

STORM WATER UTILITY DEVELOPMENT

SECTION 3

ERU CALCULATION

BOROUGH OF GREENVILLE
STORM WATER UTILITY DEVELOPMENT
Section 3 – ERU Calculation

3.0 MAPPING

Greenville Borough was mapped by Land & Mapping Services, LLC, on April 11, 2015. The aerial images were then used to develop high resolution images of the entire Borough overlaid with a topographical layer, Mercer County’s GIS parcel map and the Borough’s zoning district boundaries. The resulting image was reviewed parcel by parcel and a preliminary designation of *Residential* or *Non-Residential* was assigned. The resulting map, see Exhibit 3-1, was the starting point to determine the impervious area of 1 Equivalent residential Unit (ERU).

3.1 SFR REPRESENTATIVE SAMPLE

The preliminary designation resulted in a total of 1,901 detached single family residences. A sample size of 190 (10%) was determined to be statistically sufficient to give an accurate representation of the average detached single family residential lot within the Borough. Using a spreadsheet application, 190 parcels were selected at random and the impervious areas indicated on the aerial mapping measured for each using commercially available geographic information system (GIS) software. Exhibit 3-2 indicates the randomly selected residential parcels measured for impervious area to determine the value for the ERU. The results are presented in their entirety in Appendix A. The average impervious area for a residential lot in the Borough of Greenville was calculated to be 3,123 square feet.

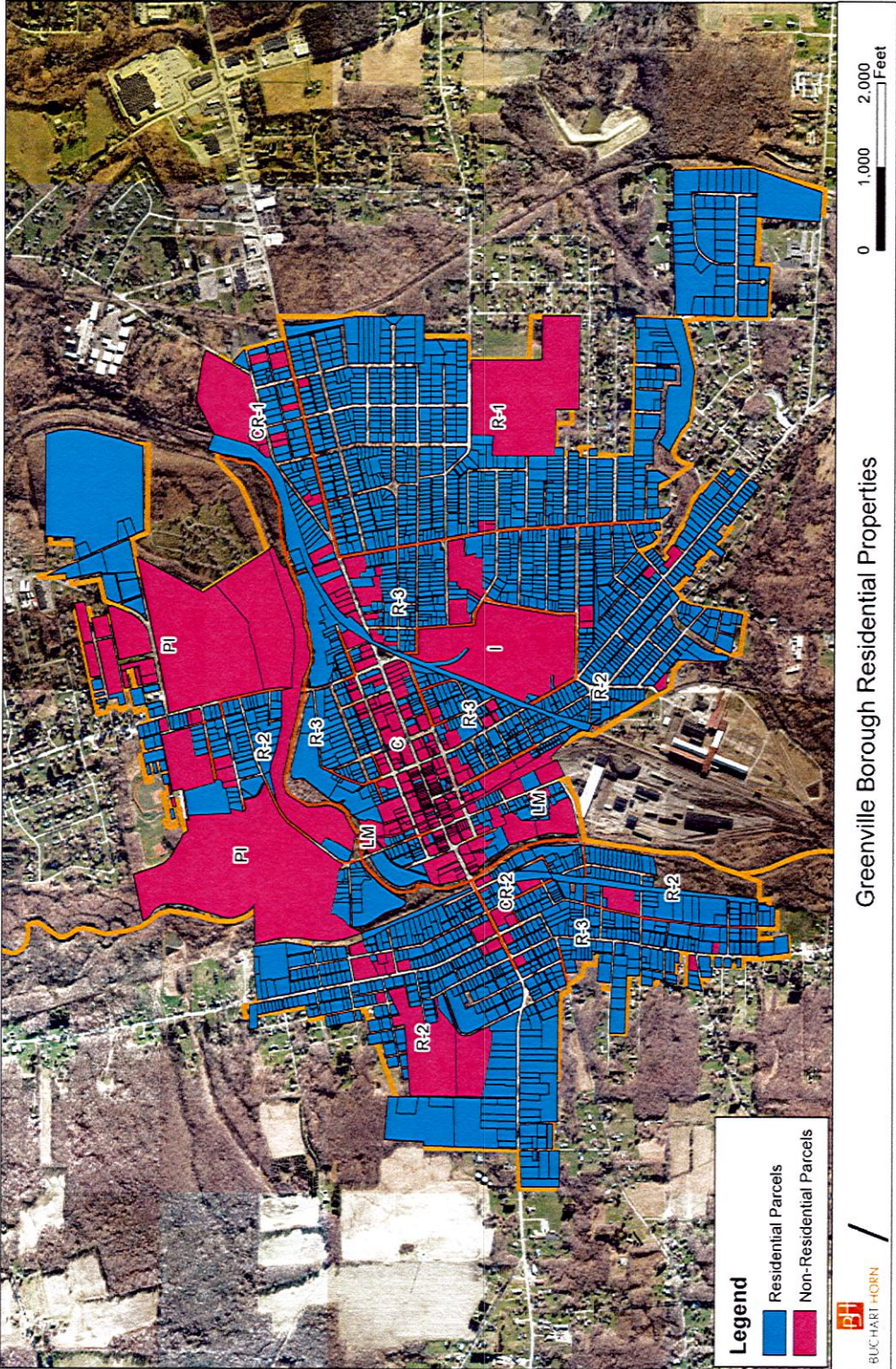
To verify the accuracy of these measurements, an audit of the measurements was performed. Fourteen (14) of the 190 parcels in the sample size were then randomly selected and the area measurements were performed again. The total average variation between the measurements was -0.39%. This close correlation achieved gives a high level of confidence as to the accuracy of the measurements performed and the large sampling size of 10% of all residential parcels gives a statistical accurate measurement of the average impervious area of a residential lot in the Borough. The value of impervious area representative of 1 ERU used to calculate non-residential lots is presented in Table 3-1.

Table 3-1 – Statistically Measured Value of 1 ERU

1 Equivalent Residential Unit (ERU)	3,122.83 square feet
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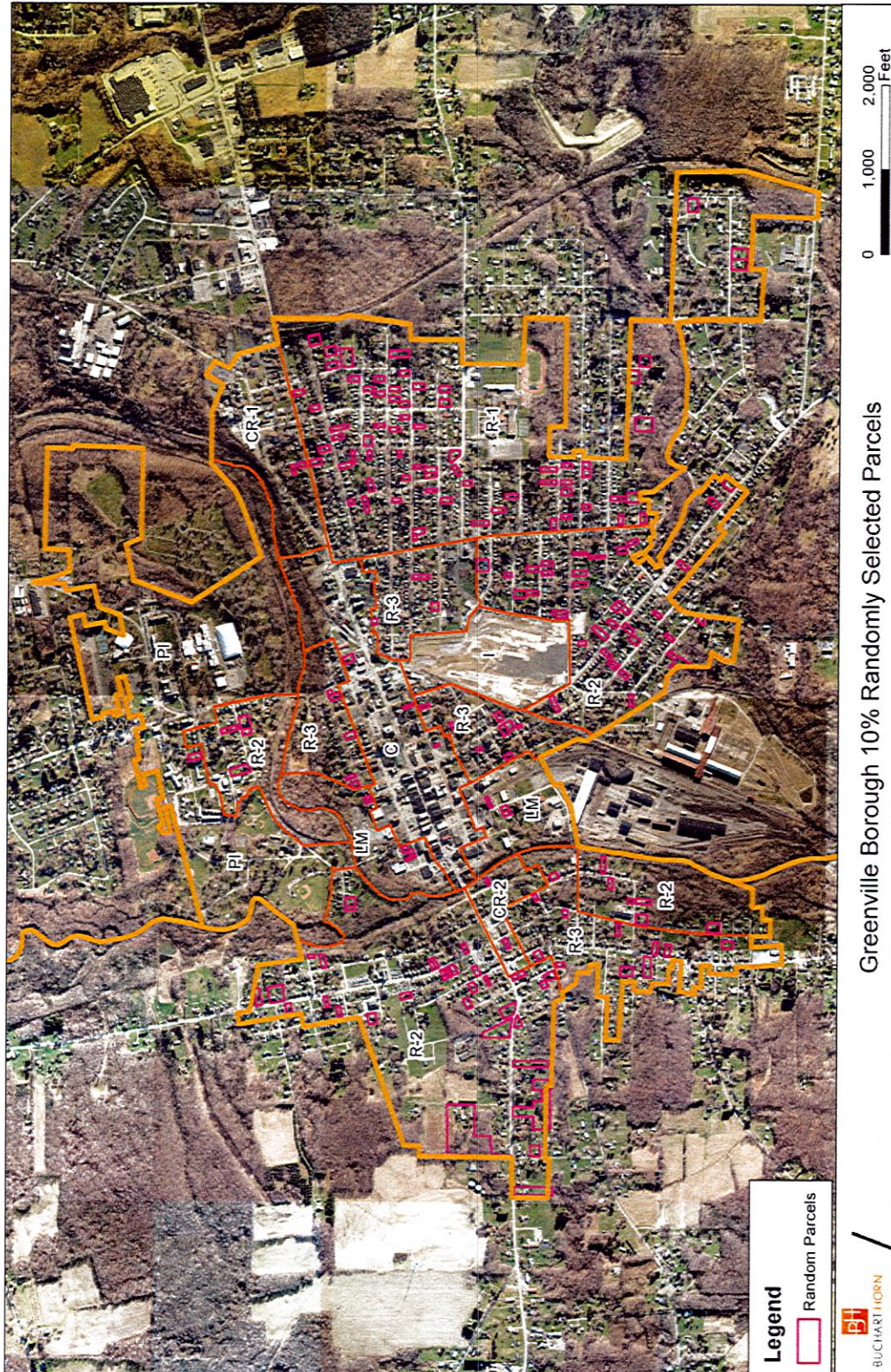
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Exhibit 3-1 – Borough Wide Residential Non-Residential Parcel Preliminary Designations



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Exhibit 3-2 – Randomly Selected Residential Parcels Measured For ERU Determination



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3.2 TOTAL RESIDENTIAL EDU CALCULATION

The Borough, with input from the Advisory Committee made the decision to establish a single tier for all detached single family residential lots. Regardless of actual impervious area actually present on a parcel, a detached single family residential lot would be assessed as 1 ERU. Mercer County provided a database of all parcel ID numbers. In combination with the preliminary mapping designation performed using the aerial mapping, the Borough's Tax Rolls were manually reviewed for designation as single family residential. The Borough's Code Enforcement Office reviewed the data to determine where detached single family residences may have been converted into multi-family residential apartments or commercial uses.

The total number of residential ERU's was determined to be 2,082. A detailed spreadsheet of all residential parcels in also provided in Appendix A.

Table 3-2 – Total Number of Residential ERUS

Type of Parcels	Number of Parcels	Number of ERUs
Residential	2082	2082

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4.0 NON-RESIDENTIAL PARCELS

Any parcel that was not occupied by a detached single family residence was designated as either vacant (i.e. not having a structure built upon it) or Non-residential. Under the ERU Model, a vacant parcel would not be charged a fee as no additional storm water run is being generated from the unimproved lot. A total of 271 vacant parcels were identified. The remaining 334 parcels were classified as Non-residential and are shown in Exhibit 4-1.

4.1 TOTAL NON-RESIDENTIAL EDU CALCULATION

The basis of the ERU model is to determine what ratio of impervious area a non-residential parcel has in comparison to the determined ERU value of 3,122.83 square feet. In order to simplify billing, only whole numbers of ERU's are used, however it was recognized that a single square foot over the ERU threshold would equate to an additional ERU charge. Based upon input from the Advisory Committee, it was decided to round up from 0.5 and down for less than 0.5.

The following are theoretical examples of the calculation on the ERU value for a Non-Residential lot:

Example 4-1 – A gas station with 15,926 square feet of impervious surface

Classification: A gas station is not a detached single family residence and therefore would be classified as a Non-Residential Parcel.

RAW ERU Value: $15,926 \text{ sq. ft.} / 3,122.83 \text{ sq. ft. per ERU} = 5.1 \text{ ERUs}$

Rounded ERU Value: 5.1 would be rounded down to 5 ERUs

Example 4-2 – A single family house converted into 4 student apartments with 5,621 square feet of impervious surface

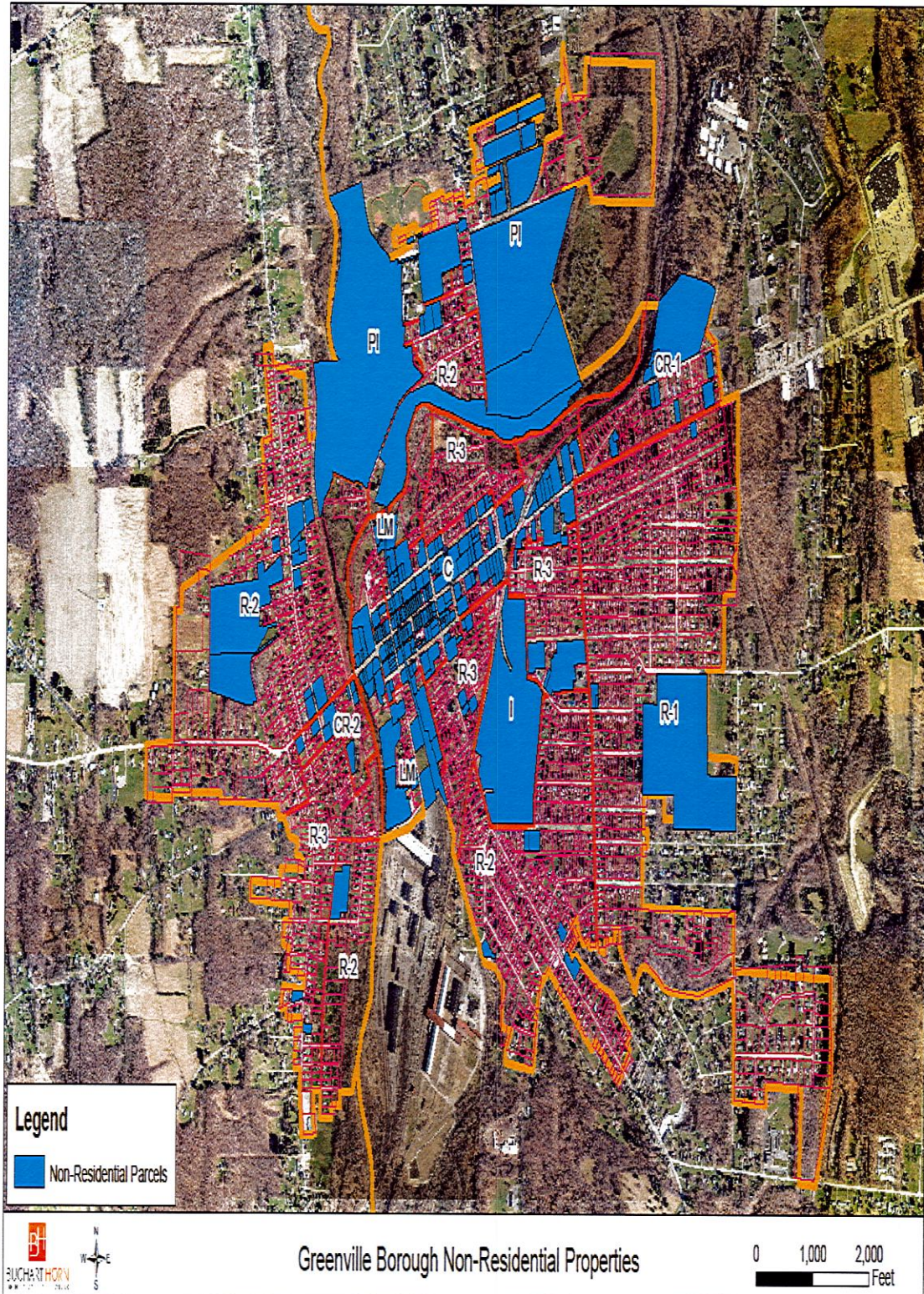
Classification: A single family house so converted into multi-tenant housing is no longer considered a detached single family residence and therefore would be classified as a Non-Residential Parcel.

RAW ERU Value: $5,621 \text{ sq. ft.} / 3,122.83 \text{ sq. ft. per ERU} = 1.8 \text{ ERUs}$

Rounded ERU Value: 1.8 would be rounded up to 2 ERUs

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Section 4 – Non-Residential ERU Calculation**

Exhibit 4-1 – Non-Residential Parcels Measured for Impervious Area



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The total number of Non-Residential ERU's was determined to be 2,396. A detailed spreadsheet of all residential parcels is also provided in Appendix B.

Table 4-1 – Total Number of Non-Residential ERUS

Type of Parcels	Number of Parcels	Number of ERUs
Non-Residential	334	2396

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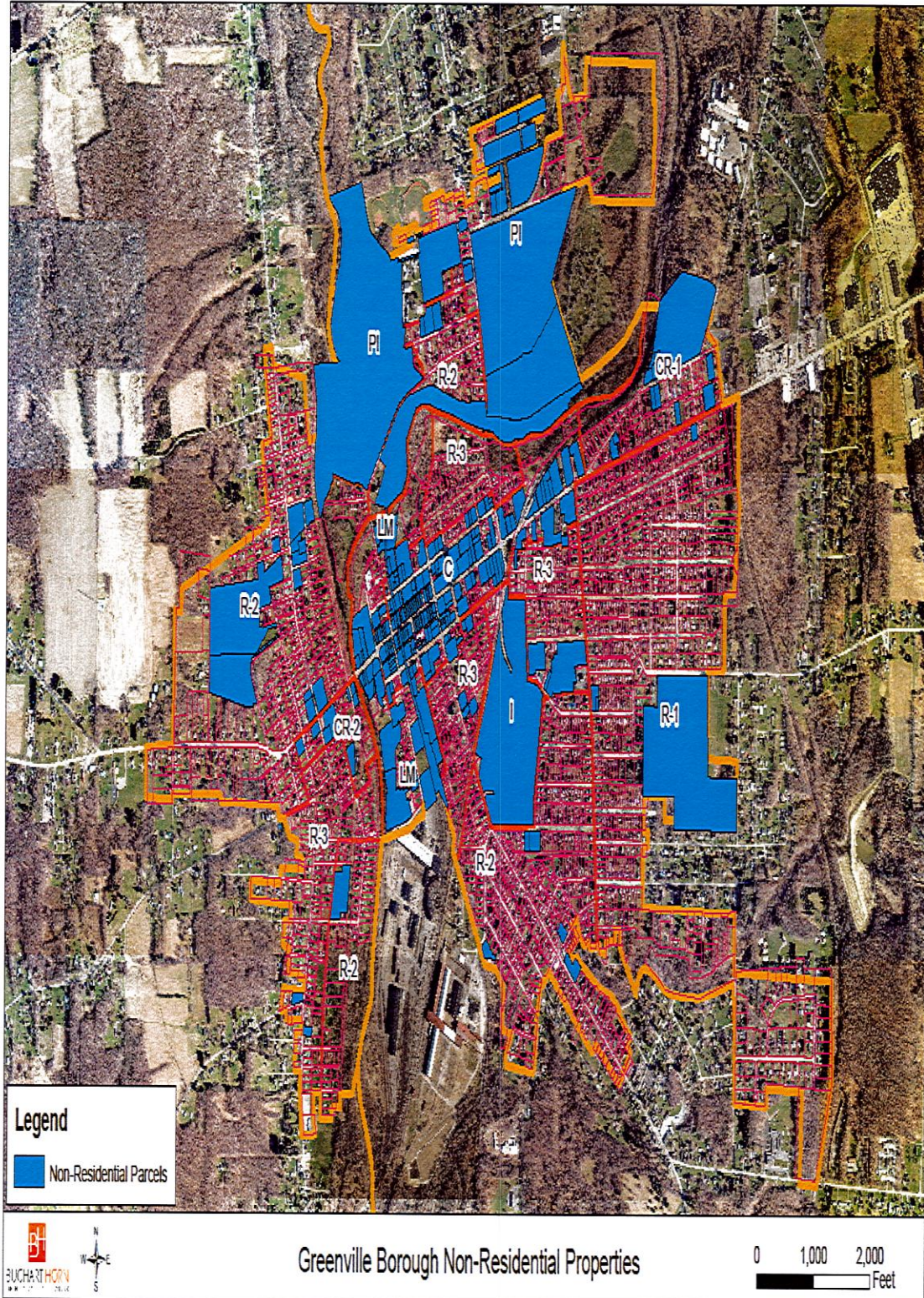
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