

SECTION 4

FUTURE WITHOUT PROJECT CONDITION

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SECTION 4 FUTURE “WITHOUT PLAN” CONDITION

4.1 “WITHOUT PLAN” DESCRIPTION

This section describes the most likely status of year 2060 conditions in the Southern Golden Gates Estates (SGGE) Study Area if no Federal action is taken to solve the problem at hand. For the SGGE project, the date for both “future with” and “future without” project conditions is administratively fixed at the year 2060. The *U.S. Water Resources Council's Principles and Guidelines*, the *National Environmental Policy Act of 1969* (NEPA), and the *Corps of Engineers regulation ER 1105-2-100* all require formulation of a “without plan” condition. This condition is vitally important to the evaluation and comparison of alternative plans and to identifying the impacts (both beneficial and adverse) attributable to proposed federal actions. The “without plan” condition is the same as a “no action” condition.

The “without plan” differs from the existing conditions in that it represents a forecast into the future rather than what is current. For CERP projects, “existing conditions” are defined as the landscape present as of December 2000. Existing conditions are described in Section 3 of this document.

During plan formulation and alternative evaluation found in Section 6 of this document, the future “without plan” conditions are compared to future “with plan” conditions for each alternative. The tentatively recommended alternative is described in Section 8. The environmental impacts and effects of the future “with plan” conditions of the tentatively recommended alternative can be found in Section 9 of this document.

4.1.1 “With-and-Without” Versus “Before-and-After”

Many people typically think about the effects of alternative plans in terms of “before and after”; that is, they compare the condition that exists now, before it is changed by a plan, to the condition they expect to exist in the future after it has been changed by an alternative plan. A with and without project analysis looks at the future conditions without the plan, instead of existing conditions, and compares against the future condition with the project in place. In other words, “with” and “after” project are the same. The difference exists in evaluation of the “without” and “before” conditions. See Figure 4-1 for a graphic explanation.

In the CERP program, of which this project is a part, “with project” conditions are evaluated as of the 2060 base year. Ecological benefits, impacts, and effects, such as change in vegetative habitats, will have had time to occur. Existing (before) conditions for SGGE are forecast to change radically between Dec 2000 and 2060 if no Federal project is implemented. In order to compare apples to apples, “with-and-without” project produces a valid evaluation, where “before-and-after” project would be a skewed assessment with little meaning.

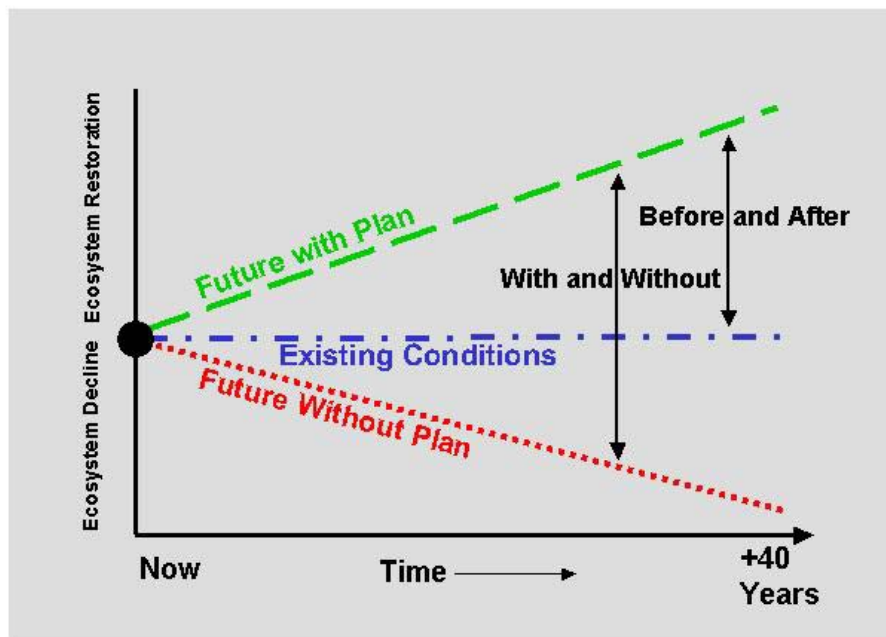


FIGURE 4 - 1 EXAMPLE: BEFORE (B) AND AFTER (A) VS. WITH (W) AND WITHOUT (WO)

4.1.2 Planning Horizon

The planning horizon encompasses the study period, the construction period, the economic analysis period, and the effective life of the project. The period of economic analysis, or the period of analysis, is the time period for forecasting future without-plan and with-plan conditions, and for considering the impacts of alternative plans. It is the period of time over which we think it is important to extend our analysis of plan impacts. This time period is frequently confused with the planning horizon, which is a longer and more encompassing concept.

The period of analysis for water resources projects is usually 50 years and never over 100 years. Forecasting conditions and impacts beyond 100 years is pure guessing, even if some structural projects may last more than 100 years. One of the most common measures of impacts has to do with the time value of money. Future dollar values, whether benefits or costs, are worth less than current dollar values. Discounting is the process used to place dollar values incurred at different times on an equivalent time basis. After 50 years, the discount factor alone reduces monetary values to a mere fraction of their former value. Unless the future dollar values being discounted are large, there is no apparent point to continue to include these values among project impacts.

For SGGE, the estimated completion of construction is 2010. Combining this with a 50-year period of analysis produces the year of 2060 for the future “without plan” condition.

4.2 GENERAL ENVIRONMENTAL SETTING

The Southern Golden Gate Estates (SGGE) Project Delivery Team (PDT) determined that the state of the SGGE Project Area without the authorization of the federal project would have been a Without Project situation where 60% of the land area is owned by the state and 40% is in private ownership. The 40% private ownership would be expected by 2060 to develop into a low-density residential pattern involving about 8,000 built out parcels. Distribution of state owned versus privately held parcels would be in a “checkerboard” configuration reflecting the historical acquisition pattern in the area (Figure 4-2). The decision to use the 60/40 split was based on an analysis of the history of land acquisition by the Florida Department of Environmental Protection (FDEP) from 1985 through the end of 1997. Acquisition of lands in the SGGE Project Area by FDEP began in 1985 when the State approved a plan to purchase these lands using Conservation and Recreation Lands (CARL) funds under the State’s “Save Our Everglades” program. The CARL program required the land to be purchased from willing sellers for not more than the appraised fair market value. If the private landowner was unwilling to sell to FDEP, then FDEP could not condemn the land without express approval from the Trustees of the State of Florida. Acquisition of the land in the SGGE Project Area was an incredible undertaking because it involved approximately 19,995 parcels spread across 55,247 acres. Between 1985 through the end of December 1997, FDEP had acquired approximately 17,183 acres from 8,543 landowners.

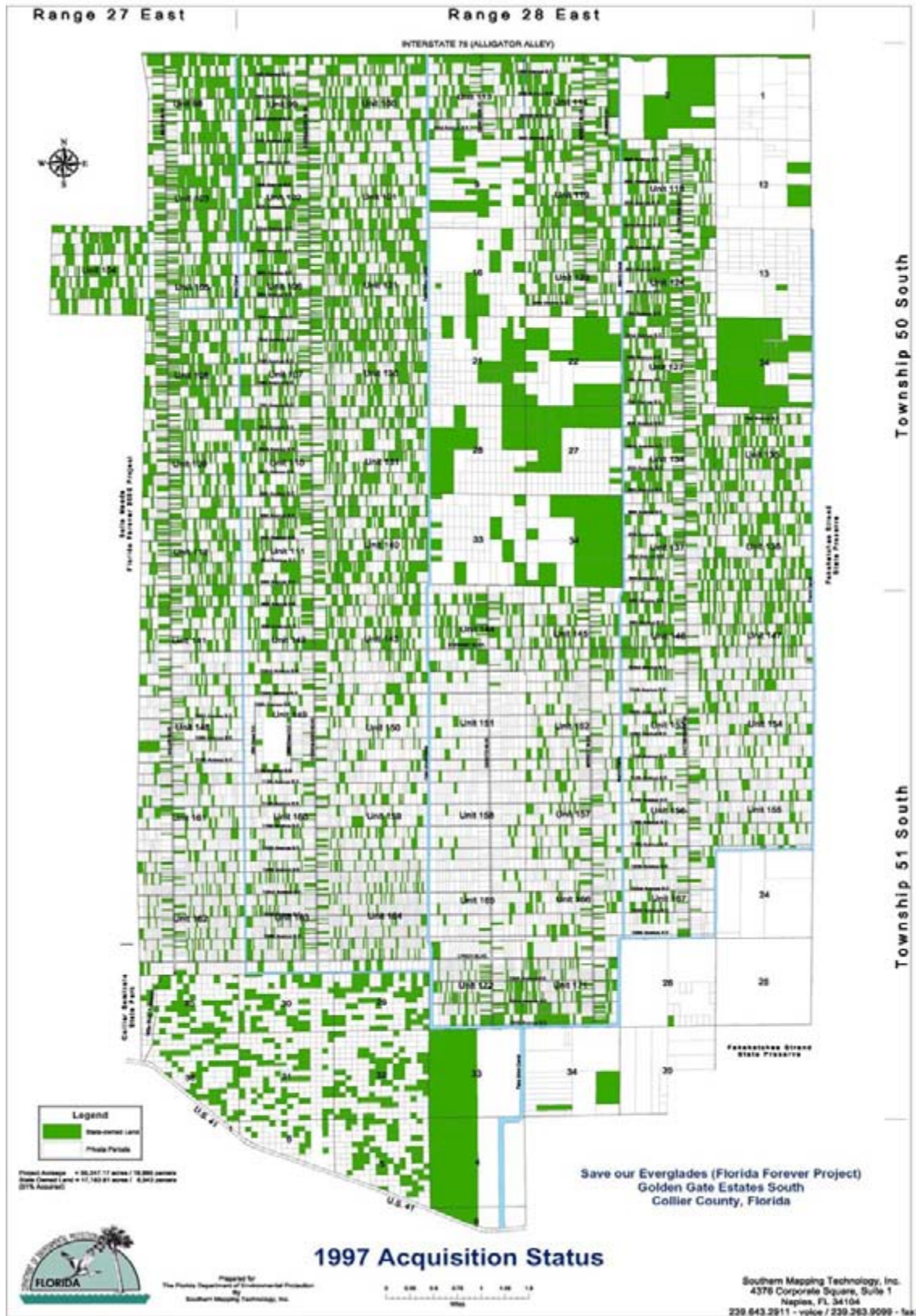


FIGURE 4 - 2 SGGE 1997 ONWERSHIP MAP

At the end of 1997, Southern Golden Gate Estates project was selected as a Critical Restoration Project by the U.S. Army Corps of Engineers pursuant to Section 528 of the Water Resources Development Act of 1996 (Public Law 104-303). (See Section 1.5.3 for history of the Critical Projects.) Southern Golden Gate Estates had also been ranked number 4 on June 4, 1996 by the South Florida Ecosystem Restoration Working Group as a priority project for receipt of Department of Interior funds authorized under Section 390 of the Federal Agriculture Improvement and Reform Act of 1996 (Public Law 104-127). Section 390 of the Federal Agriculture Improvement and Reform Act of 1996 (also known as the Farm Bill) provided the Secretary of Interior the authority to expend \$200,000,000 to conduct restoration activities in the Everglades ecosystem including the acquisition of real property and interest therein. The Secretary could provide these funds to the State or other entities for restoration activities in the Everglades ecosystem including the acquisition of real property and interest therein. (See Section 1.5.5 for history of the Farm Bill appropriations). Without either of these activities, approval of the SGGE as a Corps' Critical Restoration Project and receipt by FDEP of Federal Farm Bill funds, land acquisition by FDEP from the end of 1997 through 2060 would have continued only from willing sellers and at a pace so that by 2060 only an estimated 60% of the area would have been in public ownership. Without federal participation it is questionable whether the state would have been able to acquire land at anywhere near the current existing rate.

A 60% state forest/40% private land ownership pattern would effectively prevent a return to natural sheet flow over the SGGE Project Area. It would not be possible given the necessity to protect private landowners from flood damage impacts and to maintain road access to their properties. The 279-mile system of raised roads would eliminate any possibility of water flow across the SGGE Project Area and would present impediments to the environmental management of the state land. Under the Without Project alternative, the 48 miles of the Faka Union canal system would continue to over drain the natural hydrology and send the water in damaging surges to Faka Union Bay. The capture of all hydrology by this canal system eliminates the pre-drainage/natural flow of much needed freshwater to other estuaries in the Ten Thousand Islands Region (Figure 3-2). The rapid drainage caused by the canal system would continue to inhibit recharge to the ground water aquifer. Population increase and build out of most of the 40% private ownership would produce political pressure to improve the canal and road systems. Management functions on the 60% state land, such as law enforcement, wildlife management, invasive and exotic species control, prescribed burns, forest products harvest, and off road vehicle regulation would be gravely hampered by the public-private ownership pattern. Educational and research opportunities would be limited by the ownership pattern.

4.2.1 Infrastructure

Presently, Collier County has one of the highest population growth rates in the nation. It could therefore be predicted that by 2060 the vast majority of the 40% private lots would have homes constructed on them. The “checker board” pattern of the public/private parcels would require that most of the 279 miles of existing roads be cleared of exotics, repaired, upgraded for safety, and maintained on a regular schedule. 251 existing culverts would be cleaned, replaced as needed, and maintained on a similar schedule. Larger blocks of private land in the “Boot” and the “Hole in the Doughnut” would likely be sold off in smaller lots as plated and require additional roads and services to accommodate residential build out. Utilities would be expanded across the area. The 48-mile canal system would have to be maintained to provide existing flood protection for private property owners. By 2060 political pressure would most likely be brought to bear to improve the canals, and the road drainage system for better flood protection.

Law enforcement on State lands to prohibit public intrusion or damage would be nearly impossible due to the difficulty and high cost of surveying and legally posting 1 to 5 acre lots. Without proper posting of state land boundaries, it would be difficult to get a conviction if a reasonably prudent person were unable to tell if they were on state or private land. Even with state of the art GPS/GIS systems, the person would be warned, and would have to be apprehended a second time to receive a notice of violation.

4.3 PLANT COMMUNITIES

Under 2060 “without project” conditions, hydroperiods within the SGGE Project Area would not sustain wetland vegetation. The landscape would continue to succeed to poor quality upland habitats dominated by palmetto, cabbage palm, and exotics species, such as Brazilian pepper. Wildfires would use the increased number of cabbage palms as ladder fuel to reach the crowns of the native pines, reducing their populations to a few remnant stands. Mesic community types would become mostly populated by exotic and invasive species. Melaleuca and cogon grass would spread into the few remaining wet areas as continued wildfires damaged the native cypress stands. Exotic and invasive infestations would gradually grow worse over time, as excessive drainage further dries the SGGE Project Area. Brazilian pepper would continue to negatively affect prescribed burning, as the plants’ density prevents fire from carrying through the stand. Herbicide treatment would need to be repeated into perpetuity, due to reinfestation of the treated areas by wildlife and human vectors. The few if any epiphytic orchids and bromeliads would disappear because of illegal

collecting and wildfires, low humidity, and increased chances of freezing caused by a lack of standing water.

4.4 FIRE

The 60/40 ownership patterns in the 2060 base year would lead to extremely dry conditions brought on by an increase in both impervious surface and over-drainage for flood protection. The Florida Division of Forestry (DoF) would continue to attempt a program of prescribed burning meant to reduce fuels for potential wildfires and to restore fire dependent communities and wildlife habitat. The window of opportunity for conducting safe prescribed burns would be greatly reduced by the canal systems quick drainage of soil moisture and the ground water table. Prescribed burning on private land could be accomplished through the Hawkins bill; however, increasing numbers of private residences would increase the difficulty of accomplishing large acreage burns. Private residences would need to be protected during prescribed burns, which would make the burns logistically challenging. With the window of opportunity so dramatically shortened, conducting many small burns near residences would require a big budget to pay for a large number of trained personnel and equipment for a short period of time. The number of uncontrolled fires caused by man would increase as the number of people using the area increases.

It is, therefore, predictable that during some future drought cycle, devastating wildfires would occur. Besides threatening public health and safety, these wildfires would severely damage organic soils and continue to reduce native pine and cypress over story species. Even in prescribed burns, pine and cypress in the SGGE Project Area have, and will continue to have, a higher mortality than in undrained areas due to a lower water table and the high number of sabal palms (*Sabal palmetto*), also known as the cabbage palm. Although the sabal palm is a native species it can become an invasive that drives out all other natives to the point that it becomes virtually a monotypic stand covering the landscape. Under the very dry "without project" conditions the sabal palms would act as a ladder fuel into the pine and cypress canopy. They would encroach into all vegetation types, further increasing future wildfire intensities and mortality of the other native species. Palm fronds increase the frequency and distances for spot ignition during a wildfire. Wildfire also encourages other invasive and exotic vegetation to spread, particularly Brazilian pepper, Melaleuca, and cogon grass.

4.5 FISH AND WILDLIFE RESOURCES

Under "without project" conditions, the 60/40-ownership pattern would lead to over drainage caused by continued or even enhanced use of the canals, which in

turn would result in a loss of habitat diversity. These continued hydrologic changes would eliminate most wet prairie, marsh, and cypress communities the edges of which provide forage during dry down for prey species, such as deer, raccoons, and hogs. Mesic and Hydric Flatwood habitats would dry out further and be taken over by invasive and exotic plants that would reduce wildlife habitat quality. Succession of wetlands to uplands would eliminate those species that require pond conditions for breeding, such as fish and amphibians. Habitats that could support the Florida panther, migratory birds, the Big Cypress fox squirrel, the red-cockaded woodpecker, and many other species would be severely reduced and fragmented by the “checkerboard” 40% residential build out under the “without project” condition. Some residents on the 8,000 private parcels might allow their dogs and cats to run free, which would be difficult to control and would have a very negative effect on wildlife. The release of no longer wanted exotic pets by some residents could be devastating to native wildlife species. Continued succession of the ecosystem to poor quality uplands would increase the population of exotic species harmful to fish and wildlife. Panther use would continue to decline, due to human disturbance, low prey base, and poor quality habitat. Bear encounters with humans would increase as people encroach into the animal’s natural habitat. An improved 279-mile road system would see an ever-increasing number of vehicles and wildlife road kills. The road system would allow easy human access and under the “without project” condition, wading birds that utilize wetland habitat will virtually disappear.

4.6 THREATENED AND ENDANGERED SPECIES

Federally listed species that are known to occur in the vicinity of, may occur in, or may be affected by the SGGE Project Area are the threatened eastern indigo snake (*Drymarchon corais couperi*), endangered Wood stork (*Mycteria Americana*), endangered red-cockaded woodpecker (*Picoides borealis*), endangered Florida panther [*Felis (=Puma) concolor coryi*], endangered snail kite (*Rostrhamus sociabilis plumbeus*), endangered American crocodile (*Crocodylus acutus*), threatened bald eagle (*Haliaeetus leucocephalus*), endangered West Indian manatee (*Trichechus manatus*), smalltooth sawfish (*Pristis pectinata*), the threatened loggerhead sea turtle (*Caretta caretta*), endangered Kemp’s ridley sea turtle (*Lepidochelys kempi*), endangered Atlantic green sea turtle (*Chelonia mydas mydas*), endangered Hawksbill sea turtle (*Eretmochelys imbricate*) and the following three candidate fish species: the goliath grouper (*Epinephelus itajara*), mangrove rivulus (*Rivulus marmoratus*), and sand tiger shark (*Odontaspis taurus*).

Under the “without project” conditions, interspersed private developments within the SGGE Project Area would impact wildlife and their associated

habitats. Lack of consolidated State ownership and the additional drainage of the SGGE Project Area would make it difficult to stabilize or begin recovery of these listed species. Wide ranging wildlife, such as the Florida panther (*Felis concolor coryi*) and Florida black bear (*Ursus americanus floridanus*), would be especially hard hit. Low panther use of the SGGE Project Area would continue to decline due to human disturbance, low prey base, and poor quality habitat. Bear/human encounters would increase as development encroaches on their natural habitat. Continued development would require an improved infrastructure. Construction of electric and telephone lines would be hazardous to wading birds and waterfowl. With an improved road system, the number and speed of vehicles would increase road kills of a wide variety of wildlife. Under “without project” conditions, federal and state listed species would decrease over time due to increased human presence, easy vehicular access, limited refuge areas, and a decrease in suitable habitat. Under “without project” conditions, there would be no restoration of the hydrology, which would reduce already low populations of wading birds to near zero.

4.6.1 American Crocodile

Freshwater point source discharges to the Faka Union Bay would continue and probably increase due to development and water management practices under the “without project” condition. Rapid salinity changes and potential increases in nutrients and contaminants associated with a developing watershed would further impact Faka Union Bay and downstream estuaries. Adjacent bays and estuaries would continue to receive less water from the watershed than under natural conditions. Although the direct effects of these estuarine alternations on the American crocodile are not known, a reduction in the amount and quality of estuarine habitat would be expected to further reduce the populations of this species. As natural habitats of the SGGE Study Area are destroyed and replaced with landscapes that benefit humans, American crocodiles will become increasingly subjected to the public’s intolerance of human/crocodile conflicts.

4.6.2 Bald Eagle

Continued hydrologic over drainage of the “without project” conditions would eliminate almost all of the few existing wetland habitats that might be used by the bald eagle for nesting or hunting. The human presence caused by the approximately 40% residential build out would further reduce the use of the area by the bald eagle.

4.6.3 Eastern Indigo Snake

The eastern indigo snake will use most of the habitat types available in its home range but prefers open, undeveloped areas. Because of its relatively large home range, this snake is especially vulnerable to habitat loss, degradation, and fragmentation. Under the “without project” condition, pre-drainage habitats in the SGGE Project Area for the eastern indigo snake would be forever lost. The “without project” conditions include a 40% residential build out on about 8,000 parcels, no hydrologic restoration, improved roads with higher speeds, and increased likelihood of human/snake encounters. This “without project” condition will have a very devastating effect on any eastern indigo snake populations that exist today in the SGGE Project Area.

4.6.4 Florida Panther

The “without project” alternative would further reduce an already very limited use of the SGGE Project Area by the panther. Further loss of habitat diversity, increased human presence, further reduction of the prey base, and improved roads with additional faster traffic would eliminate the SGGE Project Area as a piece of the puzzle that would be connecting surrounding public lands into habitat of sufficient size to support the large home ranges needed by panthers. It is possible that the residential development of 40% of the SGGE Project Area land might cause an increase in deer, raccoons, and hogs, since residents may begin protecting these prey species as their pets. In this case, panther/human encounters might increase as panthers are lured into the subdivision by the presence of prey. The panther would eventually lose in these interactions. The “without project” condition could be expected to reduce the panther population on the project site and adjacent public lands managed for panther recovery.

4.6.5 Red-Cockaded Woodpecker

The “without project” condition would lead to the further loss of mesic and hydric pine flatwood habitats suitable for the red-cockaded woodpecker. Woodpeckers require mature stands of pine with relatively open ground cover beneath. Residential construction on 8,000 parcels, improved over-drainage, more intense crowning wildfires, and the increase of invasive and exotic species would have a devastating effect on woodpecker habitat and the chances for the expansion of new clusters into the SGGE Project Area. Under the “without project” condition, the red-cockaded woodpecker would most likely continue to decline in the SGGE Study Area, as has been the recent pattern in southwest Florida.

4.6.6 Estuarine Fishes and Sea Turtles

The “without project” alternative with its 40% residential build out of SGGE would continue and probably increase the detrimental effects of the Faka Union Canal system on the timing and quantity of freshwater flows to the estuaries and bays of the Ten Thousand Islands Region. The Threatened and Endangered (T&E) fish and sea turtles, and the candidate fishes would continue to be impacted not only by these unnatural flows but also by the reduced water quality that would follow the installation of 8,000 new septic systems, additional traffic, improved canals, residential construction, and irresponsible dumping in SGGE. Similar impacts caused by residential build out in NGGE will add to the problems in the affected estuaries and bays.

4.6.7 Snail Kite

The increased hydrologic over drainage of the “without project” conditions would eliminate almost all of the wetland habitats that might be able to support both the snail kite and the apple snail on which it depends for food. Snail kite usage of the SGGE project area would further decrease under the “without project” conditions.

4.6.8 West Indian Manatee

Freshwater point source discharges to the Faka Union Bay would continue and probably increase due to development and water management practices under the “without project” condition. Rapid salinity changes and potential increases in nutrients and contaminants associated with a developing watershed would further impact Faka Union Bay and downstream estuaries. Adjacent bays and estuaries would continue to receive less water from the watershed than under natural conditions. Impacts to the West Indian manatee under the “without project” condition would include: 1) potential changes in temperature and freshwater input conditions that support the warm water refugia within the Port of the Islands marina basin in the Faka Union canal, 2) displacement of manatees further down the estuary during the wet season in reaction to increased point source discharges, and 3) new or additional loss of manatee critical habitat (seagrass) in downstream estuaries associated with effects of increase freshwater point discharges, and associated nutrients and pollutants. Although effects on critical habitat would be difficult to quantify, changes in manatee distribution or use of the marina basin as a warm water refugia might expose manatees to additional boat-related mortality or cold stress.

4.6.9 Wood Stork

The wood stork appears to be experiencing human population pressure throughout its entire New World range. Although specific information on the status and trends of breeding colonies is not available throughout its range, information that has been collected on specific colonies suggests that breeding and foraging habitats of the wood stork are declining in area and quality. Prognosis of the future U.S. wood stork population is partially dependent on the success of the overall South Florida Ecosystem restoration efforts. Under the “without project” condition, freshwater sheet flow and the wetlands that sustain the prey base so critical to wood storks during the breeding season would be eliminated within the SGGE Study Area. In the “without project” condition, there is much less hope for the continued existence of the wood stork in the Study Area.

4.6.10 Endangered Plants

Increased overdrainage, more frequent and intense wildfires, infrastructure construction, residential build out on 8,000 parcels, landscaping, and illegal collecting would have a negative effect on all native plant communities including those listed by the state as endangered.

4.6.11 Essential Fish Habitat

An increase in the impervious surface caused by build out in both NGGE and 40% residential build out of SGGE would cause surge flows of greater volume to discharge through the Faka Union Canal a greater distance into Faka Union Bay. These flows would contain contaminants that normally increase with human habitation. A further decline in Essential Fish Habitat for all species would be expected in the already damaged Faka Union Bay.

4.7 GEOLOGY AND SOILS

Barring some cataclysmic event, 2060 geologic conditions would not be expected to change from existing conditions.

Under without project conditions, overdrainage caused by the canal system would continue to allow the destruction of organic soils through oxidation and the increasingly intense wildfires.

4.8 AIR QUALITY

The “without project” condition would likely cause a lowering of air quality due to more wildfires, residential chemical use, construction activities, increased traffic, and other human activities in the developed 40% of the SGGE Project Area.

4.9 CLIMATE

The “without project” condition will eliminate all sheet flow and most wetlands in the SGGE Project Area. The overdrainage caused by a canal system needed to protect the 8,000 residential parcels would have the microclimate affect of reducing freeze protection for various tropical and sub tropical plants such as orchids.

The 17 October 2003 draft CERP Guidance Memorandum titled “*Sea Level Rise Considerations for Design of CERP Projects*” states that the Project Delivery Team should consider sea level rise as a future without project condition. This guidance was not available during the building of the MIKESHE model used to evaluate the SGGE Study Area hence the model does not contain a sea level rise component. Tables 1 & 2 in the above memo were used to calculate a 50% probability of an 8” rise in sea level for the Naples area in 2060. Although elevations in the study area vary between 2 and 28 feet it is probable that an 8” rise may have some effects. The without project effects of sea level rise will be addressed during the Detailed Design Report (DDR) phase of this project.

4.10 HYDROLOGY

The following hydrologic forecasts are a best professional judgment of “without project” conditions in 2060. Since Collier County is one of the fastest growing counties in the nation, the 40% of the SGGE Project Area still in private ownership is assumed to be built out in a low-density residential development pattern. Having about 8,000 residences scattered throughout the SGGE Project Area would continue the overdrainage of the 60% state owned land. Consequently, the SGGE Project Area would be drier than it is today, with the majority of the vegetation having transitioned from wetland types to upland types with heavy invasive and exotic species encroachment. Most likely by the year 2060, a “natural event,” such as an extremely heavy rainstorm, would occur that causes significant property damage on the private land. Political pressure would be used to develop a program of canal improvement to protect life and property. Therefore, over drainage of the SGGE Project Area would be intensified.

4.10.1 Water Supply

Under the “without project” conditions, the surficial aquifers would continue to recede as 8,000 private wells were developed on the 40% private parcels in the SGGE Project Area. Overdrainage caused by an improved canal system and an increase in impervious surface from development would further reduce recharge to the fresh water aquifer. By the year 2060, lack of recharge in combination with sea level rise and private well withdrawal could cause an undetermined contamination of aquifers from saline water intrusion. Analysis to determine the probable regional extent of saline intrusion in 2060 would take separate funding, years of work, and is outside the scope of this project.

4.10.2 Water Quality

Under “without project” conditions, water quality in the SGGE Study Area would continue to be degraded as over drainage of the Faka Union canal system basin intensifies. Escalations in the development of NGGE and the 40% residential build out of the SGGE Project Area would increase the quantity of freshwater flows through the canals to Faka Union Bay. This type of concentrated point discharge coming in heavy flushing surges would further change the unnatural timing and distribution of salinity in the Faka Union estuary. These substantial variations in salinity would continue to shock the estuarine macrobenthic communities further reducing their long-term viability. Other nearby estuaries and bays would continue to receive less water than the natural pre drainage watershed provided. Lack of freshwater also causes salinity problems for the macrobenthic communities.

Runoff from the increased development in the Faka Union canal system would be expected to contain pollutants from roads and other impervious surfaces. The dramatic increase in septic systems to service the residential development in NGGE and the SGGE Project Area may pose water quality problems.

4.10.3 Water Management

Under “without project” conditions in the SGGE Study Area, the management of surface and groundwater resources for drainage, flood control, protection of water supply, and water quality would continue to be regulated, operated, and maintained by the Big Cypress Basin (BCB) unit of South Florida Water Management District (SFWMD). It is predictable that prior to 2060 a large rain event will occur which will flood the 40% residential properties in the SGGE

Project Area. Such an event would cause political pressure to be brought to expand flood protection for the life and property of the 8,000 residences in the SGGE Project Area. An “improved” canal system would further overdrain the 60% public lands and send even more fresh water in point source discharges to Faka Union Bay.

4.11 ESTUARINE RESOURCES

The 40% residential build out of SGGE in the “without project” condition would maintain the estuary degrading freshwater surge flows through the Faka Union Canal system to Faka Union Bay. This point source discharge would continue to deprive estuaries in other surrounding bays of the Ten Thousand Islands Region (Figure 3-2) of much needed freshwater deliveries. Too little and poorly timed freshwater input causes increases in salinity that are beyond the natural conditions.

Faka Union Bay has already been damaged extensively by the freshwater point-source discharge from the canal system. For example, oyster health and reef distribution are at their poorest levels within the inner reaches of the estuary, where reef development has been concentrated historically (Savarese and Volety 2001). The health of the Faka Union estuary, therefore, is not expected to depreciate much if the restoration project were not implemented.

The estuaries west of Faka Union Bay should respond differently to the “without project” alternative. The beheading of the freshwater to the western bays would continue without grossly affecting the volume of water entering the system. Unlike the effects of freshwater inundation, however, the consequences of prolonged higher salinity have a more protracted effect on estuarine ecology. In general, estuarine organisms are more tolerant of higher salinities than low. This is particularly true for oysters. Oyster growth and reproduction are favored by more normal marine salinities, but are subjected to greater selective pressures associated with predation and disease susceptibility (Savarese and Volety 2001). Consequently, health of the western estuaries is predicted to degrade further if the restoration project was not implemented.

4.12 SOCIO-ECONOMIC CONDITIONS

4.12.1 Land Use/Population

The 60% public land in the SGGE project area would not be used for developmental purposes in the “without project” conditions, but would be lacking

of any environmental benefits and would suffer from severe degradation as compared to the present condition. The surrounding residential areas will experience a significant population increase with an accompanying increase in infrastructure. It is expected that based upon existing and projected rates of growth in Collier County, as discussed below, the privately held parcels in the SGGE Project Area would be built-out well before 2060 and would experience minimal if any growth between 2050 and 2060. The Collier County urban area build out estimate is at 800 thousand persons, as estimated in the 1995 Collier County Urban Area Build-out Study. The development pattern in the SGGE Study Area area would be low density residential, one unit per 2.5-acre parcel, as per Collier County growth management regulations in place prior to 1996.

The SGGE Technical Committee, formed in 1997, consisting of local, state, and Federal agencies would continue to endorse a restoration effort for this area in an effort to restore the degraded ecosystem.

Current statistics demonstrate that Collier County, including the SGGE Study Area, is characterized by a much greater population growth rate than the rest of the State and the Nation as a whole. Collier County had a 2000 census population of 251,377 persons. The population of this county had an enormous increase of 65.3 percent from 1990 to 2000, and the estimate percentage change between 2000 and 2001 was 5.7 percent. The population of Florida and the United States increased 23.5 percent and 13.1 percent respectfully during the same period. The state of Florida added over three million persons from 1990 to 2000, ranking third in the nation in numerical change.

Population in Collier County is expected to more than triple from 2000 to 2060. Due to this anticipated population growth, the county is expected to have one of the largest populations in the Lower West Coast. The dense urban area of southwestern Florida has contributed to development pressure and population increases in Collier County.

Table 4-1 summarizes existing and projected population in the SGGE Study Area. The 2000 figures are from the U.S. Census. The future estimates are based on Collier County's April 1, 2001 publication of population projection to the year 2030. The Bureau of Economic and Business Research at the University of Florida (BEBR) medium estimates ("high" and "low" estimates are also shown) growth trends evident between 2020-2030 were utilized to extend Collier County's population projection out to 2050. These population projections were calculated for the South West Florida Feasibility Study. Table 4-2 displays the population rates of growth for each decade from 2000 to 2060. Table 4-3 indicates the population growth rate of the study area is expected to exceed that of the State from 2000-2050.

TABLE 4 - 1 STUDY AREA POPULATION ESTIMATES, 2000-2060

Population (1,000's)							
	Year						
	2000	2010	2020	2030	2040	2050	2060
Collier	251.3	383.7	529	689.3	740.9	792.6	800
Share of Florida Total	1.60%	2.00%	2.20%	2.40%	2.60%	2.90%	N/A
Florida Total	15,982.40	18,866.70	21,792.60	24,528.60	27,118.70	29,714.50	N/A

TABLE 4 - 2 STUDY AREA POPULATION RATES OF GROWTH, 2000-2060

Average (% Per year) Population Growth						
	2000-2010	2010-2020	2020-2030	2030-2040	2040-2050	2050-2060
Collier	5.3%	3.8%	3.0%	>1%	>1%	>1%
Florida Total	1.8%	1.55%	1.26%	1.06%	0.96%	N/A

TABLE 4 - 3 STUDY AREA POPULATION GROWTH, 2000-2050

	% Change 2000-2050*
Collier	215%
Florida	85.9%

* Note: Florida population projections are only published until 2050

4.12.2 Water Demand

Under the “without project” condition, the water demands will increase due to an increase in population. Water demand calculations are being conducted for 2000-2050 by Gulf Engineers in conjunction with the Southwest Florida Feasibility Study. The results of these projections are in draft form, but the final figures are not expected to significantly change. Preliminary water demand projections estimate Collier County’s most likely population scenario, conservation-adjusted water use in 2050 at 295.3 MGD. Due to the exceptionally small rate of growth projected between 2050 and 2060, it is not expected that 2060’s water demands will be substantially higher than in 2050,

after taking into account conservation measures. Collier County is expected to be using 60% of the total water demanded in the Lower West Coast.

Under the “without project” condition, the groundwater levels would continue to decrease, leading to increased shortages of water and increased salinity levels in private wells in the NGGE. With more persons drawing water and less water available for recharge, shortages to private wells would become more prevalent.

The SFWMD requires the development of water conservation plans as a prerequisite for water utilities to obtain a water use permit. With the implementation of conservation plans, water demand should change. Most conservation plans incorporate passive water conservation measures that include increasing block rate structures, the required use of ultra-low flow water fixtures on new or renovated construction, restrictions on lawn watering, required use of rain sensors on automatic sprinkler systems, a leak detection program, and public education concerning water conservation measures.

4.13 AESTHETIC RESOURCES

With 40% of the SGGE Project Area subdivided into a checkerboard pattern, it would be expected that little of the existing infrastructure of 279 miles of roads would be eliminated. Because of this continued easy access for motor vehicles, the existing reality of illegal dumping, poaching, careless use of off-road vehicles (ORVs), and the irresponsible use of firearms would most likely persist on the state owned lands.

4.14 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTES

Under the “without project” condition, the 60% of the SGGE Project Area parcels owned by the state would require remediation of HTRW sites only if they posed an immediate hazard. The impacted soils on approximately 36 acres of the 750-acre FAW area that were identified through the ESA investigations would continue to pose potential ecological risks to aquatic receptors and piscivorous birds. Since the “without project” condition scenario maintains and most likely expands the 279-mile road system, it is expected that the illegal dumping of trash and hazardous substances on public lands would continue.

4.15 CULTURAL RESOURCES

The “without project” condition assumes a year 2060 condition of 60% state land interspersed with 40% private properties. Under this scenario, residential

construction, improvement of roads, landscaping, and installation of utilities would directly impact cultural resources. Although the majority of the SGGE Project Area would be under public land management, the lack of complete State control of the SGGE Project Area would allow an ever-increasing population to explore these public areas by pedestrian and mechanized off-the-road vehicles. Vehicular traffic would have an adverse effect on archaeological properties by disturbing the ground surface. Wildfires would expose cultural resource sites that had been camouflaged by vegetative cover making detection by vandals easier. Fire control methodologies such as the plowing of firebreaks have the potential to expose and damage sites. Under this alternative, most roads would be maintained allowing easy human access to any exposed sites.

4.16 RECREATION RESOURCES

Under the “without project” conditions, the resulting “checkerboard” ownership pattern, 60% public and 40% private, would limit both the availability and quality of the recreation uses compatible with resource protection on the public land. Trails for horseback riding, hiking, off road bicycling, wildlife viewing and nature study would be difficult to establish with the unconsolidated ownership pattern and the extensive road system. Providing hunting and camping opportunities would be challenging given a 40% residential build out. Uncontrolled use of firearms would continue to be a major public safety concern. The ownership pattern would make control of irresponsible ORV use very difficult. Since the Faka Union canal system would remain in place under “without project” conditions, there would be opportunities for fishing and boating.

4.17 NOISE

Most of the existing 279 miles of road would continue to exist and possibly even be expanded in the without project alternative. As subdivision build out occurs, noise from general traffic, construction, and other vehicles would be expected to increase.

4.18 GENERAL ENVIRONMENTAL SETTING FOR OTHER LANDS

Within the SGGE Study Area the following lands would be affected by the “with out” project alternative: Fakahatchee Strand State Preserve (FSSP), Florida Panther National Wildlife Refuge (FPNWR), South Belle Meade CARL lands, Collier Seminole State Park, and the Ten Thousand Islands Region, including the Ten Thousand Islands National Wildlife Refuge and the Rookery Bay

National Estuarine Research Reserve. As with the SGGE Project Area these adjacent lands would continue to be degraded from the overdrainage caused by the Faka Union canal system. The estuarine degradation caused by the point source discharge of freshwater from the canal system into Faka Union Bay and the lack of freshwater distribution to other bays in the Ten Thousand Islands Region would likely increase due the build out of the 40% private lands in SGGE. The interconnectivity of regional wildlife habitat, prescribed burning, and exotic species control would all be increasing difficult to manage as the “without plan” build out occurs. In general an increasingly degraded ecosystem in the surrounding public lands would be the result of this no action alternative.