



Pelican Point Golf Course
Environmental Baseline Assessment
Tyndall AFB, FL Aug 04





Table of Contents

Executive Summary 1

- U. S. Air Force GEM Program 1
- GEM Program process 1
- Environmental challenges 1
- Where do we go from here? 1

Introduction..... 2

- Goal of the GEM Program 2

GEM Program Process..... 3

- Analysis 4
- Documentation..... 4
- Implementation 5
- Evaluation 5
- Revision 5

Course Specific Analysis..... 6

- Course description 6
- Course details..... 7
- Pelican Point Golf Course Aerial Photo 8

Miscellaneous Facility Review 9

- Clubhouse..... 9
- Maintenance complex 10
- Practice areas..... 11
- Pesticide mixing and storage 11
- Cart storage facility 12
- Infrastructure..... 12

Determining the Baseline (ECQ) 13

- ECQ Categories..... 13
- Key to checklist responses 13

- ECQ Checklists 13
- Interpreting the ECQ..... 14
- ECQ Scoring Scale..... 14
- Overall Management Philosophy & Documentation 15
- Safety, Training, & Awareness 16
- Compliance 17
- Conservation Practices..... 20
- Water Resources..... 21
- Maintenance Practices 22
- Customer Relations & Education..... 23
- Miscellaneous Special Projects & Activities..... 24
- ECQ Summary 25**
- GCEBA Results 25
- Conclusion 26**
- Observations 26
- Areas needing improvement..... 27
- The gallery..... 27
- Environmental challenges 30
- Bibliography 34**

Author’s note: The site visit was conducted during the same week that Tropical Storm Bonnie and Hurricane Charley arrived in Florida. During the three-day visit, 6 inches of precipitation was recorded. This was prior to the arrival of either storm. Accordingly, our apologies for the photography used in this report, as they are not up to normal AFCEE standards.

Executive Summary

U. S. Air Force GEM Program

The U. S. Air Force Golf Course Environmental Management (GEM) program is a proactive Air Force Center for Environmental Excellence (AFCEE) initiative to foster a better understanding of the environmental challenges facing our golf courses worldwide. Armed with the support and approval of the Air Force Services Agency golf program, AFCEE's goal is to facilitate the creation of an environmentally friendly golf course facility while supporting the installation mission.

The primary tenets of the GEM Program are to minimize or eliminate potential negative environmental impacts, attain and maintain daily compliance with all appropriate regulations, and constantly examine all aspects of golf course management to achieve the highest standards of environmental excellence.

GEM Program process

There are five steps in the GEM program process.

- Analysis
- Documentation
- Implementation
- Evaluation
- Revision

Environmental challenges

The following environmental challenges were identified during the GCEBA process:

- Ecosystem management/invasive exotics
- Wetlands
- Urban/wildland interface
- Bird/Wildlife Aircraft Strike Hazard (BASH)
- Threatened & endangered species
- Water resource management
- Cultural resources
- Enhanced use land lease

Where do we go from here?

Once the environmental challenges are identified, it is paramount that the golf course staff should determine their preferred management approach in the context of their ongoing, long-term goal of providing the best golfing experience for their customer's dwindling recreation resources.

Armed with this well-conceived, golf facility-based management approach, the golf staff should then coordinate with the environmental staff to ensure that there is consistency and compatibility with installation-wide natural resource and environmental management goals and objectives. Finally, the staff should proceed with the next steps in the GEM Program process documented in this study.

Introduction

The golf course environmental baseline assessment (GCEBA) is the initial step in the process of creating a successful ecosystem-based Golf Course Environmental Management (GEM) Plan.

The intent of the program is to provide an efficient, customer-driven management tool that will free up course managers and superintendents to devote more of their efforts to caring for their customers and the golf course. Properly designed and implemented, the GEM Plan will keep the entire golf facility in compliance with the constantly changing environmental requirements while contributing to the installation's vital recreational opportunities.



Quality turf and greens complex design makes a golf course.



An attractively maintained pond guards the green at the par 4, 7th hole.

Goal of the GEM Program

The goal of the U. S. Air Force GEM program is to facilitate the creation of an environmentally friendly golf course facility for its customers while supporting the installation mission. The Air Force Center for Environmental Excellence (AFCEE) is dedicated to helping to identify ways that more rounds can be played on better-conditioned courses while minimizing or eliminating negative impacts to the environment. In most cases, the U. S. Air Force's golf courses are being managed compatibly with the environment. The GEM program is the vehicle to document our successes while communicating directly with our customers, commanders, and local community.



Pelican Point operates a full service pro shop with a smile.

The GEM Program is derived from many diverse environmental regimes such as the National Environmental Policy Act, the Environmental Compliance Assessment and Management Program, and the ISO 14001 environmental management system. There are five basic steps in the implementation of the GEM Program process:

- Analysis
- Documentation
- Implementation
- Evaluation
- Revision

GEM Program Process

Efficient implementation is the most important aspect of any initiative where practices and procedures are examined and may undergo significant change. This is especially true of the GEM Plan process. The latest requirements for the GEM Plan components are described and outlined on the AFCEE golf course environmental management program website: <http://www.afcee.brooks.af.mil/ec/golf/>. Detailed explanations and directions for completing the GEM Plan will be delineated in AFCEE's proposed handbook ***Golf and the Environment, Guidelines for the 21st Century.***



Post tournament gathering area is first rate.



Mole cricket damage is commonplace on southeastern golf courses.

Analysis

Experienced environmental managers realize the importance of assembling all of the data relevant to a problem prior to determining its best solution. Analysis is the first and most important task of the golf course environmental baseline assessment (GCEBA) and the GCEBA is the initial step in the process of creating an ecosystem-based Golf Course Environmental Management (GEM) Plan. Properly completing the GCEBA is paramount to the long-term compatibility of an installation's golf course management practices with the GEM Program, and more importantly, the U. S. Air Force's natural resource and environmental management goals and objectives.

GCEBA COMPONENTS

The GCEBA is comprised of the following components:

- Site visit, interviews, and data collection
- Course specific analysis
- Miscellaneous facility review
- Environmental compatibility quotient checklists
- Identification of environmental management challenges
- Summary report

Documentation

It is not enough just to know how to create a successful golf course environmental management program. There must be a written record documenting existing site data, maintenance practices, pesticide applications, and other historical golf course activities. By documenting what we know, we will be able to determine how to make better decisions in the future. The completed GEM Plan will assist in the daily management of the course while providing a convenient vehicle to communicate to commanders and customers alike the environmental issues that challenge us on our golf course as well as our plans to deal with them. In order to reach the environmental stewardship goals set by the U. S. Air Force, we must consistently employ only those management practices that minimize or eliminate potential negative impacts to the environment.

GEM PLAN COMPONENTS

The GEM Plan will be comprised of the following components:

- GCEBA report
- Map of the entire golf course facility grounds depicting locations of the significant environmental management challenges and the golf course facilities
- Booklet that describes the environmental management challenges on the GEM Plan map
- Specific practices that will be employed by the golf course staff to deal with each environmental management challenge after coordination with and approval by the installation environmental staff
- Compilation of best management practices employed at the golf course in their implementation of the GEM program recommendations

Implementation

Positive and decisive action is the only true measure of the success of a GEM Program. By implementing new practices, whether to knowingly improve the course's role in the environmental stewardship of the installation or to just try new ideas to determine their value, will the golf staff and golfers benefit. The Windy Trails staff should adopt the GEM Program Environmental Policy and immediately begin finding ways to minimize or eliminate any and all negative impacts to the environment.

Evaluation

In order to ensure the highest quality of customer service and environmental stewardship, there must be continual self-evaluation and improvement. There also should be consistent, on-going measurement of the reduction or elimination of environmental impacts the newly implemented practices have on the course. For example, documenting the reduced use of inputs such as fertilizers, pesticides, and irrigation can be used to demonstrate the increased environmental stewardship of the golf course management practices as well as the overall value of the GEM Program. It is important for U. S. Air Force golf courses to show improvement over time. This can be easily accomplished by regularly evaluating golf course maintenance methods, practices, and management approaches to day-to-day issues and changing when appropriate.

Revision

The very nature of a superior GEM program implies that all documents be regularly maintained to represent the most current conditions. U. S. Air Force golf course managers and superintendents should be constantly looking for ways to improve their environmental stewardship. Acting on lessons learned is right behind initial implementation as the most important aspect of a successful GEM Program. The GEM Plan should be kept as current as possible at all times. Ideally, it should be completely updated at least every three years.

Course Specific Analysis

One of the most pragmatic and enjoyable tasks in the GCEBA process is the course specific analysis. From a general overall description of the course to the details of the course's history and makeup to the various observations on the way the course plays, looks, and is managed, the course specific analysis sets the stage for the rest of the GCEBA report. It is comprised of the following tasks:

- Course description
- Course details
- Miscellaneous facilities examination



The clubhouse deck offers a view of the Gulf of Mexico.

Course description

Tyndall AFB is unique military installation. It is divided by a public access highway and bordered by a great body of water while its landscape is composed mostly of pine and oak forests and wetlands.

Tyndall's golf facility is also very unique. Pelican Point Golf Course occupies an area on the far opposite side of the installation's operational mission and is comprised of 185 acres of largely undeveloped land nestled on the coastline of the Gulf of Mexico coastline. Like many military courses, Pelican Point was constructed in two separate phases, the front nine in 1962, and the back nine a full ten years later.

The Director of Golf has assembled a fine staff to help him care for the course and its customers. The clubhouse is unique to the U.S. Air Force as it sits nearly directly upon the beach. In addition to being the former home of the original landowner, of late, the clubhouse has been a great place to witness the storms coming in from the gulf.

The course itself is a lot of fun. Tight without being claustrophobic and challenging without being defeatist, Pelican Point is a must play for anyone visiting Tyndall AFB or the immediate area. The golf is as great as the staff is welcoming.



Course details

Architect	Civil Engineers/Unknown
Year constructed	Front 1962/Back 1972
Climate	Humid
Average annual rainfall	67 inches
Average growing season	285 days
Elevation	10' MSL
Winds/Prevailing Direction	Variable
Total Facility Acreage	185 acres
Par	36-35-71
Yardage/Rating/Slope	Blue- 7051/73.6/128 White- 6635/71.7/124 Gold- 5588/66.8/112 Red- 5312/70.2/121
Turfgrass	419 Tif
Tees-	Tifway II
Fairways-	Tifdwarf
Greens	Tifdwarf
Roughs-	Tifway II



Many of Pelican Point's holes are hard on the Gulf of Mexico.



The 5th green is nicely bunkered and maintained.



Pelican Point Golf Course Aerial Photo

Miscellaneous Facility Review

Although the course is primary to the enjoyment and eventual return of most of Windy Trails' customers, the support facilities play a huge role in the overall success of the operation. This section of the GCEBA will examine the following facilities for their aesthetic, functional, and environmental values:

- Clubhouse/pro shop/snack bar
- Maintenance complex
- Practice areas
- Pesticide mixing and storage
- Cart barn
- Infrastructure



The Director of Golf's pro shop has it all.



The clubhouse touts a large parking area.

Clubhouse

The Pelican Point Golf Course clubhouse was constructed in 1937 as the original landowner's home. One of the large ceiling support beams visible inside the clubhouse once was the main mast from one of the landowner's boats. The historical limestone structure has been modified several times over its lifespan. The latest remodeling effort renovated the interior of the structure in 2003. The pro shop was updated in 1994. Consultation with the installation cultural resources manager prior to any major work on the structure would be highly recommended.

Maintenance complex

The maintenance complex is a collection of structures that has evolved over many years. “Nearly adequate” and “generally satisfactory” is the most complimentary one can be upon close examination of the complex. Simple needs such as equipment storage are sufficient to the needs of Superintendent Tom Spani and his staff. Positive drainage and a decent wash rack are still lacking.



The maintenance complex at Pelican Point Golf Course.



Interior maintenance complex paving and drainage need work.



The superintendent's office is all business.



An ample practice putting green is well located near the 1st tee.

Practice areas

Pelican Point Golf Course is outfitted with an adequate driving range and a practice putting green. Although the range is across the street and a relatively long walk from the clubhouse, it is replete with a large landing with a plenty of good turf on the teeing area. The practice putting green is nicely sized and located for use by Tyndall's golfers starting their rounds or for lunchtime practice. The short game practice area is on the opposite side of the main clubhouse parking area and offers a variety of shots for players looking to improve their wedge play.

Pesticide mixing and storage

The pesticide mixing and storage facilities at the superintendent's maintenance complex are barely adequate for safe and efficient handling and application. The drain does not function in the "covered" mixing area. The superintendent and his crew procured and constructed the facility themselves. The storage of pesticide related products approaches acceptability yet falls short on some key details.



Pesticide mixing area is a self-help lean-to with inadequate drainage.

Cart storage facility

The existing cart barn is a relatively new structure that functions well due to its overall quality design. Adequate storage, circulation, maintenance, and even administrative space make this a highly useable facility. The cart storage facility can even be used for protection of equipment and other items such as furniture during seemingly endless tropical storms and hurricanes prevalent along the Florida coast.



Nicely outfitted and organized cart storage facility.



Gravel nearby turf area can be tough on mower blades.

Infrastructure

This section examines important elements of a quality golf course that are difficult to group into another category. Cart paths are in fair to good condition. The parking lot is in good condition and is large enough to satisfy the regular demands. Landscape development attempts have been relatively successful and should be continued where appropriate. There is a site amenity group near most teeing areas. The course signage is very good.

Determining the Baseline (ECQ)

The following is a brief compilation of some of the responses in each of the ten Environmental Compatibility Quotient (ECQ) categories obtained in an interview with the superintendent and the manager conducted during the site visit.

ECQ Categories

- Overall Management Philosophy & Documentation
- Safety, Training, And Awareness
- Compliance
- Pesticide Use, Storage, & Handling
- Pollution Prevention
- Conservation Practices
- Water Resources
- Maintenance Practices
- Customer Relations & Education
- Miscellaneous Special Projects & Activities

Key to checklist responses

- **Yes** = Practice is complete or ongoing and can be verified.
- **Partial** = Practice has been initiated but needs further attention and improvement.
- **No** = Practice is not in place.

ECQ Checklists

The Environmental Compatibility Quotient (ECQ) checklists are a convenient method of assessing the overall performance, implementation, and completeness of an installation's Golf Course Environmental Management Plan. The checklists can be used in many ways including:

- As an analytical tool while compiling a Golf Course Environmental Baseline Assessment like this one.
- As a self-assessment tool for the golf course manager or superintendent.
- As an award nomination evaluation by a Golf Course Assessment Team (GCAT).



The clubhouse is nicely appointed and inviting.

Interpreting the ECQ

The ECQ compiled for an installation's course is a snapshot of the overall performance and compliance with the GEM Plan. There are two measures obtained as a result of using the ECQ checklists to determine the status or quality of the environmental management program: determining the actual and potential environmental compatibility quotients.

- **Actual ECQ-** the total percentage of "Yes" responses for all ten checklists. This number represents the current level of the golf course management practice compatibility with the environment
- **Potential ECQ-** the total percentage of "Yes" responses plus the total percentage of "Partial" responses for all ten checklists. Maybe the most significant measure; the potential ECQ represents a level of compatibility that could be reached by finalizing or fully implementing a particular practice or procedure.

ECQ Scoring Scale

Percent Responses Yes or Partial per Category	Level
93-100%	Advanced
83-92%	Getting there
73-82%	Showing progress
63-72%	Early stages
Less than 62%	Just started



Starter" shack" is a fine example of quality in a small package.



The staff has designated some areas as "minimally maintained".

Overall Management Philosophy & Documentation				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Has management demonstrated that the environment is an important part of their responsibilities by initiating the GEM Planning process?	✓		
2	Has the golf course adopted and posted an Environmental Policy?			✓
3	Is the GEM Plan underway or completed, available, and updated regularly?		✓	
4	Is a map of the property highlighting environmental opportunities or constraints such as water features, sensitive landscapes, threatened or endangered species habitat, special management zones, etc. used in the environmental management decision-making process and is it posted for customers?			✓
5	Environmental goals, objectives, issues, projects, and progress are evaluated at least annually and are regularly communicated to employees, customers, management, and the local community?	✓		
6	Are written records of water quality monitoring activities, results, and control measures readily available?	✓		
7	Is there an inventory of bird and mammal species documented, maintained, and readily available?		✓	
8	Is there a general understanding of how course management practices may positively enhance or adversely impact the environment?	✓		
9	Are the environmental impacts of pest control measures such as leaching and runoff potential, toxicity to non-target organisms, soil absorption capacity, pesticide persistence, water solubility, and effects on soil microorganisms and non-target species considered as part of the course management planning process?	✓		
10	Are records of pest treatments employed and their effectiveness maintained and used to guide future pest control decisions?	✓		
	Point totals for each column	6	2	2

Safety, Training, & Awareness				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	All employees are familiar with the overall GEM Plan and are trained on the importance of environmental compliance with the goals and objectives of the program?		✓	
2	All appropriate employees are trained to be familiar with U. S. Air Force, federal, state, and OSHA regulations that apply to storage, handling, and disposal of chemicals used on the property?	✓		
3	All employees are aware that chemical use, storage, and disposal and their potential risks to human health and the environment?	✓		
4	All employees are trained to understand that poor management practices may adversely impact worker health, on- and off-site water quality, local soil health, and wildlife species and their habitats?	✓		
5	A current copy of all Material Safety Data Sheets (MSDS) for all chemicals used anywhere on the golf course property is maintained and readily available for use by employees?	✓		
6	All employees receive regular, documented training on all potential OSHA issues?	✓		
7	Are all golf course pesticide applicators active participants in a local respiratory and pulmonary testing program?	✓		
8	Pesticides, fertilizers, and other chemicals are stored on appropriate shelving in an approved storage facility?	✓		
9	Are golfers notified in the pro shop and on the first and tenth tees about the day's planned or recently completed spraying of any chemical or fertilizer that may be hazardous to human health and safety?	✓		
10	Are key staff members trained regarding water quality and conservation issues?	✓		
Point totals for each column - Response percentage		9	1	0

Compliance				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Is fuel storage/delivery managed in accordance with federal, state, and local regulations?	✓		
2	Are installation environmental staff members included in on-going course management discussions and plans at scheduled meetings?			✓
3	Are there regularly scheduled golf course staff meetings to discuss environmental management issues?	✓		
4	Does the director of golf and the superintendent attend ESOHCAMP in-briefings and out-briefings?		✓	
5	Does the director of golf and/or the superintendent coordinate with installation environmental staff on the various management plans that affect or include the golf course?		✓	
6	Have all necessary permits been secured and/or updated and their requirements satisfied in a timely manner?	✓		
7	Has appropriate impact analysis (NEPA) been performed on all proposed actions on or affecting the golf course property?	✓		
8	Are containers used to store used oil in good condition, not leaking, and clearly labeled?	✓		
9	Has the golf course staff submitted their proposed management approach to the identified environmental challenges to the installation environmental staff for coordination and review?			✓
10	Were there less than two major golf course facility-related findings during the last official ESOHCAMP visit?	✓		
	Point totals for each column - Response percentage	6	2	2

Pesticide Use, Storage, & Handling				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are there trained scouts on staff other than the superintendent to monitor turf and plant health and pest populations regularly using a process to notify management of pest problems and organized into a report or guide so that they can be used for future pest control solutions?		✓	
2	Are there written pest profiles of common pest species with a variety of potential control measures pre-evaluated including alterations in cultural management, biological, physical, and mechanical controls prior to treating the problem on the course?	✓		
3	Are there established and documented aesthetic and functional thresholds for all managed areas to effectively manage pest populations and reduce chemical use?		✓	
4	Is there a specially designed pesticide mixing area where all mixing is performed by appropriately trained personnel?	✓		
5	Has a list of pesticides and other chemicals stored or used at the golf facility been provided to the appropriate Fire Department(s)?	✓		
6	Is there a written Integrated Pest Management Plan readily available and updated in use at the facility?	✓		
7	If personal protective equipment is required for pesticide use, storage, or handling, is it available for use by trained individuals?	✓		
8	Are written and readily available records maintained of all applications of pesticides made by certified applicators, including the following? - the quantity of each pesticide used - the chemical or common name of the active pesticidal ingredient(s) (not the product name) - the pest or purpose for which the pesticide was applied --the date and place of application.	✓		
9	Is the chemical storage structure/area locked, well ventilated, fire proof, and access is limited to select personnel?	✓		
10	Are food storage and prep areas properly cleaned to reduce the likelihood of pest infestations and required pesticide applications?	✓		
Point totals for each column - Response percentage		8	2	0

Pollution Prevention				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are there designated "no-mow" areas (other than ponds) and "no spray zones" and buffer areas around pond, river, stream, or lake edges and have they been communicated to mower operators and pesticide applicators?		✓	
2	Has the Installation Spill Plan been amended to include the golf course facility and is there a spill containment kit at each required location and are spill containment procedures in place?	✓		
3	Does the chemical storage area have a sealed metal or concrete floor and are all pesticides handled over an impermeable surface?		✓	
4	Does the chemical storage area have a lip along the edges to contain spills?	✓		
5	Are liquid products stored below dry products and are dry materials stored on pallets or shelves to keep them off the floor?			✓
6	Have all the golf facility employees regularly received documented and approved HAZCOM and safety and health training?	✓		
7	Are grass clippings blown off equipment with compressed air instead of or prior to washing?		✓	
8	Are gasoline, motor oil, brake and transmission fluid, solvents, and other chemicals used to operate or maintain equipment and vehicles prevented from directly or indirectly entering water bodies?	✓		
9	Has the watershed in which the course resides and contributes runoff to been identified and mapped to aid the golf course staff in the management of their facility?		✓	
10	Are appropriate quantities of fertilizers applied during weather conducive to reducing the potential for leaching and runoff?	✓		
	Point totals for each column - Response percentage	5	4	1

Conservation Practices				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are recycling containers conveniently provided for customer and employee use throughout the golf course facility?	✓		
2	Are there officially and appropriately designated minimally maintained areas on the golf course facility grounds?		✓	
3	Has the irrigation system or its components recently been upgraded to reduce inefficiency, malfunction, and overall water use?	✓		
4	Has all “non-target” irrigation (ponds, natural, or out of play areas, etc.) been eliminated or minimized?		✓	
5	Have flow meters been installed to monitor water use and detect potential waste?	✓		
6	Has the entire golf course facility property been examined for critical habitats, threatened or endangered species, wetlands, floodplains, and historical/cultural resources?	✓		
7	Are employees encouraged to minimize their trips around the course to conserve on the use of fossil fuels?	✓		
8	Does the snack bar utilize reusable plates and silverware for use by customers throughout the facility’s operating hours?			✓
9	Have all potential “no-mow” area maintenance practices been coordinated with the installation BASH officer and environmental management personnel?			✓
10	Are all motorized golf course equipment checked regularly for excessive air polluting emissions?	✓		
Point totals for each column - Response percentage		6	2	2

Water Resources				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are water features regularly monitored for algae, erosion, excessive aquatic plant growth, fish kills, and sedimentation?	✓		
2	Are wash and wastewater kept from making direct contact with surface water and are they recycled or allowed to filter through a vegetative area when cleaning and maintaining equipment?			✓
3	Outdoor irrigation of non-golf course landscape areas are regularly monitored and maintained for leaks and efficient performance?	✓		
4	Has the golf course staff coordinated with stormwater management planning requirements from the installation's environmental staff?	✓		
5	Have part circle irrigation heads been installed where possible to preserve water resources and reduce maintenance while minimizing potential negative impacts to surrounding minimally maintained areas?	✓		
6	Are all water feature maintenance tasks coordinated with the installation natural resource manager and bird/wildlife aircraft strike hazard officer?	✓		
7	Has the irrigation system been completely checked for proper water distribution in all irrigated areas and are water leaks fixed in a timely manner?	✓		
8	Are moving water bodies such as streams or creeks that pass through the golf course regularly monitored for water quality both upstream and downstream of the course?			✓
9	If required, does the facility have a Drought Management Plan written, ready, and available if, or when, irrigation restrictions may be instituted and required by the community or the installation?	✓		
10	Are water quality problems immediately reported to supervisors or regulatory agencies (if required) for appropriate action?	✓		
	Point totals for each column	8	0	2

Maintenance Practices				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Is there a written, regularly updated, and readily available Golf Course Maintenance Plan?	✓		
2	Does the Maintenance Plan include individual plans to include Integrated Pest Management, Tree Management, Hazard Communication, Drought Management, Water Feature Management, and a Site-Specific Spill Prevention Response Plan?		✓	
3	Are green, tee, and fairway mowing heights maintained at reasonable levels without continually stressing turf or maximizing chemical inputs?	✓		
4	Are there regular procedures in place to continually improve soil health such as topdressing, organic amendments, aeration, and drainage?	✓		
5	Is there a map of the course's "hot spots" requiring special care or regular attention?			✓
6	Is all maintenance equipment maintained and cleaned in a manner that eliminates the potential for spreading of pest or disease contamination?	✓		
7	Has there been a complete examination for potential negative environmental impacts of all aspects of the golf course facility operation including the snack bar and grill, clubhouse, pro shop, and maintenance complex?	✓		
8	Is contour mowing used to conserve fuel and increase playability and aesthetics?	✓		
9	Have all playing surfaces been inventoried and mapped for soil types including soil structure, nutrient levels, organic content, compaction, and water infiltration?		✓	
10	Are soil tests and plant tissue analysis used to determine nutritional requirements?	✓		
Point totals for each column - Response percentage		7	2	1

Customer Relations & Education				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are the course manager and superintendent involved in a regularly updated, documented, and on-going customer educational program?		✓	
2	Is there a conveniently located and highly visible place at the course or clubhouse where golf course environmental management notices and informational messages are regularly posted for customers?			✓
3	Do the course manager and superintendent actively communicate with customers to determine and document their points of view?	✓		
4	Is there active and regular communication with the golf management staff, civil engineering, environmental management, the Services manager, and commanders by course management?	✓		
5	Does the golf staff regularly survey their customers on how they rate the various elements of the golf course facility?	✓		
6	Is there consistent and attractive signage around the course and grounds that would increase the awareness of the average golfer to the environmental management practices employed?		✓	
7	Are there signs appropriately located to warn golfers of hazards when drinking reclaimed or otherwise non-potable water?	✓		
8	Are there interpretive signs posted to highlight key habitats or have appropriate areas been designated "Environmentally Sensitive Zones" per USGA rules?		✓	
9	Are course staff members trained regularly on how to improve their dealings with customers?	✓		
10	Are there clinics provided to teach beginning golfers the basics of the game and to teach all levels of golfers the rules of the game?	✓		
	Point totals for each column	6	3	1

Miscellaneous Special Projects & Activities				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are there projects planned and funded for the near future that would demonstrate the compatibility of the course's management methods with protection of the environment?		✓	
2	Are there projects planned and funded to reduce the course's potential negative environmental impacts?		✓	
3	Are there tournaments or other events planned that may educate customers on the environmental challenges faced by the golf staff at this installation?			✓
4	Are there regular field trips for local students or other local community groups hosted at the course?	✓		
5	Are there projects planned to eliminate or minimize a potential erosion problem?	✓		
6	Does the course have a native tree installation program complete with planting plan and maintenance schedule?			✓
7	Are any of the local schools or universities involved in educational or research activities at your course?	✓		
8	Are there special facility-wide recycling programs underway?	✓		
9	Is your course an active participant in the USAF Golf Environmental Management Program?	✓		
10	Has your facility been nominated by your MAJCOM for the golf course environmental management award in the last 3 years?			✓
	Point totals for each column	5	2	3

ECQ Summary

#	Environmental Compatibility Quotient Category	Yes	Partial	No
1	Overall Management Philosophy & Documentation	6	2	2
2	Safety, Training, & Awareness	9	1	0
3	Compliance	6	2	2
4	Pesticide Use, Storage, & Handling	8	2	
5	Pollution Prevention	5	4	1
6	Conservation Practices	6	2	2
7	Water Resources	8	0	2
8	Maintenance Practices	7	2	1
9	Customer Relations and Education	6	3	1
10	Miscellaneous Special Projects & Activities	5	2	3
	Composite point total/response percentage	66	20	14

GCEBA Results

Σ Pelican Point Golf Course, Tyndall AFB, FL

- Actual ECQ (# of “Yes”) = 66 “Early stages”

- Potential ECQ (Actual ECQ plus “Partial”) = 86 “Getting there”



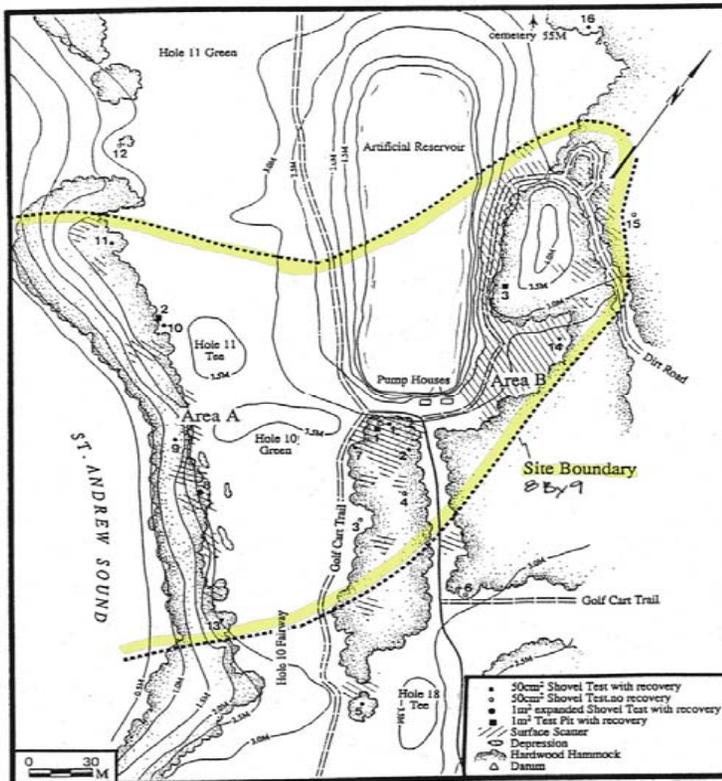
Conclusion

The Director of Golf at Tyndall has one of the best jobs in the U.S. Air Force. With his attractive, well-maintained golf course and clubhouse facilities along with his courteous and knowledgeable staff, there is little to do but glow. “Just don’t tell anyone” he might say, if cornered. Fact is, Pelican Point Golf Course is a smooth running operation. Other than the environmental challenges identified in this report, the only real issue facing the Tyndall AFB facility is the dwindling number of players teeing it up every day. Access is a primary cause while the economy, weather, and high deployment rates are also mentioned. Bottom line, if anyone has the time and makes the effort to visit Tyndall’s facility on the gulf coast, they will certainly be back with friends in tow.

Observations

- Stellar example of quality coordination and team work with installation environmental staff
- Need to compile and document actions already taken to create “continuity” document
- Utilize installation environmental management geographic information system and civil engineering digital aerial photographs for mapping requirements
- Expanded training for all employees a must to completely realize GEM goals
- Consider using AFCEE for on-site golf course environmental management training
- Lack of funding hinders training plans
- Assemble all documents in one place
- Do more than what is required
- Inconsistent interpretations of compliance actions among installation, MAJCOM, and ECAMP evaluators confuse and confound
- Ensure ECAMP results are outstanding
- Regularly provide training for all employees on the specifics of pollution prevention and how they can help
- Although pesticide facility is functional, consider purchasing state of the art facility
- Continue communication with customer on historic preservation and conservation practices that are already in place
- Continue building relationships with installation natural resources manager and other environmental professionals
- Provide detailed input to the scheduled update of installation integrated natural resources management plan (INRMP)
- Compile written pest profiles of common pest species
- Increase number of trained scouts on the maintenance staff
- Create a location to communicate environmental management goals and maintenance plan in the new clubhouse

- Continue to involve installation youth through rules and instruction clinics and field trips at the course for local school children
- Initiate Earth Day environmental awareness golf tournament
- Educate customers about the benefits of an environmentally friendly golf course
- Demonstrate dedication to “growing” the great game of golf to young airmen, other installation non-golfers, and youth



Cultural resource sites abound at Pelican Point Golf Course.



MSDSs are easy to access in case of emergency in one of the maintenance complex's facilities.

Areas needing improvement

The ECQ Summary on the previous page highlights the following areas for relative improvement at Tyndall AFB:

- Pollution Prevention
- Miscellaneous Special Projects & Activities

The gallery

This section of the report will be where some of the more revealing photographs (of the literally hundreds taken during the site visit) of pests, maintenance practices, and other areas where improvements may be made to create the best possible golf facility.



Close proximity to gulf and saltwater intrusion complicates turf care.



Liquid products should always be stored below dry products.



Course is hampered by excessive shade and minimal air circulation.



Pesticide spray unit is stored under self-help lean to cover.



Drainage is extremely poor in pesticide mixing area.



Even with a large facility, some equipment is still stored outdoors.



Clubhouse is outfitted with all of the required elements.



The Director's office sends the right message to customers.

Environmental challenges

One of the important results of the GCEBA process is the identification of significant environmental challenges to be addressed in the long-term GEM Planning process. Ideally, the golf staff will address each issue from the best way to satisfy the goals of the golf facility and acceptable levels of course playability and customer satisfaction. The golf staff's preferred management approach for these issues should then be coordinated with the installation's environmental staff for refinement, coordination, and approval.

The GEM Plan would then consist of the environmental challenges, the approach to their management, a map showing where these challenges occur on the golf course, a booklet that describes the mapped challenges, goals and objectives for future years, and a set of best management practices.

The following environmental challenges were identified during the GCEBA process at Pelican Point Golf Course, Tyndall AFB, FL:

- Ecosystem management/invasive exotics
- Wetlands
- Urban/wildland interface
- Bird/Wildlife Aircraft Strike Hazard (BASH)
- Threatened & endangered species
- Water resource management
- Cultural resources
- Enhanced use land lease

ECOSYSTEM MANAGEMENT/INVASIVE EXOTICS

Since the entire state of Florida has adapted the tenets of ecosystem management and undertaken the task of eliminating species foreign to the United States from its land and water resources, Pelican Point Golf Course must be included in on-going installation plans. One of the concepts planned was prescribed burns on the east side of the course. An invasive species report was to be completed some time after the site visit. If the report reveals invasive species occur on Pelican Point, the golf staff should request training on their identification and control. Potential species of concern include melaleuca, bamboo or cane, Torpedo grass, and Brazilian pepper. With a little instruction, the golf staff can assist the installation in their elimination or control.



Storm fed streams flow through the course directly to the adjacent Gulf.

WETLANDS

According to the INRMP, wetlands make up about 40% of the land at Tyndall AFB. Several of these wetlands occur on or near the Pelican Point Golf Course. Some have been delineated others just noted on plans. Warbler's Way and the pond by Davis Lake are examples of the latter. The course has several areas that tend to be wet some or all of the year. Many of these connect or are adjacent to coastal water features. The golf staff must ensure that all maintenance procedures on these important areas are coordinated through the environmental staff. Impacts to these areas would be extremely detrimental. The installation's overall goal is no net loss of wetlands.



This small stream emanates from the course and drains directly onto this coastal landscape and then into the Gulf of Mexico.



Turkeys are abundant at Pelican Point Golf Course.

URBAN/WILDLAND INTERFACE

As part of the revised Air Force Instruction (AFI 32-7064) for natural resource management, installation environmental staff is charged with the care and protection of wildland while assisting with providing recreational value to its employees and residents. Due to the location of the golf course, the interaction of these potentially incongruous goals becomes more difficult. Feral hogs, deer, raccoon, skunk, alligator, opossum, rattlesnakes, and bats are just a few of the species that can "interface" with Pelican Point customers. The golf staff should be educated and provided information to share to enable installation goals to be realized while protecting residents, employees, and customers of Tyndall AFB facilities.

BIRD/WILDLIFE AIRCRAFT STRIKE HAZARD (BASH)

Although the flight line and runways at Tyndall AFB are located on the opposite side of the installation from the golf course, the proximity of the Gulf of Mexico and other water features on the course dictate that the golf staff participate in the elimination of all potential bird/wildlife aircraft strike hazards. U. S. Air Force golf courses must never be connected in any way to BASH related aircraft or flying crew damage or losses.

THREATENED & ENDANGERED SPECIES

The Integrated Natural Resources Management Program lists the sturgeon, manatee, and sea turtle as potentially impacted coastal species due to pesticide or fertilizer runoff. The large-leafed joint-weed has the potential to occur on the golf course grounds and is a federal candidate for listing. Specific breeds of egrets and ospreys are also potentially impacted by golf course maintenance operations.

A large number of water and shore birds can be observed using golf course ponds, vegetated areas, and adjacent beaches. In addition to magnifying the BASH problem, a major concern for birds in these areas is protection of water resources in which they live, feed, and breed.



Many species of water bird can be observed on the golf course.

WATER RESOURCE MANAGEMENT

Water resource management and protection is a primary environmental concern for Tyndall AFB managers. From watershed protection at Warbler's Way and the pond nearby Davis Lake to the small stream that bisects the beautiful, short 15th hole, water resources are everywhere on Pelican Point Golf Course. Staff management procedures must focus on eliminating nonpoint pollution sources that can harm sensitive wetlands and species such as the flatwood salamander, sturgeon, and Florida manatee. Even the recycled water used for irrigation must be conserved and managed for quality as the course regularly uses 500K GPD and pays dearly for the promised free tertiary treated wastewater. Amazingly, there are no major coastal zone issues.



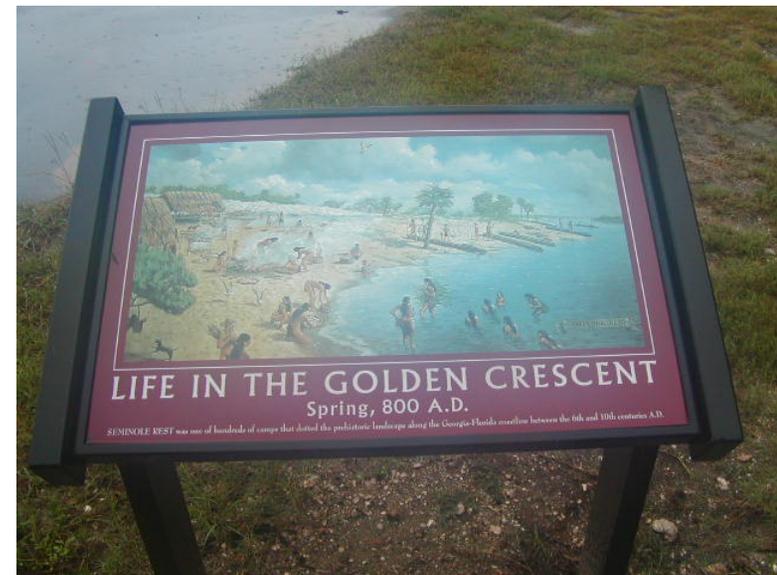
Several water bodies occur on the golf course grounds.

CULTURAL RESOURCES

Tyndall AFB is rife with historical and cultural resources. The Pelican Point Golf Course is no exception as it is the home of several important sites. The clubhouse is probably the oldest structure on the installation. There is a cemetery located on the course as well as a prehistoric shell midden and village site is located underneath a large area now occupied by the 10th green, 11th tee, and irrigation reservoir. Nearby the 17th hole is Site #50 which is one of the largest village midden sites on the Northwest Gulf Coast. Site #51 is called the Hole #8 site for obvious reasons. The golf staff should be privy to installation plans for these resources as well as part and parcel to their management and care.

ENHANCED USE LAND LEASE

During the site visit, it was learned that the Tyndall Real Property office was considering the ramifications of a cutting edge government land management concept called an “enhanced use land lease”. Despite asking the question, little was learned about the idea except that it was being discussed with commanders. In a nutshell, the golf course property is highly desirable for developers. A hotel/convention center development scheme could possibly be a reality. This concept could also limit U.S. Air Force control of the Pelican Point Golf Course.



One of the few observed U.S. Air Force golf course cultural resource interpretive exhibits can be found at Tyndall AFB. This one is located between the 10th green and the 11th teeing area.



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<http://www.afcee.brooks.af.mil/ec/golf/>