

Section 7 Evaluation Criteria

Background

Section 6 contains lists of projects and project groupings that were reviewed and discussed by the Steering Committee. Subsequently the pool committees, advisory committee and the Board approved Project Grouping 6 “Maximize Recharge” that ~~are~~ listed in Table 6-1. The project evaluation criteria discussed in this section were adopted by Watermaster to evaluate these projects to determine if the proposed projects are consistent with Watermaster’s 2013 goals, to prioritize the projects, and to ultimately provide the Watermaster recommendations for implementation.

Watermaster’s Recharge Goals

Given 2013 planning information discussed in Section 2, Watermaster will not likely be recharging significant quantities of supplemental water in the near future for replenishment purposes. The potential sustainability challenges ~~and the CDA~~ faced by the JCSD cannot be mitigated through spreading alone as was demonstrated in draft Section 3 of the 2013 RMPU Amendment report. Watermaster can work with the Appropriative Pool parties to facilitate the development of in-lieu recharge/exchange and ASR projects to mitigate potential sustainability challenges and ~~when replenishment in excess of 3,200 acre-ft/yr is required,~~ direct that replenishment occur by providing replenishment water to the in-lieu recharge/exchange and ~~or~~ ASR projects. Alternatively, the Appropriative Pool parties could make their own arrangements, independent of the Watermaster, to achieve the same purposes.

Reoperation has caused groundwater levels to decline in the northern parts of MZ2 and MZ3, specifically in areas where the CVWD, FWC, and the City of Ontario produce groundwater. Model investigations, discussed in a report titled 2009 Production Optimization and Evaluation of the Peace II Project Description prepared by WEI suggest that this drawdown will continue into future through 2030. To improve the balance of recharge and discharge in the northern parts of MZ2 and MZ3, Watermaster could implement storm and dry-weather recharge projects listed in Table 6-1 that recharge in MZ2 and MZ3. These projects would increase the recharge of storm water and dry-weather flow in these management zones and add new yield to the Chino Basin. Alternatively, a Party could implement these projects and Watermaster could facilitate their implementation by petitioning for amendment of its existing State Water Board stormwater diversion permits to

Section 7 Evaluation Criteria

include other recharge sites, in effect “sharing” its rights under its stormwater diversion permits with the implementing Party¹. In terms of balance, MZ3 has the greatest need of new storm and dry-weather flow recharge and supplemental recharge capacity.

Watermaster Minimum Standard of Performance

Watermaster is tasked with recharging the Basin in order to fulfill the following obligations: first, Watermaster coordinates replenishment of the Basin in order to offset production in excess of the Safe Yield (Judgment, ¶ 49-50). Second, Watermaster is obligated, pursuant to the Peace and Peace II Agreements, to recharge, on average, 6,500 acre-ft/yr of supplemental water to MZ1 (Peace Agreement, § 5.1(g), Peace II Agreement, § 8.4).

In the 2013 RMPU Amendment, the Watermaster’s minimum standard of performance related to the evaluation of new recharge facilities and their operations come from the Peace Agreement and the December 2011 Watermaster Board action. The Peace Agreement §Section 5.1 (e) items (i), (iii), (v), (vii), and (viii), read as follows (see Peace Agreement, pages 20 and 21):

Watermaster shall exercise Best Efforts² to:

- (i) protect and enhance the safe yield of the Chino Basin through Replenishment and Recharge; [...]
- (iii) direct Recharge relative to Production in each area and sub-area of the Basin to achieve long term balance and to promote the goal of equal access to groundwater in all areas and sub-areas of the Chino Basin; [...]
- (v) establish and periodically update criteria for the use of water from different sources for Replenishment purposes; [...]
- (vii) recharge the Chino Basin with water in any area where groundwater levels have declined to such an extent that there is an imminent threat of Material Physical Injury to any party to the Judgment;
- (viii) maintain long-term hydrologic balance between total Recharge and discharge in all areas and sub-areas; [...].

Best Efforts, per Peace Agreement (see Peace Agreement, page 4), “means reasonable diligence and reasonable efforts under the totality of the circumstances.

¹ The addition of points of diversion to Watermaster’s stormwater diversion permits would effect a change only in the ability to divert stormwater pursuant to the permits, as enforced by the California State Water Resources Control Board. Such addition does not contemplate any change in Watermaster’s own mechanisms for the allocation of stormwater yield, which is outside the scope of the State Water Resources Control Board’s oversight.

² Best Efforts, per Peace Agreement (see Peace Agreement, page 4), “means reasonable diligence and reasonable efforts under the totality of the circumstances. Indifference and inaction do not constitute Best Efforts. Futile action(s) are not required.”

Section 7 Evaluation Criteria

~~Indifference and inaction do not constitute Best Efforts. Futile action(s) are not required."~~

On December 15, 2011, the Watermaster Board directed ~~Watermaster staff to that~~ the 2013 RMPU Amendment's Implementation Plan " ... address balance issues within the Chino Basin subzones [...]",³

The following conclusions were documented in the draft Sections 2 through 4 herein and the *2009 Production Optimization and Evaluation of the Peace II Project Description* report:

- There is enough existing recharge capacity in the Chino Basin to meet projected replenishment obligations for the foreseeable future. Most of this recharge capacity is in MZ1 and MZ2.
- There are no recharge obstacles to meeting the MZ1 supplemental water recharge requirement of 6,500 acre-ft/yr. ~~The IEUA estimates projects~~ that it will recharge about 3,300 acre-ft/yr of recycled water in MZ1. Therefore, to the extent that annual replenishment obligation is less than the difference between 3,200 acre-ft/yr the MZ1 recharge obligation and recycled water recharge by IEUA in MZ1⁴, Watermaster will have to purchase some imported water from Metropolitan and recharge it in MZ1 to meet the 6,500 acre-ft/yr commitment.
- In the future when the replenishment obligation becomes significant, Watermaster will lack access to facilities to enable it to direct recharge in such a way as to balance recharge and discharge in MZ3.
- There ~~are is a~~ potential production sustainability challenges in the JCSD ~~and CDA~~ well field areas located in MZ3, MZ4 and MZ5. ~~These challenge~~ This challenges are is caused by ~~too much~~ production in the well field ~~areas in~~ excess of recharge and the inability of the aquifer to transmit recharge to the affected wells. Groundwater modeling investigations over the last five years suggests: that the new artificial recharge at existing stormwater retention facilities will provide ~~marginal some~~ benefits towards resolving the sustainability challenge faced by the JCSD ~~and the CDA~~; and that reducing net production in the JCSD well field ~~would be was significantly more~~ beneficial in resolving the production sustainability challenge.

The following questions were developed for discussion purposes to guide the development of criteria that could be used by the Watermaster and the Parties to determine which projects are consistent with Watermaster goals, to rank the projects, and determine which projects should be implemented.

³ From the minutes of the December 15, 2011 Watermaster Board meeting

⁴ ~~The MZ1 supplemental water recharge obligation is 6,500 acre-ft/yr of which 3,300 acre-ft/yr is projected by the IEUA to be satisfied with recycled water and the residual 3,200 acre-ft must come from imported water.~~

What are the Watermaster's Recharge Obligations and Priorities?

~~Watermaster must apply its best efforts: "to protect and enhance the safe yield of the Chino Basin through Replenishment and Recharge" (Peace Agreement Section 5.1 (e) (i)); to "conduct its recharge operations to "recharge the Chino Basin with water in any area where groundwater levels have declined to such an extent that there is an imminent threat of Material Physical Injury to any party to the Judgment" (Peace Agreement Section 5.1 (e) (vii)); "direct Recharge relative to Production in each area and sub-area of the Basin to achieve long term balance and to promote the goal of equal access to groundwater in all areas and sub-areas of the Chino Basin" (Peace Agreement Section 5.1 (e) (iii) and (viii) by extension).~~

~~Modeling investigations suggest that the safe yield of the Chino Basin has declined and will continue to decline in the future. The Peace Agreement Section 5.1(e)(i) commits the Watermaster and the Parties undertake best efforts to protect and enhance the safe yield of the Basin through replenishment and recharge.~~

Is the Project Cost Effective?

Planning for a storm and dry-weather flow recharge project begins when the estimated present value cost of the new storm water and dry-weather flow recharge project is determined to be less than the present value cost of recharging the next least cost supplemental water. There are limited supplies of recycled water given current and expected future land use at build out. Therefore the next least cost supply is assumed herein to be imported water from Metropolitan or other imported water that is wheeled into the Chino Basin through Metropolitan's facilities. The next least cost of supply is assumed herein to be the Metropolitan untreated Tier 1 rate.

A proposed storm and dry-weather flow recharge project ~~would~~ will be considered for implementation when the unit cost of new recharge is determined to be ~~less than~~ comparable to, or less than, the unit cost of importing a comparable volume of untreated Tier 1 water from Metropolitan. A Funding Plan and an Implementation plan will be presented in Section 8 of the 2013 Amendment (2010 RMPU); these plans will include a list of projects -that will collectively make sense to implement, after being examined under all the proposed criteria. The cost effectiveness test of comparison to Tier 1 cost will not be a strict Pass/Fail criterion.

There are limits to funding available to implement these new projects so that the projects that will be implemented must meet the recharge goals and priorities of the Watermaster and be the most cost-efficient projects.

Does a Proposed Project Create Significant New Storm Water Recharge and Dry-Weather Flow Recharge?

Smaller projects require relatively more resources to develop and operate than larger projects. For discussion purposes significant is defined herein to be greater than 100 acre-ft/yr.

Does the Project Create New Supplemental Water Recharge Capacity?

New storm and dry-weather flow recharge facilities can be used to recharge supplemental water if supplemental water can be conveyed to them. In fact, because of the hydrology of the watershed, it is likely that the supplemental water recharge capacity of a new project will be greater than the storm water and dry-weather flow recharge capacity.

There is also the possibility of constructing recharge facilities for supplemental water recharge only. These recharge facilities include injection wells and aquifer storage and recovery (ASR) wells and may include recharge basins.

What are the Barriers to Implementation?

Spreading basins that will be developed from existing retention basins will require outlet controls, SCADA, potentially significant grading, and increased maintenance. The barriers for these recharge projects may include: developing an agreement with the basin owner to construct improvements and allow recharge; the flood control function of an existing or planned retention basin; mitigation for habitat losses and other resource agency requirements; Watermaster material physical injury findings; obtaining the ability, pursuant to a water right permit, to divert water for recharge and subsequent beneficial use; and the potential for diverting water that would otherwise be captured at an existing downstream facility.

For a new spreading basin that would not be otherwise built for flood control purposes, the implementation barriers may include: property acquisition; obtaining change in the general plan to allow the land to be developed as recharge basin; agreement with the owner of the drainage works to divert storm water and convey excess back to the drainage works; mitigation for habitat losses and other resource agency requirements; Watermaster material physical injury findings; obtaining the ability, pursuant to a water right permit, to divert water for recharge and subsequent beneficial use; and the potential for diverting water that would otherwise be captured at an existing downstream facility.

The barriers to supplemental water recharge in existing and future retention basins may include: developing agreement with the owners of the basin to allow construction of improvements and supplemental water recharge; cost of obtaining and conveying supplemental water supplies to the basin; obtaining permit to recharge recycled water; conflicting schedules for supplemental water recharge and

Section 7 Evaluation Criteria

basin maintenance; mitigation for habitat losses and other resource agency requirements; and Watermaster material physical injury findings.

In-lieu recharge/exchange projects involve the conveyance of supplemental and or groundwater⁵ to the JCSD from the ~~IEUA, the~~ Appropriative Pool Parties, ~~the IEUA, the TVMWD, the WMWD,~~ or some combination of these sources. Interties would be constructed among these agencies. The barriers to in-lieu recharge/exchange projects anticipated herein include: the drafting of agreements to allow in-lieu recharge/exchange; source water availability and cost; and Watermaster material physical injury findings.

All the ASR projects listed in Table 6-3 involve the JCSD with the injection water supplied by the ~~IEUA, the~~ Appropriative Pool Parties, ~~the IEUA, the TVMWD, the WMWD,~~ or some combination of these sources, as in the in-lieu recharge/exchange projects. In fact it is possible that the in-lieu recharge/exchange and ASR projects could be combined to form a more robust project. The barriers to the ASR well projects are essentially the same as in-lieu recharge/exchange projects.

Barriers to Implementation cannot be quantitatively assessed. They will be used as a qualitative factor in ranking projects.

Is This Project Solely Required for MS4 Compliance?

If a project on the list is serving the purpose of meeting MS4 compliance exclusively, then that project will not be included in the Funding and Implementation plans, yes then the proponent pays for the project. If, on the other hand, the project represents enhancements to a project required for MS4 compliance, then the enhancements and their associated yield will be considered.

Recommended Criteria

Exercise Best Efforts to Sustain Production in the ~~CDA Desalter II and the~~ JCSD Well Fields

Watermaster will use its best efforts to facilitate recharge project implementation that sustain groundwater production in the ~~CDA Desalter II and~~ JCSD well fields. These projects will have the highest priority in the 2013 RMPU Amendment and, except for cost considerations, will not be comparatively evaluated with storm, dry-weather, and supplemental water recharge projects that use existing and proposed spreading facilities. These new projects need to consider the following:

⁵ Where this groundwater production would not impact the groundwater levels in the JCSD ~~and CDA~~ well fields

Section 7 Evaluation Criteria

- The groundwater modeling work described in Section 3 suggested that this could best be done by the JCSD reducing production in their existing well field and either producing groundwater elsewhere or using another water supply in lieu of producing groundwater from the area where their existing wells are located.
- Increasing recharge in existing recharge basins and new recharge accomplished through the conversion of stormwater retention basins to recharge facilities was found to not significantly increase the production sustainability in the [CDA Desalter II and JCSD well fields](#).
- The modeling work also demonstrated that reoperation has little impact on sustainable production in the [CDA Desalter II and JCSD well fields](#).

These facts mean that the Watermaster and the Parties concentrate their best efforts on projects that reduce groundwater production by JCSD and replace the reduced groundwater production with another supply. This can be accomplished through interconnections with [the Appropriative Pool Parties, the IEUA, the TVMWD and the WMWD](#). There are multiple in-lieu recharge/exchange and ASR project alternatives. The criteria that will be applied to evaluate alternative in-lieu supply plans include:

- Reliability of the supply to ensure sustainability – the project must be sized, scalable, and sourced to ensure sustainability.
- Cost – the cost to the Watermaster and the Parties should be minimized.
- Water quality – the project must not cause new water quality challenges and would hopefully improve groundwater quality.
- Ease of implementation – the project must be readily implementable with minimum institutional and regulatory difficulties.

Storm water and Dry-Weather Flow Recharge Projects

There are three types of storm water recharge projects that include: improvements at existing recharge facilities, improvements at existing storm water management facilities that currently produce only incidental recharge, and new facilities. The criteria that will be applied to storm and dry-weather flow recharge projects include:

- Confidence in the estimate of new storm water recharge – The procedure used by Watermaster to estimate new stormwater recharge is summarized as follows:
 - Watermaster will develop estimates of stormwater discharge and recharge at all the facilities proposed in Section 6 using the WasteLoad Allocation Model (WLAM) developed by WEI using current land use and drainage system data and the daily precipitation for the period of July 1, 1949 through June 30, 2011. This is an updated version of the modeling approach used in the 2010 RMPU.

Section 7 Evaluation Criteria

- WEI will compare the historical recharge performance at existing facilities to the WLAM estimates for the period 2005 through 2011, develop correlation statistics, and implement a bias correction procedure for flow-through, flow-by and hybrid facilities. All assumptions will be reviewed by the steering committee prior to conducting the evaluations.
- New recharge will be estimated at 90 percent of the bias-corrected model estimate.
- Location of recharge – current preference will be given to MZ3 then to MZ2 and then MZ1, up to specific new recharge goals per management zone. These recharge goals will be established in Section 8 based on the 2013 Chino Basin Groundwater Model.
- Expandability of the project to include supplemental water recharge if recharge location is desirable.
- Cost – the cost to the Watermaster and the Parties should be minimized with unit cost of the new recharge being less than the Metropolitan Tier 1 untreated rate. The unit cost of recharge will be based on the sum of amortized capital plus operations and maintenance costs, divided by average annual new recharge.
- Water Quality – the new recharge must not cause existing contaminant plumes to be redirected in such a way as to cause contamination to wells or interfere with existing groundwater cleanup programs.
- Ease of implementation – the project must be readily implementable with minimum institutional and regulatory difficulties.

Application of Criteria

The following information will be compiled for all the projects initially selected for consideration in the 2013 RMPU Amendment:

- Project name and management zone
- Average annual new storm and dry-weather flow recharge
- Supplemental water recharge capacity
- Capital and operations and maintenance costs
- Supplemental water acquisition cost
- Annual cost of the project and confidence in that cost estimate
- Unit cost of recharge (storm and dry-weather flow recharge separate from supplemental water recharge)
- Production sustainability score⁶

⁶ The production sustainability score is a tool to characterize a project's contribution to production sustainability in areas with sustainability challenges. In simple terms the score will be as follows: 0 – does not contribute to production sustainability; 1 – contributes minimally to production sustainability (a necessary but not sufficient condition of sustainability); 2 – contributes significantly to production sustainability (a necessary and sufficient condition of sustainability).

Section 7 Evaluation Criteria

- Management zone where project contributes to balance of recharge and discharge
- Water quality impacts
- Institutional challenges (water rights, access, environmental, and regulatory).

Table 7-1 shows the layout of the table where the projects will be listed and the criteria listed above will be tabulated and subsequently prioritized.

~~1. MZ3/MZ4/MZ5 production sustainability projects will be prioritized above spreading projects.~~

2.1. MZ3/MZ4/MZ5 production sustainability projects will be prioritized

- a. from least cost to greatest cost⁷
- b. then least to greatest water quality impacts
- c. then least to greatest institutional challenges

3.2. The remaining projects will be prioritized:

- a. to increase storm water and dry-weather flow recharge by spreading in MZ3 followed by MZ2 and then MZ1
- b. then from least cost to greatest cost ~~and not exceeding the Metropolitan untreated tier 1 rate,~~ in each management zone, up to their respective recharge goals to achieve balance with discharge. The comparison to Metropolitan untreated tier 1 rate will be clearly noted.
- c. then least to greatest water quality impacts in each management zone
- d. then least to greatest institutional challenges in each management zone

⁷ Expressed in dollars per acre-ft and which includes amortized capital and operations and maintenance costs. The intent is to capture all cost of recharge and express it as a unit cost for comparison to the cost of the next least cost supply.