
SECTION SIX

ENVIRONMENTAL MANAGEMENT

6.1 Introduction

The environmental management plan for the proposed South Beach Belize project will involve the identification of the mitigation measures along with the required performance indicators and monitoring plan. Furthermore, in order to carry out these activities, the developer will implement an Environmental Management System aimed at overseeing the environmental aspect of the entire operation which will include the construction and post construction phase. Furthermore, this EMS will be a tracking tool for all the environmental objectives and targets set forth by the Department of the Environment in terms of its ECP.

6.2 EMS Outline

An **Environmental Management System** (EMS) is a set of processes and practices that organizations or companies use to reduce their environmental impact. It involves a continual cycle of planning, implementing, reviewing, and improving processes and actions to meet both its business and environmental goals. The Environmental Management System (EMS) also reflects the Company's emphasis on continuous improvement in operations by measuring and evaluating its environmental performance.

In considering the proposed project for South Beach Belize, the proponents will implement an Environmental Management System to further aid the residential development in achieving its environmental goals and objectives. This action first includes the identification of the impacts, its mitigation measures and proposed monitoring plans along with the required contingency management plans.

6.2.1 Required Key EMS Elements

The organization's environmental management system must demonstrate the following key elements:

- Setting an environmental policy,
- Determining significant environmental impacts,
- Setting goals for compliance and environmental performance,
- Assigning responsibility,
- Implementing and documenting programs,
- Evaluating and measuring effectiveness, and
- Demonstrating performance.

These key elements are essential in carrying out a successful management system that will benefit the project in all its environmental endeavors. This section will facilitate the necessary framework for the project to meet its environmental goals and in so doing, promote the existence and conservation of the natural surroundings in which the project site is to be located.

6.2.2 Benefits

There are a range of benefits associated with operating an effective Environmental Management Systems (EMS):

6.2.2.1 Financial

- ▶ Cost savings through the reduction of waste and more efficient use of natural resources (electricity, water, gas and fuels).
- ▶ Avoiding fines and penalties from not meeting environmental legislation by identifying environmental risks and addressing weaknesses.
- ▶ Reduction in insurance costs by demonstrating better risk management

6.2.2.2 Operational and Internal

- ▶ Improved overall performance and efficiency.
- ▶ More efficient, less hazardous production processes
- ▶ Improved consistency by reducing waste and disruption of production.
- ▶ More clearly defined staff responsibilities
- ▶ Improved internal communications and morale, often leading to sound environmental solutions suggested by staff, proves seriousness of the company

6.2.2.3 External

- ▶ Better public perception of the organization, leading to improved sales
- ▶ Reduction of the impact (e.g. noises, smells, dust) of your activities on the local residents, leading to more community support

6.2.2.4 Benefits of third party verification

- ▶ Ensures that the EMS is consistent according to set protocols.
- ▶ Provides credibility and integrity in reporting and publishing environmental information.
- ▶ Demonstrates commitment to environmental transparency and accountability.

6.3 Impact Mitigation Measures

Impact mitigation is a critical component of the EIA process. It aims to prevent adverse impacts from happening and to keep those that do occur within an acceptable level. Opportunities for impact mitigation will occur throughout the project cycle.

The objectives of mitigation are to:

- find better alternatives and ways of doing things;
- enhance the environmental and social benefits of a proposal;
- avoid, minimize or remedy adverse impacts; and
- Ensure that residual adverse impacts are kept within acceptable levels.

This section provides a summary of the key potential residual impacts of the preferred option and recommended mitigation measures intended to reduce the potential negative impacts resulting from actions of the construction period and post construction period. This key is by no means limited and other issues may be added as the EMS is being implemented.

6.3.1 Mitigation Measures In Relation To Dredging and Land Reclamation Activities

There will be two (2) sets of dredging activities associated with the proposed project: which includes the dredging of the burrow pits and access channel for land reclamation purposes and the dredging or excavating of the Grand Canal network to facilitate the partial movement of small boats to access the proposed canal side lots.

The issues of concern related to the dredging operation are the navigational and berthing of the dredge at the burrow site, as well as the dredging or excavation activity itself which poses a threat of physical harm and injury. This is especially relevant to boat traffic in the area. The mitigative responses to this are in large part in relation to the placement of navigational aids such as buoys and lights to alert and ward off mariners.

The primary aquatic impacts arising from the dredging operations are expected to be an increase in sedimentation and turbidity, as well as an increase in BOD and Hydrogen Sulphide. The impact of the dredging of the burrow pits and Grand Canal network is to be moderate (See Table 5.1). This has been as a function of the modest scale of the dredging operations, the consistency of the seafloor material to be dredged and consequently the mobility of the sediments, as well as the location of the proposed dredging operations.

The issues associated with the actual dredging of the burrow pits is sedimentation and turbidity impacts to the marine environment. The mitigative response to these impacts is to mechanically contain or enclose the sediment plume produced from the excavation process through the deployment of a double sediment curtain. Other related responses include activities designed to ameliorate the re-suspension of sediments, as well as measures that would reduce the physiological stress on sessile and slow moving benthic organisms.

Secondary mitigational measures include the rapid undertaking of the overall dredging operation in addition to the vacuuming of the re-suspended sediments ashore to decrease the potential of

the expansive dispersal of sediments, nutrients, possible toxics and adjusting the overall mechanics of the dredging operation to allow for the re-colonization of the area by benthic organisms.

The impacts from the dredging operations are expected to be localized and should be confined to the areas immediately associated with the dredged site in the nearshore environment. The following table summarizes the proposed mitigation measures that will be implemented by the proposed project for all approved dredging operations.

Table 6.1: Mitigation Responses in relation to Dredging Impacts

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
1.0 Actual Dredging or Burrowing of ‘Cutter Head’ and other dredging equipments (excavator, back hoe)	1a. Disturbance of seafloor and suspension of fine sediments and re-deposition of coarse fraction.	1a1. Direct physical destruction of benthic habitat, and attenuation of light impeding photosynthesis of seagrass, macro-algae and other autotrophs	1a1a. Use of ‘Double Silt Curtains’ at burrow pits, ensuring that lower end of ‘skirt’ is resting upon or is at least 2 feet off the seafloor, and ensuring that top of ‘skirt’ is always above surface of water.
			1a1b. Monitoring and where necessary repairing and/or replacing leaky pipes and faulty couplings of ‘spoil’ discharge pipes.
			1a1c. Applying velocity reduction measures where spoils are deposited such as baffles to precipitate solids and curtail turbid influences in effluent stream.
			1a1d. Decrease time frame over which dredging operation is to take place to avoid daily re-suspension of sediments.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
1.0 Actual Dredging Contd.			1a1e. Ameliorate impacts of daily re-suspension of sediments by suctioning sediments that have resettled or re-deposited in the area.
			1a1f. Ameliorate re-suspension of sediments by confining dredging operations to calmer sea states.
			1a1g. Assist re-colonization of seafloor by benthic plants and invertebrates by ensuring that walls of dredged areas are not at an angle steeper than 35 degrees.
		1a2. "Blanketing" or smothering effects on benthic habitat and sessile and slow-moving invertebrates.	1a2a. Institute monitoring program to ensure that light penetration at seafloor is at least 25% of surface irradiance 2,000 ft. from silt curtains.
	1b. Decrease in Dissolved Oxygen and increase in BOD.	1b1. Physiological stress and lethal effects on benthic invertebrates and to a lesser extent, fin-fishes.	1b1a. Completion of dredging operation in as short a time-frame as possible, especially in regards to burrow pits.
	1c. Increase in temperatures brought about by the re-suspension of sediments with a	1c1. Lethal and sub-lethal effects on sessile and slow-moving benthic invertebrates.	1c1a. Proper deployment of 'silt curtains' to ensure that suspended sediments at dredged sites are

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
1.0 Actual Dredging Contd.	'specific heat capacity' capable of raising water temperatures by as much as 4 – 6°C.		contained and that any re-deposited sediments are 'vacuumed' and rapidly deposited on land
	1d. Deposition of organic sand, silt and especially peat from the Grand Canal network	1d1. Unpleasant smells associated with degassing of Hydrogen sulphide and potential to smother mangrove root systems.	1d1a. Deposition of spoils from canal network and burrow pits in areas already cleared or otherwise denuded – Also deposition in smaller piles that are spread out to facilitate drying by sun and elimination of unpleasant odor.
2.0 Navigation, Berthing of Dredge and Deployment of Spoil Discharge Pipes.	2a. Navigational hazard.	2a1. Threat of injury and possibly death associated with boat traffic.	2a1a. Ensure that marker buoys and navigational lights are deployed and activated on dredge, sediment curtains and spoil discharge pipes – Buoys are to be large and bright Navigational lights are to be fully operational from 6:00 p.m. to 6:00 a.m. on a daily basis.
			2.a1b. Partially submerging of the pipeline to facilitate the passing of the barges and boat traffic in order to prevent any accidental contact with the pipeline. This will be further facilitated by the installation of additional lights and

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
2.0 Navigation Con't			warning signs that will be notify mariners of the impending dangers in this area.
3.0 Deployment of spoil and discharge pipes (pontoons)	3a. Same as above	3a1. Installation of discharge pipes can be a navigational hazard	3a1a. Placement of spoils in fence and geotextile containment

6.3.2 Mitigation Measures in Relation to Domestic Effluent Impacts

The primary impacts associated with domestic effluents are: increased nutrients and fecal coliform in the water column as a result of inadvertent discharge, mismanagement, lack of environmental ethics, treatment plant malfunctions etc.

The situation of increased nutrients in the water column is generally referred to as eutrophication. This relates to the macro-nutrients, which are ‘phosphates’ and ‘nitrates’. These are generally derived from gray water effluents, as well as sewage effluents from the flushing of toilets. In general a major source of macro-nutrients in gray water effluents is from detergents. This is also relevant to the proposed development. The greater contribution of nutrients would come from human waste. The main source of macronutrients would be from the occupancy or commissioning of the Marina Services and residential population. For this purpose, this impact has been assessed as high according to Table 5.1.

The sewage technology to be applied is secondary treatment with the reduction of nutrients to levels that are not a threat to the environment and that are well within national standards. The system to be adopted for the proposed project is a prefabricated treatment plant or ‘Package Plant’ titled a "Purestream ES Model BESST" (See Section 3). The acronym of the systems stands for **B** Biologically **E**ngineered **S**ingle **S**ludge **T**reatment.

The issue of fecal coliform associated with the development is an important one. As may be seen from Annex V, the *E. coli* readings were one. The generation of *E. coli* becomes a significant consideration with the commissioning of the development. The primary impact from these features of the development has been characterized as ‘Low’. The application of the BESST Sewage Treatment Technology combined with water conservation measures dampens and greatly diminishes the potential human health impacts from fecal coliform.

Table 6.2: Summary of Impacts Associated with Human Wastes and Domestic Effluents

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
1. Human Waste and Domestic Effluents	1a. Nutrient enrichment from the injection of macro-nutrients into the environment.	1a1. Stimulus to plant growth on land and in the water column, in the case of the latter this includes phytoplankton, sea grass, and macroalgae including the possibility of the overgrowth of reefs by macroalgae.	1a1a. Installation of BESST Treatment technology to treat waste to ‘Tertiary’ Levels, where Total Nitrogen Loads are reduced to less than 10 mg/l and Phosphorus are reduced to 2-3mg/l.
			1a1b. Reduce further nutrients potentially going into the water column by using stored treated effluents from BESST Treatment Plant for irrigation purposes.
			1a1c. Redirect the treated and post chlorinated effluent with the brine to be disposed into the deep injection well where it would safely be diffused.
	1b. Human Health and Biosecurity risks	1b1. Infection of humans and mammals with pathogenic viruses and bacteria.	1b1a. Thorough disinfection of effluents potentially going into water column or otherwise making contact with humans by use of BESST Sewer Treatment Plant which incorporated chlorination of effluents.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
1. Human Waste and Domestic Effluents Contd.			1b1b. Reduction of effluents going into the environment by use of BESST Treatment Plant. And incorporation of recycling and reuse of effluents for watering of lawn and green areas.
	1c. Suspended Solids from un-dissolved components of human waste and domestic effluents.	1c1. Suspended solids would impede light penetration in the water column and photosynthesis.	1c1a. Installation of solids trap prior to BESST Treatment to reduce TSS to less than 10 mg/l
	1d. Sedimentation associated with settlement of flocculent fraction of human waste and domestic effluents.	1d1. Blanketing of seafloor and suffocation of slow-moving and sedentary invertebrates.	1d1a. Application of BESST Treatment technology reduces TSS to less than 10 mg/l, this in combination with effluent recycling reduces to insignificant levels suspended solids in the water column.
	1e. Increase in BOD substances and consequent reduction in dissolved oxygen.	1e1. Induction of physiological stress and in extreme circumstances death in relation to sessile and slow moving invertebrates.	1e1a. Application of BESST Treatment technology reduces BOD to less than 10 mg/l, this in combination with effluent recycling and reuse regime reduces to BOD to insignificant levels in the water column.

6.3.3 Mitigation Measures in Relation to Solid Waste Management

The solid waste accruing from the general commissioning of the South Beach Belize operation includes organic and inorganic components that cover both the construction and operational

phases of the proposed project. The organic component includes in large part discarded and unconsumed food from the restaurants and refreshment stands followed by the ‘green’ waste produced as a result of the landscaping and pruning processes. The inorganic waste includes wastes that are either classified as combustible and non combustible.

The construction phase activities have the capacity to generate substantial volumes of solid wastes. This varies from concrete moldings and form boards from the erection of buildings, to styrofoam packaging, wooden planks and metal strips from shipping crates. Other significant solid waste components from the construction phase includes: PVC piping, masonry slabs and chippings, food wrappings, aluminum cans and beverage cartons, as well as plastic and glass bottles are also expected to be a substantial part of the solid waste. Discarded food is also a relevant solid waste item during the construction phase.

One of the major impacts of the wastes generated by the development would be the attraction of feral animals such as rats and crocodiles and birds to the area to scavenge. The mitigative response to be implemented by South Beach Belize Development is the judicious collection and segregation of the wastes into organic and inorganic components (See Table 6.3 below). The inorganic wastes are to be compacted and removed from the project site on a regular and recurrent basis (See Table 6.3 below). The implementation of a public education campaign focused on the residents, guests and visitors in general is also a part of the mitigative response (See #1a1b in Table 6.3 below).

The only secondary impact of note would be in regards to the land-based ecosystems. These impacts relates to the fact that there is to be little or no discarded food lying around in a way that would be available to feral animals, given the regular collection, bagging, composting and disposal of this category of waste.

Table 6.3: Mitigation Measures in Relation to Solid Wastes

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
1. Commissioning of the operational processes of the proposed project including the relevant amenities.	1a. Accumulation of solid waste that could impact the receiving environment. General discarding of cans, bottles and plastics in general from foods, general packing materials and other utilitarian inorganic functions.	1a1. Attraction of feral animals such as rats, crocodiles, and birds to the area to scavenge and in effect shift the ecological balance in a way not induced by nature.	1a1a. Separation of discard and refuse into organic and inorganic waste. Organic waste will be composted on site and used as nutrients for landscape activities. The inorganic waste will be compacted and ferried into Belize City for disposal at the Mile 3 dumpsite.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
1. Commissioning of the operational processes Contd.			1a1b. Definition and implementation of education and sensitization program focused on residents, guests and visitors in general, in the form of interactive posters and brochures posted in strategic locations such as restaurants, gift shops, and rest rooms.
			1a1c. The waste from construction will be separated accordingly and used as land fill where applicable.
		1b1. Habitat for mosquitoes and other insect pests, as well as aesthetic pollution from odor and unsightly accumulation of solid waste.	1b1a. Separation of waste as previously described. Additional measures to be carried out by Public Health Officials.
		1b2. Entanglement and ingestion of plastics floating in the water column by sea turtles, birds and other fauna in the area.	1b2a. Judicious collection, confinement and disposal of solid wastes as described above.

6.3.4 Mitigation Measures in Relation to Energy Generation

The main impacts associated with the energy generation process are petroleum and noise pollution that will arise as a result of the operation phase of the development. This is especially true considering the backup and standby source of energy generation method chosen by the project proponent – diesel generators with some form of alternative energy.

The primary source of electrical energy for the proposed project is to be obtained from BEL. This is to be complemented by standby power in the form of diesel generators. The mitigation

measures that are to be put in place are mainly in relation to the running of the power lines as well as in relation to noise and petroleum pollution.

The petroleum pollution issue is of great importance considering the operation of the diesel generators (supplementary source). This method of energy generation is also interlinked with the sourcing and transportation of the required fuel for its operation. In considering the custodial chain of petroleum management, the proponent will be required to implement mitigation measures in every phase of the fuel management program.

The noise pollution issue is of greater relevance than the petroleum pollution issue, in regard to energy generation. The installation of diesel generators as a back-up source of electricity makes noise pollution a relevant issue. The scope of the proposed development and indeed the overall energy requirement of the initiative have resulted in a categorization of the ‘primary impacts’ as ‘moderate adverse’. This noise pollution can be mitigated by the ‘muffling of the generator noise and the use of sound-proof tiles at the generator stations, as well as their placement in areas far removed from the recreational activities of the project site and movement of staff, residents, visitors and guests’. The mitigation measures for these are discussed in the following table.

Table 6.4: Mitigation Measures in relation to Energy Generation

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
1. Operation of Stand by Diesel Generators to generate electricity.	1a. Excessive noise pollution to immediate surrounding areas	1a1. Increase in ambient noise levels as a result of energy generation use	1a1a. Attenuate noise levels by enclosing generators with sound attenuation material and by the proper use of mufflers and other sound reduction devices designed to minimize the ambient impact.
			1a1b. Examine and develop a best siting scenario for the operation of such generators at full occupancy and generator capacity.
	1b. Soil pollution due to hydrocarbon spills/leaks	1b1. Contamination of waterways and soil on direct contact	1b1a. Contain all fuel tanks in an enclosed concrete wall capable of storing 110% of the total stored volume.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
1. Operation of Stand by Diesel Generators Contd.			1b1b. Develop a contingency plan to address any spills and leaks that can occur both on land and at sea during transportation.
	1c. Air pollution due to generation process	1c1. Air pollution can impact on the ambient residential air, especially during prevalent winds.	1c1a. Develop and implement a preventative maintenance manual to address all concerns related to repair and operation of the equipments
2. Alternative Energy Sources	2a. 'Net or cumulative' noise pollution from the bank of wind turbines operating at the same time	2a1. Increase in overall ambient noise, especially around the turbine areas.	2a1a. Turbine not expected to supersede the L _{MAX} 65 dB threshold.
			2b1a. Varying wind speed and direction reduces shadowing instances.
			2c1a. Placement of the turbine units in areas not identified as 'primary migration routes for birds'.
	2b. Accumulative of battery waste, possible lead and acid pollution to receiving environment.	2b1. Health risks associated with lead poisoning to both human and animals.	2b1a. Judicious collection and appropriate disposal of batteries once discarded. This measure can also be applied to golf cart batteries no longer in use.
			2b1b. Possible recycling of lead components for commercial purposes.

6.3.5 Mitigation Measures In Relation To Socio-Economic Concerns

Development projects of any kind can modify or enhance the economic viability of a given area. The social impact assessment in principle include the process of evaluating the intended and unintended consequences of the development, and identifying and articulating the mitigative measures that are to be put in place to circumvent and ameliorate these impacts (See Tables 6.5A and 6.5B).

Relevant in this regard are the issues of the disruption and erosion of economic activities in the area: The most pertinent being sport fishing and possible visitation decline of the nearby marine reserve. The decline in the productivity of fishing grounds has been dealt with in Table 6.6 below.

Pertinent also in terms of resource use conflicts is the issue of tourism. The proposed project site is located about 4 miles south of San Pedro Town and thus remote from the tourism sector. This project site can steer away any potential investment to San Pedro Town. In addition the area in front and at the back is uses a general sea-lane for general marine traffic as well as a general ‘sea lane’ for transporting tourists to and from Ambergris Caye. The navigational issues dealing with the relationship of these to dredging activities are outlined in following tables. In addition, the growing tourism industry has the need for both skilled and unskilled workers to cater to the industry’s demands.

Table 6.5A: Mitigations In Relation to Socio-Economic Concerns

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
1. Construction Activities	1a. Temporary but potentially marked increase in amount of people moving into the area.	1a1. Increased demand on services in the area.	1a1a. Construction will be planned and strictly scheduled such that only the absolute amounts of people necessary are in the area at any given time.
			1a1b. South Beach Belize has several boats that can move the construction crews, thus no strain will be put on the present transportation infrastructure or service for the area.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
1. Construction Activities Contd.			1a1c. The development will be responsible for the temporary establishment of an independent canteen to feed the construction workers. Thus no additional strain will be placed on facilities on the greater Ambergris Caye in terms of food and refreshments.
			1a1d. In terms of living accommodations, the proposed project will construct temporary housing quarters to accommodate the construction crew. Thus no strain will be put on any residents or facilities in the area.
			1a1e. Proper temporary sanitary facilities will be constructed on site to provide the basic hygiene requirement.
	1b. Movement of materials and supplies and heavy equipment into the area.	1b1. Human health and safety issues.	1b1a. Navigation of boats to and from the caye observing and international and national sea lane rules and navigational protocol, and ensuring that equipment and supplies are securely stored and fastened during transportation.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
1. Construction Activities Contd.			1b1b. Safe and secure mooring of boats when loading and offloading equipment and supplies.
			1b1c. Response to construction injury includes first aid kit on-site, and in severe case the deployment of boat to ferry injured party (ies) into Belize City.
			1b1d. Berthing of dredge securely with adequate lighting at nights, and buoys and warning flags marking sediment curtains and spoil discharge pipes.
	1c. Employment of foreigners and persons not from immediate areas and Belize City.	1c1. Lack of economic opportunities to people in the overall region.	1c1a. Hiring people from immediate area including the districts and Belize City in circumstances where requisite skills and competencies are available at competitive costs.
2. Operational Phase of Development.	2a. Employment of foreigners and persons not from surrounding areas.	2a1. Lack of economic opportunities.	2a1a.. Hiring people from immediate area including the districts and Belize City in circumstances where requisite skills and competencies are available at competitive costs.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
	2b. Health and safety issues.	2b1. Disease coupled with accident and incidents	2b1a. Implementation of a health and safety plan to address these issues especially during the construction stage. During operation, plans include the construction of a small polyclinic, police and fire service to render these types of services.
	2c. Increase in marine traffic.	2c1. Increase in number of boats coming to the project site.	2c1a. A service station will be constructed to service the projected number of boats associated with the project.
3. Resource use conflicts	3a. Potential loss of sport fishing grounds	3a1. Potential decline in recruitment sport fishers and tour guides to the area.	3a1a. Much of dredging activities off north west and east side of the project site is away from the sport fishing grounds.
			3a1b. Canal inlets will be located off the tidal flats area in the vicinity where the present dredging operations are taking place.
			3a1c. Dredging activities to be completed within the shortest possible time to limit negative impacts in both space and time.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
	3d.Potential disruption of tourist activities.	3d1. Relates mainly to boat traffic through area.	3d1a. Installation of buoys, beacons and other navigational aids to ward off marine traffic from the silt curtains and spoil discharge pipes: Also relevant is relatively short duration of undertaking.

Table 6.5B Possible mitigation measures for the other social related impacts

Potential Impact	Mitigation measure	Comments
1. Long term access to traditional fishers rights to the fishing grounds and sport fishers as tour guides.	Developer to negotiate with fishers for a win-win situation.	Conflict resolution techniques can be used.
2. Direct damage to the various habitats (mangrove and shallow waters in the flats) that will result in damage to biodiversity that will negatively impact the livelihoods of fishers and tour guides.	Developer to do least clearance and disturbance to prevent damages. Negotiate with fishers and tour guides on how to use the resource.	Developer has capacity to do this. Conflict resolution can be used.
3. Reductions in the sport fish species population which will translate in less income to the sport fisher and a loss of foreign exchange to the country.	Spawning sites to be protected by developer and fishers.	All stakeholders can agree on the sites, along with relevant GOB Departments.
4. The cutting of mangroves resulting in breeding grounds loss and lack of protection from storms.	Developer to do least clearance and disturbance to prevent damages	Developer recognizes the importance of mangroves to biodiversity and storm prevention.
5. Increased boat traffic, especially by fast boats, that will threat the survival of the bone fish, permit and tarpon	Traffic lanes will be identified and marked; Port Authority technical guidance will be sought.	Cooperation between parties will be essential.

Potential Impact	Mitigation measure	Comments
6. Increase in workers for the development who will necessarily need to reside in San Pedro will create a strain on the existing social services.	SP Town Council and developers need to look at developing a partnership to increase those services.	Central Government needs to be brought into the negotiations.
7. There may be an increase in crime in San Pedro.	Town Council, Police Dept. and developers need to look at developing a partnership to increase security services.	Central Government needs to be brought into the negotiations.
8. The cultural impacts that may result from workers coming from other districts and are not sensitive to the local environment as it relates to water usage and sewage treatment	The workers need to be educated by developer or existing NGOs such as Green Reef to raise awareness.	Green Reef needs some funds to continue its environmental education program.
9. Senior management jobs in these resorts are reserved for outsiders while the local people are employed for the lower paying jobs only.	Developer will develop employment criteria to prevent this to happen and training for junior staff will be a continuous process	All efforts will be to employ staff from the Belize District and Caye Caulker and the rest of the country.
10. Some level of development was began without proper permits	Developer follow the protocols as contained in the Environmental Compliance Plan	Developer and the DOE follow technical guidelines as recommended by the NEAC
11. The developer does not have open communication with the community.	Community leaders and developer become more communicative and inform the general public on all aspects of the development	Organizations such as the BTIA, SPBA, Green Reef and BHA are anxious to get as much information about the development and visa versa.
12. The “time share” system has created a situation among the “marketers of the rooms on the streets” who harass the tourists.	Developer should not shift “time share” units into regular hotel rooms.	BTIA and BHA should be brought to assist in solving this.
13. The development is not compatible with the eco-tourism on which the island was developed and currently living off.	Developer negotiates with local industry leaders to respect their traditional livelihoods.	BTIA and BHA should be brought to assist in solving this.

6.3.6 Other related Impacts

The proposed project will also have other impacts that can be attributed to a negative outcome if not addressed or correctly mitigated. These impacts can have a cumulative effect if not successfully mitigated and addressed by the proposed development. The impacts can occur in both the construction and operation phases along with the proposed phasing of the development.

These impacts include the need for proper safety and health practices, water usage related issues, design concepts issues, marine traffic and environmental disturbance. The mitigative responses to these impacts include the implementation of several plans to ameliorate and circumvent the negative effects associated with the development. Such plans will focus on specific objectives of each impact and coordinate the mitigation measures accordingly.

Table 6.6: Mitigation Measures in Relation to Other Impacts

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
1. Water usage related issue	1a Loss of potable water	1a1. Reduce water availability and loss of profitability	1a1a. Implement a water conservation plan to address the water needs.
			1a1b. Develop a contingency plan for water shortage (s) and water contamination if so is the case.
			1a1c. Implement a water recycling plan (Section 3) aimed at utilizing wastewater for non potable uses.
2. Marine Traffic	2a. Increased number of users and marine vessels to the area	2a1 Impact on natural environment by increased boat usage	2a1a. The movement of marine vessels to the area should be scheduled.
			2b1. safety for traditional users and other users
			2b1a. All watercraft activities be regulated and designated markers in places in special impact areas.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
			2b1b. Safe and secure mooring of craft, docking facility
			2b1c. All watercraft activities be monitored and regulated
			2b1d. Hazardous areas and areas of specific importance be demarcated
3.0 Environmental Disturbances	3.a. Noise pollution from the operation of construction equipment and machinery.	3.a.1 Disturbance of wildlife and neighboring activities	3a1a. All installed equipment such as a power generator etc., be enclosed to minimize noise impacts.
	3b. Airborne pollutants from proposed construction and operational activities	3b1. Same as above, incremental airborne pollutants to atmosphere.	3b1a. Operation of heavy machinery (dredger, excavator, back hoe) and equipment operated during daylight hours.
			3b1b. Burning of organic combustibles will be limited during the construction and operational phases.
4.0 The clearance of mangroves and vegetation for construction of project	4a: The displacement of flora and fauna in the area.	4a1: Birds that migrate will need to find another area to rest.	4a1a: leave as much flora in place, and replant species that attract birds
	4b: The displacement of reptiles in the area, such as crocodiles and snakes	4b1: Removal of habitat	4b1b: Create a wetland habitat and protect the remaining mangroves and roots by curtaining around them.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
	4c: The displacement of Nursery areas for fish, lobsters and other marine life	4c1: The removal of seagrass, mangroves and siltation from beach erosion	4c1c: Ensuring the protection of the 66 ft reserve, the burrow pits to be located in areas of low sea-grass density and the protection of beaches in the area by the preservation of mangroves
	4d: The displacement of sport fish and food fish in the area	4d1: The loss of dividends to commercial and sport fishermen due to the degradation of habitats for the fish	4d1d: Ensure that areas to be dredged are not listed as utilized areas by fishermen, and to conduct the operations during periods that are closed seasons, especially for lobster and conch.
5.0 Construction Noise and Air Pollution	5a. Displacement of the general fauna of the area	5a1. Nuisance to humans and domesticated animals	5a1a: Limit construction work to daylight hours only.
			5a1b: Transportation of materials to and around the site should be carried out effectively and within normal working hours.
			5a1c: Use of water suppressants to bring down dust, especially during land reclamation and road construction.

6.4 Environmental Monitoring

Comprehensive or targeted monitoring can be used as an integral component of responsible life-cycle environmental management of major projects, plans or programs. Current EIA process considerations are focused on the use of monitoring in conjunction with the implementation of mitigation measures. Additional valid purposes of environmental monitoring include, but are not limited to, establishing a baseline conditions, documenting and managing experienced impacts, evaluating the effectiveness of mitigating measures, and validating impact-prediction techniques (Canter, 1993).

6.4.1 Purpose of Environmental Monitoring

Numerous purposes (and implied benefits) can be delineated pre- and/or post-EIA environmental monitoring. For example, Marcus (1979) identified the following six general purposes or case of information gleaned from the conduction of post-EIA monitoring:

1. Environmental monitoring provides information that can be used for documentation of the impacts that result from a proposed action; this information enables more-accurate prediction of impacts associated with similar federal actions.
2. The monitoring system could warn agencies of unanticipated adverse impacts or sudden changes in impact trends.
3. The monitoring system could provide an immediate warning whenever a preselected impact indicator approaches a predetermined critical level.
4. Environmental monitoring provides information which could be used by agencies to control the timing, location, and level of impacts of a project. Control measures would involve preliminary of regulation and enforcement measures.
5. Environmental monitoring provides information which could be used for evaluating the effectiveness of implemented mitigation measures.
6. Environmental monitoring provides information which could be used to verify predicted impacts and thus validate impact prediction techniques. Based on these findings, the techniques for example, mathematical models could be modified or adjusted, as appropriate.

6.4.2 Principles of Environmental Monitoring

The principles underlying environmental monitoring as it relates to any given development is to observe for any changes over time that may be associated with the development. These changes would in principle vary over time in both magnitude and direction. In the case of the latter it is important to understand that changes in environmental parameters and functions may be positive or negative.

Thus in principle a monitoring plan does not necessarily focus on the perceived or anticipated negative changes precipitated by a given development, or indeed vice versa where the focus may be on the positive or beneficial changes only. The parameters chosen are those that have been identified in the analytical process as being affected in the most significant way by the development.

6.4.3 Specific Monitoring Plan

The proposed monitoring plan for the project will entail those parameters and ecosystem components that have been identified through the mitigation matrix and other mitigation factors. These issues include:

- Water Quality monitoring (Marine and Effluent)
- Beach Dynamics
- Waste Management

- Soil contamination (spills)
- Biodiversity
- Environmental Health and Safety
- Engineering aspects
- Socio economic influence

6.4.3.1 Surface Water Quality Monitoring Program

As with so many of the EIA's, the marine component plays an important role in the overall scheme of the proposed development. With this in mind, it is critical to conserve the marine environment and its resources in order to promote a healthy and stable marine ecosystem around the proposed project.

Pollution from all the different sources can pose a serious threat to the marine ecosystem and therefore considering the negative impacts, the proposed development plans to incorporate a complete water quality monitoring program. This program, which will further be developed by the proponent and DOE, will form part of the EMS and also of the water resources management plan previously discussed in Section 3.2. Water samples will be collected and analyzed on a monthly basis for the following parameters using the recommended protocol required by the *Effluent Limitations Regulations* (this regulation recommends the use of the Standard Methods for the Analysis of Water and Wastewater):

a) *In situ Measurements*

- Salinity
- Temperature
- Dissolved Oxygen
- Ph
- Turbidity
- Total Dissolved Solids
- Conductivity

b) *Laboratory Analysis*

This will include the determination of

- Total Suspended Solids
- Total Nitrate
- Total Phosphate
- Total and Fecal Coliform
- E. Coli

Table 6.7: Monitoring Plan for Surface Waters

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
Nutrients (Phosphate and Nitrates)	Monthly	10 mg/l	Incorporate previous monitoring sites along with dredged areas including canal mouths	High Priority	DOE, CZMAI or HCMR

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
TSS/TDS	Monthly	100 mg/l	Incorporate previous monitoring sites along with dredged areas including canal mouths	High Priority	DOE, CZMAI or HCMR
Turbidity	Monthly	Observing disappearance of secchi disc and comparing this over time at different locations.	Incorporate previous monitoring sites along with dredged areas including canal mouths.	High Priority	DOE, CZMAI or HCMR
BOD	Monthly	200 mg/l (EPA/WHO)	Incorporate previous monitoring sites along with dredged areas including canal mouths.	High Priority	DOE, CZMAI or HCMR
Dissolved Oxygen	Monthly	< 4.0 mg/l (DOE)	Incorporate previous monitoring sites along with dredged areas including canal mouths.	High Priority	DOE /Fisheries, CZMAI or HCMR
- Total Coliform - E. coli - Fecal Coliform	Monthly	0/100 ml of sample	Incorporate previous monitoring sites along with dredged areas including canal mouths.	High Priority	Public Health

6.4.3.2 Energy Monitoring Program

In considering the general monitoring program for the proposed project, the anticipated development plans to integrate an energy monitoring plan to reduce the consumption of energy and prolong the use of electrical devices. This plan is an attempt to merge the common household energy saving measures with the proposed development outline. In so doing, energy saving tips must be considered and abided by in order to reduce energy consumption but at the same time live in a convenient and modest way.

Therefore in monitoring the energy consumed on the premises, all individual lot owners must set target ranges and adjust their lifestyles in order to reduce the consumption. Home owners can keep a tally of their monthly bill and reduce the rate every month as they may seem fit.

6.4.3.3 Wastewater Monitoring Program

Just as with the water resources monitoring program the proposed development intends to develop a wastewater monitoring program that will be tied into the program described in Section 6.5.1. This program among others will monitor the quantity and quality of treated effluent (wastewater) generated by the treatment plant.

In addition, the program will also develop a maintenance plan encompassing structural failures, inspections, monitoring of equipment (treatment plant, grease traps, oil/water separators, etc.) short and long term repairs as well as training for new employees in charge of supervising the plant. Also, notice and warning signs will be posted throughout the project site and especially the fuel servicing area. At the different berthing locations, this will include the prohibition of bilge and sewage disposal near the adjacent areas.

Samples of the treated wastewater will be collected and sent to an approved DOE laboratory for testing or in default tested in-house (DOE permission required). In any event, the developer will comply with all applicable laws relating to this matter. Table 6.8 shows a proposed monitoring template that will be reviewed by the project and DOE.

Table 6.8: Wastewater Monitoring Template

Date (day/month/year)	Dissolved Oxygen (mg/l)	Ph (Units)	Total Phosphate (mg/l)	Total Nitrate (mg/l)	TSS (mg/l)	BOD (mg/l)	F. Coliform (count)	E. Coli (count)
____/01/____								
____/02/____								
____/03/____								
____/04/____								
____/05/____								
____/06/____								
____/07/____								
____/08/____								
____/09/____								
____/10/____								
____/11/____								
____/12/____								
Annual Average								

6.4.3.4 Solid Waste Monitoring Plan

The proposed development plans to undertake an intensive solid waste monitoring plan in order to address all the relevant issues that can arise from the collection, storage and disposal of garbage (See Table 6.9). Indicators will be developed to keep track of this activity and report any incident/accident to the local authorities. Such examples include inadvertent spillage during barging, flying or ‘blowing’ away of uncontained garbage etc.

Table 6.9 Parameters for Solid Waste Monitoring

Parameters	Frequency	Critical Levels	Area/ Locale	Priority	Agency Responsible
Collection	Daily	Clean Environment, visual ambience	Anywhere where available trash receptacles are located.	High	SWMA, DOE , Public Health
Disposal	Weekly	Clean environment	Collected waste will be transported to the Belize City dump	High	SWMA, DOE , Public H.
Storage	Daily	Same as above	At WTS on the project site	High	SWMA, DOE , Public Health
Management	Daily	Development, implementation and documentation	All aspects of the management plan	High	SWMA, DOE , Public Health

Management Issues

Waste generated by tourism facilities normally includes paper and cardboard items, glass and aluminum products, plastic items, organic waste, building materials and furniture, and used oils and fats. Hazardous wastes may include batteries, solvents, paints, antifouling agents, and some packaging wastes. Foreign residents, guests, and tourists typically may generate up to twice as much solid waste per capita as local residents, resulting in increased stress on local waste management infrastructure.

The following principles of waste reduction in tourism and hospitality facilities should also be considered as part of a formal Waste Management Plan:

- Buying in bulk quantities whenever possible;
- Use of refillable, bulk dispensers (e.g. toiletries) rather than individually packaged products; Working with suppliers to limit use of, and establish recycling for, product packaging;

- Limiting use of plastic bags at supermarkets, malls etc.;
- Providing in-room recycling procedures and appropriate receptacles;
- Use of glass or biodegradable items instead of disposable plastic items (e.g. straws, cups);
- Implementing organic-waste composting;
- Disposing of wastes only after all waste prevention and recycling strategies have been explored and maximized.

The proposed project will carefully evaluate its options and implement a waste minimization strategy (See Section 3.4.8) to cope with the anticipated generated volume. Options however, are limited, especially considering the local infrastructure for the handling and disposal of solid waste at the Mile 3 Dumpsite in Belize City.

6.4.3.5 Biodiversity Monitoring Program

The objectives of the monitoring programs are to minimize and reduce the environmental impacts on wildlife and their habitats, and to minimize detrimental effects on protected or endangered species. The use of the caye for recreational activity should be carried out with caution.

A checklist will be prepared in order to ensure the monitoring of species. In the event of an important sighting e.g. manatees, or crocodiles, the checklist will be completed by the different land owners who will observe any sightings of important species and will record those. In addition, the following will be conducted.

- A checklist will be developed in order to ensure data collection in terms of the abundance of local species. In the event of an important sighting e.g. manatees, crocodiles or other important species, the sighting will be recorded.
- Assist in any way possible by relocating animals if found within the construction sites, if necessary.
- Establish communications with relevant Government Departments or NGOs in the event for the need for relocation of wildlife (e.g. crocodiles).
- Forge and establish constant communication with the Hol Chan Marine Reserve
- Implement a 15 feet to 35 feet buffer zone along the canal lots. This should be enforced as part of the Restrictive Code of Covenants.
- Posting of warning signs throughout the property about wildlife, especially the crocodiles.
- Minimize effects on the receiving environment by minimizing the negative impacts that may hamper potential navigational interests.
- Confinement of the construction activities to as small an area as possible.
- Establish monitoring program for biological communities for a period of three years. This should focus on features of mangrove habitats, which are likely to reflect changes in

environmental conditions (such as specie composition and distribution, changes in number of individuals, girth, height and litter, birds, fish and other animals.

Table 6.10 Proposed Biodiversity Monitoring Plan

Parameters	Frequency	Critical Levels	Area/Locale	Priority	Agency Responsible
Biodiversity					
Bird Abundance	Twice per year, during December and in June (i.e. winter and summer)	Population changes and diversity profile to be noted and compared with existing data	To be done on project site and neighboring areas, especially the cayes in the marine reserve.	Moderate Priority	Forest Dept.
Feral Animal Population (Crocodiles, rats, others)	Twice per year during June and December	Population changes to be observed over time.	- Primary Development Site - Adjacent recreational sites	Moderate Priority	Forest Dept., Public Health
Bone fish Populations	Twice per year during June and December, and any other time as requested by the Fisheries Department.	Population changes and shifts in diversity to be observed over time and compared with pre-development situation.	Tidal flats and other areas in the Laguna de Boca Ciega.	High Priority	Fish. Dept.
Sea-grass biomass and density	Twice per year during June and December.	Sea-grass biomass and density to be observed over time for any discernible trend that may be associated with the proposed development.	Dredged sites and canal inlets/outlets Additional areas could include the adjacent mangrove areas and others determined by the authorities.	High Priority	Fish. Dept.

Parameters	Frequency	Critical Levels	Area/Locale	Priority	Agency Responsible
Sea-grass Re-colonization (if any). Rate of the Burrow Pits (although these were sparse).	Twice annually in June and December.	Estimate sea grass biomass by count of rhizomes.	Burrow pits and other dredged areas of the project.	Moderate Priority	Fish. Dept.

6.4.3.6 Social Monitoring

Due to the increase in the demand for permanent employment in the country, this project will result in positive benefits for Ambergris Caye and to the country on a whole. A number of new jobs will be created during the implementation of this project. These are mostly laborers who will be required to live in. Technical staff will also be required for the day-to-day operations of the development areas, restaurants, administration etc.

It is expected that employment will come mainly from nearby communities such as Ambergris Caye, Corozal, Orange Walk and Belize Districts. The proposed project will also design an Emergency Management System (See Section 7). Staff will be identified for first aid training. This training is offered free of cost by the Red Cross Society. It is also recommended that an emergency evacuation plan be set in the event that any emergency takes place.

Table 6.11 Social Monitoring Issues

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
Fisheries Landings	Quarterly	Assess to sport fishing and fisher catch	Tidal Flats and Laguna de Boca Ciega. Other areas west and south of the project site.	High Priority	Fish. Dept.
Employment	Annually	Ratio of locals to foreigners as well as migrant workers	Construction site and administration of proposed project	High Priority	Labour Department
Services	Annually	Acceptable/non acceptable	Commercial and residential component	High Priority	BTB, BTIA

6.4.3.7 Other Monitoring Plans

The proposed project will also implement other monitoring plans as part of their EMS program. These plans will be further expanded as the project develops and gradually comes to light. The following tables summarize the proposed monitoring plan that will aid in both the yearly environmental audit and reporting scheme.

Table 6.12: Proposed Monitoring Plan South Beach Belize

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
Beach Dynamics					
Beach erosion	Quarterly	Observable loss of beach material.	- North-east of project site	Moderate Priority	CZMAI, Fish. Dept.
Engineering Aspects					
Safety considerations in relation to navigational lights, marker buoy for the dredge.	Construction phase activities to be done on a weekly basis.	All lights aboard the dredge as well as beacons marking the path of the spoil delivery pipes and sediment must be functional, and all marker buoys must be deployed appropriately.	- Associated with the dredge, spoil delivery pipes and sediment curtains.	High Priority	Port Authority
Technical integrity of dredging operation.	Construction phase activity to be done on a daily basis.	Inspection of sediment curtains and spoil delivery pipe for overflows and leakages.	- Done along the entire path of the sediment curtains and spoil delivery pipes.	High Priority	CZMAI, Fish. Dept.
		Inspection of shore-based spoil deposition pit or de-watering 'bund' for leakages and collapse of walls.	- Done along perimeter of bund.	High Priority	DOE, CZMAI, Fish. Dept.

Sediment Transport

Sedimentation of the waterways will always be an ongoing natural process that occurs in the environment. These natural processes however, can at times be accelerated by anthropogenic activities which most often require human intervention. The source for these accelerated progressions vary and are often associated with tourism related activity. The following table describes the Sediment Monitoring Program for the proposed residential subdivision.

Table 6.13 Sediment Entrapment and Dredging Activities

Parameters	Frequency	Critical Levels	Area/ Locale	Priority
Rate of sediment re-deposition in Gran Canal and primary canals	Semi-annually	When canal network depth is < 6ft and entrance depth < 8ft.	Survey bathymetric profile across canal network and canal mouths	High Priority
Integrity of Effluent Discharge or Conveyance Pipes	Daily & Weekly	Daily inspection of the discharge pipes to identify leaks along length of the pipes.	Entire length of pipe from lagoon to discharge area	High Priority
Monitor Human Safety Especially in Relation to Marker Buoys and Navigational Lights (Loss/Malfunction)	Daily Basis	The dredge, silt curtains and discharge pipes are to be adequately invested with marker buoys and navigational lights at all times	Entire discharge pipes, dredge and silt curtains are to be marked by navigational buoys and lights	High Priority
Quantity of Sediment Deposited	Annually	< than maximum permissible limit stated in the maintenance dredging	Residential canal, canal mouths and other areas of note	High Priority
Rate of sediment re-deposition (quantity) in dredged areas of the lagoon	Annually	When lagoon depth is less than 6 feet in navigable areas.	Dredged areas of lagoon including access channel, and navigable areas	High Priority

6.4.4 Performance Indicators

In the general context of the monitoring plan, there must be established target goals and objectives in terms of potable water, energy consumption and solid waste generation among others. The performance indicators are tools that the proposed residential subdivision along with the developer will be required to utilize in order to reduce their consumption and generation wastes as stipulated in the relevant mitigation and conservation measures previously discussed. These actions will result in huge savings for the residents, developer and ultimately the environment if collectively carried out. This is especially important when considering energy consumption and the petroleum crisis we are currently facing.

Therefore, each resident, guest, employee and visitor to the proposed development must take into consideration the different conservation measures for potable water and energy as well as the waste minimization strategy for solid waste generation (See Sections 3.2, 3.3, 3.4 and 3.5). Collectively these measures and actions can be beneficial towards sustainable development.

On the whole, the performance indicators must be ultimately dictated by the critical levels of the aforementioned monitoring plan along with any other indicator that may be of importance.

6.5 Conclusion

Newton's Law provides that for every action there is an equal and opposite reaction.

The Council on Environmental Quality (CEQ) on the other hand provides that “Whenever a proposed project will result in potential significant adverse environmental impacts, measures must be taken which will limit or avoid that impact. These may include conditions of approval, revisions to the project, and, less frequently, approving an alternative project with fewer impacts. Where such measures are imposed, there must be a program for monitoring or reporting on the project's compliance with those measures”.

As described from the connotation above, the proposed project will have its degree of impact on the receiving environment. Based on these assumptions, the different monitoring programs plan to include as much activities that are related to the development and operation of the proposed subdivision. Once Environmental Clearance has been granted, the Environmental Compliance Plan will request a more formal and detailed monitoring program from the different activities.

Likewise, the mitigation plan presented in this document must also be included in the ECP. Furthermore the Department of the Environment, along with other interested parties, will be required to monitor the project site in both its construction (dredging/excavation) phase and operation phase and to ensure that the monitoring program and mitigation measures presented in the tables above are properly put in place and functioning as planned.