properties are coded as vacant, rather than pipeline, and considered to have future development potential.

Residential development on non-residentially-zoned and RAE-zoned land: Some of the county's non-residential zoning classifications allow residential development, including Business zones and Office zones. It is not common for Business zones to be developed residentially. It has been more common for OR-1 and OR-2 Office-Residential zones. There are very few vacant parcels remaining with OR and RAE zones, which is a high-rise mixed use zone. Some of these zones have not been developed in the past 10 years, and so no historical density factor can be calculated.

The residential development capacity for RAE zones and non-residential zones was not calculated. Residential development of these zones would likely be similar to mixed use redevelopment by the Planned Unit Development process, which is discussed later in this study.

Residential development on agricultural land: A few areas in the urban part of the county are zoned for urban residential development, but currently used for agriculture. Many of these parcels occur in growth areas that have not yet been built out.

Agricultural parcels were identified and their future development potential for residential units was considered in the model along with vacant parcels.

Other factors: Several other factors have significant impact on the future potential of residential development that is not related to zoning. These include alternative development processes, in particular the Planned Unit Development Process, and the emergence of redevelopment which, when coupled with the PUD process, is producing residential units at a greater density. A discussion of these factors follows the zoning analysis.

THE MODEL--STEP BY STEP

The development capacity analysis was performed in a series of steps. The first step was a major undertaking--recording the existing land use of each parcel in Baltimore County in a GIS database. The remaining steps comprise the actual calculations performed to determine the residential development estimates. At each of these steps, the results of the calculations are reported, so that the effect of the various factors taken into account can be seen.

STEP 1. CODE EXISTING LAND USE

Each land parcel in Baltimore County was coded using the land use categories shown in Figure 4. The coding was based on available information contained in the County's Geographic Information System, including cadastral layer (property boundaries with tax parcel information), buildings classification data, and aerial photos. Community planners, who have personal knowledge of the land uses in the areas they are assigned, checked the coding for accuracy.

For simplicity, where there was more than one land use on a parcel, and it did not belong in one of the mixed use categories, the parcel was coded using the predominant use (covering more than 50% of the parcel).

Any parcel that did not contain a principal building was examined to determine whether it should be considered vacant. For non-residential parcels, if a parcel contained uses that were accessory to an adjoining parcel (such as a parking lot or garage), its land use was coded the same as the adjoining parcel. Residential parcels received a higher level of scrutiny in their coding. As mentioned previously, in order to obtain the highest estimate of development potential, a parcel with residential accessory structures was coded as vacant if it appeared large enough to accommodate a dwelling, and if its development would be consistent with the pattern of the neighborhood.

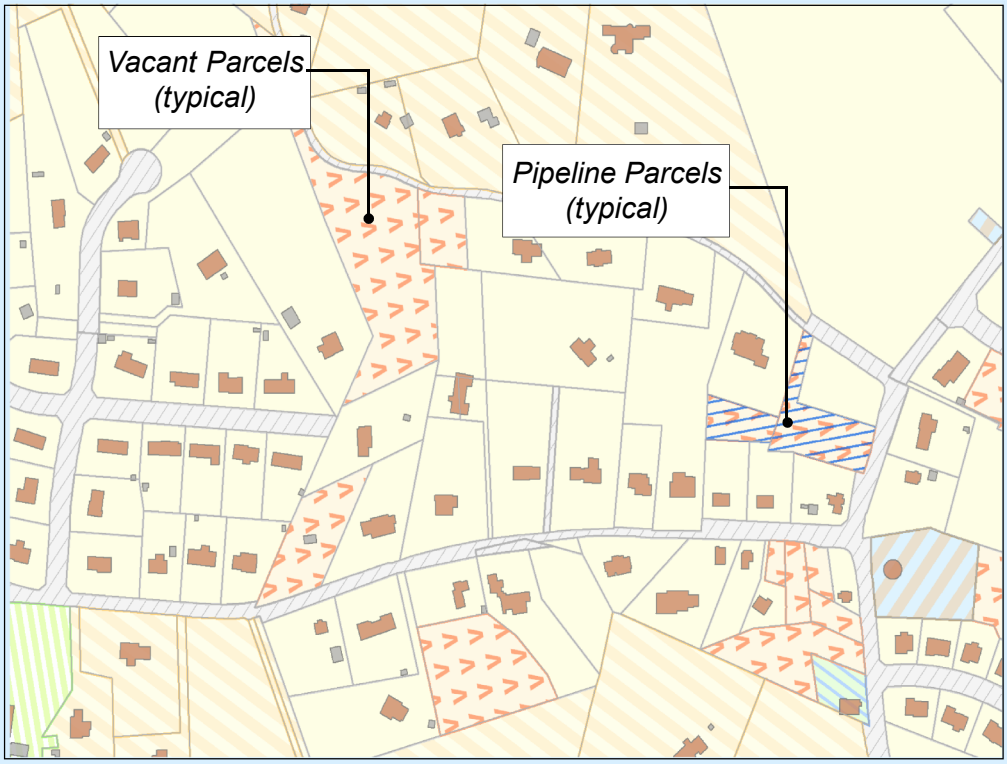
Figure 4: *Land Use Codes*

If a vacant parcel was too small or narrow to accommodate a dwelling but was in the same ownership as an adjoining parcel with a principal building, the parcel was coded the same as the adjoining parcel.

Some parcels were coded "Unbuildable" when it was known that they are extremely environmentally constrained or if its shape would not accommodate a dwelling (e.g., long, narrow parcels). If a parcel was part of a current development project, it was coded as "Pipeline." If a parcel had been the subject of a development proposal formally submitted to the county, but it had been more than ten years since any activity had taken place, the parcel was coded "Vacant." (See Appendix B, page 46 for a detailed description of the land use categories.)

Figure 5.1

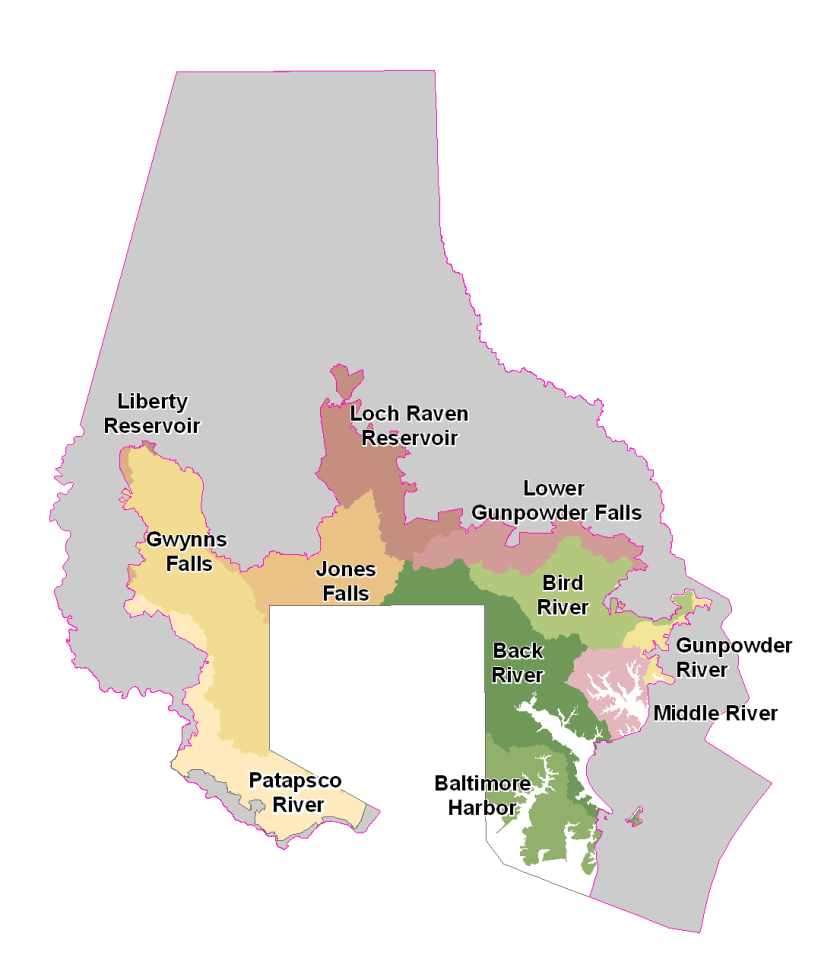
Step One: Identify Existing Land Use.



STEP 2. CREATE SUB-AREAS BASED ON WATER QUALITY PLANNING AREAS

Recent legislation requires Baltimore County to tie its land use to the water resources element. Watersheds were used in the water resources element to calculate pollutant loadings on the county's streams and the Chesapeake Bay. So that development capacity could be related to the water resources element, the county's urban area was subdivided into its watershed regions, and the model was run for each watershed (called Water Quality Planning Areas) separately. The results were tallied to calculate a total range for the entire urban area of the county.

Figure 5.2



Step 2:
Water Quality Planning Areas

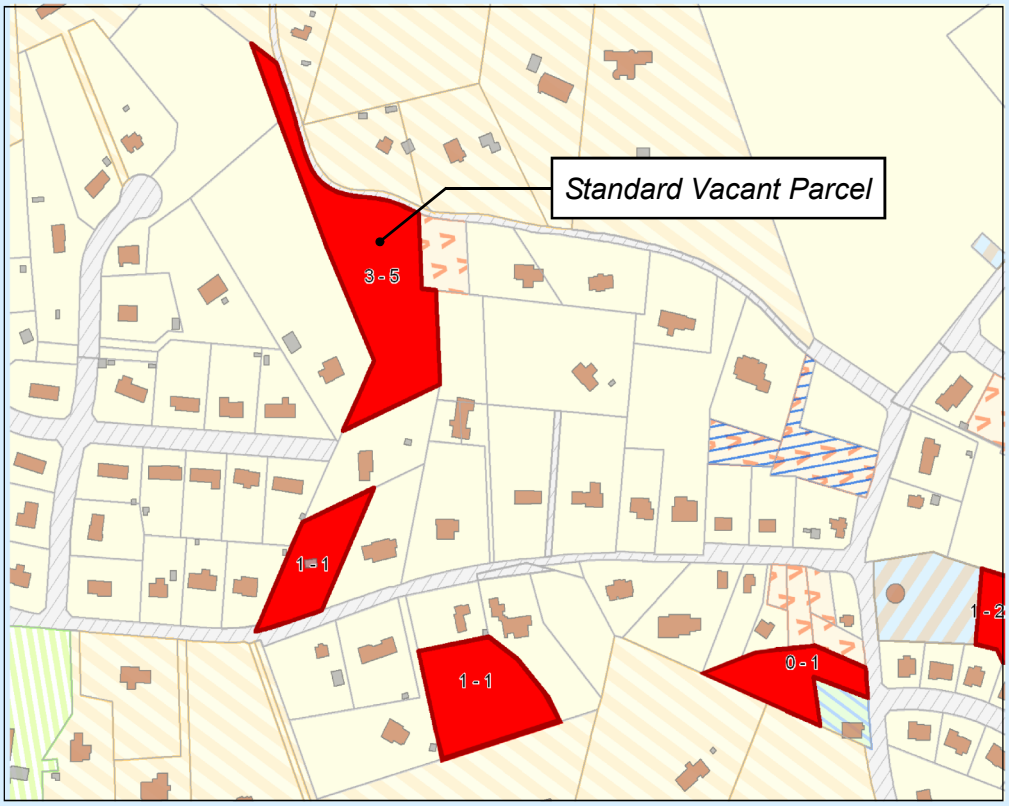


Figure 5.3

Step 3: Standard Vacant Lot Yield.

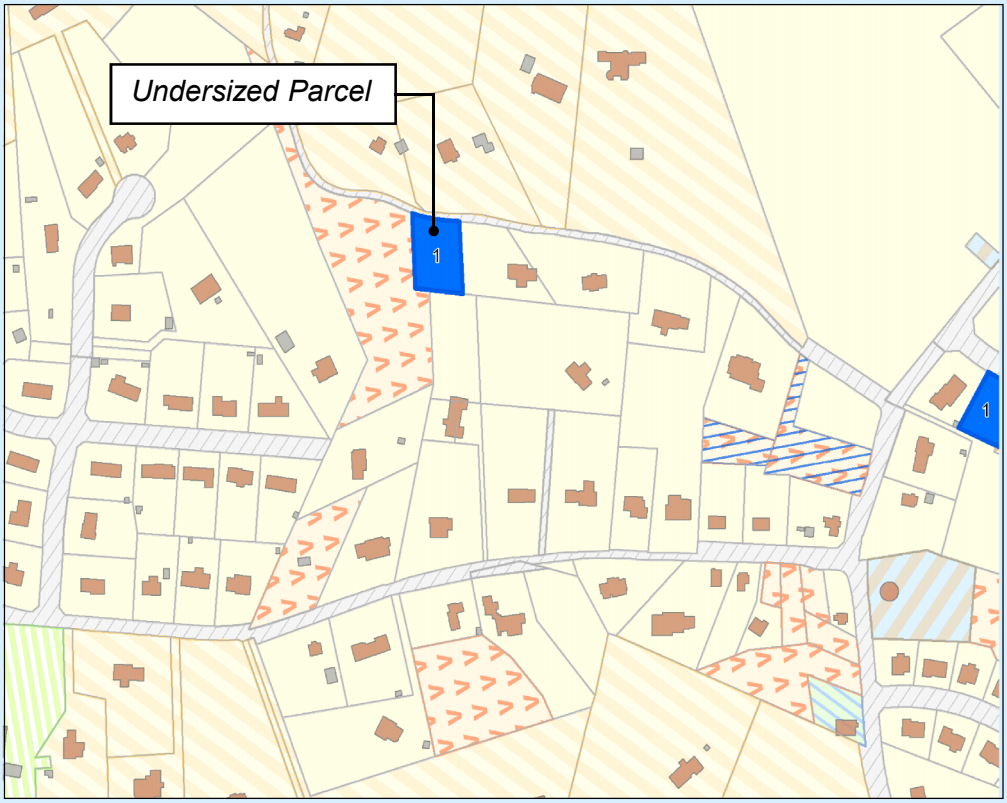
STEP 3: IDENTIFY AND CALCULATE YIELD FOR STANDARD VACANT LOTS

Three classes of vacant residential lots were created. The first class, Standard Vacant Lots, are of a size that could accommodate at least one dwelling by using the zoning density factor. For example, in DR 1, in which the zoning density allows one unit per acre, selected vacant lots have a minimum size of one acre. Two development capacity calculations were performed to determine the potential number of dwelling units. First, the maximum number of potential dwellings units was calculated for each parcel by multiplying its area by the maximum density allowed by zoning. This number is given as the high estimate.

The calculation was repeated using the historical density factor. This number is given as the moderate estimate.

Figure 5.4

Step 4; Undersized Lots capable of yielding one unit by using the Small Lot Table.



STEP 4. IDENTIFY AND CALCULATE YIELD FOR UNDERSIZED LOTS

The second class of lot sizes are those that were too small to accommodate a unit by zoning density, but large enough to accommodate one unit by using the Small Lot Table. In DR 1, for example, the Small Lot Table requires a minimum lot size of 6,000 s.f. Thus, for this zone, lots greater or equal to 6,000 s.f., but less than 43,560 s.f. (one acre) were selected.

The one unit count is the maximum that these lots can achieve and so is called the high estimate. Assuming that only 50% of these small parcels would be developed provides the moderate estimate.

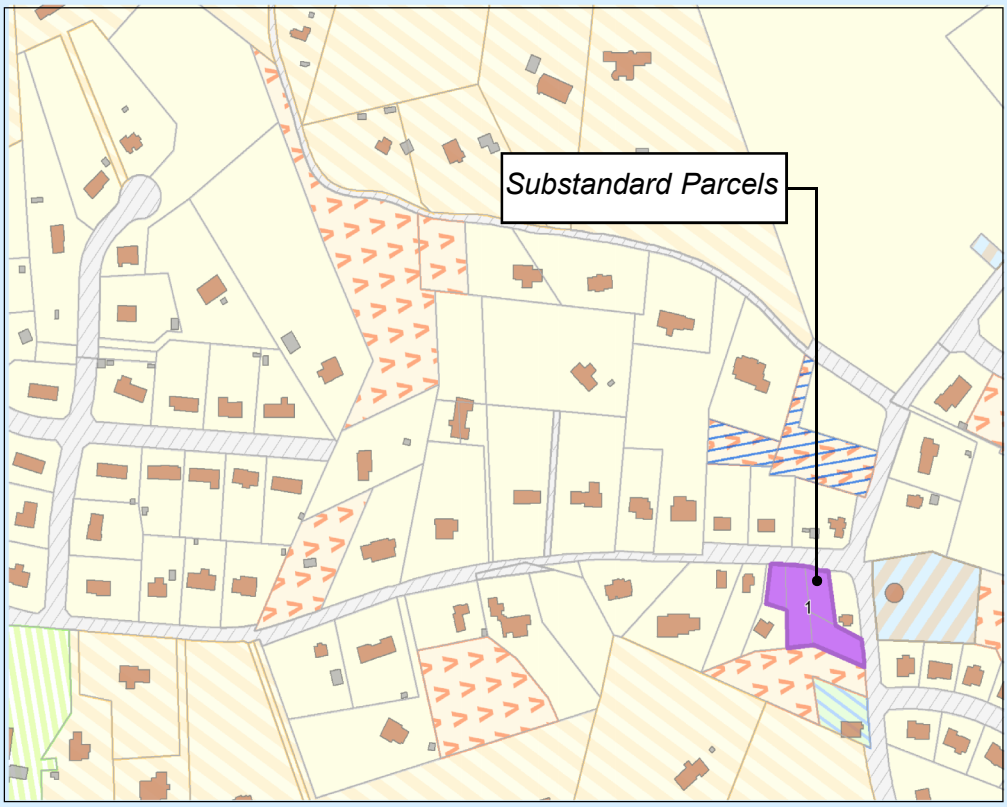


Figure 5.5

Step 5: Substandard Lots assembled with yield calculated using the Small Lot Table.

STEP 5. IDENTIFY AND CALCULATE YIELD FOR SUBSTANDARD LOTS

A calculation was performed for the third lot size class. These lots are those that are too small to accommodate a unit by using the Small Lot Table, but could accommodate units if adjacent parcels were combined. This is the only time parcels were assembled to produce potential residential units. Calculations were based on the Small Lot Table, and the number of units generated were considered to be the high estimate. The moderate estimate was derived by assuming that only 50% of these assembled substandard lots would actually be developed.

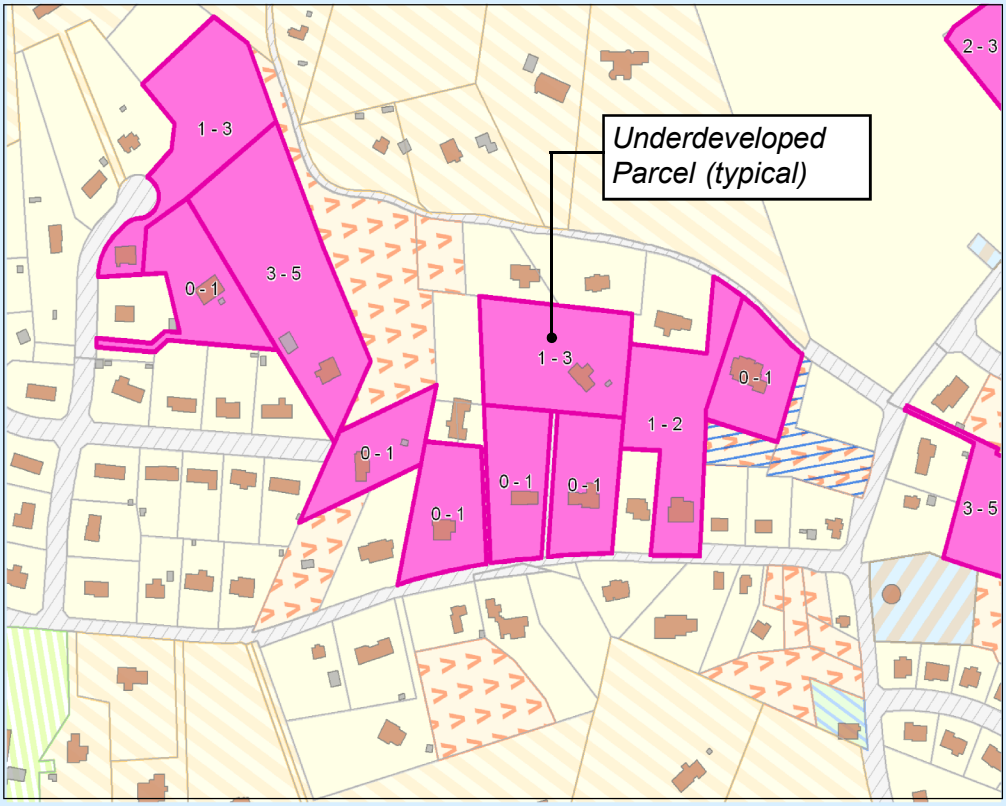


Figure 5.6

Step 6: Underdeveloped Parcels with the development capacity by historical density factor and zoning factor.

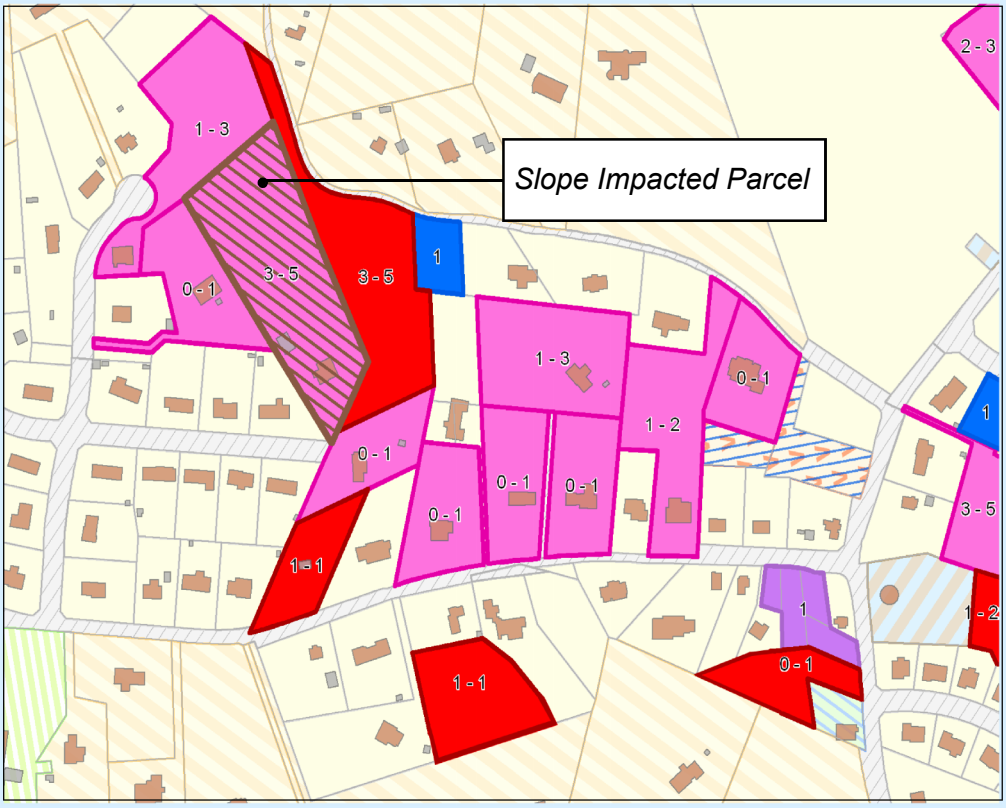
STEP 6. YIELD FOR ADDITIONAL DEVELOPMENT ON UNDERDEVELOPED LAND

The next step in the analysis was to identify developed single family detached parcels that have spare capacity. These are parcels that may be subdivided to permit the construction of additional units. To determine the maximum potential number of additional units that could be accommodated, the area of each residential parcel containing a single family detached unit was multiplied by the zoning density factor, and the outcome was reduced by one. For simplicity, it was assumed that all parcels contained only one existing dwelling. The result reflects the maximum potential for additional development on underdeveloped land. The calculations were repeated using the historical density factor to determine the moderate estimate.

For other types of residential units—semi-detached, attached and multifamily—it was assumed that the maximum development capacity was achieved at the time of development, and no further analysis was warranted.

Figure 5.7

Step 7: The yields from Slope Impacted, Underdeveloped Parcels reduce the total yield.



STEP 7. SLOPE IMPACTS ON UNDERDEVELOPED LAND

An analysis was performed to remove potential units where the underdeveloped parcels were severely impacted by steep slopes. Parcels that where characterized by slopes equal or greater than 25% covering more than 50% of its area were identified. If an underdeveloped parcel had been identified in the previous analyses as having development potential, those units were subtracted from the total.

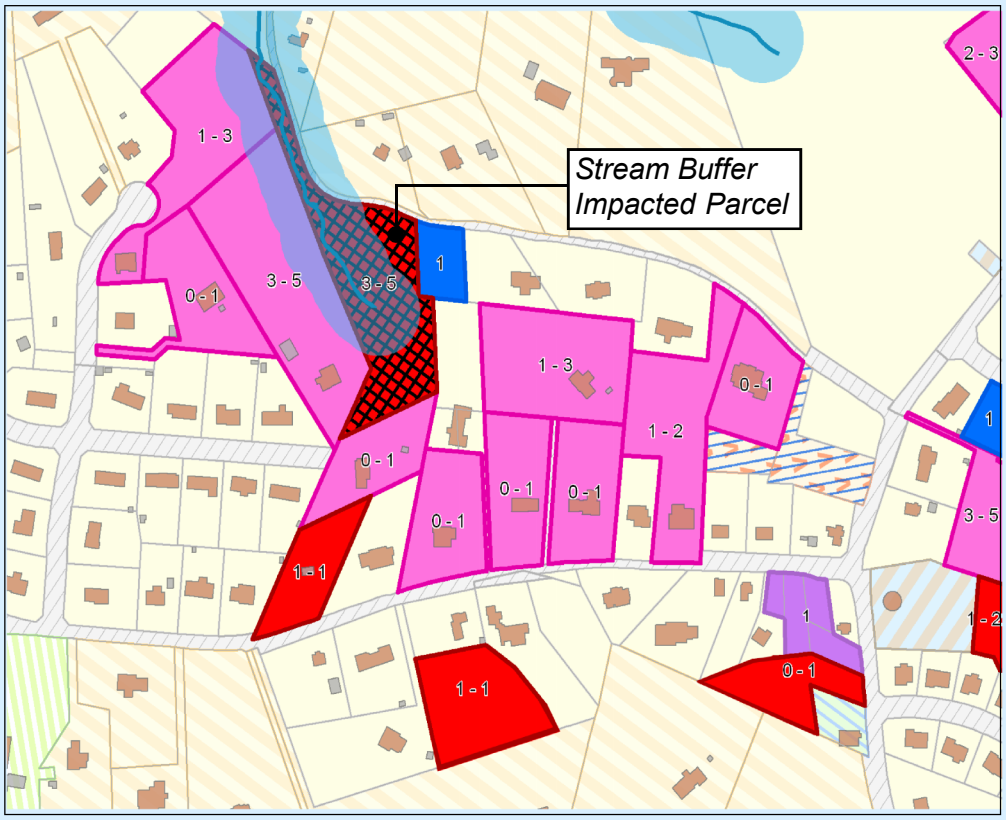


Figure 5.8

Step 8: The yields from Stream Buffer Impacted Parcels reduce the total yield.

STEP 8. STREAM BUFFER IMPACTS

An analysis was performed to remove potential units where the parcel was severely impacted by the presence of a stream. A stream buffer of 100' was used. Parcels where a stream buffer covered more than 50% of its area were identified. If the parcel had been identified in the previous analyses as having development potential, those units were subtracted from the total.