

## Attachment 6: Schedule

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### Schedule

Detailed schedules for each of the individual projects and the Proposal are provided on the following pages. The schedules show the sequence and timing of work items presented in the Proposal and assumes the effective date of the grant agreement to be October 16, 2014. The schedule shows the start dates, end dates, and milestones for each work item contained in Attachment 4 - Work Summary and when applicable, dependence on predecessors. All projects in this Proposal are scheduled to start construction/implementation by April 1, 2015, with the bulk of the work occurring in late 2014 and 2015. All three projects are expected to be completed by summer 2016, with follow-up activities such as monitoring and water quality sampling into later years.

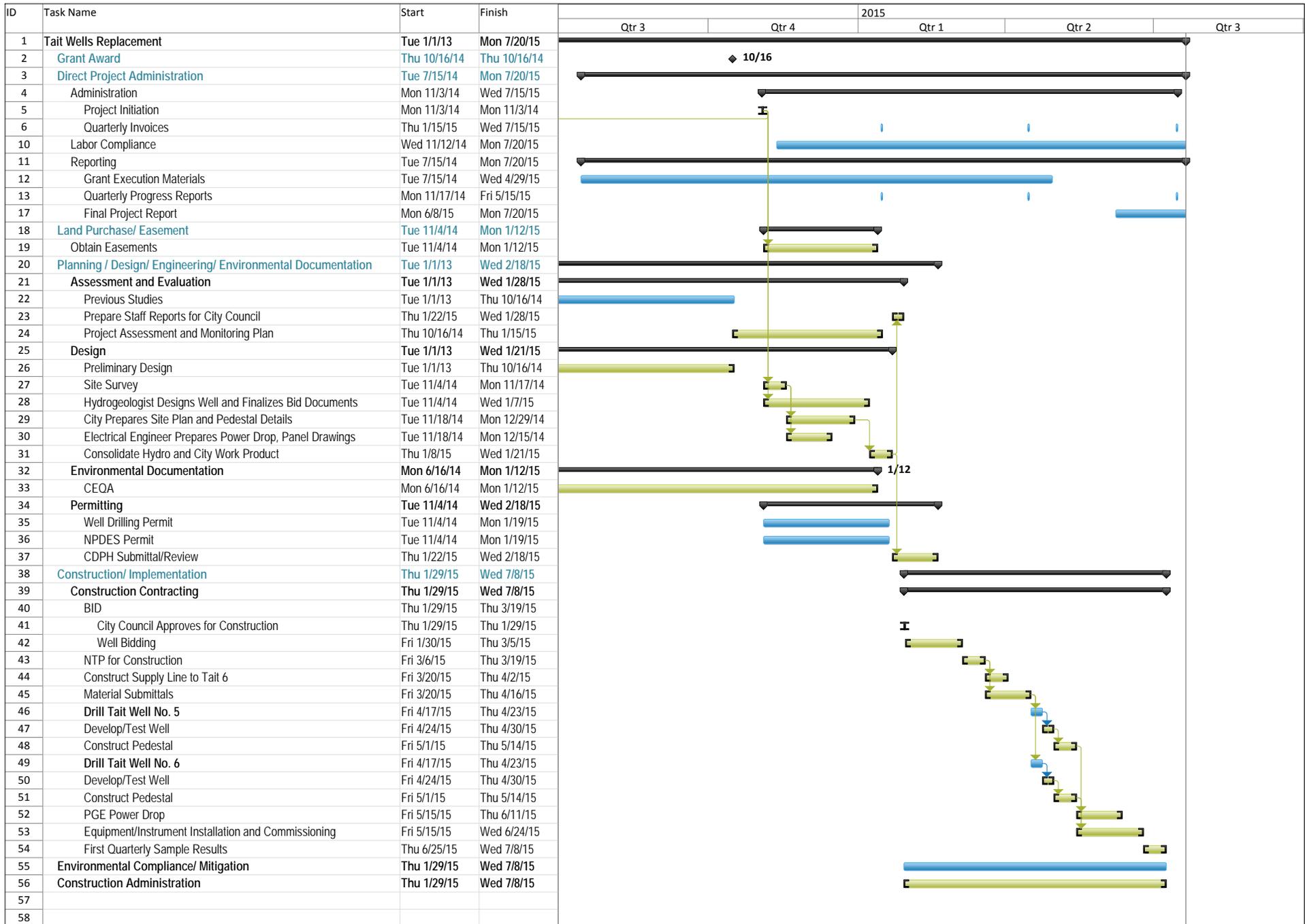
ID	Task Name	Start	Finish	2014			2015			2016		
				Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2
1	<b>Santa Cruz IRWM 2014 Drought Application</b>	<b>Mon 1/2/12</b>	<b>Fri 7/15/16</b>									
2	<b>Grant Award</b>	Thu 10/16/14	Thu 10/16/14	 <b>10/16</b>								
3	<b>Tait Wells Replacement</b>	Tue 1/1/13	Mon 7/20/15									
4	<b>Improve Potable Water Quality and Water Supply Reliability to Address Drought Impacts</b>	Mon 1/2/12	Wed 9/30/15									
5	<b>Conjunctive Use and Enhanced Groundwater Recharge Project at Hanson Quarry</b>	Tue 7/1/14	Fri 7/15/16									

<b>Santa Cruz IRWM 2014 Drought Application</b>	Task		Summary	
	Milestone		Project Summary	

## Tait Wells Replacement Schedule Description

The City has prepared a detailed schedule for the Tait Wells Replacement project. The City has examined the grant tasks and deliverables in light of experience on the previous work completed in support of this project. Well design is underway and will continue following the grant award into early 2015. Bidding for well construction is scheduled for early 2015. Well construction will start in March 2015 and be completed in July 2015. The schedule is achievable for the following reasons:

- Substantive planning work was completed on the Tait Well Replacement project from 2006 and 2009, which greatly streamlines both the well design, construction, and implementation tasks. Initial investigation of rehabilitation of the wells and associated infrastructure was initiated in 2002. The Alternative Evaluation Report Tait Street Diversion prepared by Wood Rogers in May 2009 discussed the benefits of replacing the two existing wells to restore the historical capacity of the Tait Wells production. Planning for this project was accelerated in the winter and spring of 2014, as well conditions indicated the possibility of failure.
- Construction needs are well understood because the draft BOD was developed in May 2014 for the replacement of the Tait Well No.1. The draft BOD presents: the basis for the well construction specifications and bid documents; the purpose and background for the project; permitting requirements and responsibilities; operational plans for the replacement well; the well design criteria; the preliminary well design; proposed well drilling and well construction methods; plans for cutting and fluid handling and disposal; a discussion regarding logistic issues associated with the well construction project; estimate of contractor costs; and a preliminary schedule for the well construction project and the activation of the well. The replacement of Tait Well No.1 with Tait Well No.5 was on schedule for drilling in summer 2014, but progress slowed when easement issues arose and well drillers responded to requests for bids stating they are in high demand. A Purchase Order funding design and preparation of construction bid documents for the new well was approved and commenced in April 2014.
- Tait Well No. 5 is proposed to be installed approximately 10 feet from the existing site of Tait Well No. 1. The relatively close proximity of new Tait Well No. 5 to the old Tait Well No.1 will enable the City to use the existing power and SCADA infrastructure and will minimize the amount of new well head and supply line infrastructure necessary to bring Tait Well No.5 online.
- Tait Well No.6 has not been designed. Given the similar design work performed for the Tait Well No.5 Well, there is high confidence that task durations for completing the final BOD for both wells are reasonable and achievable. Site survey will be performed in November 2014 to obtain easement, prior to hydrogeologist designing the wells.
- Environmental documents were developed for CEQA for Tait Well No.1 replacement, resulting in an Initial Study and Negative Declaration for Tait Well No.5. The CEQA process will commence for Tait Well No. 6 when the project starts in November 2014 and should be complete by mid-January, when the documentation for Tait Well No.5 and Tait Well. No.6 is finalized by the hydrogeologist.
- Well drilling is standard practice and construction is expected to be technically feasible. Construction of the wells is anticipated to start in March 2015 and will take approximately one week of full-time (24-hours per day) construction activities during that time. Well development, testing, and instrumentation will last an additional three weeks.



## Improve Potable Water Quality and Water Supply Reliability to Address Drought Impacts Schedule Description

The City has prepared a detailed schedule for the project to Improve Potable Water Quality and Water Supply Reliability to Address Drought Impacts. The City has prepared the schedule and the individual tasks in light of experience on the previous work completed in support of this project. Construction is underway and will continue into late spring 2015. The schedule is achievable for the following reasons:

- The City has performed a substantial amount of work to study the utility of the units that are proposed to be used in this project.
- Two towers were installed in Santa Cruz for the FlexNet pilot study, which successfully demonstrated the radio read metering equipment will be of use to the City. A radio read drive-by unit was purchased in 2013 for the pilot study (no costs from the FlexNet pilot study have been included in the grant budget).
- Remaining design items of the FlexNet meter antenna installation are electrical drawings for the power drop and preparation of as-builts once everything is installed to note the location of power conduits. The design issues were largely addressed in the feasibility study of TTHM removal equipment.
- Drive-by read meter transceivers were installed in the spring of 2014 and data collection has been performed using the drive-by unit. This is the first step in a multi-phase automatic meter reader system initiative underway to improve the accuracy and efficiency of meter reading.
- Assessment of the aerators, blowers and mixers was conducted in the TTHM Removal Feasibility Study (TTHM Study). The Reclaim Aeration Study, which was conducted from January 2012 to August 2012, included the following tasks: selection of an engineering consultant, preparation of a study proposal, implementation of the study, and evaluation of the data to prepare a final report. With the results from this study, equipment was purchased and installed at Santa Cruz Gardens to test the performance of the mixer alone versus the mixer and blower. Data were collected over the period of September 2012 to April 2013, and a final report was produced. The final phase of the TTHM Study was performed in a temporary 1.5 MG tank at the Bay Street Reservoir, which involved the following tasks: organization of the study, preparation of a request for proposals, evaluation of the proposals, design of aerators in-house for a comparison with the SolarBee aerator design, purchase and installation of the equipment, water quality sampling and jar testing, data collection, and evaluation of the data to produce a final report. Results from the TTHM Removal Study were presented in two conferences.
- The project does not require environmental documentation and permitting. The land required for the antenna tower is already owned by the City.
- The City has obtained quotes from the Medora Gridbee for equipment and installation, so the overall cost of equipment and installation is well understood. Separate purchase orders will be prepared during October and November 2014 for the following installation services: an electrical contractor for electrical service; a roofing contractor; and contractors for vent fabrication for the blowers, electrical conduit work, and Medora GridBee TTHM removal systems. TTHM removal equipment will be procured with a six to eight week lead time.

ID	Task Name	Start	Finish	1st Half				2nd Half							
				Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4				
1	<b>Improve Potable Water Quality and Water Supply Reliability to Address Drought Impacts</b>	1/2/12	9/30/15												
2	Grant Award	10/16/14	10/16/14												
3	<b>Direct Project Administration</b>	7/15/14	9/30/15												
4	Administration	10/16/14	9/30/15												
5	City Council Staff Report and Approval of Budget Transfer	10/16/14	11/14/14												
6	Closing Out Purchase Orders, Paying Invoices	11/14/14	5/6/15												
7	Quarterly Invoices	1/15/15	9/30/15												
12	Labor Compliance	11/12/14	5/14/15												
13	Reporting	7/15/14	9/30/15												
14	Grant Execution Materials	7/15/14	4/29/15												
15	Quarterly Progress Reports	1/15/15	9/30/15												
21	Final Project Report	5/15/15	9/30/15												
22	<b>Planning/ Design/ Engineering/ Environmental Documentation</b>	1/2/12	5/6/15												
23	Assessment and Evaluation	1/2/12	4/6/15												
24	Previous Studies	1/2/12	4/12/13												
25	Project Assessment and Monitoring Plan	10/16/14	1/15/15												
26	Water Quality Sampling	3/9/15	4/6/15												
27	<b>Design</b>	10/16/14	5/6/15												
28	Previous Design	1/2/12	3/14/14												
29	Electrical Engineer Prepares Power Drop, Panel Drawings	10/16/14	11/7/14												
30	Testing and Calibration Performed by City Staff with Support of Vendor	12/15/14	12/31/14												
31	<b>Construction/ Implementation</b>	3/14/14	6/24/15												
32	Construction Contracting	3/14/14	12/15/14												
33	Administration Supervision	3/14/14	5/15/14												
34	Installing Transceivers on Existing Meters	3/14/14	5/15/14												
35	Programming Transceivers and Registers MUX's for Project	3/14/14	5/15/14												
36	Purchase Orders	10/16/14	12/15/14												
37	Purchase orders for antenna equipment and installation	10/16/14	12/15/14												
38	Purchase order for contractor for anchor concrete pad	10/16/14	11/7/14												
39	Purchase order for electrical contractor for electrical service	10/16/14	11/14/14												
40	Purchase order roofing contractor (bidding)	10/16/14	11/14/14												
41	Purchase order vent fabrication (bidding)	10/16/14	11/14/14												
42	Purchase order electrical conduit work (bidding)	10/16/14	11/14/14												
43	Purchase order Medora GridBee units	10/16/14	11/14/14												
44	PGE Power Drop U5 Reservoir	1/1/15	6/24/15												
45	Initiate Roof Work on Water Tanks and Electrical Conduit	12/1/14	3/16/15												
46	Initiate roof work on Wash Water tank	12/1/14	12/15/14												
47	Initiate work on electrical conduit Wash Water tank	12/15/14	12/22/14												
48	Initiate roof work on U2 vent modifications	1/5/15	1/12/15												
49	Initiate work on electrical conduit U2 tank	1/12/15	1/19/15												
50	Initiate roof work on Bay St. Reservoir Tank 1 vent modifications	1/19/15	1/26/15												
51	Initiate work on electrical conduit Bay St. Reservoir Tank 1	1/26/15	2/9/15												
52	Initiate roof work on Bay St. Reservoir Tank 2 vent modifications	2/9/15	2/16/15												
53	Initiate work on electrical conduit Bay St. Reservoir Tank 2	2/16/15	3/2/15												
54	Initiate roof work on Tank U5 vent modification	3/2/15	3/9/15												
55	Initiate work on electrical conduit Tank U5	3/9/15	3/16/15												
56	Installation and Commissioning of Aerators, Blowers and Tanks	1/19/15	5/6/15												
57	Installation of Wash Water tank blowers and aerators	1/19/15	1/20/15												
58	Installation of U2 blowers and aerators	1/21/15	1/22/15												
59	Commissioning of aerators on Wash Water tank and U2 tank	1/22/15	1/23/15												
60	Installation of Bay St. Reservoir Tank 1 & 2 blowers and aerators	3/2/15	3/6/15												
61	Commissioning of aerators on Bay St. Reservoir Tank 1 & 2	3/6/15	3/6/15												
62	Installation of Tank U5 blowers and aerators	5/4/15	5/5/15												
63	Commissioning of aerators of Tank U5 aerators	5/6/15	5/6/15												
64	<b>Construction Administration</b>	3/14/14	5/14/15												

## Conjunctive Use and Enhanced Groundwater Recharge Project at Hanson Quarry Schedule Description

SVWD has prepared a detailed schedule for the Conjunctive Use and Enhanced Groundwater Recharge Project at Hanson Quarry. SVWD prepared the schedule and had the task durations reviewed by a consultant. Under Stage 1, well design, permitting, and CEQA for the proposed injection/ASR well will start following grant award in October 2014 and continue through April 2015. Monitoring well rehabilitation and monitoring well installation will start in July 2015 and be completed in August 2015. Construction of the injection/ASR well will start the beginning of August 2015 and will continue into late December 2015 with the completion of the well equipping. The majority of the Stage 2 activities will occur in 2015. Stage 3 will start in early 2015 and be completed by summer 2015. The schedule is achievable for the following reasons:

- The overall project concept has been identified and studied in several recent efforts, including:
  - 2003 Santa Cruz IRWM Plan
  - 2005 and 2013 Santa Margarita Groundwater Basin Model updates
  - 2009 SVWD Recycled Water Facilities Plan
  - 2011 Santa Cruz County Phase 1 Groundwater Conjunctive Use and Enhanced Aquifer Recharge Feasibility Study
  - Ongoing Conjunctive Use and Water Transfers – Phase II
- The conceptual-level description of the project facilities is well underway.
- The project includes three stages that could be conducted in parallel.
- Stage 1 builds on extensive prior planning and technical work and includes designing the injection/ASR well and monitoring well, and equipment. The well will be located within property referred to as the Hanson Quarry Site. SVWD has obtained confirmation that the property is available for conducting the geologic investigation and injection studies and will obtain a right of access for drilling and field studies.
- Construction of the injection/ASR well under Stage 1 requires fulfilling the CEQA requirements. It is expected that a Mitigated Negative Declaration will be issued for the project, precluding the effort required to produce a full Environmental Impact Report (EIR). Therefore, CEQA will not be a lengthy process.
- Well drilling is standard practice and construction is expected to be technically feasible based on the numerous SVWD and San Lorenzo Valley Water District wells in the area.
- Stage 2 includes designing and conducting water quality analysis and using data from the Monterey Water Pollution Control Agency's Groundwater Replenishment advanced treatment pilot study to demonstrate that advanced treated water quality will meet CDPH requirements for recharge. The proposed study will avoid the need for costly site-specific pilot testing.
- Under Stage 3, a number of water rights options have been discussed as part of the previous work conducted in 2011 (Santa Cruz County Phase 1 Groundwater Conjunctive Use and Enhanced Aquifer Recharge Feasibility Study). The previous work will streamline the further evaluation of the three surface water diversion/conveyance/treatment alternatives.

