

Stratigraphy of a NC Carolina Bay Using Ground-penetrating Radar. (S05-white092917-Poster)

Authors:

- R.P.Szuch - *North Carolina State University*
- J.G.White* - *North Carolina State University*
- M.J.Vepraskas - *North Carolina State University*
- J.A.Doolittle - *NRCS*
- C.W.Zanner - *University of Nebraska-Lincoln*
- L.Paugh - *NCDOT*

Abstract:

Juniper Bay is a 300 ha Carolina Bay in Robeson County, NC that was drained for agriculture by an extensive ditch network. The NC Dept. of Transportation plans to restore the bay to wetland for mitigation credit. Clayey soil horizons within the bay should act as aquitards, fostering saturation at or near the surface after restoration. The depth, extent, and continuity of clayey horizons in the bay were investigated using ground-penetrating radar (GPR). Continuous GPR surveys were performed along numerous transects in the bay. Soil cores to ≥ 6 m were taken on 17 transects and characterized to aid GPR interpretation. GPR traces were calibrated by matching clayey horizons in soil cores with reflections in the traces. After calibration, all reflections were delineated and their depths determined. Interpretations to date indicate that clayey layers are discontinuous in some parts of the bay. Clayey layers are shallow and thin enough in some areas to have been pierced by ditching. These natural and ditching-induced aquitard discontinuities may hinder restoration in affected areas. Additional soil cores are being obtained to further groundtruth and validate the GPR interpretations.

Corresponding Author Information:

Jeffrey White	phone: 919-515-2389
North Carolina State University	fax: 919-515-2167
Campus Box 7619	e-mail: jeff_white@ncsu.edu
Raleigh, NC 27695-7619	

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