

CHAPTER 1

PROJECT BACKGROUND AND PURPOSE AND NEED

1.1 BACKGROUND

1.1.1 Aggregate, Limestone, Crushed Stone, and FDOT Specifications

Aggregate is an essential construction material consisting of a granular mineral material that can be used alone in certain construction projects, such as bank stabilization, or mixed with other materials (such as a cement bonding medium) to make concrete and asphalt, which are necessary for the construction and maintenance of roads, bridges, buildings, homes, and other infrastructure vital to the Nation's economy. Aggregate can consist of naturally granular material like riverbed gravel or it can consist of rock materials that are crushed to meet a size specification. While different types of rock can be crushed to create aggregate, due to Florida's geology, materials such as granite do not naturally occur near the surface, while limestone does. Therefore, limestone is the predominant source of aggregate in the State.

Limestone is a rock composed of calcium carbonate materials derived from marine organisms that have accumulated over geologic time. Limestone is created through geologic processes that cause variability in the hardness, durability, and chemical composition of the rock. There are several limestone formations within six strategic aggregate mining areas throughout the State, as identified by Florida Department of Transportation (FDOT), that serve as the primary sources of limestone in Florida. Generally, there are two types of limestone in Florida: hard limestone and soft limestone. Hard limestone yields a range of high-value products including aggregates and other finished stone materials. Soft limestone is used for lower-value products such as limerock base, shell rock, or fill. Hard limestone is excavated and crushed into various grades (i.e., sizes) that are then sold to be incorporated into construction materials such as concrete and asphalt.

Crushed stone is created when rock is mined and crushed into smaller rock (coarse aggregate) and mineral particles (fine aggregate or "screenings"). "Crushed rock" is a term that can be used interchangeably with "crushed stone." The term "crushed stone" is used universally by the U.S. Geological Survey (USGS) and in other countries to describe various mining products and to report production statistics. Crushed stone is a generic phrase for the mined product, while other more specific terms apply to more narrowly defined products. Florida is the third largest consumer of crushed rock products in the United States (FTBRC 2008). In terms of value, crushed stone is Florida's leading nonfuel mineral commodity (USGS 2007a).

Not all limestone mines produce suitable material for all uses of crushed rock. Particle size, shape, and composition are among the properties that affect the suitability of an aggregate deposit for a specific use (USGS 2000). As mentioned above, in some areas, Florida's crushed stone materials are too soft and deposits yield materials that are unsuitable for engineering projects (e.g., limerock base, shell rock, or fill). While soft limestone may also be crushed to obtain the limerock base, shell rock, or fill (i.e., they do not necessarily come out of the ground in unconsolidated form), the definitions above fail to adequately differentiate between this low-quality material and material that may be suitable for construction activities. Because much of the language within the construction and limestone mining industries can be used interchangeably, the U.S. Army Corps of Engineers (USACE) has found it necessary to specify the terms that will be used in this supplemental environmental impact statement (SEIS) to simplify the language for the reader. Material that is mined to produce limerock base, shell rock, or fill will be referred to as "limerock base" throughout this document. Material that is mined to produce coarse aggregate (larger than 0.375 inches in diameter) or fine aggregate (smaller than 0.375 inches) shall be referred to as either "crushed stone" or "aggregate" throughout this document. Additionally, for the purposes of this document, aggregate produced in Florida mines is presumed to be limestone, while aggregate from outside of Florida might be either limestone or another mineral such as granite.

Chemical composition, such as higher silica content in limestone, can make the aggregate harder and more angular so that it has a higher tensile strength and is more usable in asphalt or concrete. In addition to requiring a particular grade aggregate to make a particular product, the use of the product may require that the aggregate have certain chemical characteristics or meet certain quality standards. While

a mine could change the crushing equipment to modify the grade of material a mine produces, it would not be able to change the chemical components of the aggregate it produces.

Three characteristics used to determine aggregate quality are the aggregate's bulk specific gravity (BSG), absorption value, and Los Angeles (LA) abrasion rate. BSG is a measure of a material's density (mass per unit volume) as compared with the density of water at 73.4 degrees Fahrenheit (°F) (23 degrees Celsius [°C]). By definition, water at a temperature of 73.4°F (23°C) has a BSG of 1; a material with a BSG of 2.3 will be 2.3 times as dense as water. Absorption, which is also determined during the same test, is a measure of the amount of water that an aggregate can absorb into its pore structure; this measure can be used as an indicator of aggregate durability. Higher absorption values are associated with lower durability, and highly absorptive aggregates (often specified as aggregates with over 5 percent absorption) require more asphalt binder. The LA abrasion test is a common test method used to indicate aggregate toughness and abrasion characteristics. Lower values indicate harder material.

FDOT establishes specifications and standards for construction products, such as limestone aggregate, for FDOT use in Florida. A list of FDOT specifications can be found at <http://www2.dot.state.fl.us/SpecificationsEstimates/implemented/CurrentBK/Default.aspx>. FDOT is the largest single consumer of crushed rock in Florida (FTBRC 2008) and all crushed rock used in FDOT projects must meet FDOT specifications. FDOT specifications are also adopted at the State, County, and City levels as specifications for non-FDOT projects. FDOT certification for mining products starts with a certification of the mine itself. FDOT must first approve a mine as a supplier of aggregate. The products from an approved mine must meet the specifications for each particular product the mine produces. The specifications are based upon FDOT's evaluation of the gradation and chemical composition of the aggregate. For example, higher silica content in limestone can make the aggregate harder and more angular so that it has a higher tensile strength and is more usable in asphalt or concrete. Not all mines seek FDOT approval or seek to compete in the market for aggregate that meets FDOT specifications. This could be a result of the mine's inability to consistently produce a certain size, shape or composition of product or it could be that the mine serves a specific market that does not require FDOT certification or specifications. FDOT defines commercial-grade crushed stone materials to be those that are produced and sold to non-FDOT projects or other projects that do not require FDOT certification. The USACE is characterizing 'construction-grade' aggregate as aggregate that meets FDOT specifications. Such aggregate is produced and sold for use in FDOT projects or other projects that require FDOT-certified products.

Many construction projects require a particular grade and quality of crushed stone. If a contract requires crushed stone that meets FDOT specifications, the contractor must obtain the appropriately sized aggregate from a mine that is certified by FDOT and produces aggregate that meets FDOT specifications. A mine can be FDOT-certified, but if FDOT has not certified the product or particular grade of aggregate, the mine cannot fulfill a contract for that grade of aggregate. In some cases, the specifications for the aggregate end products, like asphalt and concrete, also take the quality of the aggregate ingredient into consideration. For example, if an aggregate were being used to construct a bridge slab requiring a high strength concrete (i.e., 10,000 pounds per square inch), the aggregate used to make the bridge slab would have to be stronger and denser than that used to make a concrete slab for a sidewalk. Similarly, FDOT specifications for asphalt concrete friction courses, specialized layers of asphalt laid on the surface of roads, are characterized by the U.S. Department of Transportation, Federal Highway Administration Technical Advisory (FHWA 1990) as having an outstanding capacity for providing and maintaining good frictional characteristics over the operating range of speeds on high-speed highways when constructed with high-quality, polish-resistant aggregates. The advisory further states "their (friction courses) macrotexture facilitates drainage of water from the tire/pavement interface, improving tire contact with the pavement and reducing the potential for hydroplaning." FDOT specifications for friction courses require that aggregate used to make it consists of either 100 percent crushed granite or 100 percent crushed oolitic limestone (FDOT 2008a). Granite does not exist naturally in Florida and oolitic limestone comes from the Miami Limestone Formation found at or near the surface of the southeastern tip of Florida. The only mines approved by FDOT to provide oolitic limestone are located in the Lake Belt or the Everglades Agricultural Area.

1.1.2 The Limestone Mining Process

Limestone mining is a multi-phase process. Vegetation and the organic layer of soil is removed from the surface of the land during the dry season, exposing the limestone below. In areas where wetlands are present, the vegetation and soil, also known as the “overburden,” are discharged into adjacent uplands or wetlands. Staging areas, work pads, and haul roads are located on the filled wetlands or the exposed limestone. Where these are not sited, exposed limestone is then fractured by blasting for excavation. The limestone is removed using draglines and the excavation forms an open-water mining lake. The excavated limestone is temporarily windrowed on work pads along the shore of the created lake. The limestone is then transferred by trucks and conveyor belts to a rock processing facility. The rock processing facility crushes the limestone into various products or grades of aggregate. The products are then either delivered to cement mills on site or directly to the customer via rail or truck. Once the excavation of limestone is complete, the perimeters of the resulting lakes are converted to littoral shelves, which in the Lake Belt have been approximately 100 feet wide, and emergent wetland habitat by placing the stripped organic material onto the perimeter and allowing it to naturally recruit native species. The creation of the littoral shelves and wetlands is discussed further in Sections 5.2 and 5.3.

1.1.3 The History of Mining in the Lake Belt

Since the 1950s, limestone has been mined in an area in southeast Florida known as the “Lake Belt.” For the past two decades, the Lake Belt area has been the single largest source of construction-grade limestone products for the State of Florida, producing approximately 40 percent of total Statewide production. The Lake Belt has long been identified as a highly concentrated source of the hardest limestone among the aggregate-producing mines. The Lake Belt has been mined with the intention of meeting the public need for FDOT-certified aggregate material, and nearly all of the material from the Lake Belt meets FDOT specifications. Eighty-five percent of the material excavated from the Lake Belt is specifically sold as FDOT-certified aggregate. As a result of the long history of limestone mining in the Lake Belt area, major investments in facilities that process and transport limestone products have been made by the miners owning mines in the Lake Belt. These facilities include rock processing plants to process limestone prior to transportation and sale; limestone manufacturing facilities, including two cement mills built in the Lake Belt area so they could be adjacent to limestone feedstocks; and rail transportation infrastructure, including railway lines leading to quarries and railroad terminals built for loading aggregate onto large unit trains. In 1984, the Florida Legislature passed the Henderson Wetlands Protection Act, which expanded wetland regulatory jurisdiction for dredge and fill activities in Florida. The Henderson Wetlands Protection Act also recognized the economic importance of mining in the Lake Belt.

Historically, mines in the Lake Belt region have satisfied a public need for affordable, high-quality construction-grade aggregate. All together, eight of the Lake Belt mines are approved by the FDOT to provide 25 types of limestone products including road base, silica sand and 23 different aggregate products characterized by grade. The ninth mine is effectively mined out and no mining activities have occurred at the tenth mine since the mine was permitted in 2004. The FDOT-certified aggregate products from Lake Belt include the products included in Table 1–1.

Much of the aggregate produced in the Lake Belt is the appropriate size and quality for a specific purpose, like hot-mix asphalt or Portland® Cement concrete. Additionally, as gradations are size specifications only, rock may fall within multiple grade categories. For example, a C10-grade concrete rock can also meet the specifications of a C43 asphalt stone. Mines can control the aggregate size produced by changing the size of crushers used to break up the limestone. The grade of rock that each mine produces is chosen based on the market that the mine serves and the quality of the mine reserves. For more information on the characteristics of Lake Belt limestone, see Section 3.5.2, and for more detail on the significance of the Lake Belt materials and their uses, see Section 3.10.6.

**Table 1–1. Lake Belt Aggregate Products Certified by the
Florida Department of Transportation**

Product Code	Product Description	No. of Lake Belt Mines Producing this Product
<i>Coarse Aggregate</i>		
C06	#4	3
C08	#5	2
C10	#57	6
C11	#6	1
C12	#67	3
C16	#8	2
C17	#89	3
C31	Concrete Pipe Stone Grade #1	2
C41	S1A Coarse Asphalt Stone #1	2
C42	S1A Coarse Asphalt Stone #2	4
C43	S1A Coarse Asphalt Stone #3	1
C51	S1B Coarse Asphalt Stone #1	4
C52	S1B Coarse Asphalt Stone #2	3
C53	S1B Coarse Asphalt Stone #3	2
C54	S1B Coarse Asphalt Stone #4	2
C55	S1B Coarse Asphalt Stone #5	1
C56	S1B Coarse Asphalt Stone #6	1
C57	S1B Coarse Asphalt Stone #7	1
C58	S1B Coarse Asphalt Stone #8	1
<i>Fine Material</i>		
F03		5
F20		3
F21		2
F22		4
F23 screenings		2

1.1.4 The Market Demand for Aggregate from the Lake Belt

In FDOT's *Strategic Aggregates Study: Sources, Constraints, and Economic Value of Limestone and Sand in Florida*, it was reported that Florida's economy consumed 143 million tons of aggregate in 2006 (FDOT 2007a). Approximately 8 million tons of that came from domestic sources outside of the State, 5 million tons came from international sources, 10 million tons are recycled materials, and 120 million tons came from mines within Florida. Forty-five percent of the state's 120 million tons of aggregate came from the 10 mines in the Lake Belt. It is necessary to quantify the public demand for aggregate previously satisfied by mining within the Lake Belt in order to evaluate the mining proposed by the applicants and a reasonable range of alternatives. Limestone from the Lake Belt area has continually been provided to four major markets, all within Florida: the primary market (which falls within the larger geographic boundaries of FDOT Districts 4 and 6), the Orlando area (which falls within FDOT District 5), Southwest Florida (which falls within FDOT Districts 1 and 7), and, to a lesser extent, Jacksonville (which falls within FDOT District 2) (see Figure 1–1). The quantity of limestone sold for the last 9 years from the Lake Belt was calculated based on fees collected by the Florida Department of Revenue for mining from the Lake Belt and is shown in Table 1–2. These are conservative estimates that are slightly lower than values previously reported by FDOT (i.e., previous estimates put the 2006 demand for Lake Belt material at 55 million tons per year). Over the past 9 years, the average quantity of limestone and aggregate from Lake Belt has been approximately 44.7 and 38.0 million tons per year, respectively, which encompassed much of a multi-year housing boom in the Florida economy.

Table 1–2. Limestone Sold from the Lake Belt, 2000–2008

Year	Limestone (million tons per year)	Aggregate (million tons per year)
2000	47.7	40.5
2001	41.8	35.5
2002	43.5	37.0
2003	47.6	40.5
2004	50.1	42.6
2005	50.6	43.0
2006	53.6	45.6
2007	41.6	35.4
2008	26.0	22.1
Average	44.7	38.0

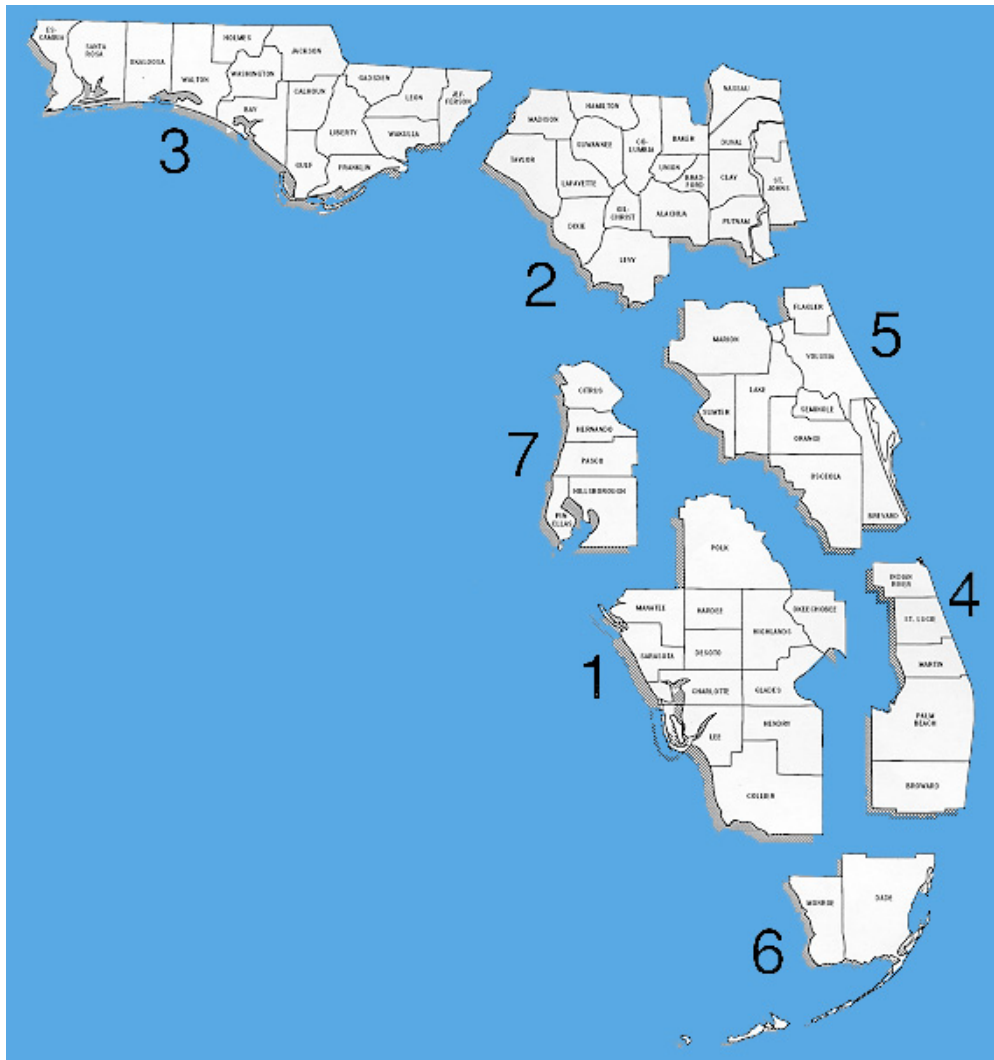


Figure 1–1. Florida Department of Transportation Districts

In 2006, the public need for limestone and aggregate that was met by mining in the Lake Belt was 53.6 and 45.6 million tons per year, respectively. In 2007 and 2008, after an economic downturn and a drop in the housing market, the public need for limestone and aggregate that was met by mining in the Lake Belt dropped to a low of 26.0 and 22.1 million tons per year, respectively. While currently in decline, continued construction of housing units, nonresidential building space, roads, and infrastructure will result in the continued demand and need for high-quality aggregate throughout Florida for the foreseeable

future. It is also expected that demand will increase as a result of economic stimulus actions that may be funded or undertaken by the Federal Government; however, as of the date of this SEIS, insufficient information was available to assess the effects, if any, of Federal stimulus funding in 2009 and beyond. The USACE has determined that the 2006 peak demand for aggregate and the 2008 low demand for aggregate can reasonably be expected to bracket the future public need for aggregate, but that neither value can reasonably be expected to represent the average future need. Therefore, the USACE has determined that it would be appropriate to use the average of the last 3 years as a basis for comparison of the public need for material that has been supplied by the Lake Belt. This 3-year period covers a year of strong demand for limestone, a year of low demand, and the transition year between. The 3-year average demand for limestone and aggregate is 40 and 34 millions tons per year, which is slightly lower than the 9-year average, moderately higher than the demand during the decline of the housing market, and effectively equivalent to the 2000 pre-housing boom upsurge in demand. While this value will be utilized as a gauge of public need, there is a public economic benefit of having multiple sources of aggregate competing for the same market, and the 34-million-ton quantity should not be considered a limiting value for potential mining.

1.2 PROJECT HISTORY

The USACE is examining the potential impacts of continued limestone mining activities within the Miami-Dade County Lake Belt area. The Lake Belt area was established per the *Northwest Dade County Freshwater Lake Belt Plan: Making a Whole, Not Just Holes* (Implementation Committee 1997) and accepted by the Florida Legislature in Title XXVIII of Florida Statutes (F.S.), Section 373.41492. The project involves a Federal action because the fill activities associated with limestone mining require authorization through a U.S. Department of the Army permit under Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1251 et seq.). The USACE Jacksonville District determined that the scope of the Miami-Dade County Lake Belt Implementation Plan (Lake Belt Plan) and cumulative impacts of limestone mining could significantly affect the quality of the human environment, and that the CWA Section 404 permits would collectively constitute a major Federal action. Based on these determinations, a programmatic environmental impact statement (PEIS), the *Final Programmatic Environmental Impact Statement, Rock Mining – Freshwater Lakebelt Plan, Miami-Dade County, Florida (Final Lakebelt PEIS)* (May 2000) (USACE 2000), was issued pursuant to (1) Section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.), (2) the Council on Environmental Quality guidelines on preparing environmental impact statements (EISs) (40 CFR 1502.4 et seq.), (3) USACE Engineering Regulation 200-2-2, “Environmental Quality: Policy and Procedures for Implementing NEPA,” (4) Section 404 of the CWA of 1972 on permitting disposal sites for dredged or fill material (33 U.S.C. 1344), as amended, and (5) “NEPA Implementing Procedures for the Regulatory Program” (33 CFR 325, Appendix B).

The *Final Lakebelt PEIS* evaluated environmental impacts associated with limestone mining activities that would be conducted throughout the Lake Belt region by 10 privately owned mining companies over about a 50-year period, which essentially would constitute full mine-out of the region. Based on evaluations in the *Final Lakebelt PEIS* and comments received throughout the development of the document, the USACE issued a Record of Decision (ROD) in April 2002 (referred to hereafter as “the April 2002 ROD”) (USACE 2002a), which stated USACE’s concurrence with a portion of the 50-year plan. At the time of the ROD, it was anticipated that the portion of the mining plan approved would take approximately 10 years to implement, and it was therefore referred to as the “10-year footprint.” The USACE issued permits at that time (April 2002) to 9 mining companies; a tenth permit was issued approximately 18 months later. These 10 permits are collectively referred to hereafter as “the 2002 USACE permits.” The 10-year footprint documented in the April 2002 ROD and authorized by the 2002 USACE permits allowed mining impacts on wetlands throughout the Lake Belt region on lands owned by the mining companies.

After the April 2002 ROD was issued, the Sierra Club, the Natural Resources Defense Council, and the National Parks Conservation Association (collectively “the Plaintiffs”) filed a complaint in the U.S. District Court for the Southern District of Florida (District Court) challenging the issuance of the 2002 USACE permits (*Sierra Club v. Flowers*, Case No. 02-23427-CIV-Hoeveler). The District Court ruled in favor of the Plaintiffs, holding, among other things, that the EIS had to be remanded to the USACE for further development. In response to the District Court’s opinion, the USACE began preparing an SEIS. The

District Court's decision was appealed to the U.S. Court of Appeals for the Eleventh Circuit, which issued an opinion on May 9, 2008, vacating the District Court's opinion and remanding the case to the District Court for further proceedings. Despite the vacatur of the District Court's opinion, the USACE continued preparing this SEIS as applications had been received for additional mining projects in Lake Belt beyond the 10-year footprint. On January 30, 2009, the District Court issued a new opinion in which it again ruled in favor of the Plaintiffs.

1.3 PROJECT LOCATION

The overall Lake Belt planning area is about 51,200 acres (80 square miles) of land that was originally wetlands. The existing and proposed mining projects are located in southeast Florida, in the northwest area of Miami-Dade County, Florida (see Figure 1–2). This area lies directly east of Water Conservation Area (WCA)-3B and the Everglades National Park (ENP) Expansion Lands. The area encompasses all of Township 52 south, Range 39 east, and Township 53 south, Range 39 east, and portions of Township 52 south, Range 40 east, and Township 54 south, Range 38 east. The area is generally bounded by Krome Avenue to the west, the Florida Turnpike to the east, the Miami-Dade–Broward County line to the north, and Kendall Drive to the south.

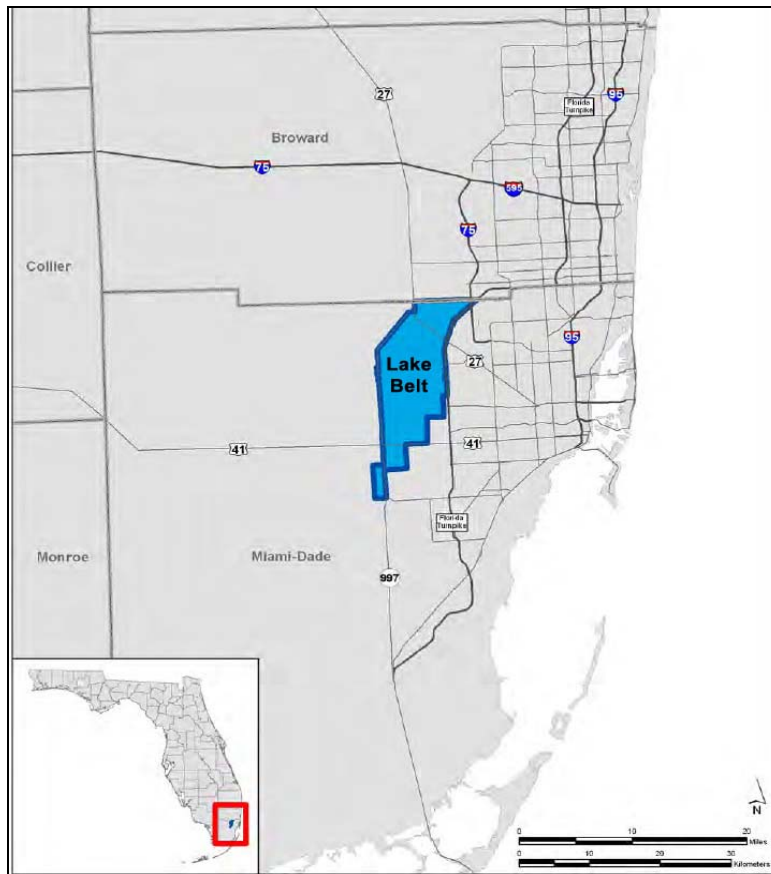


Figure 1–2. Lake Belt Area Location

The Lake Belt region is the subject of the Lake Belt Plan, which separated the Lake Belt into two areas: areas where rock mining would potentially be allowed (the Lake Belt mining area) and the Pennsuco Wetlands, a contiguous area that would be protected from mining and preserved, to the extent feasible, as natural lands. The current configuration of mined lakes is depicted in Figure 1–3.

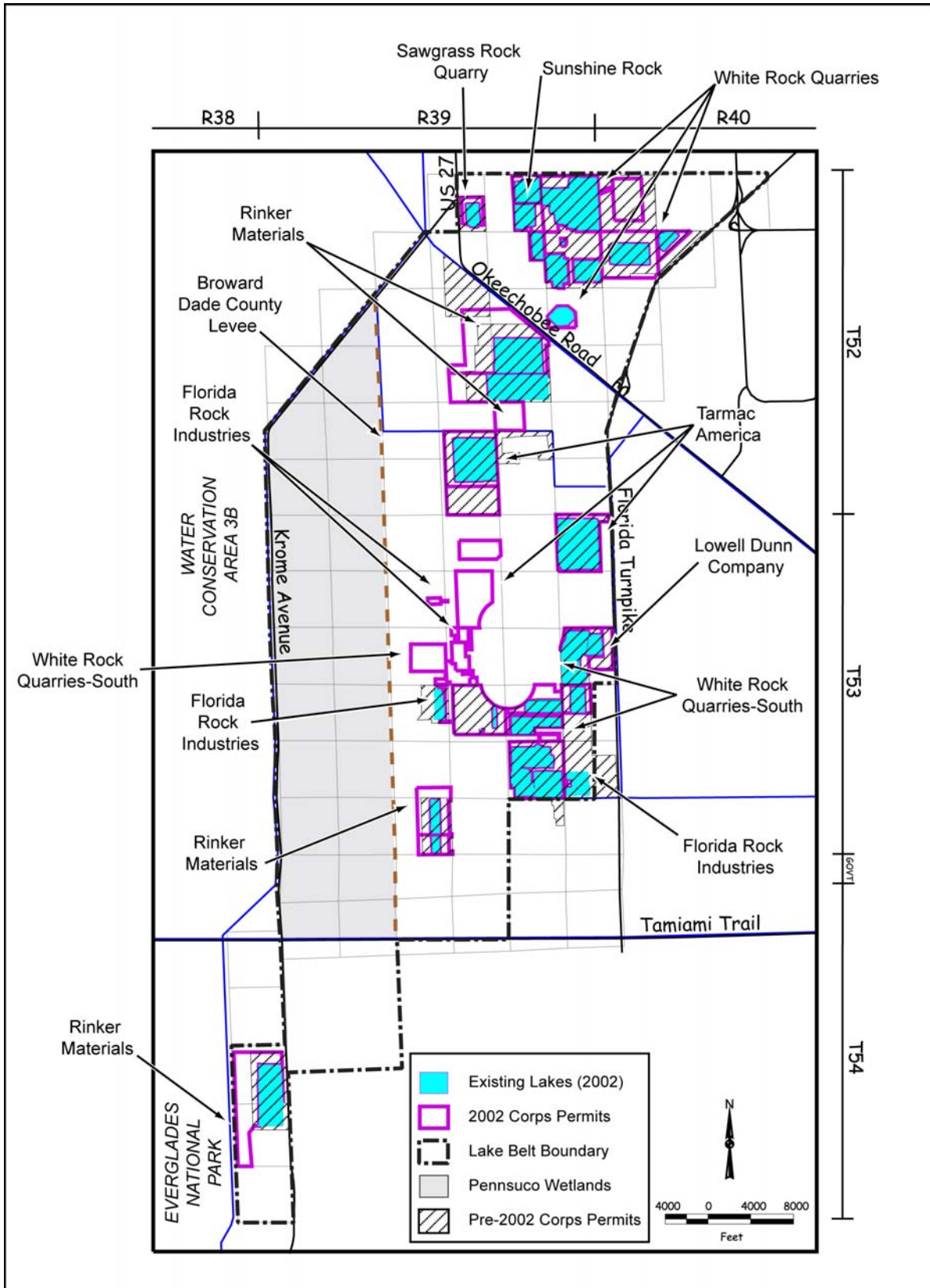


Figure 1-3. Lake Belt Outline

1.4 PROJECT PURPOSE AND NEED

Pursuant to Title 33 of the *Code of Federal Regulations*, Part 325, Appendix B, while the USACE generally focuses on the applicant's statement of purpose and need, the USACE exercises independent judgment in defining the purpose and need both from the applicant's and the public's perspective. In order to guide its evaluation of the proposed project, not only for purposes of NEPA and this SEIS, but also the USACE's evaluation of the associated applications for permits under Section 404 of the CWA pursuant to the Section 404(b)(1) guidelines (40 CFR 230) and the public interest review, the purpose and need is stated in terms of a basic project purpose and an overall project purpose. The overall project purpose, as defined by the USACE, forms the basis for the USACE's evaluation of reasonable alternatives under NEPA.

APPLICANTS' STATED OVERALL PROJECT PURPOSE

The following is the applicants' statement of the overall project purpose according to the applicants' submittal to the USACE, entitled *Information In Support of the Analysis of Practicable Alternatives Pursuant to 40 C.F.R. § 230.10 (Applicants' Alternatives Analysis)*:

To continue to excavate large quantities of affordable, high-quality construction-grade limestone from southeast Florida—preferably the Lake Belt area—that meets FDOT specifications.

The applicants' basis for its stated overall project purpose is provided in the *Applicants' Alternatives Analysis*. The applicants' statement considers the quality of the limestone in the Lake Belt, history of mining in the Lake Belt, and the established primary market demand for limestone products in southeast Florida. The applicants' statement also considers the investments that the mining companies and other companies have made based upon the historical supply and demand relationship between mines in the Lake Belt and consumers in southeast Florida. Finally, the applicants' statement relies upon legislative findings regarding mining in the Lake Belt by the State of Florida.

USACE DEFINITION OF THE OVERALL PROJECT PURPOSE

While the USACE finds that many of the requirements included in the applicants' statement of overall project purpose are legitimate, the USACE must also consider the purpose and need for the proposed project from the public's perspective. The USACE recognizes that there is a continuing public need for affordable, high-quality construction-grade aggregate that can be reasonably quantified by looking at historic demand, as discussed above in Section 1.1.4. Mines located in the Lake Belt have satisfied the public demand for aggregate in geographic markets, not just in southeast Florida, but in other parts of peninsular Florida as well. By limiting the project purpose to mining limestone from southeast Florida, the applicants' statement of overall project purpose unnecessarily precludes consideration of alternatives that could reasonably meet the projected public demand for limestone in markets within peninsular Florida as a whole. Therefore, the USACE has determined the overall project purpose to be as follows:

Basic project purpose and water dependency: The basic project purpose of a mine is to recover limestone, specifically aggregate material. This is not a water-dependent activity.

The overall project purpose is to provide affordable, high-quality construction-grade aggregate that satisfies the public need for such material within peninsular Florida, defined as geographically comprising FDOT Districts 1, 2, 4, 5, 6, and 7.

1.5 AGENCY GOAL OR OBJECTIVE FOR THIS SEIS

The objectives of this *Supplemental Environmental Impact Statement on Rock Mining in the Lake Belt Region of Miami-Dade County, Florida (Lake Belt SEIS)* are to

- evaluate the existing environmental and socioeconomic conditions and potential future impacts associated with the issuance of CWA permits associated with the excavation of limestone from the Lake Belt area, and
- describe and assess alternatives to the proposed mining and related activities in the Lake Belt area for which CWA authorization is sought.

1.6 RELATED ENVIRONMENTAL DOCUMENTS

A number of environmental plans, programs, and documents were evaluated for consideration of relevant issues in this *Lake Belt SEIS*. Based on the close proximity of the Lake Belt region to ENP, WCA-3A and -3B, and Comprehensive Everglades Restoration Plan (CERP) study areas, there are numerous studies available that address a wide range of environmental issues. The programs and reports listed below were reviewed for potential applicability to Lake Belt area environmental issues. These reports were utilized to varying degrees in performing the analyses presented in this SEIS. Some of the reports were integral to the technical aspects of this SEIS (e.g., identification of feasible mitigation projects), while some were relied upon more generally (e.g., to gain perspective as to the regional setting or possible future projects).

Final Programmatic Environmental Impact Statement, Rock Mining – Freshwater Lakebelt Plan, Miami-Dade County, Florida (2000)

The *Final Lakebelt PEIS*, issued in May 2000 by the USACE, is the NEPA document that this SEIS supplements (as described in Section 1.2). The *Final Lakebelt PEIS* evaluated the potential impacts of a full mine-out plan within the Lake Belt area that was anticipated to take 50 years to complete (a total of approximately 14,300 acres of wetlands to be mined). The *Final Lakebelt PEIS* had sections describing existing conditions (Chapter 3) and evaluating impacts (Chapter 4) on a broad list of public interest factors. The document also had appendices providing more detailed information on listed species, hydrology, water quality, vegetation and soils, wildlife, alternative sources of construction materials, land use, socioeconomics, coastal zone management, and compliance with Section 404 guidelines.

This *Lake Belt SEIS* relies upon the source materials in the *Final Lakebelt PEIS* as appropriate, while significantly expanding upon the analysis provided in that document, as broadly summarized in Section 1.2. Additionally, the information available in the *Final Lakebelt PEIS* was evaluated for its current relevance, given the amount of time that has lapsed since it was prepared and finalized. For example, the *Final Lakebelt PEIS* was published in 2000 and presented cover-type maps that were based on aerial photographs collected from 1992 through 1994, rendering the source data 13 to 15 years old; this SEIS evaluates the validity of that information and adds new analyses for an up-to-date evaluation.

In summary, this SEIS relies upon the information in the PEIS where appropriate, expands upon it where necessary, and replaces it with a new and different approach and/or datasets where necessary.

Lake Belt Annual Reports (Annually, 2002 through 2008)

These annual reports are required pursuant to Special Conditions on the 2002 USACE permits, and are prepared by MacVicar, Federico & Lamb Inc., on behalf of the Miami-Dade Limestone Products Association (MDLPA). The first report was provided for the first year of the permits, 2002, and they have been prepared annually to date. There is a 1-year lag time in report submittal because they are prepared with aerial photographs for a year, which are not available for nearly 1 year; the report summarizing a particular year's mining and mitigation activities would be available a year following the end of the year of interest (for example, the report describing activities conducted from April 2004 to February 2005 was available in January 2006). The reports describe changes in mining, wetland reclamation, and littoral

area acreages that have occurred since the previous report. In addition, the reports summarize the amount of mitigation fees remitted to the Florida Department of Revenue, the amount of mitigation acreage funded through the interagency Lake Belt Mitigation Committee (LBMC), the ecological balance between the wetlands impacts and wetlands mitigation, and data related to the Northwest Wellfield (NWWF) monitoring program.

Three-Year Review of Lake Belt Mining Permits (2006 and 2008)

The April 2002 ROD and the permits that were issued upon completion of the ROD (the 2002 USACE permits) required a review of the permits every 3 years for the 10-year duration of the permits. The purpose of the 3-year review was to provide an opportunity for the USACE, in conjunction with other Federal agencies, to evaluate (1) new information pertaining to impacts, (2) cumulative impacts or any other environmental issue of concern pertaining to the permitted activities, and (3) any issues pertaining to implementation of the work authorized by the permits. The first 3-year review was delayed by the USACE in an attempt to incorporate the results of the Miami-Dade County wellfield study; when that study was not completed, the USACE issued the first review on April 19, 2006. The second review was released in September of 2008. The 3-year review process includes evaluation of the permitted activities for impacts on wellfield protection, seepage management, water quality, wetlands mitigation, and wildlife habitat. The evaluation is based upon currently available information, including the results of environmental monitoring, compliance records, and comments provided by the U.S. Environmental Protection Agency (EPA) and the U.S. Fish and Wildlife Service (FWS).

Biological Assessment, 2002 Lakebelt 10-Year Mining Permits, Miami-Dade County (2006)

This Biological Assessment was prepared by the USACE in August 2006 and provided to the FWS for use in preparing its Biological Opinion related to the 2002 USACE permits. The USACE evaluated the impacts that the permits may have on listed species, specifically the wood stork, Eastern indigo snake, Everglade snail kite, and Cape Sable seaside sparrow.

Fish and Wildlife Service's Biological Opinion for the Continued Mining of Limerock Within the Lake Belt Mining Region of Miami-Dade County and its Effects on the Endangered Wood Stork (2006)

This Biological Opinion, issued August 31, 2006, was developed by the FWS in accordance with Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), to evaluate the effect permitted-mining activities in the Lake Belt area could have on the wood stork and other federally listed species that may live in the region. The FWS concluded that although the endangered Cape Sable seaside sparrow, the endangered Everglade snail kite, and the threatened Eastern indigo snake may occasionally appear in habitats near the project area, mining in the Lake Belt area is not likely to adversely affect these species. After reviewing the status of the wood stork, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, the FWS concluded that mining activities authorized by the 2002 USACE permits are not likely to jeopardize the continued existence of the wood stork. Additionally, the Biological Opinion confirmed that no critical habitat has been designated for the wood stork and, thus, no critical habitat would be affected.

Miami-Dade County Lake Belt Plans – Phases I and II (1997 and 2000)

As discussed in the *Final Lakebelt PEIS*, the Florida Legislature established the Northwest Dade County Freshwater Lake Plan Implementation Committee (now referred to as the “Miami-Dade County Lake Belt Plan Implementation Committee”) in 1992 to develop the Lake Belt Plan. The goals of the Lake Belt Plan were to (1) enhance the water supply for Miami-Dade County and the Everglades, (2) maximize efficient recovery of limestone while promoting the social and economic welfare of the community and protecting the environment, and (3) educate the public about the benefits of the plan. Formation of the committee and development of the Lake Belt Plan are State-sponsored activities that do not eliminate the need for the USACE to evaluate permit applications for Lake Belt area mining activities in accordance with NEPA and the applicable CWA regulations. However, the committee conducted a substantial amount of planning and interagency coordination that are documented in both phases of the plan.

The Phase I Lake Belt Plan was completed in 1997. It provides background information and presents technical information developed by the committee (e.g., biological data, modeling results). It also presents the committee's recommendations, which include designation of areas suitable for mining and mitigation (i.e., Pennsuco Wetlands); identification of areas where additional analyses are necessary; and a proposal to levy a fee on mining to pay for mitigation (a recommendation that was subsequently adopted by the Florida Legislature). This information lays the foundation for evaluation of the impacts being assessed in this *Lake Belt SEIS* and is reflected in the mining alternatives developed by the MDLPA, which are based on the regional planning framework documented in the Phase I Lake Belt Plan.

In 1999, the Legislature laid out a number of mandates to be addressed in the Phase II Lake Belt Plan, which was completed in December 2000. Among these were wellfield protection, water management, mining interests, non-mining interests, environmental enhancements, recreation, and land ownership. The Phase II Lake Belt Plan includes action items that need to be accomplished to ensure each of these issues is comprehensively addressed. Also included in the Phase II Lake Belt Plan is the Implementation Committee's "2050 Vision for the Lake Belt."

Miami-Dade County Lake Belt Mitigation Plan; Mitigation for Mining Activities Within the Miami-Dade County Lake Belt (1999)

The Miami-Dade County Lake Belt Mitigation Plan (Mitigation Plan) was enacted in 1999 by Title XXVIII of F.S., Section 373.41492(9)(a). The main outcome of the Mitigation Plan was establishment of a per-ton fee to be collected on all limestone and sand sold from the Lake Belt area and establishment of the LBMC, created to fulfill a new requirement to prepare annual mitigation reports. The funds collected pursuant to this plan are used for mitigation to compensate for unavoidable impacts from the mining activities. The plan states, "Such mitigation may include the purchase, enhancement, restoration, and management of wetlands and uplands, the purchase of mitigation credit from a permitted mitigation bank, and any structural modifications to the existing drainage system to enhance the hydrology of the Miami-Dade County Lake Belt Area." In addition to the per-ton mitigation fee collected to fund mitigation activities, Title XXVIII of F.S., Section 373.41492(9)(a), amended in 2006, also provides for collection of a water treatment plant upgrade fee designed to fund improvements to the water treatment plants receiving water from the NWWF.

The LBMC includes a broad spectrum of members, with voting members from Federal (including USACE, EPA, and FWS representatives) and State agencies, and non-voting mining representatives from the MDLPA. The LBMC is responsible for overseeing all mining fee and mitigation program elements, including making decisions on how the funds are to be spent and tracking suitable mitigation projects. The annual reports document these decisions and are submitted to the governing board of the South Florida Water Management District (SFWMD). The annual reports published by the LBMC document the state of the Lake Belt Mitigation Trust Fund, collections, expenditures, and encumbrances to date, and the mitigation actions taken as a result of committee action. The most recent annual report, published in February 2008, addresses activities conducted in 2007. The mitigation options reviewed in Chapter 5 of this *Lake Belt SEIS* reflect the ongoing and independent evaluation of potentially suitable mitigation sites by the USACE. Specific mitigation approved for the Lake Belt must also pass a separate LBMC review and approval. General and specific information on mitigation contained in the Mitigation Plan and in the LBMC's annual reports were utilized in formulating Chapter 5 of this *Lake Belt SEIS*.

Multi-Species Recovery Plan for South Florida (1999)

The Multi-Species Recovery Plan for South Florida (Multi-Species Recovery Plan) was prepared to help fulfill the first and second major objectives of the South Florida Ecosystem Restoration Initiative—namely, to restore and maintain the biodiversity of native plants and animals in the upland, wetland, estuarine, and marine communities of the South Florida ecosystem and to recover threatened and endangered species in this ecosystem. Included are recovery plans for the wood stork, Eastern indigo snake, Cape Sable seaside sparrow, and other species of concern. The geographic scope of the *Multi-Species Recovery Plan* encompasses all of the counties in southern Florida and includes all of the Lake Belt area, as well as adjoining areas such as WCA-3B and ENP.

This *Lake Belt SEIS* considered information from the *Multi-Species Recovery Plan* in the evaluation of potential impacts on threatened and endangered species in Chapter 4 and mitigation options in Chapter 5. The information contained in the plan was integrated into the Biological Assessment (USACE 2006) and Biological Opinion (FWS 2006a) that were prepared for this SEIS, which reflect the most current information and conclusions regarding potential impacts of mining activities in the Lake Belt region on listed species.

Northwest Wellfield Watershed Protection Plan, Miami-Dade County, Florida (2000)

The NWWF, located within the Lake Belt area, is the largest drinking water wellfield in the State of Florida, supplying about 40 percent of the drinking water for Miami-Dade County. The NWWF Protection Plan establishes protection zone boundaries, limits the types of businesses that can be sited in the Lake Belt area, and lays out measures to prevent the introduction of waterborne contaminants into the groundwater around the wellheads. The plan seeks to maintain the NWWF as a groundwater supplier, rather than let it become a wellfield that supplies groundwater under the direct influence of surface water, as defined by EPA. The NWWF Protection Plan limits the siting of limestone mines within the protection zones and requires periodic sampling of water within the lakes and canals in the Lake Belt area to ensure that they are not transporting increased levels of contaminants into the Biscayne Aquifer.

Central and Southern Florida Project Comprehensive Review Study: Final Integrated Feasibility Report and Programmatic Environmental Impact Statement (1999)

The *Central and Southern Florida Project Comprehensive Review Study: Final Integrated Feasibility Report and Programmatic Environmental Impact Statement* recommended a comprehensive plan, also known as the CERP, to restore, protect, and preserve the ecosystem of central and southern Florida, as well as to provide for other water-related needs of the region, such as flood protection and water supply. The CERP contains more than 60 major components that involve creation of approximately 217,000 acres of reservoirs and wetland-based water treatment areas. These components will vastly increase storage and water supply for the natural system, as well as for urban and agricultural needs. Included in the CERP is the potential creation of large reservoirs within the Lake Belt area; the lakes created as a result of limestone mining would be used to store water for supplemental delivery to ENP and WCA-3 and to maintain the water level in the canals in and around the Lake Belt, thereby reducing the need for water deliveries from the WCAs and Lake Okeechobee. Another potential change would be the enhancement of the Dade-Broward Levee within the Lake Belt area to reduce seepage to the east from the Pennsuco Wetlands, to enhance hydroperiods in the Pennsuco Wetlands, and to enhance recharge to the NWWF.

Modified Water Deliveries to Everglades National Park, Tamiami Trail Modification, Limited Reevaluation Report and Environmental Assessment (2008)

The Tamiami Trail modifications portion of the Modified Water Deliveries Project will raise the operational water level constraint in the L-29 Canal from 7.5 feet to 8.5 feet and build a bridge approximately 1 mile long in the eastern segment of the roadway. The unbridged roadway will be reinforced to FDOT standards compatible with the increased stage constraint. The limited reevaluation report and environmental assessment are planning documents to address hydrologic targets and ecological responses that will result from modifications to the Tamiami Trail roadway. These targets will characterize restoration of the northeastern part of ENP.

Draft Environmental Assessment, Proposed Interim Operating Criteria for 8.5 Square Mile Area Project, Miami-Dade County, Florida (2008)

The proposed plan defines operating criteria for the S-357 and S-331 pump stations. The recommended plan will be to operate the S-357 pump station with a limitation on pumping capacity of 500 acre-feet per day and to allow operational flexibility for the S-331 pump station. The objective is to maintain the surface-water and groundwater levels between L-357W and L-31N (within the 8.5 Square Mile Area [SMA]) at the same levels expected prior to the implementation of Modified Water Deliveries Project components, while preserving hydroperiods near the 8.5 SMA. A portion of the project included

environmental restoration work within the 8.5 SMA. Mitigation actions within the 8.5 SMA have been proposed by the MDLPA to offset possible impacts resulting from Lake Belt mining. This mitigation is evaluated in Chapter 5 of this *Lake Belt SEIS*.

1.7 DECISIONS TO BE MADE

While this SEIS supplements the *Final Lakebelt PEIS*, neither document addresses a USACE program. Rather, both documents address potential regulatory action within a region. Therefore, despite the name given to the *Final Lakebelt PEIS*, both EISs are defined as regional—not programmatic. The information compiled in this SEIS will be used by the USACE to determine whether to issue, issue with modifications or conditions, or deny Section 404 CWA permits for the purpose of mining within the Lake Belt. Lake Belt area mining companies could impact approximately 14,800 acres of wetlands through filling, land clearing, and other activities associated with limestone mining operations if the full Lake Belt mining plan is implemented. The alternatives under consideration are discussed in detail in Chapter 2. These include the No Action Alternative (no further USACE permits), three mining alternatives that were provided by the MDLPA, and several alternatives that limit the extent of the incremental MDLPA alternatives for specified objectives.

1.8 PUBLIC INVOLVEMENT

One of the basic tenets of NEPA is that comprehensive information is made available to the public and agency officials before decisions are made and before actions are taken. In addition, NEPA gives all persons, organizations, and government agencies the right to comment on proposed Federal actions that are evaluated by an EIS. In order to provide the public with the comprehensive information they need to comment, the early identification of issues and potential impacts is critical to efficient, effective EIS preparation. To obtain public input for this SEIS and to ensure that the information provided in the SEIS was comprehensive, the USACE sought input both early in the process, as required by NEPA, and throughout the development of this document. The opportunities for public input available during the SEIS development and a brief discussion of comments received in response to each public comment opportunity are summarized below. A more comprehensive discussion of comments and responses is included in Appendix G.

Notice of Intent. Federal regulations require that as soon as is practicable after a decision is made to prepare an EIS or SEIS, the scoping process for the draft EIS or SEIS must be announced in a Notice of Intent (NOI). An NOI to prepare this SEIS was published in the *Federal Register* on October 4, 2006 (71 FR 192). The NOI was widely distributed and advised the public of the project background, the project purpose, the previous PEIS, alternatives that were under consideration in this SEIS, and major issues associated with the project. The NOI also advised the public of the scoping process and invited all parties to participate in that process by identifying any additional concerns, studies needed, alternatives, procedures, and other matters related to the scope of the SEIS.

Scoping. In Title 40 of the *Code of Federal Regulations*, Section 1501.7, NEPA requires "... an early and open process for determining the scope of issues to be addressed and for identifying significant issues related to the proposed action." This is known as the "scoping process," which must occur before an EIS is prepared. In order to ensure that everyone is heard and that there is open communication, the USACE holds a public scoping meeting. The USACE uses scoping to ensure that the EIS addresses the concerns of both the public and other governmental agencies. Section 1.8.1 of this chapter summarizes the scoping process and major comments received from the public during the scoping period.

Draft SEIS. Once the *Draft Lake Belt SEIS* was completed, regulations required that it be issued publicly to obtain the comments of (1) any Federal agency that has jurisdiction by law or special expertise with respect to any environmental impact involved or that is authorized to develop and enforce environmental standards; (2) appropriate State and local agencies; (3) American Indian Tribal Governments, when the effects may be on a reservation; and (4) the public, which consists of those persons or organizations who may be interested or affected (40 CFR 1503.1). Section 1.8.2 summarizes the public comment period process relating to the release of the *Draft Lake Belt SEIS* and the major comments raised by the public.

Seepage Mitigation Plan. After the draft SEIS was published and public comments had been received on the draft, the USACE received a proposed mitigation plan from the MDLPA, representing Lake Belt mining interests, to offset changes in groundwater flow attributed to limestone mining in the Lake Belt region. After an initial review of the plan, which consisted of three proposed plans, with a miner-preferred alternative, the USACE invited Federal agencies, American Indian Tribal Governments, State and local governments and agencies, and other interested private organizations and parties to review the three proposals included in the *Proposed Mitigation for Changes to Groundwater Flow Attributed to Limestone Mining in the Lake Belt* and to provide comment on the proposed plans to the USACE. Section 1.8.3 summarizes comments received on the seepage mitigation plan.

Public Notice for Clean Water Act Permit Applications. After receipt of applications for the mining companies' preferred alternative for mining, the USACE determined that the applications were complete (sufficient information had been received to provide notice to the public on the proposed project) and issued a public notice, as described in Title 33 of the *Code of Federal Regulations*, Section 325.3. Section 1.8.4 summarizes comments received from the public and interested parties on the permit requests related to further mining in the Lake Belt.

1.8.1 Scoping and Issues

On October 4, 2006, the USACE published a notice in the *Federal Register* (see Appendix A) announcing the agency's intention to prepare an SEIS containing additional analysis of the potential impacts of further rock mining within the Lake Belt area and inviting public participation in the scoping and evaluation process. The scoping period was October 4, 2006, through November 17, 2006. A public scoping meeting was held October 19, 2006, at the Miami-Dade Fire Rescue Headquarters in Doral, Florida. Comments received during the scoping period included oral comments provided at the scoping meeting and written comments provided to the USACE at the scoping meeting or after the meeting. In total, the USACE received comments from 11 interested parties and individuals during the scoping period. These included the FDOT, Miami-Dade County Department of Environmental Resources Management (DERM), ENP, the Sierra Club, Florida Transportation Builders Association, the South Florida Chapter of the Associated General Contractors of America, Floridians for Better Transportation, the Florida Concrete and Products Association, SelectBuild Construction, the MDLPA, and a private citizen.

The comments received during the scoping period separated by major issues are summarized as follows:

Purpose and Need: There is a continued need for limestone to support building needs throughout Florida.

Alternatives: Other alternatives besides that proposed by the mining industry need to be considered and evaluated. A series of alternatives were proposed for consideration with this comment.

Other supplies of limestone outside of the Lake Belt could be available and need to be considered to fill the demand for this material.

Wildlife: The SEIS should consider all of the issues raised in the lawsuit filed as a result of the original PEIS issued on this proposal, including the effect of proposed mining on endangered species in the area.

Seepage: The SEIS should consider all of the issues raised in the lawsuit filed as a result of the original PEIS issued on this proposal, including seepage concerns that could increase the amount of water flowing out of the Everglades.

Water Quality: The SEIS should consider all of the issues raised in the lawsuit filed as a result of the original PEIS issued on this proposal, including the effect of proposed mining on the Biscayne Aquifer and drinking water in Miami-Dade County.

Socioeconomics: The economic impact on Miami-Dade County and the State of Florida from a stoppage of mining in the Lake Belt needs to be evaluated.

Mitigation Plan: Mitigation options beyond those presented in the Pennsuco Wetlands need to be developed.

After fully considering the comments submitted to the USACE during the scoping period, the USACE determined the scope and significant issues to be addressed in this SEIS. On this basis, the USACE prepared the *Draft Lake Belt SEIS* and made it available for public comment in August 2007.

1.8.2 Public Comments on the *Draft Lake Belt SEIS*

A Notice of Availability for the *Draft Lake Belt SEIS* was issued in August 2007 (72 FR 48636; see Appendix A). The formal public comment period began August 17, 2007, and ended October 22, 2007. During this comment period, a public meeting was held on September 18, 2007, in Doral, Florida, near the Lake Belt. Over 200 people attended the public meeting; see Appendix G for the transcript of that meeting. In addition, Federal agencies, State and local governmental entities, American Indian Tribal Governments, and the general public were encouraged to submit comments via U.S. mail, e-mail, or the Lake Belt website (www.lakebeltseis.com).

Nearly 300 comments were received on the *Draft Lake Belt SEIS*. Comments were received from (1) Federal agencies, including EPA and the U.S. Department of the Interior; (2) State government offices, including FDOT, the Florida Department of Environmental Protection (FDEP), and the SFWMD; (3) local government offices, including Miami-Dade County and the Miami-Dade Expressway Authority; (4) the Miccosukee Tribe of Indians of Florida; (5) non-governmental organizations, including the Sierra Club, National Parks Conservation Association, Natural Resources Defense Council, Engineering Contractors' Association, Florida Transportation Builders' Association, Floridians for Better Transportation, Florida Chamber of Commerce, Florida Wildlife Federation, Latin Builders Association, MDLPA, Clean Water Action, Nathan Ratner Testamentary Trust and Nathan Ratner Charitable Foundation, Miami-Dade County Public School Truck and Bus Heavy Equipment Diesel Mechanics Craft Advisory Committee, and Associated General Contractors of America; (6) private companies, including the General Asphalt Company, Community Asphalt Corporation, Austin Tupler Trucking, Allied Trucking of Florida, Tarmac America, Medley Block Industries and Universal Concrete, Williams Paving Company, Condotte America, National Trucking and Allstar Enterprises, Weekley Asphalt Paving, Kelly Tractor, Community Reinvestment Agency, Inc., Florida East Coast Railway, Tri-County Concrete Products, U.S. Concrete Pipe and U.S. Concrete Products, and CSX Corporation; and (7) numerous private individuals. The USACE considered all comments in evaluating the accuracy and adequacy of the draft SEIS to determine whether its text needed to be corrected, clarified, or otherwise revised. The content of all comments was examined and summarized into major comment categories, and responses were developed for each of these categories, as appropriate. This summary is provided as Appendix G of this SEIS along with copies of the comments received.

Several topics raised by public comments on the *Draft Lake Belt SEIS* are of broad interest or concern. The following discussion presents a summary of these comments separated by major issues. These issues are addressed throughout the SEIS and are responded to in the "Comment/Response Document," Appendix G.

Purpose and Need: A number of commentors expressed general opposition to continued mining in the Lake Belt area due to the potential harmful environmental impacts mining could have on various environmental resources, including the wood stork and the quantity and quality of drinking water in Miami-Dade County and water flowing into the Everglades.

A number of commentors expressed general support for continued mining in the Lake Belt area, citing economic benefits associated with this mining and the quality of the rock produced in the Lake Belt; these commentors suggested that the potential environmental impacts were not significant enough to warrant a suspension of mining or denial of future permit applications for continued mining in the Lake Belt.

A commentor expressed concern that the purpose and need was unduly restricted due to the inclusion of the words "from the Lake Belt area" at the end of the sentence, "The project purpose is to continue to

provide high-quality construction-grade limestone to the construction industry in Florida from the Lake Belt area.” (See Section 1.4)

Alternatives: Commentors expressed concern that the alternatives included in the *Draft Lake Belt SEIS* with the exception of the No Action Alternative (Alternative 1) focused on expanding mining in the Lake Belt rather than reducing mining in the Lake Belt below levels currently permitted.

Commentors expressed concern that non-Lake Belt alternatives were not included in the *Draft Lake Belt SEIS* and that materials could be provided from a variety of sources, including other Florida mines and Alabama, Georgia, and offshore locations.

Wildlife: Commentors expressed concern that the SEIS relied on the Biological Opinion for wildlife impact evaluation and that the analysis presented in the Biological Opinion was only applicable to the current permits and could not be extrapolated to cover impacts over the entire Lake Belt. Concerns were also expressed that the wood stork suitability factors included in the Biological Opinion and used in the SEIS were not applicable to wading birds and were therefore not applicable to the wood stork analysis presented in the SEIS.

Commentors expressed concern that changes in hydroperiods as a result of seepage due to mining activities in the Lake Belt could harm the endangered Cape Sable seaside sparrow and thus result in the need for formal consultations with the FWS under the Endangered Species Act.

Seepage: The SEIS should acknowledge that seepage impacts need to be offset and should designate who would be responsible for implementing actions to offset these impacts. Commentors expressed concern that the seepage impact evaluation included in the SEIS did not discuss in enough detail the possible mitigation options that could be taken to offset potential seepage impacts or potential difficulties associated with implementing some of these options (e.g., higher canal stages).

Commentors expressed concern that the seepage impact evaluation included in the SEIS did not adequately consider the potential loss of water from WCA-3B and ENP under the various alternatives and did not take into account the changes in the policies of the SFWMD with regard to consumptive use and the future availability of additional water from the regional system.

Water Quality: Commentors expressed concern that the monitoring efforts required at the Lake Belt are insufficient to detect the presence of pathogens such as *Cryptosporidium* or *Giardia* or contaminants such as benzene, and that additional monitoring is needed to ensure that a safe source of drinking water continues to be provided within the Lake Belt. In addition, commentors requested that mining activities in the vicinity of the NWWF be restricted or limited and that additional mitigation activities be required to protect the NWWF.

Groundwater Travel Time: Commentors expressed concern that the alternatives included in the *Draft Lake Belt SEIS* proposed mining within an area considered to be within 60 days’ travel time for groundwater to flow to the pumps in the NWWF, thus increasing the potential for pathogens to reach the pumps before they could be naturally filtered or die off.

Socioeconomics: Some commentors expressed concern that the socioeconomic impact evaluation was inadequate, utilized an improper modeling instrument, relied too heavily on materials favorable to the rock mining industry, and did not adequately predict potential economic changes related to the different alternatives included in the SEIS.

Mitigation Plan: Commentors expressed concern that the wetlands mitigation options included in the *Draft Lake Belt SEIS* were not discussed in enough detail to allow a decision to be made.

Commentors expressed concern that the *Draft Lake Belt SEIS* allowed habitat unit credits for the portion of the deepwater lakes that extends from the proposed littoral shelves out to 200 feet into the deepwater lakes (referred to as “lakes nearshore” in the draft SEIS). These credits were then used to partially offset the loss of habitat units due to mining activities.

Commentors expressed concern that the wetlands impact evaluation included in the draft SEIS did not adequately consider the decreasing prevalence of invasive species such as melaleuca in the Lake Belt due to the success of biological or other controls that have been used in the area and that, if the decreasing prevalence of these invasive species were considered, the number of lost habitat units related to mining activities would be greater.

Comprehensive Everglades Restoration Plan: Commentors expressed concern that the relationship of proposed mining activities with respect to planned CERP activities has not been adequately evaluated or discussed in the SEIS.

Other: A commentor requested that an analysis of the potential impacts of implementing any of the alternatives with regard to greenhouse gas emissions be presented in the SEIS and specifically called for an analysis of the emissions connected with the operation of cement kilns.

1.8.3 Applicants' Proposed Seepage Mitigation Plan Received by the USACE

On August 1, 2008, the applicants submitted a proposed mitigation plan for seepage attributed to limestone mining in the Lake Belt (see Appendix H). The USACE released this plan for public comment by publishing a public notice in early August 2008 and requesting public comments by September 4, 2008. The following discussion presents a summary of the major issues raised by commentors regarding the applicants' plan and the USACE's responses. Commentors included the USGS, FDEP, the Miami-Dade Water and Sewer Department, DERM, and the Natural Resources Defense Council. The following discussion presents a summary of these comments separated by major issues. These issues are addressed throughout the SEIS and are responded to in the "Comment/Response Document," Appendix G of this SEIS.

Incorrect Baseline Being Used to Evaluate Seepage: A comment was received that stated an incorrect baseline of 2006 has been utilized in the proposed mitigation plan.

The Proposed Seepage Mitigation Plan Does Nothing to Address Losses from the L-31N Canal and ENP: The model indicates a seepage loss of over 20 percent based on the preferred mining option from the L-31N Canal to the east, yet the proposed plans do not do anything to lessen these losses.

The Model Used to Evaluate the Various Proposed Seepage Mitigation Plans is Inadequate: A number of comments were received that questioned the ability of the Lake Belt Groundwater Flow Model to accurately assess the effectiveness of the proposed mitigation plans. Questions were raised regarding the model's ability to handle the conditions that exist in the Lake Belt, as reported in recent USGS papers.

A Schedule for Implementing the Proposed Plan Needs to be Set: Comments were received that none of the alternatives set forth in the mitigation plan contain a schedule for implementation. An implementation schedule that is linked to the schedule of impacts should be added to each of the alternatives.

The Proposed Dade-Broward Levee Recharge Canal Would Result in a Long-Term Operation and Maintenance Concern: Proposed Mitigation Plan 3 (i.e., the Dade-Broward Levee Recharge Canal) would necessitate perpetual pumping in order to avoid adverse hydrologic impacts to the Pennsuco Wetlands at any future date. This usage of freshwater would also have to compete with other emergency demands for water during drought conditions. In principle, commentors expressed concern about any seepage mitigation plan that would require active intervention by a governmental entity in perpetuity with associated pumping costs. The proposal did not identify the management entity (Federal, State, or County) that would be responsible for perpetual maintenance and operation of the pump station and associated control structures. An additional concern is that the slow infiltration rate from the recharge canal will eventually become restricted by the accumulation of silt or organic matter. This will require periodic cleaning and maintenance and the associated costs.

Water Quality Concerns: What approach is planned to address short- and longer-term water quality change issues associated with the change in land use as wetlands are transformed into borrow pits/lakes?

Opposition to the Use of Seepage Barriers: Although the seepage barrier options were not selected as the preferred options, please note that Miami-Dade County opposes any barrier that restricts water supply to the wellfields.

Effect of Proposed Dade-Broward Levee Recharge Canal on Regional Water: It is not clear how this option would prevent seepage out of the regional system since regional water would be pumped into the proposed recharge canal. A clearer analysis of the water budget with this proposed option would be beneficial.

The Model Needs to be Updated for CERP Projects: The model may need to be revised to account for CERP projects that will affect the area hydrology. There are several CERP, Combined Structural and Operating Plan, and Modified Water Delivery projects that will have a significant impact on seepage rates in the area once they are completed; these impacts should be evaluated in conjunction with the mining alternatives.

Seepage Modeling Needs to Include Proposed Mines Below the Krome Avenue Mine: The updated seepage modeling should also be expanded to include the current and proposed quarries that are located along Krome Avenue south of the Tamiami Trail, as well as reflect any seepage effects from the nearby West Wellfield. In addition to the mine operated by Kendall Properties and Investments, there is a mine operated by Krome Mining Partners. An application for a new mine to be located adjacent to Krome Mining Partners is currently under review. The seepage effects from all the mines should be looked at holistically, even if two locations are situated south of the statutorily-defined limits of the Miami-Dade Lake Belt region.

Modeling Shows that the Pennsuco Wetlands Would Continue to be Adversely Impacted by Seepage: The model results for all proposed mitigation alternatives, with exception of the flow barrier, show that the proposed alternatives would not achieve the baseline 2006 hydroperiods and would result in further draining of the Pennsuco Wetlands.

How Would Higher Water Levels in the Pennsuco Wetlands be Dealt With: The plan does not explain how to deal with potentially higher water levels in the private lands in the Pennsuco Wetlands as a result of proposed Mitigation Plan 3 (i.e., the Dade-Broward Levee Recharge Canal).

1.8.4 Public Comments on the Additional Mining Applications Received by the USACE

During October 2007, the applicants submitted nine additional permit applications that, taken together, are equivalent to Alternative 3 as included in the SEIS (see Section 2.2.3.1.3). The USACE released these applications for public comment on February 5, 2008, by issuing public notices requesting public comments within 30 days of the publication date. These comments must be separated into two categories. First, there are comments that overlap or relate to performing an adequate evaluation of the proposed project's impacts under NEPA, which will be presented and responded to in this document. Second, there are comments that relate to the decisionmaking process that will occur after completion of this SEIS. These comments relate to the USACE's decision on the applicants' preferred alternative, which will be addressed in the ROD. The following discussion presents a summary of the major issues raised by commentors regarding these NEPA-related issues. These issues are addressed throughout the SEIS, where appropriate, and responses to them will be finalized in the USACE ROD.

Expansion of Mining Activities in the Lake Belt Would Remove Needed Buffers: The proposed expansion would remove the wildlife habitat and water quality buffers that are currently being provided for ENP and the NWWF.

Expansion of Mining Activities in the Lake Belt Would Increase Seepage: The proposed expansion would result in increased seepage of groundwater away from ENP, the L-30 and L-31N Canals, and the Pennsuco Wetlands.

Expansion of Mining Activities in the Lake Belt Would Increase Risk of Groundwater Contamination: The proposed expansion would increase the risk of contamination reaching the Biscayne Aquifer.

Applicants Have Not Transferred their Pennsuco Property to Public Ownership: The companies are requesting new permits for expanded mining without previously transferring their remaining land in the Pennsuco Wetlands to public ownership for mitigation purposes.

Uncertainties Remain with Regard to Proposed Mitigation Outside the Pennsuco Wetlands: Uncertainties exist regarding the availability, timing, and success of mitigation efforts outside the Pennsuco Wetlands that would be needed to offset the additional losses that could result from the proposed expansion of mining in the Lake Belt.

Absence of a Final EIS: The USACE should not have issued the public notices for mining applications without completing an adequate EIS.

Inadequate Public Notice: The mining applications fail to include sufficient information to give a clear understanding of the nature and magnitude of the activity to generate meaningful comment. The notice must include, at a minimum, a description of all proposed activities and all available information which may assist interested parties in evaluating the likely impact of the proposed activities.

Failure to Comply with the Endangered Species Act: The USACE's proposal to issue the mining applications violates its obligations under the Endangered Species Act and the FWS's implementing regulations.

1.9 CHANGES FROM THE DRAFT LAKE BELT SEIS

In preparing this *Final Lake Belt SEIS*, the USACE made revisions in response to comments received from other Federal agencies, State and local government entities, American Indian Tribal Governments, and the public. In addition, the SEIS was changed to provide additional environmental baseline information, modify the project purpose, include additional analyses, correct inaccuracies, make editorial corrections, and clarify text. The following sections summarize the most important changes made to the SEIS.

1.9.1 Revised Statement of Overall Purpose and Need

The draft SEIS described the project purpose and need as "to continue to provide high-quality construction-grade limestone to the construction industry in Florida from the Lake Belt area." Upon further review, including consideration of comments submitted following publication of the draft SEIS, the USACE has determined that the overall project purpose and need should be revised to reflect the public need within peninsular Florida for affordable, high-quality construction-grade aggregate, as described in Section 1.4 above.

1.9.2 Incorporation of Two New Alternatives

Alternative 8 (new Section 2.2.3.2.4) has been added to this *Final Lake Belt SEIS* to evaluate the impacts of excluding mining in a 1,500-foot-wide area running from north to south parallel to the Pennsuco Wetlands. This exclusion area would be improved through melaleuca eradication and maintained as a large area of additional wetlands within the Lake Belt. It would then be turned over to public ownership. Also, under Alternative 8, no additional mining would be allowed beyond that permitted under the 2002 USACE permits south of Tamiami Trail and adjacent to ENP.

Alternative 9 (new Section 2.2.3.2.5) has been added to this *Final Lake Belt SEIS* to evaluate the impacts of limited mining in a 1,000- to 1,500-foot-wide area running from north to south parallel to the Pennsuco Wetlands. This exclusion area would be improved through melaleuca eradication and maintained as a large area of additional wetlands within the Lake Belt. It would then be turned over to public ownership. Also, under Alternative 9, no additional mining would be allowed beyond that permitted under the 2002 USACE permits south of Tamiami Trail and adjacent to ENP.

1.9.3 Incorporation of Agricultural Cover Type as a Wetland Cover Type

Agricultural areas were not included in the category of potentially affected wetlands in the draft SEIS. The USACE has decided to include the agricultural cover type in the wetland category in the *Final Lake Belt SEIS* because of the potential for agricultural areas to include jurisdictional wetlands. By assuming that all agricultural lands are wetlands, the number of acres of wetlands that could be impacted by the various mining alternatives considered in the *Final Lake Belt SEIS* increases from 13,600 (in the *Draft Lake Belt SEIS*) to 14,800 acres.

1.9.4 Expansion of Wood Stork Analysis

The wood stork analysis presented in this *Final Lake Belt SEIS* has been expanded to include an analysis of the potential impacts using suitability factors specific to wading birds in addition to the all birds suitability factors used in the *Draft Lake Belt SEIS* evaluation. The suitability factors used in the *Draft Lake Belt SEIS* were the same as the suitability factors used in the August 2006 FWS Biological Opinion related to the Lake Belt. These suitability factors were developed using information related to all birds from O'Hare and Dalrymple's 1997 report, "Wildlife in Southern Everglades Invaded by Melaleuca (*Melaleuca quinquenervia*)" (O'Hare and Dalrymple 1997). Based on comments received on the *Draft Lake Belt SEIS*, this information was reexamined and a set of suitability factors was developed specific to wading birds, as discussed in Section 3.3.2 of this *Final Lake Belt SEIS*. Because the number of wading birds observed in this study was relatively low compared with all birds, this *Final Lake Belt SEIS* evaluates the potential impacts of mining on wood storks under the various alternatives, using both the all birds suitability factors and the wading birds suitability factors (see Section 4.3.3).

The definition of suitable wood stork foraging habitat has been expanded in this *Final Lake Belt SEIS* to include dense mature melaleuca and dense melaleuca saplings based on discussions with the FWS. These cover types have very low suitability factors but could potentially support wood stork foraging. As a result, the area of suitable wood stork foraging habitat within the Lake Belt shown in this *Final Lake Belt SEIS* is much higher than that shown in the *Draft Lake Belt SEIS* (approximately 35,000 acres for the baseline compared with approximately 20,000 acres as shown in Section 4.3.1).

Also based on discussions with the FWS, an analysis of potential wood stork impacts was developed specifically for short-hydroperiod wetlands within the Lake Belt. Short-hydroperiod wetlands are considered critical to the wood stork during the nesting season. This analysis is included in Appendix I, which was added to this *Final Lake Belt SEIS*.

1.9.5 Incorporation of Updated Environmental Data and Other Information

Information was updated in this *Final Lake Belt SEIS* to reflect the most recent environmental data and to respond to comments received on the *Draft Lake Belt SEIS*. Resource areas most affected include wildlife (Section 4.3), hydrology (Section 4.6), water quality (Section 4.7), socioeconomics (Section 4.10), cumulative impacts (Section 4.16), mitigation of seepage impacts (Section 5.3), and mitigation of endangered species impacts (Section 5.4). Other new information incorporated into the *Final Lake Belt SEIS* analyses includes an assessment of the potential impacts of the alternatives on greenhouse gas emissions, which has been added to the air quality analysis presented in Sections 3.8 and 4.8. Section 5.6 was added to discuss possible permit requirements that could be added to future mining permits, if any are issued, to allow for additional water monitoring or to require mitigation actions that may need to be taken in conjunction with such permits. Appendix C was revised to more clearly indicate the purpose and use of the Lake Belt Groundwater Flow Model and to incorporate changes in the model, such as reducing the planned pumpage rate for the NWWF to 97 million gallons per day (MGD) from

155 MGD, based on Miami-Dade County's revised permit for operation of the NWWF over the next 20 years and the decision by the applicants not to propose mining Section 13 south of Tamiami Trail. Other changes have been made to the model to improve its applicability to analyzing the effect of mining activities in the Lake Belt on groundwater flow, as discussed in Appendix C. Changes in the text of this *Final Lake Belt SEIS* are sidebarred to highlight significant alterations compared with the *Draft Lake Belt SEIS*.

1.9.6 Addition of Appendix G, "Comment/Response Document"

Appendix G, the "Comment/Response Document," has been added to this SEIS. Section G.1 presents public comments on the *Draft Lake Belt SEIS* and USACE responses. Section G.2 presents the USACE responses to comments received on the applicants' seepage mitigation plan (see Appendix H).

1.9.7 Addition of Appendix H, "Applicants' Seepage Mitigation Plan"

Appendix H, the "Applicants' Seepage Mitigation Plan," has been added to this SEIS. This plan details a number of different options for addressing seepage concerns related to the various mining alternatives considered in this SEIS. The USACE released this plan to the public for comment. A number of comments were received and responses to these comments have been included in the "Comment/Response Document" (see Appendix G). The USACE analysis of this plan is included in the revised Section 5.3.3.

1.9.8 Addition of Appendix I, "Potential Wood Stork Impacts Related to Changes in Short-Hydroperiod Wetlands Within the Lake Belt"

As discussed above, based on discussions with the FWS, the USACE has analyzed the potential impacts of the various mining alternatives on short-hydroperiod wetlands within the Lake Belt. These wetlands are particularly important to wood storks during the nesting season. This analysis was done using both all birds and wading birds suitability factors.

1.9.9 Addition of Appendix J, "Relevant Sections of the Code of Miami-Dade County, Florida With Respect to Protection of the Northwest Wellfield"

As requested by Miami-Dade County in their comments on the *Draft Lake Belt SEIS*, relevant sections of the Code of Miami-Dade County with respect to protection of the NWWF has been added as Appendix J.

1.10 PERMITS, LICENSES, AND ENTITLEMENTS

Table 1–3 lists the environmental permits (e.g., mining, air), previously issued by the USACE, FDEP, and DERM, that relate to mining activities in the Lake Belt area. These permits involve work that is considered part of Alternative 2, as discussed in Section 2.2.3.1.2.

Table 1–3. Permits Issued for Limestone Mining in the Lake Belt Area

Company	2002 USACE ^a	FDEP	DERM	Notes
Vecellio & Grogan, Inc.	SAJ-2000-2284	175273	FW87-105 FW87-105A FW89-105 FW92-139 FW94-048 FW95-003	Operates White Rock Quarries
Sunshine Rock, Inc.	SAJ-2000-2285	175226	CC-895	
Sawgrass Rock Quarry, Inc.	SAJ-2000-2286	175268	CC-878	
Tarmac of America, Inc.	SAJ-2000-2287	175263	FW87-036	
Vecellio & Grogan, Inc.	SAJ-2000-2346	175257	FW90-11 FW00-119	White Rock Quarries – South
Lowell Dunn Company	SAJ-2000-2348			
APAC-Southeast, Inc.	SAJ-2000-2366	175232	CC-516 FW01-022	Formerly Pan American Construction; operated by Vecellio & Grogan, Inc. (White Rock Quarries – South)
Florida Rock Industries, Inc.	SAJ-2000-2367	175235	FW96-057(Sec22) FW88-138(Sec26)	
Kendall Properties and Investments	SAJ-2000-2369	175262	FW97-112	Operated by CEMEX Construction Materials Florida, LLC
CEMEX Construction Materials Florida, LLC	SAJ-2000-2373	FEC:0175244 SCL:0175252	FEC:FW89-107 (Sec23S) FW93-075 (Sec23N) FW97-022 (Sec14&15S) FW94-138 (Sec22) SCL:FW92-052	

^a These permits were issued April 11, 2002, and were subsequently set aside.

Key: DERM=Miami-Dade County Department of Environmental Resources Management; FDEP=Florida Department of Environmental Protection; USACE=U.S. Army Corps of Engineers.