

Park Ridge Securities Corporation
Albany Project

Environmental Management Plan
Review Report

To

**The Bahamas Environment, Science and
Technology Commission**

By

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BVI ALBANY PROJECT EMP REVIEW

1.0 Introduction and Overview

Park Ridge Securities Corporation (PRSC) is proposing to develop a residential club community on the southwestern coast of New Providence called the Albany Project. An Environmental Impact Assessment (EIA) prepared by Turrell & Associates consisting of an initial October 2005 and seven supplemental submittal was provided to BEST for review. Black & Veatch International (BVI) was contracted to assist and support BEST in conducting an objective and thorough evaluation of the EIA submittals. BVI conducted reviews of these materials, provided comments and engaged in meetings with the developer PRSC.

BVI issued a final report summarizing its findings from these reviews and meetings in July 2006. It is understood that BEST presented BVI's findings as well as its own in a presentation to Cabinet in July 2006, wherein the project was conditionally approved. One of the conditions for PRSC to proceed was to develop comprehensive Environmental Management Plans (EMPs) for review and approval by the BEST Commission.

BVI has assisted BEST in the review of the Albany Project EMPs, specifically in assessing whether project design, mitigation measures and environmental management plans conform to BEST EMP guidelines, recognized best practices, and similar requirements for projects in Florida. The sufficiency of these plans in providing protection against and mitigation of potential environmental impacts identified in the EIA was also evaluated.

This report summarizes the activities undertaken and services provided by BVI in supporting BEST in this EMP review, and presents the findings and recommendations of BVI's independent EMP evaluations.

2.0 Review Criteria

In our Albany EIA Evaluation Report, we recommended that a detail and comprehensive EMP be developed and include at a minimum:

- Beach enhancement, re-nourishment and monitoring plan
- Dredging plan for the access channel and marina entrance
- Coral relocation plan
- Marina water quality monitoring plan
- Groundwater monitoring plan
- Storm water management plan
- Hazardous materials, fuels and chemicals management plan
- Waste management plan
- Landscaping and maintenance plans.
- Noise and odour control plan

- Construction erosion and sediment control plan
- Personnel environmental training and awareness plan
- Health and safety plan
- Spill control, emergency response and contingency plans
- Environmental management, reporting and recordkeeping systems

Our report emphasized that this EMP should set forth in sufficient detail all the design measures, monitoring programs, best management practices, and emergency and contingency plans to assure BEST that all the potential impacts are methodically controlled and suitably mitigated.

In addition to reviewing the Albany EMP submittals for conformance with our EIA report recommendations, BVI carefully compared these documents and plans to BEST guidelines for Industrial Ports and Commercial Boat Harbours as well as Housing Developments in its evaluation of what is applicable or otherwise should be included in the EMP. BVI also referenced EMP guidelines for applicable to similar resort development projects published by the Florida Department of Environmental Protection and the U.S. Environmental Protection Agency in evaluating and determining best industry management practices for purposes of this review.

3.0 EMP Review Activities

BVI received the following EMP documents to review:

- Original Albany Project EMP dated October 2006 by Turrell & Associates received on October 19, 2006
- Responses to Initial EMP Comments received from Jason Callendar of PRSC on January 4, 2007
- Revised Albany Project EMP dated March 8, 2007 by Turrell & Associates received on March 16, 2007
- Revised EMP pages, diagrams and Waste Management Plan dated July 30, 2007 by SEV Consulting Group received August 1, 2007
- Marina Entrance Channel Excavation Procedures dated June 27, 2007 by MARMAT received August 25, 2007.
- EMP responses, Construction Monitoring Protocol and Training Manual by SEV Consulting Group transmitted September 29, 2007
- Final EMP on CD dated November 30, 2007 by SEV Consulting Group in conjunction with Turrell & Associates received on January 21, 2008

BVI reviewed each of these submittals in accordance with the aforementioned criteria and provided BEST with a list of issues, questions and comments for consideration and incorporation into their comments and requests for additional information. BVI also met with BEST staff, and participated in several conference calls with BEST and PRSC and its consultants, to discuss issues, clarify comments, and recommend resolutions and enhancements for the project EMP. The BVI Project Manager also attended the Town Meeting at St. Paul's Parish Hall in Lyford Cay on August 22, 2007.

Altogether, there were six rounds of comments and responses involved in this EMP development and review process. In addition to evolution of several key components of the project master plan over this review period, there were several transitions of key project personnel – with PRSC changing its lead environmental consultant in the summer of 2007, and a change of BEST project managers in April 2007.

4.0 Review Findings

Overall, the final EMP incorporates or addresses all the recommendations of the BVI EIA Report as well as BVI suggestions and recommendations offered during the EMP review process. Additionally, BVI confirmed that substantially all applicable BEST guidance for EMPs was addressed and incorporated, as is documented in the checklist originally prepared by BVI and completed by the SEV Consulting Group.

The following is a summary of our findings on the key provisions of each section of the final EMP.

4.1 Overview of the Albany Project

The EMP provides a brief but useful overview of the proposed golf course, marina and residential areas of the development, as well as the impacts and accidents the EMP is designed to address. An organization chart with contact information is also included in this section.

4.2 Applicable Environmental Regulations; Local, National and International

This section provides a bulleted list of national Bahamian laws and summary of international agreements and protocols, as well as a general reference to provisions World Bank and World Health Organization noise guidelines that may apply to EMP activities.

4.3 Description of Existing Natural Communities, Environmental Impacts and Mitigation Measures

This section of the EMP includes or references key commitments to and several enhancements of previous EIA mitigation measures to protect or minimize project impacts, including:

- **Terrestrial Vegetation** – Protocols for identifying and transplanting protected or valuable plant species resources, along with educational materials including photographs of the species concerned, will be provided to all grounds crews prior to the commencement of clearing. All exotic vegetation species are to be removed. A landscaping plan that incorporates native Bahamian species, minimizes water demanding landscape species to reduce project water and chemical requirements, mimics existing habitat structure, and includes a broad variety of species (both in form and function) for wildlife value will be developed and implemented.

- **Terrestrial Habitat Conservation** –A habitat conservation area will be established and monitored, with environmental staff to provide monitoring reports to BEST on its status every six months in the first 2 years and annually thereafter. An environmental staff member will also make a presentation to BEST on the findings of the monitoring report on the submission of each report
- **Coastal Preservation** - Maintaining a 75' building set back and buffer zone to commence at the seaward extent of the sand strand community extending to the coastal vegetation existing along the shoreline.
- **Marina Water Quality** – Optimizing marina design with more rounded corners to increase natural flushing. Installing and maintaining two permanent continuous data loggers (one within the marina basin and the other seaward of the access channel) to monitor water quality in the marina, and downloading data monthly during construction and quarterly thereafter with copies to be submitted to BEST. PRSC will also develop a marina management plan and commits to apply for Blue Flag Certification.
- **Marine Water Quality** – Deploying turbidity barriers and monitoring turbidity during dredging, beach nourishment, and jetty construction activities. The marina basin will be closed off to the sea during its excavation.
- **Marine Resources** – All coral heads and queen conch located within 30 meters of the proposed entrance channel will be relocated. Measures taken to protect marine mammals during construction will include education activities and the use of sound when an animal is sighted within view of the work area to deter the animals from closer approach. Speed limits will be imposed on vessels operating within the project vicinity.
- **Groundwater Quality** - A curtain wall will be installed around the marina to prevent saltwater intrusion from marina construction activities.
- **Cultural Resource Preservation** – In addition to preservation of an on-site fisherman/s cottage, a cultural resource discovery plan will instruct workers to notify supervisory staff upon discovery of any artifacts or cultural resources. The construction manager will notify the Antiquities, Monuments and Museums Corporation (AMMC) and have the immediate area staked and flagged to a radius of 10 feet from the location. Construction activities will cease until AMMC staff have had an opportunity to visit and observe the discovery site.
- **Construction Water and Wastewater** - Potable water will be provided by wellfield extraction by Water and Sewer Corporation. For irrigation needs, a combination of treated effluent from the new sewage treatment plant and a planned Reverse Osmosis system will meet anticipated demand. To eliminate the potential for eutrophication of near shore waters, the project entails provision of treatment for all sewage at a new, on-site sewage treatment plant.
- **Employee Education** –Monthly training of new staff with biannual updates required for all staff. Training will be mandated for construction staff prior to the commencement of employment. Educational and training materials will be submitted to BEST for their review 3 weeks prior to training beginning to enable BEST to have at least 2 weeks to review the material.

- **Homeowner Management** - Restrictive covenants will outline practical rules and regulations for project residents, including safe landscaping practices addressing water and chemical use.

All of these mitigation measures and commitments were thoroughly discussed during the EMP review, and incorporated into the EMPs where appropriate.

4.4 Construction and Operation Management Activities

This section included several environmental management plans, which are summarized as follows:

- **Construction Erosion and Sediment Control Plan** - outlines a variety of methods to manage sediment transport, including instructions on the use of silt fences, berms, and drainage swales. It also outlines soils erosion protection by use of mulching and hydroseeding, erosion control mats, riprap and plastic sheeting. The plan calls for weekly inspections of all erosion control measures, and employee training on best management practices.
- **Beach Enhancement, Re-Nourishment and Monitoring Plan** – outlines actions to mitigate possible negative impacts to the shoreline during the proposed enhancement/increasing of the width of the beach on both the eastern and western sides of the marina entrance channel. Measures include positioning and construction the breakwater and groyne, as well as a sediment sink just east of the entrance channel to minimize transport and migration of the nourished sand, erecting and maintaining turbidity barriers where construction activities are taking place; and measuring and monitoring beach and entrance channel profiles before, during and after nourishment activities. This plan also provides for deploying turbidity barriers around areas being dredged for channel sand bypassing system maintenance.
- **Dredging Plan for the Access Channel and Marina Entrance** – addresses two proposed methods of dredging: hydraulic dredging of the top thin layer of sand on the seabed, and mechanical dredging to excavate bottom sediment. Dredged material is to be transported back to the shoreline and deposited in bermed sediment sinks, with runoff from these sinks being channeled back to the beach. Once drained, the dredged material will be used for construction around the site or for beach nourishment. Turbidity monitoring will be performed for all dredging work, both for initial construction and maintenance events, with measurements recorded, analyzed and the results submitted to BEST within a two (2) day period.
- **Coral Relocation Plan** - coral heads present in the vicinity of the proposed entrance channel will be relocated to sites with similar conditions (i.e. depth, light, wave movement etc.) by chiseling or cutting them free, transporting in foam lined cages to prepared relocation sites. Relocated corals will be monitored weekly during the construction/dredging phase, monthly thereafter until the development becomes operational, when quarterly monitoring will continue for two years and either once or twice yearly thereafter. Monitoring will include either taking still pictures or video footage.

- **Noise and Odour Control Plan** – noise management measures consist of worker protection and establishing a buffer zone between the work location and adjacent residences. Operations of noisy equipment such as blowers, lawnmowers or chippers during development operations will only be allowed between 7:00AM and 7:00 PM. Noise monitoring will be performed. Odour control measures in the equestrian center will include twice daily raking of stalls and judicious use of straw/mulch. Design plans for Phase II will include incorporation of an overhead mist system at the equestrian center for insect and odour control, with plans for these systems to be submitted to BEST for review and approval a minimum of 90 days prior to commencement of Phase II construction.
- **Waste Management** - This section provides a summary of expected waste streams generated during construction and operation phases of the Albany project and outlines Best Management Practices addressing waste minimization, recycling, storage, disposal transport and tracking and spill response. Environmental managers will be responsible for monitoring of the effectiveness of procedures, record keeping and dealing with any unusual situations.

These individual plans outline appropriate measures and best practices that should, if implemented, manage construction and operational activities to avoid or lessen any resulting environmental impacts. It is noted, however, that the erosion control plans only address construction (and not operational) activities, and further do not wholly conform to the requirements set forth in the Florida Department of Environmental Protection's *Florida Development Manual: A Guide to Sound Land and Water Management* (Volume 2 Chapter 6 1988) and the new draft *Best Management Practices for Enhancement of Environmental Quality on Florida Golf Courses* (2007), as recommended by BVI.

4.5 Emergency and Hazards Management

This section of the EMP outlines guidelines and procedures to be followed when emergency situations such as storms, fires or hurricanes pose risks of damage to human health or the environment. This includes a listing of personal protective equipment and other emergency response and communication equipment to be maintained on site.

The Work Hazardous Materials Information System (WHMIS) will be utilized for identifying hazardous materials in the workplace Occupational Safety and Health Administration (OSHA) regulations and standards will be followed during construction. A household hazardous waste facility for hazardous materials storage will be established at the Albany development site. Best management practices and procedures for identification, handling, storage, tracking and transportation of hazardous substances off-site to DEHS for disposal from development, marina and golf course operations outlined in this section are appropriate and in keeping with general industry standards.

Procedures, equipment and training to address accident or emergency incidents such as spills, explosions, fire and sabotage are outlined in this section. Notifications, communications, documentation and recordkeeping requirements are included in these procedures. The upland and marina spill management protocols included in this section

are not as detail or comprehensive as what is included in a Spill Prevention, Control and Countermeasures (SPCC) plan under 40 CFR Part 112 in the United States and generally recognized as standard industry practice. Storm preparedness plans and procedures are addressed in a draft Hurricane Response Manual appended to the EMP.

4.6 Marina Management

This section outlines environmental management practices and protocols for marina operations, including fueling procedures, fuel spill response, fire protection and emergency response, sewage pumpout facilities and discharge restrictions, maintenance operations over the water, waste management, employee training and boater education procedures and practices. Management goals and best management practices for storm water management, shoreline stabilization, petroleum handling, fueling and spill response, hazardous substances and waste management, and boat maintenance activities are spelled out in good detail.

Less specific bulleted outlines of marina storm and hurricane preparedness plans and procedures for employees and customers are set forth in this section. Blue Flag marina certification criteria is described, including a bulleted list of environmental education, management, and safety elements.

4.7 Landscape & Golf Course Management Supplement

This section outlines general goals for landscaping and golf management efforts, includes a listing of desirable plant species along with transplanting guidelines and methodologies for removal of exotic species, and sets forth best management practices for landscaping activities. Goals include maximizing wildlife use by incorporation of native plant materials, isolating potential contaminants from soil and water, limiting discharge of any material other than clean storm water onto the ground or into surface water bodies, and minimization of irrigation, fertilizer, and pesticide use requirements. Best management practices for maintenance and documentation of chemical and water use addressing pesticides, solvents and degreasers, fertilizers, used oil and antifreeze, lead-acid storage batteries, and equipment storage and cleaning is summarized in this section.

4.8 Environmental Monitoring Protocol

This section sets forth the construction and operational monitoring activities and documentation for tracking and evaluating changes to the environment and effectiveness of the EMPs. Monitoring activities include:

- **Construction** - Construction staff and environmental managers will conduct weekly inspections and prepare reports monthly of work status, along with reporting of any incidents or events of potential environmental significance. This will include inspections of sediment control measures, assessment of dredge spoil disposal and dewatering areas.
- **Groundwater** - samples will be taken on a quarterly basis by golf course personnel. Samples will be tested for water quality, and the findings of each testing will be summarized in a report.

- **Terrestrial Habitats** - Upland surveys of terrestrial habitats in the conservation area will be conducted annually in late summer. Environmental staff will provide monitoring reports to BEST on the status of habitat conservation areas every six months in the first 2 years and annually thereafter. An environmental staff member will also make a presentation to BEST on the findings of the monitoring report on the submission of each report.
- **Turbidity** - testing of the water column upstream and downstream from all dredging activities will be performed twice daily during dredging for first week, then bimonthly.
- **Marina Water Quality** – monitoring of two permanent data loggers to be installed within the marina basin and the seaward of the access channel by manually downloading data monthly during construction and quarterly thereafter with copies to be submitted to BEST.
- **Marine Habitats** - Benthic surveys of marine habitats will be conducted annually in late summer. Environmental staff will provide monitoring reports to BEST along with a presentation to BEST staff on the findings of the monitoring report on an annual basis.
- **Beach Re-Nourishment** - Beach profiles will be surveyed every 50m-100m before, during, and for 3 months for first two years after construction, and then twice yearly for the next 3 years. Survey results will be reviewed and analyzed by a qualified professional coastal engineer, who will submit reports to BEST on a quarterly basis for the first two years after construction, and bi-annually for three years thereafter. After the first five (5) years of beach monitoring, the coastal engineer shall provide his recommendations whether to continue the monitoring program and/or further beach enhancement specifying appropriate volumes and source of this sand. The project Environmental Manager will continue monitoring of the beach on a regular basis throughout the life of the project, and provide reports to BEST after each beach monitoring survey.
- **Coral Relocation** – Assessments of the health and survival of transplanted coral colonies will be monitored by weekly observations during the construction/dredging phase, and monthly thereafter until the development becomes operational. Observational monitoring will then continue on a quarterly basis for two years and either once or twice yearly thereafter. Monitoring will include either taking still pictures or video footage.
- **Waste Management** - Environmental managers will monitor and document the effectiveness of best management practices, procedures and record keeping, as well as management and resolution of any unusual situations, during both construction and operation on a weekly basis.
- **Fuel Management** – The marina Harbourmaster will prepare quarterly reports tracking fuel utilization and logging any incidents of release.

Forms and procedures for conducting and documenting these monitoring activities are included in this section. Overall, these monitoring plans incorporate most all of the BVI

recommendations made during the EMP review process, and if fully implemented should provide BEST with both useful and valuable metrics to evaluate the effectiveness of project impacts and management practices, as well as to determine when any additional remedial actions may need to be considered.

5.0 Conclusions and Recommendations

Overall, the Albany EMP provides for substantive mitigation plans and management practices that, if implemented, should serve to minimize environmental impacts from proposed project construction and operation activities. While BVI has noted instances where individual management plans or practices could be enhanced to meet USEPA or Florida requirements and standards, PRSC and its consultants have developed an EMP that adequately addresses the key activities that are anticipated to present risks of environmental impacts and degradation.

PRSC's EMP consists of several individual plans often addressing only partial aspects of the overall project – i.e. separate construction or operation plans addressing specific activities within residential, marina or golf course portions of the development. While this approach is appropriate and suitable to how management of this private development community, it points out the divisions of authority and responsibility between the various areas. BEST must consider whether it would be beneficial to have PRSC designate a single person or entity that is to be ultimately responsible for ensuring all activities conform to the EMP commitments throughout the life of the development project.

It should also be noted that PRSC makes several commitments in its EMP to provide information, notifications and further plans to BEST at some point in the future, including:

- Employee educational and training materials to be submitted to BEST for their review 3 weeks prior to the beginning of staff training
- Phase II storm water drainage plans to be provided to BEST by June 30, 2008
- Coastal Engineer's sand nourishment program to be submitted to BEST for review and approval prior to its implementation.
- Plans for installation of an overhead mist system in the equestrian center to be submitted to BEST for review and approval a minimum of 90 days prior to commencement of Phase II construction
- Notification of any blasting required at least 2 weeks prior to scheduled blasting to enable sufficient time for dialogue and agreement on this issue