

7 PROJECTS AND MANAGEMENT ACTIONS TO ACHIEVE SUSTAINABILITY GOAL

Multiple projects and management actions have been identified for planning and implementation to support the KRGSA sustainability goal. The projects and actions also have been defined in the context of the sustainability goal of the Kern County Subbasin, which is to:

- Achieve sustainable groundwater management in the Kern County Subbasin through the implementation of projects and management actions at the member agency level of each GSA
- Maintain its groundwater use within the sustainable yield of the basin through as demonstrated by monitoring and reporting groundwater conditions
- Operate within the established sustainable management criteria, which are established based on the collective technical information presented in the GSPs in the Subbasin.
- Collectively bring the Subbasin into sustainability and to maintain sustainability over the implementation and planning horizon.

Projects involve substantial efforts that provide either an increase in water supply or a reduction in demand for the KRGSA. *Actions* provide a framework for groundwater management including establishing GSP policies and filling data gaps.

Projects and actions are categorized as Phase One or Phase Two, depending on the timing and circumstances of implementation. Phase One projects and actions are those being implemented in the first five years of the GSP. Some Phase One project benefits should be evident by the five-year update of this GSP, scheduled for 2025. Phase Two projects and actions involve additional activities that could be considered, as needed, for future sustainable management.

7.1 PHASE ONE MANAGEMENT PROJECTS

Five Phase One projects have been developed that address all sustainability indicators applicable to the KRGSA. Collectively, the projects provide:

- Increases in recharge and banking to offset potential future deficits and avoid overdraft
- Decreases in municipal and agricultural pumping
- Improvements in drinking water quality for disadvantaged communities
- Mitigation for the potential of land subsidence in disadvantaged communities.

Two water supply projects – the Water Allocation Plan by KDWD and the Kern River Conjunctive Use Optimization Project by the City – are expected to meet deficits identified in the historical and projected water budgets, thereby reducing the potential for future overdraft conditions while providing adequate supply to support projected demands. Collectively, the two water supply projects combined with ongoing management practices provide sufficient supplemental supply to achieve the sustainability goal and avoid undesirable results. Accordingly, projects involving demand reductions are not needed at this time. Nonetheless, demand reduction can be accomplished with urbanization of former agricultural

lands. To account for this change in land use, an estimate of future land use conversion is incorporated into this GSP as an additional project to bolster the sustainability goal of the KRGSA GSP.

A water quality project being led by member agency ENCSD provides consolidation of five small water supply systems in disadvantaged communities (DACs) to improve water quality. An additional water quality project focuses on a coordinated water exchange involving KDWD, ID4, and ENCSD.

Each of these five projects will begin implementation during the first five years of the GSP. However, several projects will require adjustment and possible re-direction over time to optimize project performance and avoid undesirable results. Incorporating this concept of adaptive management will be key to achieving the KRGSA sustainability goal.

7.1.1 Water Allocation Plan (WAP) – Kern Delta Water District

For more than 130 years, canal systems on the Kern River have delivered a cost-effective, high quality water supply to support the agricultural economy in the KRGSA Plan Area. These systems were first developed as separate canal companies, each with its own Kern River water right and defined service area; separate canal companies were later consolidated. Until recently, KDWD had managed water according to each canal's separately-defined water right, which resulted in increased reliance on groundwater for some portions of KDWD. In 2011, KDWD developed its Water Allocation Plan (WAP) to optimize its Kern River entitlement,³³ increasing overall supply across its entire service area. Project implementation was delayed due to litigation regarding compliance with the California Environmental Quality Act (CEQA). In 2018, the litigation was resolved and the WAP was adopted by the KDWD Board in 2018 (Resolution 2018-03).

The WAP (Todd Engineers, 2011) consists of a series of prioritized management actions to allow KDWD to use its full Preserved Entitlement of 201,943 AFY from the Kern River to meet both agricultural and municipal demands in its service area. Previous operations (corrected for recent court-imposed reductions) had resulted in Kern River use averaging about 168,895 AFY. By revising internal operations and using the Preserved Entitlement of 201,943 AFY, the WAP provides a supplemental supply of about 33,048³⁴ AFY on average to offset groundwater demands for both agricultural and municipal beneficial uses. The additional supply will be delivered directly to meet irrigation demands. Recharge will occur in unlined conveyance canals and will also be focused locally to benefit water levels and water quality near municipal wells, including the disadvantaged communities of Greenfield and Lamont (**Figure 2-15**). This beneficial recharge is documented as a specific management action in the WAP.

GSP regulations require the inclusion of specific details associated with projects and management actions in the GSP (§354.44). These requirements are also listed in the GSP Preparation Checklist

³³ Pre-1914 water right as modified by recent court decisions; also referred to as the *Preserved Entitlement*.

³⁴ As explained in the SEIR (2018), the average of 33,048 AFY from the WAP was developed from a strict accounting of unused water from 1997 through 2007, representing average hydrologic conditions on the Kern River. As noted in the SEIR, the average varies slightly depending on the time period selected for average hydrologic conditions.

develop by DWR for GSP submittal (**Appendix E**). These required items have been categorized into project benefits and the project implementation process, as described below.

7.1.1.1 Project Benefits

Specific benefits of the WAP are summarized below:

- Provides an additional 33,048 AFY³¹ to the Agricultural MA to reduce groundwater demands
- Maintains water levels through both increased recharge and decreased groundwater pumping to support measurable objectives for all of the sustainability indicators applicable to the KRGSA
- Provides operational flexibility through the network of conveyance canals and recharge basins to focus recharge and manage water levels for subsidence and municipal well water quality in the Agricultural MA (see **Sections 5.7.4** and **5.8.4**)
- Mitigates overdraft conditions as estimated by the adjusted checkbook water budget method described in **Section 4.4.2**. Sufficient to meet the estimate of 29,000 AFY of overdraft discussed in **Section 4.5.4** and shown in **Table 4-10**)
- Addresses numerous GSP elements described in Water Code §10727.4 and listed in **Section 2.6.6** of this GSP, most notably the replenishment of groundwater extractions, activities for implementing conjunctive use or underground storage, and measures addressing groundwater recharge, in-lieu use, diversions to storage, and conveyance projects.

7.1.1.2 Implementation Process:

The WAP was approved and adopted in 2018, and implementation has already begun. Public notice, permitting, regulatory, and procedural requirements were addressed through applicable provisions of the California Water Code (WC 35525 et seq.), the CEQA process, and the certified KDWD SEIR. Legal authority is provided through the California Water Code, various contractual agreements, and court decrees, decisions, and judgments. No additional legal authority is required for implementation. Costs have already been accounted for in KDWD operational budgets; no added costs are anticipated for full implementation. The implementation process will occur over time to optimize operations for the additional water supply in KDWD; as such, the project is expected to be fully implemented over the next five years. However, operations will be adapted on an ongoing basis to best support the sustainability goal while meeting beneficial uses of the water supply.

7.1.2 Kern River Conjunctive Use Optimization – City of Bakersfield

In order to increase flows in the Kern River channel to support municipal wellfields and other reasonable beneficial uses, and to avoid undesirable results, the City intends to optimize its conjunctive use operations using its full entitlement of Kern River water due to the expiration of the “basic term” of City contracts with several parties outside of the KRGSA. Specifically, the City executed three long-term contracts for sale of certain amounts of Kern River water after its acquisition of the Kern River water right in 1976. At that time, funds were needed for infrastructure improvements relating to the City’s river management responsibilities. The initial 35-year basic term of the contracts expired in 2012, making about 70,000 AFY of Kern River water available to the City to supplement current supplies. It is

recognized that the City may still have an obligation to supply some amount of water to certain parties under the “Extension Term” of the agreements, limited to years when there are substantial surface water supplies available to the City, and only after the City’s needs and demands have been satisfied.

In addition to this water, other discretionary historical diversions by the City were tabulated to better identify a maximum amount of water that might be available for project use into the future when urban demand is higher. The tabulation of both discretionary diversions and expired contract water resulted in an average amount of 122,947 AFY, indicating a significant future water supply for the KRGSA. This water is supplemental to the average amount of 59,770 AFY used by the City during the historical Study Period (**Table 4-11**). The total amount of 182,717 AFY combines the City’s full Kern River entitlement of about 163,139 AFY on average (**Table 4-12**) and additional water used historically by the City that was released by others. It is recognized that all of this water may not be available for future use for the GSP project due to changes in released water and additional City obligations for surface water deliveries outside of the KRGSA. For this GSP project, it is assumed that the full entitlement amount, which averages 163,139 AFY, will be available for future use, plus an unquantified amount of additional available water.

The City has developed priority uses for allocating the GSP project water. The first priority for the GSP water will be to meet municipal demands by conveyance of water to the three water treatment plants in the KRGSA. Additional water will be targeted for recharge in the Kern River channel below the Calloway weir where the channel is dry most of the time. For planning purposes, three segments of the channel are prioritized for recharge, but locations and amounts will vary depending on available water, other obligations, and activities by others in the river. Finally, water will continue to be recharged in the COB 2800 facility, which has excess capacity in most years. Again, recharge of GSP project water would occur in addition to routine ongoing banking in the COB 2800 facility by the City. Priorities for use of GSP project water are summarized in **Table 7-1** below along with maximum monthly amounts:

Table 7-1: Kern River Conjunctive Use Optimization Project

Priority	Location	Maximum Monthly Amounts
1	Henry C. Garnett Water Purification Plant (WPP)	Up to 542 AF/month
2	Cal Water North East Treatment Plant (WTP)	Up to 5,604 AF/month
3	Cal Water North West Treatment Plant (WTP)	Up to 747 AF/month
4	Kern River Channel (below Calloway Weir)	Up to 12,000 AF/month
5	Kern River Channel (below the River Canal)	Up to 2,000 AF/month
6	Kern River Channel (below Rocky Point)	Up to 2,800 AF/month
7	COB 2800 Facility	Up to 20,000 AF/month

As indicated in **Table 7-1**, the City recognizes the potential for water budget deficits related to decreases in SWP supply, especially when considering the DWR climate change factors applied to Table A allocations. Therefore, the City has determined that the first priority for this GSP project will involve deliveries of Kern River water to the Henry C. Garnett Water Purification Plant operated by ID4 and the

Northeast and Northwest water treatment plants operated by Cal Water. Treated surface water will be limited by plant capacity and demand; as such, plant deliveries will vary over time. In its UWMP, Cal Water documents plans for future expansion of its Northeast WTP that increase capacity to 43 MGD by 2030 (Cal Water, 2016). Build-out for the plant is 60 MGD, with a peaking capacity of 69 MGD (Cal Water, 2016). Although the final expansion is not currently scheduled before 2035, plans are in place for implementing the expansion earlier, as needed, depending on growth and urban demand.

7.1.2.1 Project Benefits

Project benefits of the Kern River Conjunctive Use Optimization Project are summarized as follows:

- Additional banking of water in the Kern River channel will benefit water levels in municipal wellfields and assist in meeting measurable objectives for chronic lowering of water levels, degraded water quality, and mitigation of potential future land subsidence.
- Aquifer replenishment raises water levels locally in the Urban MA for all beneficial uses and avoidance of undesirable results.
- Municipal wellfields will have excess capacity allowing a reduction in groundwater pumping of certain wells at certain times. This will provide operational flexibility for managing local water levels to avoid undesirable results.
- The Project provides sufficient water to meet the checkbook deficits estimated for the 2070 climate change scenario in **Table 4-14**. When combined with other projects, the amount fully mitigates the potential for future overdraft conditions, based on projected demands.
- The Project addresses numerous GSP elements described in Water Code §10727.4 and listed in **Section 2.6.6** of this GSP, most notably the replenishment of groundwater extractions, activities for implementing conjunctive use or underground storage, and measures addressing groundwater recharge, in-lieu use, diversions to storage, and conveyance projects.
- Use of the River channel as a primary groundwater recharge source restores more natural hydrologic functions of recharge beneath the River.

7.1.2.2 Implementation Process:

The City intends to implement this project incrementally over time and to continue project adaptation to changing conditions, adjusting the direct use of the additional Kern River water based on plant capacity and demand. Increased recharge associated with the project will be implemented in Year 1 (2020). Depending on the availability of Kern River water, the project will begin by testing the recharge capacity and aquifer response in certain areas of the channel to better develop management strategies for avoiding undesirable results. In particular, the location and amount of groundwater level increases will be evaluated over time, based on an analysis of scenarios involving resting wells and channel recharge.

Implementation of the project can begin without impediments because the GSP project water supply is part of the City's Kern River entitlement based on its pre-1914 appropriative rights. This provides the City with the legal authority to use the water for multiple reasonable beneficial uses. The City developed an EIR to describe how current water supplies and potential additional water supplies would be

incorporated into a new proposed program referred to as the Kern River Flow and Municipal Water Program; that program involved a potential new supply and associated rights on the Kern River, which is on hold pending the outcome of a SWRCB application. However, this GSP project includes only the current Kern River entitlement that belongs to the City and remains available to the City. Additionally, the use of the water is not subject to new permits or regulatory requirements beyond current obligations regarding Kern River management and use.

Public notice of the City's intent to increase conjunctive use in the Kern River was provided during the CEQA process for numerous projects, including, but not limited to, the EIR for the Kern River Parkway project, the EIR for the 2800 Acres project, the EIR for the Kern River Flow and Municipal Water Program, and in a number of City planning and policy documents including the land use planning efforts described above and documented in **Sections 2.6.1** and **2.6.2** of this GSP (although this GSP does not involve all water sources included in those projects and documents). Additional public notice will be accomplished through the GSP outreach process, which includes public hearings and an open house occurring over the next several months.

The timing for full implementation of this project is related, in part, to the planned expansion of the North East treatment plant (and other treatment plants), which in turn is tied closely to growth and future demands. Expansion of the Northeast WTP to 43 MGD is scheduled to occur by 2030 and full buildout will likely occur in the GSP Planning horizon. Scheduling of project details will be developed for the five-year update to the GSP, based on then-current projections.

Two additional treatment plants – Southwest Bakersfield WTP and Rosedale Ranch/Seventh Standard Corridor WTP – are also proposed to increase capacity for direct deliveries of Kern River water (Cal Water, 2016). These plants are on hold due to economic conditions, but ultimately would serve to decrease reliance on groundwater.

7.1.3 Land Use Conversion - Urbanization of Agricultural Lands

As indicated by the increase in urban demand over time (**Table 4-14**), growth in Metropolitan Bakersfield is anticipated. According to the UWMPs in the northern Plan Area, urbanization is expected to occur through increased density in urban lands, expansion onto undeveloped lands, and conversion of agricultural lands. Although the exact location of urban growth has not been defined specifically, much of the growth has been expanding to the south into the central and southern Plan Area, as indicated by the delineation of the KRGS Urban MA (see **Figure 5-1**). Much of this land is either currently or historically used for irrigated agriculture and some of that land will likely be converted within the 20-year GSP implementation phase.

For the purposes of this project, it is assumed that about 10,000 acres of agricultural lands in the KRGS Plan Area (about 10 percent of the total agricultural lands) will be urbanized. Most of this area is located in the Agricultural MA, but some occurs in the Urban MA. Although the acreage and locations are uncertain, the City indicates that this is a reasonable assumption based on current urbanization. Project

acreage would already be embedded in the analysis of future urban demand in the projected water budget, which is based simply on population growth. Accordingly, the overall agricultural demand is decreased to prevent double counting of water use on these 10,000 acres. Using the average crop ET demand in the southern KRGSA Plan Area of 2.7 AF/acre, approximately 27,000 AFY is eliminated from the agricultural demand, representing an overall net demand reduction in the KRGSA as a result of this project.

Project benefits of this urbanization of former agricultural lands are summarized as follows:

- Decreases overall water demand, which supports measurable objectives of all sustainability indicators applicable to the KRGSA including chronic lowering of water levels, reduction of groundwater in storage, degraded water quality, and the potential for land subsidence
- Mitigates potential for future overdraft conditions by decreasing demand; this allows for surface water to meet a larger portion of the demand, thereby reducing groundwater pumping
- Allows for decreased pumping in areas of potential land subsidence
- Addresses several GSP elements described in Water Code §10727.4 and listed in **Section 2.6.6** of this GSP, most notably processes to review land use plans and efforts to coordinate with land use planning agencies and measures addressing in-lieu use.

7.1.3.1 Implementation Process:

There are no impediments to implementation of this project. Although the GSA does not specifically control the location of future growth, the City will assist in tracking and coordinating the conversion of agricultural lands through time as opportunities arise. Given previous patterns of growth and projections of population increase, this project is expected to be fully implemented within the 20-year GSP implementation period. Legal authority, permitting, and regulations for locations of population growth within the City limits reside with the land use planning, water resources, and other City departments and with the City Council. Outside city limits, land use planning resides with Kern County.

Water use for urbanization of agricultural lands in KDWD is covered under an agreement between KDWD and the City of Bakersfield. That agreement obligates KDWD to make water available for those newly-urbanized lands, provided that those lands have been served historically by the water rights obtained by KDWD. Some of the recently urbanized lands in KDWD were not historically served by KDWD water rights and, as such, are not currently served by KDWD. KDWD has the responsibility to support the new urban demand at a rate of about 1.0 – 1.5 AF/acre. This agreement will provide sufficient water to serve urban demand and will prevent the need for additional groundwater pumping to support new growth in this area.

7.1.4 ENCSD North Weedpatch Highway Water System Consolidation Project

Six small water systems in the vicinity of Highway 184 (Weedpatch Highway) and Muller Road have had to cope with water quality issues including elevated nitrate, TCP, and arsenic concentrations detected in water supply wells. These disadvantaged communities (DACs) have limited resources and provide

drinking water supply to more than 1,400 persons along the eastern KRGSA boundary. Three of these systems are located within the KRGSA Plan Area as noted below; the remaining three are just outside the KRGSA Plan Area in AEWS.

- Oasis Property Owners Association (Oasis POA) – in KRGSA
- East Wilson Road Water Company (East Wilson Rd) – in KRGSA
- Wilson Road Water Community (Wilson Road WC) – east of KRGSA
- San Joaquin Estates Mutual Water Company (SJE MWC) – east of KRGSA
- Del Oro Water Company Country Estates District (Del Oro WC) – east of KRGSA
- Victory Mutual Water Company (Victory MWC) – in KRGSA.

Service areas of these small water systems are adjacent to, and in some areas surrounded by, the ENCSD service area (see **Figure 2-4**). In response to water quality violations, the SWRCB DDW ordered corrective actions to meet drinking water standards. Consolidation with ENCSD was evaluated as a possible corrective action for each of the water systems. ENCSD prepared an initial Engineering Report in 2016 (AECOM, 2016) evaluating the consolidation of four of the water systems. At the request of the SWRCB-DDW, an amendment to the Engineering Report was prepared in April 2019 to add Del Oro WC and Victory MWC to the consolidation evaluation.

The project includes new water distribution systems, a new well (1,400 gpm capacity) with arsenic treatment, a storage tank, hydropneumatics tank, and a booster pump station. If TCP is detected in the new well, the grant will also fund a TCP treatment system. All wells with water quality violations will be properly abandoned according to Kern County Environmental Health regulations. Grant funding through the Drinking Water State Revolving Fund (DWRSF) program has been secured for construction costs. The small water systems have also received assistance from Self-Help Enterprises, a community development organization that assists rural communities identify clean drinking water sources in eight counties of the San Joaquin Valley.

Although this consolidation project was conceived prior to the preparation of this GSP, ENCSD is documenting this project in the GSP as a member agency in the KRGSA.

7.1.4.1 Project Benefits

Project benefits of the North Weedpatch Consolidation Project are summarized as follows:

- Supports measurable objectives for degraded water quality by managing local arsenic concentrations with construction of an arsenic wellhead treatment facility, thereby avoiding an undesirable result
- Controls projected urban demand through conservation efforts implemented by ENCSD
- Abandons wells with poor water quality
- Provides DACs with a reliable, clean drinking water supply
- Supports numerous GSP elements described in Water Code §10727.4 and listed in **Section 2.6.6** of this GSP, including wellhead protection areas (for the new project well), migration of contaminated groundwater (elevated nitrate from a nearby septic system as suggested in one

DDW Water Quality Violation Order), adherence to well abandonment and well construction policies, measures addressing groundwater contamination, and efficient water management practices.

7.1.4.2 Implementation Process:

Numerous activities are required prior to project construction. ENCSD has adopted standards and policies that control this annexation process and requires legal Consolidation Agreements with the water systems for adherence to ENCSD requirements. Annexation proceedings will be completed through the Local Agency Formation Commission (LAFCO); approval is anticipated. CEQA compliance will include preparation of a CEQA Plus mitigated Negative Declaration, with a Notice of Determination filed with Kern County and the State Clearinghouse. ENCSD will need to acquire about 1.5 acres of undeveloped land from the Fairfax School District for the new well site. Construction design documents are approximately 90 percent complete (Ruiz, personal communication, 7/31/2019).

The project is scheduled for implementation once all of the agreements and CEQA compliance have been completed. To date, ENCSD has signed agreements to annex and consolidate service areas into ENCSD for SJE MWC, Oasis POA, and Wilson Road WC. Once annexed, ENCSD will have the legal authority to serve water throughout its expanded service area. Construction permits, including well drilling, are required for the project. The ENCSD permit with DDW for the provision of drinking water will be amended to include system improvements.

Construction of the consolidation project is being funded by a DWRSF grant. Funding includes new infrastructure, including pipelines, pump station, storage, and a new well. Costs for an arsenic treatment facility and TCP treatment, if needed, are included in the grant. Project costs are estimated at approximately \$20 million. More detailed costs, including O&M are provided in the Engineering reports (AECOM, 2016; 2019).

The Project schedule is summarized below and expected to take approximately 62 months.

- Project design and CEQA Plus Document – 6 months
- DWRSF construction application process – 24 months
- Annexation proceedings, property acquisition, permitting and well drilling – 8 months
- Well equipping, booster pump station, treatment processes, facilities construction – 24 months.

Once permitted, ENCSD will have the authority to deliver drinking water to all customers and no additional legal authority is needed for project implementation. Public notice will occur through the CEQA process as well as in planned public hearings on this GSP. As mentioned previously, project design activities are proceeding, and agreements have been executed with three of the six systems (as of July 31, 2019).

7.1.5 Possible Water Exchange for Improved Drinking Water Quality in Disadvantaged Communities

The GSA recognizes the challenges of the DACs within the KRGSA to obtain sufficient high-quality drinking water with limited resources. Given the large infrastructure network in the KRGSA, the potential for numerous exchanges of various source waters provides management flexibility for controlling water levels, water quality, and avoiding undesirable results.

One possible exchange is envisioned between ENCSD, which serves water to DACs, and KDWD, who operates the Eastside Canal located through the ENCSD service area. In the event that ENCSD has an immediate need to mitigate elevated nitrate concentrations, KDWD could deliver Kern River water to the ID4 treatment plant on behalf of ENCSD. Then ENCSD could provide groundwater with elevated nitrate or arsenic into the Eastside Canal, where it would be blended and provided for agricultural irrigation (recognizing that nitrate and arsenic are not constituents of concern for agricultural use).

A similar exchange to assist DACs in Oildale MWC could be developed. For this exchange, surface water would be provided for treatment from an additional agency who could receive returned groundwater from Oildale MWC in the Beardsley Canal.

7.1.5.1 Project Benefits

Project benefits of water exchanges to improve drinking water quality for DACs are summarized as follows:

- Support measurable objectives for degraded water quality.
- Assists with improvement of water quality to DACs within the KRGSA and supports the KRGSA sustainability goal to meet municipal demands.
- Supports GSP elements described in Water Code §10727.4 and listed in **Section 2.6.6** of this GSP measures addressing groundwater contamination and efficient water management practices.

7.1.5.2 Implementation Process:

For implementation of this type of project, KRGSA Plan Managers would need to coordinate and consider institutional, legal, or permitting barriers prior to the exchange. For these types of exchanges, additional agreements may be required. For example, ID4 cannot deliver treated surface water from its purification plant outside of ID4 boundaries without amending or developing new contracts. Public notice will be accomplished as part of the public review of this GSP. Implementation of this type of water exchange is considered discretionary and will be considered and implemented only on an as-needed basis. Nonetheless, it remains a viable option for assisting DACs with a high-quality drinking water supply.

7.2 PHASE ONE MANAGEMENT ACTIONS

Phase One management *actions* differ from Phase One *projects* in that they typically do not represent new water supply or reductions in demand. Rather, these actions provide a framework for overall

groundwater management including filling data gaps and establishing GSP policies. Ten management actions have been identified for implementation in Phase One.

As provided by SGMA and re-stated in the MOU forming the GSA, the KRGSA may perform the following functions:

1. Adopt standards for measuring and reporting water use.
2. Develop and implement policies designed to reduce or eliminate overdraft within the boundaries of the GSA.
3. Develop and implement conservation best management practices.
4. Develop and implement metering, monitoring, and reporting related to groundwater pumping.

The management actions included in this section rely on SGMA authority and no additional legal authority is required. In addition, the MOU states that the City and ID4 are jointly responsible for GSP implementation in the City limits and ID4 boundaries. KDWD is responsible for GSP implementation in its boundaries. In addition, Greenfield CWD is responsible for GSP implementation in its service area as per the MOU executed with the KRGSA (**Appendix C**). Unless explicitly stated, these responsibilities are assumed for the Phase One management actions.

Unless stated otherwise, all costs associated with these management actions are assumed to be a part of the administrative costs of the KRGSA. Cost sharing among the agencies will continue in the same manner used for GSP development. During the first five years, KRGSA Plan Managers may decide to develop a different cost sharing structure for certain actions below.

7.2.1 Actions Triggered if Water Levels Fall Below Minimum Thresholds

As described in **Section 5**, managing water levels at or above minimum thresholds is the selected strategy for ongoing avoidance of undesirable results throughout the KRGSA. While it is recognized that water levels may fall below minimum thresholds for relatively short periods of time without triggering undesirable results, such an occurrence is used to trigger a series of actions to better understand the nature and extent of the failure to meet thresholds.

The three KRGSA Plan Managers, representing the City, ID4, and KDWD, are the responsible parties for monitoring conditions and complying with GSP requirements within their respective service areas. Further, ID4 and the City will share and coordinate responsibility for additional agencies and entities within the Urban and Banking MAs. KDWD is responsible for coordinating with additional agencies and entities in the Agricultural MA. Greenfield CWD is responsible for GSP implementation within its service area (see MOU in **Appendix C**).

A five-step action plan for addressing exceedance of GSP thresholds, including KRGSA Plan Manager coordination, is outlined below.

1. Identify the Well(s) and Investigate the Area: This initial step will assist in determining if the issue is associated with one well or is systemic to an area. Various conditions surrounding the compliance well will be considered. For example: Are water levels declining in nearby wells? If so, how large of an area is affected? Is the area close to new or increasing groundwater extraction? Is the problem related to area-wide drought conditions? Has local demand increased? If increased demand during drought is responsible for the exceedance, then is a sustainable water budget being adhered to in the KRGSA?

2. Coordinate with KRGSA Plan Managers: The conditions associated with the low water levels in one MA may be the result of operations in an adjacent MA or by another KRGSA agency. In addition, an activity in an adjacent MA may have the ability to assist or correct the problem. For example, minimum thresholds have been set differently in adjacent areas to balance various management objectives; this occurs in the portions of the Banking MA that are surrounded by the Urban MA and also along the shared boundary of the Urban and Agricultural MAs. This balance will require close coordination among KRGSA Plan Managers and the willingness to modify operations as needed to avoid undesirable results as provided in the KRGSA Sustainability Goal. The KRGSA Plan Managers are already actively engaged in cooperative management and are committed to frequent communication and coordination for collective GSP compliance.

3. Select Appropriate Management Actions or Projects for Mitigation: The widespread network of canals and other infrastructure in the KRGSA, as well as access to a variety of water sources, provides significant flexibility for the movement of water and active management of water levels throughout the Plan Area. Large wellfields, canals, pipelines, three surface water purification plants, and access to the Kern River, imported water, and recycled water all contribute to management opportunities for minimum threshold mitigation. Various strategies can be employed to manage water levels in local areas. Possible actions to consider include water sales or exchanges such that wells may be temporarily turned off, re-distribution of pumping, or increased recharge in certain areas. Long-term capital improvements, such as wellhead treatment or well modifications, may also be identified for implementation. If the actions or projects selected for mitigation are not currently included in the GSP, such actions will be incorporated into the Plan during the next Five-Year Plan Update.

4. Consider Institutional Changes for Future Mitigation: Inability to meet minimum thresholds may require institutional solutions. KRGSA Plan Managers may consider the need to develop programs to curtail pumping or allocate groundwater.

5. Consider the Need for Improved Monitoring: The conditions associated with the low water levels may require increased monitoring frequency or locations. The GSP monitoring program is already subject to improvements as part of an additional management action in this GSP.

Benefits and Implementation: These actions support all measurable objectives applicable to the KRGSA through active management of the sustainability indicators and avoidance of undesirable results. KRGSA Plan Managers have the responsibility to manage groundwater sustainably and no additional legal

authority, permits, or regulatory process is needed for these actions. GSA managerial costs for implementation of the GSP are being determined and will be funded similar to the cost-sharing structure used in GSP development. Additional public notice will be provided through the public review period of this GSP.

7.2.2 Implement Well Metering Program in the Agricultural MA

To monitor groundwater extractions in critical areas of the KRGSA, KDWD is planning to implement a well metering program within the KDWD boundaries. Initially, all new wells will require a well meter to measure production. KDWD is exploring options for providing financial assistance to well owners for installation of meters on existing wells. The well meter installation program will be phased in over the first five years of the GSP with functional compliance expected by 2025.

To facilitate implementation of the program, KDWD notifies all new well applicants of this requirement. This action is coordinated with Kern County Environmental Health, who notifies KDWD of any permit request for a new well to be drilled in the KDWD service area.

Well metering is already in place for most municipal wells in the KRGSA, including the City and Cal Water wellfields, Greenfield CWD, ENCSD, Lamont PUD, and others. The ID4 pumping program does not currently require meters, but the method of measuring reported production is required on production reports. Installation of well meters on private wells outside of the KRGSA will be considered in the future but is not included in this management action at this time.

Benefits and Implementation: This action will allow improved accounting of groundwater production in the large Agricultural MA. Previous estimates of pumping relied on crop ET estimates and the uncertainty associated with effective precipitation and irrigation return flows. Several GSP elements described in Water Code §10727.4 and listed in **Section 2.6.6** of this GSP relate to groundwater extractions and are supported by this management action. KDWD has the authority under SGMA to develop well metering requirements and does not need additional legal authority. No permits or regulatory requirements are applicable. Public notice will be provided through the public review period of this GSP.

7.2.3 Reporting of Groundwater Extractions

As required by SGMA, the KRGSA will begin reporting extractions to DWR on an annual basis. In order to improve the accuracy of its reporting and to support the ongoing water budget analysis, KRGSA Plan Managers will implement a program for all well owners to report groundwater production to the GSA. Private domestic wells supporting only residential use in a single-family household using 2 AFY or less may be determined to be de minimis and exempt from the reporting program at the discretion of the KRGSA Plan Managers.

For each reporting program, pumpers will be required to provide total production on a WY basis and list the amount associated with each beneficial use along with the method used to determine the amount

of production. Categories of use and methods will be coordinated with the GSP annual reporting requirements by DWR.

This program will begin implementation in Year One and proceed in a phased approach over the first five years as program details are more clearly defined. Coordination of the program and shared responsibility is summarized below.

7.2.3.1 Urban MA:

ID4 already manages a successful well reporting and assessment program within its service area, which covers most of the Urban MA. All agency and private well owners are required to provide semi-annual reporting to ID4 for groundwater production. Well owners are also required to provide the measurement method for the reported production and estimate its accuracy. Currently production is reported on a semi-annual basis for each calendar year. Because GSP reporting is required by Water Year, ID4 may consider a change in reporting time periods for its groundwater program.

A similar program for well reporting outside of ID4 in the City limits will be implemented by the City. The City may coordinate with the ID4 program to establish similar reporting procedures for areas outside of ID4 boundaries.

7.2.3.2 Agricultural MA:

With its well metering program described above, KDWD will also establish a production reporting program to provide accurate groundwater extraction data to the GSA for the GSP Annual Report. Until meters are in place, production may be estimated on electrical records or using established crop ET values from the METRIC ET analysis that supported the historical Study Period. The program will require groundwater production by well including total production and the level of accuracy associated with the method.

KDWD will also compile production from its metered wells, which are used as recovery wells for its banking program. Production will be tabulated by use (i.e., recovery pumping or in-district use).

7.2.3.3 Banking MA:

ID4 will be the responsible manager for reporting and accounting of recovery pumping from groundwater banking activities within the KRGSA, given its close connections with KCWA staff who currently manage much of the local banking operations. Recovery pumping by and for the benefit of ID4 both inside and outside of the KRGSA will be tabulated. Other banking production will be focused on pumping inside the KRGSA including for the Berranda Mesa and Pioneer Project. Production reporting will be coordinated with the City for the COB 2800 Facility. KDWD will be responsible for reporting pumping from its metered district-owned wells inside the Agricultural MA as provided above.

7.2.3.4 Benefits and Implementation

This action will directly support the water budget analysis, which is used to ensure that the KRGSA is operating within its sustainable yield. A more reliable water budget, in turn, will support the measurable objective for reduction of groundwater in storage. The action also allows for the KRGSA to supply

accurate information to DWR as required by SGMA. GSP elements described in Water Code §10727.4 and listed in **Section 2.6.6** of this GSP that relate to groundwater extractions are supported by this management action.

SGMA also provides the legal authority to the GSA, and no additional legal authority for reporting of groundwater extractions is required. No permits or additional regulatory actions are needed. Public notice will be provided through the public review period of this GSP.

7.2.4 Conserve Recycled Water in KRGSA Plan Area

For more than 30 years, the City of Bakersfield has been providing treated wastewater from its WWTP No. 3 to a 4,700-acre farm for irrigation, known as Green Acres. The farm is owned by the City of Los Angeles and located on the western edge of the KRGSA with most of the land outside of the KRGSA boundary. Currently the City provides an average of about 18,000 AFY in accordance with its contract.

On July 17, 2019, the Bakersfield City Council voted not to renew the contract when it expires in 2026. This action allows 18,000 AFY to be used in the KRGSA as needed. The City is currently exploring options for the use of the water including replacement of potable water for irrigation or for groundwater recharge. Although the water will not be available until after 2026, planning has begun for identification of needs in the Plan Area.

Benefits and Implementation: This project will increase the availability of recycled water in the KRGSA for beneficial use. This water supply will support measurable objectives for all sustainability indicators. If used to replace potable water, it will have a net positive impact on the KRGSA Plan Area water budget and mitigate against future overdraft. This would also preserve a high-quality potable supply for other beneficial uses. This management action supports a key GSP element by providing measures to address water recycling, as listed in Water Code §10727.4 and re-stated in **Section 2.6.6** (see item (h)). Depending on the selected water use, this project supports additional GSP elements including replenishment of groundwater extractions, opportunities for conjunctive use or underground storage.

The City owns the wastewater and no additional legal authority is needed to retain the water for local use. A permitting and regulatory process may be required depending on the type of use. At this time, the management action is simply to retain the recycled water for use within the KRGSA. A more defined project and other implementation considerations will be provided as they are developed. The public was notified of this action at the City Council meeting on July 17, 2019. Numerous newspaper articles documented the discussion and vote of the City Council (Bakersfield Californian, 2019). Additional public notice will be provided through the public review period of this GSP.

7.2.5 Support California Delta Conveyance Project to Preserve Imported Water Supplies

In its UWMP, ID4 emphasizes the need for state-wide support in improving the availability and reliability of SWP supplies. On April 29, 2019, Governor Newsom announced that his administration will develop a water resiliency portfolio (Portfolio) intended to address a range of water-related challenges facing the

state. The Portfolio will address unsafe drinking water, major flood risks, severely depleted groundwater aquifers, communities with uncertain water supplies and native fish populations. The governor issued an executive order to implement the Portfolio that includes “current planning to modernize conveyance through the Bay Delta with a new single tunnel project.” ID4 continues to monitor and support the Delta Conveyance Project for the reliable delivery of SWP water supplies that are critical to sustainable management in the KRGSA. As described throughout this GSP, SWP water provides both drinking water supply and water for groundwater banking and recovery when needed.

Benefits and Implementation: This management action supports more reliable delivery of SWP supplies to the KRGSA. Imported surface water supplies provide the opportunity for conjunctive use, replacing groundwater supplies when available and supplementing native groundwater resources during drought with recovery of banked water. The action supports measurable objectives for all sustainability indicators and provides protection against potential future overdraft. As with other actions in this GSP, this action supports numerous GSP elements described in Water Code §10727.4 and listed in **Section 2.6.6**, especially those elements relating to conjunctive use or underground storage, and in-lieu use.

This action involves *support* of the Delta Conveyance Project and does not, by itself, require additional legal authority, permitting, a regulatory process, or CEQA compliance. ID4 support of the project has been discussed at Urban Bakersfield Advisory committee and KCWA Board meetings and will continue to be disseminated through the public review period of this GSP.

7.2.6 ID4 Climate Change Adaptation Strategies

As noted in its 2015 UWMP (ID4, 2016), ID4 has identified strategies that can be adapted to fit within ID4 operations to address potential uncertainties associated with the reliability of imported water supplies. In brief, climate change may result in reduced surface water that will be even more unpredictable on a year-to-year basis. As listed in the UWMP, ID4 has identified the following measures for consideration:

- Work with retail purveyors to identify impacts of demand management measures to improve the accuracy of overall ID4 future demands. New developments are incorporating the latest water conservation features and policies that may alter the current ID4 demand projections.
- Continue groundwater banking activities to the extent practicable to increase reliability of supplies during dry-year conditions.
- Explore options to capture excess runoff in off-stream recharge facilities to conserve additional water for beneficial use that might otherwise be lost from local supplies.

Benefits and Implementation: These strategies will provide a framework for development of more detailed management actions in the first five years of the GSP. More accurate demand estimates will support measurable objectives for reduction of groundwater in storage and improve overall planning in the KRGSA. Historical, current, and future groundwater banking in the KRGSA supports all of the measurable objectives by improving conjunctive use of imported water and decreasing reliance on

groundwater. Capture of excess runoff has the same contributions to the sustainability indicators as other recharge projects. These planning actions support numerous GSP elements described in Water Code §10727.4 and listed in **Section 2.6.6** of this GSP, most notably those relating to conjunctive use and recharge.

ID4 has the legal authority to conduct these actions and no additional legal authority is required. Permits considerations and close coordination with the City's Stormwater Management Plan will be incorporated into the planning process. Public notice will be first accomplished through the outreach process during the public review of the draft GSP.

7.2.7 Support Sustainable Groundwater Supplies for KRGSA Disadvantaged Communities

The three founding KRGSA member agencies have established lines of communication and coordination with other agencies in the GSP Plan Area, many of whom provide water to DACs in the KRGSA Plan Area. In this manner, representation of these communities is considered in KRGSA actions and policies.

In addition, KRGSA will support Plan Area DACs in securing technical, managerial, and financial assistance through partnerships with local organizations such as the California Rural Water Association, as needed. Such agencies offer programs, including the Specialized Utilities Services Program, which could provide ongoing assistance to DACs in the KRGSA Plan Area. These programs, in conjunction with state and local grant funding, can support abandonment of poor-quality wells and/or installation of replacement wells to improve drinking water supply.

As evidenced by the details of the ENCSD Consolidation project discussed above, water quality problems in DAC areas often resolve around an impacted well. The first response often is to drill a replacement well, but typically the poor water quality is less of a well problem and more of an aquifer problem. KRGSA Plan Managers may have specialized knowledge about water quality in certain areas of the GSA and can advise applicants of new wells on known issues and provide names of knowledgeable drillers or other professionals who can assist with certain water quality problems.

In addition, a well with poor water quality requires proper abandonment to avoid spreading contaminants through the water column. Kern County currently notifies KRGSA Plan Managers when well drilling or abandonment applications are filed in the KRGSA Plan Area. This provides KRGSA Plan Managers with the opportunity to notify well owners about GSP management actions and to better understand potential local issues with respect to water quality in the area. The KRGSA will continue to coordinate with Kern County on the well permitting process to assist new well applicants in their service area, as needed, and to ensure proper abandonment of wells, especially those with poor water quality.

Benefits and Implementation: This action supports the measurable objectives associated with degraded water quality and promotes sustainable management throughout the KRGSA in support of the Sustainability Goal. The action supports several GSP elements described in Water Code §10727.4 and listed in **Section 2.6.6** of this GSP including maintaining relationships with regulators (including Kern County Environmental Health), supporting proper well abandonment, and minimizing migration of

contaminated groundwater. No new legal authority or permitting is associated with this action. Costs are administrative and consistent with other managerial activities of the KRGSA Plan Managers. Additional public notice of these actions will be provided through the public review period of this GSP.

7.2.8 Improve Documentation of Well Construction in the KRGSA Plan Area

As discussed in **Section 6**, there are significant challenges in identifying wells appropriate for the GSP monitoring network, namely those that are inactive wells (i.e., non-pumping wells) with known construction and a reasonable record of water level data. Two areas where data require organization include much of the Agricultural MA and the northeastern KRGSA.

Drilling new wells is an option but installation of a reasonable number of wells across the area will take time and financial resources and may be unnecessary given the large number of wells that are routinely monitored. A systematic compilation of monitored wells and incorporation of those data into a data management system would be beneficial for selection of potential wells for the GSP monitoring network. A large water level database has been assembled for the GSP, but identifying which monitoring wells have reliable access, long water level records, known construction data, and locations in key areas to support selection of sustainable management criteria has been difficult. Further, it is important that wells are not pumping and not adjacent to large production wells that would locally skew water level readings. Reliance on water levels is key to avoiding undesirable results.

In the Agricultural MA, KDWD has retained staff for managing the current monitoring program for annual reporting of depth to water and meeting other program requirements such as CASGEM. However, the GSP network would benefit from a more complete database of water level records and research on construction information. It is also important to begin to better understand the relationship in the Principal Aquifer to the perched water observed throughout the southern and eastern Agricultural MA.

To the extent possible, the GSP monitoring network will continue to identify and enlist monitoring wells installed or developed for other objectives. Working with data and information from the Central Valley Water Board on local monitoring well installation may provide some synergies with wells being installed by others.

If these efforts are insufficient to improve the GSP monitoring network such that minimum thresholds monitoring can be better evaluated throughout the KRGSA, key locations of potential new monitoring wells will be identified. Even if new wells are eventually required, the action of processing and documenting wells and well owners in the KRGSA will ultimately benefit ongoing GSP management.

Benefits and Implementation: This action should result in a better understanding of wells and water levels being recorded in the KRGSA. This knowledge fills a data gap and provides a useful link between water level monitoring and a better understanding of aquifer response. Because monitoring improvements supports improved understanding of the groundwater system, measurable objectives for all sustainability indicators are supported. The action supports several GSP elements described in Water

Code §10727.4 and listed in **Section 2.6.6** of this GSP including maintaining relationships with regulators and improvements to monitoring.

No legal authority is required to conduct work under this management action. No permitting or regulatory requirements are involved prior to drilling new monitoring wells. A more robust DMS in the KRGSA would also support Subbasin-wide evaluations of water level data. Public notice will be provided through the public review period of this GSP and will improve cooperation of well owners to assist with this action.

7.2.9 Coordinate Water Quality Analysis through Existing Monitoring Programs

Numerous regulatory and monitoring programs are generating water quality data for wells in the Principal Aquifer in the KRGSA Plan Area. This management action involves the KRGSA Plan Managers to compile and review water quality from multiple programs for a more comprehensive understanding of water quality conditions in the KRGSA Plan Area. Results of this action will support coordinated management of water quality across the KRGSA, provide efficiencies such that duplicative water quality monitoring is not conducted, and ensure that management actions do not degrade groundwater quality.

Primary water quality monitoring programs that provide useful data to this management action are acknowledged below:

- Nitrate and TDS monitoring as part of the Irrigated Lands Regulatory Program (ILRP) through the Kern River Watershed Coalition Authority
- Contaminant monitoring as part of the cleanup and environmental sites investigations regulated by the Central Valley Water Board
- Municipal Well water quality sampling and analysis as part of Title 22 and permit requirements from the SWRCB-DDW
- Small community water systems monitoring for water quality in compliance with DDW requirements
- Ongoing monitoring efforts by the USGS as part of the continuation of the GAMA program.

Individual member agencies are engaged in several of these programs, but no current efforts exist to compile data for a more comprehensive understanding of groundwater conditions. Collectively, these programs provide powerful data to support sustainable groundwater management.

KRGSA Plan Managers will decide the best manner in which to compile data into a database and where such a database will reside. There is the potential to coordinate with other GSAs for database structure and compatibility for a Subbasin-wide DMS. The SWRCB has developed its Geotracker online database where much of the state's water quality data are assembled. This management action does not intend to duplicate these efforts. Rather development of a focused KRGSA-specific database is envisioned to meet local objectives relating to SGMA.

Benefits and Implementation: This management action supports measurable objectives relating to degraded water quality and provides information on the potential for migration of plumes. Other benefits include development of a local water quality database to support future actions and evaluations. This action also directly addresses data gaps for groundwater quality recognized in **Section 3.4**. Several GSP elements described in Water Code §10727.4 and listed in **Section 2.6.6** of this GSP are supported by this management action, most notably efforts to develop relationships with state and federal regulatory agencies maintaining relationships with regulators and improvements to monitoring.

No impediments to this management action are identified and the actions can be implemented beginning in 2020. No legal authority beyond GSA mandates is needed for implementation of this management action. No permitting, regulatory requirements, or CEQA review are applicable. Public notice of this action will be provided through the public review process associated of this GSP.

7.2.10 Continue to Evaluate Sustainable Management Criteria and Undesirable Results for Future Adjustments as Management Projects and Actions are Implemented

This management action is included to state the KRGSA Plan Managers' intent to continue to monitor and evaluate groundwater conditions in response to management actions and adapt those actions to meet the sustainability goal of avoiding undesirable results. Although minimum thresholds may be exceeded during the Implementation Period, the Projects associated with this plan are expected to provide immediate and detectable responses with respect to local water levels. KRGSA Plan Managers also recognize the need for flexibility in the GSP. Numerous minimum thresholds and other sustainability criteria were selected in the absence of undesirable results; several were selected at conservative levels to ensure that the future potential of undesirable results can be mitigated. Actual MTs may be lower (or higher) than those selected. These will be re-evaluated for each five-year update of the GSP. Ongoing analysis will be summarized in each annual report.

Benefits and Implementation: This management action supports measurable objectives for all sustainability indicators in that managers are committed to meaningful, ongoing evaluation of sustainable management criteria. The concept of adaptive management provides assurances to stakeholders that future groundwater management will not be constrained by current levels of uncertainty and estimates. Rather, management and sustainable management criteria will be adapted over time as more data are available for informed management decisions. This management action supports several GSP elements, most notably efforts to replenish groundwater extractions, enhance conjunctive use, and implement measures addressing in-lieu use, among others.

7.3 PHASE TWO MANAGEMENT PROJECTS

In the event that management projects and actions in Phase One are inadequate to achieve the KRGSA Sustainability Goal, additional projects will be developed and implemented. Because these are conceptual, only brief descriptions are provided herein. None of these projects and actions are scheduled for implementation in the first five years. Five-Year GSP Updates will be used to determine

the need to expedite the planning and implementation of additional management projects, including ideas provided herein.

7.3.1 Expansion of the Northeast Treatment Plant to Buildout

As previously described, the Northeast Treatment Plant has plans to expand its capacity to 43 MGD by 2030 with a buildout of 60 MGD. Increasing surface water treatment capacity would allow optimization of Kern River water for direct use while reducing groundwater pumping. Turning off municipal well pumps in certain areas would likely allow the aquifer to recover more quickly than even local recharge could accomplish.

7.3.2 Capital Improvement to Municipal Wells

GSP Phase One Projects and Management Actions combine to provide conjunctive use and recharge for the maintenance of water levels to meet minimum thresholds across the KRGSA Plan Area. These projects and actions provide operational flexibility to pump and rest specific wells in municipal wellfields to avoid undesirable results. In some cases, more wells pumping at lower rates would be advantageous to maintain water levels in certain areas. City wells are currently equipped with variable frequency drives (VFDs) to allow flexibility in pumping rates.

In addition, water quality can also be better managed with the flexibility of altering pumping rates. For example, the City has observed that arsenic levels in some wells can be better controlled when wells are operated at lower rates. TCP wellhead treatment facilities require active pumping to better manage bacteria, but lower rates may be sufficient to accomplish this objective. Cal Water can consider the potential benefits and select priority locations for wellhead improvements to meet sustainable management criteria, including the installation of VFDs in wells.

For installation of new municipal wells, well designs should consider avoiding undesirable results in certain areas. Test wells should be considered in new areas to better evaluate depth-specific water quality. Depth-specific sampling can also be accomplished in new or existing wells to better define aquifer layers or zones where constituents of concern, including arsenic and TCP, are concentrated.

7.3.3 Install Dedicated Monitoring Wells

If results described in Phase One actions to improve KRGSA monitoring are determined to be insufficient to locate and dedicate existing wells into the GSP monitoring network, new monitoring wells will be considered. Siting, design, installation, and monitoring protocols will be developed based on BMPs for monitoring networks and following monitoring protocols and data standards for monitoring wells provided in the GSP regulations (§352.2 and §352.4). Monitoring data will be maintained in a data management system as provided in §352.6.

7.4 PHASE TWO MANAGEMENT ACTIONS

If the KRGSA Plan Managers determine that undesirable results are difficult to avoid with Phase One activities alone, additional management actions will require consideration. Because Phase One projects provided sufficient amounts of water supply to eliminate historical and projected deficits and overdraft, allocation and demand reductions were not emphasized. However, additional management actions can be developed at many levels to assist with achieving the KRGSA Sustainability Goal, as needed.

7.4.1 Pumping Reductions and Allocation of Agricultural Groundwater Supply

If sustainable management cannot readily be achieved through increased and optimized supplies, then pumping allocations may be a helpful management tool. If needed, KDWD will explore options and opportunities for equitable allocation scenarios and engage landowners to develop workable allocations. Adjacent water districts are already developing such programs and KDWD may benefit from lessons learned and strategies incorporated by others. Agricultural demand could also be achieved if needed by growing different crop types, fallowing portions of fields, district purchase and retirement of land (and possibly used for recharge if suitable), and other strategies.

7.4.2 Conversion of Agricultural Lands

Changes in land use may also result in a decrease in agricultural demand through urbanization. Some land conversion from agriculture to urban is anticipated in Phase One associated with growth projections for Metropolitan Bakersfield. Additional changes in land use to reduce water demand could be developed in Phase Two as needed.

7.4.3 Additional Urban Conservation Measures

To reduce urban demand, additional conservation measures could be considered by the City and other urban retail water purveyors. Such actions are documented in the UWMPs and strict adherence to permanent reductions in urban demand by 2020 are underway. A decrease in the long-term per capita water use is provided in UWMPs and embedded in the projected water budgets for the KRGSA.

7.4.4 Re-negotiation of Banking Contract

The current KDWD banking program will be re-evaluated for improved conditions when the current term expires. Specifically, KDWD will explore options such as funding transportation costs in return for a larger amount of banked water left in the groundwater system. This larger “leave-behind” provides a buffer for overdraft and adds groundwater supply to the KRGSA.

7.4.5 Adaptive Management

It is recognized that demand reduction projects could have a detrimental impact on the local economy, livelihood of residents and business owners, and the well-being of Metropolitan Bakersfield and Kern

County. Therefore, large-scale reductions are not proposed in Phase One and may be unnecessary for achieving the sustainability goal. At a minimum, such actions are delayed until later in the implementation period to allow water supply projects the opportunity to sustainably support current and projected growth in the beneficial uses of groundwater.