

Eligibility Gates

Project Prioritization

The Santa Ana Watershed Project Authority (SAWPA), as the regional watershed planning group for the Santa Ana River Watershed, has been facilitating efforts to implement a watershed planning framework to guide water resource managers for the immediate future through the year 2035. To date, this has resulted in the development of the *One Water One Watershed 2.0 Plan* (OWOW Plan). The goal of this process is to develop the tools and strategies necessary to define an integrated water resource plan where all types of water (local surface and groundwater, imported water, stormwater and treated wastewater effluent) are viewed in a comprehensive, integrated manner as a single water resource with water use efficiency as the number one goal.

To assure that the OWOW plan included a list of prioritized implementation projects sufficiently developed and demonstrating appropriate needs that can be funded through the Integrated Regional Water Management (IRWM) Grant programs or other funding opportunities. Under OWOW 1.0, SAWPA issued its first Call for Projects to be included in the OWOW Plan from any public agency or non-profit organization in the Santa Ana River Watershed. The period for the preparation of project application was from May 17 to June 30, 2010. During this initial Call for Projects, project applications were evaluated in a two-step process to: 1) determine their eligibility to be included in the OWOW Plan, and, 2) prioritize projects for potential Proposition 84 funding based on their merits to address the watershed goals and objectives. The selection process was developed with goal of transparency, objectivity and deliberation. With the first round of project funding made available from the Department of Water Resource's (DWR) Proposition 84 Integrated Regional Water Management (IRWM) grant program,

agencies in the watershed were asked to collaborate ensuring that their constituencies received multiple benefits that were regional in nature

Under Round 1 of Proposition 84 IRWM program, SAWPA awarded \$12 million to 13 integrated projects in the Santa Ana River Watershed in 2011 using a project evaluation and rating and ranking process that incentivized integration and collaboration for watershed management,

In the second round of Proposition 84 project funding conducted in 2012, SAWPA sought to further expand the power of multi-agency cooperation as a means for more holistic, integrated program/project implementation. The primary difference and focus for this second funding round was to encourage projects that reflect a watershed approach that that could create opportunities for local agencies to help shape the implementation of actions that restore hydraulic functionality, solve problems, and provide long-term sustainability. To achieve this end, a new project solicitation was conducted by SAWPA in the summer of 2012. In this project/program solicitation, there were 136 projects submitted for rating and ranking. The adopted rating and ranking process used in OWOW 2.0 is depicted in **Figure 6-1**. Of these projects, 52 requested funding in this round. Others provided project information for planning/ partnership development purposes and to be eligible for other funding sources, such as Proposition 1E.





Project Prioritization Criteria

Candidate projects included in the OWOW Plan were evaluated and prioritized based on the degree to which they comply with Evaluation Criteria developed by SAWPA staff. These were based on the goals and objectives, strategies and targets established by the Steering Committee and the Pillars. The achievement of goals and objectives by a project is directly related to the projects ability to obtain Proposition 84, Chapter 2 funding. Chapter 6 Project/Program Review, Evaluation and Prioritization describes the process followed to develop and weight the criteria.

Evaluation criteria were the basis for ranking projects in a reproducible way, using numerical scores for quantitative and qualitative criteria, and applying a consistent scoring and ranking process, described below. A performance measure was created for each criterion to numerically establish the degree to which a project meets each criterion. In some cases, more than one performance measure was used for a given criterion.

The evaluation criteria and performance measures for project prioritization had the following attributes:

Non-redundant: each criterion needs to measure something not measured by others to avoid a bias decision.

Specific: each criterion is described in detail, clearly specifying what is being measured and the rationale for it.

Relevant: criteria and, particularly, performance measures need to help discriminate between "better" and "worse" projects in terms of matching with goals and objectives. If a performance measure value does not vary between projects (if the score for all projects is the same for a given performance measure) the performance measure is unnecessary or inadequate.

Evaluation criteria and their respective performance measures employed in OWOW 2.0 are presented below in **Table 6-1 Ranking Criteria and Performance Measures**.

Project Evaluation Criteria	Criteria Weights	Performance Measures	Performance Measure Weights	Performance Measure Units
1. Improve Water Reliability	20%	Water Use Efficiency	20%	AFY
		Stormwater Capture/Storage	20%	AFY
		Recycling/Reuse	20%	AFY
		Groundwater Desalination	20%	AFY
		Other	20%	AFY
2. Improve Water Quality and Salt Balance in the Watershed	20%	Non-Point Source Reduction	33%	MGD
		Reduction of TMDLs and Other	33%	kg/year
		Salt Removal	33%	tons/year
3. Manage Flood Waters Through Preservation and	20%	Acres of habitat created	60%	acres
		Natural hydrology restoration and connectivity	20%	-na-

Table 6-1 Ranking Criteria and Performance Measures

Project Evaluation Criteria	Criteria Weights	Performance Measures	Performance Measure Weights	Performance Measure Units
Restoration of Natural Hydrology		LID or resource efficient land use practices	20%	-na-
4. Reduce Greenhouse Gas Emissions from Water Management Activities	20%	GHG Reduction (CO2 equivalent)	100%	metric tons
5. Cost Effectiveness	20%	Cost per AFY	20%	-na-
		Cost per Acre of Habitat	20%	-na-
		Cost per Tons of Salt Removed	20%	-na-
		Cost per MGD of Water Treated	20%	-na-
		Cost per kg of TMDL or Other Pollutants Removed	20%	-na-

Call for Projects

After the criteria was established by the OWOW governance, SAWPA conducted a Call For Projects to all stakeholders in the watershed and solicited candidate projects from agencies and non-profit organizations in the watershed for inclusion in the OWOW 2.0 plan. The on-line form required specific information that assured that all the Project Review Process requirements could be met (Appendix L). These included the following:

- Description of how project contributes to OWOW Goals and Objectives
- Description of how project relates to Resource Management Strategies
- Description of how project is technical feasible
- Description of specific benefits to Disadvantaged Community issues
- Description of Environmental Justice considerations
- Description of project cost and financing
- Description of economic feasibility and economic analysis
- Description of project status
- Description of project merit, benefits and application to OWOW plan
- Description of climate change impacts in region
- Description of how project will reduce greenhouse gas emission compared to project alternatives

Multiple outreach flyers, email notices and workshops were implemented by SAWPA prior to and during the Call for Project Application period of two months. Procedures for submitting projects online and in hard copy for those who were unable to submit online were also made available to stakeholders.

Project Eligibility Requirements

The first step of the prioritization process was to determine those projects specifically eligible for funding from full OWOW Project List that included conceptual projects and projects seeking grant funding. For the OWOW Round 2 Call for Projects, the Steering Committee established a number of eligibility gates as minimum requirements to compete for available Proposition 84 Implementation grant funding. The eligibility gates were not limited just to the Proposition 84 statutory requirements but also include eligibility gates that would emphasize the need for integration, collaboration and meeting the OWOW Plan Goals and Objectives. These included Proposition 84 Statutory Requirements, Multi-jurisdictional Collaboration, Cost-Match Commitment and Completion Commitment.

Proposition 84 Statutory Requirements – Project Eligibility for Proposition 84 Funding:

Through this eligibility gate project proponents are required to address Proposition 84 eligibility requirements in relation to the DWR Prop 84 IRWM Proposal Solicitation Package (PSP) requirements including funding match, urban water suppliers, groundwater projects, agricultural water suppliers, and surface water diverters.

Multi-jurisdictional Collaboration – Number of Partners, Partners Role and Level of Participation:

This eligibility gate requires that project proponents have local partners and to identify each partner identify the role(s) of the partnership (e.g., planning coordination, funding partner, etc). A mere letter of support was considered insufficient to reflect multi-jurisdictional collaboration.

Cost-Match Commitment – Minimum Percent of Project Cost Funded Locally:

This eligibility gate requires that project proponents provide a minimum 25% match.

Completion Commitment - Secured Funding:

This eligibility gate requires that project proponents provide documentation of the availability of local funds to complete the project.

Initial Review

After the deadline for the Call for Projects was reached, all projects were evaluated by SAWPA staff to determine their eligibility to be part of the OWOW Plan. Since the projects received were in different stages of development, projects beyond the conceptual level, largely with feasibility studies in place, were parsed out to be considered for possible Proposition 84 IRWM Implementation funding. It is important to reiterate that initial ranking was based on self-reported project data.

The first review step occurred internally by SAWPA staff to assure quality control and catch any data input errors. With so many project information forms representing over a hundred projects from across the watershed, QA/QC was important to confirm any data outliers and verify with the project proponents whether the data was accurate. The process was conducted to ensure a sense of fairness and completeness before commencing the prioritization process. If errors based on SAWPA's review

were encountered largely based on unrealistic data entry errors, the project proponent was contacted and encouraged to correct the error by re-submittal of the corrected project information form.

Thereafter, review by SAWPA included more in depth evaluation and confirmation of the costs, benefits and overall economic feasibility analysis. Quantification and accuracy of claimed benefits were also double checked.

Project Scoring

The next step of the prioritization process was to score each project. Scoring is the process by which the information provided by the project sponsors is converted to a numerical value for each sub-criterion using the performance measures presented in **Table 6-1** above. In many instances, the information provided in the nomination forms need to be processed or combined to establish the numerical value of each performance measure. Relevant methodological notes on the scoring of each performance measures are presented above. The Project Form is located in **Appendix L**.

Each project submitted to SAWPA for inclusion in the OWOW 2.0 ranking process was scored and evaluated using the five criteria established by the OWOW Steering Committee. Each criteria was equally weighted at 20%. Each project was scored based on the effective benefit that would be realized at the conclusion of the project as described within the scope in the application. For each criterion, a scale was developed such that it would be used as the basis for analysis utilizing a commercially available software package developed by Infoharvest, Inc., called Criterium DecisionPlus (CDP).

Criterion 1 – Improve Water Reliability and Reduce Reliance on Imported Water

Scores were developed for Criterion 1 by using the acre-foot per year (AFY) yields provided by applicants for the water use efficiency, stormwater capture and storage, recycled reuse, groundwater desalination, and other categories. The score for this criterion was developed using the following steps:

- The total AFY were summed up for each project for all the categories
- A scale was developed to account for the full range of benefits
- The projects were scored based on this scale
- The values were entered into CDP

Criterion 2 – Improve Water Quality and Salt Balance

Scores were developed for Criterion 2 for each of three categories: Non-Point Source Reduction (mgd), Reduction of Total Maximum Daily Loads (TMDL) Listed Pollutants and other Pollutants (KG/year), and Salt Removal (tons/year). To develop the scores, the following steps were taken:

- Data for each category was normalized on a scale of 1 to 5, 1 being the worst and 5 the best
 - To develop the normalization, the data for each category with a value greater than 0 was divided into quartiles to facilitate developing ranges. Scores were assigned using the scale.

- Normalized data was then summed together for the three categories for each project to value the multi-benefit of multiple categories.
- Summed data was adjusted to display a 1 to 5 scoring.
- The values were entered into CDP.

Criterion 3 – Manage Flood Waters through Preservation and Restoration of Natural Hydrology

Criterion 3 was evaluated using three performance measures: Acres of Habitat Created (3a), Natural Hydrology Restoration and Connectivity (3b), and Low Impact Development or Resources Efficient Land Use Practices (3c). The performance measures were weighted with the following percentages 60%, 20%, and 20%, respectively. Performance measure 3a was weighted higher as it provides the greatest benefit to the criteria.

Performance Measure 3a

Scores were developed for performance measure 3a using the following steps: Develop a scale that would best convey the benefit for each project.

- Each project was scored
- Scores were entered into CDP

Performance Measures 3b and 3c

Performance measures 3b and 3c consist of 2 components: a yes/no answer to whether the project provides the applicable benefit and a description of the benefit. Values for each component were developed based on the following factors:

- Project had no applicable benefit
- Project had benefits but had little or no quantification of such benefits
- Project had quantified and clear benefits
- Values were then entered into CDP

Criterion 4 – Reduce Greenhouse Gas Emissions from Water Management Activities

Scores were developed for Criteria 4 using the following steps:

- Data was normalized on a scale of 1 to 5, 1 being the worst and 5 the best (any project that provided more than 10,000 metric tons of CO₂e reduction were scored a 5)
- The values were entered into CDP

Criterion 5 – Cost Effectiveness

Criteria 5 is composed of five components evaluating the cost-effectiveness on a per unit basis per year for each benefit identified by the applicant: Cost per AFY of Water (5a), Cost per Acre of Habitat (5b), Cost per Tons of Salt Removed (5c), Cost per MGD of Water Treated (5d), Cost per KG of TMDL listed or Other Pollutants Removed (5e). Values for each component were calculated using the following steps:

- Data was normalized on a scale of 1 to 5, 1 being the worst and 5 the best
- The normalized values for each project and for all components were summed together and averaged to arrive at the cost effectiveness value
- The values were entered into CDP

OWOW Project Ranking

The project scores for each performance measure were used for the ranking of the projects using a multi-criteria ranking method. The method is known as Multi-Attribute Rating Technique (MART). The method consists of applying the weights for each criterion to the criteria scores, and adding the weighted criteria scores to obtain an overall weighted and final score to use in ranking. For the ranking process, the commercial software used was CDP. CDP uses MART for ranking projects or planning alternatives.

One of the steps in the MART consists of normalizing the scores. The *normalization* of a score is necessary to eliminate the units of the scores and to be able to add, average, or compare scores from different performance measures. *Normalization* basically means converting any dimensional or dimensionless quantity to a common scale.

Normalization of scores was done at two levels in this prioritization process. The first level of normalization was done within the scoring (i.e., before the application of CDP) where a criterion required addition or averaging of performance measures. In OWOW 2.0 the following performance measures were normalized to a scale of 1-5:

For the criterion "Improve Water Quality and Salt Balance in the Watershed" the performance measures:

- Non-Point Source Reduction [MGD]
- Reduction of TMDLs and Other [KG/year]
- Salt Removal [tons/year]

Once these three performance measures were normalized, they were combined in a composite score of 1-5 to be used for prioritization. For the criterion "Reduce Greenhouse Gas Emissions from Water Management Activities" the Data normalized to 1-5 scale for CO2equivalent.

- Data > 10,000 co2e metric tons capped at 5
- Data with value less 10,000 co2e divided into quartiles to develop ranges for scale

For the criterion "Cost effectiveness" the performance measures:

• Cost per AFY of Water [\$/AFY]

- Cost per Acre of Habitat [\$/acre]
- Cost per Tons of Salt Removed [\$/(tons/year)]
- Cost per MGD of Water Treated [\$/MGD]
- Cost per Kg of TMDL listed or Other Pollutants Removed [\$/(KG/year)]

The normalized scores in the scale of 1 to 5 then were combined in an average as a composite score of cost effectiveness to be used in prioritization.

The second case in which *normalization* was conducted was within the ranking process, for all of the scores. This step always is performed in MART and it's a step performed within CDP. CDP normalizes all scores using a scale of 0 to 1.

In addition to the normalization score in CDP, there are five other basic steps in MART (**Figure 6-2**). The first step is the scoring of the project against each sub-criteria as described in the earlier sections. In the example described in **Figure 6-2**, the project has a score of 12 acres (raw performance measure) for recreational benefits. As different criteria have different units of measurement (for example salt removal is measured in tons/year, water treatment benefits are measured in MGD, etc.) normalization is used, as mentioned above. In the example depicted in **Figure 6-2**, the recreational benefits score is converted with a scale between 0 and 1, using a linear scale. The raw performance of 12 acres translates into a normalized score of 0.34 (where the score of 0 indicates the worst performance, i.e. no acres for open space, and the score of 1.0 indicates the best performance, i.e. largest recreational and open space area provided by any project).



Figure 6-2 Multi-Attribute Rating Technique to Rank Any Type of Alternatives or Projects

Step 3 on **Figure 6-2** shows the weighting of the criteria. In OWOW 2.0 all criteria were weighted equally. In Step 4 in **Figure 6-2**, the normalized score is multiplied by the weight of the criterion. In the example in **Figure 6-2**, the open space criterion received a weight of 9 percent (out of a possible 100 percent). The normalized score (0.34) is multiplied by its weight of 9 percent in order to get a partial score of 0.031 for the project.

The partial score of 0.031 then is plotted on a graph for that project [Step 5 in **Figure 6-2**]. This procedure is repeated for all of the other criteria (or performance measures) for the same project until a total decision score for the alternative is calculated [Step 6 in **Figure 6-2**]. Finally, after all projects receive a total score, they can be compared to the rest of the projects and ranked according to the overall CDP score, also called *decision score*.

Figure 6-3 shows the example of a linear scale for normalization of scores in Step 2. In the process of normalizing scores for the OWOW projects, however, some of the normalization scales were defined as non-linear scales. This was necessary to avoid an effect called "shadowing" by which a few projects with significantly higher raw scores can generate low scores for the rest of the projects when a linear scale is used. For example, in a situation in which 95 percent of projects have benefits under 100 acres, but one or two percent of projects have benefits over 5,000 acres, a linear scale could result in the lowest score for the 95 percent of projects under 100 acres. The shadowing of those high performing projects could render the performance measure irrelevant since the normalized score would not serve as a discriminator for 95 percent of projects.



Figure 6-3 Distribution of Total Decision Scores for all OWOW

In the OWOW ranking process, the scales for "Improve Water Reliability and Reduce Reliance on Imported Water", "Improve Water Quality and Salt Balance", "Manage Flood Waters through Preservation and Restoration of Natural Hydrology" and "Cost Effectiveness" scales for these benefits each required non-linear normalization scales.

Project Prioritizations Results

All 136 projects included in the OWOW 2.0 plan were ranked using MART. The complete ranked list of projects is presented in **Appendix K**.

Figure 6-4 presents the spread of decision scores (ranking scores) in a horizontal bar chart. The figure shows an inflection point around 90 percent of projects. This means that about ten percent of the projects (between 25 and 20 projects) distinguish from the rest obtaining scores that would indicate that they provide more benefits and/or perform significantly better than the rest of the projects for most of the criteria.

In order to test the robustness of the ranking method used (including the qualitative scales and the nonlinear normalization scales), a series of sensitivity analyses were run on the model.

Additionally the sensitivity of the ranking to the weights of the sub criteria also was tested. Results of the sensitivity analysis showed that the ranking is not sensitive to the qualitative scales (such as the

greenhouse gas scale of 1 to 5). The model is not sensitive to the actual shape of the non-linear scales used for normalization of some criteria, as long as the scale remains non linear (to avoid the "shadowing" effect). Similarly, the ranking generally is not sensitive to reasonable changes in the weights of the criteria (changes of ten percentage points). The ranking, however, does show a sensitivity to the actual raw scores (numbers reported in the project nomination forms) mainly for water supply and water quality benefits. For a ranking of projects to determine the actual Proposition 84 funding, the information provided in the nomination form would have to be vetted to avoid biases in decision scores due to inaccurate information.

The final prioritized OWOW project implementation list is presented in **Appendix K**. Projects are ranked from highest CDP decision score to lowest CDP decision score. Scores range from about 0.06 for the lowest ranked projects to above 0.60 for the highest ranked projects (shown in **Figure 6-4**). The "perfect" theoretical score is 1.0. The results of the ranking with the highest ranked project around 0.61 are not unexpected given the great number and diversity of sub-criteria. Generally, in any multi-criteria ranking process, the greater the number of criteria the lower the decision scores tend to be, as it becomes increasingly less likely that the best project will score well for all criteria.



Figure 6-4 Distribution and Magnitude of Total Decisions Scores for all OWOW 2.0 Projects

Based on project numeric score from established criteria approved by the OWOW Steering Committee, projects were assigned to one of three tiers to reflect natural breaks in the results on the project rankings. Identification of these breaks and placement in a specific tier was based on an analysis of

score distributions by an independent consultant for all ranked projects. The tiers represent how well a specific project meets the OWOW benefit criteria.

Project Review Committee

The next step in this process was to assure the veracity of information submitted by project proponents. To evaluate projects, SAWPA formed a three person Project Review Committee (PRC) to provide an independent and expert review of the top ranked submissions including disadvantaged community assistance and water use efficiency rate funding. The three committee members were selected for their knowledge of water, both technically and at a policy level, their understanding and leadership in developing integrated approaches to problem solving and their knowledge of the Santa Ana River Watershed. The PRC included Joe Grindstaff, former Executive Officer of the Delta Stewardship Council and former SAWPA General Manager; Pete Silva, former State Water Resources Control Board member and former US EPA's Assistant Administrator for the Office of Water; and Gerry Thibeault, former Executive Officer of the California Regional Water Quality Control Board, Santa Ana Region. Over the last week of November of 2012, the PRC interviewed project proponents from the top 32 projects.

Prior to the interview process, the PRC were asked to focus on finding projects that were not only technologically feasible, but projects that were integrated and provided regional benefit. In the review process, the PRC first vetted the claims made by the project proponents on their on-line application. Secondly, they focused on the projects in the context of the goals and objectives of OWOW. Projects that provided single benefits, were not regional in scope and impact or were not representative of significant collaboration were not considered for funding. The PRC sought to identify and move projects forward that exemplified the integrated planning concept and provided the most benefit to the OWOW planning region.

A portfolio of 22 projects and programs was recommended by the PRC, two of which were subsequently accelerated into Round 1, due to the availability of additional Round 1 funding. These projects combined provide water use efficiency, enhanced groundwater recharge, integrated flood control/ habitat benefits, non-point source pollution reduction, salt removal from local aquifers, and assistance to disadvantaged communities. Funding from Round 2 is expected to provide about \$17 million to support the 22 projects. In addition to the grant funding, local funding in the amount of \$193 million has also been committed by project proponents to implement the projects.

The recommended projects were approved by OWOW Steering Committee and SAWPA Commission in December 2012. Thereafter, the approved Round 2 project proponents from the Santa Ana Region were asked to prepare the DWR application with compilation of the project solicitation package by SAWPA staff and submittal to the State by March 29, 2013. DWR announced their recommended projects under Round 2 released on Sept. 25, 2013. The implementation of Round 2 IRWM Implementation projects will serve to augment the important initial implementation of OWOW projects from Round 1 in moving the watershed closer to meeting the OWOW vision of a Watershed that is sustainable, drought proofed and salt balanced by 2030, and in which water resources are protected and water is used efficiently.

Project Name	Lead Agency	Recommended Grant
Wineville Recycled Water	Inland Empire Utilities Agency (IEUA)	\$1,000,000
San Sevaine Recharge	IEUA	\$750,000
Vulcan Pit Flood Control	City of Fontana	\$1,000,000
Wilson Basins Project	City of Yucaipa	\$750,000
Francis St/Ely Basin Project	City of Ontario	\$750,000
Plunge Creek Recharge	San Bernardino Valley Municipal Water District (SBVMWD)	\$500,000
Enhanced SAR Recharge	SBVWCD	\$1,000,000
14th St. Recharge	City of Upland	\$500,000
Arlington-Central Ave. Phase I	City of Riverside	\$1,000,000
Perris Desalter Wells	Eastern Municipal Water District (EMWD)	\$1,000,000
Alamitos Barrier Project	Orange County Water District (OCWD)	\$500,000^
Peters Canyon Capture	City of Irvine	\$1,000,000
Corona/Home Gardens Well	City of Corona Department of Water and Power	\$1,300,000
Prado Basin Sediment Demo	OCWD	\$750,000
Wastewater Project	Soboba Tribe	\$150,000
Canyon Lake Hybrid Project	Lake Elsinore and San Jacinto Watersheds Authority	\$500,000
Arlington Basin WQ Project	Western Municipal Water District (WMWD)	\$500,000^
Forest First Project	US Forest Service	\$1,000,000
Com/Ind/Inst. Water Efficiency	Municipal Water District of Orange County	\$500,000
Regional Landscape Retrofit	IEUA	\$500,000
Customer WUE Handbook	WMWD	\$120,000
Quail Valley Sewer System	EMWD	\$1,930,000

OWOW Prop 84 Round 2 Recommended Project list is as follows:

SAWPA staff worked closely with each project proponent to ensure that their Proposition 84 IRWM Implementation Grant applications were completed appropriately. Upon announcement and approval of the recommended Round 2 project list by SAWPA Governance, weekly workshops were held with the 20 project proponents to support application preparation and submittal to SAWPA to compilation.

As part of this process, each project proponent had to adopt the OWOW 1.0 plan. Additionally, due to new State legislation, a description of how the projects would reduce dependence on the Delta Supply was included as part of the overall application submitted by SAWPA to DWR.

Future Review Processes

It is anticipated that the project review and prioritization process will be reviewed and refined to support greater integration and collaboration, to comply with any new DWR IRWM Guidelines and PSP requirements, and improve the streamlining and efficiency of project submittal. Further, based on public workshop feedback the process will be refined to better serve the stakeholders and support the overall goals and objectives of the OWOW plan.