

ATTACHMENT 5 - WORK PLAN

This section describes the work that would be performed and is divided into the following sections:

- Scope of Proposal
- Goals and Objectives
- Project Location
- Work Items
- Project Deliverables
- Permitting and Environmental Documentation
- Strategy for Evaluating Progress and Performance
- Property Access
- Information Dissemination

Exhibits

Exhibit 5.1 – Technical References

5.1 – Scope of Proposal

The scope of the proposal is to construct 12 groundwater monitoring wells to enhance an existing groundwater monitoring program. This goal will be achieved through a number of specific work tasks described in this work plan, including public outreach, monitoring well design, monitoring well construction, post construction activities and reporting. The project is critically needed to fill gaps in the District-wide monitoring network and improve the capabilities of managing groundwater resources in a region experiencing groundwater overdraft.

5.2 – Goals and Objectives

The specific goals and objectives of the groundwater monitoring improvement project are to gather public comment on the program and to plan, design and 12 monitoring wells, evaluate the findings from their installation and present the findings in a report.

The wells will provide benefits to District-wide groundwater monitoring and Kings Basin groundwater monitoring program administered by the Kings River Conservation District (KRCD). The specific goals for the groundwater monitoring improvement project include:

1. Replace old and damaged monitoring wells
2. Fill gaps in a district-wide monitoring network

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3. Collect water quality samples in each new well to establish a water quality baseline
4. Provide larger diameter wells that provide better access for water quality testing and pressure transducers

Long-term goals of the project include:

1. Improve capabilities to develop groundwater contour maps, and estimate groundwater gradients, groundwater overdraft and safe yield
2. Improve capabilities to monitor effects of groundwater recharge and other overdraft mitigation measures
3. Improve understanding of the local hydrogeology through data provided in well logs and water quality test results

5.3 – Project Location

The project includes the construction of 12 monitoring wells as shown on **Figure 4.3**. The wells are located throughout the Consolidated Irrigation District, in an effort to replace existing wells that are damaged or destroyed and can no longer be used to monitor groundwater.

5.4 – Work Items

The work plan for the project is described below. These work tasks are consistent with the schedule and budget.

Task 1 – Stakeholder Involvement

Subtask 1.1 – Public Outreach

General public outreach will be performed through flyers and an e-mail notification system. A flyer will be prepared that announces the grant award and describes the scope and goals of the project. The flyer will be placed on the CID office bulletin and extra copies will be available in the CID office. Two email articles on the project will be sent by the District's e-mail notification system. One article will announce the project and the second article will discuss the accomplishments after the project is completed. The flyer and email articles will solicit input and comments from the general public.

Subtask 1.2 - District Board of Directors Meetings

The CID Board of Directors meets monthly to discuss District issues. The meetings are open to the public, and the Board is comprised of local growers and represents the voice of the local farming community. It is anticipated that the Board will be given bi-monthly updates on the project. In addition, in-depth presentations will be provided at two Board meetings. During these meetings, the engineering consultant will provide

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handouts, and, if deemed necessary, Powerpoint presentations and other visuals will be used. The Board will be educated on the project and asked to provide input and comments.

Task 2 - Monitoring Well Design

Subtask 2.1 - Conceptual Design Memorandum

A conceptual design memorandum will be prepared based upon an understanding of the hydrogeologic setting and groundwater flow conditions. The conceptual design memorandum will document and expand upon the project details described in **Section 4.2**. The conceptual design memo will include: monitoring well locations, drilling methods, monitoring well depths and borehole diameters, screen lengths and intervals, gravel/sand pack intervals, and sealing materials and intervals. The memorandum will be given to the District Board of Directors for comments before proceeding with the final design.

Subtask 2.2 - Environmental Documents/Permitting

Based on the nature of the work, CID believes that the work is categorically exempt from CEQA. CID will file a Notice of Exemption with Fresno County based on a Class 6 'Information Collection' exemption (Section 15306) and Class 3 'Small New Facilities' exemption (Section 15303). The project involves no federal funds or federal facilities, so NEPA does not apply. The drilling contractor will be required to obtain well drilling and county encroachment permits (see Subtask 3.1).

Subtask 2.3 - Monitoring Well Construction Drawings and Specifications

A licensed engineer will prepare well design drawings, specifications and technical documents. The wells will be designed in accordance with the California Water Well Standards (DWR Bulletin 74-81 and 74-90). A cost estimate will be prepared for comparison to bids.

Subtask 2.4 - Prepare Public Bid Documents/Assist with Bidding

An engineer will prepare necessary bidding and legal documents to conduct a public bidding process. CID will also provide public notice of the bidding in accordance with Government Code requirements and CID policies. The documents will be made available to the State for review as necessary. It is anticipated that all monitoring wells will be included in one bid. The wells shall be drilled by qualified well drillers with experience constructing monitoring wells with similar depths.

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Task 3 - Monitoring Well Construction

Subtask 3.1 - Well Construction

This task includes construction of 12 new monitoring wells shown on **Figure 4.3**. The wells will have the casing depths described in **Section 4.2**.

Construction review will be performed under the supervision of a licensed engineer. The District and the engineer will be responsible for insuring that the design intent is implemented during the construction phase and will inspect the site before, during, and after construction.

The monitoring wells will be drilled by qualified well drillers with experience in constructing monitoring wells. The following qualifications will be required:

- Experience – The Contractor shall have at least 5 years experience in drilling wells to depths of at least 200 feet using the drilling, construction and development methods as specified.
- License – The well driller must possess a current C-57 Well Drillers License, valid in the State of California.

The drilling will be performed in Fresno County and the Contractor shall obtain well drilling permits from Fresno County, and shall submit well completion reports to the California Department of Water Resources. The Contractor shall also obtain the County encroachment permit for each monitoring well location constructed within County right-of-way.

Subtask 3.2 - Geologic Logging

During drilling, the drill cuttings will be logged by a Professional Geologist and classified in accordance with the Unified Soil Classification System. Well log information will include stratigraphy, date of drilling, type of drill rig, type and diameter of drill bit, type of fluid additives, and depth of boring. Monitoring zones and appropriate well screen intervals will be identified during this process. The final logs will be reviewed by a professional geologist for consistency with published information on the local geology. A short memorandum will be prepared documenting a geologic logging evaluation.

Subtask 3.3 – Labor Compliance

To comply with State funding requirements, a labor compliance program will be developed and implemented for the construction phase of the project. A third party consultant will be hired by the District to develop and manage the labor compliance program.

Task 4 - Post Construction Activities

Subtask 4.1 - Surveying

A licensed surveyor will determine the horizontal and vertical coordinates for each monitoring well. Each well casing will be surveyed for elevation. The concrete well pad and surrounding ground surface will also be surveyed for elevation. Well elevations (absolute) will be measured within 0.1 feet. Each well will have a horizontal survey reported in latitude and longitude.

Subtask 4.2 - Prepare Record Drawings

The final well design and construction may differ slightly from the well specifications due to variations in site conditions and geology. As a result, final well construction information will be documented, including: well depth and diameter, casing diameters, screened intervals, gravel/sand pack intervals and type, sealing intervals and type, and surface completion details. The drawings will be signed by a professional engineer.

Subtask 4.3 – Groundwater Quality Testing

Each well will be sampled and analytically tested for an irrigation suitability analysis, which includes the primary constituents of interest in the area (see list of constituents on **Exhibit 6.5**). Two duplicate or split samples will also be collected for quality control. Proper well development will be performed prior to sampling for accurate testing results, Water levels will also be recorded when water quality samples are retrieved. All sampling will be conducted by appropriate professionals, with appropriate preservatives, under proper chain of custody procedures, and transported to the lab within the proper holding times. The results will be summarized and reviewed by a water quality specialist. The results will also be compared to other water quality test results in the area, state drinking water standards, and recommended values for irrigated agriculture.

Task 5 - Project Reporting

Subtask 5.1 - Progress Reports

The District will submit quarterly progress reports to DWR. These reports will discuss progress to date, data developed, information gained, costs incurred, and problems encountered. Each report will be prepared in accordance with the required DWR format. Progress reports will also be presented to the District Board of Directors.

Subtask 5.2 - Draft Project Report

The draft report will include pertinent data, criteria, maps, narratives, alternatives, recommendations, and conclusions identified in this work plan. The report will also

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include an Executive Summary, a comparison between the planned schedule, actual timeline, and an explanation of differences, and a discussion of major problems encountered and how they were resolved. This report will also include, at a minimum, data collected pursuant to this grant, including the following:

- Location and description of new wells included in monitoring program
- Geologic Logs
- Monitoring well record drawings
- Survey information
- Summary of stakeholder participation in this project
- Water level information
- Water quality test results

The draft report will be submitted to DWR for review. The agency review period is anticipated to be three months. The Draft Report will also be available in the CID office for review by the public.

Subtask 5.3 - Final Project Report

CID will submit hard copies and electronic copies of the final report to DWR. The final report will address comments from DWR on the draft report. The Final Report will also be available in the CID office for public review.

Technical Background

The scope of work was prepared using detailed information found in the CID files and the numerous technical references listed in **Exhibit 5.1**. Therefore, there is strong technical justification for the project and the scope of work is based on documented and accepted scientific data.

Consistency with GMP and IRWMP

The scope of work is also compatible with the goals and objectives in the CID Groundwater Management Plan, as discussed in **Section 4.5**.

The CID is part of the Upper Kings Basin Integrated Regional Water Management Authority, who prepared an Integrated Regional Water Management Plan in 2007 and is currently updating it. The existing IRWMP can be found on the Authority's website (http://www.krcd.org/water/ukbirwma/docs_gov.html). The proposed project is compatible with the IRWMP in many ways. Specifically, the project is consistent with the following goals listed on pages 5-5 to 5-7 of the IRWMP:

- “ • *Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater;*
- *Collect and compile water quality baseline data for the region*
- *Identify and pursue sources of funding needed to support project development.*”

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In addition, page 6-2 the IRWMP states:

“After reviewing the water management strategies, the Water Forum established Conjunctive Use & Groundwater Management as the prevailing theme of the Upper Kings Basin IRWMP.”

5.5 – Project Deliverables

The project will have the following deliverables:

1. **Conceptual Design Memorandum.** This memorandum will document the draft design features and assumptions for review by stakeholders and technical experts.
2. **Monitoring Well Plans and Specifications.** Final construction drawings and specifications will be prepared for the 12 proposed monitoring wells.
3. **Monitoring Well Bid Documents.** Bidding and legal documents will be prepared for a public bidding process.
4. **Record Drawings.** Record drawings will be prepared documenting the constructed conditions at each of the 12 monitoring wells.
5. **Geologic Logging.** This deliverable will include boring logs for each well constructed detailing the geologic conditions of the well locations based on the data collected during the project. A short memorandum will be prepared summarizing the subsurface conditions encountered
6. **Quarterly Progress Reports.** Progress reports will be submitted to the DWR on a quarterly basis. No format was provided in the 2012 Proposal Solicitation Package, but the progress reports will be prepared according to DWR recommendations.
7. **Draft Project Report.** A draft report will be prepared summarizing the work from all the project tasks. Copies of the report will be submitted to DWR after District review. The DWR review period is assumed to be three months.
8. **Final Project Report.** A final report will be submitted that addresses pertinent comments from DWR. Hard and electronic copies will be submitted to DWR.

More detail on these deliverables is provided in Section 5.4 – Work Items.

5.6 – Permitting and Environmental Documentation

Permitting and environmental compliance efforts are reflected in the budget and schedule. CID has experience with permitting similar well construction projects as part of its on-going well replacement program and is familiar with the required process. No permits will be required other than Fresno County Well Drilling and encroachment permits.

Environmental Impacts

No adverse environmental impacts are anticipated from the project. Constructing monitoring wells has minimal disturbance to small areas. Overall the project will help to support groundwater recharge and overdraft mitigation efforts, which offer positive benefits to the environment.

CEQA Compliance

It is believed that monitoring well construction is exempt from CEQA. Specific locations for the monitoring wells have been identified and it is believed that their construction will have no adverse environmental impacts. The proposed monitoring wells will be located at sites where there are existing monitoring wells. CID will therefore claim a Class 6 'Information Collection' exemption (Section 15306), and a Class 3 'Small New Facilities' exemption (Section 15303). A notice of exemption will be approved by the CID Board of Directors and filed with Fresno County. CID used these exemptions on another monitoring well/banking study project in 2010. All other work performed on the project will be scientific and engineering studies and therefore will qualify as a Class 6 'Information Collection' exemption.

NEPA Compliance

The project involves no federal funds or federal facilities, so NEPA does not apply.

Permitting Requirements

A Fresno County well drilling permit will be needed for the monitoring wells. The permit must be filed by a licensed drilling contractor, but the District will ensure that the driller has secured the permit before they begin drilling. County right-of-way encroachment permits are needed from the County since all wells as part of this project are anticipated to be constructed in county road right-of-way (refer to section “**5.8 – Property Access**”). The well driller will be responsible for securing the well drilling and encroachment permits, but CID will facilitate the effort. No other permits are expected to be necessary for the project.

5.7 – Strategy for Evaluating Progress and Performance

CID has developed a detailed process for project monitoring and evaluation. This process is reflected in the work plan, budget and schedule.

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General Project Monitoring

Project monitoring will be performed through the following:

1. Updates on the project status at monthly District Board meetings
2. Updates on the project status at quarterly Upper Kings Basin Integrated Regional Water Management Authority (UKBIRWMA) meetings.
3. Quarterly progress reports submitted to DWR
4. The Draft Project Report will be available in the District office for public review and comments

These monitoring efforts will provide opportunities for the public, Board of Directors, District staff, neighboring agencies, the UKBIRWMA, and DWR to comment on the project. Involving these parties will ensure that the work is proceeding in the appropriate direction and ultimately provides a product that is needed and understood. Lastly, the numerous QA/QC measures outlined in **Section 8: Quality Assurance**, will also help to ensure that the project is properly monitored and reviewed.

Management of Schedule and Budget

The budget and schedule will be reviewed weekly to measure progress versus expenditures. If expenditures are higher than anticipated, or progress is behind schedule, then the CID manager and engineering consultant will meet within a week to resolve any problems. DWR will be notified as soon as possible if there are budgetary or scheduling concerns. The schedule, however, includes some contingency so schedule problems are considered unlikely. If schedule problems do arise then more people will be assigned to the project.

The schedule (**Exhibit 7.1**) contains several important milestones, including:

- Conceptual Design Memorandum
- Completion of Plans and Specifications
- Commencement of Monitoring Well Construction
- Completion of Monitoring Well Construction
- Geologic Logging
- Final Project Report

These milestones will help to gauge project success in terms of schedule, knowledge gained, and facilities constructed.

Project Performance by Task

Project performance will be measured as described below for each of the project tasks:

Task 1 - Public Outreach. Public outreach efforts will be evaluated based on the number of people that are reached, and comments that are received. Useful comments will be incorporated into the design of the new monitoring wells and will help to improve groundwater management.

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Task 2 - Monitoring Well Design. Performance will be evaluated through design reviews during different stages in the design. These design reviews will be performed internally by the engineering consultant, District staff (the District manager is a licensed geologist), Groundwater, and the Board of Directors. This will help to ensure that the designs are suitable and compatible with the local conditions, and meet the needs of the District. Construction will not proceed until the final design is acceptable to the stakeholders.

Task 3 - Monitoring Well Construction. Oversight during monitoring well construction will include periodic visits by the engineering consultant and daily visits by District staff and the geologist. If necessary, the design will be modified to suit site-specific characteristics, and provide a more useful monitoring well. Design modifications will only be made after consultation with the District Manager, engineering consultant, and drilling contractor.

Task 4 - Post Construction Activities. Post construction activities will include soil logging and groundwater quality testing. All of this information will be reviewed by technical specialists as well as CID staff. Comments from reviewers will help ensure that the data is presented in an organized and appropriate format, and is usable by District staff. All the collected information will be compared to existing geologic and water quality data in the area for consistency.

Task 5 - Project Reporting. Project reports will be reviewed by the engineering consultant, District staff, and Board of Directors. This will help to ensure that the reports are well organized, contain relevant information, and contain an appropriate level of detail.

5.8 – Property Access

CID will be locating future replacement monitoring wells within County road right-of-way. In general, CID's monitoring well network consists of wells located at or near County road intersections, providing adequate road right-of-way to locate a new monitoring well near the edge of the right-of-way.

In the experience of the District's consulting engineer, the County rarely denies permission to install non-producing wells (i.e. monitoring wells) in their road right-of-ways, as long as all their guidelines are met. An Encroachment Permit is needed from the County to install wells on their property. The well driller will be responsible for securing these permits, but CID will facilitate the effort. In the past these permits were acquired within one week. Refer to **Exhibit 4.1** for an example Fresno County monitoring well encroachment permit.

5.9 - Information Dissemination

CID is proactive in ensuring the public is educated regarding District projects and with information dissemination. These efforts are intended to reach local water users, the general public, and other public agencies. The goals of the information dissemination efforts include:

1. Educate the public on the goals and benefits of the project
2. Keep the public informed on project progress
3. Gauge public support for the project
4. Collect and discuss comments and suggestions

Public outreach efforts that will be used are shown in **Figure 5.1**. These public outreach efforts are reflected in the work plan, budget and schedule.

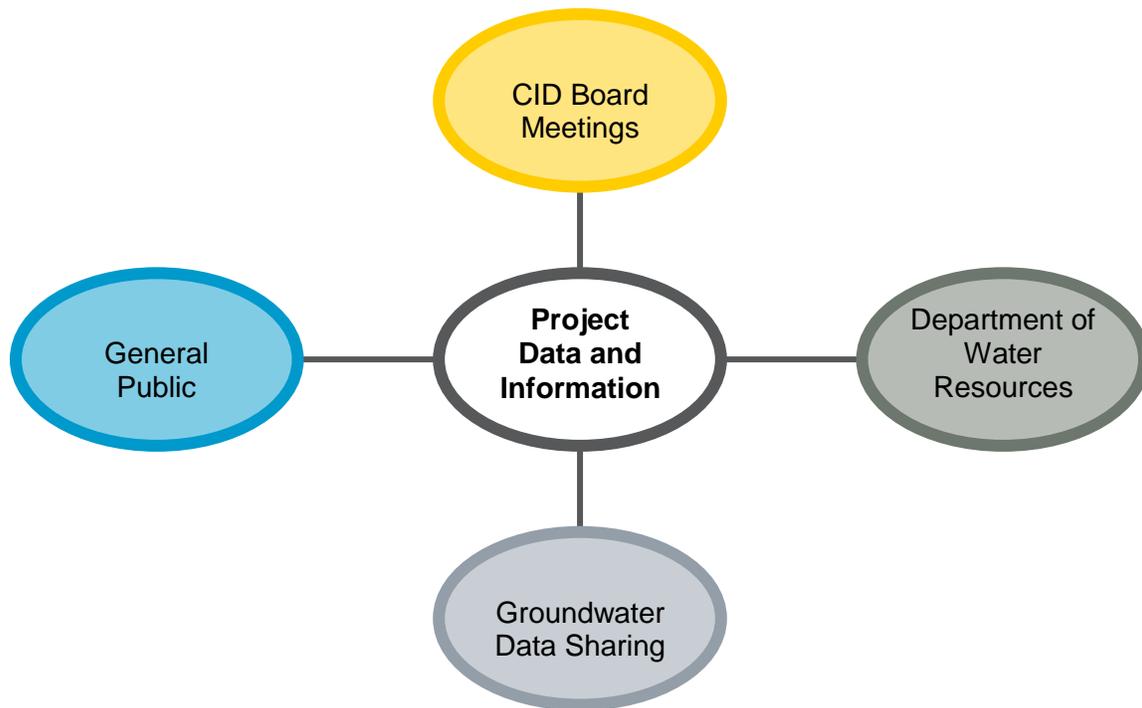


Figure 5.1 – Information Dissemination

CID Board Meetings

The District holds monthly board meetings that are publicly advertised and open to the public. At each meeting, there is a public comment period where anyone can voice their opinion or concern on any issue. During the course of the proposed project, regular presentations will be made at the monthly Board meetings on the project status and any important project issues.

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Department of Water Resources

In compliance with CWC 10795.19, the CID will submit groundwater related data collected as part of this grant to DWR. This data will include well completion reports, state well number, well casing elevation, groundwater level data, etc. On-going CID groundwater level data will be submitted to the DWR through the Kings River Conservation District, which currently reports groundwater information to the DWR for water agencies receiving water from the Kings River.

Groundwater Data Sharing

KCWD will share groundwater level information from the new wells through several existing data sharing programs, including:

- Data sharing program with the Kings River Conservation District, who prepares regional groundwater contour maps and documents them in annual reports.
- The wells will be added to the California State Groundwater Elevation Monitoring (CASGEM) database and thus made available to the State and the public.

General Public

The CID office is open to the public every work day for the public's convenience. Growers are always welcome to talk to the District Manager or operations staff about issues and concerns. Copies of reports such as the Groundwater Management Plan are also available in the office for the public's review. In the future, documentation on the proposed project will also be available in the office for their review including the grant application, Draft Project Report, Final Project Report, and annual groundwater monitoring reports.



EXHIBIT 5.1
Technical References

Technical References for Consolidated Irrigation District LGA Grant Application

1. California Department of Water Resources, *Bulletin No. 74-81 – Water Well Standards: State of California*, 1981.
2. California Department of Water Resources, *Bulletin No. 74-90 – Water Well Standards: State of California, Supplement to Bulletin 74-81*, 1990.
3. California Department of Water Resources, *California’s Groundwater, Bulletin 118 (Update 2003)*, 2003.
4. Jensen, M.E., *Design and Construction of Farm Irrigation Systems*, 1980.
5. Provost & Pritchard Consulting Group, *Engineer’s Report for Consolidated Irrigation District Proposition 218 Procedures for Benefit Assessments*, 2012.
6. GEI Consultants, *Consolidated Irrigation District Groundwater Management Plan*, 2009.
7. WRIME, *Upper Kings Basin Integrated Regional Water Management Plan (IRWMP)*, 2007.
8. Summers Engineering, Inc., *Consolidated Irrigation District, Local Groundwater Assistance Grant for Monitoring Well Replacement, Final Report*, 2003.