

An ACSP Environmental Case Study

Contained Chemical Mix/Load Facility Installation

I have been urging superintendents to enroll in the ACSP program as part of the Audubon International's 50-in-5 campaign to get 50 percent of the Florida golf courses in the program within the next five years. I also know that there are still a lot of skeptics out there just waiting for someone else to take the plunge first. One of the things you are required to do for ACSP certification is an Environmental Case Study on a subject that falls within the standard management practices of the ACSP, which are listed in the certification handbook. We are going to be submitting ACSP case studies done on Florida golf courses in the Florida Green as hands-on examples what some of your peers are doing to get their courses certified.

Our first case study in this series of "how-to" articles is from Kyle Sweet, golf course superintendent at the Sanctuary Golf Club on Sanibel Island. Kyle's case study is on the contained chemical mix/load facility recently installed on the golf course. According to Joellen Zeh, staff ecologist with AI, "This is a good example of a course that was already 'doing it all' because of the strict scrutiny that the development was given due to its location within a wildlife refuge, and yet, the Sanctuary's awareness and best management practices were strengthened even more due to their involvement in the ACSP."

Shelly Foy

By Kyle D. Sweet

The Sanctuary Golf Club did not have a contained chemical mix/load area. The original installed area was a 4-inch concrete pad poured level adjacent to the chemical storage building. This pad had no containment and had been used for mixing/loading for several years.

If a spill were to occur, there was great potential for the material to enter either of two nearby storm drains located in the maintenance facility's asphalt-paved areas. If a spill reached these storm drains, the contaminants could ultimately reach a nearby water body, which serves the 12th hole.

I proposed a project to eliminate this potential hazard. The contained chemical mix/load area project was chosen due to the liability of the potential hazard as well as the desire to comply with the necessary requirements of the Audubon Cooperative Sanctuary Program for Golf Courses.

The entire process began with gathering information on a portable containment skid and taking our proposal to a local structural engineering firm to put our ideas to work. The permitting process and engineering drawings took approximately two months to get completed so we could begin construction of the site.

The current mix/load site was the best location to build the new containment area. Demolition of the existing 4-inch-thick concrete slab was necessary, since the new slab needed to be 6

inches thick to be approved due to construction techniques. Once all of the old concrete was removed, proper reinforcing mesh was installed and the 6-inch slab was poured.

A concrete-block half wall was then constructed along two sides of the slab to protect the area from vehicle traffic as well as foot traffic that travels in and out of the facility area. The new slab was adjacent to the chemical storage building so, in order to cover it properly, an extension of the roof was necessary. The new roof to cover the mix/load area was actually fastened to the existing tie beam of the chemical building and became a large overhang for the area.

While the roofing and lighting were being installed to the new roof, we also had all electrical outlets, breaker boxes and light switches removed from the interior of the chemical storage building. Vapor-proof lighting was installed, which replaced previous insufficient lighting. All new construction of chemical storage buildings are permitted only in this way so I was glad to get us into compliance in this aspect also. In order to support the new overhanging roof, three large support posts needed to be installed along the outer edge of the slab inside of the half-wall. These support posts were buckled to the wall and fastened to the slab.

When the construction of the area was completed we sealed the slab with an impervious sealer and installed protection posts at the corners of the half wall. The posts are 6-inch PVC set and filled with concrete to prevent damage to the wall from vehicles.

This containment bay was built to accommodate a chemical mix/load skid that is constructed of aluminum and stainless steel by ESD Waste 2 Water manufacturing. This skid was placed on the new slab under roofing and had many advantages over other systems I have seen.

Advantages

1. This mix/load skid is portable and could be moved and used throughout the property if needed.
2. The mix/load area could be used for something else in the future if needed. It is accessible with our large loader under roof and could serve as dry storage area.
3. All piping and working parts are visible and able to be worked on by our staff. There is no underground electrical or underground rinsate piping.
4. The system is very easy to empty and clean of rinsate material. Many staff members have been successfully trained in using the rinsate for small sprayer applications throughout the property. Now that the area is completed and working, it has served us very well. It has proven to provide us with a water savings in our use of our small handheld and electrical 15 gallon sprayers by using the rinsate water instead of additional potable water. Most of the small sprayer use is for non-selective spraying with Round-Up herbicide. It has been very easy and dependable for our IPM manager to work with and has removed the worry of a spill from chemical mixing entering into any of our surrounding storm drains or waterways.



Demolition of the old slab outside the chemical room. Note containment around the fertigation tanks to the right.



Portable 400-gallon-capacity containment skid with portable sump pump located on sealed concrete floor in protected mix-load area. Photo by Kyle Sweet.

Goals

The goals for this project:

1. Prevent the possibility of pesticides from entering maintenance facility storm-drainage basins and surrounding water bodies from a spill while mixing and loading chemicals.
2. Keep the project as cost efficient as possible.
3. Install a system that is easy to maintain for our IPM manager and that will last for many years without costly maintenance.

4. Have the ability to re-use the chemical rinsate water to carry out non-selective herbicide spraying on the golf course rather than using costly city water supplies.

Implementation And Maintenance

In order to implement this project several steps had to be taken:

1. Proper permitting through the City of Sanibel Planning and Building departments.

2. Engineering drawings done to illustrate our ideas so the project could be bid on and permits could be acquired.
3. Measuring of the area to make sure that the additional construction of a covered area would not interfere with the necessary delivery and maintenance traffic that must travel throughout our facility each day.
4. Keeping the area as close as possible to the chemical storage building. Since there was a pre-existing slab (without containment) adjacent to the building this was not a difficult decision.
5. Separating the area from normal facility operations. This was done with the use of a concrete half-wall. Once the area was constructed we instructed our maintenance staff to treat this area the same as the chemical storage area. No access into the area unless instructed to do so.
6. The size of the rinsate storage had to be large enough to facilitate our largest sprayer. Our largest volume sprayer is 300 gallons and the drive-on skid will hold 400 gallons of liquid when empty.
7. The pumping system to extract the rinsate needs to be maintained. A filtering system was installed and has to be monitored to filter out unwanted grass and soil that might enter the holding area of the skid. This filter will catch the solid material before entering the pump, which will help the performance and life of the pump.
8. Sealing the new 6-inch slab was done to pre-

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vent any material entering the concrete flooring that surrounds the drive-on skid system.

Results

The environmental and employee safety level has been substantially increased because if any mixing/loading spills occur, they will be contained in the sump area of the newly installed mix/load skid.

Golfer/Employee Response

The project was originally proposed to the Greens and Grounds Committee of The Sanctuary Golf Club in coordination with the Audubon program as well as the Best Management Practices for Golf Courses published for the state of Florida. We had to have capital money approved to complete the project and stressed the importance of this project to everyone involved in the budget process.

As the project progressed I publicized our progress and was able to meet with members at the site and show them what was being done. Once completed, I toured the committee through the operation of the area and they were very impressed with the project. I also walked through the area with the assistant fire chief of Sanibel during their inspection of the building add-on. They also were impressed with the operation and the fact that we were being proactive to prevent accidents.

Perspectives and Recommendations

My first recommendation is to have staff that can handle a spill if one occurs. For the past three years our department has trained five individuals to act as a Spill Response Team. Our IPM manager, Fred Fulford, is a trained OSHA Level V Incident Commander, while four other staff members are trained to assist him in the event of a spill. All personal protective equipment is on hand to handle a spill. We can react immediately to an incident within the full scope of the law pertaining to Hazardous Spill Cleanup. I feel this is very important as the amount of time a spill is uncontained can increase the risk of harm to the environment. Also, the services of outside contractors are at a premium cost. Our club can be assured that the problem will be handled as safely and cost effi-

ciently as possible.

With our existing facility size restrictions and chemical storage building location, I feel we did the best we could to improve our situation. I would not do anything differently. I would certainly recommend that golf courses of all types consider this type of mix/load area containment system. The flexibility and simplicity of the system will be a winner for anyone involved in chemical mix/load containment.

Costs and Benefits

How much did it cost to implement this project?
\$ 21,050

What are your anticipated or actual financial savings?
Immeasurable.

Information

Yes, I am willing to take calls regarding this project.

Yes, photos are included with this Case Study.

Stewardship Notes

Another Outreach And Education Idea

By Shelly Foy



We have all heard the expression, "practice what you preach." You practice environmental stewardship on your golf course, but does that extend to your family and your own home? Where better to start employing good sound environmental practices than in your own backyard?

AI's

Treasuring Home program offers a guide to environmental stewardship

for homeowners. "Valuing and caring for the natural resources and unique landscapes in places we call home is critical to creating a healthier and more sustainable environment for the future," says Jean Mackay, Audubon International's director of educational services.

It occurred to me that golf course superintendents can use the Treasuring Home program and accompanying guide as another Outreach and Education program for their Audubon Cooperative Sanctuary Program. This is an excellent tool for introducing your golfers/members to AI and getting them interested in supporting the same type of projects on the golf course.

The booklet, Treasuring Home, which is available to all donors to Audubon's Earth Fund, not only is filled with great indoor and outdoor environmental projects you can do at your home, but also includes a pledge to fill out and return which allows homeowners to make a commitment to good environmental stewardship. You can obtain a copy of the guide, or purchase multiple copies by contacting AI at 518-767-9051, or e-mail jmacky@audubonintl.org. You can also view the Treasuring Home guide and take the pledge online at www.audubonintl.org/homepledge.

Below is a list of some of the projects you can learn more about in the Treasuring Home booklet.

Outdoor Projects:

- Landscape primarily with native plants
- Incorporate food and shelter for wildlife and protect natural habitats
- Maintain water for wildlife
- Become more familiar with local natural areas, plants and wildlife
- Add a variety of trees, shrubs and herbaceous plants
- Use water wisely to maximize efficiency and minimize waste
- Protect water quality
- Maintain healthy soils for a healthy lawn
- Mow the lawn at the proper height and with sharp blades
- Reduce or eliminate the use of harmful chemicals

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