



***Marshallia Ranch Golf Course***  
**Environmental Baseline Assessment**  
**Vandenberg AFB, California Jul 03**



## Executive Summary

### U. S. AIR FORCE GEM PROGRAM GOALS

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 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 our processes on 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

This report is the result of the analysis step.

### MARSHALLIA RANCH GOLF COURSE VANDENBERG AFB, CA ENVIRONMENTAL CHALLENGES

The following environmental challenges were identified during the GCEBA process:

- Invasive exotic plants & animals
- Archaeological/cultural resources
- Threatened & endangered species
- Solid waste management
- Watershed protection
- Areas of Concern 111 & 112

Further information on the environmental challenges at Marshallia Ranch Golf Course can be found in the conclusion of this Golf Course Environmental Baseline Assessment.

### WHERE DO WE GO FROM HERE?

The golf course staff should determine their preferred management approach for the challenges above in context with their ongoing goals of providing the best golfing experience for the money. They should then coordinate these practices with the installation environmental staff to ensure their compatibility with installation wide natural resources and environmental goals and objectives followed by implementation.

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## 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 ultimate intent of the program is to provide a foolproof, 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 course. Properly designed and implemented, the GEM Plan will keep the facility in compliance with the ever-changing environmental rules and regulations while providing a vital recreational opportunity for the installation.



*No details were too large or too small to ensure total quality.*



*Although there are several highlights of a customer's experience at Marshallia Ranch, it is the golf course that brings them back.*

## 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 the golfers, our commanders, and the local community.

## Program Process

Implementation is the most important phase of any initiative where practices and procedures are examined and may undergo significant change. This is especially true of the GEM Plan process. The specifics for the GEM Plan components and directions for their completion are delineated on AFCEE's Golf Course Environmental Management web site listed inside the back cover of this report.

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 14000 environmental management system. 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 our processes on all aspects of golf course management to achieve the highest standards of environmental excellence. There are five basic steps in the implementation of the GEM Program process:

- Analysis
- Documentation
- Implementation
- Evaluation
- Revision

## 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.



*The approach shot to the 11<sup>th</sup> green is fairly straightforward if the tee shot is well placed.*

## **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 has to be a written record of 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 be a comprehensive report with a map that will assist in the daily management of the course while providing a convenient vehicle to communicate to our customers the environmental issues that challenge us on our golf course and 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 Marshallia Ranch 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.



*Excellent siting of greens complexes adds to the quality experience.*

## 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 review



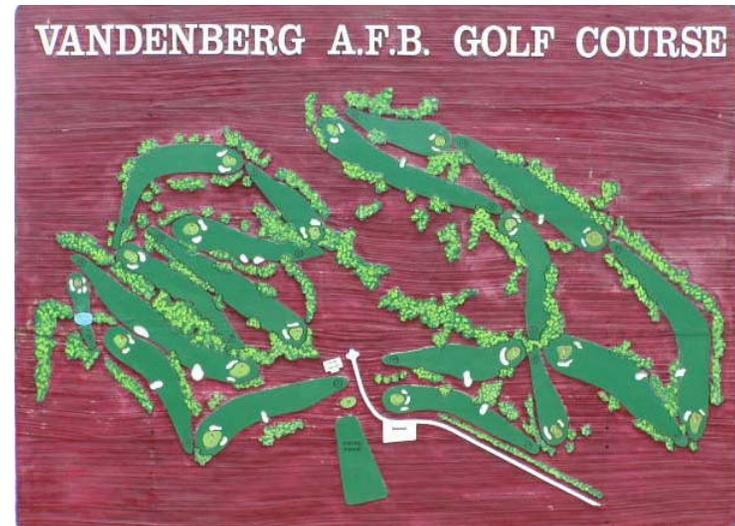
*Eucalyptus trees have naturalized throughout the California coast.*

## Course description

Marshallia Ranch Golf Course provides a unique and rewarding recreational experience for golfers in the vicinity of the central coast of California. Rolling, droughty chaparral characterizes the landscape while the course is buffeted with stiff breezes off the Pacific Ocean, which is actually visible from one of the holes. A stern test for the average player, Marshallia Ranch features narrow fairways, wiry kikuyugrass roughs, and plenty of ice plant and eucalyptus forests to punish inaccurate players. The Director of Golf operates one of the finest all around military golf facilities. His clubhouse may be the best anywhere. The superintendent always has the course in great condition. Accordingly, Marshallia Ranch has hosted several USGA qualifiers as well as the U. S. Air Force championships.

## Course details

Architect	Robert Bolduc
Year constructed	1959
Climate	Coastal influence
Average annual rainfall	14 inches
Average growing season	Year round
Winds/Prevailing Direction	NW
Total Facility Acreage	237 (150 irrigated)
Par	35-37-72
Yardage/Rating/Slope	Red- 5404/66.1/111 White- 6388/71.1/124 Blue- 6845/73.4/130
Turfgrass	Ryegrass
Tees	Ann./Per. Ryegrass/Kikuyu
Fairways	Poa annua/Bentgrass
Greens	Kikuyugrass
Roughs	



## Miscellaneous Facility Review

Although the course is primary to the enjoyment and eventual return of most of Marshallia Ranch's 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
- Practice areas
- Maintenance complex
- Pesticide mixing and storage
- Cart storage
- Infrastructure



*Clubhouse is nestled among huge indigenous eucalyptus trees.*



*Marshallia Ranch offers a wide variety of quality merchandise.*

## Clubhouse

Probably the finest in the U. S. Air Force, the 14,800 SF facility sets the military standard for design excellence and quality customer service. The clubhouse features a beautifully appointed California mission exterior that complements the nearby original ranch house that is now used as a distinguished visitor accommodation. Quality detailing continues inside the clubhouse as the pro shop, administrative offices, snack bar, locker rooms, and dining room are first class. If one were tasked to create design guidance for U. S. Air Force installations, Marshallia Ranch would be the place to begin.

## Practice areas

Among the practice opportunities at Marshallia Ranch Golf Course are two putting greens, a large driving range, a shag bag area, and a short game replete with two greens. All are well located for use by the player needing a warm up prior to their round or the Hoganesque practitioner bent on pounding a few buckets. The putting greens are nicely sized to handle large numbers of players during tournaments and are indicative of the slope and speed a player will experience on the course - a highly desirable trait for practice putting greens.



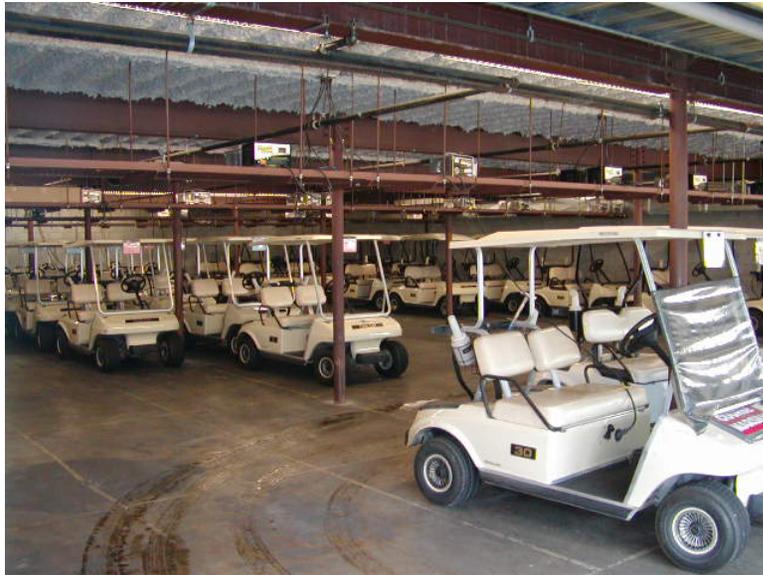
*Several practice opportunities are afforded visitors to Marshallia Ranch Golf Course at wonderful Vandenberg AFB.*



*Properly storing chemicals is a given for the superintendent and his staff.*

## Pesticide mixing and storage

The pesticide storage facility complies with all state and federal requirements. Marshallia Ranch's Superintendent and his staff have taken extreme measures to ensure that their operation is fully compliant at all times. He is also the environmental coordinator for his squadron at Vandenberg AFB, further demonstrating the staff's concern for the environment and their customers and employees. The course also employs a recycling station for all equipment wash water making Marshallia Ranch Golf Course one of the most environmentally compatible in the U. S. Air Force.



*Carts at Marshallia Ranch are stored under the clubhouse in an efficient and attractive design solution.*

## Cart storage

Another fine example of efficient and aesthetic design is the mundane, yet absolutely required cart storage facility. The clever architects and visionaries responsible for the clubhouse integrated the cart storage requirement underground. Although this concept works best when the selected clubhouse site is on slightly sloping terrain, this is a design worth emulating whenever possible. Carts are nearby, yet out of sight.

## Infrastructure

This section examines important elements of a quality golf course that are difficult to group into another category. Cart paths are in good condition. The parking lot is in superior condition and seems large enough to satisfy the regular demands of Marshallia Ranch's customers. Landscape development attempts have been fairly successful and should be continued where appropriate on the course. Landscape treatment around clubhouse is failing somewhat and could benefit from a second look from a good local landscape architect. There is a site amenity group near most teeing areas and the course signage could be adequate.



*Site amenity group is simple and functional.*

## Maintenance complex

The maintenance complex is outdated and represents a mixed bag of old and relatively new. Even to the casual observer, there are several reasons why Marshallia Ranch should and will receive a new facility in the very near future. Although lacking in technology and swagger, the complex is well organized, clean, and functional. There should be ample space for equipment, parking, storage, and administrative after construction of the new complex is complete.



*Wash water recycling station keeps Marshallia Ranch in compliance with the tough California laws.*



*The Quonset hut may survive the new construction site preparation.*



*Site of proposed new maintenance complex facility.*

## Environmental Compatibility Quotient Checklists

The following is a brief compilation of some of the observations in each of the ten Environmental Compatibility Quotient (ECQ) categories 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

## 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).



*Marshallia Ranch Golf Course is naturally sited and maintained*

### 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.

### Determining the Environmental Compatibility Quotient

The ECQ compiled for an installation's course is a snapshot of the overall performance and compliance with the GEM Plan. There are two ways to use 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.
- **Potential ECQ-** the total percentage of "Yes" responses plus the total percentage of "Partial" responses for all ten checklists.

### 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



*Looking back down the tough and beautiful 16<sup>th</sup>.*

## Overall Management Philosophy & Documentation

### U.S. Air Force GEM program goals

- Enhance the installation ecologically and economically
- Demonstrate that the golf course is managed with consideration for the unique conditions of the ecosystem of which it is a part
- Document management practices to promote more widespread understanding and appreciation for environmentally sound golf course facilities
- Share information on the environmental challenges of your golf facility with your customers, the golfers

### Observations

- Initiate and complete the GEM Plan with assistance from installation environmental staff
- Utilize installation environmental management geographic information system and civil engineering digital aerial photographs for mapping requirements
- Finish the collection of all pertinent data to assist in creating a comprehensive management approach to the entire facility



*This area could easily be modified to share environmental information.*



*Quality at Marshallia Ranch starts at the top.*

<b>Overall Management Philosophy &amp; Documentation</b>				
<b>#</b>	<b>Environmental Compatibility Indicator</b>	<b>Yes</b>	<b>Partial</b>	<b>No</b>
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 wildlife habitat, water resources, sensitive landscapes, special management zones, etc. 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 wildlife species and their habitats?	✓		
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?	✓		
	<b>Point totals for each column</b>	<b>6</b>	<b>3</b>	<b>1</b>

## Safety, Training, & Awareness

### U.S. Air Force GEM program goals

- Educate all employees on the benefits of an ecosystem based golf course environmental management program
- Store and handle all potentially harmful products to minimize employee exposure
- Regularly train employees on the potential health hazards associated with their duties
- Involve entire staff in ensuring a safe golfing opportunity for their customers



*Course employees should wear protective headgear at all times.*



*Employees are availed several training opportunities each year.*

### Observations

- Ensure that all pesticide applicators are enrolled in respiratory and pulmonary monitoring programs
- Environmental training is available on the installation for employees
- Superintendent Rick Young is the squadron's environmental coordinator
- Inquire of the possibility of installation environmental staff conducting training for Advisory Council and employees

<b>Safety, Training, &amp; Awareness</b>				
<b>#</b>	<b>Environmental Compatibility Indicator</b>	<b>Yes</b>	<b>Partial</b>	<b>No</b>
1	All employees are familiar with the GEM Plan and are trained regularly on the importance of environmental performance and compliance with the goals and objectives of the program?			✓
2	All appropriate employees are trained to be familiar with USAF, federal, state, and OSHA regulations that apply to storage and handling of chemicals used on the property?	✓		
3	Key employees are aware that chemical manufacturing, use, storage, and disposal may pose 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	Chemical applicators are encouraged to apply for continuing education programs and receive regular training to maintain currency?	✓		
7	Are all golf course pesticide applicators active participants in the local respiratory and pulmonary function testing program?	✓		
8	Pesticides, fertilizers, and other chemicals are stored on plastic or metal shelving?	✓		
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?	✓		
	<b>Point totals for each column - Response percentage</b>	<b>9</b>	<b>0</b>	<b>1</b>

## Compliance

### U.S. Air Force GEM program goals

- Integrate management practices with appropriate regulatory requirements and procedures
- Guarantee safe, healthy, and enjoyable experience for golfers while ensuring long-term operation of the facility
- Utilize installation expertise regularly on all matters dealing with bird aircraft strike hazards, regulators, impact analysis, and cleanup



*Recycling station is state of the art.*



*Containment for fuel tanks is not required yet could improve overall environmental compatibility of maintenance operation.*

### Observations

- Attend all ECAMP in-briefs & out-briefs
- Do more than what is required
- Provide input into all installation management plans that affect the golf facility
- Ensure ECAMP results are outstanding
- Continue building quality relationships with installation environmental and engineering staff by creating GEM committee that meets at least biannually

<b>Compliance</b>				
<b>#</b>	<b>Environmental Compatibility Indicator</b>	<b>Yes</b>	<b>Partial</b>	<b>No</b>
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 regularly scheduled meetings?	✓		
3	Are there regularly scheduled staff meetings to discuss environmental management issues?	✓		
4	Does the director of golf and the superintendent attend ECAMP 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 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	Are oil/water separators operating properly and correctly maintained?	✓		
10	Are projects planned and funded for the next year that would increase the compatibility of the course's management methods with the environment?	✓		
	<b>Point totals for each column - Response percentage</b>	<b>10</b>	<b>0</b>	<b>0</b>

## Pesticide Use, Storage, & Handling

### U.S. Air Force GEM program goals

- Ensure that all chemicals will be used, stored, and handled in appropriate manner at all times
- Compile and utilize an Integrated Pest Management approach to caring for the entire golf facility
- Licensed pest applicators are strongly encouraged to attend personal safety training and health monitoring programs



*Superintendent Rick Young infrequently employs pesticides.*



*New facility and associated demolition may require resiting of pesticide storage facility.*

### Observations

- Document, document, document...write down everything you know and track anything that might assist in better decisions in the future
- Excellent use of available technologies that minimize or eliminate potential negative environmental impacts
- Need to document practices in an Integrated Pest Management Plan

<b>Pesticide Use, Storage, &amp; Handling</b>				
<b>#</b>	<b>Environmental Compatibility Indicator</b>	<b>Yes</b>	<b>Partial</b>	<b>No</b>
1	Are there trained scouts on staff other than the superintendent to monitor turf and plant health and pest populations using scouting forms to record the type, severity, location, and treatment 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 and appropriately designed pesticide mixing area where all mixing occurs by only 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 regularly in use at the facility?	✓		
7	Are food storage and prep areas properly cleaned to reduce the likelihood of pest infestations and required pesticide applications?	✓		
8	Are scouting forms collected, indexed, and mapped to aid decisions for positive pest control planning?			✓
9	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"> <li>- the quantity of each pesticide used</li> <li>- the chemical or common name of the active pesticide ingredient(s) (not the product name)</li> <li>- the pest or purpose for which the pesticide was applied</li> </ul> --the date and place of application.	✓		
10	Is the chemical storage structure/area locked, well-ventilated, fire proof, and access is limited to select personnel?	✓		
<b>Point totals for each column - Response percentage</b>		<b>6</b>	<b>1</b>	<b>3</b>

## Pollution Prevention

### U.S. Air Force GEM program goals

- Employ practices that eliminate or avoid the potential for polluting the environment
- Guarantee that the golf course facility will not allow chemicals, fertilizers, detergents, or petroleum products they use to migrate outside their property boundaries
- Create and utilize a comprehensive pollution prevention plan for all aspects of the golf course and its facilities



*High-pressure air is provided for cleaning purposes rather than water.*



*The course is surrounded by indigenous vegetation far from water features that may transport stormwater runoff.*

### Observations

- Further reduce solid waste streams from clubhouse operations
- Continue using slow release fertilizers
- Regular training is provided for all employees on the specifics of pollution prevention and how they can help
- Ensure all pesticides are compliant with state, U. S. Air Force, and federal regulations
- Consider covering fueling

<b>Pollution Prevention</b>				
<b>#</b>	<b>Environmental Compatibility Indicator</b>	<b>Yes</b>	<b>Partial</b>	<b>No</b>
1	Are there designated "no-mow" areas and established "no spray zones" and buffer areas around pond, river, stream, or lake edges and have they been communicated to mower operators and technicians?	✓		
2	A spill containment kit is readily available and spill containment procedures are 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	Has the Installation Spill Plan been amended to include the golf course facility?	✓		
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	Does the fuel storage and delivery area comply with local, state, and federal regulations?	✓		
10	Are slow-release fertilizers used to reduce the negative potential for runoff?	✓		
<b>Point totals for each column - Response percentage</b>		<b>10</b>	<b>0</b>	<b>0</b>

## Conservation Practices

### U.S. Air Force GEM program goals

- Use natural resources efficiently while respecting their long term value to the local community and the mission of the USAF
- Provide important greenspace benefits
- Closely monitor and manage water use to prevent unnecessary depletion of installation or local water resources



*Deer are regular visitors to Marshallia Ranch's undeveloped areas.*



*This "snag" has purposely been saved to provide habitat benefits.*

### Observations

- Incorporate contour mowing procedures
- Increase communication with customer on 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)
- Consult with installation archaeologist to ensure compliance with cultural resource goals and objectives

<b>Conservation Practices</b>				
<b>#</b>	<b>Environmental Compatibility Indicator</b>	<b>Yes</b>	<b>Partial</b>	<b>No</b>
1	Are all motorized golf course equipment checked regularly for excessive air polluting emissions?	✓		
2	Are there designated non-maintained or minimally maintained buffers around core wildlife habitats?	✓		
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, 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 property been examined for critical habitats, threatened or endangered species, wetlands, and floodplains?	✓		
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 wildlife habitats and their maintenance practices been coordinated with the installation BASH officer and environmental management personnel?	✓		
10	Are recycling containers conveniently provided for customer and employee use throughout the golf course facility?	✓		
<b>Point totals for each column - Response percentage</b>		<b>9</b>	<b>0</b>	<b>1</b>

## Water Resources

### U.S. Air Force GEM program goals

- Minimize or eliminate potentially negative environmental impacts to all on- or off-site water resources
- Preserve water resources by using only those quantities required to maintain quality playing surfaces
- Ensure that any maintenance practices on or near water features are coordinated with appropriate personnel prior to taking action



*The lake that used to front the 3<sup>rd</sup> green was the only manmade water feature at Marshallia Ranch prior to its removal.*



*The landscape around the clubhouse was chosen to preserve limited and highly valued installation water resources.*

### Observations

- Elimination of leaking lake in front of the 3<sup>rd</sup> green is saving great quantities of water every day
- Continue utilizing native plant materials and appropriate xeriscape landscape design approach
- Integrate watershed protection measures to minimize or eliminate non-point source pollution by managing stormwater runoff and reducing the use of pesticides and fertilizers

<b>Water Resources</b>				
<b>#</b>	<b>Environmental Compatibility Indicator</b>	<b>Yes</b>	<b>Partial</b>	<b>No</b>
1	Are water features regularly monitored for algae, erosion, excessive aquatic plant growth, fish kills, and sedimentation?	✓		
2	Wash and wastewater is kept from making direct contact with surface water and is recycled or allowed to filter through a vegetative area when cleaning and maintaining equipment?	✓		
3	Outdoor irrigation of non-golf course areas and indoor plumbing are regularly monitored and maintained for leaks?	✓		
4	Has the golf course staff been provided 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 natural 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 the parking lots for customers and employees at least partially constructed with permeable surfaces and are they drained through an area of turfgrass or vegetation prior to discharge into a water feature?			✓
9	Does the facility have a Drought Management Plan written, ready, and available when, or if, irrigation restrictions may be instituted?			✓
10	Are water quality problems immediately reported to supervisors or regulatory agencies (if required) for appropriate action?	✓		
<b>Point totals for each column - Response percentage</b>		<b>8</b>	<b>0</b>	<b>2</b>

## Maintenance Practices

### U.S. Air Force GEM program goals

- Integrate the concept of ecosystem management into all course management decisions and practices
- Employ the principles of integrated pest management
- Document all activities for future reference
- Constantly examine management practices to look for improvements
- Insist on a well-trained staff



*Maintenance requirements can be eliminated by redesign.*



*Excellent playing conditions are a testament to the high level of maintenance accomplished by Rick Young and crew.*

### Observations

- Increased training and involvement of staff on integrated pest management procedures
- Compile written pest profiles of common pest species
- Begin to consider alternatives to ice plant if it is identified for removal as an invasive exotic
- Increase number of trained scouts on the maintenance staff

<b>Maintenance Practices</b>				
<b>#</b>	<b>Environmental Compatibility Indicator</b>	<b>Yes</b>	<b>Partial</b>	<b>No</b>
1	Is contour mowing used to conserve fuel and increase playability and aesthetics?		✓	
2	Are there designated non-maintained or minimally maintained buffers around core wildlife habitats?	✓		
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 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 contamination?	✓		
7	Has there been a complete examination for potential negative environmental impacts of all aspects of the operation including snack bar/grill, clubhouse, pro shop, and maintenance complex?	✓		
8	Are trees and other vegetation on the course maintained to encourage positive air flow and sunlight penetration to improve cultural conditions for the turfgrass as well as to minimize pesticide inputs?	✓		
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?	✓		
<b>Point totals for each column - Response percentage</b>		<b>8</b>	<b>1</b>	<b>1</b>

## Customer Relations & Education

### U.S. Air Force GEM program goals

- Ensure that the customer knows that their opinions count and will be acknowledged, assessed, and acted upon
- Educate the customers about the benefits of environmentally responsible golf course management and the future of the game and the environment
- Enlist customer support and assistance on caring for the course and its facilities as well as GEM Plan goals



*Marshallia Ranch is popular with the community and the installation.*



*There are several opportunities to share information.*

### Observations

- Continue effort to solicit customer opinions
- Create a location to communicate environmental management goals and maintenance plan in the clubhouse
- Consider installing interpretive signs at selected areas to inform customers and employees of environmental challenges

<b>Customer Relations &amp; Education</b>				
<b>#</b>	<b>Environmental Compatibility Indicator</b>	<b>Yes</b>	<b>Partial</b>	<b>No</b>
1	Are the course manager and superintendent involved in a long-term customer educational program that is regularly updated and documented?	✓		
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?		✓	
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 Council, Civil Engineering, Environmental Management, the Services manager, and commanders by course management?	✓		
5	Has the environmental management staff been asked to lead regularly scheduled educational seminars on the course's environmental challenges for golfers, commanders, and the golf staff?		✓	
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 R & A 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?	✓		
	<b>Point totals for each column</b>	<b>6</b>	<b>2</b>	<b>2</b>

## Miscellaneous Special Projects & Activities

### U.S. Air Force GEM program goals

- Educate the local community about the benefits of an environmentally responsible golf course management approach is for the future of the game and the environment
- Reach out to school children to raise their awareness and appreciation for the game of golf and the GEM Plan principles
- Further the great game of golf at all times in as many ways as possible



*Marshallia Ranch is one of the most beautiful U. S. Air Force courses.*



*If only every tree on the property was as striking as this cypress....*

### Observations

- Conduct field trips at the course for local school children
- Initiate an 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

<b>Miscellaneous Special Projects &amp; Activities</b>				
<b>#</b>	<b>Environmental Compatibility Indicator</b>	<b>Yes</b>	<b>Partial</b>	<b>No</b>
1	Are there projects planned and funded for the next year that would communicate 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	?	✓		
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?			✓
	<b>Point totals for each column</b>	<b>5</b>	<b>0</b>	<b>5</b>

## ECQ Summary

#	Environmental Compatibility Quotient Category	Yes	Partial	No
1	Overall Management Philosophy & Documentation	6	3	1
2	Safety, Training, & Awareness	9	0	1
3	Compliance	10	0	0
4	Pesticide Use, Storage, & Handling	6	1	3
5	Pollution Prevention	10	0	0
6	Conservation Practices	9	0	1
7	Water Resources	8	0	2
8	Maintenance Practices	8	1	1
9	Customer Relations and Education	6	2	2
10	Miscellaneous Special Projects & Activities	5	0	5
	<b>Composite points &amp; response percentage</b>	<b>77</b>	<b>7</b>	<b>16</b>

## GCEBA Results

Σ Marshallia Ranch Golf Course, Vandenberg AFB, CA

- Actual ECQ = 77 or “Showing progress”

- Potential ECQ = 84 or “Getting there”

## Conclusion

Although Marshallia Ranch Golf Course facility may only occupy 237 of the nearly 100,000 acres of the central California coast that comprise Vandenberg AFB, it provides countless high quality hours of enjoyment, exercise, and recreation. Almost 50,000 rounds are played annually at Marshallia Ranch, one of the U. S. Air Force's premier facilities. During his more than 25 years at the helm, the Director of Golf has created a golfing gold mine for Vandenberg AFB and the community. His management style alone is worth emulating as he simply hires good people who know their jobs and do them well. The superintendent applies this learned lesson outside on the course as well; and it shows. The course itself is highly recommended for all levels of golfers. The fairways are densely turfed and well defined. The rough is tough, yet fair. The greens can be difficult to read but their putting speed is compatible with their contours. The eucalyptus forests and ice plant are punishing and are the most severe and likely the only real threats to a good time for all.

## Areas needing improvement

The ECQ Summary on the previous page highlights the following areas for relative improvement Vandenberg AFB, CA:

- Pesticide Use, Storage, & Handling
- 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.



*Dining area works well for one group or two.*



*This slope is a little too steep for easy irrigation or mowing.*



*Backflow preventer is one of the few incongruous items on the course.*



*Ice plant abounds on the course and can come into play.*



*Vandenberg's architectural standards apply to the comfort station too.*



*Steps up this steep slope assist players in getting to the 9<sup>th</sup> green.*



*The 14<sup>th</sup> green is extremely challenging to read and make putts.*



*The tee shot on the 11<sup>th</sup> is blind...*



*...necessitating this "over the horizon" device.*

## Environmental challenges

One of the important results of the GCEBA process is the identification of significant issues or challenges that should 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 Marshallia Ranch Golf Course, Vandenberg AFB, CA:

- Invasive exotic plants & animals
- Archaeological/cultural resources
- Threatened & endangered species
- Solid waste management
- Watershed protection
- Areas of Concern 111 & 112

## INVASIVE EXOTIC PLANTS & ANIMALS

Like most of California, Vandenberg AFB and Marshallia Ranch Golf Course are heavily populated with Australian native eucalyptus and the ubiquitous ice plant. Other invasive exotic plants include Veldt grass, European beach grass, and pampas grass.

Working with the local game warden and employing humane yet aggressive seasonal trapping, up to 50 feral pigs are removed every year from the golf course property. The descendants of fugitive farm animals have a habit of digging up the superintendent's fine turfgrass fairways and greens foraging for food. Accordingly, the INRMP states as a goal: "control or eradication of invasive exotics and the protection of native habitats and sensitive habitats".



*Cages are used to trap feral pigs that inflict heavy damage to turf.*

## **ARCHAEOLOGICAL/CULTURAL RESOURCES**

If actions taken during the planning, design, and environmental impact analysis of the proposed new maintenance complex are any indication, archaeological and cultural resource issues will continue to challenge the golf course staff. In fact, any extensive digging will require that a representative of local Native Americans must be present throughout the process. Although the maintenance complex project received clearance to proceed, it could still become embroiled in federal and state requirements due to an “unanticipated discovery”. Meaning, of course, that at any time in the future, the archaeological/cultural challenge could impact the management practices of Marshallia Ranch Golf Course.

Also, the historic ranch house is directly across from the clubhouse and its requirements may affect management decisions due to its proximity.

## **THREATENED & ENDANGERED SPECIES**

The central California coast is home to several species receiving some protection under either federal or state law. There are 13 species of animals and 4 plants that are federally listed as either threatened or endangered. There are four birds listed as species of concern including the burrowing owl, and a sparrow, blackbird, and bittern. According to the INRMP, the golf course is in position to contribute to the installation’s natural resource management goals. It is paramount that none of the actions taken by the golf course staff negatively impact any of the listed plant or animal species.

## **SOLID WASTE MANAGEMENT**

What to do with green waste, used containers and packaging, and old tires has always been an issue. As state and federal laws are changed or created, they can become real challenges to golf course managers. Add to the mix a newly written “deconstruct” regulation that will require old buildings to be painstakingly demolished in such a way as their materials can be reused. The new golf course maintenance complex project will include demolition of old facilities that will be subject to this new environmental requirement.

## **WATERSHED PROTECTION**

The Marshallia Ranch Golf Course is situated on a long ridge overlooking the San Antonio Creek where several of the protected animals and plants reside. This fact, in itself, dictates extra attention from the golf staff. Anything used on or around the golf course can potentially be washed downhill into this sensitive water resource. Stormwater management, pesticide use, fertilization practices, and use of other organic chemicals are some of the issues that must be considered at all times by the Marshallia Ranch staff.

## **AREAS OF CONCERN (AOC) 111 & 112**

Limited information was provided with the exception of a map showing the location of these AOCs nearby the clubhouse. Several sampling points were also located on a map throughout this area as well as the maintenance complex area. The golf staff should confer with the appropriate environmental staffer to determine if their management procedures need be altered to accommodate this challenge.

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