



Banyan Tree & Chibana Golf Courses
Environmental Baseline Assessment
Kadena AB, Okinawa, Japan **Jun 05**



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. AFI 32-7064 requires a GEM Plan as part of the Integrated Natural Resources Management Plan (INRMP).

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 Compatibility Quotient

Actual ECQ	74
Potential ECQ	90

Potential environmental challenges

The following environmental challenges were identified during the GCEBA process:

- Stormwater management/water quality/erosion control
- Potential Unexploded Ordnance (UXO)
- Bird/Wildlife Aircraft Strike Hazard (BASH)
- Threatened & Endangered Species
- Cultural resources

Where do we go from here?

After confirming the environmental challenges (EC), the golf course staff should compile their preferred management approach to each in the context of their long-term goal of providing the best golfing experience for their customers. These management approaches must then be coordinated with installation environmental managers. Finally, the combined environmental and golf staff team should proceed toward finalizing the GEM Plan. The entire process is summarized on the AFCEE GEM program website (<http://www.afcee.brooks.af.mil/ec/golf/>).

Analysis



Banyan Tree details

Architect	Unavailable
Year constructed	Unavailable
Climate	Semi-tropical and humid
Average annual rainfall	110 inches
Average growing season	Year round
Elevation	Approx.40' ASL
Total Facility Acreage	Not provided
Par	37-35-72
Yardage/Rating/Slope	Blue- 6604/69.7/118 White- 6250/70.7/121 Red- 4951/69.5/115
Turfgrass	Korai/zoysia
Tees-	Korai/zoysia
Fairways-	Korai/zoysia
Greens	Sea Island 2000 Paspalum
Roughs-	Korai/zoysia

Course descriptions

BANYAN TREE

The 18-hole, Banyan Tree Golf Course at Kadena AB is one of the most enjoyable and well-cared for course in the U.S. Air Force. The course's greens were recently upgraded using in-house forces to complete the work. The result after the extended process was finally completed is beginning to impress customers. The Director of Golf and his staff have successfully moved the facility into the 21st century. A new clubhouse complex contributes to this sentiment. The superintendent has the course in its best condition ever. The future looks good for the Banyan Tree Golf Course and its customers.



The 1st at Banyan Tree is a severe dogleg left par 5.

CHIBANA

Chibana Golf Course is a 9-hole, par three. This short course is a favorite of beginners and experts of all ages. The facility sports a new clubhouse that was recently completed. An irrigation system has been installed but the actual connection to the potable water line had not been completed for one reason or another. Despite having nearly archaic conditions at the so-called maintenance facility, Chibana superintendent, Bruce Reineck has the course in remarkably good condition. It would be highly desirable, if this land will continue to be used for a short golf course, that a master plan be completed for the entire area to direct much-needed wholesale improvements.



Chibana details

Architect	Unavailable
Year constructed	Unavailable
Total Facility Acreage	Unavailable
Par	27-27-54 (9 holes only)
Yardage/Rating/Slope	Blue- 1231/NA/NA
Turfgrass	Korai
Tees-	Korai
Fairways-	Korai
Greens	Korai
Roughs-	Korai



The Chibana course provides a unique recreational experience.



Banyan Tree Golf Course Aerial Photo



Chibana Golf Course Aerial Photo

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).



Chibana's maintenance "facility" has no electricity or running water.

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: 1) determining the actual and; 2) 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



Chibana's greens are a testament to Superintendent Reineck's desire.



The 1st shot of the day at Banyan Tree must split the peaks.

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 identified environmental challenges such as landfills, threatened or endangered species habitat, restoration sites, floodplains, etc. used in the environmental management decision-making process and is it posted for customers?			✓
5	Environmental goals, objectives, challenges, 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	5	3	2

Safety, Training, & Awareness				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	All employees are familiar with the GEM program and are trained on the importance of environmental compliance with the goals and objectives of the program as it applies to their duties?		✓	
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 documented, regular training on all potential OSHA issues associated with their duties?	✓		
7	Are all golf course pesticide applicators active participants in a local respiratory and pulmonary testing program?	✓		
8	Are pesticides, fertilizers, and other chemicals 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 or public safety?		✓	
10	Are key staff members trained regarding water quality and conservation issues pertinent to the course and their particular duties?	✓		
	Point totals for each column	8	2	0

Compliance				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are fuel storage/delivery area and equipment managed in accordance with federal, state, and local regulations?	✓		
2	Is installation environmental staff members included in pertinent, on-going course management discussions and plans at scheduled meetings?	✓		
3	Are there golf course staff meetings where environmental management issues are regularly discussed?	✓		
4	Do the director of golf and the superintendent attend ESOHCAMP in-briefings and out-briefings?	✓		
5	Do 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	8	1	1

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 current 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? <ul style="list-style-type: none"> - the quantity of each pesticide used - the chemical or common name of the active pesticide 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 resistant, and is access 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		9	1	0

Pollution Prevention				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are there designated and documented "minimally-maintained" or natural areas (other than ponds) and "no spray zones" and vegetative 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 there spill containment procedures in place?		✓	
3	Does the chemical storage area have a sealed metal or concrete floor and are all liquid 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 available on a regularly updated map 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	8	2	0

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 maintenance practices for designated “minimally-maintained” or natural areas been coordinated with the installation Bird/Wildlife Aircraft Strike Hazard (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		9	0	1

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 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 (BASH) 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	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 and appropriate installation environmental staff members for direction and action?	✓		
	Point totals for each column	8	2	0

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 such as 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 and documented procedures in place to continually improve soil health such as topdressing, organic amendments, aeration, and drainage?	✓		
5	Is there a regularly-updated and readily-available 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 around or near recycled 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	2	2

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	6	1	3

ECQ Summary

#	Environmental Compatibility Quotient Category	Yes	Partial	No
1	Overall Management Philosophy & Documentation	5	3	2
2	Safety, Training, & Awareness	8	2	0
3	Compliance	8	1	1
4	Pesticide Use, Storage, & Handling	9	1	0
5	Pollution Prevention	8	2	0
6	Conservation Practices	9	0	1
7	Water Resources	8	2	0
8	Maintenance Practices	7	2	1
9	Customer Relations & Education	6	2	2
10	Miscellaneous Special Projects & Activities	6	1	3
	Composite point total/response percentage	74	16	10

GCEBA Results

- * **Banyan Tree & Chibana Golf Courses, Kadena AB, Okinawa, Japan**
 - **Actual ECQ (# of “Yes”) = 74 “Showing progress”**
 - **Potential ECQ (Actual ECQ plus “Partial”) = 90 “Getting there”**

Potential environmental challenges

One of the important results of the GCEBA process is the identification of potential environmental challenges (ECs) to be addressed in the long-term GEM Planning process. After confirming each EC, the golf staff will determine the best management approach that will satisfy the goals of the golf facility from the course playability and customer satisfaction perspectives first. Then the golf staff's preferred management approach should be coordinated with the installation's environmental staff for refinement, coordination, and approval.

Ultimately, the combined environmental and golf staff team should proceed toward finalizing the GEM Plan. The entire process can be viewed at the AFCEE GEM website (<http://www.afcee.brooks.af.mil/ec/golf/>).

The following potential environmental challenges were identified during the GCEBA process:

- Stormwater management/water quality/erosion control
- Potential Unexploded Ordinance (UXO)
- Bird/Wildlife Aircraft Strike Hazard (BASH)
- Threatened & Endangered Species
- Cultural resources

STORMWATER MANAGEMENT/WATER QUALITY/EROSION CONTROL

The Daido River basin drains quickly into the sea after every rain event. Tributaries of this watershed snake through the Banyan Tree Golf Course. Flooding is a recurring situation. Erosion of the golf course property is a primary concern. More importantly, there is a concern that fertilizer and pesticide residues may accompany the sediment all the way to the sea. Potential impacts to fishing, recreation, and wildlife are possible in worst case situations.



Continual stop gap measures have been largely ineffectively applied to the stormwater drainage basin. This feature needs major rework. Thankfully there is a project in the queue that may address this area that crosses in front of the 12th green.

POTENTIAL UNEXPLODED ORDNANCE (UXO)

Based on personal testimony from some of the original Chibana Golf Course crew, there are unexploded ordinance (UXO) buried beneath some of the features of the course. Since this is a safety concern for both customers and employees, suggest someone from the correct installation organization be asked to investigate and create operating procedures for anyone digging or disturbing the soil in this area.

BIRD/WILDLIFE AIRCRAFT STRIKE HAZARD (BASH)

The Chibana Golf Course is located close to the northeastern approach/departure center line. Although the installation BASH Plan does not mention the golf course or its water features as a concern nor does it list the golf staff or even the Services Squadron as a member of the Bird Hazard Working Group. A Chibana irrigation project may be stalled due to the requirement to build a tank for irrigation water supplies due to the airfield proximity. The Chibana course management staff should always be aware of how their actions may hinder safe flying operations at Kadena AB – before taking action.

The Banyan Tree Golf Course actually abuts the airfield at its northern most property line. Banyan Tree course management should at least consult regularly with the airfield safety office to ensure they do not detract from what may already be determined as a sufficiently safe flying operation. This is further exacerbated by the desire or intent to attain full certification in the Audubon Sanctuary Program.



The airfield can just be seen behind the 8th tee at Banyan Tree GC.

THREATENED & ENDANGERED SPECIES

The Interim Protected Species Management Plan of the INRMP “identifies 42 species contained in the Japan and Okinawa Red Data Books that have been confirmed to occur on Kadena AB, Kadena Marina, Okuma RA, ASP-1, or the 18 MUNS storage area. The species proposed for listing and reported by CCRT (1995) are not included. The source for those proposed listings was not cited in the document and could not be verified. These habitats under Kadena AB’s stewardship and management support a rich regional flora and fauna. It is clear that Kadena AB and its associated properties contain a wide variety of ecosystems ranging from marine coral reefs to upland, broadleaf-evergreen forests.

CULTURAL RESOURCES

According to the General Plan, “the cultural resources on Kadena AB fall into one of four categories: tombs, ritual or prayer sites, historic structures, and archaeological sites, but also include natural features of local cultural importance”. Some of these sites occur on the golf courses. Course management should consult with the installation archaeologist to ensure all necessary procedures are in place to protect the sites from inadvertent damage.



It is possible that there are cultural resource sites in front of the 11th teeing area.



This map amply illustrates how important the island of Okinawa is to the U.S. military.



Conclusion

Despite having recently renovated greens and new clubhouses constructed at both the Banyan Tree and Chibana, the Director of Golf has his hands full. What the increased mission tempo, higher expectations from customers and commanders alike, the status quo just doesn't get it anymore. Contriving to continually improve the course and support facilities like the practice greens and driving range while still making the bottom line attractive is at least a full time job. The manager is an expert at hiring good people to help relieve some of the load. With a little luck, everyone will continue to be satisfied – until tomorrow, of course.

Areas needing improvement

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

- Overall Management Philosophy & Documentation

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 within the limited budget and support of the mission.



Banyan Tree GC is outfitted with an all-weather driving range facility.



Banyan Tree's only water feature.



Extreme measures have been taken to improve Banyan Tree.



Several new trees have been added to mostly out of play area.



The carrying capacity of this drainage ditch is hindered by vegetation.



The Banyan Tree restaurant is sits on a hill with clubhouse to right.



The course's maintenance crew is comprised largely of local Japanese.



Maintenance complex is not large enough to store all equipment inside.



Chemicals and associated implements are stored appropriately.



The new Chibana clubhouse presents a perfect first impression.



Chibana's teeing areas are probably not large enough.



There is almost always a group eager to begin their round at Chibana.



Several small water features complicate the maintenance program.



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**Air Force Center for Environmental Excellence
Technical Directorate
Environmental Science Division**

For additional assistance or more information, please contact:
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Please visit our Golf Course Environmental Management Program website:
<http://www.afcee.brooks.af.mil/ec/golf/>