USGS U.S. Geological Survey
USLE Universal Soil Loss Equation

WBP U.S. Weather Bureau Paper
WI Work Item
WIR Watershed Investigation Report
WO Washington Office
WPH Watershed Protection Handbook
WQE Water Quality Engineer
WSP Water Surface Profile

SECTION II
GENERAL PLANNING CONSIDERATIONS

This section of the GUIDE contains notes on important subjects that should be considered during project planning. This information is supplementary to other parts of the GUIDE. More complete explanations are given for various subjects mentioned elsewhere.

Each user of the GUIDE can add his own notations or additions to this section for future reference. Also, upon recognizing from suggestions by users of the GUIDE and field contacts the need for additional explanation or consideration, the WTSC will prepare and distribute supplemental inserts for this section of the GUIDE.

The contents listed below are structured to allow for additional subjects by pen and ink change.

- | | |
|----------------------------|-------|
| 1. Project Log | _____ |
| 2. Maps | _____ |
| 3. Visual Resources | _____ |
| 4. Operation & Maintenance | _____ |
| 5. Contracting | _____ |
| 6. Plan Supplements | _____ |
| 7. _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Project Log

Planning staff leaders are encouraged to implement the maintenance of a chronological log of events for each project. This log would contain a brief description of actions taken, by whom, and the date of action. These actions would include items like: dates of meetings, planning highlights, record of correspondence, staff assignments, decisions made, field trips, etc.

Many of the items could be handled by a brief sentence or paragraph. The log would provide a quick reference for staff members and reviewers on items to be done, who's responsible, and current status. It is expected that this log would be a permanent part of the documentation.

Maps

Early in the planning phase, the interdisciplinary team members should discuss the use and need for base maps to record data as planning progresses. The discussion should include scales to be used, size of map, basic information for each work map, information to be added and by whom, and the use of overlays and maps for public meetings as well as the maps to be included in the final plan.

Visual Resources

SCS considers the landscape as part of the natural resource base and is concerned with the physical design of the landscape as a whole including the ecological, social and visual resources. The visual resources of a landscape include the visible elements in the landscape that are preferred by or necessary for mankind.

The Service policy is to include features that minimize adverse environmental and visual resource impacts. Enhancement features are normally at the request of others and may require sponsorship and cost sharing as well as operation and maintenance. The design should minimize the adverse effects. Measures to enhance would have to be related to an expressed objective.

In the selection of alternates and specific structure locations, the planners should consider the visual impact that the measures will have on the area under consideration.



ENVIRONMENTAL IMPACT

Operation, Maintenance and Replacement

A significant activity in the planning process is the determination of the activities and costs associated with operation, maintenance and replacement for the various alternatives.

This activity becomes increasingly important as our nation becomes more concerned with the conservation of energy and natural resources.

The comparison of costs for operation, maintenance and replacement is not new. It has been a major activity in planning and design for many years. The following is a quote from Engineering Memorandum No. 7:

"The SCS design objective is to provide structural improvements having the quality and durability required for the economic life of the structure at the least total cost, consistent with the functional requirements. Engineering designs must be based on comparative design studies and cost estimates prepared with full consideration of topography, foundation and other site conditions, and the economy and feasibility of construction, operation and maintenance. Economic comparisons of alternative designs are to be based on the amortized average annual cost of installation (including costs of rights-of-way, operation and maintenance)."

All of these items need to be considered as we prepare our summaries and comparison of alternates for presentation to the sponsors. They need to be fully aware of their responsibilities for operation and maintenance as they make their final selection of the measures to be included in the Work Plan or Measure Plan.

CONTRACTING

Investigations, data collection, analysis, and other needs relating to the engineering, environmental, economic and social aspects of a study may be provided by contracting during the planning phase and at SCS cost. Contracts may be undertaken when (1) the work is in excess, either in amount or type of the staff capability, (2) when special reviews are required, or (3) certain cases where the sponsors elect to employ private consultants. (Advisory ENG-21, 4/28/76; EVT Memorandum-1 (Rev); Advisory EVT-16, 8/27/74, and Guide for Environmental Assessments).

Engineering services specific to planning municipal and industrial water storage features, must be contracted for by the sponsoring organization without SCS financial assistance (ENG Memorandum-3 (Rev 3), 3/18/74, and ENG Memorandum-54 (Rev), 5/18/64).

THE PLANNING PROCESS

Several years ago an SCS planning staff member told his staff leader, "The most helpful thing you have done is to convince the planning staff that we can finish what we decide to do." Such confidence by the staff leader and his staff cannot be obtained unless they understand, step by step, how to accomplish the planning job. Section II attempts to aid this understanding by summarizing some of the detailed guidance contained in the Watershed Protection Handbook, Resource Conservation & Development Handbook, Guide for Environmental Assessment, and the USDA Procedures for Planning Water and Related Land Resources (P&S). A resource inventory checklist is included to make sure all types of resource data are considered early in the planning process.

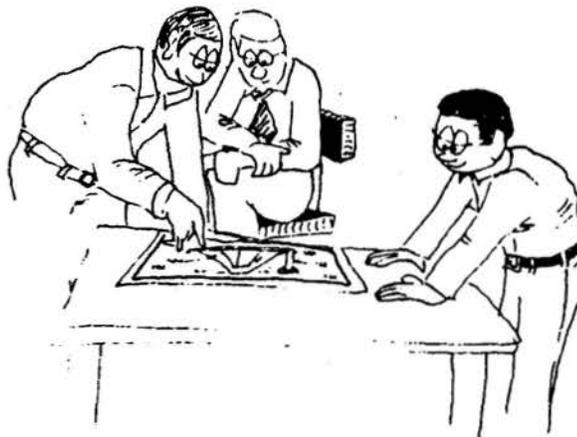
The planning team member who fully understands the whole planning process for a particular project can more efficiently carry out his part of the job. The detailed guidance contained in Section III will help to assure that all phases of the planning process are carried out.

"The whole is simpler than the sum of its parts."

-W. Gibbs-

Planning Phases

As selection of the final plan approaches, the planning progressively becomes more detailed in intensity and less comprehensive in scope. Planning phases are separate portions of this process, which are usually divided by check points, where assembled information is evaluated and decisions are made about further planning and/or implementation.



PLANNING

Planning phases generally include the following:

1. Field Examination Phase (FE)

The Field Examination Phase requires judgmental analysis of existing information and observed conditions in order to define the problems, needs, and possible solutions. The FE usually ends with a report and a decision of whether to continue planning or to stop.

2. Preliminary Investigation Phase (PI)

The Preliminary Investigation Phase involves making additional investigations and judgmental analysis of an intensity commensurate with the complexity of the project and adequate to satisfy critical questions which would influence plan measure selection and/or the decision to continue planning.

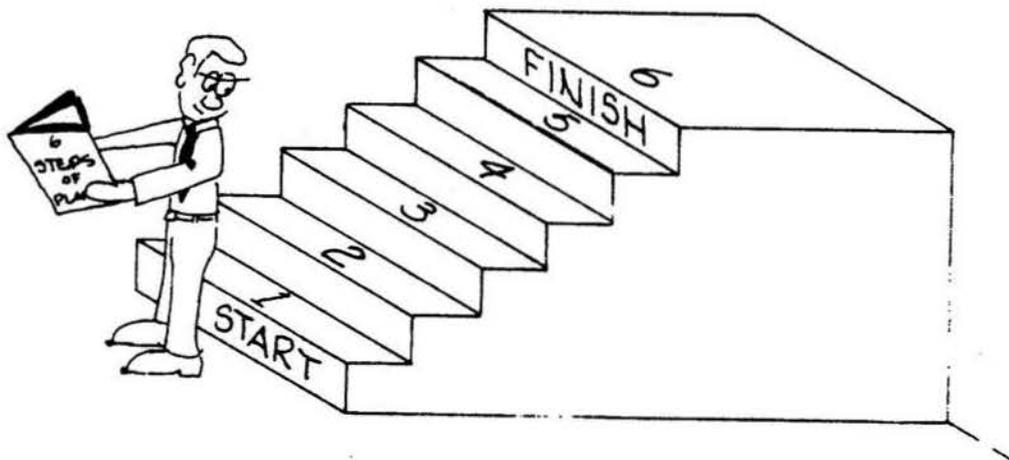
The PI phase ends either with a report indicating SCS program assistance can be provided and presents alternative plan elements for consideration during plan development/or a report explaining that a plan cannot be developed under present SCS authorities.

3. Plan Development Phase (PD)

The Plan Development Phase includes the final investigations and analysis needed to formulate the plan and to prepare the plan document and EIS.

Planning Steps

The Water Resource Council issued the Principles and Standards for Planning Water and Related Land Resources (P&S). The Principles and Standards specify six major steps for plan formulation. Since each phase of planning involves plan formulation, some or all of these steps occur in each phase. The following chart shows the steps and their normal occurrence in each of the planning phases.



Planning Step	Planning Steps in each Planning Phase		
	Field Examination	Preliminary Investigation	Plan Development
1. Specify components of the objectives.	1	1	1
2. Evaluate resource capability.	2	2	2
3. Formulate alternative plans.	3	3	3
4. Analyze the differences among alternative plans.	4	4	4
5. Review and reconsider the components and the formulation of alternative plans.	-	5	5
6. Select a recommended plan.	-	-	6

The relationship of these planning steps and planning phases is depicted in Figure II-2 showing a PL-566 planning sequence.

Major Activities and Work Items

Figure II-1 is included to illustrate how each planning step can be further subdivided into major activities. These can be further separated into the individual work items to be accomplished by the specialists as described in Section III. The figure shows how each specialist is a member of the interdisciplinary team and how each participates or completes an activity for each planning step.

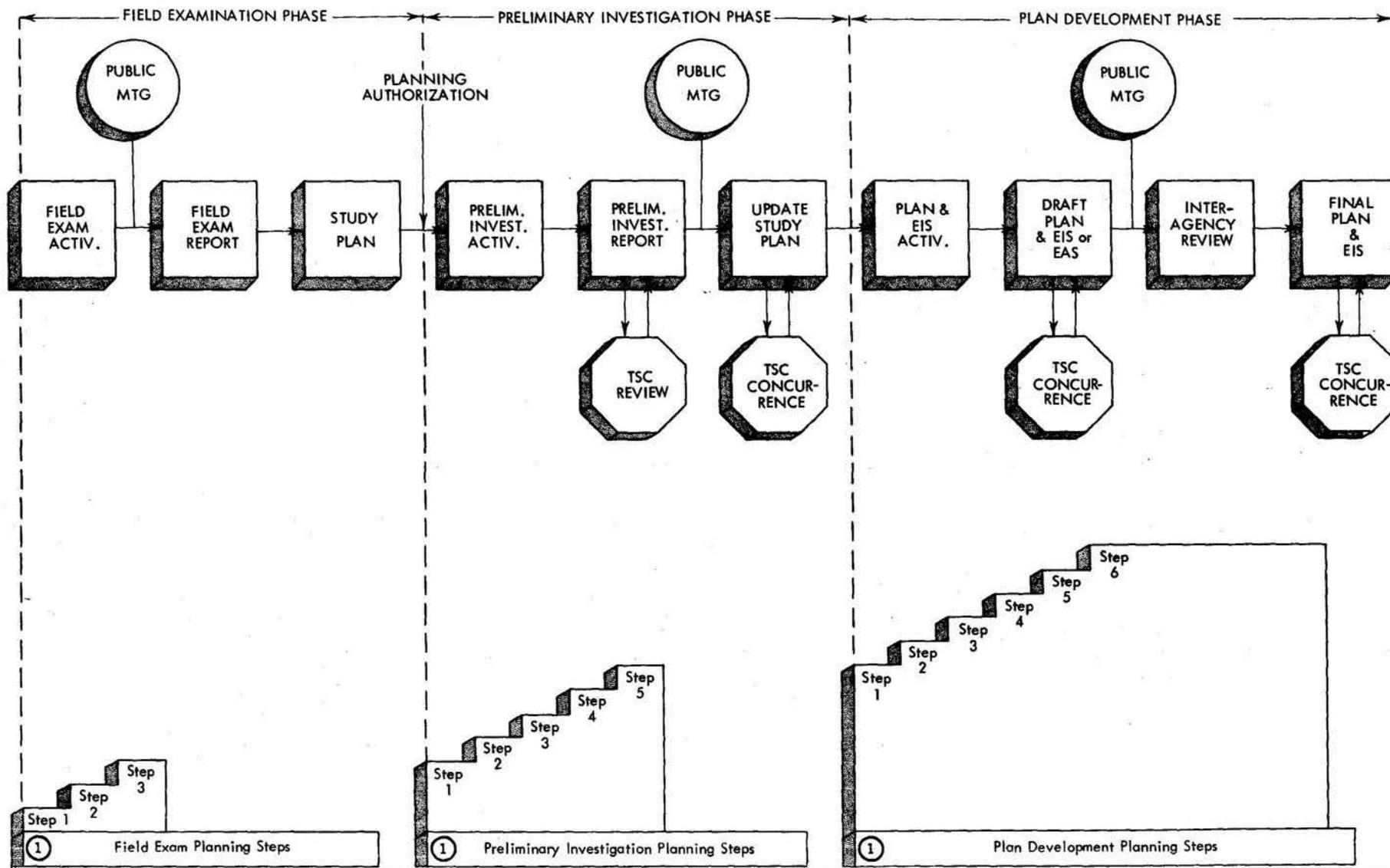
RELATIONSHIP OF PLANNING STEPS - MAJOR ACTIVITIES AND WORK ITEMS

Work Item Numbers From Section III

FIGURE II-1

Planning Step	Major Activities	Staff Ldr.	Biol.	Econ.	Rec. Sp.	Engineers				Geol.		Hyd.	Land Trt.	Rng.	For.	Agr.	Soils	Env. Sp.	
						Pln.	Drng.	W.Q.	Irr.	Sed.	Eng.								
1. Specify Components (Determine problems to plan for and to express their problems in terms of component needs for the NED and EQ objectives)	1.1. Convert public concerns into specific components of the NED and EQ objectives	001	100	200	300			403 W		500 S					700 F	700 A		800 802	
	1.2. Evaluate specific components in light of projected future conditions and SCS capability to investigate	002	101	201	301			406 W		503 S					701 F	701 A		803 804	
	1.3. Convert specific components into component needs (Type, quality, & quantity of desired plan output)	003	102	202	302			409 W		506 S					702 F		701 S	806 813	
	1.4. Obtain sponsor's verification of component needs	004																	
	1.5. Develop a study plan and obtain concurrence	005 006	103	203	303	400 P	400 D	418 W	401 I	509 S	500 504E	600	700 L		703 F		702 S		
2. Evaluate Resource Capabilities (Determine the capabilities of the water and land resources to supply the component needs; to assess significant resource conditions which may be affected by water and related land development; and to estimate future without conditions)	2.1. Develop basic resource base data to be used throughout planning and implementation, i.e., base map, drainage area, land use, etc.	007	104	204 205	304	401 P	401 D	419 W	402 I	512 S	501 E 502 E	600.1 601	701 L	700 R	704 F		703 S	805 809	
	2.2. Inventory existing water and land resource conditions which are significant to the specified components or may be affected by developments to be planned	008 009	105 106		305 306	402 P	402 D	424 W	403 I	515 S	503 E	604		701 R	705 F	702 A 703 A	704 S	814 815	
	2.3. Project conditions and quantities to establish without plan conditions.	010 011	107 108		307 308 309		406 D	445 W	423 I 427 I	526 S	531 S	607.0 607.1	702 L	702 R	706F 707F		705 S		
	2.4. Appraise the capability of the resources to support further use for the component needs, i.e., potential for reservoir sites, land treatment, fish and wildlife improvement measures, etc., including cost and benefit analysis.	012	109	206	310	403 P	407 D	460 W	428 I	534 S	505 E	607.2		703 R	708 F	704 A	706 S 707 S		
3. Formulation of Alternative Plans (Design alternative plans to meet component needs and designation of NED and EQ plans.)	3.1. Assemble relevant alternative structural and nonstructural measures for meeting component needs. Determine multipurpose possibilities. Compute total cost - benefits.	013	110	263	315	407 P	472 W	429 I 430 I				610.0	704 L 705 L					809 815	
	3.2. Develop NED, EQ, and other alternative plans, determine the contribution of each to the component needs and evaluate their beneficial and adverse effects.	014 015	111 112 113	264 265	320 321	408 P		475 W		540 S				704 R	709 F 711 F	705 A 707 A	708 S		
	3.3. Apply the tests of acceptability, effectiveness, efficiency, and completeness.	016	114	266	322	409 P		478 W						706 L	712 F			820	
4. Analysis of Alternative Plans (Prepare clearly understood comparison displays of each alternative plan, the differences among alternative plans in terms of their contributions to the component needs, and the significant effects in the four accounts)	4.1. Develop clear, concise displays and maps of each alternative plan to show: (a) Plan elements (measures) (b) Quantities of contribution to component needs (c) Total cost, cost allocation, and cost sharing (d) Significant effects in accounts of: NED EQ RD SMB	017	115	267 268 269	323	410 P		481 W	431 I	543 S		611			713 F		709 S	810 821	
	4.2. Determine preferences of sponsors and other public for alternative plans and component needs.	018	116	270	324			484 W	432 I					708 L	714 F			811	
5. Review and Reconsider (Finalize component needs and viable alternative plans. This may require a repeat of portions of steps 1-4.)	5.1. Modify alternative plans and component needs as necessary to reflect public preferences.	019	117	271	325	413 P		487 W	433 I				709 L	715 F				812 822	
	5.2. Make more intensive investigations of likely alternatives and develop displays and maps as in 4.1.	020 021	118	272	326	414 P		490 W	434 I	546 S					716 F				
6. Select the Plan (Finalize formulation with the sponsors influenced by the "public," selecting the plan they prefer to implement.)	6.1. Determine the sponsors preferred plan among the alternatives.	022						493 W								708 A		823	
	6.2. Prepare Plan and EIS documents and obtain appropriate concurrence.	023 026	119	273	327	415 P		493 W	435 I	549 S	509 E		710 L	705 R	717 F	709 A	710 S	828	

WATERSHED PLANNING SEQUENCE



① PLANNING STEPS FROM " PRINCIPLES AND STANDARDS"

- | | |
|-------------------------------------|--|
| 1. Specify Components of Objectives | 4. Analysis of Alternative Plans |
| 2. Evaluate Resource Capabilities | 5. Reconsideration of Components and Alternative Plans |
| 3. Formulate Alternative Plans | 6. Plan Selection |

CRITICAL STEPS IN PLANNING WATERSHED PROJECTS (PL-566)

<u>Action</u>	<u>WPH Reference</u>	<u>Action Person</u>	<u>Action Flow to Whom</u>
<u>PREAPPLICATION STAGE</u>			
1. Problem brought to attention of others	12.024	Public suffering damage or needing resource improvement	S&WCD and additional prospective sponsors, FWS
2. Public meeting PL-566 provisions explained Information program (news article) begins	12.024 1.00- 1.32	Prospective sponsors with help of agencies, DC	Interested public and loc. state and federal agencies incl. FWS
3. Reconnaissance study	12.024	SCS-DC, AC and ASCWP, PS	Prospective sponsors & FWS
4. Public meeting - study results and PL-566 responsibilities of prospective sponsors	12.024, 15.011 & 15.017	Prospective sponsors with help of DC, AC, and ASCWR	Interested public and loc. state, and federal agencies
5. Notification of intent to apply for federal assistance	12.025	Sponsors	State and area-wide clearing-houses
6. Notification of intent distributed	12.0252	Clearing-houses	Groups, agencies, etc., that may be affected and SCS-STC
7. Acknowledge receipt of notification of intent	12.0253	STC	Sponsors

<u>Action</u>	<u>WPH Reference</u>	<u>Action Person</u>	<u>Action Flow to Whom</u>
<u>APPLICATION STAGE</u>			
8. Application for assistance	12.03- 12.053	Sponsors with help of DC, AC, ASCWR, & SAO	Clearing-houses
9. Comments on application	12.054	Clearing-houses	Sponsors
10. Application (with comments) submitted	12.055	Sponsors	Designated state agency, clearing-houses, STC
11. Application approved and original forwarded	12.06	Designated state agency	STC
12. Application validity deter- mined and acknowledged	12.08	STC	Sponsors
13. Application date forwarded	12.08	STC	Administrator
<u>FIELD EXAMINATION PHASE</u>			
14. Field examination <u>1/</u>	12.20	STC with help of staff, sponsors, and other agencies	Support file

1/ Possible time for TSC assistance and use of GUIDE.

<u>Action</u>	<u>WPH Reference</u>	<u>Action Person</u>	<u>Action Flow to Whom</u>
15. Public meeting	12.21	Sponsors with help of agencies	Report to STC
16. Field examination report	12.22	STC	Sponsors
17. Prepare study plan and approval by STC <u>1/</u>	12.30- 12.33, 13.05	PSL, PS, AG, AE, DC, state program staff, FS, STC	ASCWR, and sponsors
<u>PRELIMINARY INVESTIGATION PHASE</u>			
18. Request planning authorization - include copies of the field exam. report and study plan	12.41	STC	Administrator, copy to TSC, FWS
19. Planning assistance authorized	12.421	Administrator	STC, concerned heads of fed. agencies, senators, congressmen, governors and fed. register
20. Notification of authorization for planning, intention to initiate planning and invitations to participate in developing a watershed plan	12.422 13.06	STC	SLO(s), local S&WCD(s) state clearing-houses, state agency environmental groups, local offices of other federal agencies, SCS area and field offices, state and local newspapers

1/ Possible time for TSC assistance and use of GUIDE.

<u>Action</u>	<u>WPH Reference</u>	<u>Action Person</u>	<u>Action Flow to Whom</u>
20A. Form a special purpose district if necessary		Sponsors	STC
21. Planning assignments and schedule reviewed using study plan	13.05 15.02	PSL, ASCWR	PS, state program staff, DC, AC, AE, FS
22. Meeting with public to cover:	15.011- 13.06	Sponsors and S&WCD assisted by:	Watershed participants, interested public, interested organizations
a. Review and refinement of objectives and potential plan elements	15.017	DC, ASCWR, & SL	
b. Understanding of responsibility in obtaining required conservation treatment on the land in the watershed	15.017	DC, ASCWR, & SL	S&WCD
c. Informed of the responsibilities for hiring an attorney, an engineer, perhaps a public relations person, a person to handle landrights, as well as other responsibilities	15.017	DC, ASCWR, SL, & SAO (Use SCS-CI-19 brochure, "Acquisition of Landrights in SCS Financially Assisted Projects".)	SLO
d. Explanation of relative planning priority for this project as it relates to other projects in the state		Representative of state soil and water conservation committee or board	Local S&WCD, local sponsors watershed participants, interested individuals and groups

<u>Action</u>	<u>WPH Reference</u>	<u>Action Person</u>	<u>Action Flows to Whom</u>
e. Study plan schedule	15.011	DC assisted by SL	Sponsors and S&WCD
23. Conduct preliminary investigation studies including the environmental assessment	13.10	PS, state program staff, DC, AE, FS, and other participating agencies <u>1/</u>	Documentation
24. Formulate all reasonable alternative plans and complete the environmental assessment <u>1/</u>	13.10	PS, state program staff, DC, AE, FS, and other participating agencies	Documentation
25. Prepare Preliminary Investigation Report <u>2/</u>	13.11	PSL & PS	AC, DC, local sponsors, TSC
26. Conduct public meetings on preliminary investigation studies	13.11	DC, County extension agent, C&WCD, and SLO with assistance of PS	Watershed participants interested organizations, individuals, and groups
27. Furnish public feedback, plan element preferences, and final objectives	13.12	SLO, local S&WCD, watershed participants, local organizations, individuals, and groups	DC, PS
28. Update study plan and obtain TSC concurrence <u>3/</u>			

1/ Possible time for TSC assistance and use of GUIDE.

2/ TSC review required.

3/ TSC concurrence required.

<u>Action</u>	<u>WPH Reference</u>	<u>Action Person</u>	<u>Action Flows to Whom</u>
<u>PLAN DEVELOPMENT PHASE</u>			
29. Conduct detailed investigations and review results with sponsors <u>1/</u>	Chapter 2	DC, PS, state program staff, AE, FS, and other participating agencies	SLO, local S&WDC, watershed planning participants
30. Obtain sponsor selection of their preferred plan	--	Sponsors	DC, PSL
31. Decision on environmental action		PSL	SS, DC
32. Prepare "working copy" of draft plan and appropriate environmental document. Material for O&M agreement, watershed agreement, and informally review with participants and sponsors	13.20 13.30 13.41	PSL, PS, & STC	All study participants
33. Prepare unsigned draft plan and environmental document for TSC review and concurrence <u>3/</u>	13.41- 13.412	PSL	TSC, FS area or regional office
34. Prepare draft of landrights work map for first increment		PSL, PS, & SAO	SLO, local S&WCD
<u>1/</u> Possible time for TSC assistance and use of GUIDE.			
<u>3/</u> TSC concurrence required.			

<u>Action</u>	<u>WPH Reference</u>	<u>Action Person</u>	<u>Action Flows to Whom</u>
35. Local review and public meeting to review watershed	13.42 13.431	DC, SLO, local S&WCD county extension agent, PS, & SAO	Watershed participants, affected property owners, interested organizations, individuals, groups
36. Begin FmHA loan arrangements	--	Sponsors	FmHA
37. Interagency Review of Watershed Plan & EIS	13.422- 13,433	STC	Appropriate federal and state agencies, WO, TSC
38. Prepare final plan and EIS	13.443- 13.445, 13.20- 13.30-71	PSL, PS	TSC, FS (for info)
39. TSC concurrence <u>3/</u>	13.445	TSC Director	STC, Administrator
39A. Transmit landrights maps	15.03- 15.04	PSL, SCE, landrights specialist, STC	SLO
40. Establish process for obtaining landrights	--	SLO, landrights person, SAO	Affected landowners in the watershed

3/ TSC concurrence required.

<u>Action</u>	<u>WPH Reference</u>	<u>Action Person</u>	<u>Action Flows to Whom</u>
41. Final approval of watershed plan and EIS	13.446- 13.4731	STC	Administrator
42. Notice of authorized installation assistance	13.454- 13.4731	Administrator	STC

RC&D MEASURE PLANNING PROCEDURES

A. RC&D Measure Plan Work Schedules {see RC&D Handbook, 102.4(d)}

RC&D Councils, assisting agencies, and public bodies sponsoring RC&D measures need to jointly develop a schedule of activities to assure timely action for measure plan preparation, design, and installation of measures. The detailed schedule should consider:

1. An outline of the jobs to be done with target dates for completion.

2. A schedule of the specific jobs sequence or steps.

3. Who will do it; the designation of one person responsible for action on each of the respective tasks to be performed.

Use of the precedence diagram (RCDH, Exhibit 102.2(d)--1-4) attached is one method for orderly scheduling. Major factors that influence scheduling are the ability and willingness of RC&D measure sponsors and the council to assume their responsibilities, the availability of personnel, land and water rights, and both federal and nonfederal funds.

B. RC&D Measure Plan {RCDH, 102.10(f)}

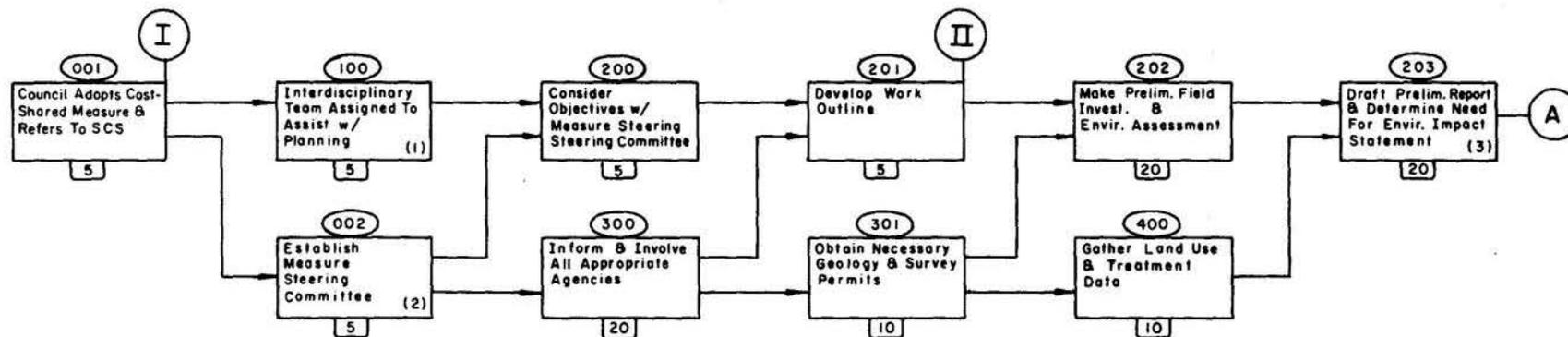
The measure plan is the basic document used in providing RC&D technical and financial assistance to eligible sponsors. The measure plan serves as a guide to measure sponsors, local citizens, and other participants in the installation, operation and maintenance of the installed measures. The measure plan is the basis for agreement between SCS and other participants. RC&D measure plans should be technically sound and professional in appearance and content. RCDH Appendix 102.10(f), lists an outline of items that should be considered for inclusion in measure plans. Items in the outline identified with an asterisk (*) shall be included in every measure plan.



C. Principles and Standards

Principles and Standards are applicable when developing RC&D measure plans for Flood Prevention, Farm Irrigation, Land Drainage, Public Water-Based Fish and Wildlife, and Public Water-Based Recreation Development when structures (water control) are involved. (See 102.6, RC&D Handbook). USDA Procedures for Planning Water and Related Land Resources will be followed in planning these measures. The intensity of the application of these procedures will vary with the level of planning, benefits realized, and environmental characteristics of the planning area. Abbreviations or approximation will be necessary in smaller implementation studies in order to keep planning inputs commensurate with the scope and significance of the measure being planned.

TYPICAL MEASURE
PRECEDENCE DIAGRAM RC & D MEASURE PLAN



II-17

ASSIGNED RESPONSIBILITY

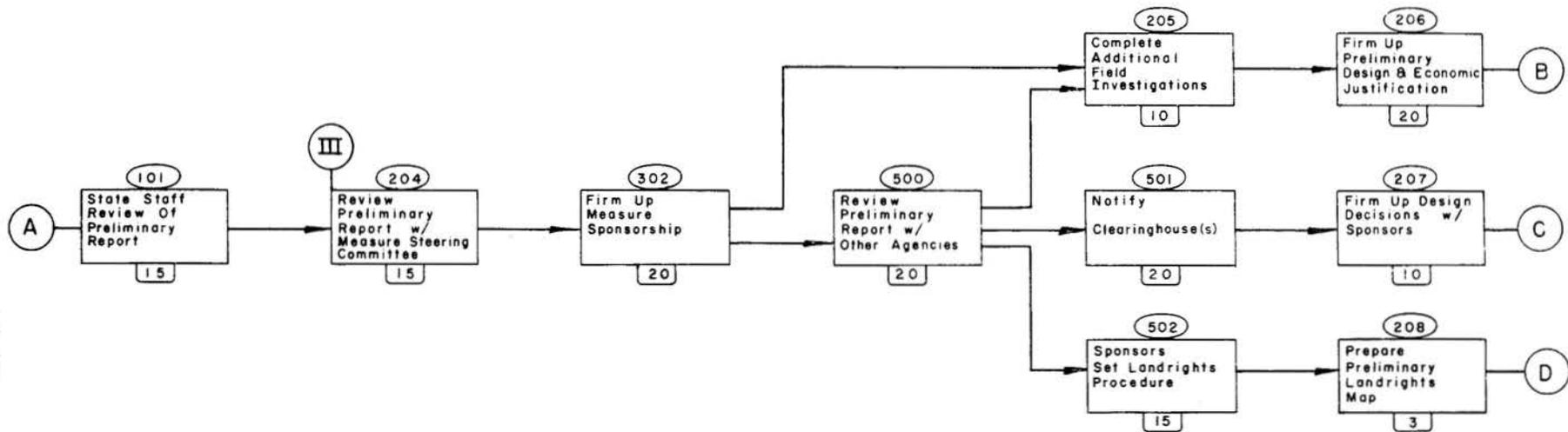
RC & D Council	001 - 099
Assistant State Conservationist	100 - 199
Interdisciplinary Team	200 - 299
Measure Steering Committee	300 - 399
District Conservationist	400 - 499
Measure Sponsors	500 - 599

MILESTONES

- I Measure Adopted by RC & D Council
- II Measure Plan Work Outline Developed
- III Steering Committee Review (Prelim. Report) Due
- IV State Staff Review of Measure Plan Due
- V Measure Plan for WO Review & Approval is Due

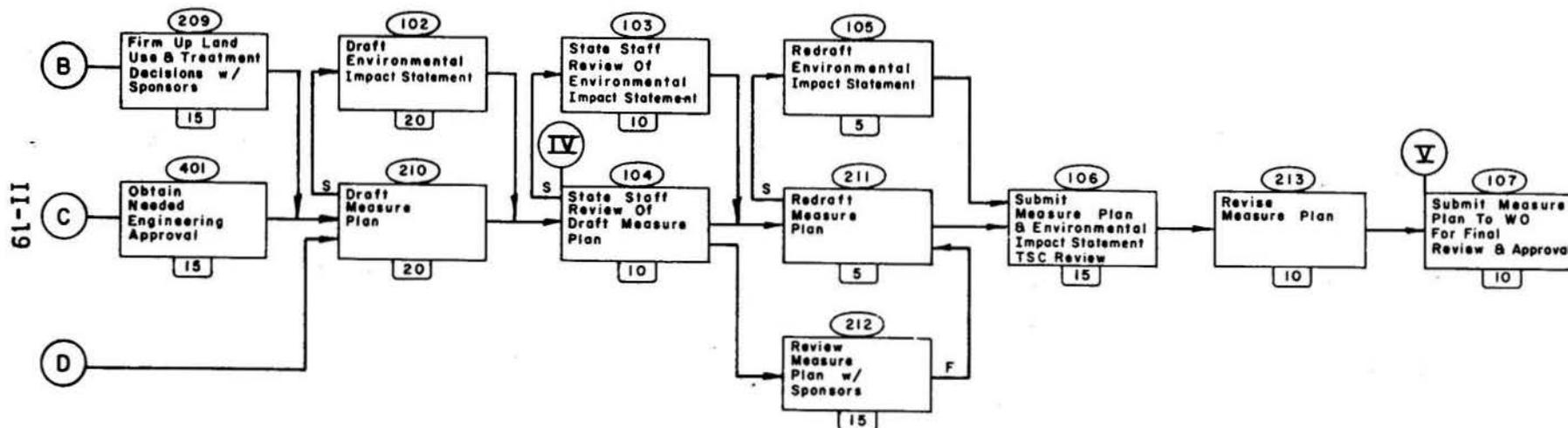
- (1) See RC & D Handbook 102.10 (c) on Use of Interdisciplinary Team.
- (2) See RC & D Handbook 102.10 (a) on Measure Steering Committees.
- (3) Follow Measure Plan Outlined in RC & D Handbook, Appendix 102.10 (f)

TYPICAL MEASURE
PRECEDENCE DIAGRAM RC & D MEASURE PLAN



81-II

TYPICAL MEASURE
PRECEDENCE DIAGRAM RC & D MEASURE PLAN



PRECEDENCE DIAGRAM FOR RC&D MEASURE PLANS

Work Items

1. Council adopts cost-shared measure and refers to SCS
2. Establish measure steering committee
3. Interdisciplinary team assigned to assist with planning
4. Team considers objectives with measure steering committee
5. Inform and involve all appropriate agencies
6. Develop work outline
7. Obtain necessary geology and survey permits
8. Make needed field investigations & Environmental Assessment
9. Gather land use and treatment data
10. Draft preliminary report & determine need for Environmental Impact Statement
11. State staff review of preliminary report
12. Review preliminary report with measure steering committee
13. Firm up measure sponsorship
14. Review preliminary report with other agencies
15. Notify clearinghouses
16. Complete additional field investigations
17. Sponsors set up land rights procedures
18. Firm up preliminary design and economic justification
19. Firm up design decisions with sponsors
20. Prepare preliminary landrights map
21. Firm up land use and treatment decisions with sponsors
22. Obtain needed engineering approval
23. Draft measure plan
24. Draft Environmental Impact Statement
25. State staff review of draft measure plan
26. State staff review of draft Environmental Impact Statement
27. Redraft measure plan
28. Redraft Environmental Statement
29. Review measure plan with sponsors
30. Submit measure plan and Environmental Impact Statement for TSC review
31. Revise measure plan
32. Submit measure plan to Wahington office for final review and approval

RCDH Notice 19 - August 1974

RESOURCE INVENTORY

Resource Inventory

The resource inventory includes the collection and organization of significant resource data which is useful in establishing and/or defining problems, needs, potentials, and plan effects. It provides the basis for much of the contents of the four account P&S displays, the EIS, and the EAS.

Resource Inventory Checklist

The Resource Inventory checklist which follows, provides a listing of most of the categories of resource data. It can be used to select resource data that is important and should be included in an inventory for any particular project. No project would normally require data in all categories listed.

Purposes of the Resource Inventory Checklist

1. To provide a list for review by the planning team as they decide on which resource features to inventory, and what team member(s) will be responsible to collect and record the data.

2. To indicate which specialist may need and/or help collect certain resource data. This is shown by letter notations in the column for each specialist.

N - Needs the data for his/her part of the planning job.

H - Helps collect or develop the data as well as needing the data.

P - May have primary responsibility for collecting the data since it mostly pertains to his/her discipline.



WHERE DO I START

The number following each letter indicates the work item listed for that specialist in Section III, where an explanation can be found about the method of collection, and/or use of the resource data.

A sample resource inventory checklist has been included to illustrate who may have prime responsibility (P) for assembling the maps, inventories and other data. The checklist also indicates who may help (H) to collect the data and who may have a need (N) for the data.

Also attached is a blank resource inventory checklist. The planning staff leader may wish to make additional work copies and use them to make assignments for the applicable items pertinent to a given job.



United States
Department of
Agriculture

Soil
Conservation
Service

P.O. Box 2890
Washington, D.C.
20013

March 5, 1979

NATIONAL WATERSHEDS BULLETIN NO. 16-9-14

SUBJECT: SUPPORTING DATA FOR PLANS SENT TO WATER RESOURCES COUNCIL
FOR REVIEW

Action Required By: April 5, 1979

Purpose. This bulletin transmits a copy of interim guidelines outlining information needed in plans or in supporting data for those plans going to the Water Resources Council (WRC) for review after April 1, 1979.

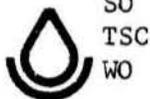
Expiration Date. This bulletin may be discarded as soon as its contents are noted and action taken as called for. The enclosure should be retained for use as needed.

Background. Executive Order 12113, dated January 4, 1979, directed the WRC to ensure that an impartial technical review is performed on reports or proposals for Federal and federally-assisted water and related land resource projects. The WRC has developed Proposed Rules and Procedures for implementing the review function within the Council. These proposed rules and procedures were published in the Federal Register on February 16, 1979. You should obtain a copy and become familiar with the procedures outlined for this review function. The procedures indicate that plans must comply with the WRC's manual of procedures for evaluating benefits and costs. The procedures manual is scheduled for completion about July 1979. Until notified otherwise, you are to continue using existing procedures for evaluating benefits and costs.

The rules and procedures call for certain supporting data to accompany plans going to the WRC for review. A task force consisting of one staff member from each technical service center (TSC) developed the enclosed interim guidelines showing minimum supporting data needed. If necessary, please contact your TSC for interpretation or consultation concerning use of the guidelines.

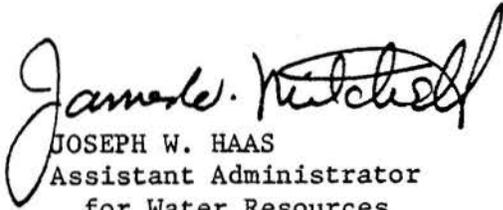
Actions Required. In accordance with WRC's proposed rules and procedures, the following actions are necessary:

1. Beginning on April 1, 1979, all plans requiring congressional resolution approvals must be submitted to the WRC for review prior to submission to the Office of Management and Budget. In addition to the plan and environmental impact statement (EIS), a separate document including supporting data as called for in the enclosure must be submitted to the WRC.



MORE

2. Submit to the Watersheds Division by April 5, 1979, a list of all final watershed plans expected to be transmitted to us for forwarding to the WRC for review during the remainder of calendar year 1979. Also, provide your best estimate of which month the plan(s) will be ready for transmittal to the WRC. If no watershed plan will be ready for review this calendar year, please inform us of this fact.


JOSEPH W. HAAS
Assistant Administrator
for Water Resources

Enclosure

INTERIM GUIDELINES FOR WATER RESOURCE PROJECT
SUPPORTING DATA FOR WRC REVIEW

INTRODUCTION

The supporting data submitted for WRC review should provide needed information called for in the proposed "Rules and Procedures Implementing a Water Projects Review Function Within the Water Resources Council." These rules and procedures were published in the Federal Register on February 16, 1979. The General Procedures for SCS's Compliance With NEPA and CEQ's Regulations were also considered. The intent of this supporting information is to supplement and not repeat what is in the plan and EIS. When any of the information included in these guidelines is in the plan and EIS, it may be excluded from the WRC review supporting data.

Supporting data organized according to the following format should be included as a separate part of the plan documentation. The usual supporting data needed for TSC review is not to be sent to the WRC at this time. It will be a function of the TSC's to assess the adequacy of this supporting data document and to assure that the plan and EIS address the remaining concerns. It should be neat and clearly understandable. Narrative, tables, charts, etc., should be typed or drafted in ink.

The kind of supporting data may need to be revised when the WRC Procedures Manual is finalized. Current procedures described in the Watershed Protection Handbook, technical manuals and guides are still applicable.

INTERIM FORMAT FOR PROJECT SUPPORTING DATA
TO BE REVIEWED BY WATER RESOURCES COUNCIL STAFF

GENERAL

Public Participation

- (a) Document by narrative or outline the extent of involvement of Federal, State, and local officials and the public in the plan formulation process. This should include the number of contacts and when they are made. Identify any associated international and intergovernmental problems.
- (b) Show the number of people and various interest groups attending meetings. Summarize the expressed concerns.
- (c) Identify important conflicts in the preferences for utilization of the water and land resources.
- (d) Include any agreements, resolutions, commitments or letters of support or non support from interested groups obtained during the planning process.
- (e) Summarize from the public participation process the goals, needs, and concerns used for project formulation. This includes the views expressed on all the alternatives by all interested parties.

Rationale for Formulating Alternative Plans

- (a) Describe how the without project conditions were determined including discussions of any other alternative future conditions considered. Include a discussion of interdisciplinary studies made and how they are related to without project environmental and economic values.
- (b) Describe the basis for selecting combinations of measures in alternative plans. Include a discussion of studies made to establish various combinations of measures (structural and nonstructural).
- (c) Describe how environmental and economic values for with project conditions were measured for each alternative.

TECHNICAL ANALYSIS

Environmental

Describe the procedures and assumptions used and include explicit reference to the scientific and other sources relied upon for conclusions. This is needed for each environmental concern. For example, wetlands, fish wildlife habitat, water quality, cultural resources, and prime and unique farmland. Displays may be included to supplement items in the plan and EIS. Provide relevant information supporting conclusions for mitigation, compensation, and enhancement.

Costs

- (a) Document how costs were developed and brought to current values along with contingency factors.
- (b) Include the basis for estimating the O&M costs.
- (c) Show the basis for replacement cost.
- (d) Explain the method for computing annual project costs showing interest rate, amortization, and discounting procedures.
- (e) Describe the use of interest during construction when installation of a measure extends beyond 1 year.

Cost Allocation and Cost Sharing

- (a) Identify the method and explain the procedural steps used in the cost allocation by objectives and purposes.
- (b) Give the rationale for use of other than approved cost allocation procedures.
- (c) Identify the cost-sharing policies and procedures.
- (d) Include any supporting information to indicate sponsors' willingness to pay, such as letters of intent, resolutions, etc.

Safety

- (a) Describe the considerations given to safety aspects including the basis for classification of dams. This includes the criteria used to design structures such as the frequency of emergency spillway operation, size of storm used to set freeboard of the structure, absence of seismic problems or solutions to existing seismic problems, foundation and embankment design to overcome problems, etc.

- (b) Identify and discuss potential safety problems including:

Possible losses to human life and property should the project experience:

- a. A major operational failure
 - b. A major structural failure
 - c. A catastrophic natural event
- (c) Describe the proposed measures to minimize or eliminate the impact of significant hazards.

NED Benefits

- (a) Direct users - For each purpose describe by narrative outline or tables the economic base data and its sources. Identify the methodology and procedures used to evaluate problems and benefits. Include the basis for and assumptions concerning future without and with project conditions; i.e., crop yields, value of residential and properties affected, flood plain development, population, level of production inputs, etc. It is not intended to include detailed computation.
- (b) Utilization from unemployed and underemployed labor resources - Document that the region has persistent underemployment and unemployment problems. Describe the procedures and assumptions used to evaluate these benefits.

PLAN AND EIS CONTENT OF PARTICULAR
CONCERN TO WRC REVIEWERS

The following items taken from the Proposed Rules and Procedures Implementing a Water Projects Review Function Within the Water Resources Council are those that are normally included in a plan and EIS. WRC review items not normally included in plans and EIS's are covered in the preceding section, "Interim Guidelines for Project Supporting Data."

These items and the interim format for supporting data can be used as check lists to insure that adequate information is provided for WRC review.

Other directives for the plan and EIS content are still applicable. References to the draft SCS NEPA procedures (7 CFR 650) and CEQ NEPA Regulations (40 CFR 1500-1508) are shown in parenthesis, unmarked references are from existing USDA procedural guidelines and existing water resource procedures.

Alternative Plans

1. Include a primarily nonstructural alternative and its effects on NED and EQ.
2. Describe conflicts among study area needs or objectives.
3. Present an incremental analysis for the NED plan that shows the economic effectiveness of accomplishing project needs.
4. Display the tradeoff among the economic and environmental effects of all viable alternatives (1502.14 and 1502.14(a)).
5. Identify any potential future development which may be precluded (1502.16).

National Economic Development

1. Show the price levels, interest rates, time periods, etc.

Environmental Considerations

1. Indicate that the plan complies with environmental statutes, regulations, executive orders and policy guidelines (1502.25(b) and 1506.2(d)).
2. Include an explicit and detailed analysis of environmental effects and important environmental values (1502.15, 1502.16(a), and 1502.16(d)).

TECHNICAL ANALYSIS

Environmental

Describe the procedures and assumptions used and include explicit reference to the scientific and other sources relied upon for conclusions. This is needed for each environmental concern. For example, wetlands, fish wildlife habitat, water quality, cultural resources, and prime and unique farmland. Displays may be included to supplement items in the plan and EIS. Provide relevant information supporting conclusions for mitigation, compensation, and enhancement.

Costs

- (a) Document how costs were developed and brought to current values along with contingency factors.
- (b) Include the basis for estimating the O&M costs.
- (c) Show the basis for replacement cost.
- (d) Explain the method for computing annual project costs showing interest rate, amortization, and discounting procedures.
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Safety

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SECTION III
PLANNING GUIDELINES AND DOCUMENTATION NOTES

This section provides detailed guidance by individual disciplines and subjects for use in preparing specific outlines of work for study plans. It also contains appropriate notes on collection of data for documentation.

"The real purpose of books is to trap
the mind into doing its own thinking."
-C. Morley

1. The first subsection "Plan Documentation" provides guidance on preparing the overall project documentation file.

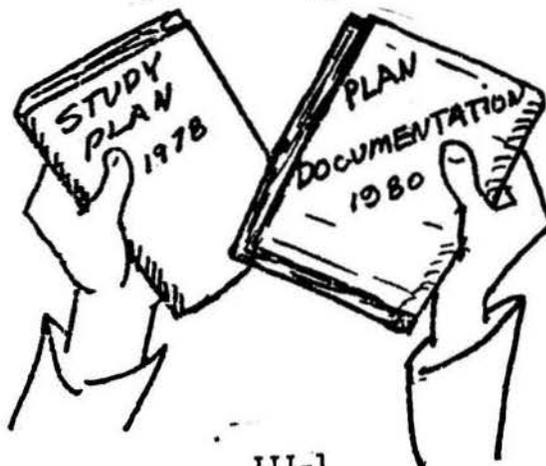
2. The remaining contents of this section are subdivided by discipline or subject for easy reference and use.

A. Work Item Numbers

A series of work item numbers are assigned as follows to avoid confusion:

<u>Subject</u>	<u>Work Item No.'s</u>	<u>Subject</u>	<u>Work Item No.'s</u>
Study Mgt.	001-099	Geology-Sed.	500S-599S
Biology	100-199	Geology-Eng.	500E-599E
Economics	200-299	Hydrology	600-699
Recreation	300-399	Land Treatment	700L-799L
Planning Eng.	400P-499P	Range	700R-799R
Drainage Eng.	400D-499D	Forestry	700F-799F
Water Quality Eng.	400W-499W	Agronomy	700A-799A
Irrigation Eng.	400I-499I	Soil Scientist	700S-799S
		Environment	800-899

The extent to which each of these subsections are used in planning and documenting any one project is dependent upon the type of problems and objectives and upon the number and type of disciplines needed or available to plan the project. The work items are organized to show how each discipline is involved in the six step P&S planning process.



B. Organization of Documentation Checklist

Most of the discipline sections have included a checklist for use in organizing a documentation file for substantiating data. Opposite each subject on the checklist is a work item number corresponding to the work item where these data would be gathered and containing notes suggesting methods of investigation and recording.

C. Planning Guidelines

Each subsection contains planning guidelines which are made up of a list of work items, each with a description of the suggested method and appropriate documentation. These work items provide an example of the type of work outline which each specialist needs to develop as input to the project study plan. The method and documentation would of course be more specific for a particular project and the number and type of work items can be changed.

The meaning and use of the other columns provided on the Planning Guideline sheets are as follows:

1. Major Activity - Numbers in this column corresponds to the major activities associated with the six step P&S process. For instance, major activities 2.1 through 2.4 all involve step 2 "resource inventories and evaluations." The planning procedures table shows these steps, major activities, and work items for all specialist.
2. Applicable Project Purpose; Plan Measure - Abbreviations in these columns indicate that the work item described particularly applies only to the purpose and/or measures noted.
3. Other Staff Involved - Abbreviations of other specialist within or outside SCS who you would normally coordinate with or obtain data from.
4. Field Examination; Preliminary Investigation; Watershed or Measure Plan; Final - The relationship between data collected in each phase of project development (Field Examination; Preliminary Investigation; Watershed or RC&D Measure Plan Development; and Final Design) is shown by an "X" in the appropriate column. Data that are normally collected in one phase and are usable in subsequent phases are shown by means of a horizontal arrow. For some items in the guide an "X" may be found in two or more of the columns with no change in method indicated. This occurs where the same method is used in all phases indicated but a more intensive study is made based on additional or improved data.

PLAN DOCUMENTATION

Documentation, often called substantiating data, provides a detailed record of significant data compiled during the planning process. It is the basis upon which important conclusions are drawn and decisions made. The clear and orderly assembly of documentation for a plan is essential for technical reviews by state and TSC personnel, and for efficiency in making necessary designs or plan changes during project installation.

The substantiating data should be recorded by each discipline as planning progresses and finally assembled into distinctive sections in 3-ring binders or bound folders for ease of reviewing and future reference. Each section should contain narrative, data, charts, maps, computations, etc., which lead to a clear understanding of the studies made, methodology and criteria employed, results obtained, conclusions reached, and future action required. Computations should show the checkers' initials and date checked, engineering designs and cost should include appropriate notes of concurrence by the state conservation engineer, and land treatment data should indicate concurrence by the state resource conservationist. The staff leader should make sure that planning documentation is organized, complete, checked, and appropriately concurred in before it is submitted for TSC review and subsequent filing in the state for future use.

A possible arrangement of documentation is shown in the following chart. Also shown are probable involvement of persons responsible for preparing each section and the persons who would normally review and concur. Guidance for the content of each section is provided for that particular discipline or subject in the remaining portions of the GUIDE.



BIOLOGY

EXAMPLE DOCUMENTATION ARRANGEMENT AND INVOLVEMENT

<u>Documentation Sections</u>	<u>Responsibility For Preparation 1/</u>	<u>Appropriate Review and Concurrence at State Level</u>
1. <u>General Planning</u> i.e.: A. Summary sheet of plan such as prepared for Congressional Committee Meetings for PL-566 - to include benefits and cost by purpose. B. Considerations in project formulation and EIS preparation. C. Summary of public involvement and results. D. Explanations of unusual or significant plan features. (Such as cost per acre benefited, number of beneficiaries, requirements for land treatment, etc.) E. Interagency coordination and contracts with consultants. F. Appropriate photographs. G. Statement of previous reviews of data and concurrence obtained.	Staff or Study Leader	State conservationist with advise of assistant state conservationist. <u>3/</u>
2. <u>Biology</u>	Biologist	State Resource Conservationist <u>2/</u>
3. <u>Economics</u>	Economist	<u>2/</u>
4. <u>Recreation</u>	Recreation Specialist or other discipline given recreation responsibility	State Resource Conservationist <u>2/</u>
5. <u>Engineering</u>	Planning Engineer	State Conservation Engineer <u>2/</u> , <u>4/</u>
6. <u>Geology</u>	Geologist	State Conservation Engineer <u>2/</u>
7. <u>Hydrology</u>	Hydraulic Engineer	State Conservation Engineer <u>2/</u>
8. <u>Land Treatment</u> Could include subsections on agronomy, soils, range, etc. or these could be in separate sections.	Soil Conservationist	State Resource Conservationist and appropriate members of his staff <u>2/</u>
9. <u>Environment</u>	Environmental Specialist	State Resource Conservationist <u>2/</u>
(Others As Needed)	--	--

1/ Each person preparing documentation should be responsible for having another staff member check his data. All computations should show the checkers' initials and date checked. Concurrence statements such as from the state conservation engineer should be included.

2/ The planning staff leader and senior staff specialist in each appropriate discipline, should review and concur in the documentation and its arrangement before it is submitted for state office review and for later review and concurrence by the TSC.

3/ The assistant state conservationist should check for proper state office staff concurrence before the documentation is submitted for TSC review.

4/ Also hydrologist, irrigation engineer, drainage engineer, water quality specialist, soil mechanics engineer, design engineer, and geologist as applicable.

PLANNING GUIDELINES

SUBJECT Study Management

PRIMARY RESPONSIBILITY Staff or Study Leader

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F											
		PP	PM																	
1.1	001 Develop specific planning objectives (specific components of NEH and EQ).	ALL		ALL	<p>A. Use the application for assistance, etc., to establish a list of expressed public concerns.</p> <p>B. Convert each concern into a specific planning objective (specific component). The resulting list could be divided--some under EQ and others under the NED objective. This should be an interdisciplinary planning team activity and not necessarily included in a FE or PI report. Results are provided to each specialist and filed for documentation. Changes are expected during the planning process.</p> <p>EXAMPLE</p> <table border="1"> <thead> <tr> <th rowspan="2">Concern</th> <th colspan="2">Specific Planning Objectives</th> </tr> <tr> <th>NED Component</th> <th>EQ Component</th> </tr> </thead> <tbody> <tr> <td>Floodwater Damage</td> <td>Reduce floodwater damage</td> <td>--</td> </tr> <tr> <td>Loss of upland quail habitat</td> <td>--</td> <td>Increase upland quail habitat</td> </tr> </tbody> </table>	Concern	Specific Planning Objectives		NED Component	EQ Component	Floodwater Damage	Reduce floodwater damage	--	Loss of upland quail habitat	--	Increase upland quail habitat	X	X →		
Concern	Specific Planning Objectives																			
	NED Component	EQ Component																		
Floodwater Damage	Reduce floodwater damage	--																		
Loss of upland quail habitat	--	Increase upland quail habitat																		
1.2	002 Evaluate specific planning objectives (specific components)	ALL		Ec Bi PE	<p>A. Organize necessary field trip(s) and meetings to accomplish the following.</p> <p>B. Determine if these are significant potential or unrealized concerns not yet expressed or recorded. Make staff assignments to accomplish this. List results as potential specific planning objectives (components) of EQ and NED to be discussed, verified, or eliminated at public meetings.</p> <p>C. Determine the types of measures having potential to satisfy each of the specific objectives.</p> <p>D. Evaluate specific objectives in view of expected future conditions and whether each is appropriate for the SCS program and expertise. List those which should be eliminated and why. Discuss with public and sponsors and determine with sponsors which specific objectives are relevant for further study.</p>		X													
1.3	003 Develop component needs.	ALL		Ec Bi	<p>For each specific planning objective (specific component) specify in as much detail as possible the type, quality, and quantity of what the public desires the plan to accomplish.</p> <table border="1"> <thead> <tr> <th>Specific Component</th> <th>Component Need</th> </tr> </thead> <tbody> <tr> <td>Reduce floodwater damage (NED)</td> <td>Provide 5 yr. frequency protection to 2,000 acres of cropland</td> </tr> <tr> <td>Increase upland quail habitat (EQ)</td> <td>Provide 1,200 acres of preserved upland quail</td> </tr> </tbody> </table>	Specific Component	Component Need	Reduce floodwater damage (NED)	Provide 5 yr. frequency protection to 2,000 acres of cropland	Increase upland quail habitat (EQ)	Provide 1,200 acres of preserved upland quail	X	X	X						
Specific Component	Component Need																			
Reduce floodwater damage (NED)	Provide 5 yr. frequency protection to 2,000 acres of cropland																			
Increase upland quail habitat (EQ)	Provide 1,200 acres of preserved upland quail																			
1.4	004 Public meeting - verify component needs and present study progress.	ALL			<p>Meet with sponsors and public to verify list of component needs. Record results, document in files.</p> <p>This meeting can also include reports on study progress, results, etc.</p> <p>It may be accomplished when the Field Exam or Preliminary Investigation reports are presented.</p>	X	X →													
<p>MA - Major Activity PP - Project Purpose PM - Plan Measure</p>				<p>FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan</p>	<p>F - Final</p>															

PLANNING GUIDELINES

SUBJECT Study Management

PRIMARY RESPONSIBILITY Staff or Study Leader

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
1.5	005 Initial study plan development.	ALL		ALL	<p>A. Meet with planning team. Review field exam. report, objective components; agree on scope and intensity of additional studies and study assignments; and general schedule. Coordinate with other appropriate agencies (FS, USFWS, etc.) and TSC specialist as needed. Agree on report format and staff responsibilities to provide specific report data. Agree on date for submission of work items from each specialist. See Environmental Assessment Guide and RCDH 102.10(c).</p> <p>B. List and describe study management work items and estimate duration time for each. Include study leader activities, other agency input, public involvement, report preparation, reviews, TSC planning team assistance, etc. Use these Planning Guidelines as applicable, and refer to WPH-12.30-12.41 for PL-566 projects. See RCDH 102.4(d) and RCDH exhibit 102.2(d).</p> <p>IPT C. Assemble lists of work items from each specialist; use time estimates to compute study cost; develop sequence and interrelationships of all work items using PCS or CPM methods where possible. Prepare brief narrative to describe the study plan and a bar graph showing the schedule.</p> <p>The results should be:</p> <p>Preliminary Investigation - Detailed work item Phase descriptions, time estimates, and funding.</p> <p>Plan Development Phase - Judgemental time, funding, and abbreviated work item listing.</p> <p>D. Meet with IP Team again to review results and make needed corrections. Where PCS or CPM methods are used, send results in for ADP processing to obtain resulting schedule. Assemble narrative and ADP results and work item description for completion of the study plan document and file. Meet again to review schedule and time commitments. Obtain STC approval.</p> <p>E. Provide schedule results to STC, AC, DC's, and others as appropriate.</p> <p>Use study management work item schedules to designate activities in the APO and to schedule activities on your personal desk calendar.</p> <p>Use the study plan for budget estimates, to accompany request for planning authorization, to obtain TSC agreement on procedures and to document planned action in RC&D short-term plans. Maintain an updated copy in the documentation file.</p>	X	→		
	006 Update study plan.	ALL		ALL	<p>A. Follow same procedure as in work item 005 using new investigations, reports, and public input. Revise and refine study plan as needed.</p> <p>Prepare detailed work item list and descriptions, time estimates, funding, and schedules for the plan development phase.</p>				X

MA - Major Activity
 PP - Project Purpose
 PM - Plan Measure

FE - Field Exam
 PI - Preliminary Investigation
 WP/MP - Work Plan/Measure Plan

F - Final

PLANNING GUIDELINES

SUBJECT Study Management

PRIMARY RESPONSIBILITY Staff or Study Leader

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PH						
1.5	006 (Continued)	ALL		ALL	For PL-566 planning this updating is accomplished after Preliminary Investigation studies and as often thereafter as needed. B. Obtain TSC concurrence and STC approval for major updates.				
2.1	007 Organize the collection of available data.			ALL	A. Make staff assignments clear for inventories. (Include field and state program staff). B. Hold meeting and provide leadership in determining available data relevant and needed for project planning activities. Consider: Field office files Forest Service & other USDA agencies U.S. Fish and Wildlife State agencies Etc. C. Assign responsibility for completing a: Base map(s) Drainage area(s) Land use Etc. D. Establish a documentation file for Resource Data, environmental assessments and related material.	X	X		
2.2	008 Organize the resources inventory. 009 Staff review of inventory results.		ALL WHP	ALL	A. Make staff assignments for field inventories to collect new resource data which is significant to the specified components, needed for the environmental, etc., effects of potential measures, and needed to determine the potential for various types of plan measures. B. Arrange to have relevant data filed and summaries prepared as needed. File with or cross-reference to the <u>Environmental Assessment</u> .	X	X	X	
				ALL	A. Review result summaries with all participating staff. Identify significant resource data which requires further study and which will change enough to require projections. Update study plan if needed.			X	
2.3	010 Organize to establish the without plan condition. 011 Determine project without plan conditions			ALL	A. Make staff assignments for establishing without plan conditions - hold meeting of those involved. B. Prepare a list of those resource (physical environmental and economic) characteristics which will be projected and the units of quality and quantity which will be used. This will provide sufficient information for an environmental assessment. C. Collect summaries of data from specialists and file. A. Review summary of without plan conditions with staff (include field and S.O. program staff). Make adjustments as necessary. B. Make copies of without plan condition summaries and distribute to appropriate staff. This data will also be used as documentation for TSC review.		X	X	
				ALL			X	X	
								X	

MA - Major Activity
PP - Project Purpose
PH - Plan Measure

FE - Field Exam
PI - Preliminary Investigation
WP/MP - Work Plan/Measure Plan

F - Final
WHP - Which Have Potential

PLANNING GUIDELINES

SUBJECT Study Management

PRIMARY RESPONSIBILITY Staff or Study Leader

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.4	012 Determine the potential plan elements.		ALL WHP	ALL	A. Have staff meeting to review inventory data on potential plan elements to meet component needs. Decide on additional studies and intensities needed. Make assignments and schedules clear. B. Collect summary, design, and cost data contributions to component needs, and effects data on potential plan measures. Prepare a list and locate on a map. File and review with staff.	X	X		
3.1	013 Assemble relevant native plan elements with multipurpose potential.	ALL	ALL	ALL	A. Meet with key staff members to determine which plan elements should be combined or analyzed for multipurpose use. Make assignments for necessary calculations. B. Assemble data on cost/benefits, effects, etc.	X	X		
3.2	014 Develop alternative plans, NED, EQ, etc. 015 Determine contribution of each alternative to component needs and the effects.	ALL	ALL	ALL	Meet with IPT staff to select plan elements which are appropriate for an NED plan, EQ plan and other alternative plans necessary to obtain public sponsors preferences. Make assignments to compile cost, benefits, and effects using data from work item 013. Using data from work item 014, list for each alternative plan: A. Contributions to each component need in the appropriate units of measure (type, quality, and quantity). B. Significant beneficial and adverse effects in the four accounts. C. Meet with staff to review results.		X	X	
3.3	016 Evaluate viability aspects of each alternative plan.	ALL	ALL	ALL	A. Make staff assignments and hold necessary meetings to accomplish the four-test evaluation of each alternative. Included will be: <u>Acceptability</u> - Provide a concise description of why and/or why not the plan is acceptable to the general public, specific public groups/organization, clubs, agencies, etc. Identify applicable institutional constraints. <u>Effectiveness</u> - Show how well the plan contributes to the component needs. Use data from work item 015. <u>Efficiency</u> - Show the cost for achieving a certain unit or quantity of component need. <u>Completeness</u> - Describe supporting groups/agencies, etc. who can provide the necessary cost, technical assistance, sponsorship, etc., for implementation. B. Prepare documentation which shows the above evaluation and include a summary table which compares each plan according to the four test evaluation.		X	X	
4.1	017 Develop displays of alternative plans.	ALL	ALL	AC DC PS	A. Organize the staff to prepare maps, tables, charts, etc. which clearly describe alternative plan elements and effects. These should be suitable for anticipated use at public meetings, in reports, etc. Use data produced from work items 014, 015, and 016.	X	X		
<p>MA - Major Activity PP - Project Purpose PM - Plan Measure</p> <p>FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan</p> <p>F - Final</p>									

SUBJECT Study Management

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Staff or Study Leader

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PH						
4.1	017 (Continued)	ALL	ALL	AC DC PS	B. Develop procedure to measure and document public preferences - brochure, questionnaires, etc. C. Review with sponsors, etc., before public meeting.	X X	X X		
4.2	018 Public meeting			AC DC PS SAO	A. Provide assistance and involve staff members as appropriate to schedule and hold a widely advertised public meeting to discuss study findings and obtain public preferences. Provide information brochure or summary to hand out. See WPH 12.21 for guidance. B. Document and file minutes of meeting, public statements, questionnaire response, etc. Summarize responses to aid in determining future direction of studies, viable alternatives, significant component needs, etc. C. Prepare Field Exam. Report or Preliminary Investigation Report.	X X X			
5.1	019 Modify alternative plans and component needs.	ALL	ALL	AC DC	A. Meet with IP Team to analyze public meeting results to modify component needs and/or establish the most viable alternative plans or measures. Review and modify as needed to make four test evaluation (see work item 016). B. Meet with sponsors to reach agreement on final component needs, and elements considered viable for alternative plans considering public meeting results. C. Document results with "Four Test" evaluation and include minutes of meeting with sponsors. D. Determine if an excluded EIS action or an EIS action is appropriate. E. Get STC decision and proceed with preparation impact appraisal and the appropriate Notice of Intent. F. Submit Notice of Intent (see CFS part 650.7 (c) and (d)). G. Submit EIA and Notice of Intent to WTSC for review and concurrence. H. Receive TSC concurrence.		X		
5.2	020 Organize for additional or more intensive investigations. 021 Develop viable alternative plan displays, NED, EQ, etc.	ALL ALL	ALL ALL	ALL ALL	A. Make additional staff assignments needed to complete investigations of viable alternative plans. Discuss and agree on scope and intensity. Coordinate as needed with other state and federal agencies. B. Update study plan similar to work items 005-006 and carry out investigations. Organize the staff to prepare maps, tables, charts etc., suitable for next meeting with sponsors and subsequent public meetings. The expected selected plan should be described in detail and have the significant effects compared clearly with other alternatives.			X X	
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PLANNING GUIDELINES

SUBJECT Study Management

PRIMARY RESPONSIBILITY Staff or Study Leader

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
6.2	D26 (Continued)				<p>Also announce in other news media. The notice will briefly describe project proposed; date, time, and location of meeting; and where copies of draft plan and EIS may be obtained.</p> <p>E. Assist in holding public meeting. Obtain summary of the substance and attendance and copies of all written statements received.</p> <p>F. Confer with sponsors on needed changes in view of comments. Discuss with TSC any significant changes needed.</p>				
	D27 Conduct Inter-agency review, consider comments and prepare final plan and EIS, and obtain sponsor approval			ALL	<p>A. Conduct Interagency review. WPH 13.422 and 13.432.</p> <p>B. Consider all comments, discuss with project sponsors, and prepare final plan and EIS.</p> <p>Arrange for transmitting to TSC for concurrence. WPH 13.44 to 13.445.</p> <p>C. Assist in obtaining sponsors approval of final plan. WPH 13.446.</p>			X	
	D28 Complete SCS approval of plan and EIS and obtain approval to authorize installation assistance.			ALL	<p>A. Present plan and EIS for approval and signature of STC. WPH 13.447.</p> <p>B. Assist in transmitting SCS approved plan and EIS to Watershed Division for authorization of installation assistance.</p>				X
<p>MA - Major Activity PP - Project Purpose PM - Plan Measure</p>				<p>FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan</p>		<p>F - Final</p>			

PLANNING GUIDELINES

SUBJECT Biologic Investigations-Fish & WildlifePRIMARY RESPONSIBILITY Biologist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F					
		PP	PM											
1.1	100 Convert public fish and wildlife concerns into specific components.	F&W		ALL	A. Use the application for assistance and other such documents to establish recorded F&W concerns B. Reword F&W concerns to represent what the public desires the plan to accomplish. The result should be a list of one or more environmental quality specific components. i.e.: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Concern</u></td> <td style="text-align: center;"><u>EQ Component</u></td> </tr> <tr> <td>Loss of upland quail habitat</td> <td>Increase upland quail habitat</td> </tr> </table>	<u>Concern</u>	<u>EQ Component</u>	Loss of upland quail habitat	Increase upland quail habitat	X	X			
<u>Concern</u>	<u>EQ Component</u>													
Loss of upland quail habitat	Increase upland quail habitat													
1.2	101 Evaluate F&W components	F&W		ALL	A. Search for additional F&W concerns not yet expressed or recorded. Contact local F&W biologist, talk to D.C., review existing F&W documents, conduct a "drive-through" field trip. List deficiencies and opportunities in general terms of quantity and quality by animal habitat or groups of animals habitat. Describe findings as a list of potential EQ components. B. Anticipate projected future conditions which may increase or decrease the importance of F&W components. C. Record findings and provide to the study leader. D. Assist SL and SLO in determining which F&W components are relevant for further study.		X							
1.3	102 Convert F&W components into component needs	F&W			Using available data, specify in as much detail as possible the type, quality, and quantity of what the public desires for each F&W component; i.e., provide 1,200 acres of preserved upland quail habitat.	X	X	X						
1.5	103 Develop a study plan - biology portion	ALL	ALL	ALL	A. List in time sequence all biologic work items needed to accomplish planning for F&W purposes. coordinate with appropriate staff, state F&W, USFWS, and TSC specialists as needed. B. Describe procedures for accomplishing each work item with man-days required. Provide to study leader. C. Obtain a copy of the resulting overall schedule and use it to schedule the biologists F&W work items on personal calendar.	X	X							
2.1	104 Assemble available data on resource base.			ALL	A. Assemble F&W resource data from sources such as: RB reports, F&W documents, etc. B. Assemble other needed information such as the project base map, county maps, land use, soils, etc. C. Establish an F&W documentation file.	X								
2.2	105 Identify scope of F&W habitat inventory needed, identify components and implement.	ALL		STATE F&W USFWS	A. Conduct reconnaissance survey with FWS, State F&W using habitat types (vegetative grouping), identify significant habitats to be inventoried; using Hamer or Thomas model, combination or substitute, inventory habitats quantitatively and qualitatively, including diversity with special consideration to impact areas; describe fish migrations if applicable. B. Prepare appropriate maps and tables.	X	X	X						

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PLANNING GUIDELINES

SUBJECT Biologic Investigations-Fish & Wildlife

PRIMARY RESPONSIBILITY Biologist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.2	106 Identify and describe threatened and/or endangered species	ALL			Using the USFWS and state developed lists, identify each species within project and measure areas. Prepare a map showing location of critical habitat area from recovery team status reports and info retrieval systems such as the COE's.		X	X	
2.3	107 Identify future impacts on F&W and their habitat including changes in habitat quality.	ALL			Analyze F&W data, prepare a F&W habitat map; project conditions and quantities to establish without plan conditions for the project life.			X	
	108 Identify supplemental inventories needed, implement study and analyze.	ALL			Analysis of F&W data may indicate further data needs. Repeat work items 105 and 107.			X	
2.4	109 Appraise the potential to improve F&W	F&W	ALL	ALL	A. For each F&W component need, list the type, extent and location on a map of the potential F&W plan measures.	X	X	X	
					B. Compute the type, quantity and/or quality of component needs that each potential F&W measure will provide and other effects.	X	X	X	
				PE Ec	C. Work with other staff (PE, Ec, etc.) to calculate data on cost benefits.	X	X	X	
3.1	110 Assemble multi-purpose potential measures to improve F&W.	F&W	ALL	PE Ec Etc.	Combine potential F&W plan measures with compatible measures for other purposes to obtain multi-purpose cost and benefits.	X	X	X	
3.2	111 Develop F&W portions of NED, EQ, and other alternatives	F&W	ALL	ALL PE Ec Etc.	A. Select measures which most completely meet F&W component needs for the EQ alternative plan. B. Select F&W measures for NED alternative plan which are complimentary or not in conflict with the EQ objectives. C. Select F&W measures for any other alternative plans (document the above in table form and file)		X	X	
	112 Determine contribution of each alternative to F&W component needs.	F&W	ALL		For each alternative plan, determine the contributions made to the F&W component needs in the appropriate units of measure (type, quality and quantity). Document in table form with appropriate narrative description and file.	X	X	X	
	113 Evaluate impacts of each alternative plan on F&W	ALL	ALL		For each alternative plan, develop and evaluate the significant beneficial and adverse effects on F&W. Describe and predict impacts on F&W habitat by comparing with and without project conditions in terms of quality and quantity and acre/acre or mile/mile values and habitat units.	X	X	X	
3.3	114 Evaluate F&W aspects of each alternative plan.	ALL	ALL		A. Evaluate F&W aspects of each alternative plan with the following tests: <u>Acceptability</u> - Provide a concise description of why and/or why not the plan is acceptable to the general public, specific public groups, organizations, clubs, F&W Agencies, etc. Identify applicable F&W institutional constraints. <u>Effectiveness</u> - Show how well the plan contributes to the component needs. Use data from work item #111.		X	X	

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PLANNING GUIDELINES

SUBJECT Biologic Investigations-Fish & Wildlife

PRIMARY RESPONSIBILITY Biologist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
3.3	114 (Continued)				<p>Efficiency - Show the cost for achieving a certain unit or quantity of F&W component need.</p> <p>Completeness - Describe supporting groups and agencies, etc., who can provide the necessary cost, technical assistance, sponsorship, etc., for implementation.</p> <p>B. Prepare documentation to show the above evaluation and include a summary table comparing F&W aspects of each plan according to the four test evaluations.</p>		X	X	
4.1	115 Develop F&W portions of plan displays.	ALL	ALL	ALL	<p>A. Prepare for public meetings and reports, necessary maps and tables which clearly describe F&W plan measures and effects. Use data from work items 109-112</p> <p>B. Provide significant F&W effects for use in the four accounts.</p>	X	X	X	
4.2	116 Obtain public and F&W agency preferences	ALL	ALL	PSL	Assist study leader to prepare and meet with sponsors, public, F&W agencies, etc., to explain alternative plans and obtain and document their preferences among alternative plans and obtainable component needs.		X	X	
5.1	117 Modify F&W plans and component needs to reflect public preferences.	F&W	F&W	PSL	Make necessary changes in alternative plans and component needs to increase the viability and move closer to plan selection. F&W measures not feasible or acceptable should be eliminated.		X	X	
5.2	118 Make additional F&W studies and computations as needed	ALL	ALL		Make final investigations, computations, and displays to develop viable plan tables and maps, and narratives for public meetings and reports.		X	X	
6.2	119 Prepare F&W portions of plan and EIS.	ALL	ALL	ALL	<p>A. Assemble all relevant F&W documentation in one folder and/or notebook suitable for TSC review.</p> <p>B. Prepare, as assigned, F&W portions of the plan report, EIS, Env. Assess. Summary, etc.</p> <p>C. Participate in resolving state and TSC comments.</p>		X	X	
MA - Major Activity PP - Project Purpose PM - Plan Measure				FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan		F - Final			

ECONOMICS
ORGANIZATION OF DOCUMENTATION CHECKLIST

<u>Documentation Item</u>	<u>Work Item Reference No.</u>	<u>Tab Headings</u>
List "tab headings" and other descriptive headings with appropriate page numbers.		TABLE OF CONTENTS
A. Economy of area - Include following economic parameters	204	DESCRIPTIVE DATA
1. Population - rural and urban including trends - Labor force	205	
2. Employment by sector (agriculture and nonagriculture) including seasonal employment, if any		
3. Income (a) range, (b) medium, (c) compare to state and nation		
4. Farm and ranch enterprises		
a. Type or kind; e.g., dairy, beef, specialized, cash crop, etc.		
b. Size		
c. Number		
d. Tenure		
e. Average value of buildings and land		
5. Off-farm employment (a) number of days, (b) kinds, if known		

<u>Documentation Item</u>	<u>Work Item Reference No.</u>	<u>Tab Headings</u>
B. Principal crops grown		
1. Watershed		
2. Flood plain or benefited area		
C. Water and land resource problem		
D. Past flood events (newspaper articles)		
1. Most recent		
2. Largest		
3. Significance of large floods compared to smaller infrequent floods		
A. Tables 5 and 6	204	SUMMARY
B. Prices paid and prices received by commodity used in the analysis		
C. Basic crop budgets		
D. Include copies of environmental assessment sheets relating to land quality	206, 207, 208, 209, 210, 211, 212	CROP AND PASTURE <u>2/</u>

<u>Documentation Item</u>	<u>Work Item Reference No.</u>	<u>Tab Headings</u>
A. Include onfarm road and bridges, fence, debris, weed seed infestation, levees, farmsteads, livestock, machinery, etc.	212, 214, 215	OTHER AGRICULTURE <u>2/</u>
A. Include nonfarm road and bridge, railroad, etc.	216, 217, 218	NON-AGRICULTURE <u>2/</u> Road and Bridge
	219, 220, 222, 223, 224, 225, 226, 242, 243	RESIDENTIAL <u>2/</u>
	221, 222, 223, 224, 242, 243	COMMERCIAL AND INDUSTRIAL <u>2/</u>
	216, 217, 218	UTILITY <u>2/</u>
A. Include public agency costs	234, 235, 236, 237	SEDIMENT <u>2/</u>
	231, 232, 233	EROSION <u>2/</u>
	238	INDIRECT <u>2/</u>
	247, 248, 249	IRRIGATION <u>2/</u>
	244, 245, 246	DRAINAGE <u>2/</u>
	227, 228, 229, 254, 255, 256, 257, 258	RECREATION, FISH & WILDLIFE, WATER <u>2/</u> & ENVIRONMENTAL QUALITY

<u>Documentation Item</u>	<u>Work Item Reference No.</u>	<u>Tab Headings</u>
	250, 251, 252, 253	AGRICULTURAL and/or M&I WATER SUPPLY <u>2/</u>
	239, 240, 241	AGRICULTURE ENHANCEMENT <u>2/</u>
	260	EMPLOYMENT <u>2/</u>
	259	EXTERNALITIES
A. Engineers	261, 262	OTHER'S DATA Include all data furnished by other disciplines
B. Hydrologist		
C. Geologist		
D. Others		
	264	NED ALTERNATIVES
A. Watershed map used in making study	204	MAPS
B. Watershed work plan map		
A. Include backup data for documentation, for example, interviews, damage schedules, etc.		APPENDIX

NOTE: Each evaluation within each major heading should be complete enough and contain enough data or proper cross references to another part of documentation that would be needed to completely understand the analysis.

1/ Do not include work item numbers in documentation; write out information

- 2/
- A. Narrative
 - B. Methodology Used
 - C. Assumptions
 - D. Projections. Give sources (not intended to use OBERS)

PLANNING GUIDELINES

SUBJECT Economics

PRIMARY RESPONSIBILITY Economist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F				
		PP	PM										
1.1	200 Convert public NED concerns into specific components of NED objective.	FP IRR REC DRAIN			<p>A. Use application for assistance, flood damage reports, and other such documents to establish NED concerns.</p> <p>B. List NED concerns and components representing what the public desires the plan to accomplish, i.e.</p> <table border="0" style="width: 100%;"> <tr> <td style="text-align: center;"><u>Concern</u></td> <td style="text-align: center;"><u>NED Component</u></td> </tr> <tr> <td>Increased output of goods and services (increased income)</td> <td> 1. Flood damage reduction. 2. Sediment and erosion reduction. 3. Irrigation etc. </td> </tr> </table>	<u>Concern</u>	<u>NED Component</u>	Increased output of goods and services (increased income)	1. Flood damage reduction. 2. Sediment and erosion reduction. 3. Irrigation etc.	X	X		
<u>Concern</u>	<u>NED Component</u>												
Increased output of goods and services (increased income)	1. Flood damage reduction. 2. Sediment and erosion reduction. 3. Irrigation etc.												
1.2	201 Evaluate NED components.	FP IRR REC DRAIN			<p>A. While evaluating expressed concerns with on-site field inspection, search for additional NED concerns not yet expressed or recorded, via landowners, DC, and local leaders.</p> <p>B. Record findings and provide to study leader.</p> <p>C. Assist the SL and SLO determine which NED components are relevant for further studies.</p>		X						
1.3	202 Convert specific NED into component needs.	FP IRR REC DRAIN			Using available data, specify in as much detail as possible on the type, quality, and quantity of what the public desires for each NED component; i.e. flood protect agricultural land and associated woodland on flood plain land from 3-year storm (5,000 Ac).	X	X →						
1.5	203 Develop a study plan, Economics portion.	ALL	ALL		<p>A. List in time sequence all Economic work items needed to accomplish planning for NED purposes. Coordinate with appropriate staff and TSC Economist as needed.</p> <p>B. Describe procedures for accomplishing each work item with man-days required. Provide to study leader.</p> <p>C. Obtain copy of the overall schedule and use it to schedule the Economist work items on desk calendar.</p>	X	X →						
2.1 2.2 2.3	204 Assemble basic resource data.	ALL	ALL		<p>A. Assemble on a watershed or county basis as applicable.</p> <p>1. "Economy of the area" includes the following Economic parameters.</p> <p style="margin-left: 40px;">a. Population - both rural and urban</p> <p style="margin-left: 40px;">b. Employment by sector, e.g. ag, mfg., commercial, etc.</p> <p style="margin-left: 40px;">c. Income</p> <p style="margin-left: 80px;">(1) Range</p> <p style="margin-left: 80px;">(2) Median</p> <p style="margin-left: 80px;">(3) Compare to state and nation</p> <p style="margin-left: 40px;">d. Farm and ranch enterprises</p> <p style="margin-left: 80px;">(1) Type of kind e.g. dairy, beef, specialized, cash crop, etc.</p> <p style="margin-left: 80px;">(2) Size</p> <p style="margin-left: 80px;">(3) Number</p>	X	X →						
<p>MA - Major Activity PP - Project Purpose PM - Plan Measure</p>				<p>FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan</p>	<p>F - Final</p>								

PLANNING GUIDELINES

SUBJECT Economics

PRIMARY RESPONSIBILITY Economist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.1 2.2 2.3	204 (Continued)				(4) Tenure (5) Average value of buildings e. Off-farm employment (1) Number of days (2) Kinds, if known 2. Project base map 3. Soils information 4. Drainage area 5. County maps 6. Aerial mosaics 7. Watershed land use 8. Water and land resource problems 9. Past flood events a. Most recent b. Largest (Attempt to delineate flood boundaries) c. Significance of large floods compared to smaller infrequent floods Source: Published Soil Surveys, Aerial Photos, City & County Data Book, Ag. Census, Onsite Field Examination, Flood Damage Reports, Application for Assistance, and other such sources. B. Assemble the following on a flood plain or benefited area basis, delineate and measure on aerial mosaic or other suitable base, and tabulate by evaluation reaches or other problem area designation. 1. Land use 2. Soils from Soil Survey Reports by land use 3. Cropping pattern 4. Yields or suitability for development Source: Onsite field examination and interviews, D.C., and technical guide for benchmark soils. C. Other data: (Most recent prices and interest to be used in plan.) 1. Price data: WPH 2.0212 Prices paid and prices received by commodity grown. 2. Interest rates WPH 2.0213 RCDH 102.6(c) 3. Evaluation period WPH 2.0211 RCDH 102.6(b)				
	205 Problem area location.	ALL		ALL	Aerial photos on mosaics or other suitable base and flood plain profile showing elevation of significant properties, problem areas (flood plains and/or drainage or irrigation problem areas), reaches, and cross sections.	X	X	→	
					1. Price data: WPH 2.0212 Prices paid and prices received by commodity grown.	X	X	→	
					2. Interest rates WPH 2.0213 RCDH 102.6(c)	X	X	→	
					3. Evaluation period WPH 2.0211 RCDH 102.6(b)	X	X	→	

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PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Economist

SUBJECT Economics

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.4	206 Crop and pasture.	FP			A. Preliminary composite acre estimates based on field examination, interviews, generalized damage values, and D.C. data. (Form SCS-WS-1) Note: High-water marks. B. Develop composite acre damage values by reach based on crop budgets and onsite detailed field examination and interviews. Method: Economics Guide, chapter 3	X			
	207 Monthly crop damage factors.	FP			Develop depth and/or duration crop damage factors for watershed or area. Seek TSC assistance as needed.		X		
	208 Compute composite damageable values by Evaluation Reach.	FP		Hy	Monthly flood distribution and acres flooded from hydrologist and data from WI's 204, 205, and 207.		X	X	
	209 ECON II - Computer Application.	FP		Hy	In lieu of the lengthy longhand procedure in WI 208, assemble same data and use ECON II Computer Program.		X	X	
	210 Crop and pasture. State damage data.	FP		Hy	Tabular or graphical summary of damages by stage or elevation and by evaluation reach. Method: Economics Guide, chapter 3.		X	X	
	211 Average annual crop and pasture damages for various alternatives.	FP			Tabular or graphical damage frequency data by reach.	X	X	X	
	212 Adjustments due to (1) increasing rates of erosion and sediment damages; (2) recurrence of floods in same year.	FP			Economics Guide (1) Chapter 5 (2) Chapter 3, pages 10-14	X	X	X	
	213 Other agriculture damages.	FP		Hy	A. Preliminary estimate by flood event or stage based on field examination and interviews (Form SCS-WS-1). B. Inventory in detail each of the following items occurring in problem area: 1. Miles of fence 2. Acres of debris 3. Acres of weed seed 4. Number, location, and elevations of farmsteads 5. Amounts of farm machinery, livestock, corals, irrigation equipment 6. Lengths of farm access roads, field roads, diversions, and levees 7. Number and location of farm road culverts, bridges, and other such improvements 8. High-water marks C. Tabulation of damage studies occurring in each reach.	X	X	X	
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PLANNING GUIDELINES

SUBJECT Economics

PRIMARY RESPONSIBILITY Economist

MA	Work Item	Applicable		Other Staff	Method and Documentation	PRIMARY RESPONSIBILITY			
		PP	PM			FE	PI	WP/MP	F
2.4	213 (Continued)				D. Estimates are to be made by flood events or stages based upon surveyed elevations, onsite field examination and interviews compiled by evaluation reach.		X	X	
	214 Other Ag: Stage damage.	FP			Graphical or tabular summary of other agricultural damages by evaluation reach.	X	X	X	
	215 Other Ag: Average annual drainage for various alternatives.	FP			Graphical or tabular array of damage-frequency data using hydrologist's stage-discharge-frequency data.	X	X	X	
	216 Nonagricultural road, railroad, and bridge damage estimates and utility.	FP		PE	A. Preliminary estimates by flood events or stages, based on field examination and interviews. B. Inventory in detail each of the following items occurring in problem area: 1. Miles of road, railroad, and number and kind of bridges by reach. 2. Data from damage schedules (Form SCS-WS-4). 3. Estimates are to be made by flood events or stages based on surveyed elevations, onsite field examination and interviews and are to be compiled by evaluation reach.	X			
	217 Nonagricultural stage damage.	FP			Graphical or tabular summary of above damage data by evaluation reach.	X	X	X	
	218 Nonagricultural Average annual damages for various alternatives.	FP			Construct graphical or tabular array of damage-frequency data using hydrologist's stage-discharge-frequency data for each alternative studied.	X	X	X	
	219 Urban damages.	FP			Preliminary estimates by flood events or stages based on field exam and interagency with residents and local planning officials and sponsors. Tabular summary of (Forms SCS-WS-2, WS-3, and WS-4) damage schedules by type or by flood.	X			
	220 Urban damages - Residential.	FP		Hy	A. Prepare sample technique to sample flood plain area for damage or potential damages to be received by flooding. Determine number of random samples to be taken. Apply "t" test to check adequacy of number of properties sampled. B. Take damage or potential damage schedules, supplementing WI 219, from an adequate number (determined in "a" above) of samples to localize standard data. (Example: TSC) C. Based on: 1. Synthetic stage-frequency (based on past flood events) data. 2. Localized standard data for each affected property, compile damage by each frequency studied (Example 2, 5, 10, 20, and 100-year events). 3. Compute average annual damage by constructing a damage-frequency curve. 4. Construct graphical or tabular display summary of damage dates.		X		
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PRIMARY RESPONSIBILITY Economist

SUBJECT Economics

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.4	221 Urban damages - Commercial and Industrial.	FP		HV	A. Secure damage schedules from all affected properties supplementing preliminary data from WI 219. B. Survey elevation of all properties affected by floodwater. C. Based on: 1. Synthetic stages (based on past flood events) of floodwater for each frequency studied. 2. Information from damage schedule from each of the affected properties. Compile damages by each frequency studied. D. Construction damage frequency curve and compute average annual damages by evaluation reach. E. Construct tabular or graphical display summary of damage data.		X	X	
	222 Flood proofing for "substantial improvement."	FP			Determine number and value of buildings "substantially improved." Determine type and cost term of flood proofing. Account for reduction in flood damages.		X	X	
	223 OM&R of existing flood protection facilities.	FP			Amount, kind, and condition of facilities based on interviews and onsite inspection.	X	X	X	
	224 Average annual damages for various alternatives.	FP			Construct graphical or tabular array of damage-frequency data using hydrologist's stage-discharge-frequency data for each alternative.	X	X	X	
	225 URB I computer application.	FP			In lieu of lengthy longhand procedure in 220, assemble same data and use URB I computer program to compute damage by residence and average annual damage.	X	X	X	
	226 Adjustment for future changes.	FP			Using data in 220 or 224, apply TSC Technical Note WS-P0-3.	X	X	X	
	227 Public recreation use damages	FP		Rec	A. Preliminary estimates based on field examination and interviews. B. Interviews, damage schedules, correspondence, and onsite inspection.	X		X	
	228 Public recreation stage damage.	FP			Graphical or tabular summary of above damage data.	X	X	X	
	229 Public recreation. Average annual damage for various alternates.	FP			Graphical or tabular array of damage-frequency data using hydrologist's stage-discharge-frequency data.	X	X	X	
	230 Saving in future costs.	FP			Economics Guide, chapter 5, page 24 (same procedure as reservoir evaluation).	X	X	X	
	231 Streambank erosion (lands and/or improvements).	FP		GS	A. Preliminary estimates based on field exam and interviews. B. Economics Guide, chapter 5, supplemental with onsite detailed field examination and interviews.	X		X	
	232 Flood plain scour.	FP		GS	A. Preliminary estimates based on field exam and interviews.	X			

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PRIMARY RESPONSIBILITY Economist

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		PP	PM			FE	PI	WP/MP	F
2.4	232 (Continued)				B. Economics Guide, chapter 5, pages 14-16, supplemented with detailed field examination and interviews.		X	X	
	233 Gully erosion	FP		GS	Preliminary estimates based on field exam and interviews.	X			
	234 Sediment: infertile deposition.	FP		GS	A. Preliminary estimates based on field exam and interviews (Form SCS-WS-1). B. Economics Guide, chapter 5, supplemented with detailed onsite field investigation and interviews.	X	X	X	
	235 Sediment damages: swamping.	FP		GS Hy	A. Preliminary estimates based on field exam and interviews. B. Economics Guide, chapter 5, supplemented with detailed onsite field investigations and interviews.	X	X	X	
	236 Sediment damages: deposition to improvements.	FP		GS HY	A. Preliminary estimates based on field exam and interviews. B. Economics Guide, chapter 5, supplemented with detailed onsite field investigation and interviews.	X	X	X	
	237 Sediment damages: deposition to channels.	FP		GS PE	A. Preliminary estimates based on field exam and interviews. B. Economics Guide, chapter 5, supplemented with detailed onsite field investigation and interviews.	X	X	X	
	238 Indirect damages.	FP		GS PE	Economics Guide, chapter 3, page 31.	X	X	X	
	239 Agricultural land enhancement. A. Productivity increases. B. Changed land use.	FP			A. TSC Technical Note WS-P0-2 (2/2/67). B. Economics Guide, chapter 4. 1. Land capability (soils and yield data). 2. Type of farming, cropping patterns (interviews and observations). 3. Suitability - size (aerial photo mosaics, strip map, or other suitable base). 4. Degree of protection or service afforded "without" versus "with" project (hydrologic and geologic data). 5. Willingness, intentions, financial and managerial ability of operators to develop the land. Damage schedules supplemented with detailed onsite field investigations.	X	X	X	
	240 Net income values per acre for various alternatives.	FP			A. Cost returns data. B. Crop budget generator.	X	X	X	
	241 Average annual increase in net income.	FP			A. Use computer programs. 1. VAGPR (Value of Agricultural Production). 2. Crop budget generator.	X	X	X	
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		PP	PM						
2.4	241 (Continued)				B. Computations, including associated cost and discounted for lag.				
	242 URBAN: acres benefited.				Economics Guide, chapter 4. Consider the following: 1. Recent population trends and projections (census data, state and county reports, interviews). 2. Soil suitability (USGS Quad Sheets, survey data, soils data, and observation). 3. Alternative opportunities for new developments (economic studies, county reports, planning and zoning reports, and interviews). 4. Alternative locations and comparative development cost for with project vs without project.	X	X	X	
	243 URBAN: increased net income or land values per acre for various alternatives.	FP			Interviews and correspondence with realtors, local officials, property owners, associated costs, discounting for lag and considering associated development cost.	X	X	X	
	244 Drainage: Data supporting the number of acres benefited considering soil capability, suitability and management.		DRAIN	DrE PS	WPH-chapter 6; P&S Guidelines V-7; Economics Guide chapter 6. Aerial photo mosaic or other base showing soils types, land use, and yield data, supplemental with onsite detailed field examination and interviews. (Form SCS-WS-6)	X	X	X	
	245 OM&R of any existing drainage facilities.				Energy use, amount, kind, and condition of facilities based on interviews, company records, and onsite inspection.	X	X	X	
	246 Average annual increase in net income for various alternatives.		DRAIN		A. Cost and return data. B. Use computer programs: 1. VAGPR (Value of Agricultural Production). 2. Crop budget generator. C. Computations, including associated costs and discounting, for lag in accrual.	X	X	X	
	247 OM&R of any existing irrigation facilities.				Energy use, amount, kind and condition of facilities based on interviews, company records, and onsite inspection.	X	X		
	248 IRRIGATION: Data supporting the number of acres benefited considering soil capability, suitability and management.		IRR	IE PS	WPH, chapter 7; P&S Guidelines V-8; Economics Guide, chapter 7. Location map, aerial mosaic, or other suitable base showing water supply, soils, land use and yields, supplemented with onsite detailed field examination and interviews. (Form SCS-WS-5)	X	X	X	
	249 Average annual increase in net income for various alternatives.		IRR		A. Cost return data. B. Use computer programs: 1. VAGPR (Value of Agricultural Production). 2. Irrigation water requirements. 3. Crop budget generator.	X	X	X	

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PRIMARY RESPONSIBILITY Economist

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MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.4	249 (Continued)				C. Computations, including associated costs and discounting for lag.				
	250 Amount of water needed for crop, livestock, and domestic use	Water Supply for Other Agricultural Needs & Domestic Use		PS	Area and farmers or rural residents to be served.	X	X	X	
	251 Average Annual Benefits: Increase in net income or alternative costs for domestic use.	Water Supply for Other Agricultural Needs & Domestic Use			Interviews and correspondence with beneficiaries and local sponsors.	X	X	X	
	252 Supporting data supplied by local organization for Service concurrence.	Municipal & Industrial Water Supply		PS	P&S Guidelines V-10; Economics Guide, chapter 8. Correspondence, interviews, or informal report.	X	X	X	
	253 Average annual benefit.	Municipal & Industrial Water Supply		PS	Computations.	X	X	X	
	254 Supporting data justifying the number of recreational visits by site.	REC		Rec	See RECREATION WORK ITEMS 311, 312, and 313.	X	X	X	
	255 Value per recreation visit and average annual benefit.	REC		Rec	A. Economics Guide, chapter 9; P&S Guidelines V-8; WPH, chapter 8; RCDH 102.6. B. Annual use times value per recreation visit discounting for lag in accrual.	X	X	X	
	256 Public Fish & Wildlife Habitat Improvement: NEED, EFFECTS AND BENEFITS.	F&W		Bi	Economics Guide, chapter 9; P&S Guidelines V-8; WPH, chapter 8, RCDH 102.6.	X	X	X	
	257 Water quality.			Bi	Watershed Memorandum 89 and 101; WPH, chapter 10.	X	X	X	
	258 Environmental quality.	EQ		ES	Watershed Memorandum 89; WPH, chapter 10.	X	X	X	
	259 Technological externalities.	FP IRR DRAIN			P&S V-12 - Computations of efficient gains through new or improved technology made profitable by direct project output.	X	X	X	
	260 Employment benefits resulting from project installation and project operation and maintenance.	FP IRR REC DRAIN M&I			P&S Guidelines V-11; WPH 2.02212; Economics Guide, Chapter 12.	X	X	X	
	261 For various land treatment alternatives estimate the following cost: A. Land treatment measures. B. Land treatment technical assistance.	ALL			Estimate unit cost and acres to be treated. A. Estimates made by DC, AC, and state staff. B. Estimates made by DC, AC, and state staff.		X	X	
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SUBJECT Economics

PRIMARY RESPONSIBILITY Economist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.4	262 For various alternatives estimate the following cost. A. Structural measures installation cost.			PE And Other Appropriate Staff	Show basis and all computations. Estimates are made by planning staff based on recent installation experiences. A. Construction Cost - WPH 3.01324. B. Engineering Services - WPH 3.01321. C. Land Rights - WPH 3.01323; Economics Guide, Chapter 13; Watershed Memorandum 120. D. Water Rights - WPH 3.01322. E. Project Administration Cost - WPH 3.01325. F. Relocation Cost - WPH 3.01326. G. Operation, maintenance and replacement - estimates made by planning staff and local sponsors based on simulated or recent O&M experiences. H. Associated Cost - WPH 3.016. I. Induced Cost Not Mitigated - WPH 3.017. J. Other Economic Cost - WPH 3.017. K. Nonproject Cost - WPH 3.014.		X	X	
3.1	263 Assemble single and multipurpose potential to enhance and improve NED output of goods and services, and improvements in economic efficiency.	ALL	ALL	ALL	Use results obtained from major activities 2.1, 2.2, 2.3, and 2.4. Assess potential measure contribution to NED objectives (single or multipurpose) structural measures. Assist planning engineer in determining cost and compute benefits.		X	X	
3.2	264 Develop NED alternative. 265 Develop NED portions of other alternatives and determine contribution of each alternative to NED component needs.	ALL	ALL		Select measures for alternatives that maximize net benefits. Designate NED alternative; document in tabular form and file. Assist in selection of measures for each alternative plan. Determine contribution made to component needs. Document in tabular form with appropriate narrative description and file.		X	X	
3.3	266 Evaluate economic aspects of each alternative plan.	ALL	ALL		A. Evaluate economic aspects of each alternative plan with following test. <u>Acceptability</u> - Provide a short concise description of why and/or why not the plan is acceptable to the beneficiaries, general and specific public groups, etc. Identify any institutional constraints. <u>Effectiveness</u> - Show how well the various plans contributes to the component needs. Use data from WI 265. <u>Efficiency</u> - Show cost and benefits for achieving a certain unit of component need.		X	X	
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SUBJECT Economics

PRIMARY RESPONSIBILITY Economist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
3.3	266 (Continued)				<p>Completeness - Describe supporting groups/sponsors etc. who can provide for the necessary cost for implementation.</p> <p>B. Document the above results and prepare a summary table comparing the NED aspects to each of the four tests.</p>				
4.1	267 Develop data for SWB account.	ALL	ALL		Use census data and other appropriate references to develop income class and percentages for each class.		X	X	
	268 Cost allocation.	All Multi-purpose Structures & Channels		PE	Cost allocation worksheet. WPH 3.02; P&S chapter 7; Economics Guide, chapter 10.		X	X	
	Cost sharing	All Multi-purpose Structures & Channels		PE	WPH 3.03.				
	269 Develop NED & RD displays and maps.	ALL	ALL		<p>A. Assist study leader to prepare for public meetings and reports, the necessary maps, tables, and displays to clearly describe NED measures and effects: Use data from work items under major activity numbers 2.1, 2.2, 2.3, and 2.4 as necessary.</p> <p>B. Provide significant NED effects for the four account tables.</p>		X	X	
4.2	270 Obtain sponsors and "publics" preferences.	ALL	ALL	PSL	Assist study leader in preparing for and meeting with sponsors, potential publics, etc. to explain and present alternative plans and to obtain and document their preferences of alternative plans and obtain component needs.		X	X	
5.1	271 Modify NED plans and component needs to reflect public preferences.	ALL	ALL	PSL	Make necessary changes in alternative plans and component needs to increase the viability selecting "a plan."		X	X	
5.2	272 Make additional economic studies as needed.	ALL	ALL	PSL	Make investigations, computations, and displays to develop a viable plan, tables, maps, and narrative for public meetings and reports.		X	X	
6.2	273 Prepare economic portions of plan, EIS, and documentation.	ALL	ALL	ALL	<p>A. Prepare, as assigned, economic portions of the plan, EIS Env. Assess. Summary, etc.</p> <p>B. Assemble all relevant economic documentation in notebooks (preferably one) suitable for review. Refer to Organization of Documentation Checklist in this Guide.</p> <p>C. Participate in resolving state and TSC comments.</p>		X	X	
<p>MA - Major Activity PP - Project Purpose PM - Plan Measure FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan F - Final</p>									

DOCUMENTATION FOR ALL RECREATION PROJECTS

Documentation needs are complimentary to associated requirements for adequate planning and completed staff work. The objective of proper documentation is the preparation and assembly of substantiating data that assists in proper interpretation of the planning process and its summary identified as the Plan. Substantiating data of high quality, properly recorded, organized, and filed, contributes to understanding and should be of value to planners, designers, and construction personnel.

The planning process properly executed as covered in the following work items will include the necessary information summarized by the enclosed outline.

1. An analysis of the need for the recreation development including:
 - A. The general need for the recreation in the area and the people (rural, urban centers, transients, etc.) to be served. Reference to state comprehensive outdoor recreation plans, local municipal or county development plans, or other planning efforts which lend support for new developments where these plans are available.
 - B. Population within 50-mile radius or one hour's driving time. Population outside the 50-mile radius which may have a bearing on recreation demand such as cities.
 - C. The number and kinds of competitive or complementary outdoor recreation facilities, public and private, which are available to this 50-mile radius population in as much detail as desired but not to include detailed inventory.
 - D. Existing or planned access to the general area by road (or where pertinent, other transportation), kinds of roads, relative remoteness or accessibility.
 - E. Special advantages of this site or of general area (scenic, historic, wildlife, climatic, vegetative, etc., assets), or disadvantages (nuisances, lack of scenic and other assets, competitive developments, large shallow areas in reservoir, need for extensive revegetation of area, etc.).
2. A general description of the amount of recreation which the area is expected to support, including:
 - A. Design load (instantaneous capacity) of the facilities and area, usually stated by activity such as picnicking, camping, swimming, boating (includes water skiing), fishing (do not duplicate boating), nature study, sports

and play areas, miscellaneous sightseeing, walking, lounging, and other miscellaneous, etc., based on the number of facilities, size of water area, and size of park area.

- B. Probably turnover, if any, in use of facilities on crowded days.
 - C. General extent of facilities use on weekends; on weekdays.
 - D. Length of season and amount of off-season use.
 - E. Total annual use by activity (activity-occasions of camping, swimming, etc.).
 - F. Value selected for economic evaluation of visitor days and reason for values.
 - G. Total values (primary recreation benefits).
3. A general description and the costs of all minimum basic facilities proposed explaining Table 2B.
- A. Type or standard, i.e., concrete or wooden picnic tables, pit privies or water-type comfort stations.
 - B. Type, standard and approximate length and width of parking areas, roads, paths, and walks.
 - C. Utilities, including type of sewage disposal, approximate length of water lines, source of water, etc.
4. Basis for estimating costs of minimum basic facilities should be explained.
- A. Records or data on other similar-type developments constructed under P.L. 566 or P.L. 91-343.
 - B. Cost of county or state highway departments for roads.
 - C. Facility costs from Federal agencies such as U.S. Forest Service or local or state park departments and others. Special notes or explanations should be provided covering any unusually high or low costs.
5. Map of reservoir, lake, perennial stream, and recreation area showing at least 5-foot contours of water area, and at scale of 1" = 100'.

- A. Sediment pool, recreation pool, emergency spillway crest, flood plain delineation, etc.
 - B. Land proposed for acquisition to serve both immediate and future recreation development needs.
 - C. Land proposed for acquisition to permit public use of the shoreline.
 - D. Existing county, state, or other roads and highways.
 - E. Schematic layout showing general location of basic recreation features, such as picnic, camping and swimming areas, roads, parking areas, boat launching ramps, etc.
 - F. Aerial photo with stereo pairs for recreation area(s).
 - G. Any other information considered pertinent.
6. A brief analysis of the proposed sponsors' ability to develop, operate, and maintain the recreation development including:
- A. General financial soundness.
 - B. Experience in park and recreation operations.
 - C. General interest and/or support.
 - D. Understanding and acceptance of a realistic operation and maintenance budget, listing the various operational items or considerations.
7. Outline any local, state, or regional laws, regulations, policies or procedures that might affect portions or all of the proposed recreation development, such as state laws on swimming and camping areas. Data used to assist with analysis of health and water quality may be included to back up work plan statements that health aspects have been reviewed by state and local agencies.

SUBJECT Recreation

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PRIMARY RESPONSIBILITY Assigned Specialist

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		PP	PM										
1.1	300 Convert public recreation concerns into specific components.	REC		ALL	A. Use the application for assistance and other such documents to establish recorded recreation concerns. B. Rerword recreation concerns to represent what the public desires the plan to accomplish. The result should be a list of one or more national economic development specific components. i.e.: <table style="margin-left: 40px; border: none;"> <tr> <td style="padding-right: 40px;"><u>Concern</u></td> <td><u>NED Component</u></td> </tr> <tr> <td>Inadequate opportunities</td> <td>Increase water based recreation.</td> </tr> </table>	<u>Concern</u>	<u>NED Component</u>	Inadequate opportunities	Increase water based recreation.	X	X		
<u>Concern</u>	<u>NED Component</u>												
Inadequate opportunities	Increase water based recreation.												
1.2	301 Evaluate recreation components.	REC		ALL	A. Search for additional REC concerns not yet expressed or recorded. Contact local D.C., review existing REC documents, conduct a "drive-through" field trip. List deficiencies and opportunities in general terms. Describe findings as a list of potential NED components. B. Anticipate projected future conditions which may increase or decrease the importance of REC components. C. Record findings and provide to the study leader. D. Assist SL and SLO in determining which REC components are relevant for further study.		X						
1.3	302 Convert REC components into component needs.	REC			Using available data, specify in as much detail as possible the type, quality, and quantity of what the public desires for each REC component; i.e., provide 200 acres of permanent lake for boating and fishing.	X	X	X					
1.5	303 Develop a study plan - REC portion.	ALL	ALL	ALL	A. List in time sequence all REC work items needed to accomplish planning for REC purposes. Coordinate with appropriate staff, state agency, and TSC specialists as needed. B. Describe procedures for accomplishing each work item with man-days required. Provide to study leader. C. Obtain a copy of the resulting overall schedule and use it to schedule REC work items on personal calendar.	X	X						
2.1	304 Assemble basic data on resource base.			ALL	A. Assemble needed information such as the project base map, county maps, land use, soils, etc. B. Establish a REC documentation file.	X	X						
2.2	305 Inventory of existing recreation facilities within and adjacent to proposed development.	ALL	ALL		NACD Recreation Inventory for SCD or county. State Comprehensive Outdoor Recreation Plan. Data from sponsoring organization, if available. Onsite investigations. Consultants. Commercially available guides (Rand McNally, AAA Camping Guides, etc.).	X	X	X					
	306 Determine projects of other agencies, existing and planned.	ALL	ALL		Use reports of other agencies - State Comprehensive Reports, Recreation Bulletins. Develop liaison with other state and federal agencies.		X	X	X				

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SUBJECT Recreation

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.3	307 Estimate recreation demand and potential within the recreation market area by activities.	ALL	ALL		Develop data from: Recreation and Fish and Wildlife Development, (Draft) Chapter 9. State Outdoor Recreation Plans. U.S. Bureau of Outdoor Recreation data-1970 Survey of Outdoor Recreation Activities. "Selected Outdoor Recreation Statistics" - BOR. Appraisals of potentials for outdoor recreation developments. Present and future projected population within reasonable distance of watershed.	X	X	X	
	308 Determine remaining needs in watershed or measure area.	ALL	ALL		Use references from 302. Statistic worksheet from appraisal of potentials for outdoor recreation developments. Interviews.	X	X	X	
	309 Estimate use of similar developments.	ALL	ALL		In conjunction with item 300. Information on O/M requirements from use. Similar developments.		X	X	X
2.4	310 Determine water storage potentials.	ALL	ALL	PE GE Hy	Locate potential site on map. Indicate desirable site on P.I. or P.R. copy of "Water Impounding Structure Design and Cost Data." Consult with geologist and engineer.	X	X	X	
	311 Determine water quality.	ALL	ALL	GE B1 WQE	Records analysis made by responsible local, state or federal agency. Multiagency biology report. Consult with geologist and water quality specialist. Discuss with biologist expected reservoir and stream conditions of water quality parameters for intended uses.	X	X	X	
	312 Determine water yield.	ALL	ALL	Hy B1	Review stream flow data with hydrologist and biologist. Copy of water budget from hydrologist. If swimming is potential activity, determine if "flow by" is adequate to meet state standards as 311.	X	X	X	X
	313 Establish water holding ability of the site.	ALL	ALL	GE Hy PE GE	Preliminary site investigation with geologists. Copy of seepage loss analysis from hydrologist, geologist, engineer. Copy engineer's report.	X	X	X	X
	314 Estimate recreation site potential by activity.	ALL	ALL		Develop in conjunction with item 307. Complete worksheet on recreation site potential. Assemble the following information: Topography map. Recreation - soils and geology interpretations. Potable water supply determined in conjunction with items 311 and 312. Water disposal requirements and potentials. Calculate area requirements on guidelines by BOR, NPS, FS, C/E, or state agency. Requirements calculated by sponsor or its consultant. Recreation facilities for suggested features.		X	X	X
3.1	315 Analyze recreation facilities needed by activities.				Water requirements for recreation areas. O&M requirements and plans. State and local laws and regulations. Environmental health practices in recreation areas. Consideration of handicapped persons in design and use of recreation areas.		X	X	X

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MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
3.1	315 (Contd.)				State and National Outdoor Recreation Plans. Determination by sponsor or consultant. Maps - Delineation of activity areas, facilities, roads, paths, etc.		X	X	X
	316 Estimate cost of storage and cost of land.	ALL	ALL	PE Ec	Engineering and economic investigation.			X	
	317 Description of recreation facilities which can be provided.	ALL	ALL		Based on applicable SCS standards and specifications for recreation practices. Facility staffing and operation needs. SCS facility designs. Recreation facility designs. Park practice designs.			X	X
	318 Cost of recreation facilities.	ALL	ALL		Complete recreation facilities, cost estimate worksheets. (Include O&M) Costs based on local or previous experience. Costs based on local sponsor's or consultant's estimates.		X	X	
	319 Assemble multi-purpose potential measures for REC.		ALL	PE Ec Etc.	Combine potential REC plan measures with compatible measures for other purposes to obtain multipurpose cost and benefits.	X	X	X	
3.2	320 Develop REC portions of NED, EQ, and other alternatives.		ALL	ALL PE Ec Etc.	A. Select measures which most completely meet REC component needs for the NED alternative plan. B. Select REC measures for EQ alternative plan which are complimentary or not in conflict with the EQ objectives. C. Select REC measures for any other alternative plans (document the above in table form and file).		X	X	
	321 Determine contribution of each alternative to REC component needs.		ALL		For each alternative plan, determine the contributions made to the REC component needs in the appropriate units of measure (type, quality, and quantity). Document in table form with appropriate narrative description and file.	X	X	X	
3.3	322 Evaluate REC aspects of each alternative plan.	ALL	ALL		A. Evaluate REC aspects of each alternative plan with the following tests: <u>Acceptability</u> - Provide a concise description of why and/or why not the plan is acceptable to the general public, specific public groups, organizations, clubs, state agencies, etc. Identify applicable REC institutional constraints. <u>Effectiveness</u> - Show how well the plan contributes to the component needs. Use data from work item 320. <u>Efficiency</u> - Show the cost for achieving a certain unit or quantity of REC component need. <u>Completeness</u> - Describe supporting groups and agencies, etc., who can provide the necessary cost, technical assistance, sponsorship, etc., for implementation. B. Prepare documentation to show the above evaluation and include a summary table comparing REC aspects of each plan according to the four test evaluations.		X	X	
4.1	323 Develop REC portions of plan displays.	ALL	ALL	ALL	A. Prepare for public meetings and reports, necessary maps and tables which clearly describe REC	X	X	X	
MA - Major Activity PP - Project Purpose PM - Plan Measure				FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan		F - Final			

SUBJECT Recreation

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Assigned Specialist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
4.1	323 (Contd.)				plan measures and effects. Use data from work items 315 - 321. B. Provide REC effects for use in the four accounts.				
4.2	324 Obtain public and REC agency preferences.	ALL	ALL	PSL	Assist study leader to prepare and meet with sponsors, public, state agencies, etc., to explain alternative plans and obtain and document their preferences among alternative plans and obtainable component needs.		X	X	
5.1	325 Modify REC plans and component needs to reflect public preferences.	F&W	F&W	PSL	Make necessary changes in alternative plans and component needs to increase the viability and move closer to plan selection. REC measures not feasible or acceptable should be eliminated.		X	X	
5.2	326 Make additional REC studies and computations as needed.	ALL	ALL		Make final investigations, computations, and displays to develop viable plan tables and maps, and narratives for public meetings and reports. A. Make final description of REC facilities (see 317). B. Make final cost estimates (see 318) and analyze cost allocation and cost sharing. C. Develop operation and maintenance cost use: analysis by sponsors or consultant - use estimates from latest state park statistics.		X	X → X → X → X	
6.2	327 Prepare REC portions of plan, EIS or EAS.	ALL	ALL	ALL	A. Assemble all relevant REC documentation in one folder and/or notebook suitable for TSC review. B. Prepare, as assigned, REC portions of the plan report, (Table 2B), EIS, Env. Assess. Summary, etc. C. Participate in resolving state and TSC comments.		X	X	

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ORGANIZATION OF DOCUMENTATION - PLANNING ENGINEER

Organize and fasten all material in a 3-ring binder or folder. Each section should contain a short narrative of action taken, assumptions made, future action required, and references, along with computation sheets, sketches, drawings, tables, and figures as follows:

<u>Documentation Item</u>	<u>Work Item Reference</u>
I. Index	
II. General	
A. Narrative	401E, 403E, 410E, 412E, 413E,
B. Correspondence	414E, 415E
C. Structure Classification	
III. Structure Data Summary (Similar to W.S. Table 3)	404E, 410E
IV. Individual Structure - Dams	404E
A. Location, Layout, Description	
B. Surveys, Plottings, Reviews, and Records	
C. Hydraulics, Geology, and Soils	
D. Embankment and Foundation Design	
E. Dam and Spillway Proportioning	
F. Quantities, Costs, O&M, and Landrights	
V. Individual Structure - Channels	405E
A. Location, Layout, Description	
B. Surveys, Plottings, Reviews, and Records	
C. Hydraulics, Geology, and Soils	
D. Allowable Velocities and Slope Stability	
E. Proportion Channel and Structures	
F. Define Sediment and Inflow Problems	
G. Quantities, Costs, O&M, and Landrights	
VI. Cost Estimates	406E
VII. Selected Plan	410E
VIII. Alternative Plans	407E, 408E, 409E
IX. Display Tables, Cost Data Items	411E

PLANNING GUIDELINES

SUBJECT Engineering

PRIMARY RESPONSIBILITY Planning Engineer

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
1.5	400P Develop engineering work items for the study plan.	ALL		ALL & SCS	A. List engineering work items and estimate man-days required. Include field, state office, and TSC specialists time. B. Describe procedures for accomplishing each work item. C. Provide above information to study leader and obtain and use a copy of the resulting overall schedule.	X	X →		
2.1	401P Assemble existing data.	ALL	ALL	ALL	Assemble copies of available maps for base-map topographic, soils, land use, ground cover, as well as existing data-surveys, flow records, etc. Coordinate map scales with staff to match needs.	X	X →		
2.2	402P Engineering surveys.	ALL	ALL	ALL	Outline surveys needed, and extent and accuracy. Discuss and reach agreement with SCE. Establish horizontal and vertical control and document. Carry out surveys - establish notebook file and index system and map file system and record. Include surveys needed for identifying effects of project. Include geologic invest needs and land rights.	X	X → X → X	X	X
2.4	403P Structure classification. On National Forest dams with 50 sq. mi. DA and joint use of storage. 404P Individual structure.	ALL	DAMS CHAN- NELS DAMS	SCE Wash. Eng. Div. Bi ES Hy GE	Establish hazard class and record. Include letter of concurrence from SCE. ^{1/} Follow procedures in Engineering Memorandum-41. Describe situation and request Washington Office approval. Re: Engineering Memorandum-6, Engineering Memorandum-27, and TSC Engineering Memorandum PO-3. Classify channels and proposed work according to SCS system. (Ref. WPH example Table 3-B) ^{1/} Establish and reference design criteria. Develop base map (location and drainage area) use quad sheet if available. Include detailed site map and topography by field survey or Kelsh. Prepare centerline profile of dam, principal and emergency spillways by field survey. Site selections, spillway locations and borrow adequacy and availability to be made with geologist. Review conclusions with SCE, geologist, and design staff to find needs for more tests or studies, need for visual resources study, and to set quantities and cost estimates. Record data, prepare narrative of selected structures, obsolete and superseded data and explain why used. Summarize proposed structure data as in Table 3 of watershed or RC&D plans. Provide brief narrative - File in front of section.	X	X X X → X → X	X	X X X X X
^{1/} For structures and channels with major problems or requiring joint approval by the TSC and/or Washington Engineering Division, the state conservation engineer, design engineer, soil mechanics engineer, and others should be involved at an early date and throughout the planning process.									
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PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Planning Engineer

SUBJECT Engineering

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.4	404P (Continued)		DAMS		Storage computations - Develop drainage area data and stage-area-storage curves.		X	X	X
				GS	Sediment analysis.				
				Bi Rec	Other storage requirements, M&I, Recreation, F&W, etc.		X	X	X
				Hy	Hydrology Data - Include hydrographs for principal spillway, emergency spillway and freeboard routings.		X	X	X
					Hydraulics - Show discharge rates of principal spillway including various ports and gates.		X	X	X
					Prepare stage-discharge curve, 10-day drawdown elevation, time of empty reservoir.		X	X	X
					Determine emergency spillway layout and rating			X	X
					Develop reservoir routings including principal, emergency, and freeboard hydrographs. Include emergency spillway exit velocity, exit slope, duration of flow and Oe/b (TR-52).			X	X
				GE DE	Embankment, emergency spillway, and foundation design. Include geology report and geologic sections of rock and overburden. Ref. NEH, Sec. 8, chapter 5.		X	X	X
					Develop soil analysis of borrow, foundation, and emergency spillway. Include classification of materials with in place densitites, grain size, blow count. Atterburg limits, lab test results and engineering design conclusions. Identify and provide for unusual conditions affecting function and cost.				
					Select and display earthwork features. Include cutoff trench bottom width, embankment top width, stability analysis, side slopes, earthquake hazard, foundation treatment and drainage, zoning, striping, slope protection, compaction and landscaping. Include availability of borrow materials, quantity, haul, overburden, etc.			X	X
					Proportion structures. Provide data that supports the selections made. Include excavation and fill quantities vs height of dam.			X	
					Emergency spillway quantities vs spillway bottom width and top of dam elevation. Show earth and rock separately.			X	
					Structural quantities vs height of dam. Show principal spillway, emergency spillway, and other.			X	
					Additional features vs dam height include drain fill and filter, grouting and foundation treatment.			X	
			Cost estimates - develop cost of dam vs height curves.		X	X	X		
		SCE	Include costs for environment, landscaping, construction pollution control, and architectural requirements.			X	X		
		Ec	Compute allocation and cost sharing for alternate development levels.			X	X		
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SUBJECT Engineering

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Planning Engineer

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F	
		PP	PM							
2.4	404P (Continued)		DAMS	Ec SCE	Summarize cost estimate. Show references used for unit prices clearing, excavation (subdivide as needed), earth fill (subdivide as needed), rock fill, drain fill, foundation treatment, concrete, cement, steel, conduits, riprap, gates and controls, trash racks, vegetation, fencing, special purpose items for M&I, recreation, fish and wildlife, etc. Other cost items (mobilization, pollution control, borrow materials). Contingencies, installation costs, project administration.		X	X		
					Land rights costs including bridges, utilities, etc.		X	X		
					Ec Bi	Identify O&M requirements. Make estimates of average annual costs and operation, maintenance and replacement costs for each project element.		X	X	
						Obsolete and superseded data - Include sufficient narrative to describe assumptions and actions taken.			X	
		405P Individual structure - general information.	ALL	CHAN- NELS	Hy GE GS	Location map showing relationship to drainage areas, other structures, outlet conditions, etc. Ref. TR-25.	X			
						Aerial mosaic or other map of flood plain showing cross-section location and hydrologic routing reaches and proposed channel alignment.		X		
						Description of features which influence location. Include topography, channel size, tributary junctions, geologic conditions, channel stability factors, right-of-way bridges, ownership and land use boundaries, existing land improvements, general visual setting and potential visual impacts. Use narrative and photos, sketches, or maps.		X	X	
		405P Individual structure surveys.	ALL	CHAN- NELS		Profile and cross sections. (Ref. TR-25) Display one or more representative valley and channel cross-sections per damage reach--tied to common elevation datum. Extend surveys to elevations necessary to show flood effects.		X		
						Valley and channel cross-section from field survey data. Show a representative cross-section of each variation.			X	
						Bridge and culvert. Describe by approximate survey description and data from local sources showage, materials, span, abutment description, and a statement regarding suitability, underpinning, remaining life, etc.	X	X	X	
	405P Individual structures estimate "n" values.	ALL	CHAN- NELS	Hy SCE	Make estimates for "n" by field inspection. Estimate for "as-built" and "aged" conditions using NEH-5, supplement B; NEH-16, chapter 6; and TR-25.	X	X	X		
	405P Stability data.	ALL	CHAN- NELS	GS	Assemble data from existing geology reports and new investigations. Relate boring and sampling data to general geologic data and display on a condensed channel profile.	X	X X	X X	X X	
				SCE & Staff	Review geology report with designers for adequacy of sampling and testing for feasibility, and quantity and cost estimates.			X	X	
					Show boring logs and field classification.			X	X	

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PLANNING GUIDELINES

SUBJECT Engineering

PRIMARY RESPONSIBILITY Planning Engineer

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.4	405P Individual structure hydraulics (Continued)	ALL	CHANNELS		Other structures and appurtenances. Estimate Planned and sized - itemize those costing over \$1,000 each.	X	X	X	X
	406P Develop cost estimates.	ALL	ALL	SCE DE	Land Rights, including bridges, utilities, etc. List unit prices for each item and provide basis for selection. Use recent contracts, previous data with cost indexing. Develop cost estimates for each structure for varying levels of protection if practical. Organize supporting data. For obsolete and superseded information, include sufficient narrative to describe assumptions made and actions taken. Obtain review and concurrence of SCE.		X	X	X
3.1	407P Develop alternatives.	ES	ES	Ec PSL	Select combinations of structures to best meet component needs including the visual impacts. Consider best size and location of each, and document reasons for selection or rejection. Develop costs of each alternative including land rights, relocation costs, operation, maintenance, and replacement.	X	X	X	X
3.2	408P Develop NED, EQ, and alternative plans.				Select and reinforce alternatives which best meet the NED component needs. Likewise for EQ. Identify beneficial and adverse effects of each.		X	X	→
3.3	409P Apply 4-tests.				Display in tabular or narrative form the results of the tests for acceptability, effectiveness, efficiency, and completeness.			X	→
4.1	410P Structure records.	ALL	A11		Prepare location map showing all proposed structures. Include sufficient narrative to describe purpose, features, interdependence and alternatives. Summarize data such as in Watershed Table 3 (including 3A-B, & C). Include structures studied but not made part of plan.	X	X	X	X
	411P Display alternatives.	ALL	ALL		Develop displays in accordance with WPH and RC&D Handbook. Maps, drawings, and tables will show location, effects, visual impacts, quantities, and costs of each plan.		X	X	
	412P Modify plans and needs.	ALL	ALL		Assist in presenting alternative plans to the sponsors and public and record decisions.		X	X	
5.1	413P Modify plans and needs.	ALL	ALL		Change structural proposals, according to revised needs.		X	X	
5.2	414P Revise displays.	ALL	ALL		Revise documentation, maps, drawings, and tables for sponsor review.		X	X	
6.2	415P Prepare plan and EIS material.	A11	A11	SCE DE	Prepare drawings, maps, tables, and narrative for use in the plan and EIS. Obtain review and concurrence of SCE for all engineering material and documentation.			X	

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PM - Plan Measure

FE - Field Exam
PI - Preliminary Investigation
WP/MP - Work Plan/Measure Plan

F - Final
ES - Each Selected

DRAINAGE ENGINEER
ORGANIZATION OF DOCUMENTATION

<u>DOCUMENTATION ITEM</u>	<u>WORK ITEM REFERENCE</u>
Drainage Areas	401-D
Soils	401-D
Land Use	401-D
Topography	401-D
Existing Conditions	402-D
Field Surveys	403-D
Geology	404-D
Irrigation Data	405-D
Drainage System Map	408-D
Hydrology	409-D
Structural Data	410-D
Quantities	411-D
Cost Estimates	412-D

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Drainage Engineer

SUBJECT DRAINAGE

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.2	402D (Continued)				2. Determine irrigation water conveyance efficiency. 3. Determine net irrigation water requirements 4. Determine quality of irrigation water.		X	X	
2.3	406D Analyze effects on project without drainage component.			FE Ec Ag	Estimate acres of land damaged, crop yields, changes in land use, change in dimensions or degree of damage.		X	X	
2.4	407D Analyze potential to improve affected area with drainage.	Agric. Water Mgt.		SCE DE PE	A. Make preliminary drainage plan. 1. Select tentative locations for mains and laterals. 2. Make tentative estimate of ditch and pipe sizes. 3. Make estimates of other works of improvement needed, such as structures, pumping plants, dikes, etc. 4. Make estimate of cost. B. Select locations for drains. Make overall layout on plan map showing locations of mains, laterals, interceptors, outlets, etc. C. Compute flow requirements. 1. Delineate area contributing flow for each ditch or tile line. 2. Select appropriate drainage coefficient. 3. Where ground water flow is being intercepted, compute flow by application of Darcy's Law. 4. Compute flow for each ditch and tile line. 5. Compute flow requirements for inlets, outlets and other structures. D. Compute required structural dimensions. 1. Compute sizes of ditches and channels. 2. Compute sizes of pipe and tile lines. 3. Compute sizes of inlets, outlets, grade control structures, pumping plants, etc. Check outlet stability. E. Make estimate of quantities to construct planned measures. 1. Estimate quantities of earthwork 2. Estimate quantities of drain material. 3. Estimate quantities of other material to construct components.		X		
		DRAIN		PE					

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 PM - Plan Measure

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 WP/MP - Work Plan/Measure Plan

F - Final

PLANNING GUIDELINES

SUBJECT DRAINAGE

PRIMARY RESPONSIBILITY Drainage Engineer

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.4	407D (Continued)			SCE PE	F. Make estimate of costs. 1. Estimate cost of installing each of the planned measures. 2. Estimate cost for operation, maintenance and replacement.		X		
MA - Major Activity PP - Project Purpose PM - Plan Measure						FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan		F - Final	

DOCUMENTATION CHECKLIST
WATER-QUALITY SPECIALIST

<u>Documentation Item</u>	<u>Work Item Reference No.</u>
I. Inventory	
A. Tabular data and figures as appropriate quantifying surface and ground water supplies (Include flow hydrographs, etc. where appropriate).	421W
B. Available water quality data in tabular form - published data; summaries from WATSTORE, STORET, or other computer data bank; local raw data.	443W 430W
C. Tabulation or narrative summary of observed or sampled water quality.	
1. Record of observations by interdisciplinary team.	443W
2. Analysis of "grab" samples taken (field or lab analysis - not included in 3 below).	443W
3. Record of water-quality evaluation(s) conducted by SCS or others.	419W 443W 490W
a. Narrative of methodology employed during the evaluation (sampling sites, frequency, handling, analysis standards, etc.).	
b. Record of parameters considered to be appropriate to the project (include those initially chosen, and later discarded).	



<u>Documentation Item</u>	<u>Work Item Reference No.</u>
c. Summary of sample analysis in tabular form.	
D. Climatological data summarized in tabular form. Include maps if appropriate.	421W
E. Erosion and sedimentation - See Sedimentation Geologist's documentation.	421W
F. Biological inventory as an indicator of water quality.	421W
G. Tabular data and maps as appropriate to show data applicable to the water quality problem.	421W
1. Geology	
2. Soils	
3. Land Use	
4. Vegetation	
5. Treatment Applied	
H. Irrigation and drainage information (tables, calculation, etc.) including diversion records, irrigation efficiencies, etc. - See Irrigation Specialist's documentation.	422W
I. Summaries or actual documents showing national and state water quality criteria, standards, or regulations (also <u>local</u> regulations relating to sanitary facilities).	421W
J. Base maps showing topography, drainage networks, etc. Scale should be appropriate to the project, but should be adequate to locate special features such as feedlots, industrial plants, municipal utilities, etc.	421W

<u>Documentation Item</u>	<u>Work Item Reference No.</u>
K. Maps and tabular data identifying potential pollutant sources (See Planning Guide for data needs).	
1. Nutrients	430W
2. Pesticides	439W
3. Bacteriological	442W
II. Evaluation of Inventory	
A. Calculations and tabulation of waste assimilation capacity of streams by segment.	451W
1. Nutrients	
2. Oxygen Demand	
3. Thermal Considerations	
4. Other parameters as indicated during inventory phase.	
B. Display of water quality index values and analysis of results.	451W
C. Narrative description of model and summary of results (include input-output parameters, calibration "fit," etc.).	
D. Calculations and tabulation of future without project conditions based on past trends and legal restraints.	
1. Nutrients	451W
2. Pesticides	454W
3. Bacteriological	457W
III. Alternative Analysis	
A. Calculations and tabular display of the effects of alternatives on water quality.	

<u>Documentation Item</u>	<u>Work Item Reference No.</u>
1. Recreation	460W
2. Sediment and erosion measures (See Sedimentation Geologist's documentation).	463W
3. Salinity reduction measures.	466W
4. Nutrient, pesticide or bac- teriological control measures.	469W
B. Calculations and tabulation showing the effect on water quality of com- binations of alternatives.	472W 475W 478W
C. Economic evaluation of alternatives (See Economist's documentation).	472W 475W
D. Narrative to describe the application of the tests of acceptability, effec- tiveness, efficiency, and completeness to alternative plans (NED, EQ, etc.).	478W
IV. Preferred plan - Tables, calculations, and narrative to show the effects of the preferred plan on water quality.	481W- 493W

SUBJECT Water Quality (Engineering)PLANNING GUIDELINESPRIMARY RESPONSIBILITY Water Quality Specialist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.1	421W Develop resource data base*	Water Quality Management		GE	Quantify surface and groundwater supply. Water supply papers, stream gaging records, etc.	X	X		→
	A. Sedimentation			PE	Gather climatological data (temperature, rainfall, evaporation, wind) NOAA records, state planning agencies, etc.	X	→		
	B. Nutrient and leachate control			GS	Assemble data on existing sedimentation and erosion, (existing maps, geologic reports, National Engineering Handbook). See work item #515-521, (Sed. Geologist).	X	→		
	C. Pesticides			Bi	Biological Inventory (limnology, benthos, etc.). Display in tabular form. Indicate sites on base map. See work item #105.	X	X		
	D. Bacteriological considerations			Ag	Present land use and treatment, vegetation (maps, tables of acreage by use).	X	→		
				GS	Geology, Soils - Maps and Tables.	X	X	→	
				SS	Soils should be of adequate detail to indicate waste assimilation capacity.				
				FS	State and National Water Quality Criteria and Standards - Local Regulations (Water Quality, Sanitation, etc.	X	→		
				FS	Water Quality Data (includes WATSTORE, STORET, published reports, local raw data, etc.).	X	X		
				PE	General data - base maps, topographic maps, drainage networks, etc.	X	→		
				FS	Scale should be adequate to show detail appropriate to the job.				
	422W Develop resource data base necessary for salinity control project planning.			ALL	Assemble the field and state office staff, determine what relevant available data is needed, and assign responsibilities for collection and analysis of resource data.	X	X	→	
					A. Assemble results published and unpublished from field studies, research, and other investigations.				
					B. Evaluate these results including the procedures and assumptions and make recommendations relating to their adequacy and need for collecting additional data.				
					C. Select pertinent data and recommend methodology including automatic data processing for making analysis.				
					D. Assemble needed information such as that listed above under work item #421W or:				
					1. Irrigation, drainage, watershed treatment, crop consumptive irrigation requirements, diversion records, farm delivery reports, canal and ditch seepage measurements.				
					2. Assemble and evaluate ADP computer programs which can be used or adapted for making analysis.				
					3. Assemble relevant economic, social, and environmental assessment material. Utilize the "Final Environmental Statement, Colorado River Water Quality Improvement Program," published by BR and SCS and submitted to CEQ in 1977.				
	*List is not all inclusive. Some items which may need to be covered in specific cases are not listed here.								
MA - Major Activity		FE - Field Exam		F - Final					
PP - Project Purpose		PI - Preliminary Investigation							
PM - Plan Measure		WP/MP - Work Plan/Measure Plan							

PLANNING GUIDELINES

SUBJECT Water Quality (Engineering)

PRIMARY RESPONSIBILITY Water Quality Specialist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.1	422W (Continued)				<p>E. Establish a documentation file. The product is a compilation by source of a reference file of pertinent information related to reducing the salinity contribution from the study unit.</p> <p>F. Develop a bibliography. Include an abstract on pertinent data and identify where the report or information can be obtained.</p>				
2.2	<p>424W Inventory existing land and water resources affecting sedimentation.</p> <p>427W Inventory existing land and water resources affecting salinity conditions.</p> <p>430W Inventory existing land and water resources affecting nutrient control.</p>	<p>Water Quality Management E&S</p> <p>Water Quality Management</p> <p>Water Quality Management</p>		<p>As Needed</p> <p>FS</p>	<p>See work items #500-599.</p> <p>See general monitoring procedures.</p> <p>Work items #436W.</p> <p>See work item #422W.</p> <p>Inventory possible nutrient sources.</p> <p>A. Agricultural facilities which produce nutrients.</p> <ol style="list-style-type: none"> 1. Feed lots 2. Dairies 3. Poultry 4. Swine 5. Other livestock 6. Processing plants <p>B. Rural domestic septic systems.</p> <p>C. Sanitary landfills, open dumps, etc.</p> <p>D. Disposal areas for agricultural and municipal waste.</p> <p>E. Other industrial facilities (including mining activities - past and present).</p> <p>F. Area(s) receiving fertilizer (commercial) by type and amount of fertilizer applied.</p> <p>G. Erosion and sedimentation of nutrient laden materials.</p> <p>Items to be inventoried should include, but not be limited to the following:</p> <ol style="list-style-type: none"> A. Size (acres or other appropriate units). B. Number of animals, units processed, etc. C. Type and volume of wastes in case of agricultural facilities. D. Capacity and condition of existing facilities (septic systems, holding ponds, clean-water diversions, etc.). E. Methods of disposal of agricultural or municipal wastes. Volume applied. 	<p>X →</p> <p>X →</p> <p>X →</p>			
<p>MA - Major Activity PP - Project Purpose PM - Plan Measure</p>				<p>FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan</p>		<p>F - Final</p>			

SUBJECT Water Quality (Engineering)

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Water Quality Specialist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.2	430W (Continued)				F. Access to surface or groundwater. G. In the case of landfills - types of material, special design considerations, etc. H. Type and volume of mine tailings, etc. Inventory items should be tabulated by nos., acres, number of animals, etc. Plot on base map or aerial photography as appropriate to the situation.				
	439W Inventory existing land and water resources affecting pesticide.	Water Quality Management		FeS	Inventory use of pesticides: A. Locate area(s) of pesticide use in watershed. 1. List of type of pesticide. 2. List by application rates. B. Locate area(s) used for disposal of pesticide containers. C. Locate areas where erosion and sedimentation may act as transport mediums for pesticides. D. Note transfer points for pesticides from one watershed to another (trans-river basin, etc.) by natural means or by methods of application. Tabulate data where available. Plot area(s) on base map or aerial photos as needed.	X	X		
				FeS ES	Inventory level of pesticides in the environment.				
				Others As Needed	A. Inventory pesticides in the environment (exclusive of water). Should be done in conjunction with other specialist study. B. Establish water quality sampling program to determine pesticide levels in water. See work item #443W.	X			
	442W Inventory existing land and water resources as they affect bacteriological considerations.	F&W REC M&I		Rec PE	Inventory conditions contributing to bacteriological degradation of environment. A. Rural domestic waste systems. B. Agricultural waste systems. 1. Animal waste (feedlots, etc.). 2. Processing wastes (vegetable, animal, etc.). 3. Include facilities built for agriculture waste management. C. Recreation areas. D. Areas used for disposal of municipal or agricultural waste not listed in B. E. Landfills, dumps, etc., used to dispose of organic waste material.	X	X		
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PLANNING GUIDELINES

SUBJECT Water Quality (Engineering)

PRIMARY RESPONSIBILITY Water Quality Specialist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.2	442W (Continued) 443W Carry out water quality evaluation programs to quantify water quality parameters.			FeS PSL IPT	<p>F. Municipal sewage treatment system.</p> <p>1. Size (capacity).</p> <p>2. Condition.</p> <p>G. Documentation will consist of appropriate graphs, tables, and figures to describe the magnitude of the problem encountered. Narrative should be included to document the site conditions at waste disposal areas. Use maps and/or aerial photography as appropriate to locate problem areas. Map scales should be appropriate to the conditions encountered.</p> <p>Quantify water quality parameters:</p> <p>A. Look at existing readily available data (field office, district, local government, state agencies). Note trends.</p> <p>B. Examine computer data banks for water quality data (STORET, WATSOTRE, others) Note trends.</p> <p>C. Observe water quality in field. (odor, color, biological activity, etc.)</p> <p>D. Take "grab" samples as needed to determine physical and chemical water quality parameters (usually data available in the field with test kits, meters, etc.).</p> <p>E. Conduct evaluation program to identify before, during construction, and after construction water quality. Use procedures established during study plan preparation. Document methodology, show summaries of water quality analysis in tabular form.</p> <p>Record in tabular form and plot on base map or aerial photos as required by the situation.</p>	X			
2.3	445W Project conditions and quantities to establish without plan conditions for sedimentation. 448W Project conditions and quantities to establish without plan conditions relating to salinity control. 451W Project conditions and quantities to establish without plan conditions relating to nutrient control.	Water Quality Management E&S		As Needed	See work items #500S-599S.	X			
		Water Quality Management			<u>TO BE DEVELOPED BY PEDLUND</u>				
		Water Quality Management		As Needed Bi	<p>A. Analyze water quality data from existing or measured water quality parameters.</p> <p>1. Stream waste assimilation capacity.</p> <p>a. Nutrient analysis.</p> <p>b. Oxygen demand analysis.</p> <p>2. Nutrient budgets.</p> <p>3. Thermal analysis (as applicable).</p>	X			
<p>MA - Major Activity PP - Project Purpose PM - Plan Measure</p>				<p>FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan</p>		<p>F - Final</p>			

PLANNING GUIDELINES

SUBJECT Water Quality (Engineering)

PRIMARY RESPONSIBILITY Water Quality Specialist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.3	451W (Continued)				4. Evaluate indices as available. <ul style="list-style-type: none"> a. Water chemistry and physical parameters. b. Biological 5. Modeling technique.				
				PSL IPT	B. Determine without project conditions in watershed which will affect nutrient sources inventoried in major activity 2.2. Include without project installation of pollution abatement measures. (Tabulate without project conditions as to size, number of acres, wastes produced, etc. Prepare map or overlay for aerial photography to display data as needed.)	X	X		
				As Needed	C. Quantify without project water quality based on past trends, present conditions, and future without project developments of nutrient sources. Use water quality criteria and standards as necessary for constraints in change of water quality (tabulate data as needed, use models, indices, etc.). Reevaluate levels of development without project conditions, based on constraints imposed in this step.	X	X	X	
	454W Project conditions and quantities to establish without plan conditions which affect pesticides in the environment.	Water Quality Management		IPT	A. Project without project conditions which will contribute to changes in pesticide use or water contamination. <ul style="list-style-type: none"> 1. Land use. 2. Population changes. 3. Vegetation changes. 4. Changes in erosion and sedimentation. 5. Pesticide use in other watersheds, river basins, etc., which contribute to the overall level of pesticides in this watershed. Documentation shall consist of appropriate tables, maps, etc.	X	X		
				As Needed	B. Quantify without project water quality (pesticides) based on past trends and future changes. Use water quality criteria and standards as necessary constraints on without project conditions. (Use models, indices as appropriate). Reevaluate without project conditions in work item #451W based on constraints imposed in this step.	X	X	X	
	457W Project conditions and quantities to establish without plan conditions relating to bacteriological considerations.	Water Quality Management		IPT	Determine inventoried items which will change without project development. Include without project installation of waste management structures. (Tabulate data as necessary. Plot on base map or aerial photography as needed).	X	X	X	
				As Needed	Project changes in bacteriological conditions of water using past trends, present situation, and future development. Use constraints of water quality criteria and standards as the maximum limit of the impact on water quality. Quantify results in tabular form as necessary. Reevaluate without project development in work item #451W based on constraints imposed during this step.	X	X	X	
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SUBJECT Water Quality (Engineering)

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Water Quality Specialist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.4	460W Appraise the water quality in terms of additional recreation, fish and wildlife and M&I needs.	As Appropriate		Bi Rec	See work items #109 and #310 for specialists involved. Prepare tables, projections, models as appropriate.	X	X		
	463W Appraise the water quality component need for sediment and erosion control.	E&S	As Appropriate	GS	See work items #500-#599 as appropriate	X	X		
	466W Appraise the component needs for salinity reduction to improve water quality.	Water Quality Management DRAIN IRR	As Appropriate	PE DE Others As Needed	TO BE PREPARED BY J. HEDLUND				
	469W Appraise the potential project measures to control nutrients, pesticides, and bacteria which degrade water quality.	Water Quality Management	As Appropriate	As Appropriate	Identify the types and number of potential project measures required for control of nutrients, pesticides, and bacteria to prevent their degrading water quality. List the sizes, volume, or other appropriate units of measures needed to meet component needs. Tabulate values where appropriate and indicate locations on base map or aerial photography. With ENG and ECON computer applicable costs and benefits for potential project measures. Documentation should include adequate computations to support size, quantities and costs involved.	X	X		
3.1	472W Combine project measures from major activity 2.4 to meet component needs of sediment, salinity, nutrient, pesticide, and bacteriological control.	As Appropriate	As Appropriate	PE Ec Others As Needed	Combine measures for sediment, salinity, nutrient, pesticide, and bacteriological control together with measures for other project purposes to arrive at overall project costs and benefits. Documentation to include tables, graphs, or other data necessary to fully record decisions made during alternative plan formulation.		X	X	
3.2	475W Develop NED, EQ, and other alternative plans which will satisfy all or part of comment needs resulting from water quality concerns.	As Appropriate	As Appropriate	PSL Others As Needed	Assemble project measures which most fully meet NED plan objectives for water quality component needs.		X	X	
					Assemble project measures which will most fully meet EQ objectives for water quality component needs.		X	X	
					Develop other alternative plans to meet unspecified objectives of water quality component needs. Documentation to include maps, tables, and narratives as needed to completely document (in appropriate units) the decisions made as NED, EQ, and other plans are formulated. Documentation should be adequate to show adverse and beneficial effects of plan on water quality component needs.		X	X	
3.3	478W Apply the tests of acceptability, effectiveness, efficiency, and completeness to alternative plans as they address the water quality aspects of component needs.	As Appropriate	As Appropriate	PSL	Evaluate each alternative plan as to how it meets the four tests of acceptability, efficiency, completeness, and effectiveness when evaluated in light of water quality component needs. Prepare narrative, tabular data, and figures as needed to document the four tests and to show the relationship of one alternative plan to another.		X	X	
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SUBJECT Water Quality (Engineering)

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Water Quality Specialist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
4.1	481W Prepare necessary displays to show the contributions of different plans in terms of their contribution to meeting water quality component needs.	As Appropriate	As Appropriate	PSL Others As Needed	Assist staff leader and others prepare necessary tables, graphs, charts, maps, or figures to be used in public meetings. Displays should show the full effects of alternative plans on water quality aspects of component needs.	X	X	X	
4.2	484W Obtain sponsors and public preferences for alternative plans and component needs.	As Appropriate	As Appropriate	PSL Others As Assigned	Assist the staff leader in public meetings to fully describe the alternative project measure(s) proposed to satisfy water quality aspects of component needs.	X	X	X	
					Assist the staff leader in documenting the sponsor's and public's concerns and comments to the alternative plans addressing water quality aspects of component needs.	X	X	X	
5.1	487W Modify alternative plans and water quality aspects of component needs as needed to reflect public input.	As Appropriate	As Appropriate	PSL Others As Needed	Modify specific parts of alternative plans and component needs to reflect the opinions and concerns of the sponsors and the public. Document costs and benefits associated with all changes, and reapply the tests of acceptability, effectiveness, efficiency, and completeness to modified plans. Document all information as appropriate.			X	
5.2	490W Make more intensive investigations of likely alternatives and redevelop displays as mentioned in 4.1.	As Appropriate	As Appropriate	PSL	Redefine required parameters of water quality if necessary. Extend existing evaluation programs to provide the necessary documentation of existing and projected levels of water quality. Prepare additional maps, charts, tables and figures to supplement displays described in 4.1.			X	
6.1 6.2	493W Obtain the sponsors preferred plan from the alternatives presented, and prepare plan and EIS documents.	As Appropriate	As Appropriate	PSL Others As Assigned	Assist the staff leader in obtaining the sponsors preference for project measures which address the water quality aspects of component needs. Prepare the necessary plan and EIS documents which relate to water quality aspects. Assist in resolving any review comments dealing with water quality aspects.			X	→

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IRRIGATION

General

This outline provides a guide for inventorying, investigation, and analyzing physical resources to assist planning staffs with the irrigation aspects of project planning. Adherence to the principles of the outline will result in a uniform approach in estimating physical feasibility, benefits, effects, and impacts at the various stages of progressive planning (as defined by the USDA Procedures for Planning Water and Related Resources).

The outline is not intended to indicate a fixed chronological order of procedure. Many of the investigations may be carried on concurrently. Only those items described in the outline which are necessary to appraise the capability of satisfying a component need should be performed. The procedural outline is subject to additions and/or deletions when particular project conditions warrant.

The intensity of the investigations required for the various outline components will vary with the level of planning and with the scope and significance of the project being planned. Generally, the lowest intensity will be associated with the preapplication planning level and increase to full intensity for investigation of the selected plan.

The procedural outline does not describe program requirements or format for work plan preparation.

It does provide an orderly format for organizing inventoring and analyzing material to facilitate comparison of alternatives, writing of the work plans, a guide in the organization of the supporting documentation, and facilities review.

Use of computer programs to perform the various analyses is encouraged. When used, the documentation should include the title and date of the program and the computer listing of the program input and output.

ORGANIZATION OF DOCUMENTATION CHECKLIST

Documentation Item	Work Item
I. Inventory	
A. Project base map	402
1. Cultural features, such as roads, railroads, power lines, gas lines, climatic stations, etc.	
2. Topography	402

Documentation Item	Work Item
B. Overlay maps	
1. Soils series and phases	404
2. Farm boundaries	402
3. Skeletal outline	
a. Project conveyance system	413
b. Drainage system	413
c. Reservoirs	413
d. Diversion points	413
e. Wells	413
f. Control structures	413
4. Irrigation service areas	
a. Present	402
b. Potential	427
5. Irrigation methods	409
C. Conservation farm maps	410
1. Skeletal outline farm distribution system field layout. (Inventory may be by farm, project, or sample area as determined by intensity of study and variation of conditions.)	
D. Soils	
1. Description of series and phases	404
2. Groups of soils with similar char- acteristics	
a. Acreage	405
b. Soil moisture storage	405

Documentation Item	Work Item
c. Intake rates	405
(1) Furrow	
(2) Flooding	
(3) Sprinkler	
d. Salinity	405
(1) Type	
(2) Acreage	
E. Crops	
1. Type	406
2. Acreage of each type	406
3. Acreage by groups of soils	406
4. Growing season	407
F. Water supply	422
1. Quantity records, historical or probability	
a. Reservoir storage	418
b. Direct flow	417
c. Ground water	419
2. Quality records	
a. Mineral content	420
b. Sediment content	420
3. Water rights	402
a. Listing of rights	402
b. Priorities	402
c. Seasonal volume and/or flow rate	402
G. Climatic records	403
(By mean monthly and seasonal or monthly for historical period, by station)	

Documentation Item	Work Item
1. Temperature	403
2. Precipitation	403
3. Humidity	403
4. Wind	403
a. Velocity	403
b. Prevailing directions	403
5. Pan evaporation	403
6. Solar radiation	403
7. Percent possible sunshine	403
H. Energy sources	
1. Type	415
2. Availability	415
3. Cost	415
I. Project conveyance system	413
1. Type	413
2. Capacity, based on size, shape, and slope	413
3. Length	413
4. Conveyance losses	414
a. Seepage	414
b. Evaporation and transpiration	414
c. Operational	414
5. Method of operation	414
a. Continuous flow	414
b. Rotation	414
c. Combined	414
6. Geology	413

Documentation Item	Work Item
J. Project waste water disposal system	413
1. Type	413
2. Capacity	413
K. Irrigation methods	409
1. Irrigation method	409
2. Acreage by method	409
(Inventory by field, farm, project area or representative sample areas, as deter- mined by study, diversity of soils.)	
3. Quantity of water applied	
a. Per irrigation	409
b. Per season	409
L. Return flow	416
1. Quantity records	416
2. Quality records	416
a. Mineral	416
b. Chemical	416
c. Organic	416

II. Analysis

Separately analyze the "Without Plan Conditions," each identified alternative plan, and the selected plan.

A. Project area to be irrigated	427 and 428
1. Acreage of composite groups of soils	428
2. Acreage by crop	427 and 428
3. Acreage by irrigation method	428

Documentation Item	Work Item
B. Crop water requirements	423
C. Water supply by months	422
1. Frequency, or	
2. Historical period	
D. Conveyance system efficiency, by months	414
1. By type and condition of conveyance system	
E. Farm application and conveyance efficiency	409 and
1. By irrigation method	410
2. By type and condition of conveyance system	
F. Water budget, by probability or historical period	424 427
1. Acreage provided full water supply	and
2. Acreage provided partial water supply	428
3. Water deficiencies	
a. Volumes	
b. Time periods	
G. System capacity requirements	426 427 and
1. Unit peak period water requirements	428
2. Composite peak period water requirements	
3. Farm turnout capacity and pressure requirement	
4. Project system capacity and pressure requirement	
H. Irrigation benefits	430
1. Net returns, by crop and acreage	

SUBJECT Irrigation

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Irrigation Engineer

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
1.5	4011 Study plan preparation.	IRR		ALL	A. List work items pertaining to irrigation and estimate man-days requirement including field, state office, and TSC specialists time. B. Describe procedures for accomplishing each work item. C. Provide this material to study leader and obtain and use a copy of the resulting overall schedule.	X	X		
2.1	4021 Assemble existing data.			ALL	Obtain or prepare the following maps: A. Base 1. Project area a. Irrigated area b. Other 2. Ownership (Fed-State-Private) 3. Land use (crop) B. Topographic and cultural features GS C. Geologic D. Aerial mosaics E. Farm boundaries Additional material: DC A. Irrigation Guide B. Table of ownership acreages C. Water rights 1. Show amounts, locations, and priority. 2. Other rights affecting project.	X X	X X X	X X	X X
2.2*	4031 Assemble climatological data.				Determine latitude, longitude, and elevation of: A. The irrigated area (use mean values). B. Representative climate stations. Show locations. Tabulate the following data by month and year using a representative period of years or mean values. Consider climatic zones if climate varies significantly. A. Mean monthly temperature (F°) B. Mean monthly rainfall (inches) C. Mean monthly surface wind velocity (miles/day). Indicate direction by percent of time and height of measurement. D. Mean monthly humidity (percent) E. Mean monthly pan evaporation (inches)	X X	X X	X X X	X X
*Intensity of inventories is not specified. It will vary from a sample base to a complete inventory.									
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PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Irrigation Engineer

SUBJECT Irrigation

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.2	404I Inventory soil resources.			SSc	<p>A. Conduct a soil survey at the intensity needed for irrigated agriculture and for intended level of investigation. <u>SEE PLANNING GUIDELINES FOR SOILS.</u></p> <p>B. Prepare soil series and mapping unit descriptions.</p> <p>C. Delineate soil boundaries on map. Show soil mapping units by series and phases. Map scale should be same as project map.</p> <p>D. For each soil series and phase:</p> <ol style="list-style-type: none"> 1. Determine erosiveness of soil 2. Determine wetness classification 3. Determine depth to water table 4. Determine land slopes and uniformity 5. Determine salinity and/or alkali content 	X	X	X	
	405I Inventory irrigation characteristics.				<p>Establish and tabulate for each significant soil series and phase:</p> <p>A. Intake characteristics for each method proposed.</p> <ol style="list-style-type: none"> 1. Border - intake family 2. Furrow - intake family 3. Sprinkler - maximum application rate 4. Other - specify method and intake value <p>B. Available water capacity.</p> <p>C. Determine management - allowed depletion by crops, and allowable seasonal carryover moisture depletion.</p> <p>D. Record irrigation limitations.</p> <ol style="list-style-type: none"> 1. Wetness 2. Depth to water table 3. Salinity or alkalinity 4. Land slopes and uniformity by method 5. Erosiveness 	X	X	X	
	406I Inventory present land use.			Ag	<p>A. Determine and tabulate.</p> <ol style="list-style-type: none"> 1. Kinds of crops grown 2. Acreage of each major crop grown 3. Acreage of each major crop by group of soils 4. Acreage of each major crop by irrigation method <p>B. List normal planting and harvesting dates for annual crops.</p> <p>C. List growing season for perennial crops.</p>	X	X	X	
	407I Inventory present land use yields.			Ag Ec	<p>Determine for each soil group the average crop production level for each crop of significant importance now grown in the irrigated area. Tabulate separately average crop yields attained for areas where full irrigation water requirements of the crop are met, from those situations where the crop does not receive the full irrigation requirement.</p>	X	X	X	

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PLANNING GUIDELINES

SUBJECT Irrigation

PRIMARY RESPONSIBILITY Irrigation Engineer

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.2	408I Inventory present land use - water requirements.				Determine evapotranspiration values for the major crops grown. Use TR-21 or other acceptable procedure. Consider use of computer program.	X	X	X	
	409I Inventory present land use - farm irrigation system.				Estimate ground water contribution to consumptive use. These contributions can be estimated from analysis of water delivery records, local research information, and general observations of irrigation practices in the area.	X	X	X	
410I Present land use inventory - farm distribution system (includes disposal).				DC	A. Tabulate the following for each group of soils as applicable: Determine present irrigation methods. Show by area on map.	X	X	X	
					B. Determine border characteristics, which includes: lengths of run, border width, irrigation slope, application time, number of sets, number of borders per set, number of irrigations per season.	X	X	X	
					C. Determine furrow characteristics, which includes: length of run, furrow spacing, irrigation slope, application time, number of sets, number of furrows per set, number of irrigations per season.	X	X	X	
					D. Determine sprinkler irrigation characteristics, which include: application time, lateral and nozzle spacing, pipe size, number of sets per day, number of laterals per set, number of irrigations per season.	X	X	X	
					E. Determine level of fields by class and acres and by uniformity.	X	X	X	
					F. Determine method of irrigation (acres) by total area, and by adequacy of irrigation, where full irrigation requirement is met or part of full irrigation requirement is met.	X	X	X	
					G. Estimate application efficiency on a seasonal, monthly, and "one irrigation" basis. Use water applied data and relate to crop water needs. Where data is not available, select representative sample areas and evaluate water application amounts in relation to crop water needs.	X	X	X	
					A. Obtain or prepare a map of the onfarm systems.	X	X	X	
					B. Determine monthly volumes delivered at the farm head gate for a representative historical period of time.	X	X	X	
					C. Determine monthly volumes delivered to the field.	X	X	X	
D. Determine type of ditches (lined or unlined) or pipelines (concrete, plastic, etc.) that are presently being used. Determine the capacity for each reach or segment (cfs or gpm). Determine the losses in the system by method and soil group. Determine efficiency of onfarm conveyance system. Tabulate data.	X	X	X						
E. Determine capacity, release rates, stage-storage relationship, and losses for onfarm reservoirs. Tabulate data.	X	X	X						
F. Determine capacity, average volume pumped each month, depth of well, depth to water level and water quality for onfarm irrigation wells. Tabulate data.	X	X	X						
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PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Irrigation Engineer

SUBJECT Irrigation

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PH						
2.2	410I (Contd.)				G. Determine methods of surface water disposal, i.e., tail water reuse, return to stream flow, etc. Determine volume of runoff from field, volume of water reused, and volume that returns to stream flow. Determine quality of return flow. Tabulate data.	X	X	X	
					H. Evaluate condition and remaining life of onfarm irrigation structures. List by type and use. Record above data and also include amounts of each kind, cost estimate, and rate of application or installation.	X	X	X	
				Ec PE	I. Determine O&M cost. Include energy cost.	X	X	X	
	411I Inventory present land use - land treatment.			DC	Determine, for each group of soils, the kinds and extent of land treatment measures which have been installed on project lands. Tabulate data.	X	X	X	
	412I Inventory present land use - committed land resources.				Determine the types of land resources which are committed and that impose a restraint on planning. Show the location of committed land resources on the project base map, and delineate the land boundaries where the area involved is of significant size. Existing cultural features such as roads, drains, building sites, industrial sites, etc., should be shown on the project map. Where aerial mosaic or orthometric maps are used as a base, many of these features will be evident.	X	X	X	
	413I Inventory project conveyance system.				A. Prepare or obtain a map of the existing system. Facilities to be shown and identified include all facilities from the point or points of diversion, outlets from storage structures or wells, to the individual farm outlets where delivery is made. Facilities to be shown include flumes, pipelines, control structures, measuring devices, farm turnouts, storage reservoirs, and other major structures. Where water is delivered to more than one organization, or where there is more than one source of water, it may be desirable to identify the conveyance system of each organization or water source and the land served. Use standard symbols to identify each facility and describe symbols used.	X	X	X	
					B. Determine the flow capacity of the conveyance system at all principal control points. Identify the locations by description or stationing at which flow capacities have been determined. Include information such as cross sectional area and shape, internal diameter, invert slope, and controlling elevations, etc., to support capacity determination. On conveyance system map show types of conveyance systems, i.e., lined ditch, earth ditch, steel pipeline, etc.	X	X	X	
				GS SSc	C. Determine soil and geologic conditions along the conveyance system route which affect channel or structure stability or influence seepage losses.	X	X	X	
	414I Inventory project conveyance system - losses.				A. Evaluate seepage and evaporation losses on a monthly or part season period where significant differences occur between initial filling and normal operation, or with changes in flow rates. Use a method that is compatible with the intensity level of the planning effort.	X	X	X	
					B. Determine losses due to phreatophytes on a monthly basis.	X	X	X	
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PRIMARY RESPONSIBILITY Irrigation Engineer

SUBJECT Irrigation

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.2	414I (Contd.)				C. Determine evaporation losses from the system.	X	X	X	
					D. Determine operational management losses from wasteway discharge records. When records are not available, losses may be estimated from an analysis of the operational characteristics and operational policies of the managing organization.	X	X	X	
					E. Estimate project conveyance efficiencies. Consider seepage, phreatophytes, evaporation and operational losses in making this estimate. Where losses are significantly different it may be desirable to estimate efficiencies for different segments of the project area.	X	X	X	
	415I Inventory project conveyance system - structures.				A. Determine the location and capacity of all turnouts from the conveyance system to each individual farm turnout or operating unit.	X	X	X	
					B. Determine and list the condition and remaining life and number of each structure in the system. Determine O&M costs; include energy use.	X	X	X	
	416I Inventory project conveyance system - return flows.			WQE Hy	Determine volume and sources of return flow. Determine kinds and amounts of pollutants. Tabulate data by source.	X	X	X	
	417I Inventory water supply direct flow.			Hy SSS	A. Determine monthly water yields at irrigation diversion points or as reservoir inflows. Use gaging records or other yield data to develop a frequency curve of annual yield. Determine the monthly distribution of water yield for selected frequencies, using the average monthly distribution of yield in percent of total annual yield. Monthly water yields should be determined for a minimum of three levels of probability of occurrence, for use in evaluation of alternate levels of project development.	X	X	X	
					B. Tabulate the monthly water yields for each year of the period of record as an alternative to (A) above, where sufficient yield information is available for analysis of a historical period. Period of record used should be checked to assure the record is long enough to give reasonable estimates and that the record is neither too long or too short.	X	X	X	
					Procedures for evaluating the adequacy of length or record are described in NEH Section 4, Hydrology, Chapter 18, Frequency Methods.				
	418I Inventory water supply reservoir storage.			Hy	Develop the following information for each existing irrigation water storage reservoir. 1. Stage-storage relationship. 2. Volumes dedicated for irrigation use where the reservoir includes multiple use. 3. Restraints imposed by joint use of reservoir storage capacity. 4. Irrigation outlet discharge capacity related to water storage stage. 5. Monthly irrigation release volumes as determined by reservoir operation studies.	X	X	X	
	419I Inventory water supply ground water.				A. Determine the average volume pumped each month, the flow capacity, depth of well and depth to water level. Determine the average seasonal volume pumped. Tabulate the data.	X	X	X	
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PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Irrigation Engineer

SUBJECT Irrigation

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.2	419I (Contd.)			Er PE	Determine cost per acre foot. Cost information should include initial standby costs, variable costs, O&M cost, and energy use.				
				GS	B. Determine availability of ground water by analyzing ground water and geologic information. Where necessary, drill test wells and make yield studies. Determine volume that will be available. USE PLANNING GUIDELINES - GEOLOGY	X	X	X	
	420I Inventory water supply water quality.			WQE	Determine the quality of the water supply at points of diversion of direct flow, in reservoir storage, and of ground water where appropriate. USE PLANNING GUIDELINES - WATER QUALITY. Use Agriculture Handbook 60 for rating water.	X	X	X	
	421I Inventory water supply - onfarm generated supply.				Inventory supplemental water supplies from farms. Determine the average monthly volume of water available from wells and reservoirs that will or can supplement project water. Identify sources on project map.	X	X	X	
	422I Inventory water supply - summary			Hy SSS	Prepare a summary of the available water supply on a monthly and seasonal basis. Monthly water supply should be determined for a minimum of three levels of probability of occurrence, or for a historical period.	X	X	X	
2.3	423I Establish unit water requirements.				Adjust the monthly evapotranspiration requirements for each of the various crops for effective growing season precipitation, water table contributions, management allowed soil moisture depletion, seasonal soil moisture storage depletion, and other water requirements for leaching, frost control, and crop cooling. Where water is available during nongrowing season from precipitation, the monthly net water requirements of the beginning and end of the crop growing season should be adjusted. A soil moisture depletion not to exceed the net depth of water applied in a normal irrigation for the particular crop and soil may be utilized at the end of the growing season. Determine the level of soil moisture storage at the beginning of the growing season by analyzing the effectiveness of the nongrowing season precipitation to replenish the depletion allowed at the end of the prior growing season. Where the nongrowing season precipitation is not adequate to replace the moisture depletion, add sufficient irrigation water requirement to raise the soil moisture level to field capacity at the beginning of the growing season.	X	X	X	
	423I Water supply - water demand analysis.				Evaluate the relationship between water supply availability and irrigation water requirements on a monthly basis. Develop gross monthly demand and supply curves. Determine the number of acres that can be provided full season irrigation and the acreage that can be irrigated only part of the season.	X	X	X	
	425I Establish unit farm monthly delivery requirements.				Estimate the monthly gross farm delivery requirement for the same percent chance of occurrence used in evaluating the water supply availability. Monthly delivery requirements may be determined by using weighted monthly composite values of soil groups, crops, farm application efficiencies	X	X	X	
MA - Major Activity PP - Project Purpose PM - Plan Measure				FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan		F - Final			

PLANNING GUIDELINES

SUBJECT Irrigation

PRIMARY RESPONSIBILITY Irrigation Engineer

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.3	4251 (Contd.) 4261 Establish unit peak period water delivery requirements. 4271 Establish future project conditions and quantities for without plan conditions - irrigated cropland.				<p>and farm conveyance efficiencies. Where significant differences occur in the project area and weighted composite values would over or under estimate requirements for portions of the project, the monthly delivery requirements should be developed for separate segments of the project area.</p> <p>Determine the unit peak period delivery requirements for the same percent chance of occurrence used in evaluating the water supply availability. Peak period requirements may be determined by using weighted composite values of soil groups, crops, farm application efficiencies and farm conveyance efficiencies. Where significant differences occur in the project area and weighted composite values would over or under estimate requirements for portions of the project, the unit peak period delivery requirements should be developed for separate segments of the project area. Near the distal end of laterals, the flow rate must be sufficient for simultaneous delivery of the farm flow rates required.</p> <p>Estimate the effects of the going program throughout the life of the proposed project and tabulate by major groups of soils. The same procedures as in Activity 2.2, Inventories, should be used where applicable.</p> <ol style="list-style-type: none"> 1. Irrigated area 2. Crops 3. Methods of irrigation 4. Crop yields - identified by groups of soils irrigation method, and adequacy of water supply. 5. Land treatment - Consider farmers' capabilities and financing 6. Unit water requirements 7. Unit farm monthly delivery requirement 8. Unit peak period water delivery requirement 9. Project conveyance system <ol style="list-style-type: none"> a. Improvements likely to be installed b. Conveyance efficiency considering management and structural improvements c. Return flow volume, kind and amount of pollutants. Tabulate by sources of water 10. Water supply <ol style="list-style-type: none"> a. Reservoirs likely to be constructed b. Ground water wells likely to be installed. Show seasonal and monthly volumes. c. Water quality - at diversion, reservoir and ground water. Use PLANNING GUIDELINES - WATER QUALITY. d. Farm developed water supply e. Summarize total available water supply on monthly basis and three levels of probability. 11. Evaluate supply and water requirements. 12. Predict return flow water quality and quantity, considering trends and going programs. 13. Predicted change in water tables. 	X	X	X	
2.4	4281 Evaluate opportunities to expand and/or improve irrigation.			ALL	<p>The following opportunities are analyzed using the steps shown under Major Activity 2.3.</p> <p>A. Additional land development. <ol style="list-style-type: none"> 1. Identify new land suitable for irrigation. 2. Identify partially irrigated areas which could be provided full supply. </p>	X	X	X	
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SUBJECT Irrigation

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Irrigation Engineer

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.4	428I (Contd.)				3. Identify new land areas which could be provided partial supply. B. Additional water supply - propose project measures which will: 1. Increase efficiency a. Conveyance system b. On farm 2. Additional diversions 3. Reservoir storage 4. Ground water development PE C. Estimate size and quantities for project measures (include land treatment and structural measures). SCE D. Estimate costs and effects.				
3.1	429I Assembly of relevant alternative structural and non-structural measures which meet component needs. 430I Economic analysis of each alternative.			ALL Ec SCE	Develop alternative plans. Consider multipurpose possibilities. A. Accelerated land treatment program. B. Accelerated land treatment program and installation of proposed project conveyance system improvement measures. C. Accelerated land treatment program and the installation of proposed project storage facilities. D. Accelerated land treatment program and the installation of proposed project conveyance system improvement measures and storage facilities. Compute total cost-benefits for each project alternative assembled.	X	X	X	
4.1	431I Develop displays and maps.			ALL	Prepare comparison displays and maps for each alternative plan and show the differences between alternative plans in terms of their contribution to the component needs and visual impacts of the proposals.	X	X	X	
4.2	432I Obtain sponsors and other public preferences for project plan and component needs.			PSL	Attend and take part in public meeting, presenting the technical aspects of the project.	X	X	X	
5.1	433I Modify plans and component needs to reflect public preferences.			PSL	Make necessary changes in alternative plans and component needs to increase the viability and come closer to plan selection. Structural measures not feasible or acceptable should be eliminated.		X	X	
5.2	434I Make additional studies and computations as needed.				Make final investigations, computations, and displays to develop viable plans, tables, maps, and narratives for public meetings and reports.		X	X	
6.2	435I Prepare irrigation portions of plan and EIS.			ALL	A. Assemble all relevant irrigation documentation in one folder and/or notebook suitable for TSC review. B. Prepare, as assigned, irrigation portions of the plan report, EIS, Environmental Assessment Summary.		X	X	
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GEOLOGY-EROSION & SEDIMENT
ORGANIZATION OF DOCUMENTATION CHECKLIST

<u>Documentation Item</u>	<u>Work Item Reference No.</u>
Map shows general areas of erosion and sediment damage and/or deposition. If reservoir sediment survey and/or sediment gage data is available, post the data on map(s).	500S
Table and/or narrative indicating judgment estimate of future conditions relative to items in Work Item 500.	503S
Narrative statement.	506S
Listing of work items and procedure to be used for each item and geologist man-days to be accomplished. This listing can be shown in diagram form if so desired.	509S
Copies of following maps: land use; soils; geologic; vegetation; R-values if USLE is used and more than one R-value is applicable. Bibliography or reference listing of publications, files, etc. used; SCS-34 for reservoir sediment accumulation surveys or summary table showing data.	512S
1. Sheet and Rill Erosion: Sample of calculations and reference to method used. Summary table showing rates and amount relative to land use and soils if soils map is available. Erosion rate map. SCS-Form 309 should be used to total erosion rate by land use. Soil sample test data sheets if obtained.	515S
2. Gully Erosion: Indicate method used; copy of field measurements and soil sample test data; summary table indicating gully erosion relative to land use and soil units. Quantity of gully erosion should be posted on SCS-309.	
3. Streambank Erosion: Amount should be shown on SCS Form 309; indicate method used to estimate rate; include logs and/or sample test data.	

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Geologist Sedimentation

SUBJECT Geology - Erosion and Sediment (E&S)

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
1.1	500S Convert public concerns into specific components of the NED & EQ objectives - E&S.	E&S			Quantify where possible the magnitude of concerns. Based on application, indicate on base map areas of concern (i.e. acres receiving sediment damage, acres with high or critical erosion and/or deposition problems, sediment concentrations in mg/l relative to water quality concerns if available).	X			
1.2	503S Specify effect of projected future conditions on erosion and sediment.	E&S			Estimate items in 1.1 (W.I. No. 500) based on projected future condition. Judgment to be considered documentation.	X			
1.3	506S Indicate needs that may or may not be realistic and within capability of SCS to investigate.	E&S			Convert specific components of concern into component needs. Geologist should keep in mind that what may be needed may be beyond the scope of man and therefore an impossibility. If the needs cannot be met, the geologist should indicate why and what part can be accomplished.	X			
1.5	509S Develop E&S work items for work outline and study plan.	E&S		ALL	Geologists estimate man-days to accomplish each work item. Contact to be made with counterpart in the TSC.	X	X	X	
2.1	512S Assemble available data.	E&S		ALL	Topographic map(s); most recent airphotos (if possible have earlier photos for comparison); land use map; vegetation map; soils map; geologic map; precipitation; stream gage data relative to sediment load and concentration; reservoir sediment accumulation data; soils descriptions and other soils data; geologic reports; yearly Sedimentation Activities report by U.S. Water Resources Council; reports for area by other federal, state, and local groups. It is advisable to have above maps at same scale in order that overlays can be prepared if needed. The minimum scale for work maps is dependent on complexity of watershed and detail being used in study. Map scales should be determined jointly by various disciplines who will be using the maps.	X	X		
2.2	515S Inventory present erosion.	E&S		SS Ag Hy	A. Determine sheet and rill erosion in watershed. Rates will be determined for each land use. When the Universal Soil Loss Equation is used, the values for each factor are to be included in documentation. When another method is used to estimate the sheet and rill erosion the rationale and/or sample calculations should be included. A summary table showing rates and volume of sheet and rill erosion by land use and soil unit should be included. An erosion rate map should be prepared for the watershed. A summary of erosion rates and quantity by land used should be entered on SCS-309.		X	X	
	517S Inventory present erosion.	E&S			B. Indicate rate(s) of gully erosion by land use and where soils mapping data is available by soil mapping unit. Method(s) used should be indicated (i.e. TR-32, air photo measurements and comparison, historical data, other special studies, etc.). A summary table relative to the gully erosion should be prepared and total included on SCS-309. Field measurement and sample testing data should be included.		X	X	
	519S Inventory present erosion.	E&S			C. Indicate rate of streambank erosion and show reach(es) involved on watershed map(s). Method(s) used to estimate bank erosion should be indicated. Quantity of erosion should be shown on SCS-309. Include sample test data and logs if available.		X	X	
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PLANNING GUIDELINES

SUBJECT Geology - Erosion and Sediment (E&S)

PRIMARY RESPONSIBILITY Geologist Sedimentation

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.2	520S Inventory present erosion.	E&S			D. Indicate rate of flood plain scour and locate on map. Indicate method used to determine scour. Enter quantity on SCS-309.		X	X	
	521S Inventory present erosion.	E&S			E. Other erosion such as construction. Indicate rate, quantity, and location; enter amount on SCS-309; indicate method used. F. Organization of documentation: When part of the erosion documentation is included in other fields of data (i.e. engineering economics, engineering geology, etc.) so indicate. An index or listing of documentation is of value in that a quick estimate can be made of availability of data. (NOTE: Erosion data should be developed for total watershed)		X	X	X
	523S Inventory present sediment yield	E&S			Estimate sediment yield relative to land use and soils mapping units if available. Indicate source areas on watershed map(s). A. Estimate delivery ratio(s) used for various source areas; amount of sediment delivered; and texture of sediment yield. A summary table should be prepared to show above data. This data will be used in preparing SCS-309 and environmental assessment and impact data. B. Show method or rationale for estimating the sediment delivery ratio. C. Indicate clearly to what area the sediment yield figures apply (i.e. channels, reservoirs, cropland, etc.) D. Prepare a sediment yield map to show source area(s) of damaging sediment. E. Where reservoir or pond sediment accumulation surveys have been made complete SCS-34 and include in documentation. Location of surveys should be shown on watershed maps.		X	X	
2.3	526S Erosion with project measures.	E&S		Ag Rg Fo PE	Erosion with project: Estimates to be made with project measures installed. A. Estimate sheet and rill erosion with conservation measures. The Universal Soil Loss Equation may be useful to show reductions due to vegetative manipulation and practices affecting slope length and/or slope percent. Sheet and rill erosion rates and quantity should be included on SCS-309. <u>1/</u> B. Estimate gully erosion with measures installed and indicate quantity on SCS-309. <u>1/</u> C. Estimate streambank erosion with project installation and include on SCS-309. <u>1/2/</u> D. Estimate other erosion and indicate on SCS-309. <u>1/</u>		X	X	
<p><u>1/</u> The data entered on SCS-309 should be for the drainage area of proposed reservoirs if in project; data on erosion below reservoirs should be kept separate and will be used for purposes other than sediment storage requirements.</p> <p><u>2/</u> This streambank erosion is for areas above proposed reservoirs if in project; possible channel erosion below structures is covered in section on channel stability.</p>									
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SUBJECT Geology - Erosion and Sediment (E&S) PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Geologist Sedimentation

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F				
		PP	PM										
2.3	531S Sediment yield with project measures.			Dam Channel Stabilization	<p>Sediment yield to various areas of concern under project conditions become essential to evaluations involving environmental considerations and specific structural design.</p> <p>A. Sediment yield to a proposed reservoir should be shown on SCS-309 in the future columns.</p> <p>B. Sediment yield to outlet channels below a proposed reservoir should be recorded. This data will be used in channel stability analysis as well as environmental considerations. The yield should be recorded as an average annual and when possible sediment yield by storm frequency should be estimated. Indicate in acre-feet, tons, and mg/l concentration.</p> <p>C. Indicate sediment delivery ratio used for each sediment source within the watershed.</p> <p>D. Give summary of gage data relative to sediment load in streams when applicable.</p> <p>E. Texture of sediment should be estimated as to clay, silt, and coarse.</p>								
2.4	534S Reservoir sediment storage. 537S Outlet on other channel evaluations.			Dam Channel Hy PE Others - See Flow Diagram	<p>Use procedures set forth in TR-12 and/or other reliable methods to estimate trap efficiency, sediment allocation in the reservoir, sediment delivery ratios, volume weight of aerated and/or submerged sediment. SCS-309 should be completed for each reservoir.</p> <p>Channel stability investigations require data indicating sediment yield to channel. It is necessary to include logs and sample data of bed and bank materials; texture of sediment reaching channel from proposed reservoir and uncontrolled area below reservoir which contributes sediment to channel. A profile of channel should be prepared to indicate bank and bed materials. Test data should be included on profile and materials in bank correlated for length of channel. Bed material should be sampled for 3 or more feet below proposed grade of channel. Where sediment transport equations are used, sample calculations should be included in the documentation. Sediment concentration for design flow condition should be estimated in mg/l. Guidance for channel investigations are included in TR-25 and in NEH, Section 3, chapter 4.1/</p>		X	X					
3.2	540S Plan effects on erosion and sedimentation.	ALL	ALL	PE Ec ES RC	<p>Compare erosion and sedimentation without project to erosion and sedimentation with alternative plans: rates and quantity of sheet and rill erosion (indicate reduction when appropriate); rates and amount of gully erosion; rate and quantity of streambank erosion; sediment load delivered to damage area and location of deposition (i.e. river, wildlife habitat, agricultural land, urban land, etc.); sediment concentrations in mg/l to rivers, lakes and other areas where concentrations have an impact on the environment.</p>		X	X	X				
1/	For structures and channels with major problems or requiring joint approval by the TSC or Engineering Division. The state conservation engineer, design engineer, soil mechanics engineer, and others should be involved at an early date and throughout the planning process.												
MA - Major Activity		PP - Project Purpose		PM - Plan Measure		FE - Field Exam		PI - Preliminary Investigation		WP/MP - Work Plan/Measure Plan		F - Final	

PLANNING GUIDELINES

SUBJECT Geology - Erosion and Sediment (E&S)

PRIMARY RESPONSIBILITY Geologist Sedimentation

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
4.1	543S	ALL	ALL		Data from Major Activity 3.2 should be set up in a table for ease of comparison of rates, amounts, and concentrations for the alternative plans. This table can then be used in writing the environmental impact statement and the environmental assessment.		X	X	X
5.2	546S	ALL	ALL	ALL	Make more intensive investigations of likely alternatives when needed and develop needed displays and maps to reflect these investigations.			X	
6.2	549S				Write erosion and sediment aspects for plan and contribute to EIS relative to impacts of plan on erosion and sedimentation.			X	X

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PLANNING GUIDELINES

SUBJECT Geology - Engineering

PRIMARY RESPONSIBILITY Geologist Engineering

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
1.5	500E Develop the engineering geology portion of the study plan.	ALL	Dams Channel Structures	PSL PE	A. List in time sequence all engineering geology work items. Coordinate with work of planning engineer. B. Describe procedures for accomplishing each work item and estimate man-days for each. Consult with TSC specialist as needed. Provide results to study leader. C. Obtain a copy of the resulting study schedule and use it to schedule geology work.	X	X		
2.1	501E Review geologic literature.	ALL	ALL		Complete review of geologic literature, reports, maps, and other pertinent information for the watershed. Collect pertinent data.	X			
	502E Prepare geologic map.	ALL	ALL	PE	Prepare a geologic map of potential sites by use of topographic maps and aerial photos. The map should be prepared in as much detail as it is possible from a study of the surface geology at the site.	X	X	X	X
2.2	503E Evaluate geology.	ALL	ALL	PE	A. Make a field examination of the watershed and the potential damsite to observe and map outcrops; examine and map road-cuts; record streamflow, water table; and record general physical conditions, including land use and potential for water storage. B. Prepare geologic profiles and cross-sections. C. Record findings and provide data to the study leader. D. Prepare a preliminary geologic report.	X	X	X	X
						X	X	X	X
						X	X	X	X
1.5	504E Develop a plan for the geologic investigation to be used in updated study plan and/or for operations phase.	ALL	Dams Channel Structures	PE	A. Describe site problems and the needs for geologic studies. Include all major sites and most minor sites. B. Specify equipment needed for exploration. C. Outline a drilling program or backhoe test pit program or both. D. Estimate time and cost for site investigation. E. Report of Methods and Findings - Refer (TR-60 NEH - Sec. 8)	X	X	X	X
						X	X	X	X
						X	X	X	X
2.4	505E Assemble seismic data for the site location.	ALL	Dams		A. Review and collect all seismic data pertinent to the earthquake hazards for the site. Study must be in agreement with TR-25 and TR-60. B. Make field studies to examine and review site for evidence of active faulting. C. Prepare a seismic report for the site. Provide data to study leader.		X		
	506E Review geologic conditions.			ALL	Give written and oral reviews on geologic conditions at site as requested by study leader.	X	X	X	X
1/	For structures and channels with major problems or requiring joint approval by the TSC and/or the Engineering Division, the state conservation engineer, design engineer, soil mechanics engineer, and others should be involved at an early date and throughout the planning process.								
MA - Major Activity		FE - Field Exam		F - Final					
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PLANNING GUIDELINES

SUBJECT Geology - Engineering

PRIMARY RESPONSIBILITY Geologist Engineering

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.4	507E Review geology with planning engineer. 508E Schedule field review of excavations during construction.				A. Review and discuss the geologic conditions with the planning engineer to assure that geologic problems are understood and can be corrected with design. B. Record and provide data to study leader. Items to be scheduled: A. Review and advise engineer on geologic conditions as revealed by excavations during construction. B. Prepare geologic map and record on file conditions in excavations. C. Prepare supplemental geologic report for construction.			X	X
6.2	509E Prepare engineering geology portions of plan and EIS.	ALL	ALL	ALL	A. Assemble all relevant engineering geology documentation in one folder or notebook suitable for TSC review and filing. B. Prepare assigned portion of the plan, report, EIS, Environmental Assessment Summary, etc. C. Participate in resolving state and TSC comments.		X	X	→

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PLANNING GUIDELINES

SUBJECT Hydrology & Hydraulics

PRIMARY RESPONSIBILITY Hydraulic Engineer

MA	Work Item	Applicable		Other Staff	Method and Documentation	FIS & FHA	FE	PI	WP/MP	F
		PP	PM							
1.5	600 Develop plan of study.	ALL	ALL	PS	Prepare a list of work items to accomplish hydrology and hydraulics. For each item describe man-days, costs, intensity, duration time. Coordinate hydrology procedures with snow survey supervisor as appropriate. Provide list to study or staff leader. See chapters 12 and 13, WPH. River Basins Memorandum 32 FIS Schedule and Guidelines.			X		
2.1	600.1 Assemble available data.	ALL	ALL		Assemble available River Basin WIR's Watershed CNI's, Flood Hazard Analysis, Flood Insurance Studies, and studies of other agencies.	X	X			
	601.0 Base map.	ALL	ALL		USGS quad or county road map.	X	X			
	601.1 Subareas	ALL	ALL		Locate boundary lines and identify each sub-area by number on USGS quad sheets and base map.	X		X		
	601.2 Cros sections	ALL	ALL		Locate all survey sections on USGS quad sheets aerial mosaics, and base map. Identify valley sections with prefix "V" and bridge or road sections with prefix "B".	X		X		
	601.3 Routing reaches.	ALL	ALL		Identify on the base map.	X		X		
	601.4 Channel work.	ALL	ALL	PE SS GS	Map showing location of all channel work reaches, diking, and old channel and new channel alignment. (From engineer)			X		
	601.5 Flood damage map.	ALL	ALL		Identify on base map and on aerial mosaics (Scale 1" = 400 to 500 ft) all areas to be evaluated.			X		
	601.6 Hydrologic groups of soils map.	ALL	ALL	SS	Identify groups of soils on base map.			X		
	601.7 Structural alternatives map.		Structural Measures	PE	On a base map, show all structure systems considered. Identify each system with a plan number or letter. (Plan A, B, C, etc.). Use one base map for each system of structures investigated.			X		
	602.0 Drainage areas.	ALL	ALL							
	602.1 Subareas.	ALL	ALL		Planimeter USGS quad sheets.	X	X	X	X	
	602.2 Cross sections	ALL	ALL		Planimeter drainage area on USGS quad sheets.	X		X	X	
	602.3 Structures	ALL	ALL	PE	Planimeter drainage area on USGS quad sheets. Copy to engineer.			X	X	
	603.0 Field survey data.		FP FIS FHA		Survey books (note where stored) A&E Contract.	X		X		
603.1 Cross sections		FP FIS FHA		USGS Topo map, hand level and tape. Data from field surveys (Plotted cross sections, etc.) Computer program XSECT plot cross sections.	X	X	X			
603.2 Water surface profiles.		FP FIS FHA		Electronic computer calculation WSP2-TR61. or - Manually calculated by Step Method or variation of Leach Method.	X	X	X			

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PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Hydraulic Engineer

SUBJECT Hydrology & Hydraulics

MA	Work Item	Applicable		Other Staff	Method and Documentation	FIS & FHA	FE	PI	WP/MP	F
		PP	PM							
2.1	603.3 Manning's "n" values.	FP			Supplement B, NEH-5.	X	X			
	603.4 Channel and flood plain lengths.	FP			Station each of the following points for both channel and flood plain lengths: 1. Mouth of watershed 2. Major tributaries 3. Cross sections 4. Bridges 5. Overfalls Reference to downstream river mile index.					
	603.5 Bridge and culvert calculations.	FP			NEH-4 or computer, WSP2 - TR61. Contracted opening or BPR method.	X		X		
	603.6 K_d Data $K_d = \frac{1.486 r^{2/3a}}{n}$	FP			K_d computations manually or by computer. Plot K_d curves if computer manually.	X		X		
	603.7 Stage-Discharge data.	FP			Compute by Manning's equation. Copy to Economist (except for FIS and FHA) or from water-surface profile data. Copy to Economist (except for FIS and FHA).					
603.7	Stage-Discharge curves.	FP			Plot on graph paper to verify computations (computer may plot these). Determine channel capacities.	X		X		
2.2	604.0 Soil cover complex, numbers.	ALL	ALL							
	604.1 Land use.	ALL	ALL	DC Bi Ec	Chapter 8, NEH-4. Provide land use data to biologist and economist.	X		X		
	604.2 Hydrologic groups of soils.	ALL	ALL	SS	Chapter 7, NEH-4.	X		X		
	604.3 Soil cover complex data.	ALL	ALL		Chapter 9, NEH-4. Develop work sheet by sub-areas for present and for future land use conditions.	X		X		
	604.4 Soil cover complex data for forest land.	ALL	ALL	Fo Rg	From Forest Service.			X		
	605.0 Time of concentration (T_c).	ALL	ALL		Figure 15.2, NEH-4 - Determine overland slope and watershed land use. Use Figure 15.2 to estimate velocity for overland flow. Figure 15.3, NEH-4 - Determine length, watershed slope and CN' to estimate lag in the upland portion of a watershed. Channel hydraulics, chapter 15, NEH-4.	X		X		
	605.1 Travel time (T_t) for each stream routing reach.	ALL	ALL		Determine by hydraulics at bankfull stage from data in item HY 3.4, NEH-4 for lag through reservoirs and swamps. or - TR-20 computer program.	X		X		
MA - Major Activity PP - Project Purpose PM - Plan Measure				FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan	F - Final					

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Hydraulic Engineer

SUBJECT Hydrology & Hydraulics

MA	Work Item	Applicable		Other Staff	Method and Documentation	FIS & FHA	FE	PI	WP/MP	F
		PP	PM							
2.2	606.0 Rainfall.	ALL	ALL		Historical data from Weather Bureau, climatological data. Obtain bucket surveys on recent events. Develop isohyetal maps for storm events.				X	
		FP		Ec	Partial duration series from NOAA Atlas 2. See TSC Technical Note PO-6 for development of precipitation-frequency data and estimation of 10-day precipitation values. Convert to annual series and plot on probability paper.	X				
	606.1 Runoff from rainfall.	ALL	ALL		Synthetic seasonal series where crop and pasture damage is significant.				X	
					By method in chapter 10, NEH-4. Subarea and frequency.	X		X		
2.3	607.0 Routing diagram.	FP FIS FHA			Schematic diagram showing routing sequence.	X				
	607.1 Subarea routings present conditions.	FP FIS FHA			Tabular routing. Convex method - route hydrographs for desired frequencies for each key tributary subarea individually. Combine hydrographs for balance of watershed and route as group. Chapters 16 and 17, NEH-4.		X			
					Computer program TR-20. Ask for hydrographs and summary printout at key locations.	X		X		
2.4	607.2 Subarea routings with structures.	FP			Tabular routing. Convex method - route hydrographs for desired frequencies for subareas for each proposed structure site individually. Combine hydrographs for uncontrolled subareas and route as group. Record results for each flood in each reach.		X			
					Computer program TR-20. Ask for hydrographs and summary printout at key locations.			X		
	607.3 Subarea routing for key storm.	FP FIS FHA			Using climatological records and bucket surveys from storm reports, develop rainfall map and intensity-duration curve and flood route using the TR-20 computer program. Compare results with known high water marks or stream gage discharge.				X	
	607.4 Discharge versus frequency.	FP FIS FHA		Ec	Obtain peak flow for each damage reach from Valley. Flood routing summary from item HY 7.4, or from the TR-20 summary. Plot peak flows at their proper frequency on Log-Normal paper. Give copy of discharge-frequency curve to economist.			X		
	608.0 Historical peak flows.	FP FIS FHA			From USGS stream gage records compute Log Pearson Type III dist. (WRC Bulletin 17) and compute plotting position by method in chapter 18, NEH-4. Plot on Logarithmic-Normal paper.	X	X	X	X	
	608.1 Frequency of historical floods.	FP FIS FHA			Obtain peak flow from valley routings. Determine frequency of these flows from discharge-frequency curves. Locate high water marks from historical events.				X	
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PLANNING GUIDELINES

SUBJECT Hydrology & Hydraulics

PRIMARY RESPONSIBILITY Hydraulic Engineer

MA	Work Item	Applicable		Other Staff	Method and Documentation	FIS & FHA	FE	PI	WP/MP	F
		PP	PM							
2.4	609.0 Stage-Area flooded.	FP FIS FHA			Determine of each cross section from stage-discharge curves and cross section data. Electronic computer calculation - WSP-2.	X		X		
	609.1 Area inundated by depth increments.	FP		SSc GS Ec	From stage-area flooded curves and discharge-frequency curves for each cross section. Give copy to economist. Electronic computer calculation - ECON 2, URB-1.			X		
	609.2 Area flooded.	FP		Ec SSc GS	Show on aerial mosaic of flood plain the area flooded for design flood. Give copy to economist.	X		X		
	609.3 Flood plain encroachment.	FIS FHA			Develop floodway map based on allowable increased stages due to flood plain encroachment. HUD-15 computer program. Delineate floodway on aerial mosaic map.	X				
3.1	610.0 Structure classification.	FP		PE SCE	Obtain from planning engineer and jointly recommend classification to SCE for his approval.				X	
	610.1 Principal spillway hydrograph.	FP		PE	Complete left half of Principal Spillway Hydrograph. Determine Q ₁ , Q ₁₀ as described in chapter 21, NEH-4, EM-27, and TR-60. Give form to engineer. Computer program for series of outflow rates. Give copy of printout to engineer. RSITE & TR-20.				X	
	610.2 Emergency spillway hydrograph data.	FP		PE	Chapter 21, NEH-4 and TR-60. Give copy to engineer. Computer program. Give copy of printout to engineer.				X	
	610.3 Freeboard hydrograph data.	FP		PE	Chapter 21, NEH-4. Give copy to engineer. See Figure 2.5, TR-60 for PMP study regions. Computer program. Give copy of printout to engineer.				X	
	610.4 Reservoir routings.	FP		PE	Chapter 17, NEH-4 or computer program. Provide copy to engineer.				X	
	610.5 Historical flood hydrograph.	FP			When data is available for a significant flood, develop hydrograph for use in checking effect of structure, or use TR-20. Give copy to engineer.				X	
	610.6 Breach hydrograph.	FP			Page 2-3, TR-60 - Use appropriate method.				X	
4.1	611.0 Water surface profile and plan view.	FP FIS FHA			Prepare from field surveys. Plot. (Preferably, plan should be halftone photo-positive of aerial mosaic.) Show station <u>location</u> and identify: 1. Evaluation reaches 2. Cross sections 3. Boundaries of political subdivisions, such as city limits, county lines, etc.	X			X	
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PP - Project Purpose		PI - Preliminary Investigation								
PM - Plan Measure		WP/MP - Work Plan/Measure Plan								

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Hydraulic Engineer

SUBJECT Hydrology & Hydraulics

MA	Work Item	Applicable		Other Staff	Method and Documentation	FIS FHA	FE	PI	WP/ MP	F
		PP	PM							
4.1	611.0 (Continued)				Show elevations of: 1. Channel bottom 2. Low bank 3. Utilities across or along channel 4. Low chord of bridges and culverts 5. Road surface at bridges and culverts 6. Low point of road approaches 7. Low ground behind dikes 8. High water marks of historical events. Key points of beginning significant damage (obtain from economist). Give copy of completed profile to engineer.					
	612.0 Channel design evaluation.									
	612.1 Field data.	FP	Channel Work Levees		Assemble copies of: 1. Aerial mosaic showing cross section location 2. Base map showing routing reaches 3. Plotted cross sections 4. Water surface profiles plotted on copy of basic condensed profile 5. "n" values 6. Lengths 7. Bridge and culvert information 8. Stage-discharge curves 9. Valley flood routing summary 10. Discharge-frequency curves Give above data to engineer.				X	
	612.2 Head losses at bridges and culverts.				Determine for at least three tailwater elevations and three discharges. Prepare stage-discharge curves for each bridge and culvert. Give copies to engineer.				X	
	612.3 Valley flood routing summary for revised channel conditions.	FP		PE	Obtain revised stage-discharge data from engineer. Determine new travel times and valley flood route desired frequencies. Prepare revised valley flood routing summary. Give copy to engineer.				X	
	612.4 Discharge-Frequency curve for revised channel conditions.	FP			Prepare new discharge-frequency curves from summaries of valley flood routings for revised channel conditions. Give copies of curves to economist.				X	
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PLANNING GUIDELINES

SUBJECT Hydrology & Hydraulics

PRIMARY RESPONSIBILITY Hydraulic Engineer

MA	Work Item	Applicable		Other Staff	Method and Documentation	FIS FRA	FE	PI	WP/ MP	F
		PP	PM							
4.1	612.5 Area inundated by depth increments for revised channel conditions.	FP		Ec	Note: This item needed only if top width of new channel significantly changes the area of usable land flooded. Give copy to economist.				X	
	613.0 Watershed yield.									
	613.1 Surface yield.	IRR M&I REC F&W			A. Regional analysis of stream-gages. NEH-4, chapter 20. B. Water accounting. NEH-4, chapter 20. C. Direct runoff method. NEH-4, chapter 20.				X	
	613.2 Ground water yield.	IRR M&I REC F&W			Obtain information from USGS or state agency.				X	
	613.3 Water budget.	IRR M&I REC F&W			A. Technical Release No. 19. B. Double mass curve or some other acceptable textbook procedure. C. Computer program (Water Budget).				X	
	613.4 Demand.	IRR REC M&I		IrE	Determine potential annual demand and the distribution of demand during year.				X	
	613.5 Reservoir losses evaporation.	IRR REC M&I F&W			WBP, TP No. 37 and climatological data near the site.				X	
	613.6 Reservoir losses	IRR REC M&I F&W		GeE	Obtain estimate from geologist.				X	
	613.7 Water rights.	IRR REC M&I F&W			Check legal aspects of storage and use of water.				X	
	614.0 Obsolete and superseded data.	ALL			File all obsolete and superseded data by same subheadings as substantiating data for work plans. No superseded data should be left under previous headings.	X	X	X	X	X

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LAND TREATMENT

The following information should be provided as documentation for land treatment in RC&D and watershed projects.

1. Capability units for each land use
2. Conservation practices applied
3. Land adequately treated
4. Land adequately protected
5. Conservation plans
6. Conservation needs remaining
 - a. Conservation practices (quantity of each)
 - b. Plan revisions
7. Review and concurrence by state resource conservationist, date and initial

PLANNING GUIDELINES

Resource Conservationist
District Conservationist

SUBJECT Land Treatment

PRIMARY RESPONSIBILITY

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
1.5	700L Develop the land treatment portion of the study plan.	ALL	LAND TREATMENT	ALL	<p>A. List in time sequence all work items needed to accomplish planning for alternative land treatment measures which have potential for meeting component needs (specified objectives). This will be based upon information gained during previous field trips and meetings. Coordinate with other specialist (i.e. biology, range, agronomy, engineering, TSC, etc.).</p> <p>B. Describe procedures for accomplishing each work item and estimate man-days required. Provide to study leader.</p> <p>C. Obtain a copy of the resulting overall schedule and use it to schedule the resource conservationist work items on personal calendar.</p>	X	X-UP-DATE		
2.2	701L Collect basic resource data.	ALL		DC SSc	<p>Land use - Estimate or measure acreage.</p> <p>Soils maps - Obtain copies of appropriate available soils maps.</p> <p>Determine capability units for each land use - Estimate or measure acreage in capability units for each land use and determine acreage of various capabilities.</p> <p>Number of operating units - Estimate from SWCD records or other statistical data.</p> <p>Conservation practices applied - From SCS-99, district progress summaries, and register of cooperator and conservation plans.</p> <p>Land adequately treated - Judgment of DC codes 682-688.</p> <p>Land adequately protected - Judgment of DC codes 692-698.</p> <p>Conservation needs remaining - Judgment of DC.</p>	X			
2.3 2.4	702L Establish without plan and with plan conditions.	ALL		IPT	<p>From judgment of DC and sampling on recent aerial photographs.</p> <p>A. Update data on:</p> <ol style="list-style-type: none"> 1. Land use 2. Soils 3. Capability class 4. Land adequately treated 5. Land adequately protected 6. Conservation needs <p>B. Develop data on land treatment needs to present sponsors and public at public meetings.</p>		X		
	703L Revise with plan condition.	ALL		IPT	<p>A. Update existing data and delineate and measure on recent aerial photographs:</p> <ol style="list-style-type: none"> 1. Acres of each land use 2. Capability 3. Land adequately treated 4. Land adequately protected 5. Conservation needs remaining 			X	
<p>MA - Major Activity PP - Project Purpose PM - Plan Measure</p>				<p>FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan</p>	<p>F - Final</p>				

PLANNING GUIDELINES

SUBJECT Land Treatment

Resource Conservationist
 District Conservationist
 PRIMARY RESPONSIBILITY

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.3 2.4	703L (Contd)	ALL		IPT	B. Develop the detailed conservation needs for the watershed or measure giving consideration to sediment and floodwater reduction, improving fish and wildlife habitat, improving water management and all practices needed to assure realization to benefits used to justify the project or measure. 1. Use local judgment and field office technical guides to develop needed practices. 2. Using the soils, land use, and capability acreages, and other data, develop the total amount of practice for each of the land use.				
	703L Projected accomplishment of remaining conservation needs.	ALL		IPT	A. Develop an estimate of the acreage by land use to be treated during the installation period. B. Determine the amount of technical assistance the landowner or operator will need (planning, soil surveys, etc.) from SCS to get the job done and indicate approximately when it will be done. C. Determine estimates of the acreage of land left to be adequately treated when the project is terminated. D. Review and concurrence by state resource conservationist and other staff specialists with primary responsibility. Date and initial.			X	
3.1 3.2	704L Formulate land treatment alternative(s) for NED, EQ and alternative plans.	ALL		IPT	A. Show in table form the land treatment practices needed by land use. B. Show in table form the acres of land treatment to be installed by land use for each year of the installation periods. C. Estimate land treatment cost for: 1. Technical assistance 2. Practices D. Show land treatment cost in table form. E. Explain programming of the land treatment and it will be accomplished and who is responsible.			X	
	705L Discuss land treatment impacts.	ALL		IPT	A. Explain how practices or resource management systems are expected to be applied to achieve land treatment. B. Describe land use adjustments and effects on crop production, farm income, reduced erosion sedimentation, runoff, fish and wildlife, esthetics, and other effects.			X	
3.3	706L Evaluate land treatment aspects of each alternative plan.	ALL		ALL	Evaluate the land treatment aspects of each alternative plan with the test of acceptability, effectiveness, efficiency, and completeness. Document this evaluation and provide to the study leader.		X	X	
4.1	707L Develop land treatment portions of plan displays.	ALL		ALL	A. Prepare for public meetings and reports necessary maps and tables which clearly describe land treatment measures and effects. Use data from work items 702L-705L. B. Provide significant land treatment effects to use in the four account displays.	X	X	X	
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PLANNING GUIDELINES

SUBJECT Land Treatment

PRIMARY RESPONSIBILITY Resource Conservationist
District Conservationist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
4.2	708L Obtain public and landowner preferences.	ALL		PSL DC	Assist study leader and DC to prepare for meeting with sponsors, landowners, SCD, and other agencies and public to explain alternative plans and obtain and document their preferences.		X	X	
5.1	709L Modify land treatment measures to reflect preferences of public.	ALL		ALL	Make necessary changes in land treatment measures in alternative plan(s) to increase the viability and move closer to plan selection. Land treatment measures not practical or acceptable should be eliminated.		X	X	
6.2	710L Prepare land treatment portions of plan and EIS.	ALL		ALL	A. Assemble all relevant land treatment documentation in one folder and/or notebook suitable for TSC review. B. Prepare as assigned, land treatment portions of the plan report, EIS, EAS, etc. C. Participate in resolving state and TSC comments.				

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RANGE CONSERVATIONIST
ORGANIZATION OF DOCUMENTATION CHECKLIST

<u>Documentation Item</u>	<u>Work Item</u>
I. Basic Range Data (nonfederal)	700R
a. Maps of rangeland and grazed woodland.	
b. Table of rangeland and grazed woodland.	
c. Location of critical areas on map.	
II. Inventory Data (nonfederal)	701R
a. Table - site name, range condition, acres, by ownership and grazing value rating on woodlands grazed.	
b. Critical areas - locate on map above and give extent of problem, in narrative.	
c. List of threatened and endangered species on rangelands.	
III. Trend Data	702R
State writeup forms used to evaluate range condition and trend.	
IV. Alternatives	703R
Data used to justify different alternatives.	
V. Impacts	704R
Data used to evaluate impacts.	
VI. Environmental Assessment	705R
Range and grazed woodlands. Environmental assessment work sheets used by assessment team.	

SUBJECT RANGELANDPLANNING GUIDELINESPRIMARY RESPONSIBILITY Range Cons. or Dist.
Cons.

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.1	700R Develop range and grazable woodland resource basic data.				A. Determine acres of range and grazable woodland by ownership as defined in the National Range Handbook, displayed on a map and summarized on a table. B. Delineate range sites, association of range sites or complexes of range sites on non-federal rangelands. Use the soil survey.	X			
2.2	701R Inventory of rangeland resources.				A. Determine range condition by range site on nonfederal rangeland by ownership using completed conservation plans or by ocular estimates on areas without conservation plans. Refer to Section II.E of field office technical guide. Summarize on table for documentation. B. Determine forage value rating by woodland suitability group on nonfederal grazable woodlands using completed conservation plans or by ocular estimate on area without conservation plans. Refer to field office technical guide. Summarize on the table above for rangeland. C. Locate and briefly describe critical areas on nonfederal rangeland. D. Determine if any threatened or endangered species are present in the area on rangeland by checking with state lists. E. Assess wildlife potential by species on nonfederal rangeland. Briefly describe in narrative form. F. Assess recreation potential by kind on nonfederal rangeland. Briefly describe in narrative form.	EL	E	X	
2.3	702R Evaluate trend on rangeland without project.				On each ownership of nonfederal rangeland evaluate what the trend and range condition will be for the short term and long term with present land treatment measures or practices being carried out. Document in narrative.		X		
2.4	703R Refine the inventory and project acres of land treatment practices needed and accomplished.			IPT	A. Using present range conditions, develop alternatives of land use treatment measures to protect or improve the resource and attain land adequately treated for rangeland. Apply the USLE as a measure of land adequately treated. Document with table by acres by practice by individual ownership showing needed and applied. Use conservation plans as reference when applicable. B. Using present forage value ratings and present overstory canopy classes, working with the forester, develop alternative land treatment measures to improve or maintain the grazing resource and attain land adequately treated for woodland. Apply the USLE as a measure of land adequately treated. Document with table by acres by practice by individual ownership showing needed and applied. Use conservation plans as reference where applicable. C. Assess extent in acres of land treatment needed by practices to correct problems created on critical areas on nonfederal rangeland. Document in narrative.			X	
1/	E - Estimate (wind shield) but document with notes made on-site.								
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PP - Project Purpose		PI - Preliminary Investigation							
PM - Plan Measure		WP/MP - Work Plan/Measure Plan							

PLANNING GUIDELINES

SUBJECT RANGELAND

PRIMARY RESPONSIBILITY Range Cons. or Dist. Cons.

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.4	703R (Continued)			Bi Rec	D. Assess land treatment needs and alternative treatment on nonfederal rangeland to benefit wildlife. Document in narrative and table by practice, acres, and habitat type. E. Assess land treatment needs and alternative treatments on nonfederal rangelands to benefit recreation. Document in narrative and table by practice, acres, and kind of recreation.			X X	
3.2	704R Evaluate impacts of each alternative plan on rangeland and grazed woodlands.				For each alternative plan, develop and evaluate the significant beneficial and adverse effects on rangeland and grazed woodland. Describe and predict impacts on rangeland by comparing with and without project conditions in terms of quality and quantity. Document in narrative.			X	
6.2	705R Assist in preparation of range and grazed woodland portions of plan and EIS.				A. Assemble relevant range and grazed woodland data in one folder or notebook suitable for TSC review. B. Prepare, as assigned, rangeland and grazed woodland portions of the plan report, EIS, environmental assessment, summary, etc. C. Participate in resolving state and TSC comments.			X	

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FORESTRY

Water Resource Planning Guidelines and Documentation Woodland

The guidelines and documentation listed for water resource planning - woodland, were developed with the idea this portion could be carried out by the forestry representative of the U.S. Forest Service. In some cases local working arrangements are such that a SCS forester or state forester would assume this role. Whoever assumes forestry leadership should closely coordinate the forestry inputs with the other planning agencies involved. In many cases this will be the U.S. Forest Service representative and the state woodland conservationists of the SCS Working together.



FORESTRY

Organization of Documentation Checklist - Forestry

<u>Documentation Item</u>	<u>Work Item No. Reference</u>
1. List of forestry components.	700F
2. Added list of forestry components.	701F
3. List of forestry component needs.	702F
4. List of forestry work items.	703F
5. Assembly of forestry resource data (see list under C. Woodland).	704F
6. List of critical areas on forest land.	705F
7. List of forestry future trends and conditions, qualities, and quantities without plan conditions.	706F
8. List of supplemental data as needed.	707F
9. List of forest types, extent, and location on a map of the potential forestry plan measures.	708F
10. List of EQ and NED forestry measures.	709F
11. A table of forestry measures and an accompanying description.	710F
12. List of beneficial and adverse effects on forestry. Show units and acres.	711F
13. Forestry Plan display-maps and charts of work items.	713 (704-712)
14. Final forestry plan displays, maps, and charts.	716F
15. Prepare Forestry portion of plan report, EIS and Environmental Assessment Summary paragraphs.	717F

SUBJECT FORESTRYPLANNING GUIDELINES

PRIMARY RESPONSIBILITY Forester (USFS)

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
1.1	700F Convert public concerns into specific components.	For			Use the application for assistance and other such documents to establish recorded forestry concerns. Rework to make a specific list of components.	X	X	X	
1.2	701F Evaluate forestry components.	For			A. Search for additional forestry concerns not yet expressed or recorded. Contact industry, state and federal foresters and representatives. Review CNI and other resource inventory reports. List deficiencies and opportunities in general terms of quantity and quality by acres, volumes, and species. B. Anticipate projected future conditions which may increase or decrease the importance of forestry components. C. Record findings and provide to study leader.		X		
1.3	702F Convert forestry components needs.	For			Using above data, specify in detail the type, quality and quantity of what the public wants for each forestry component; i.e., provide 200 acres of natural woods as preserved woodland open space.	X	X	X	
1.5	703F Develop a study plan--forestry portion.				List in time sequence all forestry work items needed to accomplish planning for forestry use. Coordinate with appropriate SCS staff, Forest Service, industry and sponsors.			X	
2.1	704F Assemble available data on resource base.	ALL		SS	A. Review soils maps, soils-5's, and technical guides. B. Assemble by acres and woodland suitability groups--maps. C. Assemble forest acres by forest types, age, classes conditions, and ownership--maps. D. Riparian vegetation and historical and unique trees--maps.	X	X	X	
2.2	705F Identify scope of forestry data, identify components and implement.	ALL		PSc	Using above data, show critical areas needing treatment--on maps and tables.	X	X	X	
2.3	706F Identify future impacts on forestry.	ALL		PSc	Analyze data (work item No. 704 for future trends, changes, and needs. Project conditions, quantities, and qualities, without plan conditions for project life.			X	
	707F Identify supplemental inventories as needed, implement study and analyze	ALL		PSc	Repeat above steps as necessary and project conditions, quantities, and qualities without plan conditions for project life.			X	
2.4	708F Appraise the potential to improve forest resources.	ALL	ALL	Ec PSc	A. For each forestry component need, list the type, extent, and location on a map of the potential forestry plan measures. B. Complete the type, quality, and quantity of component needs that each forestry measure will provide. Include cost and benefits	X	X	X	
3.2	709F Develop forestry portions of NED, EQ and other alternatives	ALL	ALL	Ec PE PSc	A. Select measures which most completely meet forestry component needs for the NED alternative plan. B. Select measures which most completely meet forestry component needs for the NED alternative plan.		X	X	
							X	X	

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F - Final
For - Forestry

SUBJECT FORESTRY

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Forester (USFS)

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
3.2	709F (Continued)				C. Select measures for any other alternative plans.		X	X	
	710F Determine contribution of each alternative to forestry component needs.	For	ALL		For each alternative plan, determine the contributions made to the forestry component needs in units of measure. Table form, with narrative description.		X	X	
	711F Evaluate impacts of each alternative plan for forest resources.	For	ALL		For each alternative plan, evaluate the beneficial and adverse effects on forestry. Describe and predict impacts on forest resources with and without project conditions in terms of quality and quantity (units) acres, production, change in type, permanent loss.				
3.3	712F Evaluate forestry aspects of each alternative plan.	ALL	ALL		A. Evaluate forestry aspects of each alternative plan with the following test: <u>Acceptability</u> - Why it is acceptable or not to the general public, forest industry, local people, and agencies. Identify constraints. <u>Effectiveness</u> - How each contributes to component needs. <u>Efficiency</u> - Cost of achieving component needs. <u>Completeness</u> - Describe those who could help for implementation. B. Prepare documentation of above and summary. Compare forestry aspects of each plan by above test.			X	
4.1	713F Develop forestry portions of plan displays.	ALL	ALL		Prepare for public meeting necessary maps, charts, and narrative which describe forestry plan measures and effects. Use data from work item No. 704F-712F.			X	
4.2	714F Obtain public and forestry interests' preferences.	ALL	ALL	SL	Assist study leader to prepare and meet with sponsors, public, forestry interests, to explain alternative plans and document preferences.			X	
5.1	715F Modify forestry plans and component needs to reflect public preferences.	Forest Resource Measures		PSL	Make necessary changes in alternative plans and component needs to increase viability and closer to plan selection. Forestry measures not feasible should be eliminated.			X	
5.2	716F Make additional forestry studies and compilations as needed.	ALL	ALL		Make final investigations, computations, and displays to develop viable plan tables and maps, and narratives for public meetings and reports.		X	X	
6.2	717F Prepare forestry portions of plan and EIS.	ALL	ALL	PSL	A. Assemble all forestry documentation in one folder and notebook suitable for TSC review. B. Prepare, as assigned, forestry portions of the plan report, EIS, environmental assessment, summary, etc.			X	
				PS	C. Participate in resolving state and TSC comments			X	
MA - Major Activity PP - Project Purpose PM - Plan Measure		FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan		F - Final For - Forestry					

PLANNING GUIDELINES

SUBJECT AgronomyPRIMARY RESPONSIBILITY Agronomist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
1.1	700A Convert public agronomic concerns into specific components				A. Use application for assistance and other appropriate documents to surface agronomic concerns. B. Address concerns to represent desires of public, list environmental quality, specific components. Show impacts. C. Loss of prime and unique cropland, open space, rural, and natural resources.		X		
1.2	701A Evaluate agronomic components.				A. Identify agronomic concerns not heretofore recorded or buried. B. Anticipate impacts with and without project. C. Record findings.				
2.2	702A Assemble available data on resource base. 703A Determine inventories needed. Divide area into hydrologic, climatic or other logical units and set up statistical sample points.				A. Locate on base map land use - i.e., cropland, pasture, hayland, orchard land, etc., summarize by acres. B. Indicate prime and unique lands using soils map, land use by capability class. A. Identify critical eroding areas. B. Through sampling determine field soil loss. C. Determine crop yields present.				
2.4	704A Evaluate the potential to improve the agronomic aspects of the area.	Rational	Comprehensive L.T. Structural and non-structural measure	ALL	A. List the type, extent and location on maps the potential. B. Record practices that need to be promoted to attain potential. C. Interdisciplinary evaluation.				
3.2	705A Develop agronomic portions of NED and EQ compatible with alternatives considered. 706A Determine contribution of alternatives considered relative to agronomic needs. 707A Evaluate impacts on the environment of each alternative plan.		Pertinent		A. Indicate measure which are most compatible to meet needs for the EQ alternative plan. B. Select measures for NED alternative plan which are complimentary or not in conflict with the EQ objectives. C. Arrange in tabular form. Record Evaluate and record both positive and negative effects with or without project using as objective terms of quality and quantity as feasible.				
6.1	708A Prepare for public meeting.				Arrange material for ease of understanding.				
6.2	709A Modify to fit.				Minutes of meeting.				
	Continue process until acceptable by both SCS and public, or abandon.								
MA - Major Activity		FE - Field Exam		F - Final					
PP - Project Purpose		PI - Preliminary Investigation							
PM - Plan Measure		WP/MP - Work Plan/Measure Plan							

SOIL SURVEY
ORGANIZATION OF DOCUMENTATION CHECKLIST

All soil surveys are documented according to data and procedures required for the NCSS. Guidance is provided in NSH. Original data is maintained by the local soil scientist. Copies of the applicable data, including copies of field sheets, legends, and interpretation tables, as appropriate, are supplied to the staff or study leader.

<u>Documentation Items</u>	<u>Work Items</u>
Work Plan	702
Base Map of Project Area	704, 705, 706, 708
Index to Field Sheets	703, 704, 705
NCSS Documentation	703, 704, 705
List of References Used	704, 705, 706, 707, 709



ENVIORMENTAL IMPACT

SUBJECT Soil Investigations

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Soil Scientist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
1.3	701S Determine specific needs of the project for soil information.			ALL	Determine type of soil data needed for the project. Decide what order of soil survey can be used. Consider general soil maps where possible. Where more detailed soil surveys are needed, follow procedures outlined in NSH.	X	X		
1.2	702S Organize plan for presenting data. 703S Evaluate soil data available.			ALL	<p>A. Develop plans for supplying the soil information that meet the needs of the project. Record agreements on:</p> <ol style="list-style-type: none"> 1. Type of soil information to be furnished 2. Tables to be furnished 3. Format of final draft 4. Time schedules 5. Acres in project <p>B. Get concurrence of appropriate Line Officer (AC) and state staff.</p> <p>A. Make inventory of data available for us.</p> <ol style="list-style-type: none"> 1. Published reports - both older and recent 2. Field sheets in F.O. files 3. General soil maps 4. Special reports 5. Legends 6. CNI data 7. Statistical reports <p>Consider: F.O. Files Other Federal Agencies State Agencies Local Universities</p> <p>B. Determine suitability of existing data.</p> <p>C. Collect additional data needed to meet objectives of project as agreed in items 701 and 702.</p> <p>D. Arrange for technical review of available data.</p>	X	X		
2.2	704S Inventory existing conditions significant to the project.			AC DC	<p>A. Assemble data to show present conditions.</p> <ol style="list-style-type: none"> 1. Group soil map units into naturally occurring associations - if applicable. 2. Compile data as agreed in item 702. 3. If applicable, show present land use by map unit or groups of map units. Give acreage and percent of area. 4. Identify areas where erosion is a problem. Identify wind and/or water erosion. Use base map to delineate the areas. 5. Identify flood plains on base map. 		X	X	

MA - Major Activity
PP - Project Purpose
PM - Plan Measure

FE - Field Exam
PI - Preliminary Investigation
WP/MP - Work Plan/Measure Plan

F - Final

PLANNING GUIDELINES

SUBJECT Soil Investigations

PRIMARY RESPONSIBILITY Soil Scientist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.2	704S (Continued)			AC DC	6. Identify areas of prime or unique farmland. Delineate on base maps where practical. Documentation: 1. Source of information 2. How measured 3. How identified				
2.3	705S Project soil conditions and qualities of the soil without the planned project.				A. Analyze the future soil conditions that are expected to exist without the planned measure over the next 10 years. B. Document by use of agricultural statistics and CNI data to determine land use trends in past 10 years. C. Project these trends into the next 10 years. Consider changes in: 1. Soil quality 2. Erosion rate 3. Prime and unique farmlands D. Assemble into format agreed upon in work item 702 and document information sources by footnotes. E. Arrange for technical review from state staff and project leader. Documentation: 1. Source of information 2. How identified and measured		X	X	X
2.4	706S Determine impact of planned measure on soil conditions.				A. Evaluate impact of planned measure on existing soil conditions. B. Consider changes in: 1. Erosion during and after installation 2. Soil production potential based on erosion, fertility, availability of water, and improving soil conditions. 3. Flood hazard 4. Acreage of prime unique and special agricultural land C. Assemble into format agreed upon in item 702. D. Arrange for technical review. Documentation: 1. Source of information 2. How identified and measured	X	X	X	
	707S Determine impact of planned measure on land use.			ALL	A. Evaluate effect planned measure will have on land use trends.	X	X	X	

MA - Major Activity
PP - Project Purpose
PM - Plan Measure

FE - Field Exam
PI - Preliminary Investigation
WP/MP - Work Plan/Measure Plan

F - Final

PLANNING GUIDELINES

SUBJECT Soil Investigations

PRIMARY RESPONSIBILITY Soil Scientist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.4	707S (Continued)			ALL	B. Evaluate land use changes expected due to increase or decrease. <ol style="list-style-type: none"> 1. Opportunities 2. Potentials 3. Needs of the area C. Consider future potentials for: <ol style="list-style-type: none"> 1. Cropland 2. Pasture 3. Rangeland 4. Recreation 5. Urbanization 6. Wildlife D. Assemble into format agreed upon in item 702. E. Arrange for technical review.	X	X	X	
	708S Review of soil evaluations.			PSC	Review all material furnished by soil scientist. Reproduce as needed for distribution.		X	X	X
	709S Design alternative plans and determine how the plans will affect the NED and EQ of the project area.			ALL	A. Determine the beneficial and adverse effects of each alternative plan upon the soil resource. <ol style="list-style-type: none"> 1. Consider how each measure will affect the productivity, erosion, addition or loss of prime land, and any changes in the present soil condition. 2. Select plans that will have least adverse effects upon the soil resources. 3. Document the effects of the alternative plans on soil resources by: <ol style="list-style-type: none"> a. Compare with completed similar projects. b. Research and extension data from other federal and state agencies. 4. Furnish project leader with lists of documentation. 		X	X	
3.1	710S Develop displays of selected alternative plans.			ALL	A. Prepare soil maps and/or tables and other displays showing effects of each plan upon the soil resources using format developed in WI 702. <ol style="list-style-type: none"> 1. Compare effects with present soil conditions as developed in WI 707. 2. Project soil conditions that will be improved and/or adversely affected by each plan. 3. Show where, and how much of the total soil resources will be affected by each alternative. 4. Show how each plan will affect the economy and environment of the project area. 		X	X	
MA - Major Activity PP - Project Purpose PM - Plan Measure		FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan			F - Final				

PLANNING GUIDELINES

SUBJECT Soil Investigations

PRIMARY RESPONSIBILITY Soil Scientist

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
3.1	710S (Continued)			ALL	B. Arrange for state technical review. Documentation: 1. Source of information 2. How identified and measured				
6.2	711S Prepare soil resource portion of plan and EIS.			ALL	A. Assemble soil data on selected plan into aged format suitable for review. This will be a part of project documentation. B. Prepare portions of the final EIS and plan report as assigned by the appropriate line officer or study leader. C. Review overall plan and EIS as assigned by appropriate line officer with careful consideration on how each section is related to the soil resources. D. Assist in resolving comments.			X X X	

MA - Major Activity
PP - Project Purpose
PM - Plan Measure

FE - Field Exam
PI - Preliminary Investigation
WP/MP - Work Plan/Measure Plan

F - Final

ENVIRONMENTAL SPECIALIST
ORGANIZATION OF DOCUMENTATION CHECKLIST

The following information should be provided as documentation for environmental investigations and procedures in RC&D and Watershed projects.

<u>Documentation Item</u> (From Support File)	<u>Work Item Reference</u>
I. Summary of Procedures	
1. Narrative Describing Assessments Made and Members of I.P.T.	All Work Items
a. Field Exam.	
b. P.I.	
c. Plan Development	
2. Document Public Meetings and Reviews	800-805, 806, 811, 816, 818, 819
3. Document Unusual or Critical Environmental Considerations	815
II. Environmental Recommendations	809, 814, 822
1. Need for EIS or EIA	
2. Minimize Adverse Effects	
3. Etc.	
III. Environmental Assessment Support Data	808, 809, 814, 815
IV. Alternative Plan Support Data (including EQ)	815, 816, 817
1. Environmental Components and Plan Documents	
2. EQ Effects	
3. Environmental "Acceptability"	
V. Selected Plan Support Data	818, 819, 820
1. EQ Components and Plan Elements	
2. EQ Effects	
3. Environmental Acceptability	

ENVIRONMENTAL SPECIALIST

<u>References For Use In Planning And Preparing Documentation</u>	<u>Useful During Work Item No.</u>
<u>REFERENCE</u>	
I. Resource Conservation Planning Handbook	801
II. National Environmental Policy Act - PL 91-190	801
III. Water Pollution Control Act Amendments of 1972, PL 92-500	801
IV. SCS Compliance with the National Environmental Policy Act, 7 CFR 650, Part IV, August 8, 1977	801, 809, 811, 814
V. Procedures for the Protection of Archeological and Historical Properties Encountered in SCS-Assisted Programs, 7 CFR 656, July 18, 1977	801, 814
VI. Environmental Protection, Message From the President of the United States, House Document No. 95-160 (Advisory EVT-13, June 8, 1977).	801
VII. Conservation Planning Memorandum 15 (and Supplemental, May 15, 1975).	801
VIII. WTSC Overview Environmental Assessment Worksheet	808
IX. Examples of Use of Overview Environmental Assessment Worksheet	808
X. Environmental Assessment Summary Outline	808, 815
XI. Environmental Assessment Summary Example	808
XII. Revised Rules for Compliance with NEPA and Impacts on RC&D and Watershed Programs, September 30, 1977	809, 811, 821
XIII. Examples of Notice of Intent and Environmental Impact Appraisal	809
XIV. Guide for Environmental Assessment, March 1977	814, 815
XV. WTSC Checklist for Environmental Inventory	814
XVI. Example Matrix Analyses of Effectiveness of Possible Plan Elements to Satisfy the EQ Component Needs	815
XVII. Example Network Diagram of the Impacts of Plan Elements	815

SUBJECT Environmental Studies		PLANNING GUIDELINES			PRIMARY RESPONSIBILITY Environmental Spec.				
MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
1.1	800 Obtain sponsors and public's environmental concerns and objectives.	ALL		DC AC RC PSL	A. Public meeting. Assist as assigned to: 1. Convert public and potential sponsor's environmental concerns into specific components. 2. Develop minutes of meeting (tape record if possible).	X	X		
	801 Counsel sponsors and public on environmental considerations in planning and service environmental constraints (NEPA).	ALL		DC AC RC PSL	A. Public meeting (could be same as above). Assist as assigned to: 1. Explain concepts (not terminology) of Principles and Standards. 2. Explain the 10 steps of Resource Conservation Planning (RCPH-710.2). 3. Explain applicable laws such as NEPA, PL 92-500, etc. 4. Utilize handbooks, policy memos, etc. 5. Develop minutes of meetings.	X	X		
	802 Identify other concerned public and interest groups who should be consulted about proposals that have environmental effects.	ALL		DC AC RC PSL	A. Public meeting (could be same as above). B. Correspondence. C. Phone calls. D. Make a record of all contacts.	X	X		
1.2	803 Evaluate specific components of P&S EQ objective in light of projected future conditions and SCS capability to investigate.	ALL but 1/		DC AC RC PSL	A. SCS meeting. 1. Minutes of meeting.	X	X		
	804 Establish interdisciplinary planning team (IDT) to handle environmental assessment.	ALL		DC AC RC PSL	A. SCS meeting (could be same as above). 1. Minutes of meeting.	X	X		
2.1- 2.3	805 Identify environmental study needs and inventories (aerial photos, soils land use, stream type, archeology, etc.) and inventories that need to be contracted.	ALL		IDT	A. SCS meeting (could be same as above). 1. Use TSC checklist. 2. Minutes of meeting.	X	X		
1.3	806 Specific component needs of EQ objective.	ALL but 1/		IDT	A. Convert publics identified environmental problems into component needs of EQ objective. 1. SCS meeting	X	X		
2.1- 2.3	807 IDT - Establish possible plan elements, alternatives, probable impact conditions, and need for additional disciplines, as well as study plan.	ALL		IDT	A. SCS meeting (could be same as above).	X	X		
1/	Principles and Standards are not applicable to RC&D Critical Area Treatment purpose or to public water-based fish and wildlife and recreation purposes when only land rights and basic facilities are involved.								
MA - Major Activity		FE - Field Exam			F - Final				
PP - Project Purpose		PI - Preliminary Investigation			IDT - Interdisciplinary Team				
PM - Plan Measure		WP/MP - Work Plan/Measure Plan							

SUBJECT Environmental Studies

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Environmental Spec.

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.1-2.3	808 Make an overview environmental assessment using existing data and summarize.	ALL	PPE	IDT	A. Develop method in consultation with TSC contact. 1. Develop support file. 2. Use WTSC Overview Environmental Assessment Worksheet. B. Summarize as an Environmental Assessment Summary, using the Overview Environmental Assessment Worksheet and using WTSC Environmental Assessment Summary Outline.	X	X		
2.1-2.3 and 3.1	809 Recommend courses of environmental action.	ALL	PPE	IDT	A. Continue environmental assessment for further information. B. Exclude from EIS since not a major federal action and will not create significant adverse local, regional, and national impacts on the environment, and there is no significant controversy associated with the project. C. Develop Environmental Impact Appraisal and Notice of Intent. D. Continue environmental assessment, if needed, and prepare EIS. (See SCS policy memos and NEPA guidelines)	X	X		
4.1	810 Develop preliminary displays of alternative plans that reflect initial level of planning.	ALL but 1/	PPE	IDT	A. SCS meeting. 1. Minutes of meeting.	X	X		
4.2	811 Obtain sponsor & other public reaction to initial environmental assessment and to alternative plans.	ALL	PPE	IDT	A. Public meeting. 1. Send out public notice that wetlands, flood plain management, prime agricultural lands, along with other items will be discussed. 2. See NEPA guidelines 7 CFR 656.6. Note discussion of wetlands and flood plain management. 3. Minutes of meeting (tape record if possible).	X	X		
5.1	812 Review and reconsider planning effort, based on public meeting and initial results of environmental assessment and alternatives.	ALL	PPE	IDT	A. SCS meeting. 1. Minutes of meeting. 2. Prepare Notice of Intent to prepare EIS if appropriate.	X	X		
1.3	813 Respecify component needs.	ALL but 1/	PPE	IDT	A. SCS meeting. 1. Minutes of meeting.		X	X	
2.1-2.4	814 Develop additional basic resource data (measure drainage areas or subareas, etc.), and collect appropriate land, water, air, social, esthetic, and economic data for detailed environmental assessment.	ALL	PPE	IDT	A. Assign individuals to develop additional data or refine basic data such as drainage areas, miles of stream by type, etc., and do in consultation with all specialists who would utilize this data, such as environmental specialists. 1. See TSC checklist for environmental inventory.			X	
1/	Principles and Standards are not applicable to RC&D Critical Area Treatment purpose or to public water-based fish and wildlife and recreation purposes when only land rights and basic facilities are involved.								
MA - Major Activity		FE - Field Exam		F - Final					
PP - Project Purpose		PI - Preliminary Investigation		PPE - Potential Plan Elements					
PM - Plan Measure		WP/MP - Work Plan/Measure Plan							

SUBJECT Environmental Studies

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Environmental Spec.

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
2.1-2.4	814 (continued)				<p>2. Develop contracts for environmental inventories and analysis, using IDT to develop the contracts.</p> <p>B. Predict without action conditions.</p> <p>C. Use SCS Environmental Assessment Guide, procedures for the protection of archeology and historical property (CFR 656 7/18/77) or other guidelines.</p> <p>D. Develop Draft of Environmental Assessment Summary. Recommended action: (1) Exclude, (2) EIS.</p> <p>1. Minutes of meeting.</p>			X	
3.1	815 Formulate EQ Plan and Alternative Plans	ALL but 1/	PPE	IDT	<p>A. Refine list of possible plan elements to satisfy EQ component needs.</p> <p>B. Apply matrix analyses of the effectiveness of the plan elements to satisfy component needs.</p> <p>C. Rate the acceptability, effectiveness, efficiency, and completeness of the plan elements.</p> <p>D. Develop a Network Diagram of the impacts of each plan elements.</p> <p>E. Show the resulting plan as the EQ alternative.</p> <p>F. Repeat 1 and 2 above for alternatives.</p> <p>G. Evaluate impacts of EQ plan and alternative plans.</p>			X	
	816 Continue development of EIS if appropriate.	ALL			<p>A. Use SCS NEPA Guidelines (7 CFR 650) and EVT Memo-1 outline.</p>			X	
4.1	817 Develop EQ plan displays and measures of effects.	ALL but 1/	PPE	IDT	<p>A. Prepare for public meeting (See 7 CFR 650.6) and develop reports, maps and tables which describe EQ plans, and measures of beneficial and adverse effect for each component.</p> <p>1. See USDA P&S Procedures and WTSC, P&S workshop notes April 1975.</p> <p>B. Prepare appropriate displays for use at public meeting to explain beneficial and adverse impacts and EIS.</p> <p>C. Obtain publics and sponsors preferences.</p> <p>1. Minutes of meeting (tape record if possible).</p>			X	
5.1	818 Modify EQ plan to reflect public and sponsor preferences.	ALL but 1/		IDT	<p>A. Make additional studies and revise component needs and EQ plan, as well as other alternatives. Reinterpret findings. Summarize for environmental assessment.</p>			X	
5.1	819 Assist with development of the selected plan that includes plan elements from EQ plan.	ALL but 1/		IDT	<p>A. Prepare appropriate displays such as EQ Account of selected plan.</p> <p>B. Complete Environmental Assessment Summary.</p>			X	
1/	Principles and Standards are not applicable to RC&D Critical Area Treatment purpose or to public water-based fish and wildlife and recreation purposes when only land rights and basic facilities are involved.								
MA - Major Activity		FE - Field Exam			F - Final				
PP - Project Purpose		PI - Preliminary Investigation							
PM - Plan Measure		WP/MP - Work Plan/Measure Plan							

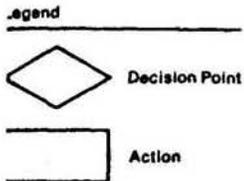
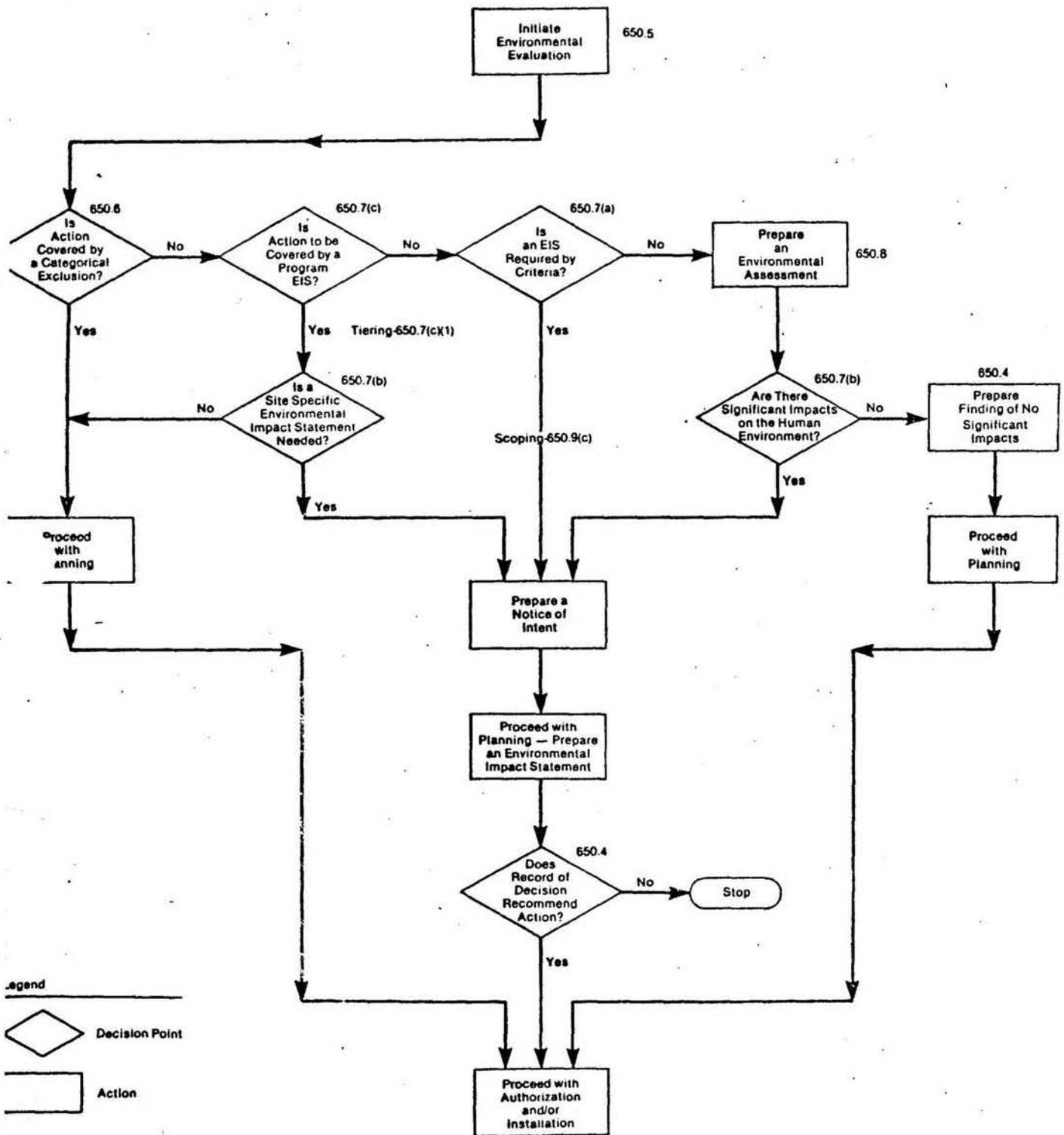
SUBJECT Environmental Studies

PLANNING GUIDELINES

PRIMARY RESPONSIBILITY Environmental Spec.

MA	Work Item	Applicable		Other Staff	Method and Documentation	FE	PI	WP/MP	F
		PP	PM						
6.0	820 Select Plan	ALL	PPE	IDT	A. Sponsors review selected plan and display at public meeting. 1. Minutes of meeting. B. Prepare draft EIS as part of plan and public review.			X	
6.0	821 Complete Environmental Impact Appraisal if appropriate. 822 Prepare appropriate Notice of Intent in consultation with STC. 823 Send Environmental Impact Appraisal and Notice to Intent to TSC for review and concurrence. 824 TSC concurrence.	ALL	PPE	IDT	A. Use WTSC Environmental Impact Appraisal Outline. 1. Use SCS environmental assessment guide. 2. Appropriate environmental memos and advisories such as those on archeology. A. Minutes of meetings. A. Memorandum B. Environmental Assessment Summary A. Memorandum			X	
6.0	825 EIS inter-agency review process.	ALL	PPE	IDT	A. Transmit EIS for review.			X	X
	826 Revise Plan and EIS after inter-agency review.	ALL	PPE	IDT	A. Review plan and EIS to reflect comments received. 1. See SCS NEPA guidelines. 2. TSC specialist inputs.			X	X
	827 Submit Notice of Availability of final EIS.	ALL	PPE	IDT	A. Send to Federal Register and locally.				X
	828 Prepare Statement of Findings.	ALL	PPE	IDT	A. Use TSC example.				X
	829 Submit Statement of Findings to TSC for review and concurrence.	ALL	PPE		A. TSC review and concurrence.				X
MA - Major Activity PP - Project Purpose PM - Plan Measure				FE - Field Exam PI - Preliminary Investigation WP/MP - Work Plan/Measure Plan	F - Final				

NEPA in SCS Planning



WORKSHEET

OVERVIEW EVALUATION OF ENVIRONMENTAL ASSESSMENT

(Initial Phase of Environmental Assessment That May Also Be Used as Detailed Phase for Some RC&D Measures)

Project: _____

Measure or Plan Elements: _____

Alternative: _____

Field Office: _____

Team: _____ Date: _____

Environmental Factors	Effect ^{4/}		Notes
	Short Time	Long Time	
Code the following items: + beneficial effect, 0 no effect, - downgrading effect			
Erosion & sedimentation			
Watertable alterations			
Change in flow regime			
Changes in land use			
Changes in air quality			
Upland wildlife habitat			
Bottomland wildlife habitat			
Migration routes			
Bottomland hardwoods			
Stream fisheries 1/			
Wetlands 2/			
Rare or endangered plants			
Rare or endangered animals 3/			
Natural perennial streams			
Man-altered perennial streams			
Natural intermittent streams			

Environmental Assessment Worksheet (Continued)

Man-altered intermittent streams			
Archeological resources			
Historical resources			
Water quantity			
Water quality, inc. receiving waters			
Appearance of the landscape			
Other (list)			

- 1/ Including potential not presently productive
- 2/ Re: Wetlands of the U. S. - Fish and Wildlife Service Circular 39
- 3/ Re: Threatened Wildlife of the United States, U.S.D.I., Bureau of Sport Fisheries and Wildlife
- 4/ Short Time - Consider this to be the installation period
Long Time - Consider this after the installation period to the end of the project (measure) life.

Degree of Public Interest:

Potential Controversy:

Setting, Urban or Rural:

Economic Impact:

Environmental Assessment Worksheet (Continued)

Social Impact:

Irreversible and Irretrievable
Commitments of Resources:

Alternatives to Proposed Actions:

Other:

Recommendation: (Check one)

Continue assessment for further information

Not a major federal action and no significant environmental impact.
(Develop an Environmental Impact Appraisal and Notice of Intent.)

Continue assessment and prepare an environmental impact statement.

6/21/78
DAVE JOHNSON

WATER RESOURCES PLANNING WORKSHOP
Planning & Documentation Guide

Discussion by
Frank Reckendorf
Environmental Resource Specialist

Planning & Documentation Guide

Environmental Specialist (Section III)

I. INTRODUCTION

The environmental specialist section was prepared by Frank Reckendorf and reviewed by three TSC staff members. The section, as presented, is a sequential approach to project and measure planning that follows the Principles and Standards planning steps. As indicated in the section, Principles and Standards do not apply to all RC&D measure purposes that are land based measures as opposed to water and related land measures. For the measures that do not require P&S, work items could be set up in terms of the ten steps in planning presented in the Resource Conservation Planning Handbook. A table, as follows, shows the relationship between Major Activity (MA) items in the Planning and Documentation Guides where P&S applies versus Steps for Action in the Resource Conservation Planning Handbook.

II. USER

The state environmental specialist, or whoever is designated overall environmental responsibility, will be the primary user of this section of the guide. However, there is some value in all members of the interdisciplinary team reviewing this section and the example material in WTSC Advisory EVT-PO-2, dated March 29, 1978.

III. USE

The guide information may be used as a checklist for determining environmental planning milestones during any stage of planning, or as a checklist to use when preparing the plan of work for a project or measure. It can also be used as a basis for what documentation should be submitted.

IV. EXAMPLES

Examples of Planning and Documentation Guide environmental documentation were previously submitted to the states with TSC Advisory EVT-PO-2, dated 3/29/78 (discussion later in VI.A).

V. MY USE IN WORKING WITH STATES

Starting next fiscal year, I plan to review the items in the guide with the state environmental specialist, or the state designated individual, when I am in the states on technical assistance trips. Many of the specialists have not yet had time to review the guide so I have made little attempt to review the guide with specialists so far.

TABLE

<u>Major Activity</u>	<u>Step for Action</u>
1.2 - Evaluate specific components	Step 3 - Find out needs and goals
2.1-2.4 - Evaluate resource capability	Steps 4 and 5 - Get the facts and analyze and interpret data
3.1 - Formulate alternative plans	Step 6 - Consider alternatives
4.1-4.2 - Analyze the differences among alternative plans	Step 6 - Consider alternatives
5.1 - Review and reconsider	Step 10 - Re-evaluate and update
6.0 - Select and recommend a plan	Step 7 - Make policies and decisions and
	Step 8 - Record policies and decisions and
	Step 9 - Implement policies and decisions

VI. FUTURE IMPROVEMENTS

There are certain specific items in the guide I would like to discuss with you and some corrections I would like to point out. In addition, other relevant policy issues will be coming up that will be cross referenced to the guide.

A. TSC Advisory EVT-PO-2, 3/29/78

1. Note content (Attachment A-F). No handout since this was sent to all states previously.
2. Questions.

B. Work Items for Special Discussion

1. Page 1/4, Work Item 801 - In the initial stage of planning, it is important to discuss with the local people what is important to them environmentally. Are the local people interested in preserving the pheasant along the irrigation ditch? Are they interested in putting fish in an existing pond or in development of ponds for fish and wildlife? Are they interested in preserving an old barn or bridge in their area. Are there other individuals and groups with interests that should be contacted. What are the opinions of the state fish and game, state historic preservation officer and USFWS?

The point is to talk with local people and others about what is environmentally important to them, and to do it without confusing them with P&S terminology. Just find out the needs and facts (Steps 2 and 3 of the planning steps in the Resource Conservation Planning Handbook).

2. Page 2/4, Work Item 808 - Use of the Overview Environmental Assessment Checklist or Equivalent - examples.
3. Page 3/4, Work Item 811 - Discussion of Flood Plain Management and Wetlands (see 650.6). Where appropriate, put in the newspaper notice of the public meeting to discuss flood plain management and wetlands.
4. Page 3/4, Work Item 815 - Matrix on effectiveness of the plan elements to satisfy component needs and rating of the plan elements in the four Principles and Standards test. Discuss.
5. Network Diagram, Work Item 815 - Example.

C. Corrections

1. Page 2/4, Work Item 811, Method and Documentation, Item 2-0. Change 656.6 to 650.6.
2. Page 2/4, Work Item 814, Method and Documentation, Item 1. Change Checklist for Environmental Inventory to Resource Inventory Checklist.
3. Page 4/4, Work Item 823 - Add a sentence "Also applies to draft EIS."
4. Page 4/4 - After Work Item 824 insert Work Item 825.a. It should state: "Send draft EIS to EPA."

Under Methods and Documentation add: "Memorandum, and EPA Friday Notice of Availability" (see Advisory EVT-12, 5/12/78). Also add "The RFO will announce the availability of the draft EIS in a newspaper serving the area."

5. Page 4/4 - After Work Item 826 insert Work Item 826.a. It should state: "Submit Combined Plan and final EIS or separate final EIS to TSC for review and concurrence."
6. Page 4/4, Work Item 827 - Delete the words in the middle of the sentence "Notice of Availability of . . ." and add the words "EPA" to the end of the sentence. The sentence should read "Submit final EIS to EPA."

Under Methods and Documentation delete words "send to Federal Register and locally." Replace this with "memorandum and EPA Friday Notice of Availability."

D. Additions

Reference items will occasionally be added to the Methods and Documentation. Such items will be submitted to the state in advisory form and be cross referenced to work items. Critical issue items, such as flood plain management, prime agricultural lands, and wetlands, will be handled this way.

POTENTIAL ENVIRONMENTAL QUALITY PLAN

Scale: 1-5

1: Least Effective

5: Most Effective

TESTS

USDA
Public

Acceptability

Effectiveness

Efficiency

Completeness

Plan Elements

Re-establish and Protect Riparian Vegetation	5/5	5	5	4
Flood Plain Zoning	5/5	4	5	3
Revegetate Eroded Areas	5/5	5	5	4
Preserve Bottomland Hardwoods	5/4	5	5	5
Management of Septic Tank Drain Fields	5/5	5	5	4
Creek	3/2	5	3	4
ment Summer Flow	3/3	3	4	5
Land Treatment	5/5	2	5	2
Log Jam Removal	5/5	3	4	3
Debris Basins	3/3	2	2	2
Fire Control Measures	5/5	4	4	3
Impoundment on Main Stem	2/2	3	2	3
Impoundment(s) on Tributary(ies)	3/3	3	4	3
Riprap and/or Jetties	2/1	5	4	4
Stream Corridor Management	5/4	4	5	3
Upgrade Plant Species Favorable to Wildlife	5/5	5	5	3
Tax Incentives	5/4	4	5	4
Riparian Easement	3/3	4	5	4
ase Development Rights	5/4	4	5	4
osition of Streamside Strip	5/4	5	4	4
Nomination of National Register Historic Places	5/5	5	5	5

