

Integrating Conservation Tools and Models with OMS and Remote Smart-Phone Apps.

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Frank Geter
Natural Resource Specialist, CDSI

Fort Collins, CO
Frank.Geter@ftc.usda.gov

Five Streamlining Initiatives

Focusing On:

INITIATIVE 3

Provide field technical staff with natural resource science and technology focused to support conservation planning and application

1.
Streamlined
& Integrated
Business
Processes

2.
Well-Aligned
Information
Technology



3.
Well-Aligned
Science &
Tools for
Conservation
Delivery.



4.
Alternative
FA Staffing
& Delivery
Approaches



5.
Client-
Focused
Products &
Services



● Current State:



- 279 science tools (difficult to manage and utilize) and databases
- Existing tools are stove piped
 - Stand-alone (i.e. non-integrated applications)
 - Stand-alone, duplicative, stale data
- Applications are NOT designed for Mobile Environment
- Non-Alignment with Business Process
 - Disconnected from the planning process

Example Tools

- 3d Mapper,
- AfoPro
- AnnAGNPS
- AgPipe
- AGWA
- APEX
- Arc Hydro Tools
- ArcSWAT
- AR Soil Char. DB
- AWM
- Bank Profile
- Basin and Border
- BASINS
- ...

Desired Future State

Integrated science/models in support of the planning process.

- ✓ Identify and assess resource concerns 
- ✓ Address resource concerns as a part of formulating alternatives 

NRCS Nine Steps of Planning

Phase I - Collection and Analysis

1. Identify Problems and Opportunities
2. Determine Objectives
3. Inventory Resources
4. Analyze Resource Data

Phase II - Decision Support

5. Formulate Alternatives
6. Evaluate Alternatives
7. Make Decisions

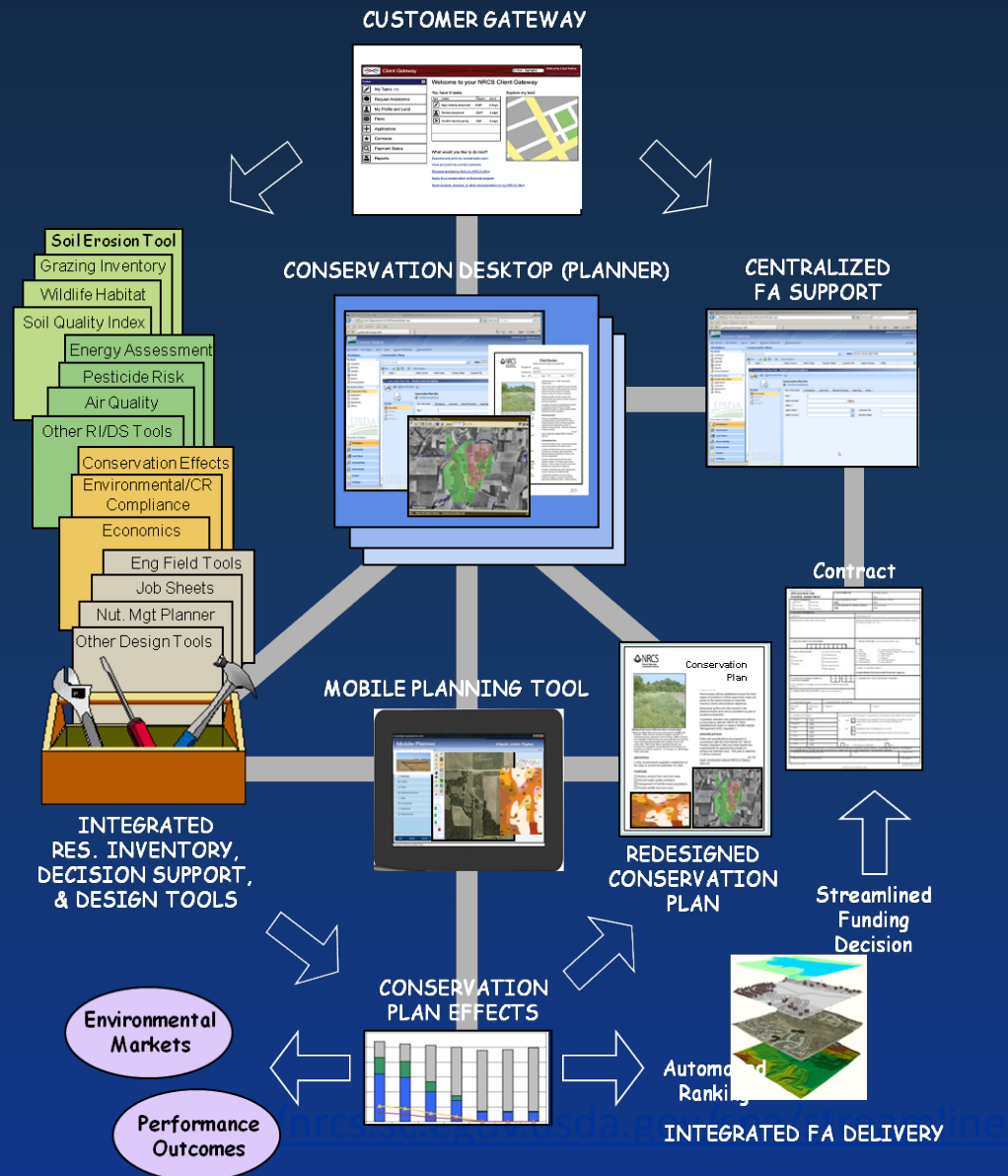
Phase III - Application and Evaluation

8. Implement the Plan
9. Evaluate the Plan

Overview for Integrated Technology

Version One Tools

- RUSLE2
- WEPS
- GRAS
- APEX
- Tech. Worksheets



Short Term Strategy Resource Assessment

- Ask Screening Questions
- Use Assessments tools (RUSLE2, WEPS, Tech. Worksheets.)

Alternative Formulation:

- Utilize CPPE to evaluate alternatives

Resource Concern	Screen Result	Assessment Result	RC meets Planning Criteria
- Soil – Sheet & Rill Erosion*: Screening: ≥ 90% permanent ground cover and <10% slope	Y	Blank	Blank
Assessment: Erosion rates is ≤ T	Blank	1 ton/ac	Yes
+ Soil – Wind Erosion*	No	7 tons/ac	No
+ Soil – OM depletion*	?	SCI = 0.5	Yes

Potential impacts to identified RCs			
Practice	Inadequate Feed and Forage	Inadequate Livestock Water	Inadequate Habitat
528	5	0	4
512	0	3	1
614	3	5	-1
382	3	-2	-3
590			
Is Planning Criteria met?	Yes <input type="checkbox"/>	Blank <input type="checkbox"/>	No <input type="checkbox"/>

Yes to All

Long Term Strategy

Resource Assessment:

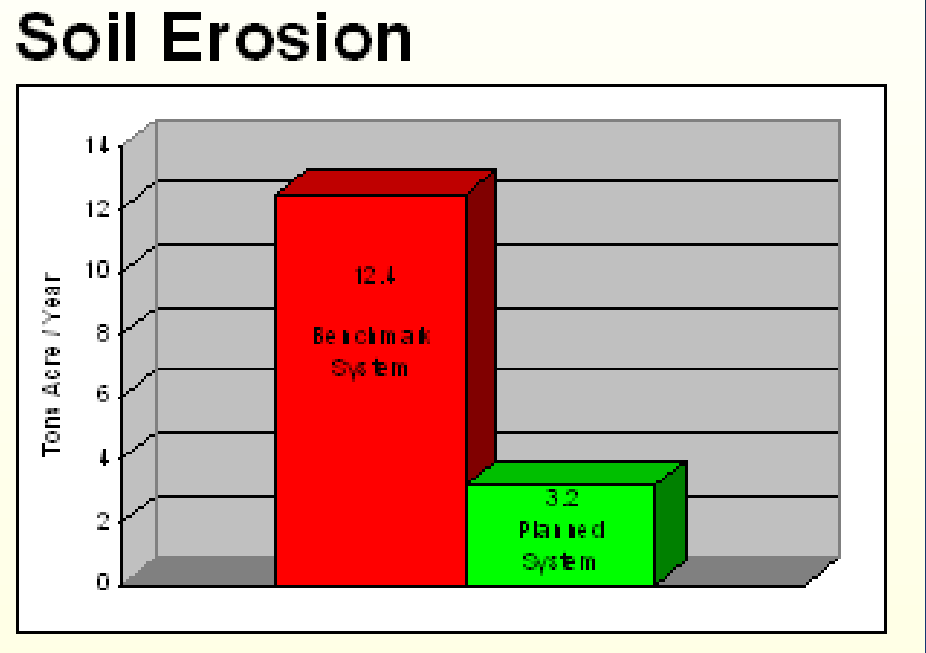
- Utilize more science based tools for assessment.

Alternative Formulation:

- Utilize models like APEX and other tools to evaluate system effects.

Area Wide Planning:

- Utilize resource concern prioritization from Area Wide Planning



Long Term Strategy

Outcome Based:

- Utilize science to support reporting outcomes.



Conservation Effects Statement

Client Name: Farmer Brown Plan Date: 11/18/2009

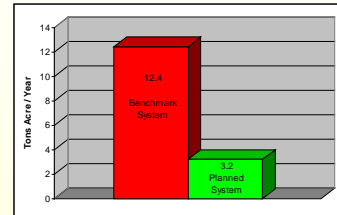
Tract Number: 1234

Fields: 1, 2, 3, 4, 5, 6

Objective: To reduce soil erosion while increasing grain production yields.

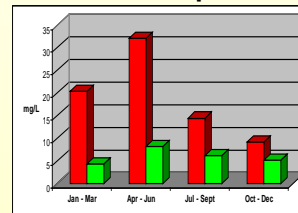


Soil Erosion



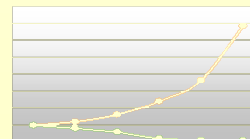
Erosion rates on a per acre basis declined significantly between the benchmark and planned system. Water (sheet & rill) erosion on cropland dropped from 12.4 tons per acre per year to 3.2 tons per acre per year; wind erosion rates were not a resource concern for this plan.

Nutrient Transport



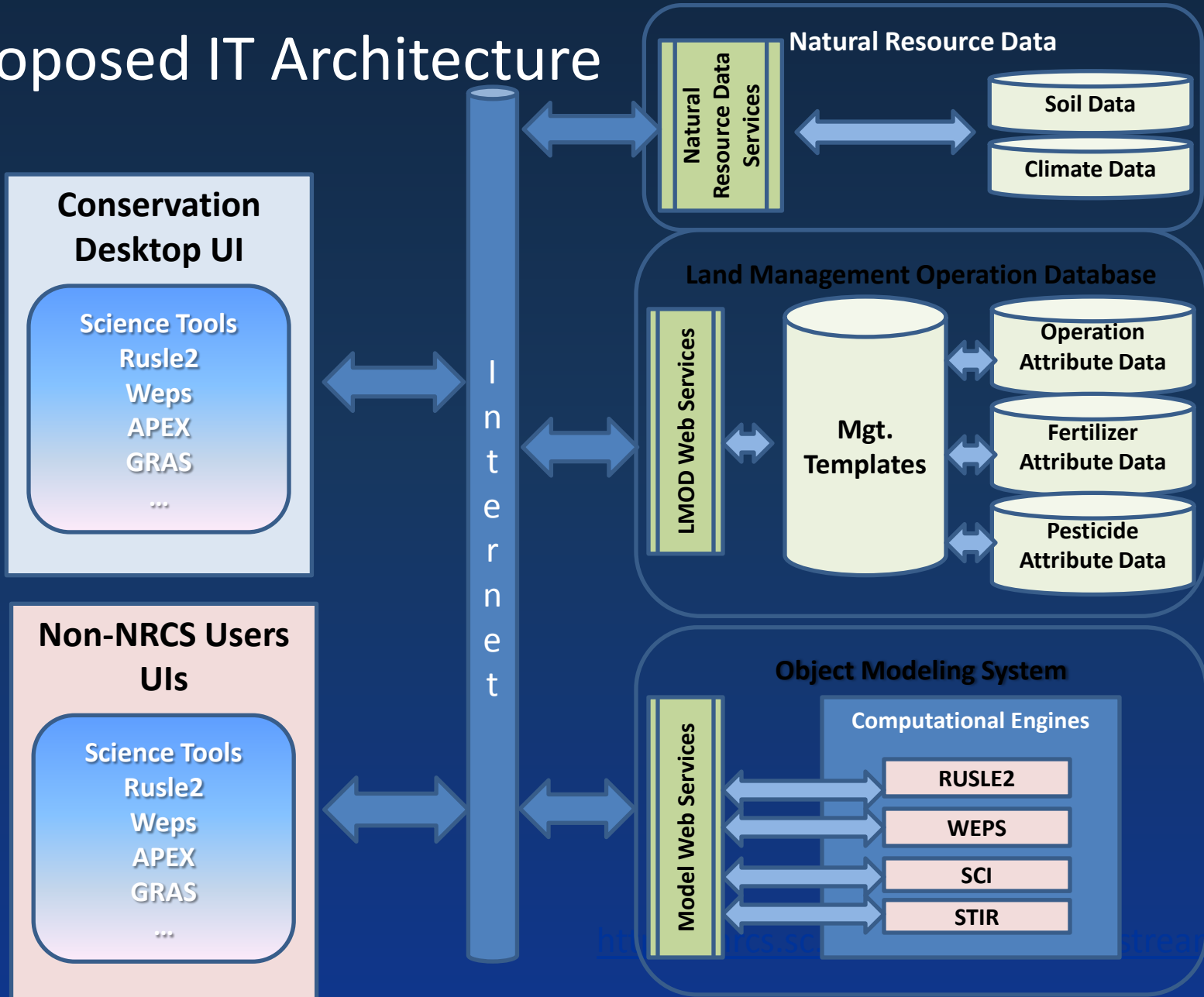
Nitrate concentrations are holding steady, in contrast to an earlier upward trend. Point source discharges continue to rise as population and wastewater flows increase. Further reduction in nutrients will be achieved largely by improving nutrient management and controlling erosion and sediment on farmland.

Carbon Sequestration



Carbon uptake on cropland will increase 14 percent between 2010 and 2035. This trend is a function of increased carbon uptake from conservation tillage operations. Continued use of conservation tillage over the next 25 years will result in the 1.9 Tg CO₂ sequestered.

Proposed IT Architecture

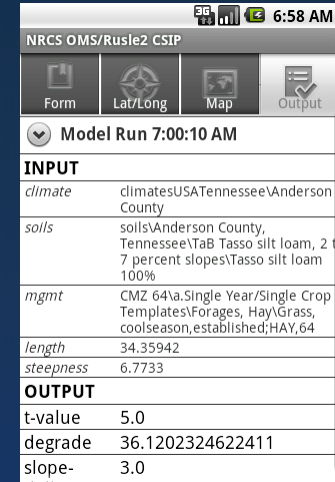
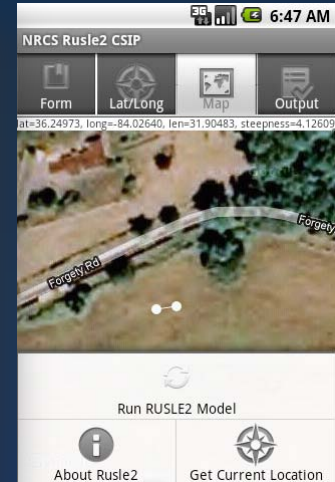
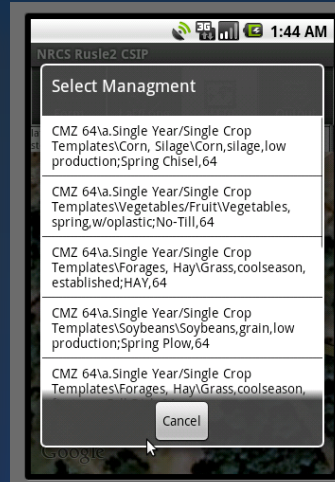
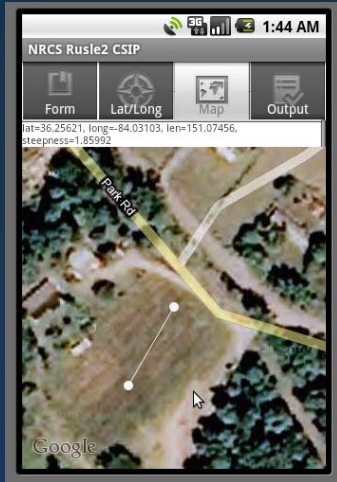
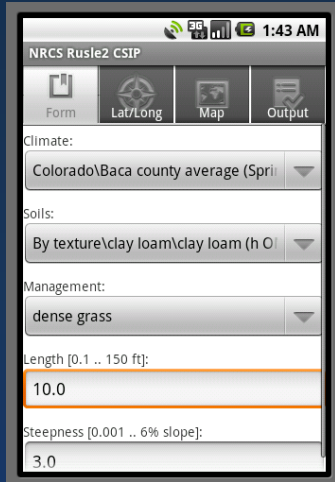
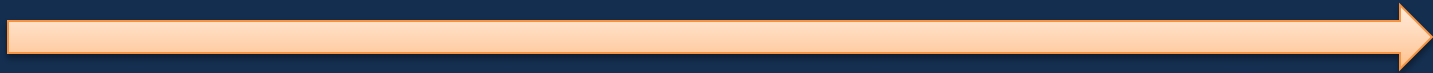


RUSLE2 Android Mobil App



- ❑ Runs the cloud based OMS3/Rusle2 Webservice
- ❑ Cloud based data management
- ❑ GPS enabled
- ❑ USGS elevation Webservice

RUSLE2 Mobile Workflow



Manual
Parameter
Selection

Transect
Definition

USGS
Elevation
service

Location based
Management
Selection

Remote Model
Execution
of Rusle 2 in
CSIP/OMS3

Model
Results