SCREENING CRITERIA FOR BENEFICIAL UTILIZATION OF DREDGE SEDIMENTS IN VIRGINIA, USA[1]

W. Lee Daniels[2], Abbey Wick, Charles Carter III and Charles Saunders.

Abstract: Upland placement of dredge sediments is favored over bulk disposal options for many projects where contaminant levels meet beneficial utilization standards. Virginia Tech and Weanack Land LLLP have cooperated on a range of programs to develop and test appropriate screening criteria to determine whether a given material will be suitable for upland placement/beneficial use and what management or remedial strategies might be needed to ensure the materials can be safely utilized with minimal risk to soil and water quality and human health. Since 2001, we have placed over 350,000 m^3 of fresh water dredge materials from the Potomac River (Woodrow Wilson Bridge Project) and 175,000 m^3 of saline materials from the Earle Naval Weapons Station (N.J.) into intensively monitored upland placement cells and documented conversion to agricultural uses. The Earle sediments contained several PAH's above USEPA residential use standards, and were limited in initial plant productivity by entrained salts and Na. Detailed ground water and soil quality monitoring has indicated no adverse effects from either material's placement. An important primary screening parameter is acid-base accounting which should become a mandatory requirement. High silt+clay and TOC may also eliminate many dredge materials for physical and logistical reasons. Over the past several years we have successfully developed and gained Virginia Dept. of Environmental Quality approval for a sediment quality screening template that separates potential candidates into three categories (A) clean sediments that may be placed without monitoring, (B) moderately contaminated materials that may be suitable for upland placement with an appropriate remediation and monitoring protocol and (C) materials that are too contaminated or sulfidic to consider. These criteria are based upon a combination of USEPA risk-based soil screening levels, NJDEP sediment screening levels, USEPA 503 biosolids criteria, USGS background soils metals data and known agronomic/plant growth limitations. We believe that these criteria and this screening approach could also be utilized for a wider range of residuals when considered for upland use or as top-soiling materials.

Additional Key Words: Upland placement, soil screening levels, risk-based assessment, sand and gravel mining, topsoil substitutes.

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[1] Paper was presented at the 2012 National Meeting of the American Society of Mining and Reclamation, Tupelo, MS ***Sustainable Reclamation*** June 8 – 15, 2012. R.I. Barnhisel (Ed.) Published by ASMR, 3134 Montavesta Rd., Lexington, KY 40502

[2] W. Lee Daniels, Professor, Abbey F. Wick, Senior Research Associate, Dept. of Crop and Soil Environ. Sciences, 0404, Virginia Tech, Blacksburg, VA, 24061. Charles H. Carter III is Managing Partner, Weanack Land LLLP, Charles City, VA. Charles (Chee) Saunders is Senior Geologist, Marshall Miller & Associates, Ashland, VA.