

Fort Hood Water Quality Monitoring Program

Background

The Blackland Research & Extension Center (BREC) has partnered with the Fort Hood ITAM program to monitor surface and storm water quality since 1995. Fort Hood's most prevalent problem is training area soil erosion. The training areas are subject to heavy traffic volumes on grasslands during military maneuvers which results in compacted soils and vegetation loss leading to severe erosion and sedimentation of area streams and lakes. BREC's monitoring program has expanded from measuring nutrient and sediment losses to determining the effectiveness of NRCS best management practices (BMPs) designed to reduce erosion. In addition to monitoring sediment loss from training areas, BREC has added studies utilizing water quality parameters to determine nutrient movement from small and large scale plots, and the effectiveness of gully plugs to reduce sediment loads. Using a combination of grab and storm water sampling, we have been able to establish a baseline of Fort Hood water quality conditions, establish trends and note changes in sediment and nutrient loads in surface waters.

Shoal Creek: Evaluating BMPs with Water Quality Measures

Water quality parameters may be affected by training activities on military installations and can be useful indicators for tracking land conditions. Ft. Hood erosion of maneuver training areas is of particular concern. BREC has been measuring storm water runoff sediment loads, and related water quality parameters, within numerous Ft. Hood watersheds, to determine the effectiveness of ITAM and NRCS implemented BMPs (Maneuver Access Structures, contour soil ripping and revegetation) to reduce erosion. Monitoring sites are instrumented with rain gauges, stream level loggers and programmable water sampling equipment. Water samples collected during storm water runoff events are analyzed for sediment content using EPA approved methods in the BREC Water Science Laboratory. Additionally, numerous water quality parameters are measured monthly to track base line water quality conditions in the area.

Action

Storm water runoff detention ponds, gully system check dams, and deep contour soil ripping are BMPs designed and implemented by ITAM and NRCS to reduce soil loss and increase water percolation in heavily eroded and impacted training areas. BREC scientists have utilized field measurements and hydrological modeling in the 5000 acre Shoal Creek watershed to document the efficiency of these erosion-reducing BMPs.

Partners

Department of Defense-Integrated Training Area Management (ITAM) Program
USDA-NRCS

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