

## CHAPTER 3B

### ENVIRONMENTAL/SOCIO-ECONOMIC IMPACT GUIDELINES

#### Authority

N.J.S.A. 13:17-1 et seq., specifically 13:17-6(i),  
and N.J.A.C. 19:4-6.27.

#### Source and Effective Date

R.1998 d.77, effective January 5, 1998.  
See: 29 N.J.R. 3704(a), 30 N.J.R. 566(a).

#### Executive Order No. 66(1978) Expiration Date

Chapter 3B, Environmental/Socio-Economic Impact Guidelines, expires on January 5, 2003.

#### Chapter Historical Note

Chapter 3B, Environmental/Socio-Economic Impact Guidelines, was adopted as R.1978 d.196, effective June 14, 1978. See: 10 N.J.R. 177(c), 10 N.J.R. 307(a).

Pursuant to Executive Order No. 66(1978), Chapter 3B, Environmental/Socio-Economic Impact Guidelines, was readopted as R.1993 d.176, effective March 29, 1993. See: 24 N.J.R. 4503(a), 25 N.J.R. 1887(a).

Pursuant to Executive Order No. 66(1978), Chapter 3B, Environmental/Socio-Economic Impact Guidelines, was readopted as R.1998 d.77, effective January 5, 1998. See: Source and Effective Date.

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#### SUBCHAPTER 1. SPECIALLY PLANNED AREAS

##### 19:3B-1.1 Existing environmental conditions on the site

(a) The inventory of the existing environmental conditions of the project site will include information in detail sufficient to enable the Commission to compare the quality of the site to that of other tracts under its jurisdiction and to evaluate any variations in quality that may occur from place to place within the site. It will characterize the site in a manner that will facilitate the Commission's examination of the potential environmental impact of the proposed plan. Specifically, the inventory will comprehend:

(b) Rules concerning location and physical character of the site are:

Note: Pertaining to information required herein, see also Section 7-301 B of HMDC Master Plan Zoning Regulations.

1. A map of the District to show the location of the entire Specially Planned Area.

2. A topographic map of the Specially Planned Area and its surroundings to a distance of 500 feet, with contour intervals not greater than 5 feet. Also to be indicated:

i. Existing easements on and within 1,000 feet of the project tract, with location, width, and purpose indicated.

ii. Existing streets and railroads on and within 500 feet of the project tract, with locations, widths, and purposes of the rights-of-way indicated.

iii. Utility rights-of-way, including above-ground and below ground installations, on and within 500 feet of the project tract, with locations, widths, and purposes of the right-of-way, ownerships and capacities.

iv. Existing structures within 100 feet of the project tract, with uses indicated.

v. Location, width, slope, capacity, direction of flow of all natural and man-made water courses, including ditches and drainage basin outline and water-control structures, on and within 500 feet of the project tract.

3. A tax map sheet to show block and lot numbers and corresponding acreages on and within 500 feet of the project tract.

4. Boring logs specific to the project site to show the thickness and character of unconsolidated sediments and the depth to bedrock; one boring for each 10 acres of the Specially Planned Area.

5. Boring logs from any solid waste landfills on the site to define:

i. Thickness and type of material included, including tests to determine the presence of toxic or combustible materials.

ii. State of decomposition (oxidation-reduction potential).

iii. Combustible gas-forming potential (% of lower explosive limit).

iv. Leachate analysis: Leachate sources, mapped by location, will be tested by laboratory analysis for chemical composition. Prior to the commencement of any sampling, a program must be submitted to and approved by the Commission staff.

## 6. Test parameters will include:

- i. A five-day Biochemical Oxygen Demand (BOD<sub>5</sub>);
- ii. Total Suspended Solids (TSS);
- iii. pH;
- iv. Temperature;
- v. Turbidity (Jackson Turbidity Units or equivalent);
- vi. Phosphates (PO<sub>4</sub>);
- vii. Total Nitrogen (as TKN, NO<sub>2</sub>, NO<sub>3</sub>);
- viii. Total Coliform Organisms (MPN);
- ix. Fecal Coliform Organisms (MPN);
- x. Chemical Oxygen Demand (COD);
- xi. Color (PCU);
- xii. Surfactants (as MBAS, LAS);
- xiii. Sulfates;
- xiv. Sulfites;
- xv. Phenols;
- xvi. Quantitative Heavy Metal Scan (Lead, Mercury, Copper, Nickel, Iron, Chromium +6 and +3, Cadmium, Zinc);
- xvii. Cyanide;
- xviii. Dissolved Oxygen (DO).

Note: Where possible, leaching life of existing sources should be estimated. Protective steps should be suggested in the Implementation section.

## (c) Rules concerning vegetation are:

1. Review of characterization of the site in previous publications (see especially Wetlands Order, page 14).
2. Detailed description of current conditions:
  - i. Map of vegetation of the site;
  - ii. Planimeter measurements on the vegetation map to determine the acreage occupied by each vegetation type;
3. Standing crop (biomass) determinations will be made in 1/10th square meter patches for each wetland vegetation type on the site. Standing crop determinations also will be made in a standard test area, to be designated by the Commission staff, to provide comparative data. That standard test area shall be the basis for the calculation of biomass from the autumnal mean. As part of this requirement, a sampling plan will be submitted to the Commission staff prior to the carrying out of the actual measurements. Additionally, each wetland vegetation type of more than 1 acre in size will be inventoried for crustaceans, mud snails, grass shrimp, fiddler crabs, etc., as these are associated with the various standing crop types. Where mud flat expanses interweave the various vegetation types, this same inventory will be taken. Prior to actual measurement, however, the proposed inventory sites should be submitted as part of the sampling plan.

## (d) Rules concerning wildlife are:

1. Field inspections and trapping will be employed to determine the species of mammals, birds, fish and reptiles and amphibians present on the site and to estimate the abundance of each species.
2. Species of birds nesting on the site will be determined and the approximate number and locations of nests will be given.
3. Muskrat activity on the site will be evaluated and the locations of major clusters of houses will be described.
4. A map of the above will be prepared showing data distribution.

(e) Prior to the commencement of any water quality/tidal influence sampling program, Applicant shall submit his proposed plan of study to the Commission staff for approval. That plan will be coordinated with the Commission's ongoing Water Quality Monitoring Program. In addition to the pre-approved inventory sampling outlined below, regular monitoring for the same parameters will begin during the construction period, and continue during the operational phases of the proposed development period.

1. The following parameters will be determined on 6 occasions each of high tide slack and low tide slack on major creeks in or adjacent to the Specially Planned Area. Sampling stations will be located at least 100 feet inland from the creek's discharge point into the Hackensack River. It should be noted that the 12 samplings cited above will be made according to a sampling plan approved by the Commission staff.

- i. Salinity;
- ii. Chloride;
- iii. pH;
- iv. Color;
- v. Turbidity;
- vi. Suspended Solids;
- vii. Dissolved Oxygen;
- viii. Temperature;
- ix. Nutrients—TN, TKN, NO<sub>2</sub>, NO<sub>3</sub>, PO<sub>4</sub>;
- x. Oxygen Demand—TOC, COD, BOD (Note: A plot of the BOD curve for a minimum of 30 days will be presented).

2. Quantitative elemental scans will be made on water samples, collected on a 3/4 ebbing tide, the samples to be taken from the stations stipulated above.

3. A continuous recording tide gauge will be installed on the project site at a place approved by the Commission staff and will be operated for at least 3 consecutive months, with no more than 3 days of missed data in any month. In addition, estimates of Spring and Neap tidal heights will be made. A registered land surveyor will determine the elevation of the gauge, indicating, to the nearest .1 foot, its height above or below mean sea level, so that the record can be correlated to official data.

4. Flow rates on flooding and ebbing tides will be determined in channels on the project site and in the adjacent reaches of the Hackensack River. These rates will be correlated with Hackensack Water Company data including volumes of water released at the Hackensack Water Company dam in New Milford.

5. Marsh effectiveness will be evaluated by comparing concentrations of nitrates and phosphates and the dissolved oxygen concentration in flood-tide water entering the site and ebb-tide water leaving the site.

6. Samples of marsh soil taken at the sites stipulated above will be subject to quantitative elemental scans to determine if toxic materials are present. Test results will be submitted to the Commission staff for determining if additional tests are necessary.

7. Dredge samples, taken at the sites stipulated above, will be examined to determine the kinds and numbers of aquatic organisms present on the project site. One such sample at each sampling station will be required in this stage of the Environmental Assessment Procedure.

8. Existing wastewater outfalls on or adjacent to the site will be sampled and analyzed as to their chemical and bacteriological characteristics and their apparent effects on their receiving waters.

(f) Existing land uses and ratable values of the project site and such adjacent tracts, as determined in consultation with Commission staff will be enumerated. For those SPA's to contain residential development, a description of housing mix and value in the surrounding area shall be provided and regional housing need detailed.

1. Special attention will be paid to historical landmarks and aspects of archaeological importance in the Specially Planned Area.

(g) Demographics of the appropriate municipality and county will be detailed (to include population, age distribution, employment, and income levels as provided, for example, in the appropriate census tract reports).

(h) Public service infrastructure and capacity on or adjacent to the site will be described. These will include sanitary sewers, electric transmission lines, potable water mains, gas mains, pipelines, telephone lines, and storm drains. Potable water supply and energy supply available for the deliverable to the site will be computed.

1. The appropriate (current) municipal and county budgets should be provided together with detailed information on existing per capita costs and service levels in such areas as fire protection, police protection, sanitation services, health services, schools, commercial, cultural, and recreational facilities.

(i) Prior to the commencement of any air quality sampling program, a plan shall be submitted to and approved by the Commission staff. This plan shall include continuous sampling of ambient air quality levels at or near (as appropriate) the project site and shall include the following parameters: Sulfur Dioxide ( $\text{SO}_2$ ), Carbon Monoxide (CO), Total and Non-Methane Hydrocarbons (THS,  $\text{N}_{\text{m}}\text{HC}$ ), Total Suspended Particulates (TSP), Nitrogen Dioxide ( $\text{NO}_2$ ), Wind Speed, Direction and Precipitation.

1. Monitoring shall be performed for a minimum of 2 consecutive months with no more than 3 days of missed data in any month.

(j) Prior to the commencement of any noise level monitoring program, a plan must be submitted to and approved by the Commission staff. Background noise levels shall be measured in dB, on the A-weighted scale (dBA), and octave band analyses shall be performed, along with the collection of wind speed, direction, and precipitation data. These levels, measured at selected sites as described above, shall be determined in a monitoring schedule devised, as noted, in conjunction with HMDC staff, to reflect the unique noise sources affecting background noise in the SPA in question. For example, regarding traffic noise, the approved schedule shall evince data about peak and off-peak hour noises, and, regarding other point sources of noise, their contribution to varied background conditions. Monitoring shall be conducted for at least one continuous 24 hour period which reflects worst case. The results are to be expressed as average value (Leg) and peak value (L10).

(k) Rules on transportation are:

1. Inventory of Existing Facilities and Services:

i. Highways and Roads:

(1) Describe existing highway and road network surrounding the proposed development site. (Procedure: Verbally describe highway and road network while making reference to map. Prepare a list of proposed highway and road improvement projects on most current Transportation Improvement Program (TIP) available from county or state transportation officials which could affect the access to the proposed development site and list proposed date for start of project.)

(2) Obtain traffic counts on highway and road network in immediate vicinity of proposed development site. (Procedure: Subdivide highway and road network in immediate vicinity of proposed development site into appropriate subsections and either

take traffic counts or otherwise obtain counts for either 24 hour period or peak morning and evening hours, 6:30 a.m. to 9:30 a.m. and 3:30 p.m. to 6:30 p.m., or other appropriate time period. These counts shall not be more than one year old and shall be properly modified for current year. The subsections selected should be so chosen as to clearly indicate the existing traffic flows and allow for a determination of the capacity of the subsection and the impact of the proposed development on it. Prior to undertaking this work effort the applicant shall contact HMDc staff to determine adequacy of proposed traffic count locations and times, etc.)

(3) Obtain or calculate highway and road capacities for subsections chosen for traffic counting effort listed above. (Procedure: For each subsection for which a traffic count has been obtained, see item (2) above, either obtain, possibly from government sources, or calculate the capacity, expressed in vehicles per hour (VPH), using level of service "C" or higher and state level of service assumed for each subsection. Note any special factors limiting the capacity of a subsection and time(s) these limitations exist.)

(4) Summarize above items (1) through (3), by constructing a table identifying the highway or road subsections on which the existing level of service is less than "C" and indicate the level of service at which it does operate. (Any additional information deemed important which impacts on either traffic flows or subsection capacities should be clearly highlighted at this time.)

#### ii. Public Transit:

(1) Indicate public transit facilities and services in area surrounding the proposed development site. (Procedure: Using maps, public transit schedules, etc., outline the existing public transit network. As in the highway and road inventory, list those public transit improvements which are contained on the Transportation Improvement Program (TIP), available from either county or state transportation officials, which are in vicinity of the proposed development site and the date proposed for the start of work on the improvement.)

(2) Indicate current estimated utilization of services and facilities listed in item (1) above and their estimated capacity. (Procedure: In most cases the operators of the public transit facilities and services or government transportation officials can supply the above data.)

(3) Discuss other factors which would influence the use of public transit. (Procedure: If the proposed development is located in an area in which public transit use is especially high or low discuss reasons. Reference may be made to demographic characteristics discussed elsewhere in the total submission.)

(4) Summarize the above items (1) through (3), by listing those public transit services and facilities which could serve the proposed development, note frequency of existing services and capacity, especially for peak rush hours.

iii. Other Modes of Transport: In some cases, it may be necessary to discuss other modes of transport where such modes are vital to the activities associated with the proposed development.

#### 19:3B-1.2 Description and justification for the proposed project

(a) This section will enumerate the needs for the proposed project, the benefits to the public which will ensue from it, and an explanation of the reason for the selection of this site. A full description of the proposed project will be presented in narrative form with sufficient graphics to indicate the extent to which the site must be altered, the kinds of facilities to be constructed, and the uses intended. Any existing facilities of an identical or very similar type will be listed. The number of dwelling units, the kinds of commercial uses, and all other activities proposed will be described.

(b) Particular emphasis will be given to areas which will be retained as open space, especially as open water lagoons and marsh, within the proposed tract. The location and configuration of these areas will be determined in collaboration with the Commission staff.

(c) The resident population, working population, and visitor population will be estimated along with all demands for services (e.g. energy, solid waste, sanitary waste, potable water, traffic and transit, school children and schools, police, fire, recreation, cultural facilities, health facilities, educational, religious and commercial facilities, etc.).

(d) The economic benefits of the project will be described in this section. They will include municipal and county taxes anticipated, new jobs to be created, and related matters.

#### 19:3B-1.3 Environmental/socio-economic impact assessment of the project

(a) The probable impact of the project on all parameters described in Section 1 of this subchapter will be described and evaluated. For purposes of assessment, traffic, service demands and other off-site effects will be considered to be aspects of the project.

1. Assessment Of Impacts On: Location and Physical Character of the Site: An evaluation will be made of any alteration to the physical character of the site (e.g. landfill excavation, realignment, of existing rights-of-way, impacts on historical and/or significant archaeological landmarks.)

2. **Assessment Of Impacts On: Vegetation and Open Space:** Particular regard will be given to the relation of the project to areas designated as marshland preservation areas, surrounding the SPA, or as marshland areas within the SPA, or as wetlands within the Park and Recreation Zone on the Commission's Zoning Map. Special consideration also will be given to the compatibility of the project with wetland ecosystems, including any wetlands, open space and buffer strips, to be preserved within the Specially Planned Area. Any plans to enhance ecological values in the Specially Planned Area will be described, and are encouraged.

3. **Assessment Of Impacts On: Wildlife:** All effects of the project on avian, aquatic and terrestrial wildlife shall be evaluated, with emphasis given also to endangered and threatened species. Impacts on species steadiness during and after project construction will be assessed.

4. **Assessment Of Impacts On Drainage, Water Quality and Tidal Influence:** All project effects relating to water quality and tidal influence will be enumerated. In addition to the parameters delineated in Section 1 of this subchapter, the following assessments will be performed:

- i. Chemical analysis of dredge spoil material;
- ii. Stormwater runoff analysis from parking lots, retention ponds, roadways, etc. to include volumes, flow, and chemical discharges calculated in accordance with HMDC Subdivision Regulations, Article 7, Section 10; "Drainage."
- iii. Computation of tide water movements and their relationship to standard tidal patterns, including but not limited to fluvial and tidal, 100 year storm, and maximum probable events.

(1) By utilizing the HMDC TAMS model for full development, calculate the effects of full development of the site on flooding in the meadowlands.

5. **Assessment of Impacts on Land Use:** All effects of the proposed project on existing land use surrounding the project site will be evaluated. In the case of residential SPA's, this analysis will include, but not be limited to, impact on area housing mix and value, and regional housing need.

6. **Assessment of Impacts on Public Service:** Effect of Project Service Demands will be evaluated relating to schools, health care, police and fire protection, potable water supply, sewerage, sanitation, energy, recreation, etc.

7. **Assessment of Fiscal Impact:** Ratables on and adjacent to project site, taxes generated and municipal and school budget increases will be evaluated. A calculation will be made, in conjunction with HMDC Staff, of the project's revenue/cost balance and its benefits in terms of its reciprocal impacts on/from the Intermunicipal Tax Sharing Account.

8. **Assessment of Impact on Air Quality:** This air quality analysis should include but not be limited to:

- i. Existing air quality levels for those pollutants previously monitored.
- ii. An inventory of total project emissions, existing and proposed, from all sources which shall include stationary sources and mobile sources.
- iii. District meteorological conditions which shall include wind speed and direction (wind rose) as well as specific site meteorological conditions that may have existed at the time of the individual monitoring.
- iv. Model analysis. Both microscale (local) and mesoscale (regional) analysis shall be developed for the proposed emissions so as to enable the Commission staff to compare existing air quality with projected air quality as a result of the total project emissions expected from the development. (Justification for the selection of a particular mathematical model over others shall be given.)

v. Hydrocarbon emissions off-set. Considerations must be addressed.

vi. The Applicant shall demonstrate compliance of total project emissions with Article VIII-101(c), Air-born Emissions, of the HMDC Zoning Regulations.

vii. A qualitative statement from the Applicant shall be submitted concerning how air quality goals and standards for the New York, New Jersey, Connecticut Air Quality Control Region will be met if this application were approved at its total scale.

9. **Assessment of Impact on Noise:** The assessment of noise impact on and from the proposed project shall include discussions on:

- i. The generation of noise within the SPA (including breakdown by noise generators).
- ii. The impact of all noise generated within the SPA on other uses within, and adjacent to, the proposed project.
- iii. Both octave band analyses and construction impact.

10. **Transportation: Forecast of Impacts,<sup>1,2</sup>**

- i. Trip Generation<sup>3</sup>:

(1) Determine the total number of trips over a 24 hour period which will be generated by the proposed development (Procedure: Prepare a forecast of the total number of trips over a 24 hour period by type of development. For example, residential development should be broken down by density and shopping centers should be listed as being neighborhood, community or regional, etc.).

(2) Determine the number of trips generated during the peak hours of activity for each development type (Procedure: Prepare a forecast of the number of trips during the peak hours of traffic generating activity for each type of proposed development.).

(3) Distinguish between internal, on-site, trips and external trips.

ii. Trip Distribution: Determine broad geographic distribution of trips using results from subsection 1. (Procedure: Prepare a forecast indicating the distribution of trips using appropriate forecasting method. Results shall be available in both tabular and graphic form.)

iii. Trip Assignment: Determine trip assignments for specific links of existing and possible future transportation network. (Procedure: Prepare a forecast showing how many trips, based on subsection 1, are assigned to different links in the existing and possible future transportation network. In preparing this forecast allowance is made for assuming that a particular mode of transport not currently available can be made available without undue difficulty. These assumed modes and/or links should be clearly identified and a fuller explanation of the implications of these assumptions should appear in later sections of this submission.)

iv. Modal Split: Determine how many trips will be accommodated on what modes of transport. (Procedure: Using an appropriate forecasting method prepare a forecast of what number of trips will be accommodated on what modes of transport. In preparing this forecast, as with the above described trip assignment forecast, it may be necessary to allow for possible new modes of transport. These possibilities should be clearly indicated and further discussion on them appear later in this submission.)

v. Transportation Network Carrying Capacity; Techniques to Expand Carrying Capacity: Using the results of the above analysis of the proposed development's impact on the carrying capacity, prepare and submit, in tabular form and on a map, a listing of those subsections of the transportation network whose carrying capacity is not capable of handling the impact of the proposed development or have associated adverse environmental impacts. Using this listing as a base and the following sample list of possible solutions, discuss how the impact on the different subsections can either be reduced or the carrying capacity of the subsection increased.

(1) Highways and Roads: Determine the impacts on the transportation network's carrying caused by the proposed development. (Procedure: Compare the capacities, traffic flows, and levels of service determined in the inventory section of this submission for different highway and road subsections with the forecasts prepared in the impact section of this submission. The results of this comparison should be expressed in terms of combined traffic flows and levels of service.)

(2) Public Transit: Determine impact on the public transit network's carrying capacity caused by the proposed development. (Procedure: Compare available public transit services and facilities, their utilization and capacities taken from the inventory section with the results from the forecast section. It will be difficult in some cases to make a direct comparison due to assumptions which may have been made in the forecast section. Please consult with HMDC staff regarding this comparison.)

vi. Techniques To Expand Carrying Capacity: If a subsection of a highway or a road is the problem, you might consider:

- (1) Improvements to highway or road;
- (2) Additions to highway or road network;
- (3) Reducing amount or location of parking;
- (4) Use of remote parking lots, existing or proposed;
- (5) Staggering peak traffic flows generated by proposed development;
- (6) Providing the facilitating use of public transit;
- (7) Vanpool and/or carpool programs;
- (8) Clustering development around public transit lines, existing and/or proposed;
- (9) Restricting flow of vehicular traffic using barriers, layout of highways and roads, tools, etc.; and
- (10) This is an open ended listing.

vii. If a subsection of a public transit line or a facility is the problem, you might consider:

- (1) Improvements to public transit services and facilities;
- (2) Additions to public transit services or facilities;
- (3) Incentives encouraging use of other public transit services or facilities;
- (4) Staggering peak demands for public transit services and facilities generated by proposed development;
- (5) Preparing designs and plans which give special advantages to certain public transit services and facilities; and
- (6) This is an open ended listing.

viii. The applicant is advised to take every step in utilizing the latest technology, programs, etc., in finding techniques which will accomplish the desired goals. After a particular technique has been selected as a solution, please indicate who is the likely party, private developer, or government agency, who will be responsible for the finding and implementation of the technique/solution selected.

11. Aesthetic Impacts: The aesthetic impact of the project will be evaluated.

12. Aggregated Impacts: All approved General, Development, or Implementation Plans, including their Environmental and Socio-Economic Impact Assessments, for other Specially Planned Areas in the Hackensack Meadowlands District and for the New Jersey Sports Complex facilities, shall be incorporated as background data into any EIA's prepared in response to these Guidelines. Such incorporation shall be in conjunction with guidance received from HMDC staff as to content and format, such that aggregated impacts are measurable and evaluable.

i. Where two or more SPA's are the subject, simultaneously, of either General, Development, or Implementation Planning including Environmental and Socio-Economic Impact Assessment, the applicant(s) in question will be required to coordinate their planning efforts, with HMDC Staff guidance, such that aggregated impacts are measurable and evaluable.

<sup>1</sup> All assumptions, data sources, factors, methods, etc., employed throughout the forecasting process, should be identified and, in some cases, a discussion as to their applicability should be presented. Also, if the forecasting process selected involves complex mathematics or new forecasting techniques, please include sample of calculations in an appendix.

<sup>2</sup> The order in which the forecasting process is carried out will obviously depend on the process selected and the associated forecasting logic. Therefore, the forecasting process need not follow the progression of steps outlined in the preceding subsection. This outline is a guide as to what the final forecast should contain.

<sup>3</sup> The factors or methods available for forecasting the number of trips, generated by a particular development, are usually based on either person trips, trip ends, vehicle trips, etc. Please clearly indicate the factors used and what they measure. In cases where there is the likelihood of considerable truck traffic being generated by a development, please include a forecast of truck trips.

### 19:3B-1.4 Carrying capacity

(a) Carrying Capacity refers to the capacity of a system, natural or man-made, to absorb without undue stress a given impact. Thus, the carrying capacity of a roadway refers to its ability to absorb traffic without becoming snarled; the carrying capacity of a river refers to its ability to support, or carry particular aquatic species or to absorb treated sewage without harm to aquatic organisms; the carrying capacity of a budget refers to its ability to respond with revenues available to services required.

(b) The impact assessment shall also compute the impacts of the proposed General Plan on the following aspects of carrying capacity, existing and projected.

1. Fiscal Carrying Capacity;
2. Water Quality and Wetland Ecosystems Carrying Capacity;
3. Air Quality Carrying Capacity;
4. Schools and Municipal Service Carrying Capacity;

5. Solid Waste Management Carrying Capacity;

6. Drainage and Flooding Carrying Capacity;

7. Water Supply and Energy Supply Carrying Capacity;

8. Transportation System Carrying Capacity.

(c) The first, existing carrying capacity, is the easier. Can the river absorb x gallons of treated sewage at a proposed discharge point? The second, projected carrying capacity, is more difficult. It entails making judgments about, say, improvements in water quality which will result from the actions of others and/or which will occur at points in the estuary remote from the project site. The Applicant will confer with HMDC Staff to aid him in making such projections.

(d) These guidelines call for the following planning sequence to be observed by the Applicant.

1. Natural resource inventory (sections A,B,C,D,E,H,I);

i. Man-made infrastructure inventory (sections A,E,F,G,I);

2. Proposed land use allocation map (General Plan), which shows in map and in chart form the allocations of space, horizontal and vertical, which the Applicant adopts as his projections for the entire Specially Planned Area. As indicated in the Zoning Regulations, the General Plan requires that such factors as approximate heights of buildings, number of units, bedroom mix, and housing mix (residential only) be indicated. The natural resource inventory becomes critical, at this planning stage, to allocating as open space the areas whose natural features reveal comparative ecological values. The Wetlands Order addresses the way such choices shall be made in the presence of planning imperatives.

(e) This process is, as the engineers say, iterative. It is a process of travelling, back and forth, between two sets of calculations.

1. First, questions of carrying capacity always entail answering the question "carrying capacity for what?"—for fiddler crabs, alewife herring, muskrat, shorebirds, waterfowl; for houses, offices or warehouses; for buses, trains, horizontal elevators, automobiles, bicycles, pedestrians? In an ecosystem, each of these organisms is carried by different biozones or different sections within biozones. On a given land mass, each of these listed uses responds to the larger land use environment and mix. In transportation systems, the different modes listed respond to both the natural and the land use environments they impact.

2. Carrying Capacity calculations cannot be made, then, until a natural resource and man-made resource inventory has been completed and until varying patterns of development have been contemplated to fit these inventoried conditions. Neither can they be made without consulting the best available local and regional data at the time of General Plan submission. For this reason, prior to commencing this section of the assessment, Applicant will meet with Commission Staff to develop an acceptable format for each section.

3. At a broad scale, this is how the Master Plan was constructed: the upland/lowland resource base was inventoried; and then various patterns of land use were proposed. The process went back and forth until a successful mix was attained. This process, at finer scale, is what we call for in these guidelines.

(f) Rules concerning stages as mentioned in zoning regulations are:

1. The land use allocation map and chart will represent the EIA's first work product.

2. Once the land use allocation map and charts are prepared, the Applicant will then consider how his developmental staging could respond to the inventoried carrying capacities of natural and man-made systems, and to his sense of the market's evolving capacity to respond to the Master Plan's stated mix of land uses for the SPA in question.

3. Carrying Capacity analysis at this point becomes very detailed. Applicant tells the Commission how far into the future he can see clearly. For example, he would assert that there is safe carrying capacity at sewage treatment plant X for Y MGD; and propose to deliver Z MG over a given period. He would make similar projection for other sectors of carrying capacity analysis, always indicating to the Commission how far into the future the carrying capacity at and near the site can be reasonably described and anticipated as sufficient.

4. Applicant's Stages, then will come down to fitting reasonable increments of a General Plan to expectations for the carrying capacities that these increments will experience and will require.

(g) Rules concerning the entire general plan are:

1. Here finally is where District-wide and regional carrying capacity calculations become appropriate. What impacts could be felt eventually, from the General Plan, were it to develop in its entirety over a prescribed period? What assertions can/cannot be made about the reasonable attainments of local, district-wide and regional capacities for the General Plan. What steps must Applicant take?

2. What steps must others take in order for these maximum capacities to become available to the maximum level of planning represented by the General Plan's land use allocation map? Will this proposed General Plan and its proposed first stages advance the Master Plan for the Hackensack Meadowlands District? Will local carrying capacity benefits penalize the District's and the region's possibilities? Will District-wide and regional impacts penalize local carrying capacities?

#### **19:3B-1.5 Adverse environmental impacts which cannot be avoided**

Unavoidable adverse environmental impact, including irretrievable commitments of resources, which are expected to result if the project is implemented will be listed in the approximate order of their relative magnitudes.

#### **19:3B-1.6 Techniques to minimize or eliminate adverse environmental effects of the project**

The Environmental Performance Standards of the Commission, as well as applicable State and Federal Regulations will be considered in developing these techniques.

#### **19:3B-1.7 Alternatives to the proposed project**

Alternatives to the various parts of the project, including the no-action alternative, will be described. Reasons for the acceptability or non-acceptability of each alternative will be given. Particular emphasis will be given to the relative suitability of the various alternatives to the Commission's Master Plan for the District.

#### **19:3B-1.8 Licenses, permits and other approval required by law**

The Applicant will list all known licenses, permits, and other forms of approval that will be required by law for the construction and operation of the proposed project. This list shall include, but will not be limited to, approvals required by the Hackensack Meadowlands Development Commission, other agencies of the State of New Jersey, local municipalities, the County, and the Federal Government. Legally adequate documentation must be included to show riparian ownership, or an ability to obtain it, if any part of the project tract is or has been claimed by the State.

#### **19:3B-1.9 Documentation**

All publications, file reports, manuscripts, or other written sources of information related to the project, the project site, and the Meadowlands District which were consulted and employed in compilation of the Environmental/Socio-Economic Impact Assessment will be listed in this section. A list of all agencies and individuals from whom pertinent information was obtained orally or by letter will be listed separately. Dates and locations of all meetings will be specified.