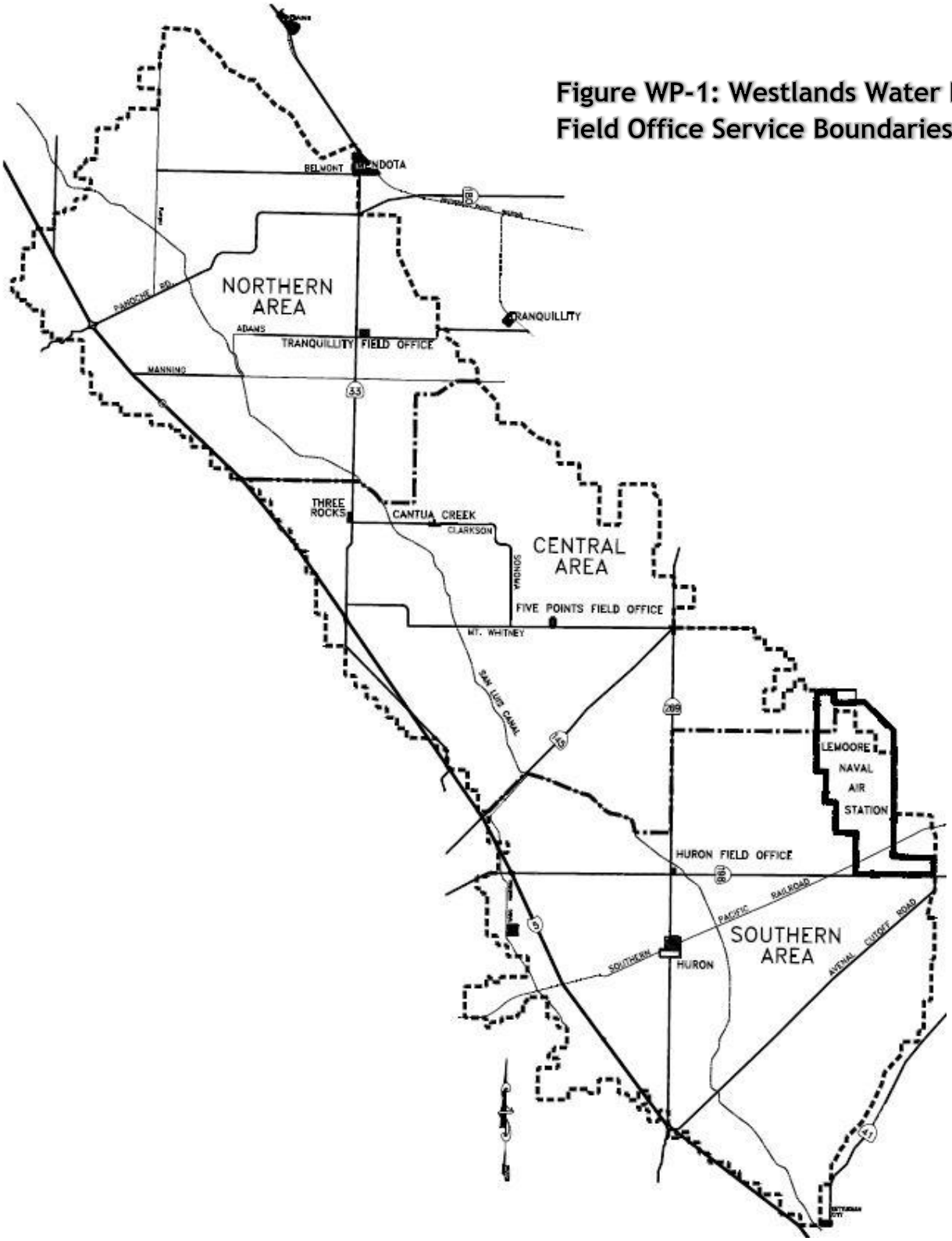
LOCAL GROUNDWATER ASSISTANCE PROGRAM

WORK PLAN

Westlands Water District consists of nearly 1,000 square miles and the operations and maintenance of the District's facilities is broken down into three areas: Tranquillity Field Office in the Northern Area, Five Points Field Office in the Central Area, and the Huron Field Office in the Southern Area. Each field office has qualified District technicians and will be responsible for all new meter installations and meter repairs within their portion of the District. A graphical representation of the area divisions is shown in Figure WP-1: Westlands Water District Field Office Service Boundaries. All work done by the District operators in all three areas of the District will be done in a systematic manner consistent with the survey performed in May and June of 2012.

Westlands Water District conducted an evaluation of 86% of groundwater wells within the District in May and June of 2012. The data provided in this evaluation was extrapolated over the entire District which provides an estimate of the amount of meters needed, the meters needing repair and the meters which do not have an adequate amount of pipeline straight run to read properly. The numbers found were 68, 46 and 40 respectively. The Work Plan describes the approach the District will take to complete new installations, perform the necessary repairs, and install the appropriate apparatus to ensure proper readings in the 2 year life span of the LGA Program.

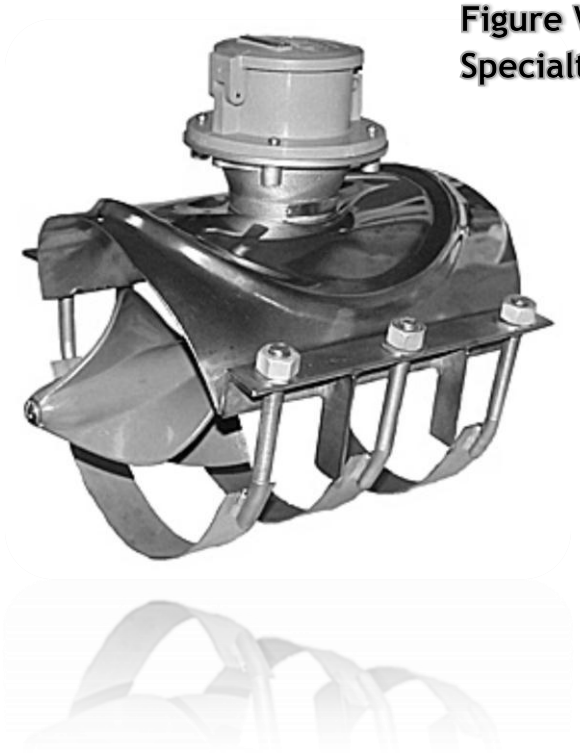
Figure WP-1: Westlands Water District Field Office Service Boundaries



New Installations

Since the majority of the new installations needed throughout the District have been identified, the District specialists will be able to begin installations as soon as meters are purchased and received. Figure WP-1 shows a McCrometer Water Specialty LP32 Meter, which is the meter that will be used on all new installations.

Figure WP-2: McCrometer Water Specialty LP32 Meter



McCrometer has been a leader in flow technologies for 55 years. McCrometer is a trusted brand in the flow instrumentation industry and has several patents in worldwide markets. The reputation McCrometer has built in its industry has led the District to choose McCrometer for all of the surface water as well as groundwater metering.

The LP32 meter requires a minimum of ten pipe diameters in length upstream and two pipe diameter downstream of the meter. For example if the pipe is one foot in diameter, the meter will require the pipe be 10' from the meter to any upstream pipe disturbance. A pipe disturbance could be an elbow, tee, valve, reduction, expansion, etc. If there is not enough length of straight pipeline, a straightening vane or a flow straightener must be used (see "Straightening Apparatus" section of this Work Plan). Once the position is

determined, installation of the LP32 meter is done by cutting a hole in the existing pipeline and then attaching the meter securely to the line; u-straps for attaching the meter are furnished with each meter.

Repair Existing Meters

It is estimated that 46 meters within the District will need repair. This will include any repair needed and possible replacement of the meter. The survey conducted in May and June of 2012 assessed the existing meters functionality; a thorough evaluation of the meters and the exact repairs and parts needed cannot be determined until District technicians are able to take the meter apart. Meters in need of repair will be handled on a case-by-case basis. Parts will not be purchased until the brand of meter is known and the exact part that is needed to return the meter to working order. Since approximately 46 of the existing meters in the District are in need of repairs and the majority of them have been located and identified, District staff will be able to immediately start pulling meters and making the necessary repairs.

Straightening Apparatus

Straightening vanes are required when the meter does not have an adequate amount of straight run. Straight run is the distance upstream and downstream of a pipe from the meter to a disturbance in the pipeline. The following Figure WP-2 shows a simple groundwater well setup with adequate straight run for the meter to preform accurately. Straightening vanes cut down the turbulence that

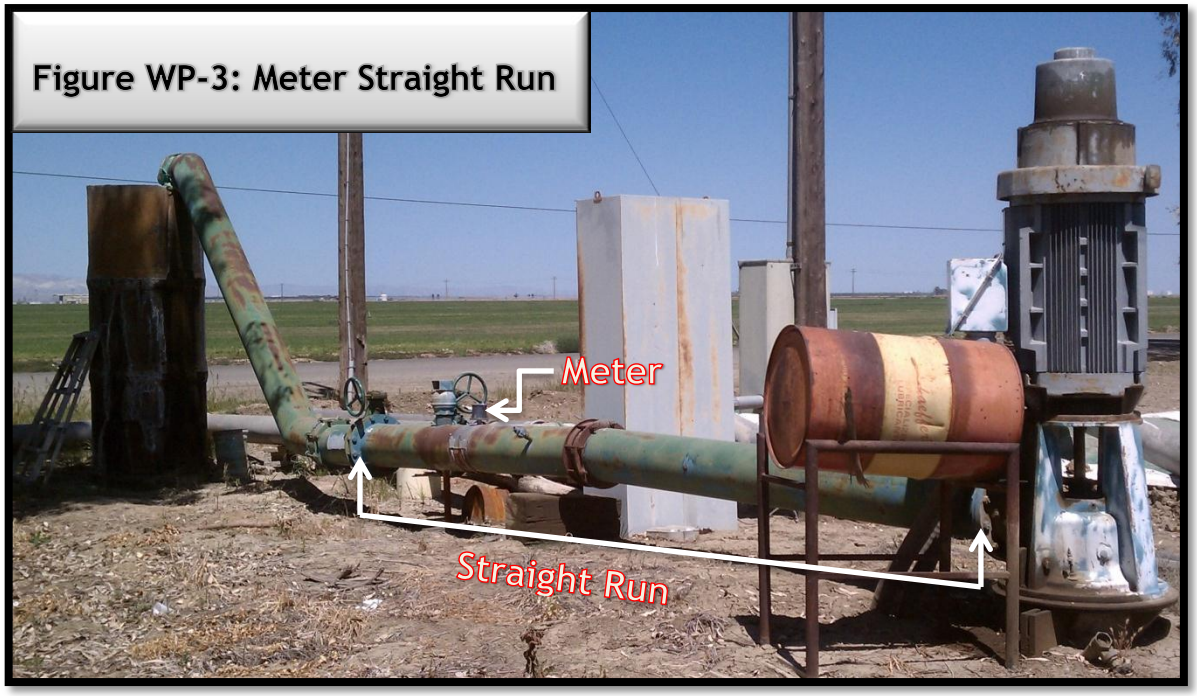


Figure WP-3: Meter Straight Run

occurs when a pipeline changes direction and thus providing accurate meter readings. The distance needed for the straight run is dependent on the type of meter and the diameter of the pipe in which the meter is installed. As mentioned previously the McCrometer Water Specialty LP32 Meter that the District is going to use for all new installations, requires a minimum of ten pipe diameters of straight pipe upstream of the meter; if the existing groundwater well is not set up with this amount of pipe, a straightening vane reduces the length to five diameters upstream of the meter and two diameters downstream of the meter; if the existing set up still doesn't have enough straight run for the straightening vanes, then a flow straightener only needs one and a half diameters upstream of the meter and a half diameter downstream. It is estimated that about 25% of the existing meters that lack an adequate amount of straight run will require a flow straightener. Straightening vanes will be used when possible, which run about $50 each; whereas the flow straightener runs about $450, which is still cost effective as compared to revamping the existing system.

Operation & Maintenance

To ensure accuracy, all meters will be placed on a preventative maintenance cycle certifying each meter is calibrated and tested every three-to-four years. Accurate metering allows the District and its farmers to carefully manage and account for all water delivered. Appendix A contains a sample form "Meter Maintenance and Accuracy Report". This form is used by technicians to determine the condition of the meter. The District also maintains an aggressive program for the installation, upgrading and repair of District water meters. All groundwater meters will be merged into this program once all new meters are installed and existing meters are brought up to the Districts standards.

An important step in the implementation of the District's Groundwater Management Plan is integrating local groundwater resources into the District's overall water supply through the Groundwater Management Programs and conjunctive use planning procedures; this allows the District to improve overall supply reliability while minimizing total water supply costs.

Reporting and Progress Evaluations

Progress reports will be given to the directors of the LGA Program on a quarterly basis. Reports will include progress evaluations in percentages of meters installed, straightening devices installed and existing meters repaired. This will also include a list of all groundwater well identification numbers with in the District and the status of the meter. Manufacturer Invoices will be provided for all parts and devices purchased within the quarter. A projected completion date will be given at each quarter. If it is projected to last longer

than allotted time for the LGA Program, the District will hire additional staff to assist the current technicians. The District will put its best efforts forward to complete this project in the two years given and will make adjustments as necessary.

The 2012 Well Metering Project will consist of the installation of new meters where needed, repair of existing meters when necessary and the installation of straightening devices when a meter is lacking an adequate amount of straight run. This will provide the District and its farmers the ability to assess their groundwater development. Due to the nature of this project no permitting or environmental compliance will be necessary. Westlands will continue to explore opportunities to increase the importation of surface water to stabilize water supplies and reduce the demand for water users to pump groundwater to satisfy their irrigation needs.