**National Wetlands Inventory**

Guidance for use in identifying wetlands for LCMS/LCMAP reference data collection

Wetlands are notoriously difficult to map using remote sensing data. This is particularly true of forested wetlands. The National Wetlands Inventory provides a very solid but not infallible source of ancillary data for supporting wetland calls, especially when direct visual evidence is limited as is often the case in closed canopy forested wetlands. The National Wetlands Inventory is generally derived by stereo photo-interpretation of aerial photography by wetland specialists. Accuracy is generally very high, especially for the primary “upland vs wetland” distinction (Kudray & Gale 2000; Nichols 1994; Swartwout and others, 1981). Errors tend to be errors of omission (Tiner 1997; Nichols 1994) therefore NWI is a better indication of presence of wetlands than of absence of wetlands.

For our purposes NWI can be assumed to be a very good indicator of wetland conditions. Nevertheless, the final call for forested wetland will be based on the weight of evidence in primary and ancillary data. It may be substantially based on ancillary data where the primary data does not provide adequate evidence one way or the other but should never be contradictory to what is seen in the Landsat.

Some classes in the NWI do not correspond to the LCMS/LCMAP Joint Response Design wetland class. These are the *Lake* and *Estuarine and Marine Deepwater* classes.

**When to Use the NWI layer:**

Wetlands, especially forested wetlands, will not always be easy to identify in the Landsat and Google Earth images. Very often closed tree canopy can prevent direct observation of inundation or understory vegetation. Furthermore, wetlands are very often either only periodically inundated or the result of saturated soils with minimal visible evidence at the surface.

NWI is a quick source of additional evidence for interpreting imagery for wetlands, particularly in forest pixels located in regions with a high occurrence of wetlands (see map http://geochange.er.usgs.gov/sw/impacts/hydrology/wetlands/wet\_usa2.jpeg), or anywhere visual evidence in Landsat and Google Earth is inconclusive regarding wetland occurrence. It will often be useful in combination with the SoilWeb layer and the elevation data in Google Earth.

**How to Use the NWI Layer**

Load the NWI streaming kmz into Google Earth. It will load for the extent of the current view. (When not being used it can be un-selected in the table of contents or faded). When consulting the NWI layer view it at a zoom level that the wetland class codes will display. Be aware of the “deepwater” classes which are not considered wetlands for out data collection (*Lake* and *Estuarine and Marine Deepwater).* Where the other NWI wetlands classes overlap the sample plot, it can be taken as strong indication of wetland conditions. Be aware of the limits of locational accuracy. Often the boundaries of the NWI layer will correspond to boundaries in vegetation patterns in the Google Earth imagery but may be offset slightly. Be sure to adjust for this.

Again, the final call for forested wetland will be based on the weight of evidence in primary and ancillary data. It may be substantially based on ancillary data where the primary data does not provide adequate evidence one way or the other but should never be contradictory to what is seen in the Landsat.