Monitoring Land Use Adjacent to Parks

Network parks where resource is being monitored:

All GULN parks (BITH, GUIS, JELA, NATR, PAAL, PAIS, SAAN, and VICK)

Importance

One of the highest priority management concerns for parks in the GULN is changing land use outside of the park boundaries and the potential impacts of those changes on park natural resources. Increased development around the parks can contribute to the increased presence of non-native, invasive species; contribute to fragmentation of habitats; alter water and air quality; impact park viewscapes and soundscapes; increase litter and debris within the park; and devalue visitor experience. Information about changes in the type and intensity of adjacent land use is of immense value to park managers. Adjacent Land Use (ALU) has been selected as a high priority vital sign for the GULN monitoring program. GULN has chosen an "early warning" approach, where we assess evidence for upcoming development by tracking activities such as changes in parcel ownership, planning units (such as zoning or Tax Increment Financing (TIF) districts), and building permits to forecast near-future development. Key reasons for monitoring parcel changes and planned development of lands adjacent to network parks are that: (1) changes in land use, type and intensity inevitably lead to changes in threats that transfer across boundaries; (2) natural and cultural resources are specifically identified in park founding legislation and as key management objectives of the parks, and these resources are vulnerable to threats originating from adjacent land use; and (3) the earliest and most-precise possible warning of upcoming land use changes will provide park management with their best opportunity to develop appropriate responses to coming changes.

Example of commercial developments adjacent to park resources.

Subdivision developments adjacent to park boundaries.

Monitoring Objectives

Some of the specific monitoring questions that will be addressed by this protocol include:

- What recent change in parcel status (ownership, zoning, size, configuration) or frequency of building permits indicates a potential impact to park resources?
- What major types of development will occur on selected adjacent lands on a per-parcel basis; new mall, new factory, change in local waterways or drainages, new apartment complex, etc.?
- What is the near-future (1-3 years) larger-scale land use and development trend for selected areas of adjacent lands; the trend in anticipated development in the area, such as creation of a new neighborhood, urban infrastructure segment, major highway, etc.?
- What changes in land-use and land-conversion will occur in selected sections of park-adjacent lands in the next 1-3 years?

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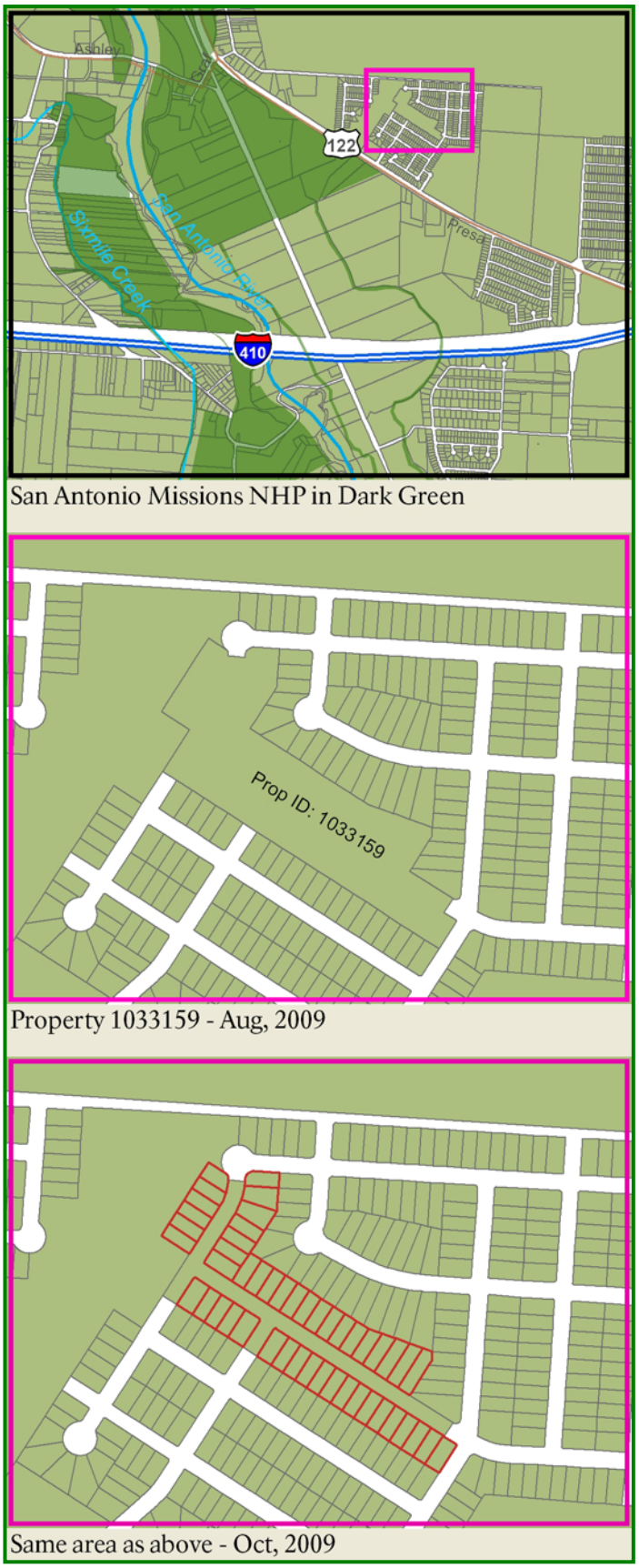
Basic Approach

The GULN Land Use Change Early Warning System has been developed around periodic collection and analysis of publicly available information relating to land ownership, land conversion, specific land-use project development, and proposed larger-scale land use changes. Data sources to be monitored include, but are not limited to, zoning changes, building permits, wetland alteration permits, utility installation permits, and standard base data (property boundaries and ownership, roads, streams, administrative boundaries,). Each park has identified its area of interest, or "buffer zone", of adjacent land which will be included in the protocol. Monitoring will be performed primarily by database-mining, followed by periodic and event-based reporting of alerts and critical information to parks. Data collection and analysis will be performed and reported on by GULN staff.

Initial protocol development was performed at SAAN by a team from Texas A&M University (TAMU) headed by Dr. Sam Brody, in close collaboration with park and network staff. Development involved defining initial ALU buffer-zones for monitoring; identifying classes and types of permits to monitor; compiling information on local land use planning entities, committee structures, work flow, and meeting schedules; identifying and evaluating data sources for availability, quality, quantity, consistency, and format; and developing a geodatabase, allowing all the data to be accessed and mapped using a spatially explicit GIS format change analysis tool. Protocol narrative and other text elements will be developed by GULN staff.



Example of property acquisition and development