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A Restoration Management System for Projects in BAO

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B. Project Summary

The core objective of this project is to build a software based Restoration Management System that will enhance restoration projects in Butte Area One. This system will provide the tools to help keep track of the tasks completed by every participant. This system will reduce the many challenges that a restoration project may encounter, including funding constraints, unpredictable events and the uncertainty about how the targeted ecosystem will develop.

One way to improve the efficiency of restoration projects is by applying software tools for data and quality management. This way project participants share information, keep track of maintenance tasks, monitor results, and all information is collected and utilized within the same system.

By creating easy guidelines for project participants with the help of software tools, we can restore more areas using fewer resources. In this way, a computer based system would help provide for the continuity of restoration projects. In addition, this system would help track problems that need to be addressed.

The online field access by teams will bring them information on what to do at each site and avoid mistakes during maintenance or monitoring. Furthermore, tasks will be updated by the field teams, leading to less paperwork, lowering the possibility of errors and making possible faster feedback on fieldwork completed.

Therefore, some duties could be safely delegated to people under training or without advanced specialization, while keeping quality and good practices.

C. Project Goal and Objectives

GOAL:

The goal of this project is to develop an easy-to-use Restoration Management System with a database to help streamline the restoration process. Using widely available low-cost or free software will improve the efficiency of a project's outcome by reducing the amount of resources invested. Any problems caused by lack of information that occurs during a restoration project's tasks can be resolved quickly and efficiently using this system.

OBJECTIVES:

- Develop a MS Access Database with resources listed below:
 - Area management with breakdown by project, site and section (area). Record of site characteristics, maps, links to restoration plans, coordinates, invasive species detected, address, photos, etc. See map examples and proposed structure on Appendix A.
 - Map access using Google Earth and other tools, like ArcGIS
 - Budgeting of restoration works with resource allocation, with labor and cost calculation hitherto and breakdown. Multiple budgets can be made for projects, sites or sections.
 - Site Maintenance: task scheduling for sites, determined by site characteristics, like weed infestation. Issuance of Service orders by e-mail for the supervisors/employees.
 - Orchard/Greenhouse plant inventory management. Calculation of plants needed according projects underway and forecasts.
 - Plant species database with key data for field work (photos) and projects
 - Online and remote access for fieldwork. Characteristics of the species used in restoration and those of weedy species. Plant maps.
 - Recording of monitoring data, like planted species population, weed infestation, using BRES table data. It would be used either in the office or during fieldwork, internet access on mobile devices will make it available.
 - Progress Analysis with statistics and graphs – helps research, problem detection and planning ahead. It can be used for monitoring data, budget, inventory, etc.
 - Seed mix calculator, with stored mix data associated to sites for future reference
 - Password protected menus and features, if required.
 - Printing of tags, signs, labels and other graphical info.

- Obtain existing restoration data of projects already underway to include to the system's database, to start using and testing it with real data.
- Make adjustments and improvements after initial testing with users.
- Training of users to use the system and all its features.

D. Project Benefits

The Restoration Management System can benefit restoration projects in Butte by improving data management, which will lead to more efficient restoration projects. This goal can be met by adopting the following resources which this system can provide:

- Store all relevant data regarding projects in a single source will make it easier to search and find information.
- Multi-user database will help disseminate information for those who need access project data, preventing long waiting time.
- Improve the efficiency of field maintenance tasks by providing necessary information on-site.
- Keep track of maintenance tasks, measure results, find mistakes and address errors quickly will increase the success rate of projects.
- Provide updated statistics to demonstrate project results and evolution over time, which will help in decision-making.
- Pro-active system, which identifies scheduled tasks and issues service orders.
- It can be linked into Mark Mariano's GIS model and can be used to more effectively make site selections.

E. Project Implementation

The implementation of this project will be performed in one year. Project's Steps:

1. Meetings with people involved with restoration projects to determine key data used during restoration management, the system's possibilities, and set up the project deliverables.
2. Obtain a sample of restoration data already available to start to develop a system prototype.
3. Develop the database, system and its features.
4. Testing the system with future users using real data to make any necessary adjustments.
5. Train users on how to use the system.

F. Project Schedule

January 2017

- Meetings with people currently involved with management of restoration projects.
- Obtain a sample of restoration data already available to start develop a system prototype.

January 2017 to June 2017

- Develop the database, system and its features.

June 2017 to August 2017

- Testing of the system with future users using real data to make any necessary adjustments.

September 2017 to October 2017

- Train users on how to use the system.
- Make adjustments in the system as needed.

A Restoration Management System

The project will use data generated by currently existing site monitoring routine. No other monitoring data applies to this project development.

G. Project Budget

Matching funds and services:

A tablet with MS Office 365 2016 will be needed to test and develop the online field access. The price for this item is approximately US\$ 300.00.

All other software are free, like Google Earth and ArcGis Viewer.

Expense Category		NRD	Cost Share
Labor			
	Rate	Hours	
Restoration Ecologist + PI - Robert Pal (1 week)	\$54.14	40	\$ 2,166
Grad Student (Joao Nascimento) - 360 hours	\$22.00	200	\$ 4,400
Subtotal		\$ 4,400	\$ 2,166
Materials			
Tablet			\$ 375
Web Access in the field			\$ 125
Subtotal		\$ 500	
Grand Total		\$ 4,900	\$ 2,166

Appendix A



Figures 1 and 2: Examples of map made available by the system