Range of NDWI Values

Water features in MSS images show positive NDWI values; a threshold of ≥ 0.13 was found to be the most suitable and most accurate (Al-Saady et al., 2015).

The value of NDWI ranges between −1 and +1. Generally, the negative value of NDWI indicates the built-up area and bare land those have no water surfaces, whereas the positive NDWI value shows water and vegetation surface (Guha et al., 2020)

McFeeters asserted that values of NDWI greater than zero are assumed to represent water surfaces, while values less than, or equal, to zero are assumed to be non-water surfaces. Soil and terrestrial vegetation features have zero or negative values, owing to their typically higher reflectance of NIR than green light. Image processing software can easily be configured to delete negative values. This effectively eliminates the terrestrial vegetation and soil information and retains the open water information for analysis. The range of NDWI is then from zero to one. Multiplying equation of NDWI by a scale factor (e.g., 255) enhances the resultant image for visual interpretation (McFEETERS, 1996).

A threshold value of 0.3 was applied to the NDWI image to better isolate surfaces without detectable water (NDWI less than 0.3) from those with detectable water surfaces (NDWI greater than or equal to 0.3). It should be noted that, while it was necessary in this study to use a threshold value of 0.3 for the NDWI to better discriminate between water and non-water surfaces, such a threshold value may vary from scene to scene, or from one date to another, because of varying sun-target-satellite geometry, or it may not be necessary at all. The decision to use a thresholding value for NDWI should be based upon the spectral responses of residential rooftops and other surfaces as compared to the water surfaces of maintained public swimming pools.(McFeeters, 2013).

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