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Streamlining Regulatory Compliance and Conservation Planning: Data Analytics Applications for Producers, Planners, and Agencies

Final Report
October 30, 2020

In 2017 The Freshwater Trust (TFT) was awarded a Conservation Innovation Grant (CIG) by the Natural Resource Conservation Service (NRCS) for the project *Streamlining Regulatory Compliance and Conservation Planning: Data Analytics Applications for Producers, Planners, and Agencies* (Award Number 69-3A75-17-287). The three-year project began August 1, 2017 and was supported by $779,959 of federal funds through its completion on July 31, 2020. TFT also supported the project through an equal amount of in-kind funding during this period.

TFT is proud of the cutting-edge methods developed through this project. Where applied, these methods can have significant impacts on the planning, funding, and success of agricultural-based conservation programs. All project objectives were met through collaboration with project partners and stakeholders in Solano County, California, where the methods were developed and applied.

TFT is grateful for our project partners: NRCS Conservationist Wendy Rash; Dixon Resource Conservation District (RCD) Manager Kelly Huff; former Dixon RCD Manager John Currey; and Solano County Water Agency Interim Assistant General Manager Chris Lee.

TFT's project team included the following:

David Primozich, Conservation Director
Erik Ringelberg, California Director
Nick Osman, Conservation Programs Manager
Elliot Hohn, Senior Analyst
Tommy Franzen, GIS Analyst
Maddee Rubenson, Ecosystem Services Analyst
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PROJECT BACKGROUND AND RATIONALE

Lasting drought in California has driven expansion of regulatory programs that rely on agricultural producers to sustainably manage surface water and groundwater. In coming years, NRCS, RCDs, and Groundwater Sustainability Agencies (GSAs) will play a key role in facilitating improvements in water management on farms by providing technical and financial assistance to producers. This assistance must serve the dual purpose of encouraging the adoption of conservation practices by producers and meeting the basin-wide objectives of multiple agencies. Faced with coordinating outcome-based, distributed changes in farm management, NRCS staff and others need data-driven systems to develop strategic plans. Specifically, they need insight into the conservation actions that are possible on each agricultural field, as well as the contribution that specific, field-level actions will make—either alone or in combination—toward achieving basin-level water resource targets.

California's complex agricultural landscape adds to the challenges of strategic planning for multiple objectives. The feasibility and effectiveness of various conservation actions can drastically differ among agricultural fields based on numerous site-specific factors. Further, conservation actions may simultaneously have both positive and negative impacts on water resources. For example, converting a surface-water-irrigated farm from a flood irrigation system to a more efficient sprinkler system can positively impact both surface water quality and water quantity. Yet, this change can concurrently impact groundwater quantity negatively, by reducing inputs from surface-water irrigation practices.

NRCS has developed a suite of tools that inform the selection of field-level conservation actions[1] and provide recommendations based on a set of generalized conditions. Yet, at the time of this award, these tools did not quantify the site-specific benefits of field-level actions or link them to specific basin-scale objectives. With this CIG Award, TFT developed methodologies that allow NRCS and other planners to leverage cutting-edge data science and technologies to develop strategic, optimized plans for facilitating NRCS practice implementation in California. Where applied, these methodologies provide information on the feasibility of various NRCS practices on individual fields, as well as quantified site-specific water resource impacts and economic costs of implementation. This enables the identification of specific NRCS practices on specific fields that, if implemented, will result in cost-effective benefits to ground or surface water resources.

METHODS, ACTIVITIES, AND RESULTS

Using available data for the Solano County area, TFT developed a scenario-planning system (SPS) for implementation of select NRCS practices. Methods for the SPS were developed collaboratively with the project stakeholder committee, which met five to ten times throughout each of the three years of the

[1] For example, The Stewardship Tool for Environmental Performance (STEP) is a valuable field-level planning tool for evaluating conservation practice benefits to water quality based on threshold targets for contaminants like nitrogen, phosphorus, and sediment. The Resource Management Systems (RMS) planning tool and the Conservation Practices Physical Effects (CPPE) matrix were built to help planners consider the range of applicable practices to address multiple resource concerns as well as the economic implications of those practices.

project.[2,3,4] Additional stakeholders were also consulted throughout the project period, as described later in this report, but did not participate as members of the stakeholder committee.

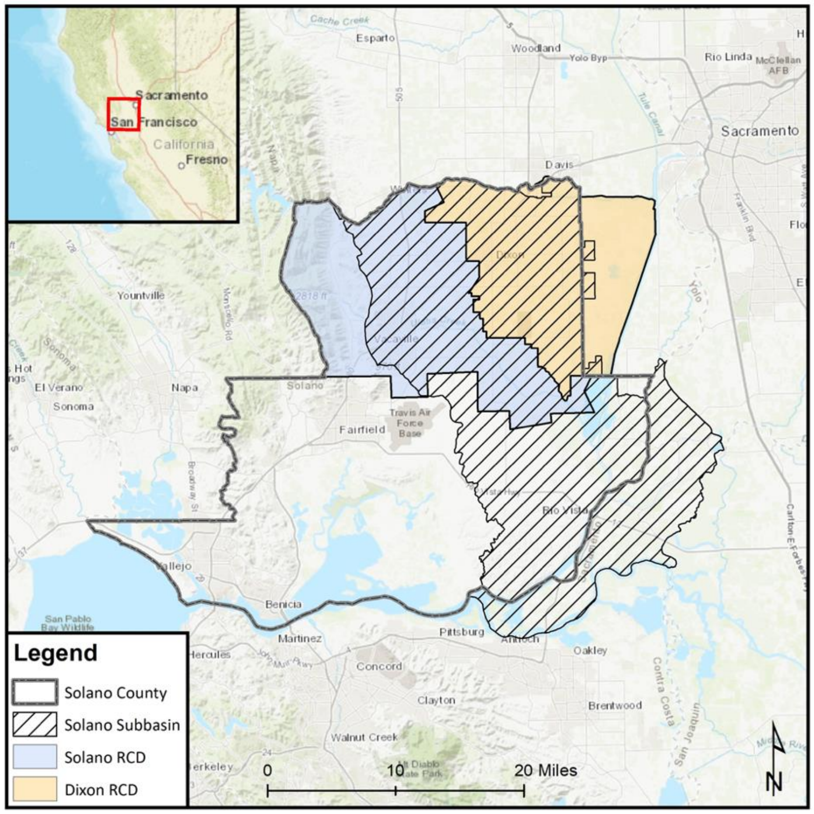

Figure 1. Project area

Three farm management activities were chosen by the stakeholder committee for initial inclusion in the SPS based on their likelihood of adoption, widespread applicability, and potential for water resource benefits. These activities (and applicable NRCS Practice Standard Codes) are:

- irrigation efficiency improvements (441 & 442);
- cover cropping (340); and
- managed aquifer recharge (MAR).

Although NRCS practice standards for agricultural MAR in California are currently under development, these management actions are collectively referred to as NRCS practices throughout this report. In this context, MAR refers to stormwater retention on—or application of excess surface water flows to—agricultural lands for groundwater recharge.

The stakeholder committee also defined the project analytical area of interest (AOI), referred to as the "Solano AOI" in this report (Figure 1). It encompasses significant agricultural and regulatory boundaries in the region, including Solano County, Dixon and Solano RCDs, and all GSA boundaries that will be included in the Solano Subbasin Collaborative Groundwater Sustainability Plan (GSP).[5] As a result, small portions of Sacramento and Yolo Counties are also incorporated into the Solano AOI. In total, the resulting SPS assesses agricultural management on 7,028 fields across 273,161 agronomic acres. **While the SPS methods were applied only in the Solano AOI, TFT ensured that they were developed to enable transferability to other areas of California and allow incorporation of additional management actions in the future.**

[2] Objective 1, Deliverable 1: Stakeholder committee established
[3] Objective 1, Deliverable 9: Two stakeholder meetings held each year of project period
[4] The project stakeholder committee included Wendy Rash (NRCS), Kelly Huff (Dixon RCD), and John Currey (Dixon RCD).
[5] The Solano Subbasin GSP will be collaboratively developed among the Solano Irrigation District GSA, Vacaville GSA, Solano Subbasin GSA, Sacramento County GSA, and Northern Delta GSA.

Among the project outputs were systems to aggregate and validate numerous environmental and farm management data sets. The project team integrated multiple publicly available models and analytical methods to quantify the site-specific economic costs and water resource impacts of NRCS practice implementation across thousands of agricultural fields. Additionally, TFT developed methods for prioritization and optimization to dynamically transform the results of those analyses and models into insight for users of the SPS. The analytical steps that collectively comprise the SPS are described below, and all data and models used to facilitate these analyses are described in the project methodology documentation (see link on page 11).

A primary goal of the project was to leverage new data systems and technology so that knowledge gained through local, isolated agricultural research and projects can be integrated and applied to large-scale conservation issues. TFT's collaboration with project partners and stakeholders throughout the project ensured that NRCS and RCD staff expertise was reflected in the SPS methods. In particular, the NRCS and RCD members of the stakeholder committee used their detailed knowledge of local crop and irrigation systems, as well as their experience providing technical and financial assistance to producers, to:

- Perform Quality Assurance/Quality Control of field-level farm management data sets used as model inputs;
- Inform assumptions inherent in the SPS, such as those included in a decision framework that determines each field's suitability for specific NRCS practice;
- Ensure quality of model outputs, including economic, irrigation, infiltration, and runoff data;
- Facilitate communications with producers, stakeholders, practitioners, and scientists that provided additional feedback; and
- Articulate the data and planning needs of producers and their agencies.

SCENARIO-PLANNING SYSTEM METHODOLOGY

The SPS outcomes for the Solano AOI are provided through a web application developed by TFT. The web application displays all resulting data and provides users access to dynamic maps and data tables. Customized plans for distributed NRCS practice implementation can be created and viewed through the web application, using user-specified areas of interest, water resource benefits of interest, objectives, targets, and budgets.

Examples and highlights of results for each step of the SPS in the Solano AOI are provided below. All data displayed in the web application or estimated by the SPS rely on the integration of many independent data sets, models, and methods, each of which has an associated level of uncertainty. Therefore, data displayed in the web application may differ from actual site conditions.

1. Field identification and farm management classification

Using both publicly available spatial data and analysis of aerial imagery, TFT identified all agricultural fields in the Solano AOI and classified the following environmental and management characteristics for each: crop type or types, irrigation method, irrigation water source, majority soil type, average field slope, recharge potential, and hydrogeologic connectivity to a groundwater-dependent ecosystem (GDE) (Figure 2). These data enable modeling of the field-specific feasibility, economic costs, and water resource impacts of NRCS practice implementation.

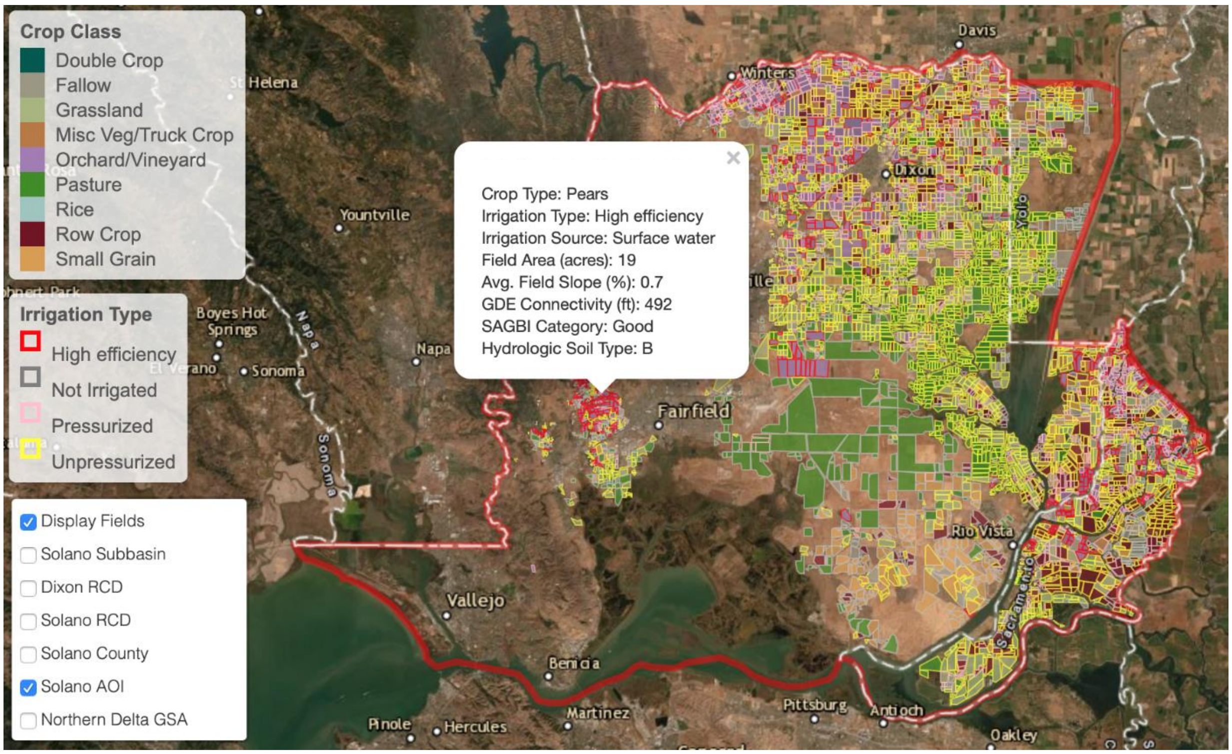

Figure 2. Crop classes and irrigation types for individual fields throughout the Solano AOI, as displayed in the web application. Polygon fill colors represent field crop types, and border colors represent irrigation types. Complete environmental and management data for a randomly selected field are shown in the data "pop-up" box.

2. NRCS practice feasibility assessment

Using the field-specific data, each field is assessed for suitability of implementing variations of the three NRCS practices, alone or in combination. The feasibility of each practice on all fields is displayed in the web application. In Figure 3, for example, the fields within Dixon RCD where cover cropping can be implemented are displayed. Cover crop feasibility is indicated by the appearance of a field polygon, regardless of color. The field color indicates a specific model outcome, as described in the next section.

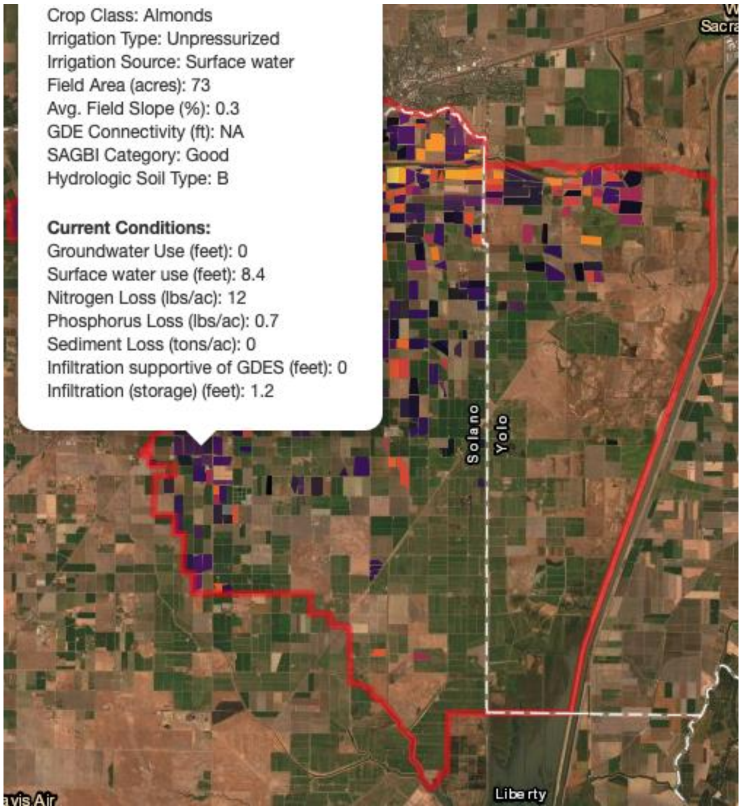

Figure 3. Current conditions within Dixon RCD. In this example view of the web application, the presence of field polygons indicates where cover cropping is likely feasible, and field color represents relative estimated nitrogen loss under current management. The pop-up displays the full suite of modeled values for a randomly-selected field under current management conditions.

3. Field-specific modeling of costs and water resource impacts

Field-specific data are inputs to models used to estimate the 20-year economic costs and average annual water resource impacts of implementing feasible NRCS practices on each field. Modeled impacts include annual change in the following metrics given NRCS practice implementation, either alone or in combination:

- volume of surface water and/or groundwater used for irrigation;
- volume of water that infiltrates beyond the root zone that either supports groundwater-dependent ecosystems (GDE) or likely contributes to groundwater reserves; and
- edge-of-field nitrogen, phosphorus, and sediment losses.

These changes are estimated by simulating both current management conditions *and* management conditions if the feasible NRCS practices are implemented on each field.

Modeled results for selected fields are viewable in a pop-up box in the web application. The pop-up box in Figure 3 shows each metric modeled under current management conditions for the selected field. Cost is not displayed because no practice implementation has occurred under current conditions. Further, in this example, the field color indicates the relative estimated nitrogen loss under current management conditions on each field where cover cropping is likely applicable.

Figure 4 illustrates expected changes from implementing NRCS practices. In this example, the user is assessing the potential for irrigation upgrades to reduce surface water usage in the Solano RCD. Field polygons indicate sites where irrigation upgrades are likely feasible, and their color represents the resulting reduction in surface water use if this practice is implemented. The pop-up displays the change in all metrics on a specific field given the adoption of the specific irrigation upgrade scenario identified, as well as the estimated 20-year cost of installing and maintaining the irrigation system.

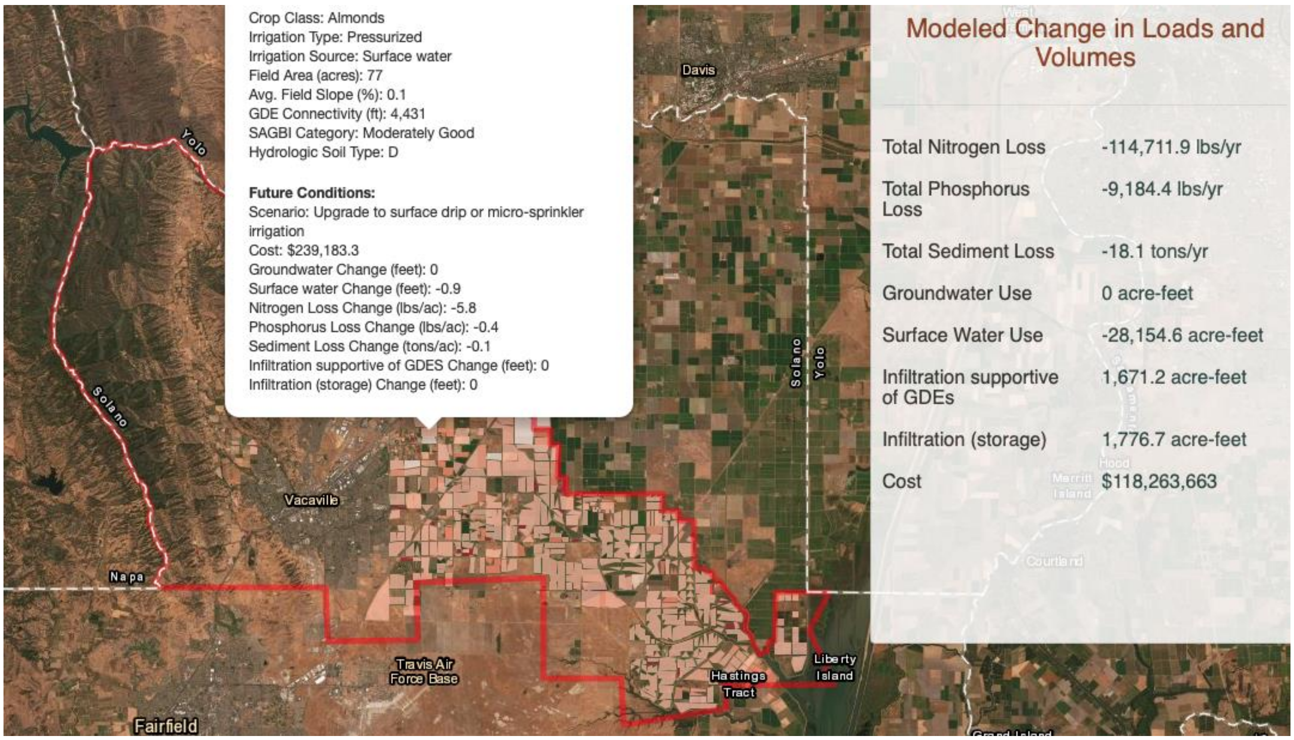

Figure 4. Fields in the Solano RCD where irrigation upgrades are feasible. In this example, the shade of red for each field indicates the relative reduction in surface water usage resulting from an applicable irrigation upgrade scenario. When a field is selected, a pop-up displays the field-specific impacts for all water resource metrics, as well as costs, given the irrigation upgrade. Cumulative costs and outcomes of irrigation upgrades on all fields where they are feasible within Solano RCD are shown in the panel on the right.

4. Basin-wide assessment and prioritization

The field-specific modeled costs and impacts of NRCS practices are used to assess the potential for water resource benefits given implementation at various scales and spatial distributions. Field-specific costs and impact data are used to prioritize practices on specific fields where the greatest benefits can be realized at the lowest cost of implementation.

Continuing with the Solano RCD example above, the shade of red for each field in Figure 4 indicates the relative reduction in surface water usage resulting from an applicable irrigation upgrade scenario, identified through the SPS. This information, which is also provided through the web application in tabular form, can be used to compare costs and benefits among fields and to identify the most cost-effective opportunities for increasing irrigation efficiency on fields that use surface water. The values in the right-side panel are the cumulative costs and impacts of upgrading irrigation on all surface-water-irrigated fields where it is feasible. While not a realistic scenario *per se*, planners can use the values to estimate potential impacts with more attainable recruitment percentages and set achievable targets when designing conservation programs (see *Plan development*).

5. Plan development

Optimization is used to identify site-specific distributions of NRCS practices across a specific AOI that will collectively achieve specific water resource objectives within specific constraints, including a budget. Optimized landscape-level scenarios can serve as strategic implementation plans.

Figure 5 shows an output of the program planning process in the web application. In this hypothetical example, the user designed a program where $5 million would support NRCS practice implementation in the Dixon RCD over 20 years, with the explicit goal of reducing sediment loss from fields. Based on this water resource objective and budget constraint, a $4.58 million program is identified, where sediment runoff is reduced by 1,322 tons per year through a combination of cover cropping and/or irrigation upgrades on the 45 fields shown on the map. Each identified field and its recommended implementation scenario are also displayed in a table, where projects can be sorted by impacts or costs. The SPS also identified the ancillary benefits of this program, which include annual reduction in use of approximately 814 acre-feet of groundwater and 722 acre-feet of surface water.

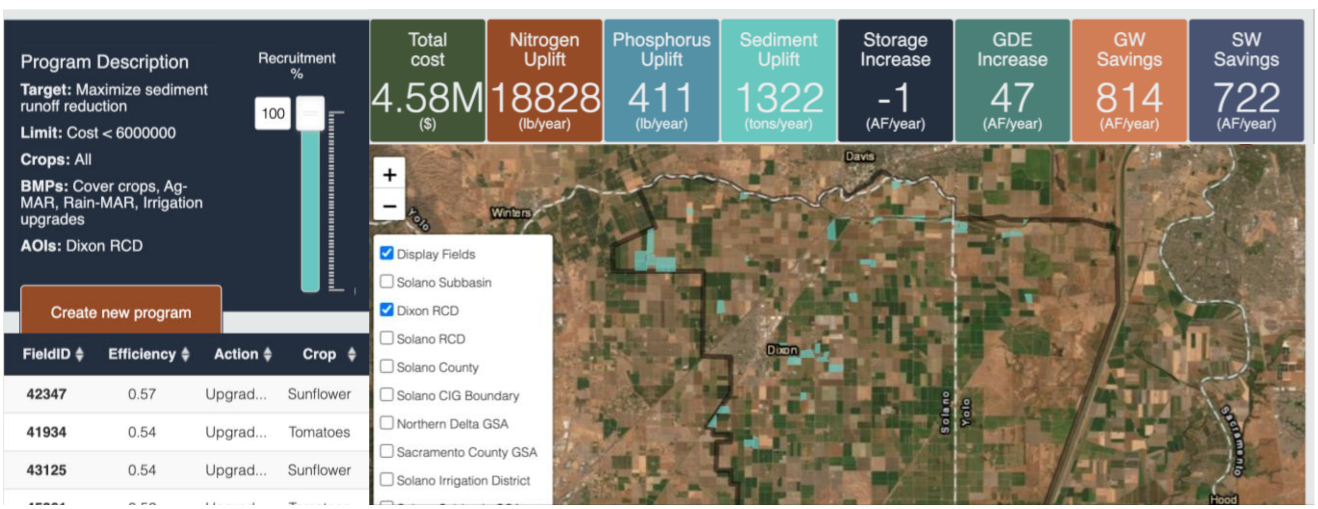

Figure 5. An example of outputs from the program planning feature of the web application, including the fields identified for implementation of specific practices to meet user-specified water resource objectives. Program costs and ancillary water resource impacts of the program are also shown.

The web application allows more complicated program planning than what is demonstrated in this example. The user can also identify optimized programs that are restricted to specific practices or to fields with specific subsets of crops. They can also set numeric water resources targets (e.g., 10,000 acre-feet of groundwater use reduction) and receive the program cost as an output of the program planning process, rather than specifying a budget up front. The likely success rate of recruiting landowners can be estimated by the user, and the application will display a range of potential optimized outcomes based on simulations of varying recruitment success. This shows how the program cost will increase and the benefits will decrease if landowners associated with optimal projects cannot be incentivized to adopt practices.

Once an optimized conservation program is developed, field-level outputs of the SPS can be used to: (1) define program trajectory, (2) adaptively manage the program to ensure target achievement, and (3) report program progress and outcomes over time.[6] For example, a planner can set interim milestones and annual recruitment targets based on the likely contribution of practice adoption on individual fields. As program recruitment begins, additional priority practices can be identified if producers initially targeted express no interest in participating. Moreover, using the web application, specific fields can be included in programs or excluded from programs during the planning phase, based on information the user has about likely participation. Cumulative annual impacts of practice adoption can also be calculated using the output data and used to track benefits over time and monitor progress toward a target.

CHALLENGES

Like all model-based systems, the SPS is limited by the accuracy of the input data sets and analytical methods integrated into it. A primary challenge for the project was the limited publicly available, field-level data and models. For example, TFT was unable to find high-quality data sets for existing current cover cropping and MAR activities on fields. As a result, it is possible that the SPS may prioritize these practices for fields where they are already occurring. This bias likely has small impact because the practices have not been adopted widely, but is a limitation nonetheless. Additionally, few data sets exist for measured edge-of-field runoff or infiltration volumes beyond the root zone beneath fields. This limited the ability to validate the site-specific data outputs. Lastly, the tool identified as the best candidate for field-scale assessment of the groundwater *quality* impacts of changes in management is undergoing updates.[7] Rather than use the existing version, the project team opted to omit this assessment from the analysis in light of likely complications from using a near-end-of-life tool.

IMPACTS ON CONSERVATION

This project demonstrates how data analytics tools and applications can be used to maximize the effectiveness of large-scale conservation programs and advance the remote strategic planning capabilities of NRCS, RCDs, GSAs, and other entities. By supporting site prioritization and optimized use of available resources at the landscape level, it enables planners to more efficiently identify achievable program goals, maximize outcomes given financial constraints, and increase the pace at which program

[6] Objective 1, Deliverable 6: Tracking and reporting system for sub-drainage and basin progress toward compliance objectives supported by database

[7] Nitrate Hazard Index assessment method; personal communications with researchers at the University of California's Division of Agriculture and Natural Resources

objectives are met. Moreover, by providing a map-based web application, planners gain easy access to the wealth of geospatial information that results from the application of SPS methods in the Solano area.

A key project outcome was the integration and leveraging of numerous but isolated publicly available data sets, analytical methods, and models. Several unique technical features to conservation planning tools in the agricultural sector resulted, including:

- site-specific assessment of *multiple* types of on-farm conservation actions, either implemented together on the same field or in various combinations across multiple fields;
- integrated assessment of the impacts of these conservation actions on *multiple* water quantity and quality metrics, either positive or negative, including annual groundwater and surface water usage, infiltration with varying benefits, and nutrient and sediment runoff; and
- quantification of metric *change* that would result from conservation practice adoption on individual fields, estimated by simulating current farm management conditions and potential future management under various conservation action scenarios.

In addition to the previously described ability to improve program planning, the SPS's integration of data on both the benefits *and* economic costs associated with changes to agricultural management has the potential to facilitate increased funding of and participation in conservation programs. The SPS can focus conservation investments on the highest priority projects, while increasing certainty that producer actions and conservation programs are having the intended beneficial impacts.

Although the impacts of management changes on a single farm may be small in the context of basin-scale sustainability objectives, the SPS can demonstrate that, with data-driven planning, many distributed changes in management can collectively contribute to achieving sustainability objectives in significant ways. Further, quantifying the outcomes that can be achieved given various levels of funding for changes in agricultural management provides an estimate of the "return on investment" in a program. This can bring higher levels of funding to conservation programs, not only from agencies but also from other entities seeking to mitigate impacts on water resources. It also facilitates robust comparison of investment outcomes in conservation programs with more traditional, engineered solutions to water management issues. In turn, funds that traditionally support infrastructure projects may be directed toward producers to use for adoption of on-farm conservation practices.

The SPS also provides insights for producers, and potentially contributes to increased incentives and crediting for their use of conservation practices. Using the SPS, conservation planners can better inform producers of available conservation options for their fields. Planners can also provide estimates to producers for additional incurable costs (over 20 years) if conservation actions were adopted, as well as specific benefits each action would have if implemented. Perhaps more importantly, producers can be empowered with knowledge of how each action will *uniquely* contribute to achieving basin-level sustainability objectives of regulatory agencies or other entities in their region. While conservation actions provide many internalized benefits for producers, such as increasing long-term viability of their operations, the SPS quantifies the *external* benefits of these actions to public surface and groundwater resources. This can enable more appropriate compensation or crediting for the costs that producers incur to provide public benefits through management of their private lands. Increased funding for these practices will potentially increase the pace of conservation action adoption and align environmental and economic gains in California's agricultural landscapes.

OUTPUTS, OUTCOMES, DELIVERABLES AND PRODUCTS

All project documentation, deliverables, and products are available on a dedicated page of TFT's website (https://www.thefreshwatertrust.org/tft-conservation-partners-tools-to-streamline-conservation-planning-california). They include:

- The map-based web application for the Solano County area. This web application provides access to all data resulting from the application of the methodologies in the Solano AOI.[8] Through this web application the user can: (1) view all economic and water resource impacts for feasible NRCS practices for each field,[9] (2) identify priority sites and actions for specific water resource objectives,[10] and (3) dynamically develop optimized conservation programs through the scenario-planning system (SPS) for this region.[11] https://thefreshwatertrust.shinyapps.io/SolanoSPS/
- A detailed, technical description of the methodologies that support the SPS, as well as descriptions of example conservation programs developed via these methods[12,13]: https://www.thefreshwatertrust.org/wp-content/uploads/2020/10/Scenario-Planning-System-Methodology.pdf
- Example outreach materials that can be used to facilitate the implementation of strategic plans developed through the SPS[14]: https://www.thefreshwatertrust.org/wp-content/uploads/2020/10/Cover-Crop-Guides-final.pdf

TFT enlisted the Community Alliance with Family Farmers (CAFF) in California to develop these outreach materials. Once high priority management actions are identified on specific fields using the SPS, the realization of the quantified benefits hinges on the willingness of producers to adopt them. These cover crop decision-making guides demonstrate the communication and educations tools that should be utilized alongside the SPS to achieve specified objectives. CAFF developed the guides for both annual and perennial cover cropping systems specific to the Solano County area, with review and input from TFT, producers, agricultural scientists, and others (as indicated in the outreach materials). CAFF is currently

[8] Objective 1, Deliverable 5: Database for program administration and adaptive management
[9] Objective 1, Deliverable 3: Generalized matrix (or data visualization) developed as a quick reference for Solano County landowners to see the results of approach at the field scale
[10] Objective 1, Deliverable 2: Comprehensive analysis of priority sites and actions in Solano County
[11] Objective 1, Deliverable 4: Dynamic data visualization (likely web map) to support integrated planning and adaptive management of conservation actions for compliance through collaborative actions
[12] Objective 2, Deliverable 1: Publicly available, repeatable methodology for producers, RCDs, NRCS, other regional entities (GSAs, ILRP Coalitions), and others to strategically plan conservation actions to meet regulatory and basin goals
[13] Objective 2, Deliverable 2: Methodology, administration documentation and other guidance documents (including prioritization schema, customizable database, Solano County demonstration project outcomes and outreach materials) publicly available online
[14] Objective 1, Deliverable 7: Outreach and education materials developed and refined with stakeholder committee; deployed in Solano County

working to translate them into additional languages and will provide them to producers via cover crop workshops and outreach programs throughout the south Sacramento Valley.

To validate assumptions and outputs of the SPS, TFT and Dixon RCD Manager Kelly Huff met with six walnut and almond growers in the Solano area. The producers were shown the data resulting from application of the SPS to their fields, and the accuracy and utility of these data were evaluated. Further, many details of their farm operations were discussed, particularly the variables and data that currently drive their decision-making around irrigation management, cover cropping, and adoption of other conservation practices. These interviews took place over two meetings in July and August 2019 at the Dixon RCD office,[15] and TFT used the producers' feedback to improve the economic and irrigation models used in the SPS.

Throughout the project period, TFT broadly presented the methods and the Solano County application of the SPS.[16,17] Through meetings, webinars, and conference presentations, TFT targeted potential users of the SPS, both to seek out collaborators interested in applying it in other areas of California and to solicit feedback on its utility for planners. These presentations included:

- The Groundwater Resources Association of California's Annual Western Groundwater Congress (Sacramento, CA; 2018 (poster) and 2019 (talk)). This conference was primarily attended by GSA representatives, their consulting engineers, academic researchers, and California agency staff.
- Dixon RCD Board of Directors meeting (December 2018, virtual webinar), which included multiple EQIP-eligible orchardists in Solano County.
- Solano Subbasin GSP Collaborative meeting (May 2019, Vacaville, CA), where the potential for the SPS to contribute to groundwater sustainability planning was discussed with GSA and Reclamation District representatives, Solano County Water Agency, Solano RCD, and consulting hydrogeologists and engineers.
- California Association of RCDs (November 2019, Redding, CA), where TFT co-presented with NRCS and Dixon RCD partners on the methods and utility of the SPS.

TFT and project partners also held in-person meetings and webinars that provided opportunity for feedback and collaboration, and focused discussion of specific technical topics. These meetings included:

- Roundtable meeting for academics, non-profits, university extension staff, and others working to research or promote the water resource benefits of cover cropping, particularly the potential impact of cover crops on groundwater recharge and irrigation management (November 2019).
- Virtual meeting with researchers at the Bren School of Environmental Science Management (UC Santa Barbara) to share methods for determining site-specific feasibility and benefits of MAR implementation (March 2020).
- California NRCS Senior Executive Team (April 2020), to discuss the potential for integration with

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[15] Objective 1, Deliverable 8: EQIP-eligible landowners engaged to participate in stakeholder committee and/or through targeted outreach by RCDs
[16] Objective 2, Deliverable 3: Three to five webinars for audiences in California
[17] Objective 2, Deliverable 4: Presentations at three relevant conferences or seminars

existing NRCS planning and prioritization processes, as well as the potential for future collaboration to apply the SPS in new geographies and expand the suite of practices assessed.

Finally, TFT posted updates to its website and in its newsletter at the beginning and end of the project[18,19]. Additional media outlets are currently being contacted to broadcast the success and impacts of this project[20].

NEXT STEPS

A final project deliverable was the co-development of a strategy with Solano County partners to use the SPS and its outcomes for conservation program planning.[21] This is currently underway and being funded under Proposition 1 and Proposition 68 California grant funding and will be finalized in 2021. More specifically, the SPS methods are being used to develop a MAR-based agricultural stormwater management plan to maintain groundwater sustainability. Further, the web application is being leveraged as a dynamic adaptive management tool that may be used to maintain minimum sustainability thresholds and avoid undesirable results, as applicable throughout the 20-year implementation of the Solano Subbasin GSP. TFT continues to work with its NRCS and RCD project partners in Solano County to utilize the existing application of the SPS to further their conservation and planning efforts in this region.

The methods developed under this project are also currently being applied to the Madera Subbasin in support of the San Joaquin Valley Land and Water Conservation Collaborative, which is led by the American Farmland Trust and includes TFT, local NRCS field offices, RCDs, and others. This collaborative is funded by a $10 million Regional Conservation Partnership Program (RCPP) grant, which will be used to protect the region's farmland and ranchland with the greatest potential for groundwater recharge and to promote the conservation of water resources through NRCS practice implementation. The Collaborative will use the SPS to optimize strategies for NRCS practice implementation over four years to achieve specific groundwater targets.

These Solano and Madera Subbasin applications of the SPS will provide TFT with ample data for additional validation of the methods and their associated assumptions and outputs. They will also allow TFT to assess the utility of the SPS in NRCS practice-based conservation planning. Most importantly, the Madera application will test the transferability of these methods.

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[18] Objective 2, Deliverable 6: Project updates distributed via The Trust's communication channels
[19] https://www.thefreshwatertrust.org/freshwater-trust-receives-grant-help-farmers-conservationists-california/; https://www.thefreshwatertrust.org/tft-conservation-partners-tools-to-streamline-conservation-planning-california
[20] Objective 2, Deliverable 5: Pitches to national media outlets, as well as outlets in California and Oregon
[21] Objective 2, Deliverable 7: Solano County partners and analysis in place for implementation of broader conservation program potentially funded through RCPP or similar program