Land Parenting – knowing your land - why digitally manage Native American lands?

The lands that Native Americans own and manage are much like their own family's children. There is an extraordinary kinship. The land, as with children, must be nurtured and protected at all stages of its life for the benefit of future generations.. Family members must know what is going on at all times and there is a constant need to monitor the physical, cultural, spiritual and destiny status. There are many and constant outside influences that affect the health of land and like with a child, the more you pay attention the more viable the result. As a responsible parents you must simply know and control what is going on.

graphic 3

Parenting has many rewards. One of which is the joy of looking back in history to see the progress of your efforts. Or, looking back in history to find the cause and affect of issues at hand. Knowing your land like a child will give you predictions and trends that are valuable in protecting what you hold dear.
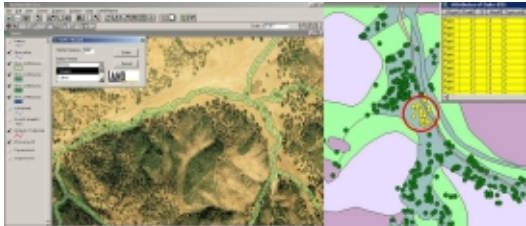
But land and real estate are very complicated things to monitor because of the size, age, influences of man and animal, climate, dynamic subsurface geology, etc. Land changes like children and keeping up is a monumental task. A parenting land manager cannot keep up with all this change or prevent problems without some assistance. In this wonderful era of technology we have access to many computer driven tools to enable the land parent to be the best possible steward. One of the best programs is Geographic Information Systems (GIS). This versatile software bundle fundamentally connects unlimited data to mapping in a very graphic and friendly display. The software engineers have given us increasingly easy access to geographic data that is horizontally and vertically connected to the land. We can measure and record exactly what exists in two, three, or even four dimensions. We can simulate virtual reality at any time and at any point on the land over time.
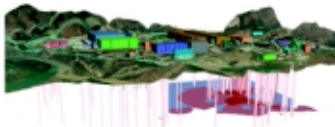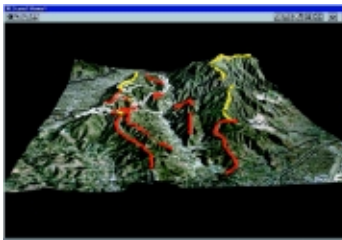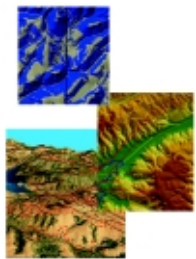
The GIS modules that we have installed for some of the largest landowners in the western United States have been specifically engineered to be "manager" friendly. This is critical because the key to success in using these "parenting" systems is to easily create, store, and manipulate data. Today's notes are tomorrow's information. The data does not go bad or stale. The GIS program is about relating information in layers. We often encourage land managers to start "today" in creating the database. The accumulation of data over time or the long term is the structural basis for a good and useful system.

graphic 9

So what are the fundamental uses of a GIS module for Native American land managers?

1. **Natural Resource Management**. With today's technology you can cost effectively create data and photographs on every tree, shrub, water feature (including subsurface), boulder, soil type, geologic feature, drainage, road, building, outbuildings, equipment, etc. This data is organized to be searchable under any amount of attributes one may think of. We had one client who knew which trees on his thousands of acres that had ants or was sick.

graphic 1

2. **Agriculture.** Crops can be registered and inventoried for maximizing yields. Notations can be made on productivity for any given zone of attributes. Farming can be enriched with the depth of knowledge, built over time that makes the science of selection perfected. Harvest planning can be well timed by having a complete and thorough status of every plant. After harvest products can be completely inventoried for control and protection.

3. **Cultural Resources**. The identification, cataloging, segregation, and conservation of important or sensitive areas are fundamental actions of understanding the land in Native American holdings. Burial grounds, archeologically significant areas, and sacred or historical sites can all be confidentially recorded and maintained by good GIS practices.

4. **Climate**. On-going measurements of climatic conditions can be stored and modeled to show the predicted conditions for any given time of year for any location.

5. **Environmental Quality**. Trends in air, water, ground, and subsurface conditions can be easily displayed to check the quality differences over time. The slightest change in quality can be clearly displayed in relative data.

graphic 4

6. **Ownership.** The parcel information is easily assembled from a variety of sources that can assist future generations in their relationships with neighbors. The creation of data in overlays or "coverages" is enhanced with color and textured graphics.

7. **Homeland Security**. Areas of risk can be monitored and even predicted by behavioral notations for any location. Instant access to a complete overview or on any point in the land will give managers invaluable data by which to make decisions. Evacuation plans can be customized instantly with three-dimensional monitoring of the land conditions. Damage assessment can clearly documented and measured. Permanently recording extent of damage with data and mapping can be very valuable to insurance claims. The use of GIS in wildfire zones has made land managers very smart about hazardous conditions and repair rates.

graphic 5

8. **Facilities Management**. Managing the land for natural resources will often include recording opportunities for mining, hunting, movie sets, etc. The GIS control of this information not only monitors the resource but also allows merchandising to the market place strong imagery selling the opportunity.
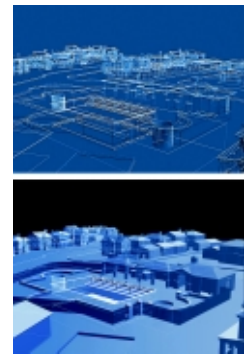
    Casino and resort activities are a major opportunity to track performance. Gaming plans that are adjusted to match real demand can hugely increase profits. An overview of the gaming field can quickly show the peak and weak points of customer contact. Buildings, furniture, equipment, supplies, etc. can all be inventoried and protected.

graphic 6

8. **Social Economics.** Information on the people who inhabit the land is important for a healthy relationship between man and land. The wealth of census and other data on people is greatly enhanced when processed through GIS applications. When applying for assistance there is more capability to demonstrate the full picture of people and their environment. Grant justification and allocations are based on need and graphic display of public datasets will maximize the application process. The plight of many distressed Native Americans is best noted when their geographic location is expressed.

9. **Community Outreach**. Once the data is made graphic and relationally clear, the entire community can access important land and facility information for the common good. Internet and Intranet access is very easy because all the information is digital and instantly transferable. Community billboards can assist everyone to stay connected to their neighbors. Often issues affecting the land can be solved by the common understanding of the visible problem.
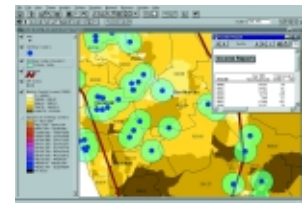
graphic 2

10. **Cost savings**. Particularly in land managed by Tribal government there is a great value in creating all this data for the future users of the land. There is a one-time investment to benefit many future generations. There is also major public funding available for needy peoples who could enhance their lives with GIS software access.

graphic 8

11. **Confidentiality**. The GIS access can all be created and stored on personal computers that are owned and managed by the landowner. The entire system can be internalized and maintained by "locals" for their benefit. Once the installing professional creates the customized menus of access they can be eliminated from the process. All the data can be protected from outside view and fully conserved for perpetuity.

The concept of creating these valuable data sources is especially relevant to Native American situations where the land as a legacy for future generations is paramount. A complete "picture" of the land is made that will never fade or be lost. The data "picture" actually gets clearer with use over time. Everyone can add clarity and contribute to the future. Every data bit or point will be cumulatively valuable. It is analogous to the most complete family album of pictures and information. Imagine showing future generations how they got where they are and how to protect their legacy.

Author: Van Stephens is a Principal with FORMA, a multidisciplinary professional services firm who have specialized in GIS management programs for over twenty years. FORMA has created systems that control millions of acres throughout the western United States. FORMA has created the LAND Suite of products as a specific series of increasingly intelligent software applications using the best GIS and Simulation platforms available.