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VIII. ENVIRONMENTAL IMPACTS

Through the scoping process and with the considerable assistance of the Ad Hoc Committee for Point Au Roche State Park, issues and concerns regarding potential impacts were identified (Appendix F, Summary of Scoping Meeting) and used as a guide in preparing this section. This section contains a description of potential changes which may be associated with implementation of a Master Plan for Point Au Roche State Park, as well as the kinds of steps that will be taken to minimize or mitigate adverse effects. The potential effects of each of the primary alternatives are described first, followed by a more detailed description of the effects expected to occur as a result of implementing the Master Plan

A. ENVIRONMENTAL IMPACTS OF ALTERNATIVES.

In addition to the primary criteria listed in Table 10, (p. 76) the expected environmental impacts of each alternative were also considered in the analysis of alternatives. The extent of the possible environmental effects of each of the four primary alternatives is summarized in Table 13. The findings from this analysis generally indicate that the Master Plan provides the most benefit while adequately protecting the quality and character of the significant natural resources of the park. The table reflects a general increase in types and intensity of use from Alternative 1 through Alternative 4. For example, the effect on the existing character of the open fields at Point Roche increases with proposed increases in the amount of day use and camping. Alternative 1 calls for no substantial changes to the open old field areas while implementation of Alternative 4 would result in substantial conversion of these open areas to campsites, parking and other developed facilities. There are however, exceptions to this trend. Patron benefit increases from Alternative 1 to Alternative 3. These benefits diminish however, between Alternative 3 and Alternative 4 due to an expected alteration of the scenic character of the park under Alternative 4.

With the exception of the Master Plan, all alternatives may have noticeable adverse impacts on the water quality of the park's bays. Presently, the water quality of Deep Bay is not monitored and enforcement of regulations related to wastewater discharge is difficult. The Master Plan includes facilities for pumpout of wastewater from deep draft vessels and calls for an evaluation of the use of Deep Bay for mooring. Alternative 4 includes the development and operation of a boat rental facility which could increase the risk of occurrence of small oil and gas spills.

Impacts of the Master Plan (Alternative 3) are addressed in the next sections, which follow the format of the section describing the Environmental Setting. The beneficial impacts and the effects of potential concern are summarized in Tables 14 and 15, respectively. Impacts affecting the region or elements external to the park are described first, while effects on the park's resources are discussed in the second part.

Table 13 Summary of Analysis of Impacts
Associated with Each Alternative

<u>ELEMENT</u>	<u>ALTERNATIVE</u>			
	1	2	3	4
Patrons	+1	+2	+3	+1
Economy	NC	+1	+2	+3
Beach:				
. St. Armands	+3	+3	+3	+3
. Treadwell Bay	NC	-1	-2	-3
Scenic Vistas	NC	NC	+1	-2
Water Quality				
. Bays	-2	-2	+2	-1
. Lake Proper	NC	NC	NC	NC
Cultural	NC	NC	+3	+3
Traffic Flow	NC	NC	-1	-2
Vegetation				
. Old Fields	NC	-1	-2	-3
. Forest	NC	NC	-1	-2
. Wetland	NC	NC	-1	-2
Other Recreation Facilities				
. Public	NC	NC	+2	+2
. Private	NC	NC	unkn	-1
Wildlife	NC	-1	-1	-3
Adjacent Areas	NC	NC	+1	+2
Topography	NC	-1	-2	-3

KEY

IMPACT

	<u>Beneficial</u>		<u>Adverse</u>	
	+1	+2	-1	-2
Low	+1	+2	-1	-2
Moderate	+2	+3	-2	-3
High	+3		-3	

NC = No Change
Unkn = Unknown
+ = Whether change is beneficial or adverse depends on perspective

Table 14. BENEFICIAL IMPACTS OF MASTER PLAN ADOPTION AND IMPLEMENTATION

ELEMENT AFFECTED	IMPACT
User	Patrons benefit through facilities which provide relaxation, change of pace, exercise, or environmental education.
Economy	With full development, \$2.7 million in community income generated annually; \$10 million in income over period of construction; 31 construction-related jobs; additional seasonal and permanent jobs for operation of the park.
Scenic	Vistas from park will be maintained; facility designs will be consistent with scenic character of park; shoreline areas protected from development; maximum area to be developed is 30%.
Ponds, Streams, Wetlands, and Dune Systems	These resources will be protected to the fullest extent possible during construction and operation of the park. Certain areas previously affected by development will be allowed to return to more natural conditions.
Deep Bay	Construction and operation of a pumpout facility for deep draught vessels in Deep Bay will reduce the chance for adverse effects on the bay's water quality.
St. Armand's Beach	This area will be designated as preserve and will serve as a waterfowl resting area.
Forest	Most of the mature forest areas will be designated for low intensity of use and thus protected from significant alterations. Development within mature forest will be limited to uses such as picnicking areas and trails.
Cumberland Bay State Park	Camping sites at Cumberland Bay are small and crowded. Provision of camping at Point Au Roche will allow reduction in the number of campsites at Cumberland Bay and thus increase the size and quality of the remaining sites.

TABLE 15 . SUMMARY ANALYSIS OF ENVIRONMENTAL
IMPACTS OF POSSIBLE CONCERN

1. a. Area or Resource Possibly Affected: Scenic Resources
- b. Impact: alteration of scenic resources of park or scenic vistas from park.
- c. Possible Causes: * development within areas of high scenic quality (campsites directly on shoreline)
* over development
* failure to maintain scenic vistas
- d. Significance Criteria: * more than 30% of park developed
* development along shoreline
* 10% or more of scenic vista lost
- e. Chance of Criteria Being Exceeded: low
- f. Mitigation and/or Comments: the design of the master plan limits developed areas to less than 30% of park. Shoreline development will be minimal. Scenic vistas will be maintained.

2. a. Area or Resource Possibly Affected: Water Quality of Lake Champlain.
- b. Possible Impact: * increase in phytoplankton (turbidity)
* health impacts at bathing beach
- c. Possible Cause: * bather impacts on water quality
- d. Significance Criteria: * 10 percent reduction in transparency

* coliform concentration at beach facility exceeds standards.
- e. Chance of Criteria Being Exceeded: negligible

Table 15. continued

f. Mitigation and/or Comment: as with all state park facilities, the TISP&RC engineering staff will work closely with the staff of the DEC and the Clinton County Health Department in the design, installation, and operation of any wastewater treatment facilities. recent findings from soils analyses indicate that disposal of treated wastewater on upland areas is feasible and that point discharge of effluent to the lake will not be necessary.

The area proposed for beach use possesses good circulation potential thereby reducing any tendency for buildup of disease-causing organisms.

3. a. Area or Resource Possibly Affected: Water Quality
and Aesthetic
Appearance in
Bays
- b. Possible Impact: * increased turbidity
* floating material, oil and gas on
surface
- c. Possible Cause: * illegal discharges of wastewater
from larger vessels
* accidental spills of oil and gas
- d. Significance Criteria: * 10% reduction in bay
transparency
* material floating on
surface washing up on shore
* noticeable "sheen" of oil
or gas on water surface
- e. Chance of Criteria Being Exceeded: negligible to low
- f. Mitigation and/or Comment: the master plan calls for pump-out facilities in Deep Bay for deeper draft vessels. The use of Deep Bay by deeper draft vessels for mooring will be monitored and the need for a formalized mooring program evaluated.

Table 15.continued.

- 4 a. Area or Resource Possibly Affected: forest
- b. Possible Impact: significant alteration
- c. Possible Causes: * clearing for development and park operation
* damage by patrons
* damage by wildlife overpopulations
- d. Significance Criteria: * loss of 10% of mature forest
- e. Chance of Criteria Being Exceeded: low
- f. Mitigation and/or Comment: master plan limits development within mature forest. Some damage to understory and groundcover in heavily used picnic areas will be unavoidable. Wherever and whenever possible, impacted areas will be given "rest" to prevent severe compaction of soil and elimination of vegetation.
5. a. Area or Resource Possibly Affected: Open or "old field" areas
- b. Possible Impact(s): * alteration or elimination of "old field" ecosystem; destruction of vegetation, displacement of wildlife.
- c. Possible Causes: * construction of roads, utilities, buildings.
- d. Significance Criteria: * noticeable change in the character of "old field" and (i.e. alteration of 20 % or more of the "old field" areas)
* significant adverse effect on the scenic character
- e. Chance of Criteria Being Exceeded:
* On character of "old fields": certain
* On overall scenic character: low
- f. Mitigation and/or Comments: with development of facilities, a noticeable change in the character of the park is certain to occur. Facilities will, however, be designed and landscaped in a manner that is consistent with the scenic character of the park.

Table 15. continued

6. a. Area or Resource Possibly Affected: Cultural
- b. Possible Impact(s): * loss or adverse alteration of significant cultural resources
- c. Possible Causes: * facility development and/or operation
- d. Significance Criteria: * loss or alteration
- e. Chance of Criteria Being Exceeded: negligible
- f. Mitigation and/or Comments: the OPRHP, at the request of the Division of Historic Preservation, is presently having a cultural survey of the park conducted. Findings from this survey will be considered within the design of the park.
7. a. Area or Resource Possibly Affected: traffic Patterns
- b. Possible Impact(s): * congestion and delays
* increased road maintenance needs
- c. Possible Causes: * increased traffic associated with park operation
- d. Significance Criteria: * "backup" of more than a few vehicles entering the park from Pt. Au Roche Road
* more than a few minute delay at the intersection of Pt. Au Roche Road during peak traffic periods to the park.
* 5 % increase in maintenance costs for Pt. Au Roche road
- e. Chance of Criteria Being Exceeded: negligible to low
- f. Mitigation and/or Comments: contact station and approach road at the park will be designed to prevent vehicle backup on to Pt. Au Roche Road . Congestion, as a result of park operation, at intersection of Pt. Au Roche road with Route 9 is unlikely since times of peak traffic flow to and from park do not coincide with normal "rush hours". Pt. Au Roche Road is in sound condition and is expected to be able to adequately handle the additional traffic without significant increases in maintenance costs.

Table 15. continued

8. a. Area or Resource Possibly Affected: wildlife
b. Possible Impact(s): change in species diversity
c. Possible Causes: * development of facilities
* park operation
d. Significance Criteria: substantial decrease in
diversity of species
e. Chance of Criteria Being Exceeded: low
f. Mitigation and/or Comments: while shifts in species
type and number may occur in certain portions of the
park, the overall effect of the development and
operation of the park on wildlife will be beneficial.
The OPRHP will work closely with the DEC
in identifying and protecting any potential
significant habitat which may exist within the park.
9. a. Area or Resource Possibly Affected: Private
Campgrounds
b. Possible Impact(s): * reduction in attendance
c. Possible Causes: * excessive development of
improved camping sites at
Pt. Au Roche
d. Significance Criteria: * noticeable reduction in
attendance at private
camping facilities as a
result of Pt. Au Roche
development
e. Chance of Criteria Being Exceeded: low
f. Mitigation and/or Comments: effect of Pt. Au Roche
development on any given private camp grounds that
serve long term campers (i.e. seasonal rental of sites)
will be minimal since State Park facilities serve
transient campers. The impact of Pt. Au Roche
development on any given private camping facilities
that serve persons interested in shorter stays is also
likely to be light since a broad based market is
indicated by use of Cumberland Bay and Ausable
Point. This will be further assured by limiting
development to basic camping facilities and phasing
development to allow time for market adjustment to
occur.

Table 15. continued

Development of a large number of sites may lead to reduction in attendance at not only private campsites but at public facilities as well. Development of a moderate number of sites, a portion of which will be replacements for sites at Cumberland Bay State Park, is not expected to significantly reduce attendance at other campgrounds, private or public. In fact, the presence of camping at Pt. Au Roche may have a positive effect on attendance at other campgrounds through direction of overflow to these other facilities. It will also attract and introduce new campers to the area, helping to expand the overall camping market. The OPRHP will continue to work in cooperation with representatives of private campground owners regarding this issue. Expansion of camping beyond the initial 60 unimproved and 30 carry-in sites will depend on findings from additional studies of resource capacity.

10. a. Area or Resource Possibly Affected: Shoreline of Middle Bay
- b. Possible Impact(s): Increase in Rate of Erosion
- c. Possible Causes: Changes in wave action due to modification of shoreline areas.
- d. Significance Criteria: Noticeable increase in material eroding from shoreline
- f. Mitigation and/or Comments: A portion of the western shoreline of Middle Bay is identified (NERBC, 1978) as having a potential for severe erosion. Middle Bay is also the area designated for construction and operation of a boat launch facility. Prior to the final design of the facility, a site specific evaluation of the erosion potential will be made and, if necessary, elements dealing specifically with management of this area's potential for erosion will be included within the final design.
11. a. Area or Resource Possibly Affected: Soils (trails/use area)
- b. Possible Impact(s): Compaction and/or erosion
- c. Possible Causes: Overuse of trails, camping area etc. by patrons
- d. Significance Criteria: Noticeable occurrence of area in the park with severely compacted soil or exposure of root system of trees
- e. Chance of Criteria Being Exceeded: Moderate
- f. Mitigation and/or Comments: Prevention of significant compaction and/or erosion will require monitoring of use areas with a high potential for such impacts followed by steps taken to divert or limit overuse

B. REGIONAL IMPACTS OF MASTER PLAN

1. RECREATIONAL BENEFITS

Adoption and implementation of the Master Plan for Point Au Roche State Park will, quite obviously, result in recreational benefits. Some of these benefits to park users are intangibles (but no less important) such as the good feelings associated with relaxation, exercising, scenic vista viewing, social gatherings, and just "getting away from it all". Participation in the proposed nature education program will result in an increased user awareness of natural systems. Campers and day users will have more efficient access to Lake Champlain for fishing and/or boating, and persons traveling the lake in deep draft vessels will have an opportunity for wastewater pumpout. In addition, the new park would ease the overcrowded situation at Cumberland Bay State Park during the peak recreation season. The Master Plan calls for a reduction in the number of campsites at Cumberland Bay, resulting in an improved camping environment and experience.

2. ECONOMIC IMPACTS

Estimates of income, employment, and fiscal effects associated with new parks are important considerations in decision-making processes. Tourism-related expenditures are a major element in the economic vitality of localities in many parts of the state. This is especially true for places such as Point Au Roche that possess significant natural resources and are strategically located near major interstate and international transportation corridors. While this analysis concentrates on the indirect impacts expected to flow from development of Point Au Roche, OPRHP does recognize that the direct beneficial impacts derived by users are as important and indeed perhaps more valuable.

a. Estimate of Park Visitation

Since Point Au Roche State Park is currently undeveloped, established user trends do not exist. However, estimates of economic effects can be derived from analysis of available data on similar parks or situations. Fortunately, Cumberland Bay State Park is in the immediate vicinity and served as an ideal comparison. Cumberland Bay offers beach swimming and camping on Lake Champlain and is located within ten miles of Point Au Roche. It also serves basically the same market. From a resource perspective, Point Au Roche will provide more spacious and attractive camping, better water quality, greater boating opportunities, a larger trail network and a superior scenic setting. As a result, Point Au Roche is expected to have higher utilization rates than Cumberland Bay. Thus, proportional comparison based on facility capacities should yield conservative estimates of Point Au Roche's economic impact. While more removed from Point Au Roche, the DEC campground facility at Ausable Point is another similar facility from which estimates of Point Au Roche development effects can be drawn.

Estimation of the number of park visitors expected to attend Point Au Roche State Park was based primarily on analysis of attendance at Cumberland Bay State Park. The two predominant factors influencing total attendance are (1) the parking capacity and (2) the number of camping sites. At Cumberland Bay State Park there are 1300 parking spaces available for day park users and 197 camp sites. In 1983, the park accommodated 130,414 day users and 58,500 campers. Assuming the same ratio of attendance because of similar recreational and natural resource offerings, with a 400 parking capacity park and 210 campsites available at Point Au Roche, 40,127 day users and 52,000 campers would be expected to visit Point Au Roche each year. The total annual visitation would be 92,127.

In 1983 at Ausable Point Campground, which is also located in Clinton County, day use attendance was 45,699 with a parking capacity of approximately 428, cars and campers totaled 35,008 at 121 camp sites. Assuming the same visitation rate at Point Au Roche State Park, 42,709 day users and 50,631 campers would be expected, and an annual attendance of 93,340 at the new park.

It is interesting to note that Cumberland Bay State Park and Ausable Point Campground have very similar rates of attendance for both day use and camping. The ratios of the total number of day users to the number of parking places for Cumberland Bay and Ausable Point are 100 and 107, respectively. Likewise, the ratios of camping attendance to number of campsites are similar - Cumberland Bay's ratio was 297 while that at the DEC campsite 289. Similarities of the ratio figures support the use of these parks as comparables for the Point Au Roche economic impact analysis.

b. Attendance Distribution

Since the Point Au Roche, Cumberland Bay, and Ausable Point Parks are all located in Clinton County on or near Lake Champlain and have similar scenic, as well as social and environmental settings, it is reasonable to assume they would have similar park user profiles. In a recent study by DEC on the point of origin of campers at Ausable Point Campground, it was determined that 41.3 percent came from Canada (the majority from nearby Quebec Province), 26 percent from Clinton County, 24 percent from the rest of the state, and 8.6 percent from other states. Thus, visitors from Quebec, Canada and from Clinton County accounted for two thirds of the total campers at Ausable Point. It is probable that the campers were predominantly drawn from the Montreal and Plattsburgh areas.

The geographic proximity of population centers to parks can be expected to significantly affect use (i.e. the closer a campground to a population center, the greater chance for a higher rate of utilization). It is only 3 to 5 miles from Plattsburg to Cumberland Bay and 10 to 12 miles from Plattsburgh to Ausable Point. The distance from Montreal to Cumberland Bay is also about 15 miles shorter than that to Ausable Point.

Point Au Roche is geographically closer to Montreal than either Cumberland Bay State Park or Ausable Point. It is also closer to Plattsburgh than Ausable Point. Thus it seems appropriate to assume there would be a similar if not higher attendance rate in camping activity at Point Au Roche than at Cumberland Bay.

c. Estimates of Park Visitor Expenditures

Using the expected annual attendance figures for Point Au Roche, estimates can be made of the park's economic impact (in dollars) on Clinton County. A recent study (Brown, Allee and Shimbo, 1983) showed that the mean expenditure per party per day for Wellesley Island State Park visitors in 1982 was \$50.32 for campers and \$53.88 for day users. Similar to Wellesley Island State Park, Point Au Roche State Park is located in the Thousand Islands region and is expected to have a large number of Canadians among its visitors. The large amount spent by day users at Wellesley Island would also be expected at Point Au Roche since it is also a tourist destination area with many of its users vacationers. By applying (1) the mean expenditures per group per stay and (2) an average group size of four found in statewide park visitor and camper surveys to the estimated day use and camping, visitor expenditures are projected to be \$1.2 million.

d. Impact of Park Visitor Expenditures

Almost every economic sector benefits from the expenditures of park visitors. Spending has a chain reaction or multiplier effect on the economy, starting with the original \$1.2 million injected into the Clinton County economy. This multiplier effect extends the spending benefits to firms and households outside the Clinton County region as well.

Firms supplying visitors with meals, lodging or other services will stimulate a demand for local goods and services as the visitor dollars turn over in the region's economy. These purchases within the region stimulate additional economic activity among suppliers. Input - Output analysis can be used to estimate the total impact of any given sector of the economy on all other economic sectors.

Hiser and Fisher (1976) constructed an Input-Output table for the Clinton County economy containing 25 industrial sectors. It was found that direct tourist purchases created positive impacts primarily on the recreation, trade, food, wholesale and retail sectors. The study found that \$22 million in direct purchases in Clinton County in 1974 generated a total impact of \$39 million in the Clinton County economy, representing a multiplier of 1.8.

Applying the 1.8 multiplier effect to the park visitor's direct purchases of \$1.2 million would generate a total of \$2.2 million to the Clinton County economy.

e. Impact From Park Expenditures

Expenditures related to the operation of the park would have a very similar multiplier effect on the Clinton County economy. It is estimated that \$79,000 will be required for permanent staff salaries and \$40,750 for temporary staff salaries and benefits, to run Point Au Roche State Park. In addition, \$94,300 will be required for other operation and maintenance expenses. This represents an annual budget of \$214,050. These estimates are based on the comparable budget presently incurred at Cumberland Bay State Park.

Assuming that 80 percent or \$95,800 of the salary portion of the operation budget would go for local purchases, and that 100 percent of the park operation and maintenance expenditures would be spent locally, the initial expenditure impact on the Clinton County economy would be \$190,100. With the multiplier effect of 1.8, the total impact to the region would be \$342,180.

f. Impact on Municipal Revenues From Sales Taxes

A four percent sales tax is collected by New York State and local governments have the option to collect taxes on the same transactions up to 3 percent. The state sales tax revenues collected in Clinton County have no direct local economic impact because it would be transferred back to the state general revenue fund and redistributed throughout the state in a non-traceable manner. Clinton County, however, collects a 3 percent local sales tax and these tax revenues would be retained and spent on public services. In Clinton County, taxes collected would be from non-exempt expenditures by park visitors and from park operations.

In the Brown *et. al.* study (1983), the types of visitor expenditures were estimated at Wellesley Island State Park. The study indicated that 11.9 percent of visitor expenditures were park fees. Another 16.6 percent was paid for local groceries. Thus, assuming all local groceries were tax exempt, 28.5 percent of the expenditures were exempted from state and local sales taxes. Total local sales tax revenues collected in Clinton County and attributable to visitor expenditures would be:

$$2.2 \text{ million} \times (100 - 28.5\%) \times 3\% = \$46,000$$

Assuming that 25% of park wages spent locally were not spent on taxable items, sales tax revenues from park expenditures equal \$9,000. Thus, total sales tax revenues to Clinton County governments derived from Point Au Roche State Park would be \$55,000 per year.

g. Impact of Capital Investment Program

Point Au Roche State Park, once fully developed, will be able to accommodate approximately 100,000 park visitors annually by offering them recreational opportunities in swimming, camping, picnicking, nature walking, ball fields and play areas. In order to reach its full potential, it is proposed that a ten-year capital investment program with a total investment of \$5.5 million be instituted. The money will be distributed as follows:

<u>FACILITIES</u>	<u>IN 1984 DOLLAR VALUE (000's)</u>
Day Use	\$1,935
Nature Center	1,050
Camping Sites	2,160
<u>Maintenance Area</u>	<u>320</u>
TOTAL	\$5,465

Capital investment is translated into construction expenditures which produce economic impacts. The proportions between local and non-local construction expenditures vary in accordance with the structure of the firms and resource materials purchased.

The New York State Office of Planning Coordination (OPC) in 1970 produced an Input/Output Analysis Table for New York State's economy. According to the OPC study, it was estimated that for every million dollars spent in construction, 31 person-years of work would be created directly from the construction, and another 20 person-years of work created through the supplier.

Based on the \$5.5 million capital program it is estimated that a total of 308 person-years of work will be derived from these expenditures, of which 198 person-years of work will be on site and 110 person-years of work will be off the job site, creating a total income of 10 million based on the 1.8 multiplier effect.

h. Conclusion

From the above analysis, it would appear that Point Au Roche State Park, if developed, would provide a combined economic benefit of \$2.6 million dollars from park visitor expenditures, park operations expenditures and sales taxes revenues. There would also be construction-related expenditures, including a total of 308 person-years of work generated by construction and suppliers. To these impacts should be added the value of the visitor experience received directly by the estimated 100,000 annual visitors.

3. TRAFFIC IMPACTS

Development and operation of Point Au Roche State Park will obviously increase traffic flow on the roads leading to the park. Traffic volume will vary, as attendance at recreation areas characteristically is subject to seasonal, weekly and even daily peaks. Since most of the attendance at Point Au Roche will be associated with day use and camping activities, the bulk of traffic to and from the park will occur during the summer months. Total daily traffic flow is higher on weekends and holidays than weekdays and also varies during the day, with peaks occurring in the morning and afternoon.

The major routes leading to the park are the Northway, Route 9 and Point Au Roche Road (Figure 3, p. 11). Both the Northway and Route 9, which are heavily used transportation routes, are operated and maintained by the State of New York. While estimates of total traffic volume on these routes are not included within this report, it is clear that the average number of vehicular trips per day expected to be associated with operation of Point Au Roche State Park is negligible when compared to the total daily traffic on these roads.

Point Au Roche Road has good alignment, subsurface structure and drainage, and is actually one of the better roads in the county (personal communication, F. Madden, Clinton County Highway Superintendent). The road is expected to adequately handle the additional traffic flow and provide good reliable access.

The estimated amount of traffic which will use Point Au Roche Road when the park is constructed is the total of the traffic presently using the road combined with the estimated traffic to and from the park. At present, approximately 3,000 vehicles use Point Au Roche Road daily during the summer and roughly 1,500 during the off season.

The number of vehicles which will be using the road to reach Point Au Roche State Park can be estimated by dividing the estimated total attendance by 3.5 which is an OPRHP standard for the number of persons per car. For the day use facilities only, this would result in 11,464 additional cars using the road each season. Assuming the season is 100 days (3 months) an average of 115 additional cars would travel to and from the park on Point Au Roche Road each day. With complete development of the park, the estimated annual attendance is approximately 100,000 or 28,500 additional vehicles/year. This figure does not account for other factors such as public transportation, campers' trips to retail stores or other recreation areas, or the number of buses which may bring large groups to the park.

An alternate method of estimating the traffic volume generated by the park is based on the total parking capacity. At full development the day use parking lot will hold a maximum of 350

cars, 30 RVs and 8 buses; the nature center, 80 cars and 12 buses or RVs; the boat launch, 30 cars with trailers; and the campgrounds, 210 cars or RVs or a total of 720 parking spaces in all. That capacity translates into 1440 vehicle trips (round trips) over Point Au Roche road per day which is a 48% increase in the average amount of traffic which presently uses the road during summer.

It should be noted, however, that this peak traffic flow will occur on only a few days a year when all facilities would be used to maximum capacity. In addition, design capacity analysis (American Association of State Highway Officials, 1965) indicates that a rural highway constructed to standards, such as Point Au Roche Road (e.g. wide traffic lanes, minimal restrictive passing sight distance and adequate shoulders, lateral clearance and stopping sight distance) has a design capacity in the range of 705 to 810 vehicles per hour in both directions. In terms of average daily traffic (ADT) the maximum possible capacity is estimated at 15,000 to 20,000 vehicles per day, with actual design ADT capacity in the range of 6,200 to 9,000 vehicles per day. Thus while the traffic flow on Point Au Roche Road is estimated to be 4,440 trips/day (i.e. 1440 park and 3,000 non-park) on peak use days, this estimate is well below the road's ADT capacity of 6,200 vehicles per day.

Finally, while it is not possible to accurately estimate the numbers of vehicles which may be turned away at the park entrance during periods of full capacity, an estimate can be made based on the figures from Cumberland Bay State Park. At that park, on the average, there are about 5 days during the summer when cars are turned away at the gate. This figure can be considered significant in terms of measuring overall popularity of a facility. It is not, however, particularly significant in terms of increasing the traffic loads when compared to the annual number of cars expected to use the road.

In conclusion then, the impacts expected by Point Au Roche generated traffic do not appear to be substantial, particularly for the Phase I day use activities. However, as each phase of the plan is implemented, the need for additional safety signs, lights or road repair may need to be evaluated to insure these routes will be able to efficiently handle the additional traffic.

4. GROWTH INDUCEMENT

Development and operation of Point Au Roche State Park may result in additional interest and demand for development of facilities consistent with the activities provided within the park. This inducement could, for example, result in expanded or new retail outlets (grocery/ sales), restaurants and campgrounds.

The extent and type of development near the park is dependent to a large extent on the steps taken by local officials to manage such growth. A primary tool for such management is adoption and enforcement of an appropriate zoning ordinance. There is a need for the county and state to cooperate and assist the Town of Beekmantown officials in this regard.

The chance of significant commercial or strip development along Point Au Roche Road or Route 9 as a result of adoption and implementation of a plan for Point Au Roche State Park appears minimal. The preferred alternative calls for a natural or scenic park and should not generate the kinds of commercial strip development often found in proximity to "Theme Parks".

5. IMPACTS ON OTHER RECREATIONAL FACILITIES

The development of day use and camping facilities at Point Au Roche State Park should have a beneficial effect on other recreational facilities in the area. As stated previously, the new campsites will relieve the pressure on Cumberland Bay State Park where overcrowding exists. Demand for sites at this park has made it extremely difficult for OPRHP to reduce the overcrowding. The addition of Point Au Roche camping facilities will allow for a reduction of campsites at Cumberland Bay.

The swimming beach and day use facilities will complement the existing beaches and facilities at Cumberland Bay and the City of Plattsburgh's public beach. The size and scale at Point Au Roche is relatively small compared to the other two beaches, i.e., 800 linear feet compared to 2700 linear feet and 3500 linear feet respectively. Use of the Point Au Roche day use facilities should not have any major impact except the possible beneficial one of alleviating overcrowding on peak days or weekends.

Boating and fishing will be major activities at Point Au Roche. Both the pumpout station and boat launch ramp will assist in maintaining water quality in Lake Champlain. Private marinas should benefit from increased sales, particularly gas and fishing accessories.

Another major activity planned for Point Au Roche is the nature interpretive center and related programs. This activity is consistent with the park's classification, and based on a similar facility at Wellesley Island, nature interpretation should provide four season use of the park with a minimum of impact on facilities.

Within the four season concept of park utilization, winter recreation will be an integrated element in the park's programs. Ice fishing and cross-country skiing along with nature interpretation will be the major winter activities. Existing trails will be used for skiing, and a warming shed will be provided for the people ice fishing. Those activities are complementary and will have no adverse impact on the park or other nearby recreation facilities.

Finally, the impact of 210 additional campsites at Point Au Roche on the private campgrounds in the area is difficult to measure. OPRHP will continue to work with the Campground Owners of New York (CONY) on this issue. CONY officials generally oppose the operation of campsites by the state, and believe that the private sector can and is meeting camping demand. Attempts to definitely

measure such impacts have not produced conclusive data. It is quite possible that the facilities at Point Au Roche will attract additional tourists to the area and benefit the private campgrounds as well. Inclusion of camping opportunity within the Master Plan for Point Au Roche was based primarily on the quality and capacity of the park and lake recreational resources and OPRHP's mission of bringing people and resources together. Analysis of attendance at comparable state facilities also indicated the appropriateness, in terms of demand, of including camping within the park. Since the plan calls for a reduction in the number of campsites at Cumberland Bay State Park, it will have a beneficial effect on the quality of this overcrowded facility.

6. HEALTH AND SAFETY OF PARK VISITORS

The health and safety of persons using Point Au Roche State Park will be protected through proper design and construction which meet applicable health and safety codes. Also, OPRHP's Recreation Services program places strong emphasis on visitor safety; for example, lifeguards at State Park beaches must be certified through certain safety training programs. Persons injured in minor accidents will be administered to at the park's first aid station. More serious injuries or accidents may require the assistance of park police, or local fire protection and ambulance services.

Construction of a boat launch facility at Point Au Roche State Park will result in an increased density of boaters in the bay areas. This increase in the number of boats will obviously increase the risk of boater accidents which may result in damage to equipment or possibly injury to the operators. Such accidents often involve boaters who are not knowledgeable about boating on a large body of water such as Lake Champlain, especially under rough conditions. Often there is a tendency among boaters who are inexperienced in boating on large lakes to underestimate the amount of risk of injury to their persons and damage to their property during storm events or high wave action.

OPRHP is mandated under state navigation law to provide educational information for boaters operating on state waters. OPRHP, through its Marine and Recreational Vehicles Unit, has developed a program entitled "Make Sure, Make Shore" which is taught by several thousand volunteer instructors. OPRHP also administers a program which provides financial assistance to those County Sheriffs' Departments conducting enforcement activities related to boater access. The Clinton County Sheriff's Department receives assistance through this program and is the primary agency responsible for enforcement of boating regulations on Lake Champlain within the Clinton County jurisdiction. The Sheriff's Department owns two patrol boats which operate out of Plattsburgh and are available throughout the boating season for emergency calls. Routine patrols on the lake are conducted during the summer on weekends only. OPRHP will also be responsible for placement of necessary marker buoys within the Middle Bay area.

The U.S. Coast Guard has units which patrol Lake Champlain. They primarily maintain buoy markers on the lake, and respond as backup to major emergency calls.

C. IMPACTS TO PARK RESOURCES

Quite obviously, with the investment of more than 5 million dollars into the development of Pt. Au Roche State Park followed by the attraction of a relatively large number of people to the area, there will be a substantial change. It is not the investment into facilities or the attraction of patrons which determines whether the effects will be positive or negative, but rather how development and operation will take place. This section addresses the changes expected to be associated with implementation of the "how", or the Master Plan for Point Au Roche. This section does not address all effects on all resources, but rather focuses on the impacts of substantial benefit or of possible concern. A summary of potentially adverse effects and ways in which these effects will be mitigated is contained in Table 15. In those instances where not enough is known about the resource to determine impacts, a description of OPRHP's strategy to assure protection of the resource will be provided.

1. SCENIC RESOURCES

As noted previously Point Au Roche State Park is one of the few remaining large areas of Lake Champlain shoreline that is still undeveloped. For this reason the maintenance of the scenic and natural characteristics of the park has been a primary consideration in developing a master plan for the park. The natural character of the existing land will obviously be altered with implementation of the Master Plan. However, every effort will be made by OPRHP to minimize the visual and aesthetic impacts resulting from development of park facilities.

One of the most significant features of the Master Plan that insures that the natural character of the park will be maintained is the fact that only 30% of the total park acreage will be developed. In addition, effort has been made to minimize development activities in the remaining natural areas of the park and instead concentrate them primarily in the areas which have previously been disturbed by man, such as the brushland areas.

Areas that are to be developed will be designed to be as natural and compatible with the existing landscape as possible. Building location, design and appearance will maintain a parklike atmosphere and will not be visually obtrusive from areas outside the park (i.e. Point Au Roche Road and the lake). Park landscaping will also contribute to an atmosphere of a natural park setting and will be done with native plant species. Overall, although the proposed Master Plan will change the existing character of the park property, it is not expected to result in any significant visual or aesthetic impacts, over either the short or long term.

2. CULTURAL RESOURCES

In order to determine the significance of the cultural resources which may exist in the park, and on the recommendation of OPRHP's Division for Historic Preservation, an archeological and historical investigation is being conducted. The final reports will include findings from a thorough literature search and field investigations designed to identify areas of archeological and historical significance. These sensitive areas will then be compared with the areas to be affected by implementation of the plan, and an appropriate mitigation program will be developed. Where practicable, project modification can be made to avoid disturbance of these sensitive areas. If modification is not feasible, salvage excavation will be undertaken in the project area prior to construction in order to assure preservation of artifacts. Salvage archeology, if needed, could contribute to the interpretive programs planned for the park's nature center.

With the exception of the boat launch site in Middle Bay and the docking facility in Deep Bay, there are no elements in the plan which may have any direct impact on underwater archeological resources. Closer inspection for archeological resources of these two potentially affected areas will be conducted prior to any disturbance of the bottom of the bays.

3. WATER RESOURCES

a. Groundwater.

Adverse impacts as a result of development and operation of a State Park at Point Au Roche are not expected to occur. The preferred source of water supply for the park is groundwater. More detailed study of the feasibility of using groundwater as the source of water for park operation will be required. Based on existing information, however, it appears that there will be enough water of sufficient quality from this source to serve the park's operational needs. Since the Master Plan calls for protection of the wetlands and stream areas in the park, elimination of potential recharge areas is precluded.

b. Wetlands and Streams

The Master Plan is designed to protect the values associated with wetlands and streams in the park. Its implementation will not significantly alter stream flow or substantially impact any of the wetland areas. With the exceptions of the boat launch and the eastern campground area, new facilities will be located away from surface water resources. The boat launch and campground facilities will be located near the intermittent stream which leaves Duck Pond. Stormwater runoff controls, however, will be incorporated in the design of both of these facilities. The design will protect normal flow patterns through the ponds and streams.

c. Ponds

Similar to the wetland and stream areas, the ponds will be protected from the short term adverse impacts associated with construction. While the ponds will be retained, their shoreline areas may be subject to soil compaction due to patron activities. Proper trail design, marking, and maintenance will help mitigate these kinds of effects.

d. Lake Champlain

As described in the Environmental Setting Section of this report, the water in the bays and lakes proper surrounding Pt. Au Roche State Park is generally of good quality. Because of their shape, however, Middle and Deep Bays are felt to have limited capacity for use. The peninsulas on either side of these bays prevent normal shoreline circulation patterns. This is especially true on Deep Bay. Due to its long and narrow configuration, this Bay may function similar to a separate small lake rather than a part of Lake Champlain proper. For example, during the late summer portions of Deep Bay may exhibit some depletion of oxygen at certain depth, while at that same depth in Lake Champlain proper the oxygen concentration is substantially higher due to the mixing action of seiches and/or high winds.

Using existing conditions as a starting point, implementation of the Master Plan will increase and reduce the extent of possible adverse impacts on Middle and Deep Bay, respectively. Middle Bay, which presently receives limited use by boaters, will be the site of a boat launching facility serving day users and campers. The presence of additional boat traffic will increase the risk of oil and gas spills in the area. The relatively small number of boats (parking is for 30 cars and trailers), and the fact that most boats will not be staying only in Middle Bay indicates that the chance for significant spills of oil or gas will be minimal. Still, the Bay should be the subject of a baseline water quality study before the launch site is constructed and of a water quality monitoring program after plan implementation. Deep Bay presently receives use by owners of deeper draft vessels who are seeking a place to drop anchor for the night. The proposed plan includes a pumpout facility for Deep Bay which should lessen the potential for adverse effects on water quality.

Another area of possible concern is the effect of boat operation in Middle and Deep Bay. Normal operation of outboard or two-stroke engines causes a mixture of burned and unburned fuel composed of oil, lead and phenols to be discharged into the water (Stewart, 1968). While improvements in engine design have resulted in a reduction in this kind of discharge (Muratori, 1968), if present in large enough amounts it can affect aquatic life. Jackivicz (1973) has shown that the substances in this discharge can taint fish flesh as well as adversely affect the reproductive processes of fish. An EPA funded study, however, conducted in the early seventies which set out to determine the effects of outboard motors on aquatic ecosystems, however, contained in the findings a statement that, after two years of research both in the field and laboratory, "it was not possible to determine conclusively the

precise point at which outboard emissions affect the aquatic environment." While the report also contains a finding that outboard emissions tend not to significantly affect aquatic ecosystems, it also states that impacts vary according to different environmental characteristics. Middle and Deep Bays, where the most concentrated boating activity will take place, apparently have limited circulation and will be monitored to determine the extent of impact.

Another concern is the potential impact of the wakes generated by boat traffic on the shoreline of the park. While most of the park's shoreline has been identified as possessing only slight potential for erosion, a small portion of the shoreline in Middle Bay has been rated as having severe erosion potential. OPRHP will conduct a site specific evaluation of this erosion potential and incorporate into the final design of the boat launch facility steps not only to prevent substantial increase in erosion but, if necessary, to reduce the present level of potential for erosion.

Bathers may cause increases in coliform bacteria levels and turbidity problems by stirring up the sediment in the bathing area. They may also contribute waterborne pathogens to the water as well. Occurrence of these types of effects will be localized in nature and will be controlled through monitoring by OPRHP in accordance with New York State Department of Health standards. Other areas such as Middle and Deep Bays may be monitored also to insure that their water quality remains high.

4. SOILS

The soil in the park can be an impacted resource or an element impacting other resources. Under either definition, the conservation of the soil in the park is of critical importance. Excessive mobilization of soil will deplete an already limited supply and may affect the water quality of the park's ponds and bays.

Construction and operation of Point Au Roche State Park will have both long- and short-term impacts on the park's soils. Short-term impacts will be primarily those associated with construction activities. During construction, runoff may cause an increase in the rate of erosion into the surrounding bay areas, especially with construction activities occurring nearest to the lake such as the boat launch construction. While short-term increases in turbidity and decreases in dissolved oxygen may occur, such increases are not expected to be significant. The contractor retained for the construction of the park's proposed facilities will be directly responsible for any necessary erosion control measures. The specific measures employed will be monitored by OPRHP regional staff. It is important to note that from an engineering perspective, erosion control will be a prime concern during the development of specifications, and that each facility will be designed to minimize the necessary cut and fill, thus reducing potential soil movement.

DEC Fish and Wildlife staff will be consulted on the optimum time for construction, so as to minimize adverse effects on fish spawning in the areas of the lake around Point Au Roche. On-site erosion controls will be used regardless of what time of year the facility's construction takes place.

Areas affected by construction activities will be seeded as soon as possible and according to design specifications. These areas will be treated with a hydroseed machine which sprays the grass seed in a mixture that creates a thin film preventing planted seed from being easily washed away. The seeded areas will be further protected with a mulch of hay.

Long-term impacts to the park's soils will be compaction and erosion in certain areas of the park, such as trails and day use areas. These impacts are likely to be more severe in areas already subject to erosion and drainage problems, such as the trail areas along the shoreline of Long Point. Proper trail construction and maintenance will mitigate some of these impacts.

Finally, it should also be noted that limitations of soils for development may affect the overall cost for development. More investment may be necessary in order to overcome or manage certain types of soil limitations.

5. VEGETATION

Changes in park vegetation will occur during and following the construction of park facilities. Certain areas now covered with vegetation will be replaced by pavement. With the exceptions of (1) the picnic area servicing the bathing complex and (2) the boat launch site to Middle Bay, all proposed development will be within open field/brush areas. The primary plant species most affected by the park development are old field types. These include aspen, alder, willows, dogwood and meadowsweet as well as wildflower species such as goldenrod and aster. Small individual cedar trees are also located throughout the open areas of the park. Some of these individual tree/shrubs will be lost to the effects of construction. The "old fields" at Point Au Roche do contain a few mature oaks and maple trees in scattered areas. Special efforts will be made during design and construction to minimize the loss of these mature trees. As previously mentioned, the pond/wetland/stream system which runs through the old field areas will be protected since this system substantially contributes to the diversity of the park's biota.

Creation of small open areas for picnickers and the construction of the boat launch/parking facility at the northern end of Middle Bay will require removal of some woodland. The total amount of such clearing will be minimal, probably less than 5 acres. The intent of development within these areas is to retain as much of the natural character of the park as possible. The plant resources of the park will also be affected by park maintenance and operation following construction. In high use areas, trampling of vegetation

and compaction of soil may occur and trees may be damaged by park users. Similar impacts will also occur along trails through the park, although to a much lesser degree. Landscaping, tree planting, and proper trail design will help minimize these adverse effects so that the overall scenic quality of the park will not be substantially affected.

6. WILDLIFE

Wildlife will be affected in different ways by the construction and the operation of the park. The proposed plan can be viewed as substantially beneficial to wildlife since more than 70 percent of the existing habitat will be retained. Also in two areas of the park, environmental systems which were significantly affected by development activities in the past will be allowed to return to more natural conditions. Most of the St. Armand's Beach area will be set aside as a waterfowl refuge, and the dunes behind the beach which were altered by past road construction will be allowed to regenerate. Likewise, the future impacts on the wetland at the northern end of Deep Bay will be lessened by designating the access road in the same area for use by park operation vehicles only.

The wildlife will be affected by short-term construction activities and by park operations. In the area where most of the development is to take place (i.e. the areas classified as High Use Intensity), wildlife will be displaced and portions of their habitat eliminated. Following construction, many of the displaced species will return to the areas of suitable habitat that remain. Overall, however, there will be a reduction in the number of individuals using "old field" areas for habitat. These species include field mice, reptiles, rabbits, woodchuck, and various species of birds.

Park operation will result in the increase of certain species of wildlife, while those species wary of people will seek refuge elsewhere. Species which may become more abundant include raccoons, skunks, Canada geese and other animals with an interest in the food supplies of day users and campers. These species can reach nuisance population levels if appropriate controls are not put into effect. Such controls include efficient solid waste collection and disposal, and informing patrons not to encourage the presence of these animals by feeding them.

Another concern is the effect of boat traffic (e.g. noise and wakes) on waterfowl, mammals, and amphibians using the bays for nesting or feeding. Displacement of waterfowl from the Middle and Deep Bays during peak boating season will be mitigated somewhat through the designation of St. Armand's beach as a preserve area.

While there will be some changes in wildlife species composition in the areas of high patron use, as was indicated at the beginning of this section, these areas amount to less than 30 percent of the park and the time of greatest impact is limited to the summer recreating season. Overall, the Master Plan is quite sensitive to the protection of indigenous wildlife and their habitat.

7. SOLID WASTE MANAGEMENT

Solid waste generated as a result of park operation will be included within the collection system for Cumberland Bay and Macomb Reservation. The existing equipment for collection may need replacement due to age of the existing sanitation vehicle.

Based on the amounts of solid waste produced in other similar parks, it is estimated that approximately 200 tons of solid waste will be generated at Point Au Roche annually. The maximum amount of waste generated at the park will be during the summer when it is estimated that up to three tons could be produced on a weekend day and one ton on an average week day. All solid waste will be transported to the Clinton County landfill in compactor trucks for disposal. The solid waste produced at the park will consist primarily of biodegradable waste such as paper, paper products and food. The county landfill, which is located on Sand Road, is located approximately 17 miles from the park and has approximately 14 more years before it reaches capacity. (Malone, 1984).

IX. UNAVOIDABLE ADVERSE IMPACTS

Possible adverse effects and proposed ways of minimizing or mitigating their extent are described in the previous section (Table 15, p.96). With the possible exception of the impact on the existing overall character of the park, any substantial adverse impacts can be avoided.

The changes to the overall character of the park can be beneficial or adverse depending on one's perspective. The park presently has a natural, pastoral setting, which will be altered through development and operation of facilities such as the bathhouse, boat launch, and parking areas. Since protection of the important natural areas in the park, (which are also in least supply) is an element of the Master Plan, the areas most affected by this change in setting will be the open areas of the park, including the plants and wildlife inhabiting those areas. These changes, may be viewed as adverse by some people. They are unavoidable if more people are to have the opportunity to enjoy and interpret the substantial resources of the park.

The Master Plan contains various elements which will mitigate any adverse impacts. These include:

- o a land use classification system which allows uses with only low impact potential in areas of important environmental character.
- o landscaping and design of developed areas that are compatible with the park's natural/scenic character.
- o preservation of scenic shoreline areas

Through incorporation and implementation of these elements, the essence of the scenic character of the park will be protected.

X. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The planning, development and implementation of a Master Plan for Point Au Roche State Park has involved and will involve the irreversible and irretrievable commitment of public funds, in the form of time, labor and materials. Also there is a commitment to the long term operation and maintenance costs to run the park. Implementation of the Master Plan will also involve an increase in energy use both for construction and operation of the park. Buildings, however, will be designed and constructed to be energy efficient.

Implementation of the plan will also convert a portion of Pt. Au Roche State Park from open space to developed facilities serving to bring recreationists in to contact with park resources.