3.0 ALTERNATIVE ANALYSIS

Once it was determined that there was significant global demand for heavy mineral sands, the applicant began the site selection process. The applicant looked at various locations to conduct the mining activity. Site criteria was developed to aid in the selection process. The site criteria considered socio-economic factors for determining a suitable location for the mining activity. Those factors include:

- The location of suitable reserves of heavy mineral sands containing the target minerals suitable for mining with an average mining cut with 2% concentration;
- A 50-mile proximity to the Port of Jacksonville;
- The costs and availability of public services, facilities and improvements required to support a proposed facility and protect public health, safety and the environment;
- Cost associated with handling/transporting of material;
- The direct access to a rail line capable of linking to a port;
- The social and economic impacts of a proposed facility on the affected community; and
- The location of a proposed facility and its potential impacts on environmentally sensitive areas including:
    1) water resources including wetlands, streams, and floodplains;
    2) threatened and endangered species,
    3) cultural resources
    4) protected natural areas including the Okefenokee Swamp National Wildlife Refuge.

The applicant and its consultants identified several potential sites initially and evaluated each based on the established criteria. Additional alternatives were evaluated but eliminated. The possible alternatives were narrowed to five alternatives and a no action alternative. The alternatives included the proposed project, an alternative site, two alternative sites with only upland areas mined, and the proposed project with an alternative mining method. The site alternatives are shown on Figures 4.1-4.3 and described below.

3.1 Alternative 1

Alternative 1, the proposed project, consists of a combination of dragline and excavator/dozer trap mining at the proposed project site. Mining at the site will be accomplished utilizing dragline mining for the majority of the site. Dragline mining involves a large crane-like earthmoving machine equipped with a bucket to scoop material. Mining and initial reclamation require moving more materials than can be accomplished with standard excavation equipment. Draglines can efficiently move large quantities of material. A large-capacity bucket swings from cables on the end of the boom, scooping material that is then moved to adjacent areas. Draglines are electrically powered and run by two employees, an operator and an oiler. When mining is occurring measures must be taken to protect the areas adjacent to the mine property. Berms are constructed to ensure that muddy water does not leave the mine property and affect local waterways.

Prior to mining the trees will be harvested and the land is cleared. The berms, ponds and best management practices for sediment control are constructed and installed. The topsoil is stockpiled for use during reclamation. The permanent facilities are then constructed and installed. The mining process proceeds as follows: The dragline moves through the mining area excavating the material to be mined which is stockpiled nearby. It is then transferred to an apron feeder which feeds to a screen. This removes roots and other large objects. The material is then transferred to a pit/feed conveyor