

Are Environmental Audits Needed on Ranches? Perspective of an Auditor

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In an attempt to address questions raised by the Legislature, The Florida Department of Environmental Protection (FDEP) initiated a cattle dipping vat site assessment program in July 1994. This program is an effort to gather more information about cattle dip vat sites and to assess the potential human and environmental risks imposed by these sites. Twelve sites were investigated to determine if the former cattle dipping practices had impacted soils in the vicinity of the selected vats and to assess the actual or potential impacts to the ground water and/or nearby surface waters.

From 1906 through 1961, the federal government required the treatment of cattle with pesticides to eradicate the cattle fever tick. Cattle could not be shipped out of state unless they had been dipped in an arsenical dip and declared tick-free. More than 3500 cattle dip vats were constructed by governmental entities (federal, state, and local) to control the disease. The primary problem associated with the cattle dip vats is that many sites that used to be in rural areas are now developed. Investigations of some vat sites have indicated the presence of soil and ground water contamination, and issues of environmental impacts due to contamination have been raised.

The assessments for the cattle dip vat program were separated into two phases. The Phase I assessments were intended to determine if soil and ground water contamination were present at a particular site and focused on the highest probable area for contaminants, *i.e.*, the immediate area of the dip vat. The primary focus of the Phase II assessments was to better define the horizontal and vertical extent of soil and ground water contamination so that estimates could be made of

the volume of soil or area of ground water requiring remediation. This information will be used to develop interim risk management strategies and cost estimates for remediating other contaminated cattle dip sites.

The results of the investigation indicate that soil and ground water contamination by arsenic is the most common problem associated with dip vats. Land use categories and acceptable levels to determine the relative risk and priority for remediating cattle dip vat sites were developed by FDEP as part of this program and are presented as Section 5.0¹ of *Cattle Dip Vat Assessment Program: A Summary Report*.²

The acceptable levels were based on the expected degree of contact with soil and water at the site, given current and expected land use. An acceptable concentration for a cattle dip vat soil contaminant of concern in a remote, relatively inaccessible site with little human contact may be very different from an acceptable soil contaminant for a playground. The categories developed by the FDEP range from the highest risk category of "Residential" (involves potential contact on a full-time or nearly full-time basis) to "Restricted II" (involving infrequent site contact). Intermediate categories are "Commercial/Industrial" and "Restricted I". Of the 12 sites investigated presently, two sites are considered to be Residential, one to be

¹Section 5.0 of this report was prepared by Ligia Mora-Applegate (FDEP) and Dr. Stephen Roberts (University of Florida).

²Project No. 94F685, prepared for the FDEP by Woodward-Clyde Consultants, Tallahassee, Florida.

Commercial/Industrial, two to be Restricted I, and seven to be Restricted II.

Phase I investigation costs range from \$14,000 to \$36,000. The Phase II investigations range in cost from \$24,000 to \$190,000. Analytical costs are the single largest cost item of the assessments and may represent over 80% of the cost of an assessment. The costs of remediating the dip vats can range from \$40,000 to \$450,000 depending on the levels of contaminants and whether or not it is necessary to pump and treat ground water. Interim risk management strategies may be used to reduce the risk to acceptable levels until cleanup is needed.

Based on the method developed to prioritize clean-up of the cattle dip vat sites, this program has identified 11 out of 12 sites which have exceeded the appropriate acceptable soil concentration and will require consideration for soil remediation. The order in which these identified sites will be addressed is determined by the total risk score; therefore, the order to complete assessment and soil remedial action is as follows:

- Okaloosa-Walton Community College (Residential)
- Lake Arbuckle (Restricted II)
- Jay Livestock Market (Commercial/Industrial)
- Tosohatchee State Reserve (Restricted II)

- Myakka River State Park (Restricted II)
- Dudley Farm Historic Site (Residential)
- Lake Kissimmee State Park (Restricted I)
- Cecil Webb Wildlife Management Area (Restricted II)
- St. Marks (Restricted I)
- Blackwater River State Forest (Restricted II)
- Walker Ranch (Restricted II)
- Paynes Prairie (Restricted II)

Although the Walker Ranch site is considered a Restricted II site, the concentrations of arsenic detected in the soil samples collected at this site were below the acceptable level for arsenic in soils at Restricted II sites; however, the soils may need their leachate potential evaluated by Toxic Characteristic Leaching Procedure (TCLP). Additionally, ground water contamination by arsenic was detected at the site and may require ground water remediation.

The Walker Ranch site was the only extensive ground water contaminant plume identified during this study. Exceedances for arsenic, DDE, DDD, toxaphene, and benzene in ground water each occurred one time at different sites. The Maximum Contaminant Level (MCL) for arsenic was exceeded at 5 sites. Extensive ground water contamination does not appear to be associated with the other 11 sites.