



Sacramento Regional County Sanitation District Sacramento Regional Wastewater Treatment Plant

Progress Report Method of Compliance Work Plan and Schedule for Ammonia Effluent Limitations

February 1, 2014

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1.0 Introduction

On June 9, 2011, the Sacramento Regional County Sanitation District (SRCSD) submitted a Method of Compliance Work Plan and Schedule for Ammonia Effluent Limitations and Title 22 or Equivalent Treatment Requirements (Work Plan). This submittal was required by the compliance schedule contained in the waste discharge requirements Order No. R5-2010-0114 (NPDES Permit) adopted by the Central Valley Regional Water Quality Control Board (Regional Board) on December 9, 2010, which imposed new final effluent limitations for ammonia discharged by the Sacramento Regional Wastewater Treatment Plant (SRWTP). The NPDES Permit allowed for a period of up to 10 years to achieve compliance and further required the submittal of annual progress reports by February 1 of each year following approval of the Work Plan. The Regional Board approved the Work Plan on July 8, 2011.

On December 4, 2012, the State Water Resources Control Board adopted an order based on its review of Order R5-2010-0114. As relevant here, the State Water Board prescribed some changes in the final ammonia effluent limitations specified in the Regional Board's Order R5-2010-0114. The Regional Board incorporated the revised modified final effluent limitations for ammonia into the NPDES permit through Order No. R5-2013-0124, adopted on October 4, 2013, and those are the applicable final limitations.¹ In addition, the NPDES Permit contained new effluent limitations for nitrate. The SRWTP currently complies with the nitrate limitations, and the compliance activities below assume the need to comply with both the applicable ammonia and nitrate limitations.

Since approval of the Work Plan, steps toward compliance have been made. Also, the Sacramento Superior Court has entered orders having the effect of shifting the "due date" for ultimate compliance and various steps toward compliance. The controlling order was issued by the Superior Court on May 6, 2013. The updated deadlines with respect to compliance with Ammonia effluent limitations resulting from the Court's order were incorporated into the NPDES permit in Order R5-2013-0124, and are noted in Table 1 below. The annual progress report required by Provision VI.C.7.b and Reporting Requirement X.D.1 of the NPDES Permit (i.e., Compliance Schedule for Final Effluent Limitations for Ammonia), which was due by February 1 of each year, is now due by July 13 of each year. Also in a Partial Settlement Agreement, SRCSD stated that it will post on the SRCSD's website a second progress report on or before February 1 of each year until completion of the nutrient reduction facilities has occurred. This progress report is the report described in the Partial Settlement Agreement that is not required by the NPDES permit.

On February 27, 2013, the SRCSD Board approved a project name for the Advanced Wastewater Treatment Plant (AWTP) to be used in external communications. The SRCSD Board selected the name "*EchoWater Project*." The SRCSD is transitioning to use this project name in communications and correspondence regarding the AWTP project.

¹ The Regional Board also amended Order R5-2010-0114 in 2011, by Order R5-2011-0083. None of those amendments in that order related to ammonia or nitrate effluent limitations or compliance schedules.

Additionally, as of December 2013, SRCSD is transitioning use of the name “Regional San” in communications and correspondence.

2.0 Overall Compliance Schedule

The following compliance schedule for Ammonia Effluent Limitations is listed in Table 1 below:

Table 1. Compliance Schedule for Ammonia Final Effluent Limitations

| Task | Relevant Dates |
|---|--|
| i. Submit Method of Compliance Workplan/ Schedule | Due Date: 9 June 2011 Date Submitted: 9 June 2011 Date Approved: 8 July 2011 |
| iii. Progress Reports | Progress report required by permit due 13 July, annually ¹ |
| iv. Begin CEQA process for Compliance Project | Due Date: 19 May, 2015 Process Initiated: 22 August 2012 |
| v. Begin Construction of Compliance Project | Due Date: 19 May 2018 |
| vi. Full Compliance | Due Date: 11 May 2021 |

¹Regional San will prepare an additional report annually, to be posted on the Regional San’s website on or before February 1 of each year, beginning in 2014. This additional report is not required by the NPDES Permit, but is a report the Partial Settlement Agreement states that Regional San will prepare. Both reports will be posted on Regional San’s website but only the report required by July 13 will be transmitted directly to the Regional Board.

Installation of advanced treatment technologies is needed to meet the Ammonia Effluent Limitations. To construct advanced treatment technologies, Regional San identified other major activities needed to achieve compliance with the NPDES Permit requirements including:

- Treatment Technology Identification - Completed
- Pilot Study Implementation
 - ❖ Phase 1 - Treatment Technology Selection - Completed
 - ❖ Phase 2 - Design Criteria Optimization - In progress
 - ❖ Phase 3 - Process optimization and operator training – To follow Phase 2
- Establishment of the Program Management Office (PMO) - Completed
- Select treatment technologies for environmental review, design, and implementation - Completed
- Design full-scale treatment systems (for nutrient reduction) - In progress
- Environmental analysis - In progress
- Construction Phase - In planning
- Startup and Commissioning - In planning

3.0 Progress towards Compliance

The following is a summary of the various activities associated with complying with the Ammonia Effluent Limitations. The summary herein is the information Regional San stated that it would provide on a semi-annual basis, as part of the Partial Settlement Agreement.

3.1 Phase 2 Pilot Study Implementation

The goal of Phase 1 of the Pilot Study was to select treatment process technologies and to validate the identified technologies' ability to reliably meet the new permit requirements.

As of submission of this progress report, Phase 1 of the Pilot Study has been completed and a report has been prepared recommending the treatment technologies that can be carried forward for full-scale design.

Based on evaluations of the Phase 1 Pilot Study results, the preferred treatment train selected for design includes biological nutrient removal via an air activated sludge process (BNR), granular media filtration, and liquid chlorine for disinfection. Accordingly, the BNR process is being carried forward for full scale design in advance of CEQA approval to meet the permit schedule requirements. Implementation (i.e., construction of the BNR process) would occur upon completion of design, assuming that compliance with CEQA and acquisition of required permits has been achieved.

Phase 2 of the Pilot Study is underway. Modifications to the pilot system have been designed, constructed and the process commissioned. The goal of the Phase 2 Pilot Study is to further refine the design criteria for the BNR, filtration, and disinfection processes to optimize full scale facilities. The Phase 2 pilot system will be operated over 10 to 12 months and is scheduled to be completed in December 2014.

3.2 Design of Treatment Systems

Design consultants have been procured to provide pre-design and full-scale designs of various individual treatment systems and project features. Table 2 lists the major projects required to meet nutrient related (i.e., final ammonia and nitrate) limitations. Major design projects, as defined in the Partial Settlement Agreement, are those with a design contract in excess of \$1 million. Dates in bold are actual dates of accomplishment. Other dates are planned dates. Construction completion includes commissioning. Additional project information is included in Appendix A.

Table 2. Major EchoWater Projects

| Major Project | Design Contract Award | Construction Contract Award | Construction Completion |
|----------------------------------|-----------------------|-----------------------------|-------------------------|
| Biological Nutrient Removal | 22 Feb 2013 | 23 Feb 2016 | 26 Oct 2020 |
| Flow Equalization | 28 Aug 2013 | 25 Feb 2015 | 13 Jan 2017 |
| Primary Effluent Pumping Station | 23 Oct 2013 | 23 Feb 2016 | 03 Feb 2020 |
| RAS Pumping System | 13 Nov 2013 | 26 Jul 2016 | 17 Jan 2020 |
| Building Relocations | 25 Sep 2013 | 02 Sep 2014 | 25 May 2015 |
| Site Preparation | 11 Dec 2013 | 19 Feb 2015 | 26 Sep 2016 |
| Disinfection Chemical Storage | 11 Dec 2013 | 16 Jun 2015 | 16 Sep 2016 |

3.3 Environmental Analysis

The CEQA process was initiated on August 22, 2012 and is expected to be completed (including required permits) by January 2015. The Draft EIR is expected to be issued for public review in February 2014. The Final EIR is scheduled to be certified in August 2014.

3.4 Construction Phase

Construction of treatment facilities is expected to begin by the first quarter of 2015 and continue through October 2020 (which includes project startup and commissioning) for the ammonia and nitrate treatment facilities.

3.5 Startup and Commissioning

Startup and commissioning for each project will occur as major treatment processes are completed and existing processes are cut over as required. Additional time is required to start up and commission the new facilities to ensure stable process operation. Additionally, an overall commissioning period is required to operate the individual projects together as a system. The District is defining full compliance as completion of this phase of the project. This phase is identified on the schedule in Appendix B as Systemwide Commissioning and is anticipated to be completed by December 31, 2020.

3.6 District Project Acceptance

This milestone of the project is a contractual step to formally close out the construction project and is subject to an SRCSD Board action. Treatment facilities will have already been commissioned and will be fully operational. This date is subject to the nearest Board meeting after all contractual issues have been resolved and is not the measure of full compliance.

4.0 Schedule

Regional San staff has identified and implemented several efforts to meet the formerly applicable December 2020 compliance date and advance the work to the extent practicable. The CEQA process was initiated well before NPDES permit schedule requirements and the Draft EIR is scheduled to be issued for public review in February 2014. In addition, several design consultant contracts are in place and are proceeding in parallel to the CEQA process. The current schedule indicates that full system commissioning is on schedule to be accomplished in December 2020; however, it is very early in the Program and the start of construction is dependent on the ability to certify the EIR and approve the project, acquire all of the necessary permits needed to start construction, and enter into construction contracts in time to meet the scheduled start dates. Regional San staff will continue to identify and evaluate means by which compliance could be accelerated weighing the cost and risk to the project.

A planning level schedule is included in Appendix B showing major projects required to comply with the final effluent limitations for ammonia as well as the nitrate limitations. The schedule developed at this planning stage of the EchoWater Project shows completion of startup and commissioning of the BNR project by December 31, 2020.

Appendix A

Status of Ammonia Reduction Projects

Appendix A

Status of Ammonia Reduction Projects

Biological Nutrient Removal (BNR)

The design consultant was given notice to proceed (NTP) on February 22, 2013 and work has been in progress to deliver a preliminary design report by March 2014. The project is on schedule to meet this milestone.

Flow Equalization

A contract for design services was awarded on August 28, 2013. Design work is in progress and a preliminary design report is scheduled to be completed by February 14, 2014. The project is on schedule to meet this milestone.

Primary Effluent Pumping Station

A contract for design services was awarded on October 23, 2013. Design work is in progress and a preliminary design report is scheduled to be completed by April 2014. The project is on schedule to meet this milestone.

RAS Pumping System

A contract for design services was awarded on November 13, 2013. Design work is in progress and a preliminary design report is scheduled to be completed by July 2014. The project is on schedule to meet this milestone.

Building Relocations

A contract for design services was awarded on September 25, 2013. Design work is in progress and a preliminary design report is scheduled to be completed in February 2014. The project is on schedule to meet this milestone.

Site Preparation

A contract for design services was awarded on December 11, 2013. Design work is in progress and basis of design validation is in progress. The project is on schedule to meet established milestones.

Disinfection Chemical Storage

A design contract was awarded on December 11, 2013. A project kickoff meeting was conducted on January 14, 2014. The project is on schedule to meet established milestones.

Appendix B

Workplan Schedule for Ammonia Reduction Compliance

EchoWater Project Schedule

| ID | Task Name | Duration | Start | Finish | 2013 | | | | 2014 | | | | 2015 | | | | 2016 | | | | 2017 | | | | 2018 | | | | 2019 | | | | 2020 | | | | 2021 | |
|----|---|------------------|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|------|--|
| | | | | | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 | Qtr 1 | Qtr 2 | | | | |
| 1 | EchoWater Projects | 1975 days | Tue 4/2/13 | Mon 10/26/20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | BNR | 1975 days | Tue 4/2/13 | Mon 10/26/20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Design | 755 days | Tue 4/2/13 | Mon 2/22/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Construction | 1037 days | Tue 2/23/16 | Wed 2/12/20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Startup and Commissioning | 183 days | Thu 2/13/20 | Mon 10/26/20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Flow Equalization | 870 days | Mon 9/16/13 | Fri 1/13/17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Design | 377 days | Mon 9/16/13 | Tue 2/24/15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Construction | 413 days | Wed 2/25/15 | Fri 9/23/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Startup and Commissioning | 80 days | Mon 9/26/16 | Fri 1/13/17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Primary Effluent Pumping Station | 1638 days | Thu 10/24/13 | Mon 2/3/20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Design | 586 days | Thu 10/24/13 | Thu 1/21/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Construction | 954 days | Fri 1/22/16 | Wed 9/18/19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | Startup and Commissioning | 98 days | Thu 9/19/19 | Mon 2/3/20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | RAS Pumping System | 1610 days | Mon 11/18/13 | Fri 1/17/20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | Design | 701 days | Mon 11/18/13 | Mon 7/25/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | Construction | 811 days | Tue 7/26/16 | Tue 9/3/19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | Startup and Commissioning | 98 days | Wed 9/4/19 | Fri 1/17/20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | Site Preparation | 728 days | Thu 12/12/13 | Mon 9/26/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | Design | 310 days | Thu 12/12/13 | Wed 2/18/15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | Construction | 391 days | Thu 2/19/15 | Thu 8/18/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | Startup and Commissioning | 27 days | Fri 8/19/16 | Mon 9/26/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | Building Relocations | 434 days | Wed 9/25/13 | Mon 5/25/15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | Design | 244 days | Wed 9/25/13 | Mon 9/1/14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | Construction | 165 days | Tue 9/2/14 | Mon 4/20/15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | Startup and Commissioning | 25 days | Tue 4/21/15 | Mon 5/25/15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | Disinfection Chemical Storage | 722 days | Thu 12/12/13 | Fri 9/16/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | Design | 393 days | Thu 12/12/13 | Mon 6/15/15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | Construction | 299 days | Tue 6/16/15 | Fri 8/5/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | Startup and Commissioning | 30 days | Mon 8/8/16 | Fri 9/16/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | Systemwide Commissioning | 69 days | Mon 9/28/20 | Thu 12/31/20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | Systemwide Commissioning | 69 days | Mon 9/28/20 | Thu 12/31/20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | Program Float | 93 days | Fri 1/1/21 | Tue 5/11/21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | Ammonia Compliance | 1 day | Tue 5/11/21 | Tue 5/11/21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Project: Appendix C Ammonia Workpl: Date: Fri 1/17/14

Task Progress Summary External Tasks Deadline

Split Milestone Project Summary External Milestone

Fri 1/17/14