# Environmental Management & Planning

## Client
Marine Corps Base Camp Lejeune

## Location
Jacksonville, North Carolina, USA

# Sustainable Development Program for Camp Lejeune Marine Corps Base in Jacksonville, North Carolina

## Unique Features

- Developed detailed site maps; identified and marked buffer zone limits in all application areas
- Prepared an O&M manual and provided training to base personnel
- Developed a customized software program called the Integrated Residuals Application Management System (IRAMS) that is used to operate and manage the base's residuals management program

## Description

CH2M HILL is assisting Camp Lejeune's Environmental Management Department in improving overall environmental stewardship at the base by using sustainable development approaches. We are implementing a systematic plan for sustainability that will culminate in preparation of a Sustainability Master Plan. CH2M HILL works with Camp Lejeune in many areas of sustainability. For example, we updated Camp Lejeune's Pollution Prevention Plan; conducted a thorough field evaluation of the Cogdel's Creek watershed, including aerial photography and identification of wetland areas; helped Camp Lejeune develop land application as a cost-effective, environmentally sound residuals management method; and developed a comprehensive Solid Waste Management Plan. CH2M HILL also wrote the education and awareness programs that will be conducted to support the involvement of military and civilian workers in the overall program. Unique metrics that EMD has been able to achieve are more than $3.5 million in savings in 1 year resulting from recycling efforts; a 55 percent reduction in solid waste landfilled; and a 600 percent increase in the amount of solid waste recycled.

The Atlantic Division Naval Facilities Engineering Command (LANTDIV) retained CH2M HILL to develop a land application residuals management plan (RMP) for Camp Lejeune's new 15 mgd French's Creek WWTP. The RMP defines the residuals quantities, screening and selection methodologies for determining residuals application sites, equipment and staffing requirements and costs, and an implementation plan for the base.

CH2M HILL agricultural engineers and soil scientists conducted preliminary and detailed screening of available base land areas, screening potential land application sites with respect to soil suitability, and land use functions. Approximately 22,000 acres were deemed suitable for land application on the base. However, the presence of red-cockaded woodpecker habitat, training areas, artillery impact zones, and other restrictions, reduced the useable are to approximately 9,600 acres. At startup of the land application program, approximately 2,000 acres per year will be used for residuals land application. Ultimately, about 3,000 acres per year will be required for a design residuals production of 60,500 gallons per day. Residuals will be

applied to a variety of areas, including tactical landing zones, gun positions, landfill cover, and forested areas.

To help reduce solid wastes, increase recycling, and meet current regulatory and Navy-mandated requirements, CH2M HILL developed a comprehensive solid waste management plan for this 153-acre Marine Corp training base, home to 144,000 marines, sailors, and their families. The plan, the final step in the analysis of the solid waste management program, identified improvements to the recycling program to capture a larger portion of the solid waste stream. It also developed a long-term strategy for the most cost-effective management of the base's solid waste management, recycling, and disposal program.

The resulting plan included evaluation of procurement policy, collection and recycling programs, regulatory and Navy-mandated compliance actions, minimization and diversion practices, disposal records, and previous and current waste minimization goals. It also outlined educational awareness programs to support military and civilian worker and family involvement. CH2M HILL also provided a full assessment of cost and financing for existing and planned solid waste management practices.

CH2M HILL evaluated various methods of transporting and applying the liquid Class A residuals. Because of the widely scattered location of various application sites, a truck-based system was selected for the project. Highway tractors will shuttle 6,000-gallon tanker trailers to application sites, where 2,000-gallon application vehicles will fill and then apply the residuals.

Because of our previous work, LANTDIV retained CH2M HILL to implement the program in 1998. CH2M HILL developed detailed site maps, identified and marked buffer zone limits in all application areas, prepared an O&M manual, provided training to base personnel, and developed a customized software program called the Integrated Residuals Application Management System (IRAMS) that is used to operate and manage the base's residuals management program.

The Class A biosolids program has been operating successfully since 1998. Two brief non-compliance events prompted LANTDIV to consider developing contingency plans in the event that non-compliance conditions could occur. CH2M HILL was selected to develop the Biosolids Management Contingency Plan in 2000. The contingency plan was completed and accepted by LANTDIV, and a paper on the plan was selected for presentation at the 2002 WEF Biosolids Specialty Conference.