UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
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SUBJECT: Post meeting comments re: Tri-cities field assessment of 10 July 2014

FROM: Charles A. Rhodes Jr., Ecologist, OMA

TO: Carol Petrow, OEP

DATE: 15 July 2014

A brief update regarding our meeting of yesterday:

HGM Reference site STL:

I received an E-mail from Kirk Havens (VIMS) yesterday in which he provided the qualitative (i.e., presence only) vegetation data for the HGM reference site in the vicinity of the current Tri-Cities project. The site is not located to the west if the Stumpy Lake Golf course as I had surmised, but rather just north of Elbow Road and due south of Stumpy Lake. That notwithstanding, the data are comparable to the tree and "shrub" data from the Plots 1-5 that Carol and I inspected (10 July) along with colleagues from the Norfolk Corps District and representatives of the applicant (see table below).

HGM Reference Site "STL" in the vicinity of Stumpy Lake/Gum Swamp				
Herbaceous species list	**Shrub species list**	**Saplings species list**	**Midstory tree species list**	**Canopy tree species list**
A. gigantea	V. corymbosum*	C. caroliniana*	L. styraciflua*	Q. velutina
S. rotundifolia		L. styraciflua*	A. rubrum*	L. styraciflua*
A. triloba		A. triloba	C. caroliniana*	Q. michauxii*
A. rubrum		F. pennsylvanica	Carya sp.	A. rubrum*
Carex app.		A. rubrum*		F. pennsylvanica
C. caroliniana		N. sylvatica		P. taeda*
C. joorii		C. glabra		C. caroliniana*
T. radicans		U. Americana*		N. sylvatica
E. americana		C. ovata*		L. tulipifera*
N. sylvatica		Carya sp		Q. pagoda*
P. quinquefolia		I. opaca*		C. ovata*
B. capreolata		Q. michauxii*		
* Also occurs in at least one of Plots 1-5 (Tree or Shrub stratum) in the most recent Tri-Cities field review (10 Jul 14)				

For future reference the following discussions are derived from Havens et al. (2012):

Reference wetlands are wetland sites that represent the range of variability in a Regional Wetland Subclass as a result of both natural processes and also anthropogenic alterations (e.g. succession, channel migration, erosion, and sedimentation). Reference wetlands provide examples of wetlands from a regional subclass whose characteristics can be observed, measured, and researched. Reference wetlands establish the range of variability and provide data for calibration of assessment model variables and functional indices.

Reference *standard* wetlands are a subset of reference wetlands that achieve a level of functioning that is both characteristic for the subclass and sustainable across the suite of functions inherent to the subclass. Generally, they are the least altered wetland sites in the least altered landscapes. Generally, the functional index for all functions in reference standard wetlands is 1.0. (Brinson, 1995, Smith et al. 1995, Brinson and Rheinhardt 1996, Rheinhardt et al. 1997, Rheinhardt et al. 2002). Some Delaware reference standard sites scored below 1.0 due to lack of oak species in the sapling layer and high pine presence. One original Virginia reference standard site scored less than 1.0 due to an anomalous high herbaceous cover plot of giant cane (*Arundinaria gigantea*). Sites that scored 1.0 in three or more functional categories and no less than 0.9 in the remaining category were added to the reference standard sites *a posteriori*. Reference wetlands analyzed for this regional guidebook and their functional capacity index scores are listed in Appendix C.

Reference *standard* hardwood mineral flats wetlands for model calibration were selected on the following criteria reflecting the least disturbed condition and sampling of over 100 sites:

• Less than 1% of the species are non-native or invasive.

• No ditches within the wetland assessment area (WAA) and no ditches within 200m of the edge of the WAA that have hydrologic impact on the WAA.

• No vegetation disturbance in the WAA such as forestry activity or mowing within the past 50 years.

With regard to the STL reference site listed in Appendix C mentioned above, the scores were as follows:

Maintain Characteristic Habitat Community: 1.0
Maintain Characteristic Plant Community: 0.8
Maintain Characteristic Water Level Regime: 1.0
Maintain Characteristic Carbon Cycling Processes: 0.7

Preliminary literature search:

I also received word from our librarian, Anne Gold, about the results of the preliminary literature search. There is apparently limited peer reviewed scientific information directly concerning the environs of Stumpy Lake. As I asked Anne to search the general literature as well (e.g.,

newsletters and newspapers) there are several articles regarding development in and around Stumpy Lake (including Tri-cities), as well as with regard to lawsuits, and federal and state agency involvement.

The only peer reviewed documents that Anne provided were two law review articles (Mueller and Tannery, 2005-2004; and Jaffe, 2001) and a master's thesis from Virginia Tech (Genovese, 2000).

Future Steps:

Given that Stumpy Lake was a water supply for Norfolk and Virginia Beach in the past, one would think that there would be some water quality monitoring data residing at either the state or local level. Moreover we may want to investigate whether or not there are any data with regard to Stumpy Lake water levels and quantity (hydrograph?) and quality of the water discharged from the lake into receiving waters.

Literature cited

Brinson, M. 1995. The hydrogeomorphic approach explained. National Wetlands Newsletter, November/December. Environmental Law Institute, Washington, DC.

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Jaffe, C. A. 2001. Tragedy of the Wetland Commons: What the Virginia Nontidal Wetlands Resources Act Says about the Future of Environmental Regulation. Virginia Environmental Law J. 20: 329-364.

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Rheinhardt, R. D., M. C. Rheinhardt, and M. M Brinson. 2002. "A regional guidebook for applying the hydrogeomorphic approach to assessing wetland functions of wet pine flats on mineral soils in the Atlantic and Gulf coastal plains," ERDC/EL TR-02-9, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

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