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Bear River Basin Environmental Assessment Projections: Summary Report

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BEAR RIVER BASIN

ENVIRONMENTAL ASSESSMENT

PROJECTIONS

SUMMARY REPORT

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BEAR RIVER BASIN

ENVIRONMENTAL ASSESSMENT

PROJECTIONS

SUMMARY REPORT

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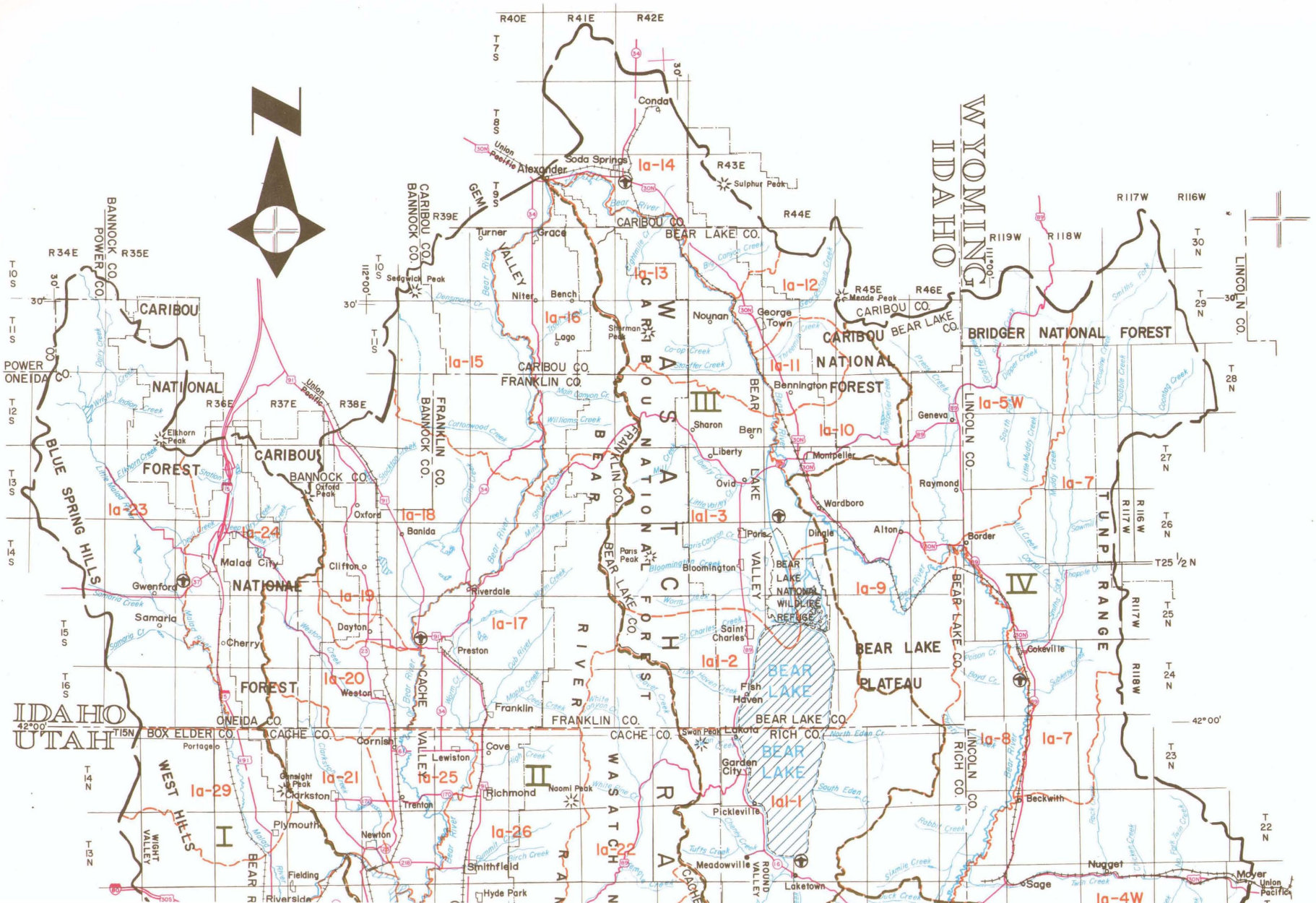
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE
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T28N
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T26N
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Soda Springs
Alexander
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Union Pacific
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Sherman Peak
Nounan
George Town
Bennington
Geneva
Sharon
Bern
Liberty
Montpelier
Ovid
Raymond
Wardboro
Alton
Dingle
Border
Paris
Paris Peak
Bloomington
Saint Charles
Fish Haven
Swan Peak
Lakota
Garden City
Pickleville
Meadowville
Laketown
Sage
Nugget
Moyer
Cokeville
Beckwith
Sedgwick Peak
Meade Peak
Elkhorn Peak
Oxford Peak
Oxford
Banida
Malad City
Clifton
Gwenford
Samaria
Cherry
Dayton
Riverdale
Preston
Weston
Franklin
Cornish
Portage
Lewiston
Cove
Richmond
Naomi Peak
Trenton
Clarkston
Plymouth
Newton
Fielding
Riverside
Smithfield
Hyde Park
CARIBOU
NATIONAL
FOREST
BLUE SPRING HILLS
WEST HILLS
WIGHT VALLEY
BEAR RIVER
CACHE VALLEY
GEM VALLEY
BEAR LAKE
PLATEAU
BEAR LAKE NATIONAL WILDLIFE REFUGE
BEAR LAKE
BRIDGER NATIONAL FOREST
TUNP RANGE
WASATCH MOUNTAINS
WASATCH FRONT
BOUNDARY
CARIBOU CO.
BANNOCK CO.
FRANKLIN CO.
BEAR LAKE CO.
ONEIDA CO.
CACHE CO.
BOX ELDER CO.
RICH CO.
LINCOLN CO.
POWER CO.
Ia-1
Ia-2
Ia-3
Ia-4W
Ia-5W
Ia-7
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I
II
III
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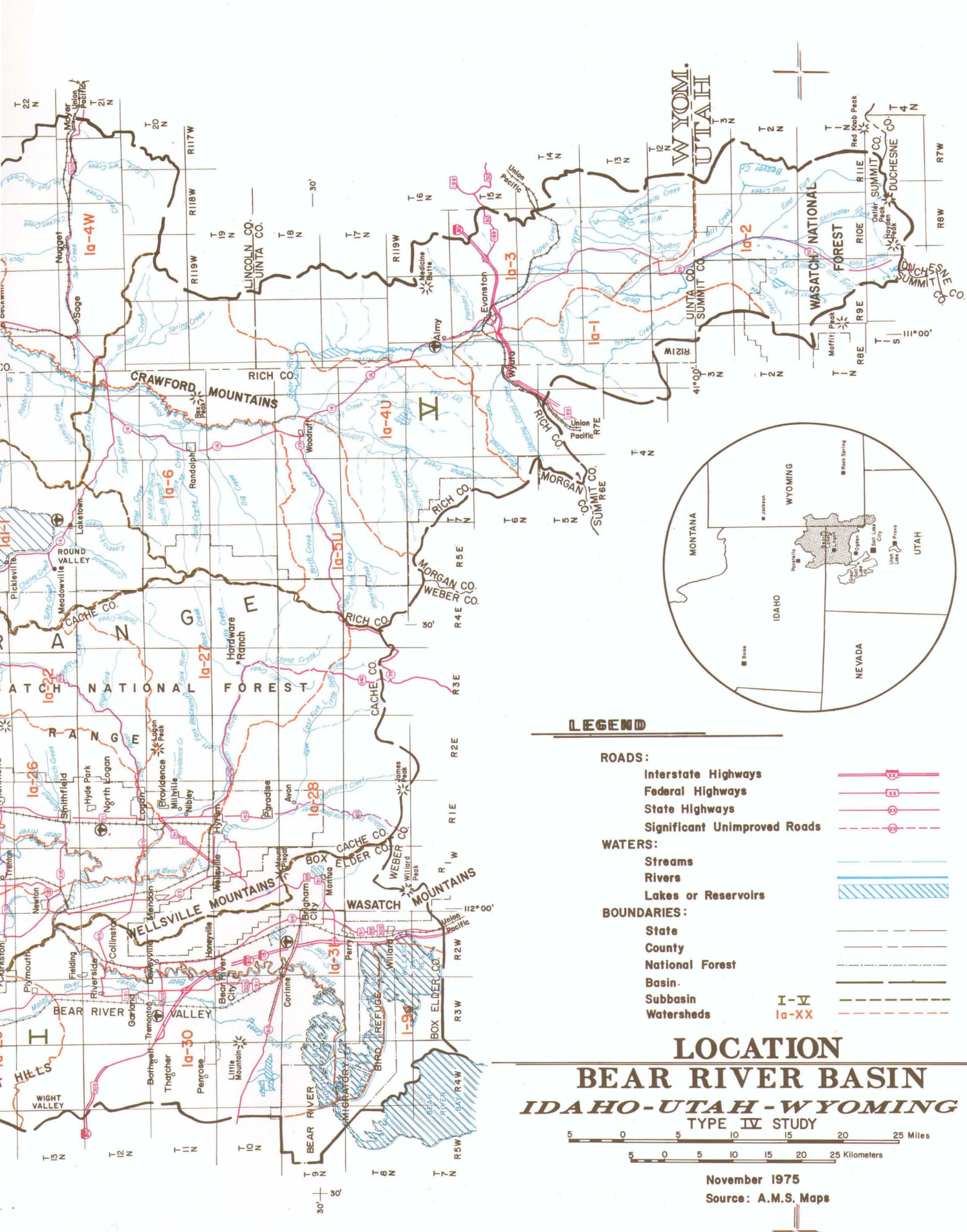

LOCATION MAP

LEGEND

ROADS:
- Interstate Highways
- Federal Highways
- State Highways
- Significant Unimproved Roads

WATERS:
- Streams
- Rivers
- Lakes or Reservoirs

BOUNDARIES:
- State
- County
- National Forest
- Basin
- Subbasin I-V
- Watersheds Ia-XX

LOCATION
BEAR RIVER BASIN
IDAHO-UTAH-WYOMING
TYPE IV STUDY

5 0 5 10 15 20 25 Miles

5 0 5 10 15 20 25 Kilometers

November 1975

Source: A.M.S. Maps

ENVIRONMENTAL ASSESSMENT

OF THE

BEAR RIVER

BASIN

SUMMARY REPORT

PROJECTIONS

PREPARED BY:

THE UTAH DIVISION OF WATER RESOURCES

FOR

THE U. S. SOIL CONSERVATION SERVICE

BEAR RIVER BASIN

Environmental Assessment

Projections

Contents

BEAR RIVER BASIN

ENVIRONMENTAL ASSESSMENT

PROJECTIONS

Projections are conditional forecasts of the future. Because of our inability to see very far into the future, projections must be based in one degree or another, on an extension of past relationships among factors which have future relevance to the measures being projected.

Inherent in the task of making projections is the choice of the relationships to be extended and a determination of possible future changes which will modify historically based trends. A simple extension of historic trends is not valid.

Possible changes may include the constraining influence of an obviously growing resource scarcity. They may also reflect an emerging awareness of the catastrophic implications of food requirements for a world population growing at an exponential rate.

Initially, therefore, projections are built on a set of assumptions regarding conditions which are expected to exist during the period of projection. The assumptions selected are those which seem to have the greatest possibility for realization.

A note of caution should be introduced at this point. It is naive to believe that any set of assumptions regarding the course of future events has any more than a fortuitous chance of being fully realized. This is especially true of the assumptions and projections made for small areas, such as the Bear River Basin, since the compensating balances which operate on the national level are weak or absent in small areas.

General Assumptions

1. The assumptions adopted for the 1972 Series E population OBERS report will generally prevail. These include:

(1) Growth of national population will be conditioned by a fertility rate which represents "replacement level fertility."

(2) Nationally, reasonably full employment, represented by a 4 percent unemployment rate, will prevail at the points for which projections are made. As in the past, unemployment will be disproportionately distributed regionally, but the extent of disproportionality will diminish.

(3) The projections are assumed to be free of the immediate and direct effects of wars.

(4) Continued technological progress and capital accumulation will support a growth in private output per man hour of 2.9 percent annually.

(5) The new products that will appear will be accommodated within the existing industrial classification system, and, therefore, no new industrial classifications are necessary.

(6) Growth in output can be achieved without ecological disaster or serious deterioration, although diversion of resources for pollution control will cause changes in the industrial mix of output.

The regional projections are based on the following additional assumptions:

(1) Most factors that have influenced historical shifts in regional "export" industry location will continue into the future with varying degrees of intensity.

(2) Trends toward economic area self-sufficiency in local-service industries will continue.

(3) Workers will migrate to areas of economic opportunities and away from slow-growth or declining areas.

(4) Regional earnings per worker and income per capita will continue to converge toward the national average.

(5) Regional employment/population ratios will tend to move toward the national ratio.

However, two additional factors affecting regional (Basin-wide) population growth and land use will play a stronger role in the regional projections. These are:

(1) World wide pressure for food production will have intensified by the year 2000 so as to place the productive capacity of the Basin's land and water resources into an altered frame of reference. Production of food and fiber from the farm and range lands will move into a more dominant position in respect to single use for recreation, wildlife or wilderness. There will be more effort to reduce urban encroachment on productive lands and urban planning will center on reducing per capita urban land requirements.

(2) The development of regional energy resources now appear to be destined to occur mostly outside the Basin. If oil discoveries in important amounts are found in the Basin, economic and population growth will be greatly accelerated.

Although the records of population change through the decade 1960 - 1970 shows both gains and losses among the counties of the Basin, the over-all trend is for an increase. The population census for the various counties for the census years 1960 and 1970 are shown below.

Table 1. Population Distribution in the Study Area.

County	County Population 1960	County Population 1970	10 Year Change %	1970 Urban & Rural Distribution Within County: Urban (%)	Non-Farm Rural(%)	Rural(%)	1970 Population Within Basin
Utah							
Box Elder[a]	25,061	28,129	12.2	59.7	7.9	32.3	26,802
Cache	35,788	42,331	18.3	60.7	25.7	13.6	42,331
Rich	1,685	1,615	-4.2	--	--	100.0	1,615
Total	62,534	72,075	15.3	--	--	--	70,748
Wyoming							
Uinta[a]	7,484	7,100	-5.1	62.8	--	37.2	4,964
Lincoln[a]	9,018	8,640	-4.2	41.5	--	58.5	986
Total	16,502	15,740	-4.6	--	--	--	5,950
Idaho							
Bear Lake	7,148	5,801	-18.8	44.9	--	55.1	5,801
Caribou[a]	5,976	6,534	9.3	45.6	--	54.4	5,031
Franklin	8,457	7,373	-12.8	44.9	--	55.1	7,373
Oneida	3,603	2,864	-20.5	--	64.5	35.5	2,638
Total	25,184	22,572	-10.4				20,843
Basin Total	102,220	110,387	8.0	53.8	13.6	33.6	97,541

[a]Only a portion of listed county population living in the basin. However, except for Lincoln County, Wyoming, the major center of population and trade are located within the basin.

As can be noted, the losses in the Idaho and Wyoming Counties are more than compensated by gains in the Utah Counties. Although hard census data is not available at this time, there are indications that there has been a subsidence of the declining trend in both the Idaho and Wyoming Counties and that the increasing trends in Cache, Box Elder, and Caribou Counties are being sustained and even accelerated. Data for the Utah Counties are:

	Population			Annual Rate %	
County	1960	1970	1975[1/]	1960-70	1970-75
Box Elder	25,062	28,129	30,800	1.2%	1.8%
Cache	35,788	42,331	48,500	1.7%	2.8%
Rich	1,685	1,615	1,600	-0.4%	-0.01%
Total	62,534	72,075	80,900	1.4%	2.4%

Although similar data is not available for the Idaho and Wyoming Counties, the Idaho Division of Water Resources has made estimates of a population growth rate in the Idaho portion of about 1.25% per year for the next 50 years. If realized, this would add about 16,000 in population to that now in the Idaho Counties by the year 2020.

Another indication of projected population in Idaho can be gained from the draft Environmental Impact Statement on proposed phosphate development in southeastern Idaho, prepared jointly by USDI agencies and the U. S. Forest Service. Presentation and discussion of 1970-2000 projections of population and employment are covered on pages 1-391 to 1-409 of the report.

For the time points and counties relevant to the Cooperative River Basin (Type IV) Study, the following projections of population are taken from the report with a further projection to 2020 extrapolated.

	Population			
	Idaho Counties - 1970-2000			Extrapolation
County	1970	1985	2000	to 2020
Bear Lake	5,801	8,100	9,500	10,400[1/]
Caribou	6,534	12,600	17,000	19,000
Franklin	7,343	6,900	6,500	6,500
Oneida	2,864	2,500	2,100	2,000
Total	22,572	30,100	35,100	37,900
In-Basin	20,850	28,200	33,200	36,100

1/ Growth projected from recreation development.

Changes in the Wyoming part of the Basin are harder to predict. The immediate past indications indicate a static condition. However, if recent oil and gas exploration evidence proves out, Uinta and Lincoln Counties could experience a population boom similar to that which occurred in Uintah and Duchesne Counties, Utah, in the 1960's and early 1970's.

Employment data for 1970-1974 suggest a recent increase in population. In recognition of this change from the static condition, the population projections developed for the Wyoming Water Plan Program are adopted as representing a conservative forecast of population growth for that part of the Basin.

In recognition of persistent and current growth rates in Utah and recreation and other developmental activities in Idaho and Wyoming, the following population projections are adopted:

	Projected Populations - Bear River Basin 1/		
	1970	1985	2020
Utah	70,750	102,000	207,000
Idaho	20,850	28,000	36,000
Wyoming	5,950	8,000	10,000
TOTALS	97,550	138,000	253,000

1/ That portion of the population living in the Basin.

The rate and pattern of population growth as shown in the preceding tabulation will generate diverse land use pressures. The most intense and direct of these will be the requirement for urban space and rural homesites. Under growing competition with other uses, it is probable that there will be a trend toward lower per household urban space requirement. There will be an increase in multiple housing units, cluster housing, and mobile homes. This is a trend already apparent in Utah Counties as shown in the following:

	Type of Housing Structure					
	Percent of Units in					
County	One Unit Structure		Multiple Unit Structure		Mobile Homes, Trailers	
	1960	1970	1960	1970	1960	1970
Box Elder	84.7	83.7	12.3	12.9	3.0	3.5
Cache	76.4	73.2	22.4	24.7	1.2	2.3
Rich	92.8	89.7	1.5	6.7	5.7	3.7

Consideration of the changing proportions of housing types and in recognition of their varying land requirements, the following mean-land requirements per unit of housing is adopted for projection purposes:

	1970	1985	2020
	(acres per unit[1])		
Urban	.40	.37	.28
Rural[2]	7.0	6.0	4.5

Urban Space Requirements

The estimates of urban space requirements for 1985, 2000, and 2020 is principally based on the projections of population, rural and urban distribution, numbers in households and space requirement per household. In parts of Rich and Bear Lake Counties, where second homes are being developed around Bear Lake, the past and current rates of lot sales and the ratios of second home construction to lot sales was used as guidelines in projecting land use shifts to this purpose. Industrial developments were separately identified. Second home, residential, and industrial space was included in one category--urban space. Projected urban space requirements is as follows:

State Portion of Basin	Increased (Cumulative) Acres Required at Time Points[3]	
	1985	2020
Wyoming	300	900
Idaho	5200	17,650
Utah	6150	33,750
Totals	11,650	52,300

[1] Includes associated commercial and facility space.
[2] Assumes acreages shifted from other functional (productive) uses.
[3] Takes into account vacant space in existing urban areas.

PROJECTION ASSUMPTIONS

Land Use Shifts

To forecast shifts in land use in the watershed evaluation units, a number of factors, operating in concert and developing in intensity through the future time frames, must be given consideration. These include:

1. Space for human habitation, including that associated with urban recreation, commercial, industrial, and urban open and green space will maintain its traditional priority over other uses. Efforts will be made toward greater selectivity in allocating land to the urban purpose. Land conserving practices such as cluster and multiple housing and central city rehabilitation will be increasingly practiced. However, total space needs, coupled with the ultimate limitations of providing urban services will force further encroachment of urban development on perimeter areas, most of which are now irrigated.

2. A growing awareness of the crucial problem of providing food for an expanding world population will begin to penetrate the private and public decision-making process on land use. By the year 2000, both a national and a local policy will have developed which will place emphasis on the preservation of existing agricultural lands and the development of new lands of high production potential. Through the period 1975-2020, therefore, the acreage of irrigated land, basin-wide, should show a substantial increase. The greater amount of this increase should occur in Caribou, Rich, and Franklin Counties through development of existing irrigation supplies, on-farm improvements and storage facilities.

3. Much of the expansion of the irrigated area will be at the expense of contiguous drylands. There will be direct shifts of some drylands to urban use and rural homesites. The greater shift will be to replace existing irrigated lands converted to urban use and direct changes to irrigation.

A factor which may contribute in some degree to the decline in dry cropland use is the extent to which this type of agriculture is identified as a major non-point water quality pollution source. Sediment studies

indicate that sediment movement on dry croplands is over 5 times that from irrigated land. The extent to which stream-carried sediment can be traced to drylands is yet to be determined.

There is no doubt that this will vary from area to area. It would appear, however, that in general the conversion from dry to irrigated agriculture would result in a substantial reduction in sediment movement, assuming, of course, that proper irrigation practices were applied. It can be concluded, therefore, that pressure for increased food production and steps to improve water quality will combine to induce a future shift from dry to irrigated cropland.

4. Shifts in other existing dominant land uses may occur but when viewed against the back drop of existing acreages, the magnitude of the shifts will be rather small. Although projected population increases will demand the development of new concentrated recreation sites, the impact on range and forest use will be generally negligible, with losses in grazing being more than compensated by improvements in range quality. With the increased emphasis on food production, there should be an acceleration of improved management and treatment on rangelands and a consequent improvement in production and the environmental quality of these lands. Wetland acreage should remain substantially intact. It is probable that there will be an increase in areas occupied by mineral lands. These increases would be carved out of existing ranges and forest areas.

Changes in Environmental Quality

Changes in land use, in general, will produce an over-all improvement in environmental quality. With approximately 63,000 acres of dryland projected to be shifted to irrigated land and 6,200 acres in shifts to urban use (including rural and recreation homesites), there will be a net environmental improvement due to changes in the mix of land uses. However, the most significant changes will be generated by the impact of going conservation and improvement programs on existing acreages of cropland, rangelands, and forest areas. These practices will improve production and enhance watershed, wildlife and recreation values.

PROJECTIONS
AGRICULTURAL LAND USE SHIFTS
WATER FILINGS RELATIONSHIPS

Projections of shifts in land use in the Basin are based on current discernable trends and reasoned estimates of the degree to which these trends will be sustained or constrained in the future by resource supplies. Some of the political, economic, and demographic factors which will effect land use shifts have been previously outlined. The projections resulting from these assumptions need to be further examined to determine if resource restraints will dampen their realization.

It has been previously determined that the land supply will not constrain the shift of lands into urban use. It remains, therefore, to determine if land or water constraints will limit shifts into irrigated agriculture.

THE SUPPLY - POTENTIAL IRRIGATED CROPLAND

The Soil Resource Group survey and study has delineated and classified present and potential croplands and rangelands. These are summarized by counties. This summary includes acreages which are now irrigated plus those acres of presently cropped drylands and undeveloped rangeland which are suitable for irrigation.

Another limiting factor is the water supply. However, the supply picture in the Basin is not at this point identified in the same degree of detail as is the available land. It is known that an average annual gross surplus of some 900,000 acre feet flows into Great Salt Lake. It is also a matter of current practice that individuals are actively developing uncommitted and unused water supplies throughout the three states of the Basin. Further, it is a matter of record that substantial quantities of water have been filed upon by individuals and small irrigation companies and that large flow requests are covered by approved and pending, but not yet certified, filings. It would seem reasonable to assume that the category of approved and pending filings

represents as a minimum a projection of future water supply development along the river. With appropriate adjustment for that portion of the filings which will be used for supplemental water, the filings may be used to quantify maximum acreages which may be served in the various locations.

At the present writing (July 1976), the Compact between Utah, Idaho, and Wyoming on the Bear River has been under re-negotiation. At this time, it appears that negotiators have reached substantive agreement on a new Compact and it will probably be ratified by the three states late this year. To whatever degree the old compact has constrained development of the river's wate resources in the past, it is expected that the new agreement will accelerate new irrigation development.

Estimates of shifts to irrigated and urban uses were based on several sources and types of information.

In the Idaho portion of the Basin, the 1985 projections were primarily based on the SCS - State of Idaho 5-year (1975-80) estimates issued in July 1975. This report quantified and identified types of land use shifts at specific locations, thus enabling allocations to watersheds. The 2020 were extensions of derived 1975-85 shift rates modified or constrained by other factors such as industrial development, recreation home establishment, or land or water constraints which might be identified.

The Wyoming urban shift estimates were based on population projections provided by the state of Wyoming. Agricultural shifts were based on allocation of new irrigation water as reflected in Wyoming filings.

In Utah, Box Elder and Cache county urban shifts were based primarily on population projections. In Rich County, recreation home establishment was the governing factor in urban shifts. Shifts to irrigated land were based on pending water filings.

The following tables set forth peak-month requirements and the acres/cfs requirements which were used in testing the projected shifts to irrigated agriculture.

Table 2. CONSUMPTIVE USE - ACRE EQUIVALENTS - 1 CFS

Sub-Basins & typical Watersheds	Peak Month C.U.[1]/Ac. Inches	Required Gross Inches Per Applic. Acres	Acres Per 1 cfs	Allocated to New Land cfs	Allocated to New Land Acres
I					
1a-29 and 30	6.60	10.1	65	231	15,000
1a-31	6.48	9.97	64	47	3,000
1a-23 and 24	5.28	8.12	81	(89)	7,200
				Total	25,200
II					
1a-17 thru 1a-20	6.12	9.41	70	170	11,900
1a-15 and 16	5.88	9.05	72	292	19,900
1a-21 - 28	6.12	9.41	20	54	3,800
				Total	35,600
III					
1a-13 and 14	5.64	8.68	76	(-8)	(- 700)
Bear Lake	5.16	7.94	83	(-16)	900
Rich 1a1-1	5.16	9.94	83	(-22)	(-1,800)
					(-1,600)
IV					
1a-5w and 1a-8	5.16	7.94	83	29	2,400
1a-7	5.04	7.75	85		
V					
1a-6 and 1a-5u	4.8	7.38	89	90	8,000
1a-1 thru 1a-3	5.04	7.75	85	21	1,800

APPROVED AND PENDING FILINGS - JANUARY 1, 1976

		Allocated to New Land (CFS)	Projected New Land Requirements (CFS)
Utah	690 cfs	470	400
Idaho	553 cfs	440	438
Wyoming	126	65	50

1/ C.U. - Consumptive Use

Table 3. LAND AND WATER LIMITATIONS AS RELATED TO SHIFTS TO IRRIGATED USE

Sub-Basin-County	1970 Total Potential Irrigated Land (Acres)	1970 Available (Surplus) for new Irrigation (Acres)	Acres in Filings[1] Available for new Land (Acres)	Projected Shifts 1970 - 1985	Projected Shifts 1985 - 2020
I					
Oneida	127,000	101,300	7,200	4,200	3,000
Box Elder	170,500	81,900	18,000	6,000	12,000
II					
Cache	209,000	105,000	2,200	3,800	(-1,600)
Franklin	147,800	96,300	11,900	7,300	4,600
Caribou	37,200	13,200	19,900	14,300	5,600
Bannock	15,900	14,800	1,100	-	1,100
III					
Caribou	52,100	38,400	(-1,100)	(-700)	(-400)
Bear Lake	125,800	84,400	900	-	900
Rich	8,600	-	(-1,800)	(-1,000)	(-800)
IV					
Bear Lake	74,300	54,400	x 500	100	400
Lincoln	65,100	37,700	2,400	600	1,800
Rich	6,500	3,300	300	-	300
V					
Uinta	47,100	15,800	1,800	-200	2,000
Summit	4,100	4,100			
Rich	68,100	19,300	8,000	3,500	4,500
TOTALS					
Utah	466,800	213,600	26,700	12,300	14,400
Idaho	580,100	402,800	40,400	25,200	15,200
Wyoming	112,200	53,500	4,200	400	3,800
			71,300	71,300	

1/ Calculated acres based on approved and pending filings only.

PROJECTION CRITERIA

GROWTH AND LAND USE SHIFT CLASSES

Urban Growth

Class I	Low - Resource base and vacant space in existing urban area indicates minimal urban expansion.
Class II	Moderate - Present status as trade, educational, or religious center; or unique resource base (mineral - recreation) indicates sustained current rate of expansion. (Available vacant space in existing urban area(s) a consideration.)
Class III	High - Potential mineral, recreation, or trade developments and/or the lack of vacant space in existing urban areas indicates an accelerated expansion.
Class IV	No significant growth.

LAND USE SHIFT CLASSES[1/]

Class 1	Low - Shifts in land use acreage involve less than 3% of acres in the specific use.
Class 2	Moderate - Shifts in land use acreage involve from 3% - 5% of acres in the specific use.
Class 3	High - Shifts in land use acreage involve 5% to 10% of acres in the specific use.
Class 4	Accelerated - Very high and unsustainable shifts in the specific use.

[1/] Percentages based on end use; i.e., if shift is from dry ⇒ irrigated, the irrigated acreage is base for computation.

Table 4.

BEAR RIVER BASIN

PROJECTIONS - ADAPTED TRENDS IN LAND USE[1]

County - Watershed	Homesite or Urban Growth 1975-1985	Homesite or Urban Growth 1985-2020	Land Use Shifts: Cropland to Urban 1985	Cropland to Urban 2020	Rangeland to Urban 1985	Rangeland to Urban 2020	Dryland to Irrigated 1985	Dryland to Irrigated 2020	Dryland to Recreation 1985	Dryland to Recreation 2020	Rangeland to Recreation 1985	Rangeland to Recreation 2020
Oneida												
1a-23	I	IV	-	-	-	-	4	3	-	-	1	1
1a-24	I	I	1	-	-	-	3	4	-	-	1	1
Box Elder[2]												
1a-29	IV	IV	-	-	-	-	1	1	-	-	-	-
1a-30	II	II	1	1	-	-	1	1	-	-	-	-
1a-31	II	II	1	3	-	1	1	1	-	-	-	1
Caribou												
1a-14	I	II	1	2	1	1	-	1	-	1	-	1
1a-15	IV	I	-	1	-	-	3	3	-	-	-	-
1a-16	IV	IV	-	-	-	-	4	3	-	-	-	-
Franklin												
1a-17	I	I	2	1	-	-	2	2	-	-	1	-
1a-18	IV	IV	-	-	-	-	-	3	-	-	-	-
1a-19	IV	IV	-	-	-	-	3	-	-	-	-	-
1a-20	IV	IV	1	1	-	-	1	3	-	-	-	-
Cache[3]												
1a-21	IV	IV	-	-	-	-	-	-	-	-	-	-
1a-25	I	II	-	1	-	-	-	1	-	-	-	-
1a-26	I	III	4	4	-	1	1	2	1	2	-	1
1a-27	II	III	2	4	-	1	-	-	-	-	-	-
1a-28	I	III	1	4	-	1	-	-	-	-	-	-

[1] See growth and land use shift classes preceding page.

[2] 2020 increased urban need 5064 acres based on population increase of 44,000.

[3] 2020 increased urban need based on population increases of 62,000.

PROJECTIONS - ADAPTED TRENDS IN LAND USE

County - Watershed	Homesite or Urban Growth 1975-1985	Homesite or Urban Growth 1985-2020	Land Use Shifts: Cropland to Urban 1985	Cropland to Urban 2020	Rangeland to Urban 1985	Rangeland to Urban 2020	Dryland to Irrigated 1985	Dryland to Irrigated 2020	Dryland to Recreation 1985	Dryland to Recreation 2020	Rangeland to Recreation 1985	Rangeland to Recreation 2020
Bear Lake												
1a1-2	I	II	3	4	-	-	-	-	-	-	2	1
1a1-3	I	I	1	1	-	-	-	-	-	-	1	1
1a-10	I	II	-	-	-	-	1	1	-	-	-	-
1a-11	IV	IV	-	-	-	-	1	1	-	-	-	-
1a-12	IV	I	-	1	-	-	1	1	-	-	1	1
1a-13	I	I	-	1	-	-	1	1	-	-	-	-
Rich												
1a1-1	I	II	3	1	1	1	-	-	3	2	1	1
1a-4u	IV	I	-	1	-	1	-	-	-	-	1	-
1a-5u	IV	I	-	-	-	-	-	-	-	-	-	1
1a-6	IV	I	-	1	-	1	-	-	-	-	-	-
Lincoln												
1a-4w	V	V	1	-	-	-	1	1	-	-	-	-
1a-5w	I	I	1	2	1	2	1	2	-	-	-	-
1a-7	I	II	2	3	2	3	1	2	-	-	-	-
1a-8	V	V	-	-	-	-	-	-	-	-	-	-
Uinta												
1a-1	V	V	-	-	-	-	-	-	-	-	-	-
1a-3	I	I	1	1	-	-	-	1	-	-	-	-

OVERVIEW

Projected Shifts in Land Use 1985 - 2020

By Watersheds - Counties

Table 5,which follows,sets forth an array of projected land use shifts by watersheds and counties for the time points 1985 and 2020. It will be noted that some of the numbers shown reflect some rather precisely defined quantities and may,therefore,imply a degree of accuracy not supported by the projection methodology or the basic information utilized. Such numbers,where they appear,mostly represent values used to balance the official watershed totals. In later tables they go to make up the rounded totals which are the hallmark of most of the Type IV data.

The principal reason for setting up the array of projected shifts by watersheds is for the purpose of conforming to the design of the assessment inventory,which has been done by watersheds. This proceedure enables consistant application of the quality rating proceedure and establishes baseline profile evaluation units against which can be measured alternative action proposals.

PROJECTED MAJOR LAND USES

County and State Distribution

1985 2020

Tables 6 through 14 show the projected distribution of major land uses at the time points 1985 and 2020. These are summations of data shown in table 5.

Sub-region - Idaho and Utah — Bear River Basin

Projected Urban Growth - Land Use Shifts

Watersheds	Change 1970-1985				Acres - 1985				Change 1985-2020				Acres - 2020			
	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Total Native Range	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Total Native Range
1a-23		+3,100	-3,100		1,400	18,100	60,300	133,110	+ 200	+1,600	-1,600	- 200	1,600	19,700	58,700	132,910
1a-24	+ 500	+2,100	-2,100	- 500	2,900	12,800	27,400	63,825	+300	+1,400	-1,400	- 300	3,200	14,200	26,000	63,525
Subtotal																
1a-29	+ 200	+3,000	-2,500	- 700	1050	9,900	12,000	43,630	+ 300	+3,000	-2,500	- 800	1350	12,900	9,500	42,830
1a-30	+1,200	+2,000	-1,800	-1,400	6,500	56,800	18,500	138,325	5,200	+7,000	-6,500	-5,700	11,700	63,800	12,000	132,625
1a-31	+2,700	+1,000	- 900	-2800	7650	27,900	9,100	104,900	7,800	+2,000	-1,800	-8,000	15,450	29,900	7,300	96,900
1a-3a					300	100	200	41,620					300	100	200	41,420
Sub-Basin Total	+4,600	+11,200	-10,400	-5400	19,800	-125,600	127600	525,500	+13,800	+15,000	-13,800	-15,000	33,600	140,600	113,700	510,500
Complex																
Basin	+ 500	+5,200	-5,200	- 500	4,300	30,900	87,800	196,935	+ 500	+3,000	-3,000	- 500	4,800	33,900	84,700	196,435
Box Elder	+4,100	+6,000	-5200	+900	15,500	94,600	39,600	328,565	13,300	+12,000	-10,800	-14,300	28,800	106,600	29,000	314,265

Projected Urban Growth [1] and Land Use Shifts — Cache County — Sub-Basin II

Watershed	Change 1970-1985				1985 acres				Change 1985-2020				2020 acres			
	Urban	Irr.	Dry	Range [2]	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Range
1a-21		+ 400	- 400		550	5,900	26,600	16,530	+ 300	+ 600	- 900		850	6,500	25,700	16,530
1a- 22	-	-	-	-	-	-	-	135,410	-	-	-	-	-	-	-	135,410
1a-25		+ 200	- 200		1,430	30,580	6,820	10,790	+ 700	+ 820	- 920	- 600	2,130	31,400	5,900	10,190
1a-26		+1,300	-1,000	- 300	6,200	34,030	8,920	72,320	+5,500	-1,200	-3,000	-1,300	11,700	32,830	5,920	71,020
1a-27	+300 [1]	+1,000	-1,200	- 100	2,100	18,200	470	193,270	+1,500	-1,500			3,600	16,700	470	193,270
1a-28	+300 [1]	+ 900	-1,000	- 200	3,950	19,110	25,250	156,750	+ 500	- 300	- 200		4,450	18,810	25,050	156,750
Total																
Totals	+600	+3,800	-3,800	- 600	14,230	107,820	68,100	556,200	+8,500	-1,580	-5,020	-1,900	22,730	106,240	63,040	554,300

1/ Includes rural homesites

2/ Range area includes all areas of natural vegetation.

Projected Urban Growth - Land Use Shifts

	Change - 1970-1985				Acres - 1985				Change - 1985-2020				Acres - 2020			
Watershed	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Range
1a-15		+9,100	- 6,000	-3,100	600	22,600	11,100	92,986	+ 100	+3,600	-3,000	- 700	700	26,200	8,100	92,286
1a-16		+12,340	-11,820	- 540	1,200	31,940	1,880	59,155	+ 100	+3,360		-3,360	1,300	35,300	1,680	55,795
1a-17	+ 500		- 500		5,600	16,380	25,700	123,750	+ 400	+2,000	-2,400		6,000	18,400	23,300	123,750
1a-18					160	17,680	36,000	84,410		+1,500	-1,500		160	19,180	34,500	84,410
1a-19	+ 100	+ 300	- 200	- 200	630	2,440		3,420		+ 200		- 200	630	2,640		3,220
1a-20	+ 160	+ 300	- 300	- 160	570	7,520	12,600	44,455	+ 130	+ 600	- 730		700	8,120	11,870	44,455
Totals	+ 760	22,040	-18,820	-4,000	8,260	98,560	87,280	408,170	+ 730	+11,260	-7,730	4260	8,990	109,900	79,650	403,070
						(99,600)	(87,300)									
Caribou	+ 100	13,200	-9900	-3,400	1,200	37,200	4700	81,000	+ 200	+5,600	-3000	-2800	1,400	42,800	1700	
Franklin	+ 700	+7,300	7400	- 600	6900	58,800	71,800	286,200	+ 530	+4,560	-3,630	-1,560	7,390	63,400	68,200	
Fannett		1500	-1500		200	2600	10,800	48,600		+1,100	-1,100		200	3700	9700	
Oneida								18,700								
								434,500								427,200

Sub-Basin III Idaho and Utah

Watershed	Change 1970-1985				Acres - 1985				Change - 1985-2020				Acres- 2020			
	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Range
Utah																
1a1-1	+1,600	-1,000	- 500	- 100	2,300	7,600	2,300	132,025	+5,800	- 800	- 300	-4,700	8,100	6,800	2,000	127,350
Idaho																
1a1-2	2600	- 600		-1,000	3,000	7,880	1,900	69,650	+1,250	-1,050	- 200		4250	6,830	1,700	69,650
1a1-3	+ 600	- 300		- 300	2,070	10,820	13,050	140,950	+1200	- 500	- 300	-400	3270	10,320	12,750	140,550
1a-10		+ 300	- 300		3,715	12,080	1,810	34,250		+1,020		-1,020	3,715	13,100	1,810	33,230
1a-11		+ 200	- 200		240	4,600	8,060	14,815		+ 300	- 300		240	4,900	7,760	14,815
1a-12		+ 400	- 400		375	4,020	1,380	25,265		+680	- 680		375	4,700	700	25,265
1a-13	+ 600	- 300	- 300		700	2,200	13,400	72,495		+ 400	- 300	- 100	700	2,600	13,100	72,395
1a-14	+1000	- 180	- 300	-520	4,500	13,020	37,200	49,690	+8,800 1/	- 440	- 360	-8,000	13,300	12,580	36,840	41,690
Totals	+ 5400	-1,480	-2,000	-1,400	16,900	62,220	79,100	539,14	+17,050	- 390	-2,440	-14,220	33,950	61,830	76,660	524,04
1/ Phosphate operation - 8,000 acres																
Rich	+1600	-1000	-500	-100	2,300	7,600	2,300	132,025	+5,800	- 800	- 300	-4,700	8,100	6,800	2,000	127,350
Bear Lake	3800	-300	-1200	-1300	11,100	41,600	39,600	357,425	+2450	+ 850	-1,780	-1520	13,550	42,450	37,820	355,905
Caribou	+1000	-180	-300	-520	3500	13,020	37,200	49,190	+8,800	- 440	- 360	-8,000	12,300	12,580	36,840	41,690

-Bas... - I... Wyc... Uta...

Watershed	Change - 1970-1985				Acres - 1985				Change - 1985-2020				Acres - 2020			
	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Range
1a-4W		+ 100	- 100		200	3,600	630	194,035		+ 300	- 100	- 200	200	3,900	530	194,035
1a-5W	+ 100	+ 200	- 300		1,300	11,300	4,600	138,030	+ 100	+ 500	- 600		1,400	11,800	4,000	138,030
1a-7	+ 100	+ 400	- 500		1,600	16,900	3,500	226,480	+ 400	+ 700	- 700	- 400	2,000	17,600	2,800	226,080
1a-8					300	10,300	2,170	99,715					300	10,300	2,170	99,715
1a-9					400	9,100	13,100	81,120					400	9,100	13,100	81,120
Totals	+ 200	+ 700	- 900		3,800	51,200	24,000	739,380	+ 500	+1,500	-1,400	- 600	4,300	52,700	22,600	738,980
County Distribution																
Bear Lake	+ 100	+ 100	-200		1,700	20,000	16,600			+ 400	- 400		1,700	20,400	16,200	
Lincoln	+100	+ 600	-700		2,100	28,000	7,300		+ 500	+1,800	- 900	- 400	2,600	29,300	6,400	
Rich						3,200	100			+ 300	- 100	- 200		3,500		
Totals					3,800	51,200	24,000	739,400								

Sub-Basin V Wyoming - Utah

Watershed	Change 1970-198 5				Acres - 1985				Change - 1985 - 2020				Acres - 2020			
	Urban	Irr. 1/	Dry	Range	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Range	Urban	Irr.	Dry	Range
1a-1					130	2,300	250	124,440					130	2,300	250	124,440
1a-2					50	6,700		162,570					50	6,700		162,570
1a-3	+ 200	- 200			3,000	22,100	750	207,645	+ 100	+2,000	- 750	-1,350	3,100	24,100		206,295
1a-4U		+ 500	- 500		450	19,100	1,200	217,745		+ 500	- 500		450	19,600	700	217,745
1a-5U		+1,000	- 500	- 500	200	6,400		82,185		+1,000		-1,000	200	7,400		81,185
1a-6		+2,000	- 300	-1,700	570	26,800		136,525		+3,000		-3,000	570	29,800		133,525
Total	+ 200	+3,300	-1,300	-2,200	4,400	83,400	2,20	932,110	+ 100	+6,500	-1,250	-5,350	4,500	89,900	950	926,760
Counties																
Uinta	+ 200	- 200			3,000	31,100	1,000	263,200	+ 100	+2,000	- 750	-1,350	3,100	33,100	250	261,850
Rich		+3,500	-1,300	-2,200	1,100	52,300	1,200	412,400		+4,500	- 500	-4,000	1,100	56,800	700	408,400
Lincoln					200			66,300					200			66,300
Summit					100			187,500					100			187,500

1/ Based on enlargement of Woodruff and Woodruff Creek Reservoir.

Table6. PROJECTED DISTRIBUTION

TABLE - URBAN LAND BY COUNTY, STATE, AND HYDROLOGIC PLANNING UNIT - 1985 - BEAR RIVER BASIN

County and State	Hydrologic Planning Unit I	II	III	IV	V	Basin Total
IDAHO						
Bannock		200				200
Bear Lake			11,100	1,700		12,800
Caribou		1,200	3,500			4,700
Franklin		6,900				6,900
Oneida	4,300					4,300
Power						
TOTAL	4,300	8,300	13,500	1,700		28,900
UTAH						
Box Elder	15,500					15,500
Cache		14,200				14,200
Rich			2,300		1,100	3,400
Summit					100	100
TOTAL	15,500	14,200	2,300		1,200	33,200
WYOMING						
Lincoln				2,100	200	2,300
Uinta					3,000	3,000
TOTAL				2,100	3,200	5,300
BASIN TOTAL	19,800	22,500	16,900	3,800	4,400	67,400

Table7. PROJECTED DISTRIBUTION

TABLE - URBAN LAND BY COUNTY, STATE, AND HYDROLOGIC PLANNING UNIT - 2020 - BEAR RIVER BASIN

County and State	Hydrologic Planning Unit I	II	III	IV	V	Basin Total
IDAHO						
Bannock		200				200
Bear Lake			13,550	1,700		15,250
Caribou		1,400	12,300			13,700
Franklin		7,400				7,400
Oneida	4,800					4,800
Power						
TOTAL	4,800	9,000	25,850	1,700		41,350
UTAH						
Box Elder	28,850					28,850
Cache		22,700				22,700
Rich			8,100		1,100	9,200
Summit					100	100
TOTAL	28,850	22,700	8,100		1,200	60,850
WYOMING						
Lincoln				2,600	200	2,800
Uinta					3,100	3,100
TOTAL				2,600	3,300	5,900
BASIN TOTAL	33,650	31,700	33,950	4,300	4,500	108,100

Table 8. PROJECTED DISTRIBUTION

TABLE - IRRIGATED CROPLAND BY COUNTY, STATE, AND HYDROLOGIC PLANNING UNIT - 1985 - BEAR RIVER BASIN

(Acres)

County and State	Hydrologic Planning Unit I	II	III	IV	V	Basin Total
IDAHO						
Bannock		2,600				2,600
Bear Lake			41,600	20,000		61,600
Caribou		37,200	13,000			50,200
Franklin		58,800				58,800
Oneida	30,900					30,900
Power						
TOTAL	30,900	98,600	54,600	20,000		204,100
UTAH						
Box Elder	94,600					94,600
Cache		107,800				107,800
Rich			7,600	3,200	52,300	63,100
Summit						
TOTAL	94,600	107,800	7,600	3,200	52,300	265,500
WYOMING						
Lincoln				28,000		28,000
Uinta					31,100	31,100
TOTAL				28,000	31,100	59,100
BASIN TOTAL	125,500	206,400	62,200	51,200	83,400	528,700

Table 9. PROJECTED DISTRIBUTION

TABLE - IRRIGATED CROPLAND BY COUNTY, STATE, AND HYDROLOGIC PLANNING UNIT - 2020 - BEAR RIVER BASIN

County and State	Hydrologic Planning Unit I	II	III	IV	V	Basin Total
IDAHO						
Bannock		3,700				3,700
Bear Lake			42,500	20,400		62,900
Caribou		42,800	12,600			55,400
Franklin		63,400				63,400
Oneida	33,900					33,900
Power						
TOTAL	33,900	109,900	55,100	20,400		219,300
UTAH						
Box Elder	106,600					106,600
Cache		106,200				106,200
Rich			6,800	3,500	56,800	67,100
Summit						
TOTAL	106,600	106,200	6,800	3,500	56,800	279,900
WYOMING						
Lincoln				29,800		29,800
Uinta					33,100	33,100
TOTAL				29,800	33,100	62,900
BASIN TOTAL	140,500	216,100	61,900	53,700	89,900	562,100

Table 10. PROJECTED DISTRIBUTION

TABLE - NON-IRRIGATED CROPLAND BY COUNTY, STATE, AND HYDROLOGIC PLANNING UNIT - 1985 - BEAR RIVER BASIN

County and State	Hydrologic Planning Unit I	II	III	IV	V	Basin Total
IDAHO						
Bannock		10,800				10,800
Bear Lake			39,600	16,600		56,200
Caribou		4,700	37,200			41,900
Franklin		71,800				71,800
Oneida	87,800					87,800
Power						
TOTAL	87,800	87,300	76,800	16,600		268,500
UTAH						
Box Elder	39,800					39,800
Cache		68,100				68,100
Rich			2,300	100	1,200	3,600
Summit						
TOTAL	39,600	68,100	2,300	100	1,200	111,300
WYOMING						
Lincoln				7,300		7,300
Uinta					1,000	1,000
TOTAL				7,300	1,000	8,300
BASIN TOTAL	127,600	155,400	79,100	24,000	2,200	388,600

Table 11. PROJECTED DISTRIBUTION

TABLE - NON-IRRIGATED CROPLAND BY COUNTY, STATE, AND HYDROLOGIC PLANNING UNIT - 2020 - BEAR RIVER BASIN

(Acres)

County and State	Hydrologic Planning Unit I	II	III	IV	V	Basin Total
IDAHO						
Bannock		9,700				9,700
Bear Lake			37,800	16,200		54,000
Caribou		1,700	36,800			38,500
Franklin		68,200				68,200
Oneida	84,700					84,700
Power						
TOTAL	84,700	79,600	74,600	16,200		255,100
UTAH						
Box Elder	29,000					29,000
Cache		63,000				63,000
Rich			2,000		700	2,700
Summit						
TOTAL	28,800	63,000	2,000		700	94,500
WYOMING						
Lincoln				6,400		6,400
Uinta					300	300
TOTAL				6,400	300	6,700
BASIN TOTAL	113,700	142,600	76,600	22,600	1,000	356,500

Table 12 PROJECTED DISTRIBUTION

TABLE - RANGELANDS [1/] BY COUNTY, STATE, AND HYDROLOGIC PLANNING UNIT - 1985 - BEAR RIVER BASIN

(100 Acres)

County and State	Hydrologic Planning Unit I	II	III	IV	V	Basin Total
IDAHO						
Bannock		471				471
Bear Lake			2,631	1,173		3,804
Caribou		677	430			1,107
Franklin		1,960				1,960
Oneida	1,390	65				1,455
Power						
TOTAL	1,390	3,173	3,061	1,173		8,797
UTAH						
Box Elder	1,636					1,636
Cache		3,261				3,261
Rich			1,111	477	3,771	5,359
Summit					518	518
TOTAL	1,636	3,261	1,111	477	4,289	10,774
WYOMING						
Lincoln				4,737	661	5,398
Uinta					2,634	2,634
TOTAL				4,737	3,295	8,032
BASIN TOTAL	3,026	6,434	4,172	6,387	7,584	27,603

1/ Suitable National Forest and Non-Forest Rangeland

Table 13 PROJECTED DISTRIBUTION

TABLE - RANGELANDS 1/ BY COUNTY, STATE, AND HYDROLOGIC PLANNING UNIT - 2020 BEAR RIVER BASIN

County and State	Hydrologic Planning Unit I	II	III	IV	V	Basin Total
IDAHO						
Bannock		470				470
Bear Lake			2,540	1,172		3,712
Caribou		652	350			1,002
Franklin		1,939				1,939
Oneida	1,385	65				1,450
Power						
TOTAL	1,385	3,126	2,890	1,172		8,573
UTAH						
Box Elder	1,496					1,496
Cache		3,225				3,225
Rich			1,064	475	3,731	5,270
Summit					518	518
TOTAL	1,496	3,225	1,064	475	4,249	10,509
WYOMING						
Lincoln				4,724	661	5,385
Uinta					2,620	2,620
TOTAL				4,724	3,281	8,005
BASIN TOTAL	2,881	6,351	3,954	6,371	7,530	27,087

1/ Suitable National Forest and Non-Forest Rangeland

ESTHETICS

The management principles which will dominate in the use of the Basin's natural resources over the 50-year projection period will include (1) better urban planning and implementation of plans, (2) an extension and a moderate acceleration of improved agricultural technology and conservation practices, and (3) a more intensive use of natural areas and wildlands up to the limits of their capability to support appropriate uses.

The implementation of improved urban, agricultural, and wildland plans should bring about a general improvement in the esthetics of the Basin. However, in local areas, some development activities such as the completion of the improved highway network and construction incident to expansion of urban areas will temporarily detract from the natural beauty of such areas. The point at which esthetic degradation sets in from wildland use must be defined and use held below the degradation threshold.

Lakes and Reservoirs

With a level and type of water development designed to serve the projected population and the associated economy of the Basin, three small reservoir projects can be forecast. These are:

Name	Location	Acre Feet	Surface Acres	Probable Date Installation
Caribou Power[1/]	1a-14 1a-13	45,000	3,000	1985 - 2020
Woodruff Narrows[2/]	1a-3	53,000	2,250	1977 - 1985
West Fork - Bear	(1a-2)	20,000	700	1985 - 2020

1/ Industrial

2/ Enlargement

Other small impoundments may be built but their location and size cannot be predicted at this time. Other than for Woodruff Narrows, the existing lakes and reservoirs will continue to function as they do now.

The installation of the three impoundments will involve tradeoffs in a number of environmental values. The esthetic values, stated in terms of the quality ratings derived from application of the esthetic criteria for Lakes and Reservoirs and for Streams are as follows:

Trade-Offs - Quality Rating

Name	Entity Gained	Esthetic Rating	Entity Lost	Esthetic Rating
Caribou Power Reservoir	3,000 Ac. Flat Water	6	6 miles stream	5
Woodruff Narrows	2250 Ac. Flat Water	4	1 mile stream	5
West Fork-Bear	700 Ac. Flat Water	6	.7 miles stream	8

Streams

If the water quality goals of NEPA are to be achieved, those streambank segments of streams now contributing sediment to streams in significant amounts will have to be stabilized. In some localities, there may be a degree of temporary or permanent esthetic degradation due to highway construction. In general, however, the extent and pattern of stream diversions will remain about the same as it is at present. This will induce a pattern of stability and favor the establishment of adapted riparian vegetation and better channel conditions. Over-all stream esthetics should show a moderate improvement.

Scenic Areas

There will be little or no change in these areas except where roads may be improved or extended. A philosophy of protection and conservation will dominate the administration of these areas and uses will be restricted to levels below degradation thresholds. Any changes occurring will be in the direction of improvement in all environmental parameters, including esthetics.

Other Watershed Areas

The criteria by which Other Watershed Lands are evaluated for esthetics include a comprehensive array of land classes delineated by vegetative character or

land use. Although the land use shifts forecast for the 1985 and 2020 time points are introduced in the evaluations of esthetic quality, their magnitude in reference to those components of the system which remain fixed are such that little or no change in esthetic quality is produced. This illustrates the limitations of the watershed as an evaluation unit and at the same time directs attention to the way in which major esthetic features dominate the esthetics of a large area such as a watershed. The quality ratings for 1970, 1985, and 2020 are shown in Table 15.

HUMAN INTEREST

The values implicit in the items included in the human interest catagory will be sustained and greater interest will develop in identifying and preserving structures or objects of historic,cultural or natural interest. The existance and location of these items of human interest will increasingly enter into natural resource planning. Thus,human interest values will become a more important component of the array of trade-off values entering into land and water use decisions.

Table 15. ESTHETICS

OTHER WATERSHED LANDS

Watershed Name	Watershed No.	Present and Projected Quality Ratings 1970	1985	2020
Sub-Basin I				
Upper Little Malad River	1a - 23	2.5	2.6	2.6
Deep Creek	1a - 24	3.2	3.2	3.4
Plymouth-Portage	1a - 29	1.9	2.1	2.1
Bear River Valley	1a - 30	0.9	1.0	1.0
Brigham	1a - 31	1.1	1.1	1.1
Bear River Bay	1 - 9a	0.7	0.7	0.7
Sub-Basin II				
Cottonwood Creek	1a - 15	2.5	2.7	2.7
Grace-Thatcher Area	1a - 16	2.8	2.9	2.9
Guis River	1a - 17	4.2	4.3	4.3
Battle Creek-Deep Creek	1a - 18	2.8	2.8	2.8
Five Mile Wash	1a - 19	2.9	2.9	3.5
Weston Creek	1a - 20	2.0	2.0	2.1
Clarkston	1a - 21	1.6	1.7	1.7
Logan River	1a - 22	3.7	3.7	3.7
Lewiston-Trenton	1a - 25	0.9	0.9	0.9
North Cache	1a - 26	1.7	1.7	1.8
Blacksmith Fork	1a - 27	3.7	3.7	3.9
Little Bear	1a - 28	2.8	2.8	2.8
Sub-Basin III				
South Bear Lake	1a1 - 1	2.8	2.8	2.8
Fish Haven-St. Charles	1a1 - 2	3.5	3.5	3.5
Liberty-Bloomington	1a1 - 3	3.4	3.5	3.5
Montpelier Creek	1a - 10	3.5	3.6	3.6
Bennington	1a - 11	2.7	2.7	2.7
Georgetown Creek	1a - 12	2.9	2.9	2.9
Nounan-Eight Mile Creek	1a - 13	4.0	4.1	4.1
Soda Springs Area	1a - 14	1.8	1.8	1.8
Sub-Basin IV				
Fossil Butte	1a - 4w	2.7	2.7	2.7
Thomas Fork	1a - 5w	3.7	3.7	3.7
Smiths Fork	1a - 7	3.4	3.4	3.4
Wood Hollow	1a - 8	1.0	1.0	1.0
Sheep-Pegram Creek	1a - 9	1.3	1.3	1.3

ESTHETICS

OTHER WATERSHED LANDS (Cont'd)

Watershed Name	Watershed No.	Present and Projected Quality Ratings 1970	1985	2020
Sub-Basin V				
Yellow Coyote	1a - 1	2.2	2.2	2.2
Upper Bear	1a - 2	6.8	6.8	6.8
Evanston	1a - 3	1.6	1.6	1.6
Saleratus Creek	1a - 4u	2.7	1.6	1.6
Woodruff Creek	1a - 5u	4.0	4.0	4.0
Big Creek-Otter Creek	1a - 6	2.4	2.4	2.4

BIOTA

Wildlife

Use of broad and generalized terms in depicting 1985 changes in the wildlife resource base, rather than specific quantitative figures, is dictated by a lack of available data. Even where projections of future wildlife consumptive use is found, it is generally not compatible with 1960 and 1970 bases because of differences in methodology and census areas. There is a definite antipathy on the part of wildlife resource managers to quantify future stocks of fish and wildlife.

Where the Quality Column applies to Fish and Game Harvest in the 1985 projections, any change shown is a measure of the fishing and hunting experiences rather than numbers of game bagged or fished creeled.

Table 16 WILDLIFE - HARVEST AND HUNTER TRENDS

AREA - WYOMING

	Units	1970	Projected - 1985 Quantity	Projected - 1985 Quality
Big Game				
Harvest				
Deer	No.	475	Decrease	Decrease
Elk	No.	250	Increase	No change
Moose	No.	17	Increase	Increase
Bear	No.			
Hunter Demand	Hunter Days			
Deer	No.	6,000	Increase	Decrease
Elk	No.	5,000	Increase	No change
Moose	No.	70	Increase	Increase
Bear		480	Increase	Increase
Small Game				
Fur Bearers	(+ or -)		Minus	Static
Upland Game Birds				
Harvest	No.	2,500	Increase	No change
Demand	Hunter Days	2,000	No change	No change
Water Fowl				
Habitat (Public)	Acres	None		
Habitat (Private)	Acres	N/A		
Habitat Quality (water)	1st. Mag.			
Harvest	No.	3,500	Increase	No change
Demand	No. Trips	2,600	Increase	Increase
Rare and Endang. Spec.	No.	1	Increase	
Fish				
Trout				
Habitat Classes	Stream Miles			
Class 1	" "	0		
Class 2	" "	60	Static	Static
Class 3	" "	92	Static	Static
Class 4	" "	47	Decrease	Decrease
Class 5	" "	123	Static	Static
Fishing Demand	Fish mn day	11,450	Increase	Static
Warm Water Fish Habitat	Surface Ac.	None		

WILDLIFE - HARVEST AND HUNTER TRENDS

AREA - WYOMING (Cont'd)

	Units	1970	Projected - 1985 Quantity	Quality
Fishing (Cont'd)				
Lakes and Reservoirs				
Alpine Lakes	Surface Ac.	442	Static	Static
Lowland Reservoirs	Surface Ac.	1,958	Increase	Static
Predators - Non-Game				
Trends in abundance	(+ or -)		Plus	
Habitat Trends	(+ or -)		Static	Static
Impact by man	(+ or -)		Plus	
Big Game Habitat Availability				
Deer	Acres	890,000	Decrease	Decrease
Elk	Acres	435,000	Static	Static
Moose	Acres	285,000	Increase	Static

Table 17 WILDLIFE - HARVEST AND HUNTER TRENDS

AREA - IDAHO

	Units	1970	Projected-1985 Quantity	Projected-1985 Quality
Big Game				
Harvest				
Deer	No.	7,826	Increase	Decrease
Elk	No.	92	Static	Static
Moose	No.	5	Static	Static
Hunter Demand	Hunter Days			
Deer	No.	24,050	Decrease	Decrease
Elk	No.	870	Static	Static
Moose	No.	35	Static	Static
Small Game				
Fur Bearers	(+ or -)		Minus	
Upland Game Birds				
Harvest	No.	33,600	Decrease	Decrease
Demand	Hunter Days	42,000	Increase	Decrease
Water Fowl				
Habitat (Public)	Acres	17,600	Increase	Increase
Habitat (Private)	Acres	10,100	Decrease	Decrease
Habitat Quality (water)	1st. Mag.		Increase	Increase
Harvest	No.	95,510	Increase	Static
Demand	Hunter Day	190,000 1/	Increase	Static
Rare and endang. Spec.	No.	1	Increase	
Fish				
Trout				
Habitat Classes	Stream Miles			
Class 1	" "	10	Static	Static
Class 2	" "	55	Static	Static
Class 3	" "	198	Decrease	Decrease
Class 4	" "	164	Static	Static
Class 5	" "	125	Static	Static
Fishing Demand	Fish mn day	137,200	Increase	Decrease
Warm Water Fish Habitat	Surface Ac.	28	Static	Static

1/ Includes all counties in Idaho Game Region 6.

WILDLIFE - HARVEST AND HUNTER TRENDS

AREA - IDAHO (Cont'd)

	Units	1970	Quantity	Quality
Lakes and Reservoirs				
Trout	Surface Ac.	32,723	Increase	Static
Combination	Surface Ac.	2,382	Static	Static
Predators - Non-Game				
Trend - Abundance	(+ or -)		Minus	
Habitat Trends	(+ or -)		Static	
Impact by Man	(+ or -)		Minus	
Big Game Habitat Available				
Deer	Acres	904,000	Decrease	Decrease
Elk	Acres	900,000	Static	Static
Moose	Acres	N/A	Static	Static

Table 18 WILDLIFE - HARVEST AND HUNTER TRENDS

AREA - UTAH

	Units	1970	Projected - 1985 Quantity	Projected - 1985 Quality
Big Game				
Harvest				
Deer	No.	17,328	Static	No Change
Elk	No.	299	Increase	Static
Moose	No.	24	Increase	Increase
Hunter Demand	Hunter Days			
Deer	No.	53,900	Increase	Decrease
Elk	No.	9,294	Increase	No Change
Moose	No.	246	Increase	Increase
Small Game				
Fur Bearers	(+ or -)			
Upland Game Birds				
Harvest	No.	138,330	Decrease	Decrease
Demand	Hunter Days	156,830	Increase	Decrease
Water Fowl				
Habitat (Public)	Acres	81,254	Increase	Increase
Habitat (Private)	Acres	124,217	Decrease	Decrease
Habitat Quality (water)	1st Mag.	144,000	Decrease	Decrease
Harvest	No.	107,750	Increase	Decrease
Harvest	No. Trips	48,885	Decrease	No Change
Rare and Endang. Spec.	No.			
Fish				
Trout				
Habitat Classes	Stream Miles			
Class 1	" "	15	Static	Decrease
Class 2	" "	140	Static	Decrease
Class 3	" "	288	Decrease	Decrease
Class 4	" "	12	Static	Static
Class 5	" "			
Fishing Demand	Fish mn day	423,100	Increase	Static
Warm Water Fish Habitat				
Reservoir	Surface Ac.	7,464	Static	Static
Stream	Surface Ac.	160	Static	Increase

WILDLIFE - HARVEST AND HUNTER TRENDS

AREA - UTAH (Cont'd)

	Units	1970	Projected - 1985 Quantity	Projected - 1985 Quality
Fishing (Cont'd)				
Lakes and Reservoirs				
Cold Water				
Class 1	Surface Ac.	0	Static	Static
Class 2	Surface Ac.	43,144	Static	Increase
Class 3	Surface Ac.	293	Increase	Increase
Predators - Non-Game				
Trend in Abundance	(+ or -)		Plus	
Habitat Trends	(+ or -)		Static	
Impact by Man	(+ or -)			Plus
Big Game Habitat Available				
Deer	Acres	1,398,000	Decrease	Static
Elk	Acres	775,000	Static	Increase
Moose	Acres	520,000	Increase	Increase

BIOTA

Native Vegetation

A major and widespread impact on the physical environment will be the result of improvement in the condition of the Basin's range-lands. Projections of range conditions for the time points 1985 and 2020 show varying but substantial improvement throughout the various areas of the Basin. The effects of vegetative changes are basic and pervasive and the estimates figure importantly in the evaluation of Land Quality and Open and Green Space.

The projection estimates for the National Forest lands were developed by the U.S.Forest Service. Those for non-forest lands were made by the U.S Soil Conservation Service in consultation with the U.S..Bureau of Land Management where Public lands were involved.

A strong indicator of basic environmental conditions is the proportion of the range vegetation falling in the Excellent and Good range condition classes.In Table 19 ,which follows,these classes have been combined for summary purposes. Most importantly,the table shows the rates of improvement which are anticipated in the various areas over the evaluation period.

Table 19. PRESENT AND PROJECTED DISTRIBUTION OF RANGE ACRES 1/ in GOOD AND EXCELLENT CONDITION

Subregion--County-State	-1970	1985	2020
Subregion I		(100 Acres)	
Oneida	156	226	409
Bannock		1	2
Power			
Franklin	2	3	3
Idaho	158	230	414
%	11%	16%	30%
Box Elder	3	95	306
Utah	3	95	306
%	-	6%	20%
Total-- Sub-basin I	161	325	720
Sub-basin II			
Bannock	6	30	102
Caribou	26	102	275
Franklin	115	293	537
Oneida	30	33	48
Idaho	177	464	982
%	5%	15%	21%
Cache	264	545	1509
Utah	264	545	1509
%	8%	17%	47%
Total-- Subregion II	441	1009	2491
Sub-basin III			
Bear Lake	363	570	1200
Caribou	69	86	127
Idaho	432	656	1327
%	17%	25%	52%
Rich	50	220	650
Utah	50	220	650
%	4%	20%	61%
Total-- Sub-basin III	482	876	1977

Sub-basin-County-State	1970	1985	2020
Sub-basin IV			
Rich	-	85	286
Utah		85	286
%		18%	60%
Bear Lake	227	332	576
Idaho	227	332	576
%	19%	28%	49%
Linclon	2784	2871	3051
Wyoming	2784	2871	3051
%	59%	61%	65%
Total-- Sub-basin IV	3011	3203	3913
Sub-basin V			
Rich	10	704	2357
Summit	197	232	312
Utah	207	936	2669
Lincoln	397	414	456
Uinta	1626	1858	2398
Wyoming	2023	2272	2854
%	61%	69%	87%
Total-- Sub-basin V	2510	3208	5523
Total- Bear River Basin	6605	8621	13543
%	24%	31%	50%

1/ Suitable range acres.

OPEN AND GREEN SPACE

The evaluation components of this catagory fall in two broad classes. These are; (1) those whose areas will remain constant through the evaluation period and, (2) those which will include shifting land uses or changing vegetative conditions..

Included in the first group are commercial forest and wooded ares,water areas and wild or scenic areas. The second group is made up of irrigated and dry cropland,urban and industrial areas and two combined range condition classes,-Excellent and Good and Fair and Poor.

In most watersheds (evaluation units) the first group encom-- passes a large proportion of the watershed and changes in the second (variable) group are diluted in the weighting process so that only minimal changes,if any, are produced in the quality rating. However, such a result probably describes a basic characteristic of this catagory in that there are a number of the components of Open and Green Space, assuming that they remain constant in area and condition, which tend to dominate in this catagory.

An overview of quality changes for 1970, 1985 and 2020 can be observed in Table 20.

Table 20. OPEN AND GREEN SPACE

Watershed Name	Watershed No.	Present and Projected Quality Ratings 1970	1985	2020
Sub-Basin I				
Upper Little Malad River	1a - 23	6.3	6.5	6.5
Deep Creek	1a - 24	6.3	6.5	6.7
Plymouth-Portage	1a - 29	6.1	6.3	6.6
Bear River Valley	1a - 30	6.0	6.1	6.3
Brigham	1a - 31	7.1	7.1	7.1
Bear River Bay	1 - 9a	4.3	4.3	4.3
Sub-Basin II				
Cottonwood Creek	1a - 15	7.1	7.3	7.4
Grace-Thatcher Area	1a - 16	7.4	8.1	8.4
Guis River	1a - 17	7.4	7.5	7.7
Battle Creek-Deep Creek	1a - 18	6.5	6.6	6.8
Five Mile Wash	1a - 19	7.4	8.2	8.3
Weston Creek	1a - 20	6.4	6.6	7.1
Clarkston	1a - 21	5.4	5.6	5.9
Logan River	1a - 22	9.5	9.5	9.5
Lewiston-Trenton	1a - 25	7.0	7.1	7.3
North Cache	1a - 26	8.5	8.6	8.6
Blacksmith Fork	1a - 27	7.2	8.5	8.9
Little Bear	1a - 28	7.9	7.9	8.2
Sub-Basin III				
South Bear Lake	1a1 - 1	8.5	8.5	8.5
Fish Haven-St. Charles	1a1 - 2	9.1	9.1	9.1
Liberty-Bloomington	1a1 - 3	7.8	7.9	7.9
Montpelier Creek	1a - 10	7.6	7.7	8.2
Bennington	1a - 11	7.2	7.2	7.4
Georgetown Creek	1a - 12	8.9	9.0	9.2
Nounan-Eight Mile Creek	1a - 13	8.2	8.2	8.5
Soda Springs Area	1a - 14	6.4	6.5	6.0
Sub-Basin IV				
Fossil Butte	1a - 4w	7.9	8.0	8.4
Thomas Fork	1a - 5w	8.1	8.2	8.4
Smiths Fork	1a - 7	9.1	9.2	9.2
Wood Hollow	1a - 8	7.3	7.5	7.6
Sheep-Pegram Creek	1a - 9	6.9	7.0	7.5

OPEN AND GREEN SPACE (Cont'd)

Watershed Name	Watershed No.	Present and Projected Quality Ratings 1970	1985	2020
Sub-Basin V				
Yellow Coyote	1a - 1	8.3	8.7	8.9
Upper Bear	1a - 2	9.3	9.3	9.3
Evanston	1a - 3	8.3	8.7	8.7
Saleratus Creek	1a - 4u	7.0	7.3	7.8
Woodruff Creek	1a - 5u	7.8	7.8	8.3
Big Creek-Otter Creek	1a - 6	7.5	7.6	7.9

LAND QUALITY

The evaluation components of this catagory include; (1) acreage and treatment levels of irrigated and dry cropland, (2) acreage and range condition quality rating of rangelands, and (3) acreage and quality rating of commercial forest.

The choice of evaluation components, the quality rating criteria and the weighting process enable a more definitive reflection of present and projected levels of land treatment and vegetative changes. The ratings reflect the effect of on-going programs and probably establish a more usable baseline condition for evaluation of most conventional action proposals.

Table 21 presents Land Quality rating for 1970, 1985 and 2020.

Table 21. LAND QUALITY

Watershed Name	Watershed No.	Present and projected Quality Rating 1970	1985	2020
Sub-Basin I				
Upper Little Malad River	1a - 23	3.6	4.0	4.3
Deep Creek	1a - 24	4.1	4.2	4.8
Plymouth-Portage	1a - 29	3.8	4.1	4.9
Bear River Valley	1a - 30	4.1	5.5	5.6
Brigham	1a - 31	4.8	5.3	6.0
Sub-Basin II				
Cottonwood Creek	1a - 15	2.6	4.0	4.9
Grace-Thatcher Area	1a - 16	4.6	5.4	6.9
Guis River	1a - 17	5.3	5.2	6.0
Battle Creek-Deep Creek	1a - 18	3.4	3.8	4.9
Five Mile Wash	1a - 19	3.5	4.2	5.2
Weston Creek	1a - 20	2.9	3.5	4.6
Clarkston	1a - 21	4.0	4.4	5.0
Logan River	1a - 22	7.1	7.4	8.0
Lewiston-Trenton	1a - 25	5.7	6.3	7.0
North Cache	1a - 26	5.7	5.9	6.7
Blacksmith Fork	1a - 27	4.7	5.5	6.2
Little Bear	1a - 28	5.0	5.5	6.1
Sub-Basin III				
South Bear Lake	1a1 - 1	3.3	3.7	5.7
Fish Haven-St. Charles	1a1 - 2	4.9	5.2	6.1
Liberty-Bloomington	1a1 - 3	5.1	5.4	6.1
Montpelier Creek	1a - 10	5.5	5.9	8.5
Bennington	1a - 11	4.9	5.1	6.0
Georgetown Creek	1a - 12	5.7	6.4	7.5
Nounan - Eight Mile Creek	1a - 13	5.3	5.4	6.0
Soda Spring Area	1a - 14	3.3	3.7	4.9
Sub-Basin IV				
Fossil Butte	1a - 4w	4.5	4.5	4.8
Thomas Fork	1a - 5w	4.0	4.2	4.6
Smiths Fork	1a - 7	3.7	5.2	4.7
Wood Hollow	1a - 8	2.3	2.8	4.5
Sheep-Pegram Creek	1a - 9	2.5	2.6	3.3
Sub-Basin V				
Yellow Coyote	1a - 1	5.2	5.4	6.3
Upper Bear	1a - 2	7.2	7.3	7.8
Evanston	1a - 3	5.4	5.5	6.4
Saleratus Creek	1a - 4u	2.6	3.0	4.6
Woodruff Creek	1a - 5u	4.3	4.7	6.0
Big Creek-Otter Creek	1a - 6	3.4	3.8	5.4