VOLUME 2

APPENDIX C

METHODOLOGIES

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S.M.R.P.C. POPULATION ESTIMATES AND PROJECTIONS METHODOLOGIES EXPLAINED

ESTIMTES

Estimates of current population are based on changes in housing stock, changes in household composition and birth and death statistics

Housing Activity

Changes in housing stock are based on building permit activity. The U.S. Census Bureau publishes a report (C-40) on permit activity in municipalities. Building officials in most municipalities are requested by the Bureau to report building permit activity on a monthly basis. Not all building officials comply with the monthly requests. When the Bureau does not receive a report, "imputes" [guesses] what the permitting activity for the month was. The annual report published by the Bureau and received by S.M.R.P.C. indicates the number of monthly reports received, the number of permits reported and the number reported and imputed. When a municipality is listed as sending less than twelve monthly reports during the year, S.M.R.P.C. attempts to contact the building official directly to obtain a more accurate figure than the Bureau's imputation. Failure of the municipal official to respond results in S.M.R.P.C's use of the Bureau's imputed figures. In accuracies in reporting permitting activity, and the resulting imputations are major sources of error in S.M.R.P.C's estimates. S.M.R.P.C. only looks at permits for the creation of new dwelling units, not all building permits. When data is available, the permits are adjusted to account for demolitions, conversions to nonresidential uses and other losses of housing stock.

S.M.R.P.C. assumes that each permit issued results in a year-round occupied dwelling built. This is the second major source of error in the estimates and may result in overestimates. Some dwellings are never built. Others, particularly in the coastal communities, are occupied as seasonal dwellings.

S.M.R.P.C. has no source of data on the conversion of existing seasonal dwellings to year round use. This is a third source of error, and may result in underestimates.

Natural Increase

Data on births and deaths is obtained from the Maine Department of Human Services, Office of Data Research and Vital Statistics. It is assumed to be accurate. A few municipalities in the region have experienced a "natural decrease" over the decade. These are municipalities with high median ages and low birth rates, resulting in more deaths than births.

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Net Migration

Net migration is computed by initially estimating the total population (multiplying total occupied housing units time average household size) and subtracting the natural increase (decrease,). Adjustment is made for the non-household population. In communities where the increase in the housing, stock has been a smaller percentage than the decrease in the average household size, a net out-migration is calculated.

Current Population Estimate

The current population estimate is, the sum of the 2000 population, the natural increase and the net migration.

Projections Of Future Population

Future population projections are based on the assumption that the trends established between 1990 and 2000 will continue into the future.

S.M.R.P.C. has used three different methodologies to project population, in five-year increments through the year 2010. All three methodologies assume a continuation of 1990-2000 trends but apply this assumption to different aspects of the change.

Numerical Growth

The numerical methodology looks at the average annual numeric growth between 1990-00 and projects an annual increase in population of that amount. For example if a community grew from 2, 600 in 1990 to 4,000 in 2000, the total growth was 1,500 people and the average annual growth was 150. The numeric methodology would project a population of 5,500 in 2010 (10 times 150 increase)

Percent Growth

The percent methodology looks at the average annual percentage growth between 1990-00 and projects an annual increase of that percentage of the 2000 population. At first glance this may seem similar to the numeric methodology. However using our same hypothetical community above will show the difference. Total growth between 1990 and 2000 was 1, 600 people or 76%. The average annual percentage increase is therefore 7. 5%. The percent methodology assumes the population will continue to increase at the same average annual rate. Therefore, in the year 2010 our town will have a population of 7,000 (1.75 times 4,000)

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Rate Growth

The rate methodology assumes that the growth rate is "compounded", much as interest on a bank account is. Rather than looking at average growth or growth rates the rate methodology looks at the growth rate which, when applied year after year would result in the decade's growth, and assumes that rate will continue to apply. In order to achieve 75% growth in our hypothetical example, a community would have grown by 5.75% per year, each year. By 2000, under the rate growth assumptions, the community will have grown to 7,656.

The Three Methodologies Compared

Both the numeric and the percentage methodologies are arithmetic projections, which when plotted on a graph will result in straight-line projections. The main difference between the two as alluded to above is that the numeric growth curve works from a base year of 1990 and the percentage growth curve is applied to a base year of 2000 and is therefore slightly steeper in its slope.

The rate methodology is a geometric projection and assumes an ever-increasing population growth. When carried out more than twenty years, this methodology clearly has its limitations. Generally, the rate methodology provides for a "faster" growth curve than the other two methods. However, the projections for 1995, under the rate methodology are lower than under the percentage methodology. This is explained by the fact that the rate methodology applies a smaller annual increase than the decade's average annual growth rate. In the first few years, the rate methodology will “lag behind" the percentage methodology until the “power of compounded interest" pushes it ahead.

Problems with All Three Methodologies

As mentioned above, all three methodologies rely on the assumption that the trends exhibited during the 1990's will continue into the future.

This trend of increasing activity peaking and then decreasing activity, leads to the question of which portion of the curve should be used in projections. Also, the question of whether the level of activity during the eighties will ever be replicated has been raised.

Rating System, Maine Department of Inland Fisheries and Wildlife (MDIFW), 1989

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Table 1. Rating scheme for Wetlands as Waterfowl Habitat.

Rating	Value	Definition
W3	High	a) High value as feeding, nesting, or cover habitat for waterfowl,
		b) Heavy use by ducks and/or geese,
		c) All coastal salt marshes.
W2	Moderate	a) Moderate value as feeding, nesting, and cover habitat for waterfowl,
		b) Significant use by ducks and/or geese, and
		c) Would respond favorably to management.
W1	Low	a) Low value as feeding, nesting, and cover habitat for waterfowl,
		b) Limited use by ducks and/or geese,
		c) Generally would not respond favorably to habitat management.
W5	Unknown	a) No data available
		b) Wetlands not mapped or rated in this report.

RATING SYSTEM, MDIFW, 1989

Table 2. Rating Scheme for Deer Wintering Areas.

Rating	Value	Definition
D3	High	Received a value between 22-35 in the evaluation procedure. These DWA's constitute excellent deer winter range. They are critical to achieve goals and objectives in MDIFW's Whitetail Deer Species Plan.
D2	Moderate	Received a value between 18-21 in the evaluation procedure. These areas are lacking in several of the components of prime habitat, although through management these deficiencies may be corrected. These areas are important to achieve goals and objectives in MD1FW's Whitetail Deer Species Plan.
Dl	Low	Received a value between 7-17 in the evaluation process. These areas may periodically provide shelter for small numbers of deer, however, they do not possess the characteristics associated with better winter cover. These areas may not be essential to MDIFW's whitetail deer goals and objectives.
D5	Unknown	These areas are of unknown value.

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RATING SYSTEM, MDIFW, 1989

Table 3. Rating and description of fisheries habitats (streams and lakes)

Category	Value	Habitat Type	Description
F3	High	Streams	a) Highly suitable habitat to support game fish, b) Contains fish species which are highly sensitive to changes in physical features, water quality, or temperature, c) Contains fish species which are rare within study area, d.) Has a quality fishery in high demand, e) Habitat area of greater than 10 acres occurring within main stem of the stream, and f) High economic importance.
		Lakes	a) High water quality. b) Heavy fishing pressure, c) High species abundance, d) High species diversity, e) Contains fish species which is rare within the study area, and f) Fish species have high incidence of natural reproduction.
F2	Medium	Streams	a) Moderately suitable habitat to support game fish, b) Contains fish species which are moderately sensitive to changes in physical features, water quality, or temperature, c) Contains fish species which are moderately common within study area, d) Has a quality fishery in moderate demand, e) Habitat area of from 5 to 10 acres occurring within main stem of the stream, and f) Moderate economic importance.
F2	Medium	Lakes	a) Moderate water quality, b) Moderate fishing pressure, c) Moderate species abundance, d) Moderate species diversity and rarity, and e) Moderate incidence of natural reproduction.
Fl	Low	Streams	a) Low suitable habitat to support game fish, b) Contains fish species which are tolerant to changes

Category	Value	Habitat Type	Description
			in physical features, water quality, or temperature, c) Contains fish species which are common within study area, d) Fishery in low demand, e) Habitat area of less than 5 acres occurring within main stem of the stream, and f) Low economic importance.
		Lakes	a) Low water quality, b) Fishery in low demand, c) Low species abundance, d) Poor species diversity, e) Species very common, and f) Minimal or no incidence of natural reproduction.
F5	Indeter-minatc	Streams & Lakes	a) Mapped or not mapped b) Not evaluated or rated as Fl, F2, or F3