# Resource Management Software Tool

Overview
Development
Next Steps
Schedule

- Golfer mandates – "Golf takes too long and it is too expensive."

- Society Mandates – "Golf courses use too much water and chemicals."

- USGA Leadership Mandates – "Golf needs to be proactive rather than reactive. We need to be able to anticipate change and predict results."

# Variables (changes) that are impacting the game now and in the future

- Pace of Play
- Cost to Play
- Competition for rounds and resources
- Changes in the game itself (Rules, Equipment, Players)
- Changes in how golf is viewed by non-golfers
- Environmental restrictions
- Availability of suitable land
- Cost and availability of water
- Cost and availability of labor
- Cost of fuel
- Cost of energy
- Cost of fertilizers
- Cost and availability of pesticides

# Purpose

To provide golf courses of all levels a tool, or model, to help them perform "what if" analysis regarding their utilization of resources.

*"What if ..."*

*We have less water*
*Water is more expensive*
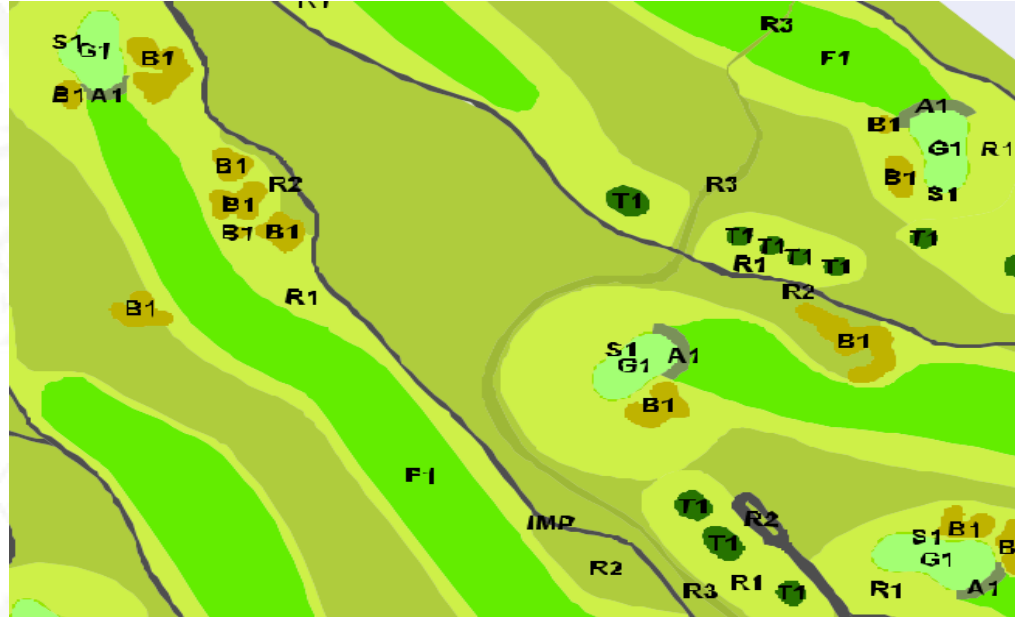*We cannot apply chemicals*
*We want to build a new course*
*We want to improve our greens*
*We want to be more competitive*

# Concept

- **Every area of the course can be identified as polygons**
- Every polygon consumes resources
- The consumption of those resources can be measured

# Concept

- Every area of the course can be identified as polygons
- **Every polygon consumes resources**
- The consumption of those resources can be measured



Fuel
Water
Labor
Fertilizer
Chemicals

# Concept
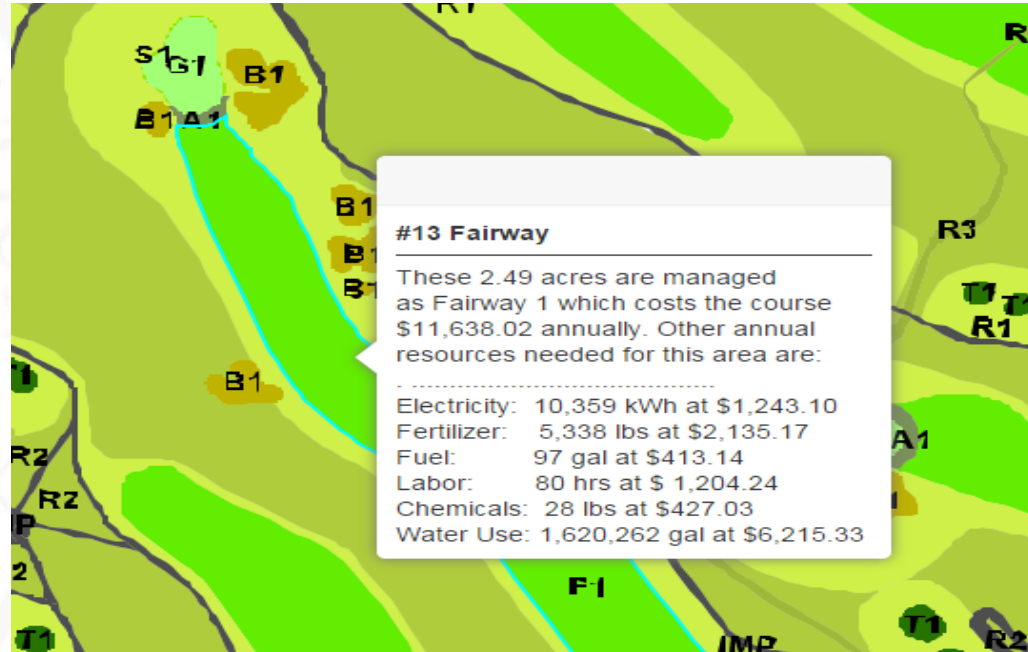
- Every area of the course can be identified as polygons

- Every polygon consumes resources

- **The consumption of those resources can be measured**



#13 Fairway

These 2.49 acres are managed as Fairway 1 which costs the course $11,638.02 annually. Other annual resources needed for this area are:

- - - - - - - - - - - - - - - - - - - -
Electricity:   10,359 kWh at $1,243.10
Fertilizer:    5,338 lbs at $2,135.17
Fuel:          97 gal at $413.14
Labor:         80 hrs at $ 1,204.24
Chemicals:    28 lbs at $427.03
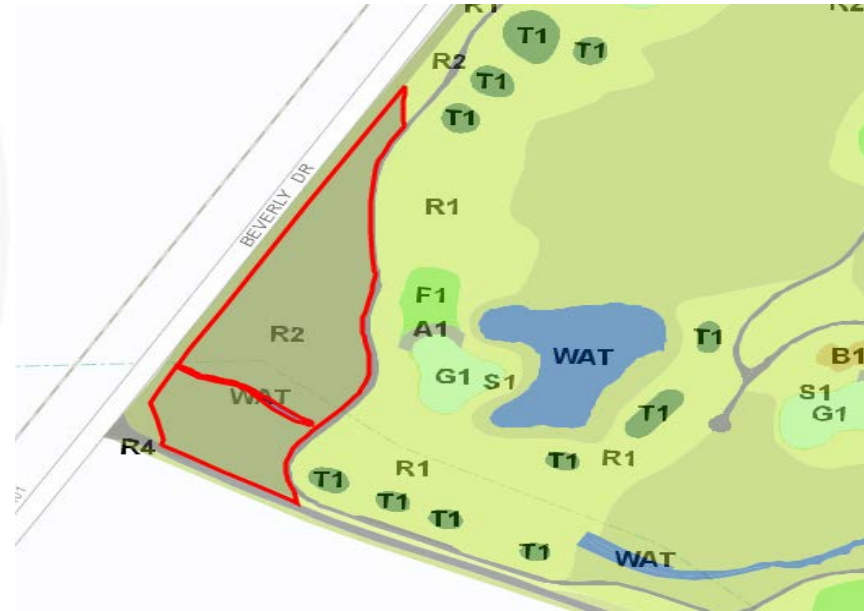Water Use: 1,620,262 gal at $6,215.33

# Concept

- Every area of the course can be identified as polygons
- Every polygon consumes resources
- The consumption of those resources can be measured
- Resource consumption can be managed by changing:
    - Polygon level of maintenance (B1, B2, B3, etc.)



PRESENTED BY THE **USGA**

# Concept

- Every area of the course can be identified as polygons
- Every polygon consumes resources
- The consumption of those resources can be measured
- Resource consumption can be managed by changing:
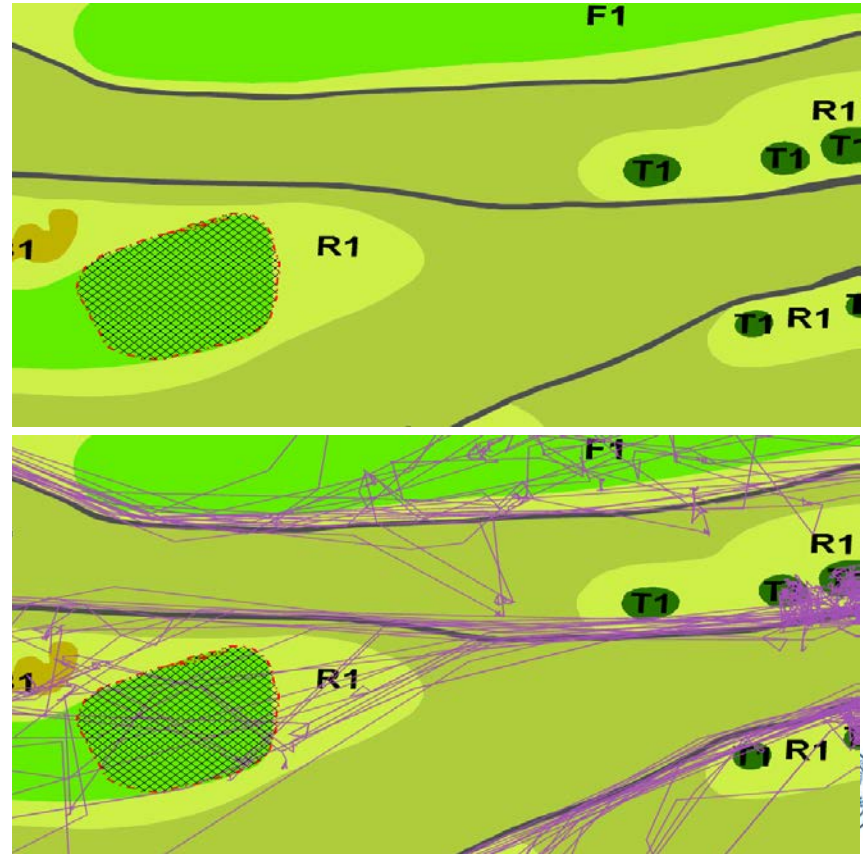  - Polygon level of maintenance (B1, B2, B3, etc.)
  - Polygon area

# Concept

- Every area of the course can be identified as polygons
- Every polygon consumes resources
- The consumption of those resources can be measured
- Resource consumption can be managed by changing:
  - Polygon level of maintenance (B1, B2, B3, etc.)
  - Polygon area
- **Player tracks help ensure changes are appropriate**

# Goal

Develop an online tool that allows course management to create and save various maintenance scenarios or models

# Major Features of the Tool

- Initially populate the model with values typical of courses in the user's locale and budget range

- Provide base map of polygons for the user's course

- Allow users to easily input their own data to personalize the model

- Allow users to add or remove line items customizing the model to their specific needs

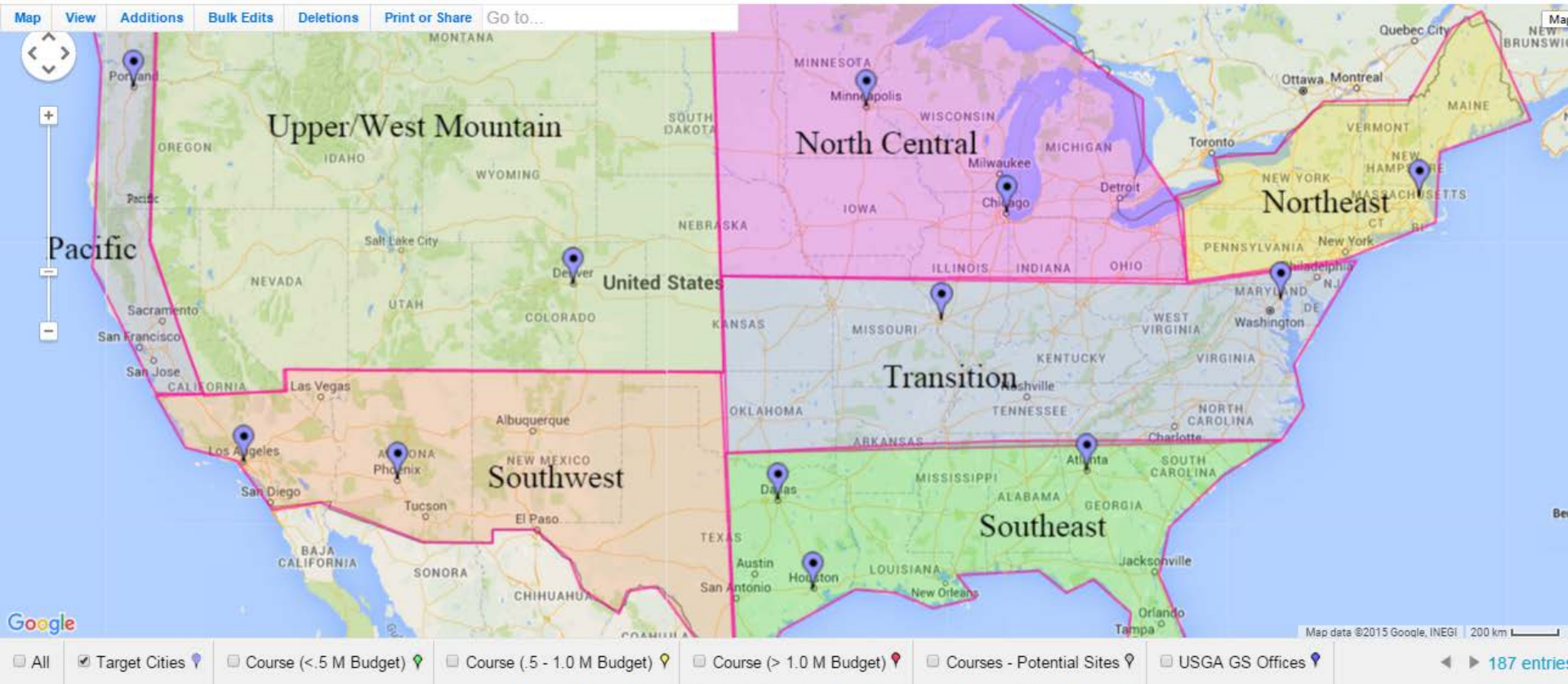- Allow users to create and save multiple maintenance scenarios

# Collection of "seed" data



**USGA Resource Management**
This map 1) identifies courses that will participate in the Resource Management survey, 2) identifies which Green Section agronomist will visit which courses, 3) regions that are approximately the same as utilized in the GCSAA surveys and represent major climatic zones in the U.S.

My Maps | USGA Green Se

Map Ac

| Map | View | Additions | Bulk Edits | Deletions | Print or Share | Go to... |

- Pacific
- Upper/West Mountain
- North Central
- Northeast
- United States
- Transition
- Southwest
- Southeast

Google
Map data ©2015 Google, INEGI   200 km

☐ All   ☑ Target Cities ⚲   ☐ Course (<.5 M Budget) ⚲   ☐ Course (.5 - 1.0 M Budget) ⚲   ☐ Course (> 1.0 M Budget) ⚲   ☐ Courses - Potential Sites ⚲   ☐ USGA GS Offices ⚲   ◀ ▶ 187 entries

# Software Development

- Future leveraging of platform
  - Design tool
  - Pace of play modeling
  - Flagstick/championship pace dashboard
  - Player tracks
  - Shotlink data
  - ET databases
  - Plant water use coefficients