Abstract Descriptions

Correlation Between Field types, Location and Demographics and Potential Greenfields

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Attendee Level: Beginner
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Abstract text: Sustainable Environment: Leveraging Spatial Technology to Support Sustainable and Resilient Communities Correlation between Field types, Location and Demographics and potential Greenfields Development, Using GIS to map Brownfields in Richmond, Virginia

Brownfields are businesses, factories and buildings that have been abandoned or condemned for an extended period of time. According to studies in Olympia, Washington a community is unsustainable if it consumes resources faster than they can be renewed, and produces more wastes than natural systems can process or relies upon distant sources for its basic needs.

The EPA defines sustainable development as redevelopment and growth that are maintained over the long-term and occur within the limits of the environment so that the current needs of citizens are met without comprising the ability of future generations to meet their needs. The EPA identified the following key elements associated with sustainable Brownfields redevelopment: Community Profiling, Comprehensive Community Planning, Organizational Focus and Structure, Site Identification and Characterization, Risk Management and Restoration, Legal/Regulatory Issues, Site Marketing and Redevelopment, Technology Applications, and Project Funding and Finance.

"These Brownfields represent areas of urban deterioration and decay, which can be transformed into great economic and employment opportunities for the area known as Greenfields. Virginia has 92 Brownfields throughout the state. The city of Richmond has 45 of the 92 Brownfields. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off green spaces and working lands. Initially, GIS was used to show the location of the Brownfields located within the city of Richmond, see Figure 1.

Figure 1: Richmond City Brownfields

It is believed that the majority of these Brownfields are located in areas of low socio-economic development. With GIS we located the Brownfields in Virginia, and separated the counties by ethnicity, which will permit us to accurately create effective policies and planning projects for the Brownfields in those areas. This project will use GIS to confirm the correlation between the locations of the Brownfields with their demographics. Some of the
parameters included in this project will be population, density, ethnicity, and other vital statistics such as age and income level. Spatial statistics can be used to predict and explain the distribution of the variables and use modeling or regression as a method for supporting the theory of a pattern, correlation or probability. For example a point pattern analysis can be applied to nearest neighbor statistics of the Brownfields. This would assists in determining a relationship amongst the variables.

The first phase of the study will use GIS to map and geocode and locate the Brownfields within the city of Richmond. Followed by, imploring spatial statistical analysis to demonstrate that a correlation could exist between ethnicity, income level and district locations. GIS statistical results would also illustrate which variables have a much higher effect, if any, on the resulting Brownfields. The Brownfields will be further studied to determine what type of site existed prior to its abandonment. The Brownfields that are chemical in nature or in close proximity to a chemical hazard will require a more in-depth study on their environmental effects. The factories, residents and businesses that are abandoned may not require as much efforts for the restoration, but all the categories will be mapped in GIS for consideration.

Figure 2 used GIS to show the proximity of Brownfields in relationship to Haz-Waste or Toxic-Waste areas. The information will assists in determining whether it would be feasible to develop the Brownfields into future economic communities for school, housing and businesses. The resulting data will further assist with developing some type of migratory tendency based upon the economic trends within the state of Virginia.

Figure 2: Hazardous and Toxic waste locations. Yellow represents general Brownfield’s, the red points signify haz-waste areas and the blue triangles are toxic waste areas.

Figures 1 and 2 represent the preliminary phase of studying the Brownfields in Virginia. Locating the Brownfields and determining what type of toxin, if any, is remnant of the Brownfield. Richmond was chosen as the pilot area because it possesses nearly 50% of the existing Brownfields in the state. The less densely populated areas will be studied later in a different project. Demographics has had a major impact on rural areas and this will be addressed and then compared to the Urban areas to determine if the migration of people and businesses are proportional to the geographic area. The results will a contributing factor in determining whether these areas are adequate for developing sustainable communities for the future.
Techniques and Politics of Regional Land Use Planning Modeling

Primary Presenter
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Abstract text: In 2010 the Regional Planning Commission for the Greater New Orleans Area embarked upon the delicate mission of determining a common regional land use language and vision. In Louisiana, land use regulation is a function of local government (municipal or parish). Metropolitan planning agencies (MPO's) in Louisiana have a federal directive to include future land use planning in travel models, but have no jurisdiction over land use controls. MPO's have a vested interest in adjacent lands developing with a collaborative vision in support of a thirty year future master transportation plan. Metropolitan planning agencies are tasked to aid local governments in achieving their future land use objectives within a larger geographic intermodal transportation context. GIS has been used within each parish and city in the New Orleans Region to capture existing and future land use data, which is normalized (using a newly determined categorization) across the region and paired with other data sets in an open land use model at an appropriate regional scale. The needed approach had to be highly politically sensitive in order to ensure cooperation and investment of information between agencies without alienating local development goals.
Georgia Hazus Project – A Model for Success through Collaboration

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Abstract text: In 2011, the Georgia Department of Community Affairs secured a grant from the Housing and Urban Development Agency to promote forward-looking land use solutions by improving consistency between hazard mitigation planning and comprehensive planning. A portion of that grant was set aside to fund the development and implementation of a strategy for improving mitigation planning in the State of Georgia. As has been the case with many communities across the United States, Hazus-MH, a GIS-based hazard loss estimation methodology, was identified as a vital component of that strategy. However, the success of the Georgia Hazus-MH program has been due to a number of other critical elements that will be explained during this presentation. These include development of a cadre of Hazus experts in through the onsite instruction of multiple Hazus courses; planning sessions and close coordination between government as well as academic and private sector entities; and the creation of tools and workflows that enable the ongoing update of Hazus support risk assessments with detailed local inventory and exposure data with minimal effort. The presenter will discuss how this model has been developed and implemented in Georgia, lessons learned from this experience. He will also describe how the work that has been done to support the Hazus program has grown into the implementation of mechanisms in 2014 that will facilitate statewide data sharing collaboration between state, local and federal government partners.