reference handbook

Fiscal Year 1982

For Use with the Principles, Standards, and Procedures for Water Resources Planning (Level C).

U.S. Water Resources Council

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FOREWORD

This handbook has been compiled by the Water Resources Council staff with the assistance of Member agencies to aid planners in formulating and evaluating water resources management and development plans. Several sets of information, data, or guidance are provided to comply with the WRC Principles, Standards and Procedures (PS&P). The Principles, Standards, and Procedures were issued as rules in 18 CFR parts 711,713,714, and 716 on December 14, 1979 (44 FR 77892), April 11, 1980 (45 FR 24863), and September 29, 1980 (45 FR 64388). Background to their preparation is provided in the Federal Register of September 29, 1980, and in the FY 1981 edition of this handbook.

The Water Resources Council recently proposed (46 FR 45368, September 11, 1981) to repeal the PS&P, with substitute guidelines to be established on the recommendations of the Cabinet Council on Natural Resources and Environment. Pending the outcome of that proposal and perhaps, thereafter, much of the information in the handbook will continue to be pertinent and useful to the planning process. The agency contacts listed herein will be advised of developments relating to the PS&P and will pass this information on to field planners.

Gerald D. Seinwill
Acting Director

September 1981

i. Agency Contacts

The following persons will be advised of developments relating to this Handbook that affect their agencies and will pass this information on to planners.

1. Dick Porter/Bureau of Reclamation
   (202) 343-5501

2. Art Flechinger/SCS
   (202) 447-7829

3. Dave Hottenstein/COE, DAEN-CWP-P/S
   (202) 272-0134

4. Kenneth Gray/TVA
   (202) 245-0101

I. Discount Rates

A. The interest rate of 7 5/8% is to be used by Federal agencies in the formulation and evaluation of plans for water and related land resources for the period October 1, 1981 through and including September 30, 1982. Official notification in accordance with 18 CFR 711.19 will be published in the Federal Register in late October.

The rate has been computed in accordance with 18 CFR 704.39 "The Discount Rate" of the Water Resources Council, and is to be used in the formulation and evaluation of water and related land resources plans for the purpose of discounting future benefits and computing costs, or otherwise converting benefits and costs to a common time basis.

Fiscal Year	B.B.C. A-47	S.D. 97	WRC 1968 Reg.	Prin. & Stand.	WRDA 1974 Sec. 80	WRC 1974 Notice
1957	2.500 1958		2.500			
1959	2.500					
1960	2.500					
1961	2.625					
1962	2.625	2.625				
1963		2.875				
1964		3.000				
1965		3.125				
1966		3.125				
1967		3.125				
1968		3.250				
1969		3.250	4.625			
1970			4.875			
1971			5.125			
1972			5.375			
1973			5.500			
1974			5.625	6.875	5.625	5.625
1975					5.875	5.875
1976					6.125	6.125
1977						6.375
1978						6.625
1979						6.875
1980						7.125
1981						7.375
1982						7.625

Effective dates of the indicated documents:

Budget Bureau Circular A-47	(December 31, 1952 - May 15, 1962)
Senate Document 97	(May 15, 1962 - December 24, 1968)
Water Resources Council	(December 24, 1968 - October 25, 1973)
Principles and Standards	(October 25, 1973 - March 7, 1974)
WRDA of 1974 (Section 80)	(March 7, 1974 - Continuing)
Water Resources Council (1974)	(August 14, 1974 - Continuing)

B. Conversion factors for selected discount rates.

i%	Present Value of Annuity of $1 50 years	100 years
5.625	16.62554	17.70390
5.875	16.04106	16.96483
6.000	15.76186	16.61755
6.125	15.49091	16.28376
6.375	14.97253	15.65380
6.625	14.48359	15.06963
6.875	14.02195	14.52661
7.125	13.58565	14.02069
7.375	13.17288	13.54831
7.625	12.78201	13.54831
10.000	9.91481	9.99927

C. Present value of an annuity of $1. at 7.625%.

$$PV = \sum_{t=1}^{n} \frac{1}{(1+i)^t} = \frac{1-(1+i)^{-n}}{i}$$

where: n = years of growth
t = year
i = interest rate (.07625 in this example)

Year (t)	PV, $1. Ann., 7-5/8%	Year (t)	PV, $1. Ann., 7-5/8%
1	.929	15	8.759
2	1.792	16	9.068
3	2.595	17	9.354
4	3.340	18	9.621
5	4.032	19	9.868
6	4.676	20	10.098
7	5.274	25	11.026
8	5.829	30	11.668
9	6.345	35	12.113
10	6.825	40	12.421
11	7.271	45	12.634
12	7.685	50	12.782
13	8.069	75	13.062
14	8.427	100	13.106

D. Formula for the present value of a compound growth series.

This formula applies in those cases where there is a benefit at the end of the first planning period that grows at a constant rate during successive planning periods. Although the initial benefit is not realized until the end of the first period, it and all successive benefits are discounted back to the beginning of the first period. If an initial benefit of B_1 grows at j percent for each of t = 1, 2 ..., n years and the applicable interest rate is i percent, then the present value of the stream of benefits is:

$$PV = \sum_{t=1}^{n} B_1 \left[\frac{(1+j)^{t-1}}{(1+i)^t} \right]$$

which simplifies to

$$= B_1 \left[\frac{(1+i)^n - (1+j)^n}{(i-j)\ (1+i)^n} \right]$$

where again

B_1 = initial benefit
j = growth rate of benefits
i = interest rate
n = years of growth

Example: Assume benefits at end of first year are $235,000, i = 7-3/8%, j = 2%, n = 50 years, then

$$PV = \$235{,}000 \left[\frac{(1.07375)^{50} - (1.02)^{50}}{(.07375 - .02)\ (1.07375)^{50}} \right]$$

$$= \$4{,}036{,}710$$

E. Interest rates determined by the Department of the Treasury in accord with provisions of the Water Supply Act of 1958 (Section 301(b)).

Note: These rates are limited in application to calculation of interest during construction and repayment of construction costs allocated to water supply purposes under Title III of Public Law 85-500, the Water Supply Act of 1958 (Section 301(b)).

Fiscal Year	Rate	Fiscal Year	Rate
1959	2.670%	1971	3.463%
1960	2.699	1972	3.502
1961	2.632	1973	3.649
1962	2.742	1974	4.012
1963	2.936	1975	4.371
1964	3.046	1976	5.116
1965	3.137	1977	5.683
1966	3.222	1978	6.063
1967	3.225	1979	6.595
1968	3.253	1980	7.250
1969	3.256	1981	8.605
1970	3.342	1982	9.352

F. Interest rates determined by the Department of the Treasury relating to hydropower purposes under Secretarial Order RA 6120.2 Paragraph 11(b) of the Secretary of Energy and Departmental Manual 730 DM 3 superseding Secretarial Order 2929 of the Secretary of the Interior.

Note: These rates are limited in application to calculation of interest during construction and repayment of

construction costs allocated to hydropower purposes. Thus, the principal to be repaid should include interest compounded over the period of construction.

Fiscal Year	Rate	Fiscal Year	Rate
1973	5.500%	1978	7.000%
1974	5.625	1979	7.500
1975	6.125	1980	8.000
1976	6.625	1981	8.500
1977	7.000	1982	9.000

II. Agricultural Price Standards

Purpose

The orderly development and use of water and related land resources requires that the Council and its Member Agencies utilize a consistent set of economic standards and criteria in formulation and evaluation of development plans. Agricultural price standards provide the price base for evaluating the agricultural effects of alternative plans for the development and management of water and related land resources.

Authority

The authority for these guidelines is set forth in the Water Resources Planning Act (P.L. 89-80) and by the Water Resources Council's Principles and Standards for Planning Water and Related Land Resources, as published in the Federal Register, September 10, 1973. These Principles and Standards state in part:

> "When prices are used in evaluation they should reflect the real exchange values expected to prevail over the period of analysis. For this purpose, relative price relationships and the general level of prices prevailing during the planning study will be assumed to hold generally for the future, except where specific studies and considerations indicate otherwise." (FR-24783)

> "The prices of goods and services used for evaluation should reflect the real exchange values expected to prevail over the period of analysis. For this purpose, relative price relationships and the general level of prices for outputs and inputs prevailing during or immediately preceding the period of planning generally will be used as representing the price relationships expected over the life of the plan. Exceptions to the general rule will occur when the output or input of the plan affects prices, abnormal weather or other factors have temporarily affected prices, or governmental or other institutional arrangements have temporarily affected prices. The Water Resources Council will publish periodically data on prices of agricultural and other goods and services that can be furnished efficiently for all planning activities. Included in the publications may be a special analysis of price problems and simulated prices for recreation and other project outputs or effects for which market prices are not readily available." (FR-24821)

Conceptual Basis for Normalized Agricultural Prices and Costs

The project evaluation process should yield valid estimates of the aggregate beneficial or adverse effect on "real income" of those affected by projects and programs under consideration. Such an estimation requires that the effects of alternative projects and programs are measured at a common general price level. A prime objective, therefore, is a set of relative price relationships representative of the period of analysis over which costs are incurred and benefits accrue. Since the Principles and Standards suggest that current price relationships should generally be used, it is important that current price relationships are not distorted by short-term abnormalities. Since the agricultural prices and costs are generally influenced by highly variable factors, such as weather, insect infestations, sudden demand changes and the like, it is desirable to correct for the effects of these factors by the use of a normalizing procedure such as the one described in the next section.

Computational Procedures

The estimates of current (1980) normalized prices shown in the following tables are weighted averages of actual season average prices over the five-year period 1976-80.

Three assumptions provide the basic conceptual foundation for calculating normalized prices to use in project evaluation: (1) The appropriate set of commodity and inputs prices are reflected in a weighted average of actual season average prices observed in the preceding five years, 1976-80; (2) weights used in calculating the five-year weighted average placed greater emphasis on more recent prices and less emphasis on earlier prices and (3) each individual year weight is equal to or greater than zero and less than one, and the sum of these weights equals one.

The weight coefficients used in these calculations were estimated by a polynomial distribution lag regression technique that incorporated the above features.1/ A unique set of weights was estimated for each commodity from a thirty-one year time series of prices for that commodity, 1950-80.

1/ The theoretical rationale for applying polynomial distributed lag procedure is presented in Robert D. Niehaus, "'Normalized Prices for Project Evaluation," Agricultural Economics Research, Vol. 28, No. 2, Economic Research Service, USDA, Washington, D.C., April 1976.

The estimated weights varied from commodity to commodity. Essentially, the weights gave more emphasis to the recent prices and reduced emphasis to earlier prices. The average weights by commodity groups are given in Table 1.

Normalized price procedure is directed toward correcting short-term fluctuations only. It is not designed to offset institutional price-setting arrangements, since these are not generally applicable to U.S. agricultural prices at the present time. Also, this procedure is not intended to assess the effects of a resource development plan on prices.

State prices--The State normalized prices were obtained by multiplying the national normalized prices by the average ratio of the State price to the national commodity price for the period 1977-80.

Use of Current Normalized Prices in Planning

Current normalized prices are to be used in all economic evaluations covered by the Principles and Standards, such as (1) evaluation of beneficial or adverse effects of alternative projects and programs under consideration, and (2) appraisals of economic impacts where such impacts are expressed in terms of value of production or income. The latter point may require price adjustment in the OBERS Projections[2/] in which agricultural output is valued at 1967 prices.

Special circumstances will require further price estimation, such as: (1) pricing of commodities not included in the price tables; (2) determination of price differentials within States; (3) determination of price differentials to reflect product quality differences from the average represented by published price data; and (4) adjustments to reflect the impacts of project or program actions on market prices. These and other special price problems should be approached in such a manner as to achieve consistency with the published estimation of current normalized prices.

Commodities not covered in price tables--In circumstances where price data for one or more specific commodities are needed, they may be developed by using a three-year average (mean) for each of the desired commodities. Normalized prices derived by this procedure should be based on data for the years 1978-80, to be consistent with normalized commodity prices presented in this guideline.

2/ U.S. Water Resources Council, OBERS Projections, U.S. Government Printing Office, Washington, D.C. 20402. Catalog No. Y.3W29; 20B2/972; Stock Nos. 5245-0013 through 0019, April 1974 and Supplement Agricultural Projections, Stock No. 052-045-0020-7, May 1975.

Table 1. Average Price Estimation Weights by Category

Category 1/	Weight for 1976	1977	1978	1979	1980
Grains	.032	.078	.160	.283	.446
Fruits	.085	.156	.213	.257	.288
Vegetables	.049	.111	.187	.276	.378
Oil-bearing Crops	.041	.120	.190	.275	.373
Other Crops	.043	.102	.180	.279	.397
Livestock Products	.032	.100	.184	.284	.400
Input Indexes	.015	.050	.141	.292	.503

1/ The categories are defined as:

Grains - wheat, rye, rice, corn, oats, barley, sorghum

Fruits - apples, oranges, grapefruit

Vegetables - dry beans, potatoes, sweet potatoes

Oil-bearing crops - cottonseed, soybeans, peanuts, flaxseed

Other crops - tobacco, cotton, sugar beets, sugarcane, hay

Livestock products - steers and heifers, feeder steers (8 market average), cows for slaughter, calves, sheep, lambs, hogs, milk, broilers, turkeys, eggs, wool

Input indexes - feed, feeder livestock, seed, fertilizer, agricultural chemicals, fuels and energy, farm and motor supplies, autos and trucks, tractors and self-propelled machinery, other machinery, building and fencing, wage rates

Forest product prices are not included in these tables. Information on current (non normalized) prices for forest products can be obtained from the latest issue of The Demand and Price Situation for Forest Products, Forest Service, U.S. Department of Agriculture. The user should be cautioned that in order to be consistent with the agricultural prices in this report, the stumpage prices should be adjusted to reflect value added from harvesting.

Price differentials within States--Current normalized prices for a specific area within a State may be derived by computing the average local area-to-State price ratio for the 1977-80 period and multiplying by the State normalized price.

Price differential to reflect product quality--Published data do not provide, in most instances, a basis for deriving price estimates for particular quality attributes of a given agricultural product. Procedures for estimating such price differentials will vary from one set of circumstances to another. Since a standard procedure cannot be specified, each analyst confronted by such a problem must develop his own procedures. The basis used for estimating such price differentials should be fully documented in review reports.

Price impacts--As specified in the Principles and Standards, whenever implementation of a plan is expected to influence price significantly, the use of a price about midway between those expected with and without implementation may be justified. Special consideration should be given to price adjustments where a program induced shift from a deficit to a surplus production area is expected, or vice versa.

Additional Information

Additional information on the statistical procedures employed in these price standards may be obtained from the Economic Research Service, U.S. Department of Agriculture, 500 12th Street, S.W., Washington, D.C. 20250.

DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON, D. C. 20250

OCT 20 1981

Honorable Gerald D. Seinwill
Acting Director
U.S. Water Resources Council
Suite 800
2120 L Street, N.W.
Washington, D.C. 20037

Dear Mr. Seinwill:

As requested, we are transmitting herewith an updated set of normalized prices for water resource planning.

In developing the updated standards, we followed the procedures used previously. These procedures were approved by the Water Resources Council in 1976.

Sincerely,

Enclosure

Current Normalized Prices

USDA-NRED
September, 1981

UNITED STATES: PRICES RECEIVED BY FARMERS FOR PRINCIPAL

COMMODITIES AND CURRENT NORMALIZED PRICES

08/20/81

COMMODITY	UNIT	U.S. SEASON AVERAGE PRICES 1976	1977	1978	1979	1980 1/	CURRENT NORMALIZED PRICE
		DOL.	DOL.	DOL.	DOL.	DOL.	DOL.
FOOD GRAINS							
WHEAT, ALL 2/	BU.	2.73	2.33	2.97	3.780	3.960	3.462
RYE 2/	BU.	2.47	2.05	1.99	2.060	2.620	2.272
RICE 2/	CWT.	7.02	9.49	8.16	10.500	12.000	10.075
FEED GRAINS AND HAY							
CORN FOR GRAIN 2/	BU.	2.15	2.02	2.25	2.520	3.270	2.677
OATS 2/	BU.	1.56	1.09	1.200	1.360	1.820	1.574
BARLEY 2/	BU.	2.25	1.78	1.920	2.290	2.910	2.611
SORGHUM GRAIN 2/	CWT.	3.63	3.25	3.590	4.180	5.390	4.336
HAY, ALL (BALED)	TON	60.20	53.70	49.800	59.800	70.900	62.236
DRY BEANS	CWT	15.50	20.20	17.30	22.800	26.300	22.63
SUGARBEETS 3/	TON	21.00	24.20	25.20	33.900	49.300	33.404
SUGARCANE FOR SUGAR 3/	TON	13.70	18.50	19.40	26.000	40.500	22.236
COTTON, LINT (UPLAND) 4/	LBS	0.638	0.521	0.581	0.631	0.761	0.680
TOBACCO	LB	1.122	1.185	1.325	1.405	1.512	1.436
OIL-BEARING CROPS							
COTTONSEED	TON	103.00	70.30	114.00	121.000	129.000	112.321
SOYBEANS FOR BEANS	BU.	6.81	5.88	6.660	6.280	7.610	6.803
PEANUTS HARVESTED FOR NUTS	LB.	0.200	0.210	0.211	0.206	0.240	0.219
FLAXSEED	BU.	7.08	4.54	5.740	5.970	7.270	6.259
FRUITS							
APPLES, COMMERCIAL CROP 5/	LB.	0.091	0.105	0.104	0.109	0.086	0.098
ORANGES, ALL 6/	BOX	2.80	3.34	5.450	6.15	4.760	4.593
GRAPEFRUIT, ALL 6/	BOX	2.21	2.35	2.54	3.44	4.100	3.136
VEGETABLES							
POTATOES	CWT.	3.59	3.55	3.38	3.43	5.730	3.886
SWEETPOTATOES	CWT.	7.50	10.50	10.60	8.92	12.000	10.646
		U.S. AVERAGE ANNUAL PRICES					
LIVESTOCK							
STEERS AND HEIFERS	CWT.	36.50	37.30	51.70	69.800	66.900	59.126
FEEDER STEERS-8 MKTS	CWT.	37.08	38.35	57.71	75.100	69.750	63.739
COWS FOR SLAUGHTER	CWT.	24.50	24.30	35.80	50.000	45.700	40.004
CALVES	CWT.	34.20	36.90	59.10	88.700	76.800	69.317
SHEEP	CWT.	13.20	13.40	21.70	26.300	21.100	21.248
LAMBS	CWT.	46.90	51.30	62.70	66.700	63.600	62.570
HOGS	CWT.	43.30	39.40	46.40	41.800	38.000	40.625
DAIRY PRODUCTS							
MILK 7/	CWT.	9.66	9.72	10.60	12.000	13.000	11.722
CREAM, (FAT) 7/	LB.	0.834	0.920	1.020	1.190	0.000	0.000
POULTRY AND EGGS							
BROILERS, COMMERCIAL	LB.	0.236	0.236	0.263	0.259	0.277	0.267
TURKEYS	LB.	0.317	0.355	0.436	0.411	0.413	0.413
EGGS	DOZ.	0.584	0.556	0.522	0.583	0.563	0.561
WOOL	LB.	0.657	0.720	0.745	0.863	0.881	0.804

1/ PRELIMINARY
2/ INCLUDES ALLOWANCE FOR LOANS OUTSTANDING AND PURCHASES BY THE GOVERNMENT VALUED AT THE AVERAGE LOAN AND PURCHASE RATE, BY STATES. DOES NOT INCLUDE PRICE SUPPORT PAYMENTS.
3/ DOES NOT INCLUDE PAYMENTS UNDER THE SUGAR ACT.
4/ PRICES BASED ON 480 POUND NET WEIGHT BALE.
5/ BOTH FRESH AND PROCESSED SALE PRICES (EQUIVALENT PACKINGHOUSE-DOOR RETURNS FOR WASHINGTON AND OREGON, EQUIVALENT FIRST DELIVERY POINT FOR CALIFORNIA AND "AS SOLD" FOR OTHER STATES).
6/ EQUIVALENT PACKINGHOUSE-DOOR RETURNS PER BOX FOR ALL USE
7/ SOLD TO PLANTS AND DEALERS. THE PRICE SERIES FOR CREA DISCONTINUED IN 1980.

UNITED STATES: INDEXES OF PRICES RECEIVED BY FARMERS, PRICES PAID BY FARMERS AND PRICES FOR CONSTRUCTION COST ITEMS AND CURRENT NORMALIZED INDEXES

08/20/81

ITEM		INDEX NUMBERS 1976	1977	1978	1979	1980 1/	CURRENT NORMALIZED INDEX
PRICES RECEIVED BY FARMERS							
ALL FARM PRODUCTS	1967=100	186	183	210	241	246	230
ALL CROPS	1967=100	197	192	203	223	240	223
LIVESTOCK AND LIVESTOCK PRODUCTS	1967=100	177	175	217	257	251	239
PRICES PAID BY FARMERS							
ALL COMMODITIES BOUGHT FOR USE IN PRODUCTION	1967=100	193	200	217	248	276	240
FEED	1967=100	191	186	183	204	230	210
LIVESTOCK	1967=100	154	158	221	293	281	257
SEED	1967=100	241	261	273	286	309	293
FERTILIZER	1967=100	185	181	180	196	243	210
AGRICULTURAL CHEMICALS	1967=100	174	157	147	150	160	156
FUELS AND ENERGY	1967=100	187	202	212	276	380	328
FARM AND MOTOR SUPPLIES	1967=100	164	165	171	189	221	206
AUTOS AND TRUCKS	1967=100	212	234	248	273	288	280
TRACTORS AND SELF-PROP. MACHINERY	1967=100	217	238	259	289	323	306
OTHER MACHINERY	1967=100	225	246	266	293	326	310
BUILDING AND FENCING MATERIALS	1967=100	215	229	248	272	293	270
WAGE RATES FOR HIRED FARM LABOR	1967=100	210	226	242	265	286	264
CONSTRUCTION COSTS							
COMPOSITE INDEX (U.S. DEPT. OF COMMERCE)	1967=100	196	213	240	273	304	273
ENR CONSTRUCTION COST	1967=100	223	240	258	280	301	280
WHOLESALE LUMBER PRICE (U.S. DEPT. OF LABOR)	1967=100	233	276	322	354	326	325

1/ PRELIMINARY

STATES: CURRENT NORMALIZED PRICES FOR PRINCIPAL COMMODITIES

08/20/81

STATE	COMMODITIES										
	WHEAT ALL 1/	RYE 1/	RICE 1/	CORN FOR GRAIN 1/	OATS 1/	BARLEY 1/	SORGHUM GRAIN 1/	HAY ALL BALED	DRY BEANS	SUGAR BEETS 2/	SUGAR CANE SUGAR 2/
	BUSHEL	BUSHEL	CWT.	BUSHEL	BUSHEL	BUSHEL	CWT.	TON	CWT.	TON	TON
MAINE	0.0	0.0	0.0	0.0	1.26	0.0	0.0	64.76	0.0	0.0	0.0
NEW HAMPSHIRE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	77.72	0.0	0.0	0.0
VERMONT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73.29	0.0	0.0	0.0
MASSACHUSETTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.04	0.0	0.0	0.0
RHODE ISLAND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81.98	0.0	0.0	0.0
CONNECTICUT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81.98	0.0	0.0	0.0
NEW YORK	3.44	2.68	0.0	2.94	1.84	2.06	0.0	67.68	23.59	0.0	0.0
NEW JERSEY	3.46	2.87	0.0	2.98	1.79	2.31	0.0	80.91	0.0	0.0	0.0
PENNSYLVANIA	3.78	2.56	0.0	3.11	1.86	2.65	0.0	73.50	0.0	0.0	0.0
DELAWARE	3.46	2.65	0.0	2.87	0.0	2.36	0.0	81.61	0.0	0.0	0.0
MARYLAND	3.47	2.65	0.0	2.87	1.85	2.36	0.0	80.65	23.81	0.0	0.0
MICHIGAN	3.48	2.09	0.0	2.60	1.65	3.42	0.0	55.41	19.16	29.45	0.0
WISCONSIN	3.19	2.17	0.0	2.56	1.44	2.28	0.0	47.14	0.0	0.0	0.0
MINNESOTA	3.49	2.34	0.0	2.38	1.39	2.41	0.0	49.08	19.25	28.67	0.0
OHIO	3.57	2.42	0.0	2.67	1.77	2.50	0.0	61.95	0.0	30.58	0.0
INDIANA	3.48	2.65	0.0	2.71	1.94	2.10	4.03	63.66	0.0	0.0	0.0
ILLINOIS	3.45	2.42	0.0	2.78	1.53	2.37	3.98	61.16	0.0	0.0	0.0
IOWA	3.09	2.65	0.0	2.58	1.51	0.0	3.97	51.76	0.0	0.0	0.0
MISSOURI	3.42	2.28	8.64	2.66	1.58	2.25	3.94	54.81	0.0	0.0	0.0
NORTH DAKOTA	3.45	2.06	0.0	2.40	1.33	2.37	0.0	44.76	21.01	29.95	0.0
SOUTH DAKOTA	3.44	2.09	0.0	2.28	1.40	2.41	3.42	37.75	0.0	0.0	0.0
NEBRASKA	3.28	2.09	0.0	2.58	1.41	2.17	4.03	41.33	22.85	37.06	0.0
KANSAS	3.33	2.09	0.0	2.73	1.69	2.29	4.11	51.93	23.11	29.36	0.0
VIRGINIA	3.51	3.75	0.0	2.97	1.83	2.44	4.06	75.85	0.0	0.0	0.0
WEST VIRGINIA	3.48	0.0	0.0	2.76	1.57	2.60	0.0	56.35	0.0	0.0	0.0
NORTH CAROLINA	3.34	2.96	0.0	3.00	1.70	2.34	4.47	74.94	0.0	0.0	0.0
KENTUCKY	3.44	2.65	0.0	2.93	2.41	2.20	4.04	56.01	0.0	0.0	0.0
TENNESSEE	3.45	2.51	0.0	2.93	2.16	2.58	4.53	56.02	0.0	0.0	0.0
SOUTH CAROLINA	3.43	2.85	0.0	2.83	1.57	2.32	4.40	65.31	0.0	0.0	0.0
GEORGIA	3.41	2.20	0.0	2.93	1.67	2.39	4.56	64.79	0.0	0.0	0.0
FLORIDA	3.41	0.0	0.0	2.65	1.73	0.0	0.0	68.04	0.0	0.0	23.53
ALABAMA	3.39	0.0	0.0	2.97	1.82	0.0	4.85	62.91	0.0	0.0	0.0
MISSISSIPPI	3.40	0.0	9.62	3.15	1.86	0.0	4.38	53.93	0.0	0.0	0.0
ARKANSAS	3.29	0.0	9.46	2.92	2.19	0.0	5.10	56.59	0.0	0.0	0.0
LOUISIANA	3.42	0.0	9.78	2.93	2.00	0.0	4.37	51.78	0.0	0.0	21.47
OKLAHOMA	3.52	2.68	0.0	2.96	1.93	2.42	4.45	62.96	0.0	0.0	0.0
TEXAS	3.46	2.70	11.09	3.02	1.70	2.48	4.76	59.80	0.0	32.39	15.50
MONTANA	3.37	0.0	0.0	2.85	1.60	2.41	0.0	58.19	23.68	39.90	0.0
IDAHO	3.51	0.0	0.0	2.86	1.98	2.52	0.0	52.47	22.87	35.96	0.0
WYOMING	3.22	2.09	0.0	2.74	1.66	3.10	0.0	56.75	24.05	39.43	0.0
COLORADO	3.24	2.17	0.0	2.63	1.50	3.04	3.96	60.71	24.51	36.45	0.0
NEW MEXICO	3.38	0.0	0.0	2.89	0.0	2.60	4.77	72.46	0.0	34.02	0.0
ARIZONA	3.59	0.0	0.0	3.19	0.0	3.14	5.66	78.02	0.0	33.41	0.0
UTAH	3.48	0.0	0.0	3.29	1.92	2.71	0.0	61.30	25.23	37.65	0.0
NEVADA	3.86	0.0	0.0	0.0	1.79	2.97	0.0	71.47	0.0	0.0	0.0
WASHINGTON	3.85	2.11	0.0	3.23	1.88	2.70	0.0	64.99	24.81	36.05	0.0
OREGON	3.84	2.23	0.0	3.31	1.69	2.71	0.0	64.92	0.0	33.11	0.0
CALIFORNIA	3.88	0.0	13.69	3.40	2.10	3.16	5.57	77.44	30.42	35.32	0.0
ALASKA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAWAII	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1/ INCLUDES ALLOWANCE FOR LOANS OUTSTANDING AND PURCHASES BY THE GOVERNMENT VALUED AT AVERAGE LOAN AND PURCHASE RATE. DOES NOT INCLUDE PRICE SUPPORT PAYMENTS.
2/ DOES NOT INCLUDE PAYMENTS UNDER THE SUGAR ACT.

-CONTINUED

STATES: CURRENT NORMALIZED PRICES FOR PRINCIPAL COMMODITIES-CONTINUED

STATE	COMMODITIES										
	COTTON, LINT UPLAND 3/	TOBACCO	COTTON SEED	SOYBEANS FOR BEANS	PEANUTS HARVESTED FOR NUTS	FLAXSEED	APPLES COMMERCIAL 4/	ORANGES ALL	GRAPEFRUIT ALL 5/	POTATOES	SWEET-POTATOES
	POUND	POUND	TON	BUSHEL	POUND	BUSHEL	POUND	BOX	BOX	CWT.	CWT.
MAINE	0.0	0.0	0.0	0.0	0.0	0.0	0.120	0.0	0.0	4.30	0.0
NEW HAMPSHIRE	0.0	0.0	0.0	0.0	0.0	0.0	0.132	0.0	0.0	4.51	0.0
VERMONT	0.0	0.0	0.0	0.0	0.0	0.0	0.129	0.0	0.0	7.81	0.0
MASSACHUSETTS	0.0	6.081	0.0	0.0	0.0	0.0	0.134	0.0	0.0	6.49	0.0
RHODE ISLAND	0.0	0.0	0.0	0.0	0.0	0.0	0.132	0.0	0.0	4.76	0.0
CONNECTICUT	0.0	4.894	0.0	0.0	0.0	0.0	0.128	0.0	0.0	5.19	0.0
NEW YORK	0.0	0.0	0.0	6.28	0.0	0.0	0.094	0.0	0.0	4.73	0.0
NEW JERSEY	0.0	0.0	0.0	6.86	0.0	0.0	0.106	0.0	0.0	4.36	15.89
PENNSYLVANIA	0.0	0.727	0.0	6.51	0.0	0.0	0.091	0.0	0.0	5.28	0.0
DELAWARE	0.0	0.0	0.0	6.68	0.0	0.0	0.097	0.0	0.0	6.50	0.0
MARYLAND	0.0	1.333	0.0	6.72	0.0	0.0	0.106	0.0	0.0	6.00	9.81
MICHIGAN	0.0	0.0	0.0	6.65	0.0	0.0	0.083	0.0	0.0	4.64	0.0
WISCONSIN	0.0	1.061	0.0	6.32	0.0	0.0	0.117	0.0	0.0	4.48	0.0
MINNESOTA	0.0	0.0	0.0	6.51	0.0	6.15	0.143	0.0	0.0	3.07	0.0
OHIO	0.0	1.349	0.0	6.80	0.0	0.0	0.141	0.0	0.0	4.07	0.0
INDIANA	0.0	1.434	0.0	6.74	0.0	0.0	0.120	0.0	0.0	6.69	0.0
ILLINOIS	0.0	0.0	0.0	6.93	0.0	0.0	0.107	0.0	0.0	3.31	0.0
IOWA	0.0	0.0	0.0	6.75	0.0	0.0	0.118	0.0	0.0	4.43	0.0
MISSOURI	0.688	1.394	104.74	6.74	0.0	0.0	0.139	0.0	0.0	0.0	0.0
NORTH DAKOTA	0.0	0.0	0.0	6.21	0.0	6.26	0.0	0.0	0.0	3.02	0.0
SOUTH DAKOTA	0.0	0.0	0.0	6.09	0.0	6.29	0.0	0.0	0.0	3.33	0.0
NEBRASKA	0.0	0.0	0.0	6.49	0.0	0.0	0.0	0.0	0.0	4.31	0.0
KANSAS	0.0	0.0	0.0	6.52	0.0	0.0	0.094	0.0	0.0	0.0	0.0
VIRGINIA	0.671	1.405	109.28	7.02	0.220	0.0	0.086	0.0	0.0	4.81	9.82
WEST VIRGINIA	0.0	1.370	0.0	0.0	0.0	0.0	0.093	0.0	0.0	6.09	0.0
NORTH CAROLINA	0.707	1.427	109.77	6.95	0.219	0.0	0.001	0.0	0.0	6.48	8.46
KENTUCKY	0.635	1.446	117.07	7.05	0.0	0.0	0.111	0.0	0.0	0.0	0.0
TENNESSEE	0.675	1.439	115.74	6.95	0.0	0.0	0.124	0.0	0.0	8.33	11.45
SOUTH CAROLINA	0.713	1.291	107.50	6.90	0.217	0.0	0.121	0.0	0.0	0.0	13.92
GEORGIA	0.684	1.467	97.88	6.83	0.218	0.0	0.103	0.0	0.0	0.0	15.00
FLORIDA	0.674	1.520	110.13	7.10	0.219	0.0	0.0	4.48	3.35	6.58	0.0
ALABAMA	0.674	1.370	105.53	6.75	0.226	0.0	0.0	0.0	0.0	9.37	15.07
MISSISSIPPI	0.600	0.0	121.47	7.05	0.223	0.0	0.0	0.0	0.0	6.92	10.90
ARKANSAS	0.694	0.0	119.03	7.09	0.0	0.0	0.107	0.0	0.0	0.0	11.53
LOUISIANA	0.685	1.857	117.00	6.86	0.0	0.0	0.0	0.0	0.0	6.34	7.29
OKLAHOMA	0.647	0.0	106.97	6.26	0.218	0.0	0.0	0.0	0.0	0.0	0.0
TEXAS	0.635	0.0	105.93	6.35	0.213	6.66	0.0	3.19	2.30	7.70	16.86
MONTANA	0.0	0.0	0.0	0.0	0.0	5.80	0.0	0.0	0.0	4.70	0.0
IDAHO	0.0	0.0	0.0	0.0	0.0	0.0	0.140	0.0	0.0	3.69	0.0
WYOMING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.87	0.0
COLORADO	0.0	0.0	0.0	0.0	0.0	0.0	0.092	0.0	0.0	3.13	0.0
NEW MEXICO	0.715	0.0	110.70	0.0	0.242	0.0	0.102	0.0	0.0	4.20	0.0
ARIZONA	0.722	0.0	110.65	0.0	0.0	0.0	0.0	4.70	2.33	6.43	0.0
UTAH	0.0	0.0	0.0	0.0	0.0	0.0	0.101	0.0	0.0	4.05	0.0
NEVADA	0.751	0.0	110.70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WASHINGTON	0.0	0.0	0.0	0.0	0.0	0.0	0.104	0.0	0.0	2.93	0.0
OREGON	0.0	0.0	0.0	0.0	0.0	0.0	0.091	0.0	0.0	3.10	0.0
CALIFORNIA	0.735	0.0	110.16	0.0	0.0	0.0	0.092	5.24	3.03	6.31	15.40
ALASKA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAWAII	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

3/ PRICES BASED ON A 480 POUND NET WEIGHT BALE.
4/ BOTH FRESH AND PROCESSED SALE PRICES (EQUIVALENT PACKINGHOUSE-DOOR RETURNS FOR WASHINGTON AND OREGON, EQUIVALENT FIRST DELIVERY POINT FOR CALIFORNIA AND "AS SOLD" FOR OTHER STATES).
5/ EQUIVALENT PACKINGHOUSE-DOOR RETURNS PER BOX FOR ALL USES.

-CONTINUED

STATES: CURRENT NORMALIZED PRICES FOR PRINCIPAL COMMODITIES-CONTINUED

STATE	COMMODITIES										
	STEERS AND HEIFERS	CALVES	SHEEP	LAMBS	HOGS	MILK 6/	CREAM (FAT) 6/	COMMER-CIAL BROILERS	TURKEYS	EGGS	WOOL
	CWT.	CWT.	CWT.	CWT.	CWT.	CWT.	POUND	POUND	POUND	DOZ	POUND
MAINE	49.14	61.53	33.14	79.18	40.05	12.85	0.0	0.258	0.619	0.665	0.790
NEW HAMPSHIRE	47.18	62.64	34.86	82.33	40.05	12.67	0.0	0.0	0.668	0.694	0.819
VERMONT	48.03	63.58	34.33	79.18	40.05	12.34	0.0	0.0	0.644	0.791	0.813
MASSACHUSETTS	49.28	64.02	38.23	83.79	40.05	12.75	0.0	0.0	0.638	0.709	0.817
RHODE ISLAND	50.16	65.34	44.40	85.38	40.05	12.75	0.0	0.0	0.659	0.703	0.837
CONNECTICUT	51.10	65.65	37.11	83.79	40.05	12.67	0.0	0.258	0.668	0.736	0.793
NEW YORK	51.28	69.34	38.10	61.98	40.10	11.66	0.0	0.285	0.439	0.520	0.813
NEW JERSEY	55.70	70.15	28.72	53.21	39.30	12.26	0.0	0.285	0.601	0.609	0.789
PENNSYLVANIA	58.15	79.23	21.91	66.19	40.82	12.41	0.0	0.282	0.460	0.536	0.805
DELAWARE	55.04	69.67	19.50	59.03	40.80	12.45	0.0	0.264	0.439	0.707	0.782
MARYLAND	55.12	68.79	17.13	57.29	40.57	12.45	0.0	0.264	0.437	0.706	0.792
MICHIGAN	57.84	70.91	21.46	62.46	41.65	11.66	0.0	0.293	0.438	0.493	0.717
WISCONSIN	55.31	77.52	15.86	58.50	40.12	11.31	0.0	0.279	0.428	0.508	0.718
MINNESOTA	56.71	68.36	21.00	63.63	40.62	10.86	0.0	0.307	0.397	0.456	0.707
OHIO	57.58	72.13	21.73	60.90	41.38	11.82	0.0	0.260	0.440	0.493	0.714
INDIANA	57.51	66.21	17.58	55.91	41.01	11.95	0.0	0.266	0.393	0.557	0.672
ILLINOIS	57.94	66.17	18.87	56.58	40.60	11.51	0.0	0.0	0.442	0.563	0.724
IOWA	58.76	67.77	16.17	61.62	40.75	11.14	0.0	0.398	0.403	0.422	0.731
MISSOURI	58.85	67.40	17.82	60.80	40.49	11.31	0.0	0.265	0.405	0.507	0.734
NORTH DAKOTA	60.91	71.60	17.98	61.94	39.48	10.56	0.0	0.0	0.422	0.368	0.781
SOUTH DAKOTA	60.26	74.90	18.72	64.34	40.83	10.85	0.0	0.0	0.398	0.382	0.806
NEBRASKA	59.78	71.97	18.44	63.02	40.80	11.37	0.0	0.439	0.431	0.414	0.738
KANSAS	59.82	72.05	18.97	60.64	40.98	11.71	0.0	0.396	0.405	0.455	0.740
VIRGINIA	53.45	69.24	19.29	58.82	40.29	12.20	0.0	0.254	0.404	0.662	0.861
WEST VIRGINIA	51.81	64.93	19.15	57.65	38.96	11.88	0.0	0.298	0.390	0.653	0.859
NORTH CAROLINA	52.43	64.66	21.14	46.64	40.71	12.72	0.0	0.262	0.420	0.656	0.783
KENTUCKY	57.07	66.66	14.06	55.11	40.31	11.40	0.0	0.253	0.407	0.517	0.704
TENNESSEE	57.92	68.02	15.12	50.16	40.45	11.80	0.0	0.253	0.400	0.573	0.783
SOUTH CAROLINA	55.04	64.06	22.20	53.67	39.74	13.27	0.0	0.253	0.392	0.572	0.715
GEORGIA	54.37	64.20	22.20	56.11	38.38	12.62	0.0	0.267	0.397	0.642	0.737
FLORIDA	57.21	68.43	20.61	48.79	38.97	14.34	0.0	0.254	0.0	0.464	0.670
ALABAMA	54.23	62.37	22.30	56.11	40.36	12.99	0.0	0.252	0.401	0.639	0.726
MISSISSIPPI	57.33	69.26	22.20	56.11	40.95	12.29	0.0	0.276	0.0	0.661	0.737
ARKANSAS	58.44	67.96	18.55	63.30	41.15	12.14	0.0	0.264	0.407	0.581	0.703
LOUISIANA	58.32	68.63	23.08	60.61	39.06	12.84	0.0	0.271	0.401	0.671	0.650
OKLAHOMA	61.68	70.27	15.20	59.81	40.34	12.18	0.0	0.266	0.411	0.623	0.712
TEXAS	58.83	68.20	25.41	65.32	38.65	12.84	0.0	0.285	0.408	0.638	0.905
MONTANA	62.30	76.77	18.59	64.26	38.70	11.82	0.0	0.0	0.0	0.586	0.862
IDAHO	58.87	69.59	17.64	58.17	38.79	11.27	0.0	0.0	0.0	0.515	0.751
WYOMING	63.69	79.16	24.51	65.61	38.95	11.64	0.0	0.0	0.0	0.549	0.817
COLORADO	59.74	74.67	20.42	63.62	40.52	12.48	0.0	0.0	0.442	0.533	0.790
NEW MEXICO	61.50	69.54	21.24	66.66	40.57	12.81	0.0	0.0	0.0	0.598	0.813
ARIZONA	59.80	70.33	17.09	62.43	43.37	12.22	0.0	0.0	0.0	0.467	0.646
UTAH	58.27	69.57	16.00	60.07	39.49	11.36	0.0	0.0	0.456	0.464	0.763
NEVADA	58.46	69.50	17.15	58.01	41.77	11.50	0.0	0.0	0.0	0.500	0.744
WASHINGTON	58.32	65.21	12.54	59.54	41.42	11 68	0.0	0.317	0.430	0.501	0.756
OREGON	56.51	62.42	16.24	60.28	40.41	11.90	0.0	0.322	0.427	0.538	0.809
CALIFORNIA	59.61	60.94	16.82	61.45	43.00	11.40	0.0	0.298	0.412	0.498	0.791
ALASKA	67.65	48.56	33.73	61.23	65.72	19.23	0.0	0.0	0.0	1.029	0.917
HAWAII	49.14	57.08	0.0	0.0	60.44	17.75	0.0	0.443	0.0	0.715	0.0

6/ SOLD TO PLANTS AND DEALERS. THE PRICE SERIES FOR CREAM WAS DISCONTINUED IN 1980.

III. NONSTRUCTURAL MEASURES IN WATER RESOURCES PLANNING

During the past 15 years Federal water policy has continued to emphasize consideration of nonstructural tools in the formulation of Federal water resources planning. The Task Force on Federal Flood Control Policy 1/ noted in 1966 that, "There is inadequate recognition of the nature of the flood threat and the limitations of engineering works." Their report provided guidance for dealing with flood losses using a variety of means to complement or substitute for traditional flood control tools. Congress established the policy that "consideration shall be given to nonstructural alternatives in any Federal surveys, plans, or designs for flood protection" in Section 73 of the 1974 Water Resource Development Act (P. L. 93-251). The Water Resources Council's 1980 Principles and Standards expand the consideration of nonstructural alternatives to include other benefit categories in addition to flood loss reduction and require that at least one primarily nonstructural plan be formulated whenever structural project or program alternatives are considered.

Thus, the goal of water resource planning is to formulate the mix or package of structural and nonstructural tools that makes the most satisfactory contribution to achieving stated objectives.

Definition of the terms structural and nonstructural has not been resolved to the satisfaction of all planners and should not be permitted to become an energy sink or impediment in the planning process. For clarification the following general definitions are utilized. Traditional structural

1/Task Force on Federal Flood Control Policy. A Unified Program for Managing Flood Losses House Document No. 465. 89th Congress 2nd Session, Washington, DC 1966.

measures are those tools which modify the amount, quality, location, or timing of the water resource itself through construction projects such as reservoirs, harbors, or channels. Nonstructural measures are those tools which modify the use of a water resource such as a modification in public policy, an alteration in management practice, a regulatory change, or a modification in pricing policy that provides a complete or partial non-traditional alternative to traditional structural measures for addressing water resources problems and opportunities.

Neither structural nor nonstructural tools are inherently good or bad; their value depends upon the specifics of a given water resource problem and site. The emphasis on nonstructural tools is intended to obtain balanced consideration of all alternative tools in the formulation of water resource plans.

Consultants have prepared five reports designed to assist planners to broadening the scope of alternative plans for several purposes and benefit categories. The purpose of these documents is to provide field level water resource planners with guidance in identifying and formulating nonstructural options. The reports are available from the National Technical Information Service (NTIS) Springfield, VA 22151.

Hydroelectric Power - W.R.Z. Willey "Nonstructural Alternatives to Hydroelectric Power"

Recreation - Patrick T. Miller (EDAW Inc.) and Edward L. Perkins "Recreational Aspects of Primarily Nonstructural Plans"

Flood Loss Reduction - Sheaffer & Roland Inc. "A Conceptual Framework for Formulating Nonstructural Alternatives"

Navigation - Robert C. Waters "Nonstructural Alternatives for Inland and Deep Water Navigation Planning"

Municipal and Industrial Water - IEP Inc. "Nonstructural Alternatives in Municipal/Industrial Water Management"

IV. Floodplain Management Guidelines for Urban Flood Damage

The Without Project Condition Section (18 CFR 713.505(b)) of the Urban Flood Damage chapter of the NED Procedures lists several assumptions inherent in the definition of the without-project condition. Two of these assumptions refer to the adoption, enforcement, or certification of laws, ordinances, regulations, guidelines, or executive orders. Planners may wish to refer directly to these when formulating and evaluating management and development plans which have urban flood hazard reduction features.

Individual copies of the following documents are available free from:

Paula Lyons
Publications
Federal Emergency Management Agency
500 C Street, S.W. - Room 504
Washington, D.C. 20472
Phone: (202) 287-0192

1. Flood Disaster Protection Act of 1973 (P.L. 93-234) as amended.

2. 24 CFR 1910.3 and 1910.5 appeared in the Federal Register Part II on Tuesday, October 26, 1976. They have been recodified as 44 CFR 60 because the National Flood Insurance Program has been reassigned to FEMA from HUD.

3. Floodplain Management Guidelines have been developed by the Water Resources Council to interpret Executive Order 11988 Floodplain Management (43 FR 6030), May 24, 1977. These guidelines may also be used for Executive Order 11990 Protection of Wetlands where the wetlands in question are in a floodplain.

4. A Unified National Program for Floodplain Management transmitted by the President to Congress in January, 1980, offers a conceptual framework and description of terminology and tools for floodplain management.

V. Wetlands Evaluation Methodologies

The Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi, prepared a technical report for the Water Resources Council which summarizes and analyzes 20 wetland evaluation methodologies in use or under development. It also recommends programs to improve evaluation methodologies, particularly with respect to hydrologic values.

Copies of the report, Analysis of Methodologies Used for the Assessment of Wetlands Values, will be available in early 1982 from:

U.S. Government Printing Office
Order and Inquiry Desk
Phone: (202) 783-3238

The basic evaluation framework of the wetlands evaluation methodologies summarized in the report is an assessment of technical and administrative characteristics for measuring values commonly attributed to wetlands (habitat, hydrologic, recreation, agriculture, and heritage). The technical characteristics are categorized as: data needs, key indicators of value, technical basis of evaluation, ability to reproduce results, ability to quantify values, sensitivity of the procedures to wetlands types and values, assessment of the vulnerability of wetlands and field testing. Administrative characteristics are categorized as: purpose of the methodology, field implementation needs, adaptability, assumptions, and constraints.

The tables on the following pages note the methodologies reviewed and summarize functional values measured by each methodology and the applicability

of each. Listed below are the citations for the methodologies included in the report.

Wetland Evaluation Methodology Citations

1. Brown, A., et al. 1974. "Rare and Endangered Species, Unique Ecosystems and Wetlands," Department of Zoology and Department of Botany and Bacteriology, University of Arkansas, Fayetteville, Ark.

2. Dee, N., et al. 1973. "Environmental Evaluation System for Water Resources Planning," Water Resources Research, Vol 9, No. 3, pp 523-534.

3. Fried, E. 1974. "Priority Rating of Wetlands for Acquisition," Transactions of the Northeast Fish and Wildlife Conference, Vol 31, pp 15-30.

4. Galloway, G. E. 1978. "Assessing Man's Impact on Wetlands," Sea Grant Publication No. UNC-SG-78-17 or UNC-WRRI-78-136, University of North Carolina, Raleigh, N.C.

5. Golet, F. C. 1973. "Classification and Evaluation of Freshwater Wetlands as Wildlife Habitat in the Glaciated Northeast," Transactions of the Northeast Fish and Wildlife Conference, Vol 30, pp 257-279.

6. Gupta, T. R., and Foster, J. H. 1973. "Valuation of Visual-Cultural Benefits from Freshwater Wetlands in Massachusetts," Journal of the Northeastern Agricultural Council, Vol 2, No. 2, pp 262-273.

7. Kibby, H. V. 1978. "Effects of Wetlands on Water Quality," Proceedings of the Symposium on Strategies for Protection and Management of Floodplain Wetlands and Other Riparian Ecosystems, General Technical Report No. CTR-WO-12, U. S. Department of Agriculture, Forest Service, Washington, D. C.

8. Larson, J. S. (ed.) 1976. "Models for Assessment of Freshwater Wetlands," Pub. No. 32, Water Resources Center, University of Massachusetts, Amherst, Mass.

9. Reppert, R. T., et al. 1979. "Wetlands Values: Concepts and Methods for Wetlands Evaluation," IWR Research Report 79-R-1, U. S. Army Engineer Institute for Water Resources, Fort Belvoir, Va.

10. Schuldiner, P. W., Cope, D. F., and Newton, R. B. 1979a. "Ecological Effects of Highway Fills on Wetlands Research Report," National Cooperative Highway Research Program Report No. 218A, Transportation Research Board, National Research Council, Washington, D. C.

Schuldiner, P.W., Cope, D. F., and Newton, R. B. 1979b. "Ecological Effects of Highway Fills on Wetlands Users Manual," National Cooperative Highway Research Program Report No. 218B, Transportation Research Board, National Research Council, Washington, D. C.

11. Stearns, Conrad, and Schmidt - Consulting Engineers. 1979. "Analysis of Selected Functional Characteristics of Wetlands," Contract No. DACW 73-78-R-007, Reston, Va.

12. Smardon, R. C. 1972. Assessing Visual-Cultural Values on Inland Wetlands in Massachusetts, Master of Science Thesis, University of Massachusetts, Amherst, Mass.

13. Solomon, R. C., et al. 1977. "Water Resources Assessment Methodology (WRAM)--Impact Assessment and Alternative Evaluation," Technical Report Y-77-1, Environmental Effects Laboratory, U. S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss.

14. State of Maryland Department of Natural Resources (Undated). "Environmental Evaluation of Coastal Wetlands (Draft)," Tidal Wetlands Study, pp 181-208.

15. U. S. Army Engineer Division, Lower Mississippi Valley. 1980. "A Habitat Evaluation System (HES) for Water Resources Planning," Vicksburg, Miss.

16. U. S. Army Engineer Division, New England. 1972. "Charles River; Main Report and Attachments," Waltham, Mass.

17. U. S. Department of Agriculture. 1978. "Wetlands Evaluation Criteria--Water and Related Land Resources of the Coastal Region, Massachusetts," Soil Conservation Service, Amherst, Mass.

18. U. S. Fish and Wildlife Service. 1980. "Habitat Evaluation Procedures (HEP) Manual," 102 ESM, Washington, D. C.

19. Virginia Institute of Marine Science. Undated. "Evaluation of Virginia Wetlands" (Mimeographed).

20. Winchester, B. H., and Harris, L. D. 1979. "An Approach to Valuation of Florida Freshwater Wetlands," Proceedings of the Sixth Annual Conference on the Restoration and Creation of Wetlands, Tampa, Fla.

Summary of Critical Elements to be Measured for an Assessment of Functional Values for 20 Wetland Evaluation Procedures

Methodology Number	Citation	Habitat*	Hydrology**	Recreation†	Agriculture/Silviculture††	Heritage
1	Brown, A., et al. 1974	Classification of prime and nonprime wetlands, life forms and sublife forms, classification according to use by man, wetland habitat classes and subclasses, size classes, wetland site types, surrounding habitat types, wetland cover types, wetland interspersion, wetland juxtaposition	NA	NA	NA	NA
2	Dee, N., et al. 1973	Interdisciplinary team must decide critical elements to be measured	Interdisciplinary team must decide critical elements to be measured	NA	Interdisciplinary team must decide critical elements to be measured	Interdisciplinary team must decide critical elements to be measured
3	Fried, E. 1974	(1) Biological productivity: total alkalinity, area with 6"-24" water depth, adjacent soil fertility, Soil Conservation Service Wildlife Suitability rating, vegetative interspersion, number of vegetative classes, plant species, fish and wildlife species, (2) vulnerability rating, and (3) additional factors	NA	NA	NA	NA
4	Galloway, G. E. 1978	Interdisciplinary team must decide critical elements to be measured	Interdisciplinary team must decide critical elements to be measured	NA	NA	Interdisciplinary team must decide critical elements to be measured

(Continued)

Note: NA. Not addressed.

* Habitat. Habitat functions include the related categories of common wetland plant and animal species, endangered, threatened, or rare plant and animal species, game species, commercial species, and nongame species.

** Hydrology. Hydrology functions include floodwater storage, shoreline protection, ground and surface water recharge and discharge, and water quality.

† Recreation. Recreation functions include water-required activities such as boating, sport fishing, photography, nature study, camping, etc.

†† Agriculture/Silviculture. These functions include harvestable products of wetlands such as cultivated crops, pastureland and hay crops, lumber, peat, etc.

Heritage. Heritage functions include scenic, cultural, scientific, visual, and aesthetic values of wetlands.

(Sheet 1 of 7)

Methodology Number	Citation	Habitat	Hydrology	Recreation	Agriculture/Silviculture	Heritage
5	Golet, F. C. 1973	Wetland class richness, dominant wetland class, size category, subclass richness, site type, surrounding habitat type, cover types, vegetative interspersion, wetland juxtaposition, water chemistry	NA	NA	NA	NA
6	Gupta, T. R., and Foster, J. H. 1973	NA	NA	NA	NA	Scenic values: land form contrast, land form diversity, land use contrast, wetland type diversity, wetland size, water body size
7	Kibby, H. V. 1978	NA	Water quality: frequency of hydrologic periodicity, estimation of net primary productivity	NA	NA	NA
8	Larson, J. S., ed. 1976	Wetland class richness, dominant wetland class, size category, subclass richness, site type, cover types, vegetative interspersion, wetland juxtaposition	Presence of a useful water supply: base flow, test borings, surficial geology, ground water potentiometric map, drilling, and pumping sites	NA	NA	Land form contrast, land form diversity, wetland-edge complexity, associated water body size, diversity of associated water bodies surrounding land use contrast, surrounding land use diversity, wetland type diversity, internal wetland contrast, wetland size
9	Reppert, R. T., et al 1979	Productivity and food chain relations: net primary productivity, mode of detrital transport, food chain support, determination of key game, commerical, aesthetic species	Hydrologic periodicity, shoreline protection (vegetation, width, fetch, cultural development), flood water storage (vegetative cover), natural groundwater storage (soil depth, porosity, transmissivity, etc), water quality improvement (type of wetland, areal and waste loading relationships), geographical and locational factors	Investigator's professional judgment	Investigator's professional judgment	Investigator's professional judgment

(Continued)

Methodology Number	Citation	Habitat	Hydrology	Recreation	Agriculture/Silviculture	Heritage
10	Schuldiner, P. W., et al. 1979	Potential biological impacts on wetlands: change in wetland size, change in species composition, change in class composition, change in primary productivity and secondary productivity, sudden mortality of aquatic species, barrier to animal movements, encouragement of beaver activity, rare and endangered species	Potential impacts on physical properties: (1) Impacts associated with surface flows (change in mean water level, change in periodicity, change in wetland circulatory patterns), (2) Impacts associated with subsurface flows (alteration of local water table levels), (3) Impacts associated with creation of channels (drainage of surface waters, periodic flooding, and fertilization change in retention storage), (4) Impacts associated with tidal flows (damping of tidal variations, alteration of salinity patterns), (5) Impacts associated with water quality (turbidity, sedimentation, chemical pollution, temperature patterns)	NA	NA	NA

(Continued)

(Sheet 3 of 7)

Methodology Number	Citation	Habitat	Hydrology	Recreation	Agriculture/Silviculture	Heritage
11	Stearns, Conrad, and Schmidt - Consulting Engineers. 1979	NA	(1) Water quality improvement (vegetation types, wetland size, water residence time and velocity, hydraulic loading, wetland location), (2) Groundwater recharge (soils, wetland size, evapotranspiration rate, vegetation, wet/dry cycles, presence of a multi-aquifer system, water quality, retention time), (3) Storm and flood water storage (area soils and water table, vegetation, roughness, topography), (4) Shoreline protection (extent and type of vegetation, soils, frequency of inundation, location and elevation of wetland, fetch, bottom roughness, cultural developement)	NA	NA	NA
12	Smardon, R. C. 1972	NA	NA	Recreational carrying capacity, recreational diversity	NA	Visual-cultural values: land form contrast, land form diversity, wetland edge complexity, associated water body size, diversity of associated water bodies, surrounding land use contrast and diversity, wetland type diversity, internal wetland contrast, wetland size, multiple cultural attributes
13	Solomon, R. C., et al 1977	Interdisciplinary team must decide critical elements to be measured	Interdisciplinary team must decide critical elements to be measured	Interdisciplinary team must decide critical elements to be measured	NA	Interdisciplinary team must decide critical elements to be measured

(Continued)

(Sheet 4 of 7)

Methodology Number	Citation	Habitat	Hydrology	Recreation	Agriculture/Silviculture	Heritage
14	State of Maryland, Dept of Natural Resources. Undated	Net primary production, wildlife food value, vegetation/water interspersion variable, vegetation form vegetation interspersion	NA	NA	NA	NA
15	U. S. Army Engineer Division, Lower Miss. Valley (HES). 1980	A. Aquatic ecosystem evaluation 1. Streams: sinuosity, fish species associations, turbidity, total dissolved solids, chemical type, benthic diversity. 2. Lakes/lentic habitats: mean depth, turbidity, total dissolved solids, chemical type, shoreline development, spring flooding, fish standing crop B. Terrestrial ecosystem evaluation 1. Wooded swamps - bottomland hardwoods: species association, percent overstory, percent area inundated, ground cover - understory coverage, mast proximity, tract size, number of trees more than 16 in. DBH, number of snags. 2. Terrestrial wildlife value of aquatic habitats: cover by aquatic plants distance to disturbance, water depth in August, distance to river, brush cover, flooding frequency, winter overflow, distance from woods, size of water body, and shallow water. Also evaluates seasonally overflowed bottomland hardwoods	NA	NA	NA	NA

(Continued)

(Sheet 5 of 7)

Methodology Number	Citation	Habitat	Hydrology	Recreation	Agriculture/Silviculture	Heritage
16	U. S. Army Engineer Division, New England. 1972	Interdisciplinary team must decide critical elements to be measured; detailed analysis of wildlife in the watershed project area	Flood water storage: basic hydrologic analyses for determining storage contained in lakes and wetlands of watershed. Flow duration frequency, storage yield, dependability, peak discharge frequencies, past flood analysis	Estimated annual user days for various activities, inventory of recreation site supply, and analysis of activities and demands in the watershed	Interdisciplinary team must decide critical elements to be measured; detailed analysis required for present and projected activities in watershed	Interdisciplinary team must decide critical elements to be measured; detailed analysis required
17	U. S. Department of Agriculture. 1978	Fish habitat: principle wetland type, size, location of wetland, presence of fish cover, presence of game fish. Wetland wildlife habitat: principle wetland type, number of wetland types, diversity of adjacent land use, percent of perimeter with 300' wide buffer strip, size, islands	Flood control: (estimations) effective storage of wetland on total watershed above, effective storage of upstream reservoirs and wetlands on total watershed, effective storage on main stem between wetland and potential damage area or major confluence, distance downstream to potential damage area, severity of potential flood damage	Boating: principal wetland type used for boating, acreage, physical access, boatable stream present. Fishing: principal wetland type, wetland size, physical access. Nature study: diversity of plants and animals, percent of urban development within 300 ft of wetland perimeter. Hunting: waterfowl hunting, access for hunting	Forest management, percent public ownership of forest in wetland, stand size, portion of forest land with 81-100 percent crown closure, portion of wetland forested, predominant forest cover type, shape of forested wetland, type of soil, accessibility	Uniqueness: location, endangered species habitat, regionally rare plant community, migratory birds, size, archaeological, geological, or historical significance. Visual quality: number of public roads, overlooks accessible by path, deciduous woodland type, topography, islands, appearance and condition, wetland types
18	U. S. Fish and Wildlife (HEP). 1980	1. Determine applicability of HEP. 2. Define study limits. 3. Determine baseline habitat units. a. Definition of study area. b. Delineation of cover types. c. Selection of evaluation species. 4. Compare baseline areas. 5. Determination of future habitat units. 6. Comparison of proposed actions	NA	NA	NA	NA

(Continued)

Methodology Number	Citation	Habitat	Hydrology	Recreation	Agriculture/Silviculture	Heritage
19	Virginia Institute of Marine Science. Undated	Vegetative production, wildlife food value, diversity of plant species, percent of marsh flooded daily, relative length of marsh-water interface	NA	NA	NA	NA
20	Winchester, B. H. and Harris, L. D. 1979	Determination of wetland size, wetland contiguity, vegetative structural diversity, and the type and amount of edge relative to wetland size	Determination of wetland size, wetland configuration, wetland contiguity, edge area relationships	NA	NA	NA

(Sheet 7 of 7)

Summary of the Applicability Features to Various Types of Administrative Needs of 20 Wetland Evaluation Procedures

Methodology Number	Citation	Project Planning and Site Selection	Regulatory Actions	Impact Assessment	Management	Mitigation	Acquisition Needs for Preservation
1	Brown, A., et al. 1974	Not applicable; evaluation on only habitat functions	Applicable; does not have extensive time requirements, requires moderate to low technical skills, data, and degree of accuracy	Not applicable	Some application	Applicable; alternative wetlands may be identified	Applicable; high quality wetlands could be identified by the ranking process
2	Dee, N., et al. 1973	Applicable; developed for long-term Water Resources projects, interdisciplinary team approach	Not applicable; requires extensive amounts of time	Applicable; determine major and minor impacts and project alternatives	Not applicable	Not applicable	Not applicable
3	Fried, E. 1974	Not applicable	Not applicable	Not applicable	Not applicable	Applicable; may be useful for making "trade-offs"	Applicable; specifically developed for acquisition needs in New York; procedure also contains a separate economic evaluation instrument
4	Galloway, G. E. 1978	Applicable; requires extensive time requirements, graphic display of evaluation results	Not applicable	Applicable; impacts determined for various sites in wetland and watershed; utilizes expertise of interdisciplinary team, laymen, and project engineer	Not applicable	Not applicable	Not applicable
5	Golet, F. C. 1973	Not applicable	Applicable (habitat values); no extensive time or data requirements	Not applicable	Applicable; can be used to manage for maximum wildlife production and diversity	Applicable; numerical ranking may identify wetlands for possible "trade-offs"	Applicable; high quality wetlands may be identified for possible acquisition

(Continued)

Table 8 further describes these administrative needs.

(Sheet 1 of 4)

Methodology Number	Citation	Project Planning and Site Selection	Regulatory Actions	Impact Assessment	Management	Mitigation	Acquisition Needs for Preservation
6	Gupta, T. R., and Foster, J. H. 1973	Not applicable	Applicable; must be used in conjunction with other procedures because only scenic values are evaluated	Not applicable	Not applicable	Not applicable	Applicable; wetlands of outstanding scenic quality could be identified for purchase
7	Kibby, H. V. 1978	Not applicable	Applicable; does not require extensive time requirements, technical skills, or high degree of accuracy to produce general evaluation of water quality	Not applicable	Not applicable	Not applicable	Not applicable
8	Larson, J. S., ed. 1976	Not applicable**	Applicable; numerous functions are evaluated in a time- and cost-efficient manner	Not applicable**	Applicable; submodels in the procedure may be useful (habitat); management of visual-cultural attributes	Applicable; numerical ranking instrument may allow "trade-offs"	Applicable; high quality wetlands could be identified by "red flag" features
9	Reppert, R. T., et al. 1979	Not applicable†	Applicable; a narrative evaluation summary can be prepared in a short time frame	Not applicable	Limited application	Applicable; lower quality wetlands could be identified for alternative development sites	Limited application; high quality wetlands not specifically "earmarked"

(Continued)

** J. S. Larson indicated that the procedure is applicable to project planning and site selection and impact assessment.
† R. T. Reppert has indicated that the methodology is applicable for preliminary project planning.

(Sheet 2 of 4)

Methodology Number	Citation	Project Planning and Site Selection	Regulatory Actions	Impact Assessment	Management	Mitigation	Acquisition Needs for Preservation
10	Schuldiner, P. W., et al. 1979	Applicable; requires extensive time requirements, large amounts of data, high degree of accuracy, and technical skills for biological and hydrological functions	Not applicable	Applicable; determination of high, moderate, and low impacts of physical structures on habitat and hydrology values of wetlands	Not applicable	Applicable; procedure specifically identifies mitigation practices to avoid or reduce impacts	Not applicable
11	Stearns, Conrad, and Schmidt - Consulting Engineers. 1979	Applicable; requires extensive amounts of time, expertise, and accuracy for implementation. A thorough hydrological investigation is required	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
12	Swardon, R. C. 1972	Not applicable	Applicable; no extensive time or technical skill requirements	Not applicable	Not applicable	Applicable; trade-offs may be possible by an identification of low quality wetlands	Applicable; high quality wetlands can be identified from red flag features
13	Solomon, R. C., et al. 1977	Applicable (Water Resource projects); extensive time, expertise, and degree of accuracy requirements	Not applicable	Applicable; interdisciplinary team determination	Not applicable	Not applicable	Not applicable
14	State of Maryland. Dept of Natural Resources. Undated	Not applicable	Applicable; time, cost, technical skill, and degree of accuracy requirements are moderate (habitat)	Not applicable	Applicable; for site-specific management needs	Applicable; numerical rankings may be useful	Applicable; may be used to identify high quality wetlands

(Continued)

(Sheet 3 of 4)

Methodology Number	Citation	Project Planning and Site Selection	Regulatory Actions	Impact Assessment	Management	Mitigation	Acquisition Needs for Preservation
15	U. S. Army Engineer Division, Lower Miss. Valley (WES). 1980	Applicable	Not applicable††	Applicable	Applicable for assessing alternative management plans	Not applicable	Applicable for determining habitat value for acquiring mitigation lands
16	U. S. Army Engineer Division, New England. 1972	Applicable; requires extensive time, costs, expertise, and levels of accuracy for implementation	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
17	U. S. Department of Agriculture. 1978	Not applicable	Applicable; can be used to evaluate a variety of functions in a cost- and time-efficient fashion	Not applicable‡	Not applicable	Not applicable	Applicable; high quality wetlands could be identified for possible purchase
18	U. S. Fish and Wildlife Service (HEP). 1980	Applicable; usually requires extensive time and costs. Requires expertise and identifies levels of accuracy for application	Applicable‡‡	Applicable	Applicable	Applicable; can be used to determine acreage needed to maintain habitat quality level and best means to offset potential loss in quality	Applicable
19	Virginia Institute of Marine Science. Undated	Not applicable	Applicable	Not applicable	Applicable	Applicable	Not applicable
20	Winchester, B. H., and Harris, L. D. 1979	Not applicable§	Applicable; does not require extensive time, expertise, and data requirements	Not applicable	Not applicable	Some application	Possible application; numerical rankings may be useful for determination of high quality wetlands

†† "Can be used to evaluate impacts on wetlands." (Author comment.)
‡ The U. S. Soil Conservation Service has indicated that the methodology is applicable to impact assessment.
‡‡ The authors have indicated that the procedure is applicable to regulatory needs but is frequently limited because of the time requirement and manpower funding limitations. A decision must be based on individual user needs.
§ The author indicated that the methodology is relevant to project planning and site selection.

(Sheet 4 of 4)

VI. Approved Regional Models for Estimating Recreation Demand

The Water Resources Council Procedures (Section 713.917) define regional use estimating models as "statistical models that relate use to the relevant determinants based on data from existing recreation sites in a region. The use of regional models is encouraged to economize on resources required for site-specific studies." This does not preclude the use of household surveys, automobile registration and roadside surveys as a source for data in addition to that obtained from existing recreation sites.

An Interagency Recreation Task Force established in January, 1981, developed the following guidelines for Regional Recreation Models.

GUIDELINES FOR REGIONAL RECREATION MODELS

Introduction or Purpose

The purpose of these guidelines for recreation models is to encourage development of meaningful regional use and benefit estimating models consistent with the intent of the Procedures for Evaluation of National Economic Development Benefits and Costs (18 CFR 713, Part K). These guidelines should foster interagency cooperation in model development by providing a common set of criteria and characteristics of desirable regional models.

Nature of the Criteria

The criteria are based on the planning and evaluation information that models should provide rather than their detailed structural characteristics. This emphasis on model performance will permit innovation and flexibility in model design, choice of variables, data collection strategies, and development of recreation use estimates. Good estimating models, in general, are based on statistically sound methodologies, incorporate relevant variables, are replicable, and have predictive power. Specifically, regional recreation models should yield an empirical estimate of demand applied to the particular project or site based on: (1) socioeconomic characteristics of market area population; (2) qualitative characteristics and uniqueness of the recreation resources; and (3) costs and characteristics of substitute recreation opportunities. Models should permit generation of recreation use projections over time that vary with underlying determinants of demand, and allow for evaluation of gains and losses in the study area.

The model should reflect the effects of site congestion of the users' willingness to pay for the recreation opportunity and then be able to evaluate the possible long term effects of congestion on site characteristics.

Concept of the Region

The region must be determined by a combination of factors based on relevant activities (functional), types of recreation resources, geographical boundaries (spatial), geographic distribution of prospective recreation users, etc. A helpful step is to take into account existing or future sites that may be significant substitutes for the proposed site(s). Thus, the concept of the region, as defined in the NED Procedures, is not to use pre-established areas, but to define regions iteratively during the study as planners develop parameters for a cross section of sites and determine which are relevant to water related activities of the proposed sites. Planners should choose a sample containing a representative number of sites so that the variables will have predictive power.

Application of the Model

The model should be able to be applied to sites rather than to market areas because water resource planning is designed to produce changes at specific locations rather than to abstract area-wide markets of recreation goods and services. The estimates of value to be obtained from the model should be consistent with and of a level of precision similar to the estimates of value derived for other goods and services produced by a plan.

The procedures should be readily applicable to evaluating proposed changes on the availability of the specific recreation opportunities affected by the plans. For example, can the model estimate the benefit of an additional opportunity of a recreation activity at a particular location? Have questions concerning the relevant resources and sites been included in the household or similar surveys?

When meaningful to the resource situation being evaluated, the consideration of substitution should account for choices among (a) recreational and non-recreational activities, (b) alternative recreational activities, and (c) alternative sites for identical activities.

By following these guidelines, the regional recreation models developed by planners and researchers should be realistic in terms of their applicability to the water based recreation setting being evaluated.

VII. Unit Day Values for Recreation

The NED Benefit Evaluation Procedures: Recreation (18 CFR 713.901-.927) developed by the Water Resources Council in 1979 provides three methods for evaluation of the beneficial and adverse effects of project recreation on national economic development (NED). These three approaches (travel cost, contingent valuation, and unit day values) are set forth in Subpart K of the Procedures. In addition, Appendices 1-3 to Subpart K contain detailed explanations of the three evaluation methods. To reflect changes in price levels since 1978 using the Consumer Price Index without the presently constituted housing component, unit day values have been updated to current levels as of July 31, 1981. The approved unit day values for FY 1982 are:

General recreation	$1.50	-	$4.50
Specialized recreation	$6.10	-	$17.90

Where evidence indicates a value outside the published range, either the travel cost or contingent valuation method is required for the evaluation of recreation benefits. The tables included in Appendix 3 are intended as guidance to planners in the selection of unit day values for particular recreation activities.

Tables 2 and 3 illustrate a method of assigning a point rating to a particular activity. The five criteria and associated measurement standards are designed to reflect quality, relative scarcity, ease of access, and aesthetic features. Table K-3-2 can be used for general

recreation such as picnicking, camping, hiking, riding, cycling, fishing and hunting. Table K-3-3 can be used for specialized recreation such as big game hunting, wilderness pack trips, white water canoeing, and other relatively unique experiences.

Table K-3-1 in Appendix 3 converts the point ratings to dollar values and were applicable for fiscal year 1980. They should not be used for future years. A revised Table K-3-1 for FY 82 follows. This table may be used to convert points to a dollar value if the point assignment method is used to select a unit day value. The table should be adjusted for FY 1983 and subsequent years to reflect changes in the Consumer Price Index after July 31, 1981.

Revised Table K-3-1 (FY 1982) - Conversion of Points to Dollar Values

Activity Categories	POINT VALUES										
	0	10	20	30	40	50	60	70	80	90	100
General Recreation (Points from Table K-3 2)	1.50	1.80	2.00	2.30	2.80	3.20	3.50	3.70	4.00	4.30	4.50
General Fishing & Hunting (Points from Table K-3 2)	2.20	2.40	2.60	2.90	3.20	3.50	3.90	4.00	4.30	4.40	4.50
Specialized Fishing & Hunting (Points from Table K-3 3)	10.50	10.80	11.00	11.30	11.60	12.70	13.80	14.70	15.80	16.90	17.90
Specialized Recreation Other than Fishing & Hunting (Points from Table K-3 3)	6.10	6.50	7.00	7.50	8.00	9.00	10.00	12.00	14.00	16.00	17.90

Note: See 44 FR 72963-64 (published December 14, 1979) for Table K-3-2 and K-3-3.

VIII. Recreation Economics Bibliography

A recently compiled (July 1981) bibliography on Recreation Economics is now available. The USDA Forest Service sponsored by the International Union of Forestry Research Organizations and George Washington University Department of Human Kinetics and Leisure Studies conducted a comprehensive search of the literature on the economics of outdoor recreation as it relates to forestry. Research from 30 nations is included in their publication, Outdoor Recreation Economics: Methods of Valuing Recreation Resources.

To obtain a copy of this bibliography, contact H. Fred Kaiser, USDA Forest Service, (202) 382-9036.

IX. Areas Eligible for NED Benefits from Employment of Previously Unemployed Labor Resources

A. Criteria for designation.

The Economic Development Administration has ceased publication of Qualified Areas which was cited as a reference to designated areas in Subpart N, Unemployed or Underemployed Labor Resources, Section 713.1203(b), of the WRC Manual of Procedures.

As a result, the WRC published Standards for the designation of "substantial and persistent" unemployment areas based on the criteria that were formerly used by EDA in designating qualified areas under subsection 1 of Title IV of the Public Works and Economic Development Act of 1965 (Pub. L. 89-136, as amended). These Standards appeared in the April 11, 1980 Federal Register and state that an area can be considered to have substantial and persistent unemployment when

1. The Secretary of Labor finds that the current rate of unemployment, as determined by appropriate annual statistics for the most recent 12 consecutive months, is 6 percent or more and has averaged at least 6 percent for the qualifying time periods specified in paragraph (2) and

2. The Secretary of Labor finds that the annual average rate of unemployment has been at least: (i) 50 percent above the

national average for three of the preceding four calendar years, or (ii) 75 percent above the national average for two of the preceding three calendar years, or (iii) 100 percent above the national average for one of the preceding two calendar years.

The eligibility determinations were based on the following national unemployment rates for the relevant time periods provided by the Bureau of Labor Statistics:

1977	1978	1979	1980
7.0	6.0	5.8	7.1

The current rate of unemployment for the most recent twelve months covers the period ending July 31, 1981. For further information relating to the designation of these areas contact David Campbell, WRC, at (202) 254-6453 or Agency Contacts listed herein. For information regarding the development of the data, contact Ray Konstant, BLS, at (202) 523-1082.

B. Directory of eligible areas.

The following areas satisfy the Water Resources Council's Standards for qualification as areas of "substantial and persistent unemployment."

State: ALABAMA

Bibb County
Hale County
Greene County
Talladega County
Wilcox County
Winston County

State: ALASKA

Angoon Division
Annete Island Area (Reservation)
Bethel Division
Bristol Bay Borough Division
Bristol Bay Division
Craig Area (Reservation)
Fairbanks Division
Haines Division
Hoonah Area (Reservation)
Hydaburg Area (Reservation)
Kake Area (Reservation)
Kenai Cook Inlet Division
Klawock Area (Reservation)
Kobuk Division
Kushokwim Division
Matanuska - Susitna Borough Division
Outer Ketchikan Division
Seward Division
Skagway - Yakutat Division
Southeast Fairbanks Division
Unalaska Native Village (Reservation)
Upper Yukon Division
Valdez-Chitina-Whittier Division
Wrangell - Petersburg Division
Yukon - Koyukuku Division

State: ARIZONA

Ak Chin Reservation (Part of Pinal County)
Apache County
Camp Verde Reservation (Part of Yauapai County)

Cocopah Reservation (Part of Yuma County)
Colorado River Reservation (Parts of Yuma County, Arizona and Riverside and San Bernardino Counties, California)
Fort Apache Reservation (Parts of Apache, Gila and Navajo Counties)
Fort McDowell Reservation (Part of Maricopa County)
Gila Bend Indian Reservation (Part of Maricopa County)
Gila River Reservation (Parts of Maricopa and Pinal Counties)
Havasupai Reservation (Part of Coconino County)
Hopi Reservation (Parts of Coconino and Navajo Counties)
Hualapai Reservation (Parts of Coconino and Navajo Counties)
Kaibab Reservation (Parts of Coconino and Mohave Counties)
Navajo County
Navajo Reservation (Parts of Apache, Coconino and Navajo Counties, Arizona and San Juan County, Utah and San Juan and McKinley Counties, New Mexico)
Papago Reservation (Parts of Maricopa, Pina and Pinal Counties)
Salt River Reservation (Part of Maricopa County)
San Carlos Reservation (Parts of Gila, Graham and Pinal Counties)
San Xavier Reservation (Part of Pina County)
Santa Cruz County
Yauapai Reservation (Part of Yauapai County)
Yuma County

State: ARKANSAS

Lawrence County
Lee County
Newton County
Phillips County
St. Francis County
White County

State: CALIFORNIA

Alpine County
Amador County
Big Pine Reservation (Part of Inyo County)
Bishop Reservation
Butte County
Calaveras County
Del Norte County
El Dorado County
Fort Mohave Reservation (Parts of Mohave County, Arizona, San Bernardino County, California and Clark County, Nevada)

Fort Yuma Reservation (Parts of Yuma County, Arizona and Imperial County, California)
Hoopa Valley Reservation (Part of Humboldt County)
Humboldt County
Imperial County
Kings County
Lake County
Lassen County
Lone Pine Reservation (Part of Inyo County)
Mariposa County
Mendocino County
Merced County
Morongo Reservation
Nevada County
Pala Reservation
Plumas County
Rincon Reservation
San Benito County
San Juaquin County (Stockton/San Juaquin Manp. CSRT)
Shasta County
Sierra County
Siskiyou County
Stanislaus County
Sutter County
Tehama County
Trinity County
Tuolumne County
Yuba County

State: COLORADO

Archuleta County
Conejos County
Costilla County
Ouray County
San Juan County
Southern Ute Reservation (Parts of Archuleta and LaPlata Counties)
Ute Mountain Reservation (Parts of LaPlata and Montezuma Counties, Colorado and San Juan County, Utah and San Juan County, New Mexico)

State: CONNECTICUT

No Qualifying Areas

State: DELAWARE

No Qualifying Areas

State: FLORIDA

Big Cypress Reservation (Part of Hendry County)
Brighton Reservation (Part of Glades County)

Franklin County
Glades County
Hernando County
Hollywood Reservation (Part of Broward County)
Miccosukee Indian Lands
St. Lucie County
Polk County

State: GEORGIA

Burke County
Chattahoochee County
Warren County

State: HAWAII

No Qualifying Areas

State: IDAHO

Adams County
Benewah County
Boise County
Bonner County
Boundary County
Clearwater County
Coeur D'Alene Reservation
Fort Hall Reservation (Parts of Bingham-Caribou and Power Counties)
Gem County
Idaho County
Nez Pierce Reservation (Parts of Clearwater, Idaho, Lewis, and Nez Pierce Counties)
Valley County

State: ILLINOIS

Alexander County
Calhoun County
Clay County
Franklin County
Gallatin County
Hamilton County
Hardin County
Massac County
Pope County
Pulaski County
Saline County
Union County
White County
Williamson County

State: INDIANA

Crawford County
Henry County
Howard County
Madison County
Ohio County
Orange County
Perry County
Randolph County
Scott County
Washington County

State: IOWA

Sac and Fox Reservation

State: KANSAS

Kickapoo Reservation

State: KENTUCKY

Bath County
Butler County
Carter County
Clay County
Edmonson County
Graves County
Jackson County
Knott County
Lawrence County
Lee County
Letcher County
Lincoln County
Magoffin County
Marshall County
Menifee County
McCreary County
Owsley County
Powell County
Robertson County
Russell County

State: LOUISIANA

Allen Parish
Coushatta Indian Trust Land (Part of Allen Parish)
East Carroll Parish
Madison Parish
Vernon Parish
Washington Parish
West Carroll Parish

State: MAINE

Aroostook County
Indian Township Reservation (Part of Washington County)
Penobscot Indian Reservation (Part of Penobscot County)
Pleasant Point Indian Reservation (Part of Washington County)
Somerset County
Waldo County
Washington County

State: MARYLAND

Dorchester County
Garrett County
Somerset County
Worcester County

State: MASSACHUSETTS

No Qualifying Areas

State: MICHIGAN

Alcona County
Alger County
Alpena County
Antrim County
Arenac County
Baraga County
Bay County
Benzie County
Charlevoix County
Cheboygan County
Chippewa County
Clare County
Crawford County
Delta County
Genesee County
Gladwin County
Gratiot County
Houghton County
Huron County
Isabella Reservation
Iosco County
Iron County
Keweenaw County
Lake County
Lenawee County
Luce County
Mackinac County
Manistee County
Mason County
Missaukee County

Montcalm County
Montmorency County
Newaygo County
Oceana County
Ogemaw County
Ontonagon County
Osceola County
Oscoda County
Presque Isle County
Roscommon County
Saginaw County
Sanilac County
Schoolcraft County
Shiawassee County
Tuscola County
Wexford County

State: MINNESOTA

Aitken County
Clearwater County
Fond Du Lac Reservation (Parts of Carlton and St. Louis Counties)
Grand Portage Reservation (Part of Cook County)
Itasca County
Leech Lake Reservation (Parts of Beltrami, Cass, Crow Wing, Hubbard, and Itasca Counties)
Lower Sioux Reservation
Marshall County
Mille Lac Reservation (Parts of Aitken, Mille Lacs, and Pine Counties)
Nett Lake Reservation (Parts of Koochiching and St. Louis Counties)
Prarie Island Reservation
Red Lake County
Red Lake Reservation (Parts of Beltrami, Clearwater, Koochiching, Lake of the Woods, Marshall, Pennington, Red Lake, and Roseau Counties)
Shakopee - Mdewakanton Reservation
White Earth Reservation (Parts of Becker, Clearwater, and Mahnomen Counties)

State: MISSISSIPPI

Attala County
Choctaw Reservation (Parts of Attala, Jones, Kemper Leake, Newton, Neshoba, and Scott Counties)
Jefferson County
Montgomery County
Sharkey County
Tate County
Wilkinson County
Winston County

State: MISSOURI

Washington County

State: MONTANA

Blackfeet Reservation (Parts of Glacier and Pondera Counties)
Crow Reservation (Parts of Big Horn and Yellowstone Counties)
Flathead Reservation (Parts of Flathead, Lake, Missoula, and Sanders Counties)
Fort Belknap Reservation (Part of Phillips County)
Fort Peck Reservation (Parts of Daniels, Roosevelt, Sheridan, and Valley Counties)
Lincoln County
Northern Cheyenne Reservation (Parts of Big Horn and Rosebud Counties)
Rocky Boys Reservation (Parts of Chouteau and Hill Counties)

State: NEBRASKA

Omaha-Winnebago Reservation (Parts of Burt, Cuming, Dixon and Thurston Counties)
Santee Sioux Reservation (Part of Knox County)

State: NEVADA

Duck Valley Reservation (Parts of Elko County, Nevada and Owyhee County, Idaho)
Duckwater Reservation
Elko Reservation
Ely Colony
Fallon Reservation and Colony (Part of Churchill County)
Fort McDermitt Reservation (Parts of Humboldt County, Nevada and Malheur County, Oregon)
Moapa River Reservation (Part of Clark County)
Pyramid Lake Reservation (Part of Oashoe County)
Reno-Sparks Reservation (Part of Washoe County)
South Fork - Odgers Reservation
Walker Riever Reservation
White Pine County
Washoe Nation Lands (Parts of Alpine County, California and Douglas County and Carson City, Nevada)
Yerrington Reservation and Colony

State: NEW HAMPSHIRE

No Qualifying Areas

State: NEW JERSEY

Atlantic County
Cape May County
Cumberland County
Hudson County

State: NEW MEXICO

Acoma Pueblo (Part of Valencia County)
Alamo Reservation
Albuquerque Indian Land Area
Canoncito Reservation (Bernalillo-Valencia and Sandoval Counties)
Cochita Pueblo
Guadalupe County
Isleta Pueblo (Parts of Bernalillo and Valencia Counties)
Jemez Reservation (Part of Sandoval County)
Jicarillo Reservation (Parts of Rio Arriba and Sandoval Counties)
Laguna Pueblo (Parts of Bernalillo, Sandoval and Valencia Counties)
Mescalero Reservation (Part of Otero County)
Mora County
Nambe Pueblo (Part of Santa Fe County)
Picuris Pueblo (Part of Taos County)
Pojoaque Pueblo (Part of Santa Fe County)
Ramah Reservation (Parts of McKinley and Valencia Counties)
Rio Arriba County
San Felipe Pueblo
San Ildefonso Pueblo (Part of Santa Fe County)
San Juan Pueblo (Part of Rio Arriba County)
Sandia Pueblo
Santa Ana Pueblo
Santa Clara Pueblo (Parts of Sandoval, Santa Fe, and Rio Arriba Counties)
Santa Domingo Reservation (Parts of Rio Arriba, Sandoval, and Santa Fe Counties)
San Miguel County
Taos County
Taos Pueblo (Part of Taos County)
Tesuque Pueblo (Part of Santa Fe County)
Zia Pueblo
Zuni Pueblo (Parts of McKinley and Valencia Counties)

State: NEW YORK

Allegany Reservation (Part of Cattaraugus County)
Cattaraugus Reservation (Parts of Cattaraugus, Chautauqua, and Erie Counties)
Clinton County
Essex County
Franklin County
Fulton County
Greene County
Hamilton County
Jefferson County
Kings County
New York County
St. Lawrence County
Warren County

State: NORTH CAROLINA

East Cherokee Reservation (Parts of Graham, Jackson, and Swain Counties)
Tyrrell County

State: NORTH DAKOTA

Bismarck Indian Land
Fort Berthold Reservation (Parts of Dunn, McKenzie, McLean, Mercer, and Mountrail Counties)
Fort Totten (Devils Lake) Reservation (Parts of Benson, Eddy and Ramsey Counties)
Rolette County
Standing Rock Reservation (Parts of Sioux County, North Dakota and Corson and Walworth Counties, South Dakota)
Turtle Mountain Reservation (Part of Rolette County)

State: OHIO

Adams County
Scioto County

State: OKLAHOMA

Cheyenne Arapaho Indian Lands
Chickasaw Indian Lands
Coal County
Kiowa-Comanche and Apache Indian Lands
Latimer County
Osage Indian Lands
Otoe - Missouria Tribal Trust Lands Area
Pittsburg County
Ponca Indian Lands
Seminole Indian Lands
Tonkawa Tribal Trust Area
Wichita-Caddo-Delaware Indian Lands

State: OREGON

Burns Paiute Reservation
Crook County
Curry County
Grant County
Harvey County
Hood River County
Josephine County
Umatilla Reservation (Part of Umatilla County)
Warm Springs Reservation (Parts of Clackamas, Jefferson, Linn, Marion, and Wasco Counties)
Wheeler County

State: PENNSYLVANIA

Bedford County
Cambria County
Cameron County
Clearfield County
Clinton County
Huntingdon County
Somerset County
Wyoming County

State: RHODE ISLAND

No Qualifying Areas

State: SOUTH CAROLINA

Catawba Reservation

State: SOUTH DAKOTA

Buffalo County
Cheyenne River Reservation (Parts of Dewey, Haakon, Meade, Perkins, Stanley, and Ziebach Counties)
Crow Creek-Lower Brule Reservation (Parts of Brule, Buffalo, Hyde, Hughes, Lyman and Stanley Counties)
Pine Ridge Reservation (Parts of Bennett, Shannon and Washabaugh Counties, South Dakota and Sheridan County, Nebraska)
Rosebud Reservation (Parts of Gregory, Mellette, Todd and Tripp Counties)
Sisseton Reservation (Parts of Marshall and Roberts Counties, South Dakota and Richland and Sargent Counties, North Dakota)
Yankton Reservation (Parts of Bon Homme and Charles Mix Counties)

State: TENNESSEE

Campbell County
Cocke County
Crockett County
Cumberland County
Fentress County
Grundy County
Hancock County
Haywood County
Jackson County
Lake County
Meigs County
Monroe County
Overton County
Roane County
Scott County
Sevier County
Stewart County
Van Buren County
Wayne County

State: TEXAS

Alabama-Coushatta Reservation
Cameron County
Dimmit County
Hidalgo County
Loving County
Maverick County
Starr County
Tigua Reservation
Val Verde County
Webb County
Willacy County
Zapata County
Zavala County

State: UTAH

Goshute Reservation (Parts of Juab County, Utah and White Pine County, Nevada)
Unitah-Ouray Reservation (Parts of Duchesne, Unitah, and Wasatch Counties)
Wasatch County

State: VERMONT

Grand Isle County
Essex County

State: VIRGINIA

Dickenson County
Lancaster County
Northumberland County
Pamunkey Reservation
South Boston City
Williamsburg City

State: WASHINGTON

Chelan County
Clallam County
Columbia County
Colville Reservation (Parts of Ferry and Okanogan Counties)
Ferry County
Grant County
Kittitas County
Klickitat County
Lewis County
Lummi Reservation (Part of Whatcom County)
Makah Reservation (Part of Clallam County)
Muckleshoot Reservation
Okanogan County
Pacific County
Pend Oreille County

Quileute Reservation
Quinnult Reservation
Skagit County
Skamania County
Skokomish Reservation
Spokane Reservation
Squaxin Reservation
Stevens County
Swinomish Reservation (Part of Skagit County)
Tulalip Reservation
Yakima County
Yakima Reservation (Parts of Klickitat and Yakima Counties)

State: WEST VIRGINIA

Braxton County
Calhoun County
Clay County
Fayette County
Lewis County
Lincoln County
McDowell County
Nicholas County
Ritchie County
Summers County
Webster County
Wyoming County

State: WISCONSIN

Bad River Reservation (Part of Ashland County)
Forest County
Lac Courte Oreilles Reservation (Part of Sawyer County)
Lac du Flambeau Reservation (Parts of Iron and Vilas Counties)
Menominee County
Oneida Reservation (Parts of Brown and Outagamie Counties)
Red Cliff Reservation (Part of Bayfield County)
Saint Croix Reservation (Part of Burnett County)

State: WYOMING

Wind River Reservation (Parts of Fremont and Hot Springs Counties)

X. OBERS Projections, Regional Economic Activity in the U.S.

The 1980 OBERS Projections (BEA Regional Projections) are scheduled to be issued in mid September 1981. Since many projection users indicated an immediate need, an advance summary of the results for each state from the 1980 Projections was included in the fiscal year 1981 WRC Reference Handbook and is repeated here. Table 1 presents data on the absolute levels of total earnings, employment, population, and personal income historically (1969 and 1978) and projected (1985 and 2000). Table 2 presents percent shares of the U.S. for total earnings, employment, and population, and per capita income (in absolutes and relative to the Nation) for these same years.

The 1980 OBERS projections printed in 11 volumes (titles given below) will be available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.*

1980 OBERS BEA REGIONAL PROJECTIONS

Volume I:	Methodology, Concepts, and State Data
Volume II:	BEA Economic Areas
Volume III:	Standard Metropolitan Statistical Areas
Volume IV:	BEA Region 1 - New England
Volume V:	BEA Region 2 - Mid East
Volume VI:	BEA Region 3 - Great Lakes

* GPO reference numbers and cost of each volume are not available at time of publication. For this information contact Marian Sachs, BEA, at (202) 523-0586.

Volume VII:	BEA Region 4 - Plains
Volume VIII:	BEA Region 5 - South East
Volume IX:	BEA Region 6 - South West
Volume X:	BEA Region 7 - Rocky Mountains
Volume XI:	BEA Region 8 - Far West and BEA Region 9

TABLE 1

BEA REGIONAL ECONOMIC PROJECTIONS

	TOTAL EARNINGS (MILLIONS OF 1972 DOLLARS)				TOTAL EMPLOYMENT (THOUSANDS)				TOTAL POPULATION (THOUSANDS)				TOTAL PERSONAL INCOME (MILLIONS OF 1972 DOLLARS)			
	1969	1978	1985	2000	1969	1978	1985	2000	1969	1978	1985	2000	1969	1978	1985	2000
CT	11844	13424	17049	24981	1350	1502	1667	1802	3000	3099	3232	3541	15735	18416	23022	33601
ME	2665	3391	4503	7463	419	491	558	666	992	1091	1138	1317	3357	4589	5999	9914
MA	20320	22982	28766	40761	2546	2748	2977	3069	5650	5774	5809	6037	25532	30510	37898	53746
NH	2106	2997	4185	7102	316	415	495	597	724	871	970	1174	2892	4285	5847	9839
RI	3035	3366	4314	6806	416	445	490	552	932	935	955	1060	3837	4640	5885	9186
VT	1312	1627	2180	3480	193	228	261	299	437	487	522	586	1607	2142	2851	4550
DE	2115	2650	3477	5566	252	283	321	374	540	583	614	706	2604	3313	4310	6852
DC	6216	7547	9021	12545	647	654	693	707	762	674	641	633	3730	4310	5048	6883
MD	12728	15872	19751	29145	1576	1801	1986	2147	3868	4143	4239	4574	17424	23054	29131	43342
NJ	25391	30127	38644	57445	2913	3248	3640	3970	7095	7327	7615	8329	34949	42865	54267	80311
NY	73404	74037	88767	117118	8048	7784	8193	8004	18105	17748	17316	16559	88535	97373	115323	152170
PA	39687	46444	58440	83428	4951	5217	5655	5854	11741	11750	11728	11851	48240	60660	75150	106891
IL	43275	51968	66360	96021	4972	5338	5877	6221	11039	11243	11544	12264	52632	66477	84038	120891
IN	17798	22088	29143	45388	2189	2482	2785	3098	5143	5374	5680	6199	20985	27598	36181	55990
MI	33027	41876	54229	83011	3481	3989	4523	5103	8781	9189	9553	10368	39325	51990	66423	99818
OH	37896	44882	58088	86155	4463	4870	5432	5833	10563	10749	11054	11622	45090	56304	72242	106703
WI	14084	18348	23997	36436	1849	2215	2516	2777	4378	4679	4928	5366	17360	23494	30512	46526
IA	8677	11412	14390	21609	1204	1424	1552	1688	2805	2896	2959	3196	10907	15165	19144	28854
KS	6448	8923	11717	18463	955	1146	1287	1456	2236	2348	2467	2707	8766	12281	15774	24270
MN	12449	16934	22626	36687	1588	1989	2289	2662	3758	4008	4302	4984	15094	21120	28016	45141
MO	15379	19130	24549	36526	2057	2297	2533	2712	4640	4860	5001	5256	17921	23609	30227	44658
NE	4578	5963	7529	11496	665	795	866	955	1474	1565	1618	1746	5776	7873	9962	15249
ND	1664	2466	3061	4785	263	327	353	387	621	652	673	727	2068	3230	4086	6393
SD	1678	2267	2934	4503	289	340	368	397	668	690	707	751	2184	3027	3897	5942
AL	8526	12244	16403	26796	1304	1584	1802	2073	3440	3742	3935	4251	10477	15779	21220	34622
AR	4281	6657	8699	14282	725	931	1052	1237	1913	2186	2274	2514	5553	8920	11659	19131
FL	19150	29129	40229	69629	2642	3808	4557	5673	6641	8594	10191	12683	25789	43420	62512	111660
GA	13502	18475	24450	40273	1984	2429	2736	3171	4551	5084	5438	6251	15923	22976	30700	51309
KY	8273	11824	17005	29187	1213	1484	1763	2112	3198	3498	3792	4279	10362	15404	21725	36859
LA	9339	14016	19566	33469	1346	1699	2006	2428	3619	3966	4297	4901	11610	17815	24577	41827
MS	4753	6845	9375	16727	812	1008	1163	1445	2220	2404	2557	2981	5838	8944	12178	21733
NC	14479	19847	26438	43896	2288	2748	3098	3620	5031	5577	5978	6871	17018	24686	33184	55773
SC	6716	9650	12934	22305	1094	1378	1567	1898	2570	2918	3146	3672	7979	12238	16496	28876
TN	10738	15304	21317	36189	1618	2029	2412	2909	3897	4357	4761	5649	12667	19061	26423	45243
VA	13815	19430	26039	42632	1980	2421	2785	3273	4614	5148	5566	6432	17728	26497	35301	57567
WV	4388	6314	9292	15186	602	722	885	1024	1746	1860	2023	2129	5398	8218	11692	18570
AZ	5213	8729	12133	21036	672	1057	1279	1595	1737	2354	2794	3442	6498	11588	16801	29906
NM	2629	4111	5639	9402	370	521	612	730	1011	1212	1346	1537	3221	5332	7323	12263
OK	6861	9894	13698	22364	998	1268	1471	1726	2535	2880	3124	3557	8795	13684	18509	29997
TX	33260	52730	73985	128361	4620	6235	7418	9252	11045	13014	14812	18130	40871	67202	93966	162804
CO	6934	11361	16635	29824	931	1360	1718	2206	2166	2670	3178	4042	8642	14449	20979	37339
ID	1969	3205	4405	7587	288	418	488	594	707	878	1000	1194	2390	4138	5705	9776
MT	1923	2719	3642	6137	276	361	406	473	694	785	829	926	2457	3617	4756	7812
UT	2888	4668	6915	12809	408	585	737	957	1047	1307	1556	1904	3464	5748	8437	15372
WY	993	1972	3032	5268	148	227	294	367	329	424	537	669	1266	2453	3728	6415
CA	76192	102375	134313	212112	8458	10796	12475	14662	19711	22294	24456	28443	93591	132519	173414	272683
NV	2000	3417	5215	10158	232	395	535	774	480	663	873	1348	2306	4148	6428	12968
OR	6590	10277	14451	25900	854	1175	1436	1869	2062	2444	2850	3652	8101	13157	18461	33002
WA	12003	16511	22891	36172	1431	1763	2138	2504	3343	3774	4288	4933	14759	21517	29668	46859
AK	1387	2810	3679	6881	140	210	259	375	296	403	473	674	1406	2913	3952	7636
HI	2943	3932	5247	8601	379	478	558	667	743	885	1005	1229	3501	4993	6731	11184
US	679459	879168	1155351	1810100	85416	101118	114965	130943	201298	218051	232346	259845	834161	1139744	1491758	2336905

TABLE 2

BEA REGIONAL ECONOMIC PROJECTIONS

	SHARE OF TOTAL EARNINGS (PERCENT)				SH. OF TOT. EMPLOYMENT (PERCENT)				SH. OF TOT. POPULATION (PERCENT)				PERCAPITA INCOME (1972 DOLLARS)				PERCAPITA INC. RELATIVE (U.S.=100)			
	1969	1978	1985	2000	1969	1978	1985	2000	1969	1978	1985	2000	1969	1978	1985	2000	1969	1978	1985	2000
CT	1.7	1.5	1.5	1.4	1.6	1.5	1.4	1.4	1.5	1.4	1.4	1.4	5245	5943	7122	9490	127	114	111	106
ME	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	3384	4205	5271	7525	82	80	82	84
MA	3.0	2.6	2.5	2.3	3.0	2.7	2.6	2.3	2.8	2.6	2.5	2.3	4519	5284	6524	8902	109	101	102	99
NH	.3	.3	.4	.4	.4	.4	.4	.5	.4	.4	.4	.5	3995	4919	6028	8379	96	94	94	93
RI	.4	.4	.4	.4	.5	.4	.4	.4	.5	.4	.4	.4	4117	4964	6163	8663	99	95	96	96
VT	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	3677	4401	5460	7767	89	84	85	86
DE	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	4822	5687	7021	9702	116	109	109	108
DC	.9	.9	.8	.7	.8	.6	.6	.5	.4	.3	.3	.2	4895	6399	7870	10878	118	122	123	121
MD	1.9	1.8	1.7	1.6	1.8	1.8	1.7	1.6	1.9	1.9	1.8	1.8	4505	5565	6872	9475	109	106	107	105
NJ	3.7	3.4	3.3	3.2	3.4	3.2	3.2	3.0	3.5	3.4	3.3	3.2	4926	5850	7127	9643	119	112	111	107
NY	10.8	8.4	7.7	6.5	9.4	7.7	7.1	6.1	9.0	8.1	7.5	6.4	4890	5486	6660	9189	118	105	104	102
PA	5.8	5.3	5.1	4.6	5.8	5.2	4.9	4.5	5.8	5.4	5.0	4.6	4109	5163	6408	9019	99	99	100	100
IL	6.4	5.9	5.7	5.3	5.8	5.3	5.1	4.8	5.5	5.2	5.0	4.7	4768	5913	7280	9858	115	113	113	110
IN	2.6	2.5	2.5	2.5	2.6	2.5	2.4	2.4	2.6	2.5	2.4	2.4	4080	5135	6370	9032	98	98	99	100
MI	4.9	4.8	4.7	4.6	4.1	3.9	3.9	3.9	4.4	4.2	4.1	4.0	4478	5658	6953	9627	108	108	108	107
OH	5.6	5.1	5.0	4.8	5.2	4.8	4.7	4.5	5.2	4.9	4.8	4.5	4269	5238	6535	9181	103	100	102	102
WI	2.1	2.1	2.1	2.0	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.1	3965	5021	6192	8671	96	96	96	96
IA	1.3	1.3	1.2	1.2	1.4	1.4	1.3	1.3	1.4	1.3	1.3	1.2	3888	5237	6470	9029	94	100	101	100
KS	.9	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	3920	5231	6394	8967	95	100	100	100
MN	1.8	1.9	2.0	2.0	1.9	2.0	2.0	2.0	1.9	1.8	1.9	1.9	4017	5269	6513	9058	97	101	101	101
MO	2.3	2.2	2.1	2.0	2.4	2.3	2.2	2.1	2.3	2.2	2.2	2.0	3862	4858	6045	8496	93	93	94	94
NE	.7	.7	.7	.6	.8	.8	.8	.7	.7	.7	.7	.7	3919	5029	6158	8734	95	96	96	97
ND	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	3330	4955	6070	8789	80	95	95	98
SD	.2	.3	.3	.2	.3	.3	.3	.3	.3	.3	.3	.3	3269	4390	5509	7909	79	84	86	88
AL	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.6	3046	4217	5392	8144	73	81	84	91
AR	.6	.8	.8	.8	.8	.9	.9	.9	1.0	1.0	1.0	1.0	2903	4081	5128	7610	70	78	80	85
FL	2.8	3.3	3.5	3.8	3.1	3.8	4.0	4.3	3.3	3.9	4.4	4.9	3883	5052	6134	8804	94	97	96	98
GA	2.0	2.1	2.1	2.2	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.4	3499	4519	5645	8208	84	86	88	91
KY	1.2	1.3	1.5	1.6	1.4	1.5	1.5	1.6	1.6	1.6	1.6	1.6	3240	4403	5728	8614	78	84	89	96
LA	1.4	1.6	1.7	1.8	1.6	1.7	1.7	1.9	1.8	1.8	1.8	1.9	3208	4492	5719	8534	77	86	89	95
MS	.7	.8	.8	.9	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	2630	3721	4763	7291	63	71	74	81
NC	2.1	2.3	2.3	2.4	2.7	2.7	2.7	2.8	2.5	2.6	2.6	2.6	3383	4426	5551	8117	82	85	86	90
SC	1.0	1.1	1.1	1.2	1.3	1.4	1.4	1.4	1.3	1.3	1.4	1.4	3105	4195	5243	7864	75	80	82	87
TN	1.6	1.7	1.8	2.0	1.9	2.0	2.1	2.2	1.9	2.0	2.0	2.2	3250	4374	5550	8009	78	84	86	89
VA	2.0	2.2	2.3	2.4	2.3	2.4	2.4	2.5	2.3	2.4	2.4	2.5	3842	5147	6342	8950	93	98	99	100
WV	.6	.7	.8	.8	.7	.7	.8	.8	.9	.9	.9	.8	3092	4419	5780	8723	75	85	90	97
AZ	.8	1.0	1.1	1.2	.8	1.0	1.1	1.2	.9	1.1	1.2	1.3	3741	4923	6014	8688	90	94	94	97
NM	.4	.5	.5	.5	.4	.5	.5	.6	.5	.6	.6	.6	3186	4399	5440	7980	77	84	85	89
OK	1.0	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.4	3470	4751	5925	8434	84	91	92	94
TX	4.9	6.0	6.4	7.1	5.4	6.2	6.5	7.1	5.5	6.0	6.4	7.0	3700	5164	6344	8980	89	99	99	100
CO	1.0	1.3	1.4	1.6	1.1	1.3	1.5	1.7	1.1	1.2	1.4	1.6	3990	5411	6600	9238	96	104	103	103
ID	.3	.4	.4	.4	.3	.4	.4	.5	.4	.4	.4	.5	3381	4716	5705	8188	82	90	89	91
MT	.3	.3	.3	.3	.3	.4	.4	.4	.3	.4	.4	.4	3540	4610	5739	8441	85	88	89	94
UT	.4	.5	.6	.7	.5	.6	.6	.7	.5	.6	.7	.7	3308	4396	5422	8073	80	84	84	90
WY	.1	.2	.3	.3	.2	.2	.3	.3	.2	.2	.2	.3	3849	5791	6943	9593	93	111	108	107
CA	11.2	11.6	11.6	11.7	9.9	10.7	10.9	11.2	9.8	10.2	10.5	10.9	4748	5944	7091	9587	115	114	110	107
NV	.3	.4	.5	.6	.3	.4	.5	.6	.2	.3	.4	.5	4805	6252	7359	9621	116	120	115	107
OR	1.0	1.2	1.3	1.4	1.0	1.2	1.2	1.4	1.0	1.1	1.2	1.4	3929	5384	6477	9037	95	103	101	100
WA	1.8	1.9	2.0	2.0	1.7	1.7	1.9	1.9	1.7	1.7	1.8	1.9	4415	5702	6918	9498	107	109	108	106
AK	.2	.3	.3	.4	.2	.2	.2	.3	.1	.2	.2	.3	4751	7233	8346	11337	115	138	130	126
HI	.4	.4	.5	.5	.4	.5	.5	.5	.4	.4	.4	.5	4712	5643	6699	9098	114	108	104	101
US	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	4144	5227	6420	8993	100	100	100	100

XI. Regional Multipliers

Copies of Industry Specific Gross Output Multipliers for BEA Economic Areas (WRC's Guideline 5, January 1977) are available from the U.S. Government Printing Office, Washington, DC 20402 (#052-045-00048-7 - $2.50).

This document, prepared for WRC by the Department of Commerce, supplies input-output type multipliers for Bureau of Economic Analysis (BEA) Economic Areas to enable water resource planners to estimate the indirect and induced changes in regional gross output which may be attributed to direct changes produced by a water resource project or program.

The report contains input-output type multipliers for 56 industrial sectors for each of 173 BEA economic areas of the U.S. The user is required independently to estimate the initial final demand changes by industry, typically in terms of regional exports due to the project or program under study. The user then selects the appropriate industrial sector multiplier for the study region from the report. The product of the initial change and the multiplier provides an estimate of the total (i.e., direct, indirect, and induced) change in gross output in the region which is attributed to a particular element of the project or program. The sum of such calculations for all elements is the estimate of regional change due to the water development project. Procedures are provided for converting this regional total gross output change into a change in earnings and employment.

For further information on the use of these multipliers, contact Joe Cartwright of the Bureau of Economic Analysis at (202) 523-0594.

XII Other Categories of Benefits

Benefit evaluation procedures have been developed for 10 categories of goods and services in the NED account. Evaluation procedures for other categories of benefits which have not been developed might include those associated with beach erosion control and hurricane protection, prevention of damages to ships and cargoes, or dredged material utilization.

Such categories of benefits may be claimed if the procedures are documented in the planning report and are consistent with the general measurement standards outlined in 18 CFR 711.61(b) of the Principles and Standards.

In some cases, the benefit evaluation on procedures outlined for recreation in the NED Procedures may be appropriate when considering management and development plans related to beach erosion. Similarly, planners may find that the steps contained in the Urban Flood and Agricultural Flood sections may be appropriate when formulating and evaluating plans to reduce losses from hurricanes.

XIII. WRC Assessment Subareas (ASA) and Subregions (ASR)

Subparts D, E, and F (which describe NED evaluation procedures relating to agriculture) contain references to WRC assessment subareas (ASA).

The Second National Water Assessment prepared by the WRC used the 21 water resources regions of the Nation and the 106 hydrologic subregions (ASR), which are small drainage areas within the major regions. The subregion is the basic information-collecting subdivision but some socioeconomic information had to be compiled by political (county) boundaries. These adjusted subregions follow the subregional hydrologic boundaries as closely as possible and are defined as assessment subareas (ASA).

Individual copies of maps outlining these aggregated subareas (ASA) are available from:

Art Flechinger
Department of Agriculture
Soil Conservation Service
Box 2890
Washington, DC 20103
Telephone: (202) 447-7829

Note: An order form for obtaining WRC publications relating to the Second National Water Assessment is attached.

THE NATION's WATER RESOURCES, 1975-2000

The Second National Water Assessment by the U.S. Water Resources Council

Volume	GPO Stock Number	Price	Title
1	052-045-00051-7	$ 5.00	Summary
2	052-045-00082-7	11.00	Water Quantity, Quality & Related Land Considerations
3	052-045-00052-5	4.00	Analytical Data Summary
3	052-045-00053-3	4.75	Appx. I, Social, Economic & Environmental Data
3	052-045-00054-1	5.00	Appx. II, Annual Water Supply & Use Analysis
3	052-045-00055-0	7.00	Appx. III, Monthly Water Supply & Use Analysis
3	052-045-00056-8	7.00	Appx. IV, Dry Conditions Water Supply & Use Analysis
3	052-045-0005[illegible]	6.00	Appx. V, Streamflow Conditions
4	052-045-00059-2	4.25	Region 1, New England
4	052-045-00060-6	4.00	Region 2, Mid-Atlantic
4	052-045-00061-4	3.75	Region 3, South Atlantic-Gulf
4	052-045-00062-2	3.75	Region 4, Great Lakes
4	052-045-00063-1	2.75	Region 5, Ohio
4	052-045-00064-9	2.50	Region 6, Tennessee
4	052-045-00065-7	4.75	Region 7, Upper Mississippi
4	052-045-00066-5	4.25	Region 8, Lower Mississippi
4	052-045-00067-3	4.00	Region 9, Souris-Red-Rainy
4	052-045-00068-1	2.75	Region 10, Missouri
4	052-045-00069-0	2.75	Region 11, Arkansas-White-Red
4	052-045-00070-3	3.75	Region 12, Texas-Gulf
4	052-045-00071-1	3.75	Region 13, Rio Grande
4	052-045-00072-0	2.50	Region 14, Upper Colorado
4	052-045-00073-8	2.75	Region 15, Lower Colorado
4	052-045-00074-6	3.75	Region 16, Great Basin
4	052-045-00075-4	2.75	Region 17, Pacific Northwest
4	052-045-00076-2	3.75	Region 18, California
4	052-045-00077-1	3.75	Region 19, Alaska
4	052-045-00078-9	3.50	Region 20, Hawaii
4	052-045-00080-1	3.50	Region 21, Caribbean

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XIV. Environmental Quality Measurement Methods

In October 1980, the U.S. Water Resources Council began a 3-year effort to define those environmental quality measurement methods which would be required when analyzing the environmental impact of Level C plans under the Principles and Standards (45 FR 64366, September 29, 1980). This effort would have resulted in a set of measurement methods which would allow a systematic and consistent implementation of the Environmental Quality Evaluation Procedures (EQEP) (45 FR 64402, September 29, 1980). The EQEP provides a broad framework for analyzing environmental impacts.

However, since the President's budget does not include funding for the Council after September 30, 1981, the Council has not continued this work. Nevertheless, each of the agencies covered by the Principles and Standards has been considering alternate programs for following through with this effort. Contact should be made with the respective agencies to obtain further information regarding this program.

Department of the Army
U.S. Army Corps of Engineers
Dr. L. Blakey
Comm: 202-272-0146
FTS: 272-0146

Department of Agriculture
Soil Conservation Service
Dr. Marc Safley
Comm: 202-447-3922
FTS: 447-3922

or

Mr. Carl Thomas
Comm: 202-447-5991
FTS: 447-5991

Department of the Interior
Bureau of Reclamation
Ms. Betty Blair
Comm: 202-343-3125
FTS: 343-3125

U.S. Fish and Wildlife Service
Mr. Don Peterson
Comm: 202-343-5161
FTS: 343-5161

XV. Sources of Information for Environmental Planning

This section describes a limited number of the agencies and organizations that coordinate the collection and distribution of information related to the evaluation of environmental impacts. The listing is by no means a comprehensive one and the absence of a particular information source should not be considered a reflection of its usefulness or applicability to environmental planning and management. The sources included here are generally involved in the management of a broad range of comprehensive information services and provide nationwide coverage. In most cases they can direct users to other appropriate sources when they do not have the capability to handle a particular request.

1. Department of the Interior Sources and Services:

The U.S. Department of the Interior maintains several information services and offices of specialized technical expertise that are particularly relevant to environmental impact evaluation in water resources planning. These and over 1000 other sources of information within Interior, including over 60 data bases, are described in detail in the Department's Information Sources and Services Directory, a copy of which can be obtained by writing to:

U.S. Department of the Interior
Office of Library and Information Services
Field Library Services and Special Projects Division
Washington, D.C. 20240
Telephone: (202) 343-5815

A few of the information and technical services that users are likely to find helpful are:

A. U.S. Department of the Interior
Water Resources Scientific Information Center (WRSIC)
Washington, D.C. 20240
Telephone: (202) 343-8435, FTS: 343-8435

Custom-tailored computerized literature searches of the WRSIC data base in response to specific inquiries on existence, locations, and availability of documents are performed by the Center. Selected Water Resources Abstracts, a semi-monthly journal published for WRSIC by NTIS, includes abstracts of current and earlier pertinent monographs, journal articles, reports, and other publication formats. These documents cover the water-related aspects of the life, physical, and social sciences as well as related engineering and legal aspects of the characteristics, conservation, control, use, or management of water. Information on current research projects collected from Principal Investigators of WRSIC is also available through the Smithsonian Science Information Exchange (SSIE).

B. U.S. Geological Survey
WATSTORE (Automatic Data Section)
437 National Center
Reston, Virginia 22092
Telephone: (703) 860-6879, FTS: 928-6879

This office has primary responsibility for all automatic data processing activities within the Water Resources Division of U.S.G.S. Hydrologic data on streamflow, river stages, reservoir storage, water temperature, sediment concentrations and discharges, ground water levels, specific conductance, etc., are available in the form of printed tables, graphs, statistical analyses,

and digital plots, as well as computer-compatible tapes and cards. The system is referenced by State, county, and latitude-longitude.

C. U.S. Geological Survey
NAWDEX Program Office
421 National Center
Reston, Virginia 22092
Telephone: (703) 860-6031, FTS: 928-6031

Data search and referral services are currently provided through this office by NAWDEX, the National Water Data Exchange. A computerized Water Data Sources Directory identifies and describes the data collection activities of more than 300 water-oriented organizations in Federal, State, and local governments and the private and academic sectors. Types of hydrologic data covered include surface water, groundwater, water quality, biological, and sediment data. NAWDEX has established a nationwide network of local assistance centers at its district offices for local users' access to these services in 45 States and Puerto Rico.

D. U.S. Geological Survey
Office of Water Data Coordination
417 National Center
Reston, Virginia 22092
Telephone: (703) 860-6931, FTS: 928-6931

This office maintains a computerized file of information on water data acquisition activities throughout the U.S. and its territories and possessions called the Catalog of Information on Water Data. All activities pertaining to water-data acquisition,

water quality, groundwater, and surface water are covered. The catalog itself serves to describe the availability of data in these areas and does not contain any actual measurements, which must be obtained from the reporting agencies and organizations.

E. U.S. Fish and Wildlife Service
Office of Biological Services
Washington, D.C. 20204
Telephone: (202) 343-4126, FTS: 323-4126

This office provides an environmental strike force capability which will respond to requests for specialized technical assistance on environmental issues relating to the location, quantity, condition, and ecological importance of habitats critical to the survival of the Nation's fish and wildlife resources. It plans and monitors the gathering, analysis, and dissemination of information that will aid decisionmakers in the end resolution of problems associated with major land and water use changes.

F. U.S. Fish and Wildlife Services
Office of Biological Services
National Stream Alteration Team
Route #1
Columbia, Missouri 65201
Telephone: (314) 442-2271 X3271, FTS: 276-3271

The National Stream Alteration Team provides technical assistance in assessing the environmental impacts on streams and riparian

habitat of such operations as dredging, mining in streams, and reservoir construction. Literature searches through both commercial on-line data bases and hard copy indexes to the scientific literature are available on request. Technical assistance and other information services are available primarily to Federal and State agencies.

2. National Oceanic and Atmospheric Administration Sources and Services:

A. Environmental Data Information Service (EDIS)
National Oceanic and Atmospheric Administration
2001 Wisconsin Avenue, N.W.
Washington, D.C. 20235
Telephone: (202) 234-6500

NOAA's EDIS maintains a set of computer-searchable interdisciplinary files of environmental data, known as the Environmental Data Index (ENDEX), at the National Oceanographic Data Center. These files can be searched by geographic area, type of data, institution holding the data, projects, etc. Descriptions of data collection efforts, detailed inventories of commonly used files, and descriptions of data files can be obtained through ENDEX. Data catalogs from large NOAA environmental data collection projects can be identified.

One of the ENDEX data bases that users are likely to find particularly helpful is the Environmental Data Base Directory (EDBD), which is a computerized inventory of environmental data bases located at Federal, State, and local government agencies, educational and research institutions, and private

industry in the U.S. and Canada. At present, 12,000 environmental data files are described.

Requests for services should include requester's identification, address, phone number, and as much information as possible on geographic areas of interest, types of data needed, data format, time periods, etc.

B. Environmental Science Information Center (ESIC)
User Services Branch, D822
NOAA Library and Information Services Division
6009 Executive Boulevard
Rockville, Maryland 20852
Telephone: (301) 443-8330

ESIC manages NOAA's library and information services and coordinates its participation in the national network of scientific information centers and libraries. Searches of nearly 100 data bases of abstracted or indexed published literature are provided to help identify relevant articles or reports and assist the user in locating the most useful materials. A complete list of ESIC data bases is available on request.

3. Environmental Protection Agency Sources and Services:

A. EPA Information Clearinghouse
401 M Street, S.W.
Washington, D.C. 20460
Telephone: (202) 755-9112

The Clearinghouse manages an indexed inventory describing all EPA environmental data bases and models. It does not provide

raw data, but can describe the availability of water and other data collected by EPA and make referrals to appropriate agency contacts who can access the data. The Clearinghouse will be operational in early 1981.

B. Storage and Retrieval System (STORET)
Environmental Protection Agency
WH 553
401 M Street, S.W.
Washington, D.C. 20460
Telephone: (202) 426-7792

The STORET system is a computerized file of water quality data consisting of 65 million observations covering 400 parameters at 400,000 sampling sites. Continuing users are encouraged to attend the free training seminars offered at 10 regional EPA offices so that they can access STORET data on a self-serve basis. Data is available in both hard-copy and computer-compatible formats and a limited number of standard statistical manipulations can be performed. STORET services are generally made available only to Federal, State, and local governments and their contractors.

4. Other Sources and Services:

A. Smithsonian Science Information Exchange (SSIE)
1730 M Street, N.W.
Washington, D.C. 20036
Telephone: (202) 381-5511

SSIE collects and distributes summaries of research in progress supported by the Federal Government. It also handles some

research supported by major foundations and fund-raising organizations, universities, State and local governments plus a limited number of industrial and non-U.S. organizations. Output consists of a summary of work being performed, researcher, location of research, and sponsoring organizations.

B. Current Research Information System (CRIS)
National Agricultural Library
5th Floor
Beltsville, Maryland 20705
Telephone: (301) 344-3850

CRIS is an automated system for storing and retrieving information on research projects of the U.S. Department of Agriculture and the State Agricultural Experiment Stations. The data base consists of in excess of 34,000 resumes of current or recently completed projects sponsored or conducted by 55 State agricultural experiment stations, 30 forestry schools and other cooperating institutions, and 6 agencies in USDA. Resumes are updated annually. Summaries include title, location, organization doing research, investigation, objectives, progress and approach.

C. National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, Virginia 22161
Telephone: (703) 557-4142

NTIS maintains a computer-based bibliographic data file on government funded publications on research, development and engineering as well as machine processible data and related software. NTIS collects and sells copies of specialized

technical information. Over 1,000,000 titles on file in 1978 with 70,000 added annually.

D. Environmental Data Center (EDC)
392 Madison Avenue
New York, New York 10017
Telephone: (212) 949-9494

EDC provides comprehensive summaries of environmental information including journal articles, books, technical reports, conference proceedings, and patents through its Environmental Index (ENVIRONLINE). Selected information from the Federal File contains 70,000 entries from 1970 to present with 10,000 entries added annually.

E. Bio Science Information Service (BIOSIS)
2100 Arch Street
Philadelphia, Pennsylvania 19103
Telephone: (215) 568-4016

BIOSIS maintains a data base of international research in the life sciences. Source material includes primary journals, symposia theses, monographs, and technical reports. Subject categories include: agriculture and agricultural engineering, environment, food science, life science, and medicine. Files contain 2.5 million entries with 250,000 added each year.

F. National Wildlife Federation
1412 16th Street, N.W.
Washington, D.C. 20036
Telephone: (202) 797-6800

The National Wildlife Federation publishes a list of Federal departments and agencies; State and territorial agencies;

citizen groups; interstate commissions and organizations; and directories and periodicals concerned with natural resource use and management in its Conservation Directory.

XVI. Agency Environmental Training Courses

The Water Resources Council is providing a selected list of environmental training courses given by individual agencies which may be pertinent to the field planner. These are made available to other agencies on a space available basis.

A. U.S. Army Corps of Engineers' training courses.

Following are several selected Army Corps of Engineers' training courses which are available to other agencies. For further information contact the Registrar at:

U.S. Army Engineers Division, Huntsville
Attention: HNDTD
P.O. Box 1600
Huntsville, AL 35807
Telephone: (205) 895-5032
FTS: 872-1666 (leave message only)

ECONOMIC ANALYSIS OF ENERGY SYSTEMS

Provides the basic concepts of life cycle costing, interest formula, and comparison of alternatives. It also covers the latest CE policy regarding

economic factors used in economic studies and economic ranking of design alternatives. Specific topics include:

a. Overview of U.S. energy situation
b. DOD-DA energy policies/Federal standards
c. Overview of energy conservation and utilization technologies
d. Basic concepts of life cycle costing
e. Analytical methods used in economic studies
f. Comparison of alternatives
g. Economic parameters - discount rate, escalation rates, inflation rates, etc.
h. Acquisition, owning, and operating costs
i. Economic life or planning horizon
j. Treatment of uncertainties
k. Economic ranking of alternatives

Fiscal Year 1982 Date	Location
December 14 - 18, 1981	Huntsville, Alabama

ECONOMIC, SOCIAL, AND INSTITUTIONAL ANALYSIS FOR WATER SUPPLY PLANNING

Water supply and water conservation have seldom been effectively brought together in the planning process. They have been looked on as separate fields, handled by different professionals and groups sustained by different institutions. This approach has not been productive and is now giving way to more effective cooperative efforts and the development of analytical

approaches which make possible the explicit consideration of conservation in water supply planning. The controlling economic and institutional elements in regionalized water supply planning are also becoming better understood. Corps planners need to follow carefully these developments as they hold the prospect of improved plans within the Corps.

Fiscal Year 1982 Date	Location
June 14 - 18, 1982	To be announced

ECOSYSTEM SURVEYING TECHNIQUES

a. Survey rationale

b. Sampling techniques

   1. Sampling vegetation and animal populations

   2. Sampling plant communities

      (a) The Releve method

      (b) Estimating species quantities

      (c) Relative magnitude terms

         (1) Absolute scale values

         (2) Cover scales

   3. Sampling aquatic ecosystem

c. Ecosystem surveys

   1. System state

   2. Ecosystem responses

   3. Critical factors determination

Fiscal Year 1982 Dates	Location
October 5 - 9, 1981	Huntsville, Alabama
April 19 - 23, 1982	Huntsville, Alabama

FORECASTING TECHNIQUES FOR WATER RESOURCES

Overview of forecasting techniques, trend extrapolation techniques; pattern recognition; probabilistic techniques, KSIM; dynamic models; use of scenarios; values forecasting; and life style typologies.

Fiscal Year 1982 Date	Location
April 19 - 23, 1982	To be announced

PLANNER ORIENTATION

Civil Works program, types of planning studies, planning and review process, study management, project purposes, effect assessment, plan formulation, funding the CW program, decision making tools, trends and new development, and water resources planning exercise are topics discussed during this course.

Fiscal Year 1982 Dates	Location
May 10 - 14, 1982	Fort Belvoir, Virginia
May 10 - 14, 1982	Cincinnati, Ohio
May 10 - 14, 1982	Seattle, Washington
May 17 - 21, 1982	Savannah, Georgia

May 17 - 21, 1982	Dallas, Texas
May 17 - 21, 1982	Honolulu, Hawaii

PUBLIC INVOLVEMENT - II - ADVANCED PUBLIC INVOLVEMENT

Program development including development of public involvement program objectives, identification of publics, defining information related to stages of planning, selection and use of program elements, public involvement in coordination, monitoring and evaluation; management considerations (staffing, timing, funding); and sample case studies with community variables, agency constraints, and techniques of public involvement and how to evaluate them.

Fiscal Year 1982 Date	Location
April 19 - 23, 1982	Washington, D.C.

PUBLIC INVOLVEMENT FOR CORPS EXECUTIVES

To teach District Engineers and other top level field executives the philosophy, principles and techniques of public involvement. Emphasis is placed on the executive role and the development, management, and evaluation of a public involvement program.

The course is intended to provide an orientation on the Corps public involvement and program requirements with emphasis on management's role in facilitating and supporting effective public involvement practices.

Fiscal Year 1982 Date	Location
September 14 - 15, 1982	Washington, D.C.

SOCIAL IMPACT ANALYSIS TECHNIQUES

The purpose of this course is:

a. To enable students to understand what is meant by "Social Analysis Functions" (SAF), and use of the process in planning and understanding the Corps capability with SAF
b. To prepare students to use SAF interactively with social science consultants
c. To acquaint students with the state-of-the-art of SAF.

The course covers:

a. Social structure - theory in social organization and social psychology
b. SAF and public involvement
c. The integration of social analysis in the Corps Multiobjective Planning Process.

Fiscal Year 1982 Date	Location
May 3 - 7, 1982	Washington, D.C.

URBAN ENVIRONMENT

Course will include study sessions on environmental urban planning, developing open space and nonstructural solutions for floodways, planning and

designing recreational facilities at urban projects, minimizing impacts on air and water quality and cultural resources, planning for the preservation and enhancement of natural habitats on project lands, and gaining public support for proposed projects in urban areas. A field survey of Corps urban flood control, navigation, shore protection, and recreational development projects that have impacted on the urban environment, or successfully responded to environmental concerns and constraints, will be included.

Fiscal Year 1982 Date	Location
March 8 - 17, 1982	Los Angeles, California

ENVIRONMENTAL QUALITY PLANNING

The purpose of this course is to provide field planners with an updated overview of the most current philosophies, concepts, methods of planning for environmental quality objectives within the broader planning process. The course covers:

a. Concepts of national planning objectives NED, EQ
b. Relationship of EQ planning formulation process
c. New legislative and administrative mandates
d. Water Resources Council's EQ procedures
e. Identifying, measuring, and scaling EQ values
f. Constructing an EQ plan
g. Cost-sharing for EQ
h. Risk and uncertainty considerations (irreversible and irretrievable)

i. Impact analysis

j. Net EQ benefits

B. U.S. Fish and Wildlife Service's training courses.

The following are several selected U.S. Fish and Wildlife Service training courses which are available to other agencies. For further information, contact the individual named on the course description sheet.

1. INSTREAM FLOW COURSES

To confirm course dates and to obtain other course information for the following instream flow courses, contact:

Center for Conferences and Institutes
Colorado State University
Fort Collins, CO 80522
Attention: Helen White
Telephone: FTS: (303) 491-6222
Comm: (303) 491-6222

INSTREAM FLOW FIELD TECHNIQUES SHORT COURSE

Course objectives are (1) develop an understanding of the sampling involved in study site selection and transect placement; (2) develop operational skills in differential leveling, profile leveling; distance measurement, and velocity and discharge measurement; (3) develop an appreciation for quality control in data collection, and skills in using various trouble-shooting techniques to correct errors; and (4) develop an understanding of

the states of flow, and how to work around such problems as rapidly varied and unsteady flow situations.

Fiscal Year 1982 Dates	Location
October 19 - 23, 1981	Boise, Idaho
January 11 - 15, 1982	San Antonio, TX
March 15 - 19, 1982	Columbia, MO
April 19 - 23, 1982	Boston, Mass
May 17 - 21, 1982	Redding, CA
July 19 - 23, 1982	Fort Collins, CO

(Cost $300 - Government agencies
400 - All others)

INSTREAM FLOW STRATEGIES/NEGOTIATIONS SHORT COURSE

Course objectives are (1) analyze water law relating directly to stream flow protection; (2) identify and evaluate strategies for protecting instream flows; (3) enhance participant's abilities in strategy selection and design; (4) introduce the basic principles of negotiation; and (5) develop skills in presenting and defending instream flow recommendations.

Fiscal Year 1982 Dates	Location
November 2 - 5, 1981	Fort Collins, CO
November 16 - 19, 1981	Washington, D.C.
January 18 - 21, 1982	Sacramento, CA
March 8 - 12, 1982	East Lansing, MI
May 25 - 28, 1982	Anchorage, AK

(Cost $250 - Government agencies

350 - All others)

INSTREAM FLOW COMPUTER ANALYSIS COURSE

Course objectives are (1) to develop operational level skills in the use of the PHABSIM computer modelling system; (2) provide an understanding of Job Control language and the use of procedure files; (3) develop skills in use of interactive data entry and file modification programs; and (4) develop skills in the calibration and quality control in the use of hydraulic simulation models.

Fiscal Year 1982 Dates	Location*
November 16 - 20, 1981	Fort Collins, CO
February 1 - 5, 1982	Fort Collins, CO
April 26 - 30, 1982	Fort Collins, CO
July 26 - 30, 1982	Fort Collins, CO

(Cost $450 - Government agencies

550 - All others)

*Colorado State University

INSTREAM FLOW INCREMENTAL METHODOLOGY COURSE

Course provides all of the training necessary to implement instream flow incremental methodology including problem analysis; legal and institutional opportunities; data collection, analysis and interpretation; and negotiation of recommendations.

Fiscal Year 1982 Date	Location
June 7 -12, 1982	Colorado State University Fort Collins, CO

(Cost $600 - Government Agencies
800 - All others)

WATER LAW SHORT COURSE

Course is a basic summary of western water law.

Fiscal Year 1982 Dates	Location
February 25 - 26, 1982	Dallas, Texas
June 24 - 25, 1982	Denver, Colorado

(Cost $200)

2. Habitat Evaluation Procedures Courses

The schedule of training dates and locations listed below is tentative and courses may be cancelled if a minimum attendance is not achieved. To

confirm course dates, tuition schedule, and obtain other course information for the following Habitat Evaluation Procedures (HEP) related courses, contact:

Charles Solomon
U.S. Fish and Wildlife Service
2625 Redwing Road
Fort Collins, Colorado 80526
(FTS)323-5421 or (303)226-9421

or

Caroline Frye
Office of Conferences
and Institutes
Colorado State University
Fort Collins, Colorado 80523
(303)491-6222

CERTIFIED HEP

The course is designed to introduce, describe, and demonstrate the Habitat Evaluation Procedures (HEP) based on a project example. The course will also include an introduction to the Human Use and Economic (HUEE) concepts. This course can be taken for 2 semesters of graduate credit through Colorado State University. ($350).

Date	Region	Location
October 19-23, 1981	3	St. Louis, Missouri
November 16-20, 1981	4	Atlanta, Georgia
December 7-11, 1981	5	Boston, Massachusetts
January 11-15, 1981	2	Austin, Texas
February 15-19, 1982	6	Billings, Montana
March 15-19, 1982	7	Juneau, Alaska
May 17-21, 1982	1	Portland, Oregon
July 19-23, 1982	6	Fort Collins, Colorado

HSI MODELS

The course consists of a review of the principles and concepts of HSI models, phases of building models, and developing and modifying HSI models for site specific use. ($300).

Date	Region	Location
June 8-11, 1982	6	Fort Collins, Colorado
July 12-15, 1982	1	Portland, Oregon
August 16-19, 1982	6	Fort Collins, Colorado

ADVANCED RECREATION ECONOMIC TECHNIQUES

This course is designed to teach state-of-the-art techniques in recreation economics. The course includes a presentation of recreation valuation and demand estimating methods such as Travel Cost Method and Contingent Value Method. The principles of the U.S. Fish and Wildlife Service's Bio-economic analysis system (HUEE) will be applied to analyzing wildlife recreation. ($200).

Date	Region	Location
January 5-7, 1982	-	Washington, D.C.
June 22-24, 1982	1	Seattle, Washington

HEP AND HSI SOFTWARE

Course objectives are 1) to develop operational level skills in the use of

the HEP and HSI computer software; and 2) develop skills in use of interactive data entry and file modification programs. ($200).

Date	Region	Location
December 15-17, 1981	6	Fort Collins, Colorado
January 19-21, 1982	6	Fort Collins, Colorado
March 23-25, 1982	6	Fort Collins, Colorado

For further information about any of these sessions, please contact the HEP Coordination in that region.

FWS Region	Coordinator	Phone
1	Mac McKie	(FTS) 429-6150 or (503) 231-6150
2	Dean Watkins	(FTS) 474-2914 or (505) 766-2914
3	Jerry Decker	(FTS) 725-3536 or (612) 725-3536
4	Bruce Bell	(FTS) 242-6343 or (404) 221-6343
5	Carl Schwartz	(FTS) 829-9382 or (617) 965-5100
6	Grady Towns	(FTS) 234-5586 or (303) 234-5586
7	Greg Konkel	(FTS operator) 399-0150; ask for (907) 276-3800