CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ADMINISTRATIVE CIVIL LIABILITY ORDER R5-2012-0560

MANDATORY PENALTY
IN THE MATTER OF

CITY OF JACKSON
WASTEWATER TREATMENT PLANT
AMADOR COUNTY

This Order is issued to the City of Jackson (hereafter Discharger) pursuant to California Water Code (CWC) section 13385, which authorizes the imposition of Administrative Civil Liability (ACL). This Order is based on findings that the Discharger violated provisions of Waste Discharge Requirements (WDRs) Order R5-2007-0133 (NPDES No. CA0079391).

The Assistant Executive Officer of the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board or Board) finds the following:

1. The Discharger owns and operates the City of Jackson Wastewater Treatment Plant (WWTP), which provides sewerage service to the City of Jackson in Amador County. Treated domestic, commercial and industrial wastewater is discharged to Jackson Creek, a water of the United States, and tributary to Lake Amador.

2. On 25 October 2007, the Central Valley Water Board issued WDRs Order R5-2007-0133, effective 14 December 2007, which contained new requirements and rescinded Order 5-00-173, except for enforcement purposes. The WDRs include effluent limitations and other requirements.

3. On 1 July 2010, the Assistant Executive Officer of the Central Valley Water Board issued Administrative Civil Liability Order (ACLO) R5-2010-0531 for $147,000 in mandatory minimum penalties for effluent violations from 1 January 2008 through 31 December 2009. The Order allowed $135,000 of the penalty to be applied to an effluent filter upgrade project. The Discharger paid $12,000 and completed the compliance project. The Board considers the matter settled for the violations specifically listed in Attachment A of ACLO-R5-2010-0531.

4. On 3 November 2011, the Central Valley Water Board adopted Time Schedule Order (TSO) R5-2011-0909. The TSO provides interim effluent limitations for aluminum, ammonia, copper, cyanide, dichlorobromomethane, nitrate, total coliform organisms, turbidity, and zinc. Compliance with the TSO exempts the Discharger from MMPs for these constituents. This Order considers the protection from MMPs granted by TSO R5-2011-0909.

5. On 28 March 2011, Central Valley Water Board staff issued the Discharger a draft Record of Violations and Notice of Violation for effluent limitation violations that occurred at the wastewater treatment plant from 1 January 2010 through 31 January 2011. On 13 April 2011, the Discharger agreed that the violations occurred and requested that the Board allow the penalties to be applied to a compliance project. On 11 August 2011, the

Discharger submitted a compliance project, project schedules, projected project costs, and a statement that funding is available in the wastewater fund (Attachment B). The final listing of violations has been extended by 15 months and additional violations have been added.

6. CWC Sections 13385(h) and (i) require assessment of mandatory penalties and state, in part, the following:

CWC section 13385(h)(1) states,

> Notwithstanding any other provision of this division, and except as provided in subdivisions (j), (k), and (l), a mandatory minimum penalty of three thousand dollars ($3,000) shall be assessed for each serious violation.

CWC section 13385 (h)(2) states,

> For the purposes of this section, a "serious violation" means any waste discharge that violates the effluent limitations contained in the applicable waste discharge requirements for a Group II pollutant, as specified in Appendix A to Section 123.45 of Title 40 of the Code of Federal Regulations, by 20 percent or more or for a Group I pollutant, as specified in Appendix A to Section 123.45 of Title 40 of the Code of Federal Regulations, by 40 percent or more.

CWC section 13385(i)(1) states,

> Notwithstanding any other provision of this division, and except as provided in subdivisions (j), (k), and (l), a mandatory minimum penalty of three thousand dollars ($3,000) shall be assessed for each violation whenever the person does any of the following four or more times in any period of six consecutive months, except that the requirement to assess the mandatory minimum penalty shall not be applicable to the first three violations:
>
> A) Violates a waste discharge requirement effluent limitation.
> B) Fails to file a report pursuant to Section 13260.
> C) Files an incomplete report pursuant to Section 13260.
> D) Violates a toxicity effluent limitation contained in the applicable waste discharge requirements where the waste discharge requirements do not contain pollutant-specific effluent limitations for toxic pollutants.

7. WDRs Order R5-2007-0133 Effluent Limitations IV.A.1.a. includes, in part:

> The Discharger shall maintain compliance with the effluent limitations specified in Table 6:

Table 6. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
INORGANICS						
Copper, Total Recoverable	µg/L	3.22	--	6.46	--	--
Cyanide, Total	µg/L	4.26	--	8.54	--	--
Zinc, Total Recoverable	µg/L	30.00	--	60.00	--	--
ORGANICS						
Dichlorobromomethane	µg/L	0.56	--	1.12	--	--
NON-CONVENTIONALS						
Nitrate (as NO_3)	mg/L	45	--	--	--	--
Total Coliform Organisms	MPN/100 mL					240
Turbidity	NTU	--	--	--	--	10

8. WDRs Order R5-2007-0133 Effluent Limitations IV.A.1.f., ammonia, states:

   f. Ammonia. The following effluent limitations for ammonia are effective from 18 May 2010 until 5 years following the date of adoption of this Order:

      i. 1.2 mg/L, as an Average Monthly Effluent Limitation; and
      ii. 4.2 mg/L, as a Maximum Daily Effluent Limitation.

9. WDRs Order R5-2007-0133 Effluent Limitations IV.A.1.i., Turbidity, states:

   Effluent turbidity shall not exceed:

   i. 2 NTU, as a daily average;
   ii. 5 NTU, more than 5% of the time within a 24-hour period; and
   iii. 10 NTU, at any time.

10. WDRs Order R5-2007-0133 Effluent Limitations IV.A.1.j., Total Coliform Organisms, states:

    Effluent total coliform organisms shall not exceed:

    i. 2.2 most probable number (MPN) per 100 mL, as a 7-day median; and
    ii. 23 MPN/100 mL, more than once in any 30-day period.

11. TSO Order R5-2011-0909 Provision No. 2 includes in part, the following effluent limitations:

Parameter	Units	Maximum Daily [1]	Average Monthly [2]
Cyanide, Total	µg/L	8	6
Zinc, Total Recoverable	µg/L	145	124
1 Mean + (3.3) x (Standard Deviation) 2 Mean + (2.0) x (Standard Deviation)			

12. According to the Discharger's self-monitoring reports, the Discharger committed seven (7) serious Group I violations of the above effluent limitations contained in WDRs Order R5-2007-0133 during the period beginning 1 January 2010 and ending 31 May 2012. The violations are defined as serious because the measured concentrations of Group I constituents exceeded maximum prescribed levels by more than 40 percent on these

occasions. The mandatory minimum penalty for these serious violations is **twenty-one thousand dollars ($21,000)**.

13. According to the Discharger's self-monitoring reports, the Discharger committed eighty-four (84) serious Group II violation of the above effluent limitations contained in WDRs Order R5-2007-0133 during the period beginning 1 January 2010 and ending 31 May 2012. These violations are defined as serious because the measured concentration of a Group II constituent exceeded the maximum prescribed level by more than 20 percent on these occasions. The mandatory minimum penalty for these serious violations is **two hundred fifty-two thousand dollars ($252,000)**.

14. According to the Discharger's self-monitoring reports, the Discharger committed forty-six (46) non-serious violations of the effluent limitations contained in WDRs Order R5-2007-0133 during the period beginning 1 January 2010 and ending 31 May 2012. All of the non-serious violations are subject to mandatory penalties under CWC Section 13385(i)(1) because these violations were preceded by three or more similar violations within a six-month period. The mandatory minimum penalty for these non-serious violations is **one hundred thirty-eight thousand dollars ($138,000)**.

15. The total amount of the mandatory penalties assessed for the cited effluent violations is **four hundred eleven thousand dollars ($411,000).** A detailed list of all the effluent violations is included in Attachment A, a part of this Order.

16. CWC section 13385 (k)(1) states, in part:

> In lieu of assessing all or a portion of the mandatory minimum penalties pursuant to subdivisions (h) and (i) against a publicly owned treatment works serving a small community, the state board or the regional board may elect to require the publicly owned treatment works to spend an equivalent amount towards the completion of a compliance project proposed by the publicly owned treatment works…

17. CWC section 13385 (k)(2) states, in part:

> For the purposes of this subdivision, "a publicly owned treatment works serving a small community" means a publicly owned treatment works serving a population of 10,000 persons or fewer or a rural county, with a financial hardship as determined by the state board after considering such factors as median income of the residents, rate of unemployment, or low population density in the service area of the publicly owned treatment works.

18. The City of Jackson Wastewater Treatment Plant is a publicly owned treatment works, depends primarily on residential fees to fund its wastewater treatment facility, and is serving a small community with financial hardship as defined by the Water Quality Enforcement Policy and within the meaning of CWC section 13385(k)(2).

19. On 11 August 2011, the Discharger proposed a $464,000 secondary process improvements compliance project as found in Attachment B to this Order. The project is consistent with the project required by TSO R5-2011-0909 and consists of updating the

nitrification/denitrification in the oxidation ditches, introducing pH control, modifying the disinfection system including the injection point, replacing the coagulation system with a flow-paced control system, stream dilution studies, and submitted the project outline and project schedule. Other improvements to the effluent filters are part of the compliance project set forth in ACLO R5-2010-0531. The Discharger proposes to complete the work by 1 December 2014, evaluate performance through 28 February 2015, and has provided assurance that it has funds on hand to complete the project as presented in Attachment B.

20. The Central Valley Water Board finds that the Compliance Project has been designed to correct these violations within five years, that the timeline for the Compliance Project is as short as possible, and that the Compliance Project has been designed in accordance with the Enforcement Policy of the State Water Board. The amount that the Discharger plans to expend on the Compliance Project is in excess of the mandatory minimum penalty that the Board is required to assess under CWC sections 13385(h) and (i) for the violations that are to be addressed by the Compliance Project.

21. On 23 April 2009, the Central Valley Water Board delegated the authority to issue Administrative Civil Liability Orders, where the matter is not contested by the Discharger, to the Executive Officer, or to an Assistant Executive Officer when the Executive Officer is serving as head of the Board's Prosecution Team (Resolution R5-2009-0027). Pamela Creedon is serving as the head of the Board's Prosecution Team for this matter, and therefore Assistant Executive Officer Kenneth Landau has the authority to issue this Order.

22. This Order constitutes a settlement of the violations herein mentioned. Notice of this settlement was published on the Central Valley Water Board's website and was provided to all interested parties. The 30-day public notice and comment period mandated by Federal regulations (40 C.F.R. § 123.27) has expired.

23. Issuance of this Administrative Civil Liability Order to enforce CWC Division 7, Chapter 5.5 is exempt from the provisions of the California Environmental Quality Act (Pub. Resources Code § 21000 et seq.), in accordance with California Code of Regulations, title 14, section 15321(a)(2).

IT IS HEREBY ORDERED THAT:

1. The City of Jackson, its agents, successors and assigns, shall be assessed Administrative Civil Liability in the amount of **four hundred eleven thousand dollars ($411,000)**.

2. The **four hundred eleven thousand dollar ($411,000)** penalty shall be suspended if the Discharger complies with the following time schedule to complete its compliance project:

Task	Compliance Date
Complete Planning, Design, and Bid Process for pH, DO, SCADA Monitoring, Recording, Controls, and Alarms	1 February 2013
Complete Planning, Design, and Bid Process for Lime Storage and Dosing System, Prefilter Coagulation/Flocculation improvements, and Increase in Chlorine Mixing Energy	1 November 2013
Complete Construction of pH, DO, SCADA Monitoring, Recording, Controls, and Alarms	1 March 2014
Complete Construction of Lime Storage and Dosing System, Prefilter Coagulation/Flocculation improvements, and Increase in Chlorine Mixing Energy	1 December 2014
Comply with Final Effluent Limitations for aluminum, ammonia, copper, cyanide, dichlorobromomethane, nitrate, total coliform organisms, turbidity, and zinc	1 March 2015
Submit final project report describing whether the project goals, costs, milestones, and completion dated have been met. The final accounting shall detail the funds spent for this particular project.	1 May 2015

3. A progress report shall be submitted on or before each of the above compliance dates. The progress reports shall detail the steps taken to comply with this Order, including documentation showing completion of tasks, construction progress, evaluation of the effectiveness of the implemented measures, and assessment of whether additional measures are necessary to meet the compliance dates.

4. In addition, beginning with the third quarter of 2012, the Discharger shall submit quarterly progress reports detailing the progress toward compliance with the above schedule, the funds expended to date, and how those expenditures relate to the specific compliance project. Quarterly progress reports are due on the first day of the second month after the end of the quarter (i.e., 1 February, 1 May, 1 August, and 1 November) and shall be submitted through the first quarter of 2015.

5. The Assistant Executive Officer may extend the abovementioned deadlines if the Discharger demonstrates that unforeseeable contingencies have created delays, provided that the Discharger continues to undertake all appropriate measures to meet the deadlines. The Discharger shall make any deadline extension request in writing. Under no circumstances may the completion of the Compliance Project extend past five (5) years from the issuance of this Order.

6. If, in the judgment of the Assistant Executive Officer, the Discharger fails to complete the Compliance Project in accordance with the specified time schedule or fails to construct the Compliance Project in accordance with the 11 August 2011 Compliance Project Proposal without obtaining Central Valley Water Board approval, the suspended mandatory minimum penalty ($411,000) must be paid within 30 days of notification by the Assistant Executive Officer of such failure.

7. The Discharger must obtain explicit approval from the Assistant Executive Officer for any significant departures from the project outline submitted on 11 August 2011 (as found in Attachment B). Failure to obtain approval for any significant departures will result in the assessment of the full amount of the suspended mandatory minimum penalty.

8. Should the Discharger fail to take any of the above actions, the Assistant Executive Officer may refer the matter to the State Attorney General for enforcement of the terms of this Order.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with CWC section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date that this Order becomes final, except that if the thirtieth day following the date that this Order becomes final falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

Original signed by Richard Loncarovich for

KENNETH D. LANDAU, Assistant Executive Officer

7 September 2012
DATE

Attachment A: Record of Violations

ATTACHMENT A
ADMINISTRATIVE CIVIL LIABILITY ORDER NO. R5-2012-0560

City of Jackson
Wastewater Treatment Plant

RECORD OF VIOLATIONS (1 January 2010 – 31 May 2012) MANDATORY PENALTIES
(Data reported under Monitoring and Reporting Program R5-2007-0133.)

	Date	Parameter	Units	Limit	Measured	Period Type	Remarks	CIWQS
1	29-Mar-10	Coliform	MPN/100mL	23	30	> once/30 days	4	874239
2	29-Mar-10	Coliform	MPN/100mL	2.2	17	7-Day Median	4	874240
3	31-Mar-10	Coliform	MPN/100mL	2.2	17	7-Day Median	4	874241
4	2-Apr-10	Coliform	MPN/100mL	2.2	17	7-Day Median	4	874242
5	5-Apr-10	Coliform	MPN/100mL	2.2	22	7-Day Median	4	874243
6	7-Apr-10	Coliform	MPN/100mL	2.2	23	7-Day Median	4	874244
7	9-Apr-10	Coliform	MPN/100mL	2.2	23	7-Day Median	4	874245
8	12-Apr-10	Coliform	MPN/100mL	2.2	23	7-Day Median	4	874246
9	14-Apr-10	Coliform	MPN/100mL	2.2	17	7-Day Median	4	874247
10	16-Apr-10	Coliform	MPN/100mL	2.2	17	7-Day Median	4	874248
11	20-May-10	Turbidity	NTU	2	3	Daily Average	4	879673
12	21-May-10	Turbidity	NTU	2	3	Daily Average	4	879674
13	22-May-10	Turbidity	NTU	2	5	Daily Average	4	879675
14	23-May-10	Turbidity	NTU	2	6	Daily Average	4	879688
15	23-May-10	Turbidity	NTU	5	6	≤5% of the time	4	879689
16	24-May-10	Turbidity	NTU	2	6	Daily Average	4	879690
17	24-May-10	Turbidity	NTU	5	6	≤5% of the time	4	879691
18	25-May-10	Turbidity	NTU	2	5	Daily Average	4	879692
19	26-May-10	Turbidity	NTU	2	5	Daily Average	4	879693
20	26-May-10	Ammonia	mg/L	4.2	5.2	Daily Max	4	879694
21	27-May-10	Turbidity	NTU	2	6	Daily Average	4	879695
22	27-May-10	Turbidity	NTU	5	6	≤5% of the time	4	879696
23	27-May-10	Ammonia	mg/L	4.2	7.6	Daily Max	1	879697
24	28-May-10	Turbidity	NTU	2	3	Daily Average	4	879698
25	28-May-10	Ammonia	mg/L	4.2	10.0	Daily Max	1	879699
26	29-May-10	Turbidity	NTU	2	3	Daily Average	4	879700
27	29-May-10	Ammonia	mg/L	4.2	6.3	Daily Max	1	879701
28	30-May-10	Turbidity	NTU	2	3	Daily Average	4	879704
29	31-May-10	Ammonia	mg/L	1.2	2.5	Monthly Ave	1	879705
30	31-May-10	Nitrate	mg/L	45	52	Monthly	4	879706
31	1-Jun-10	Ammonia	mg/L	4.2	4.4	Daily Max	4	879707
32	2-Jun-10	Ammonia	mg/L	4.2	4.6	Daily Max	4	879708
33	2-Jun-10	Coliform	MPN/100mL	240	900	Maximum	4	879709
34	3-Jun-10	Ammonia	mg/L	4.2	6.8	Daily Max	1	879710
35	4-Jun-10	Ammonia	mg/L	4.2	7.3	Daily Max	1	879711
36	9-Jun-10	Ammonia	mg/L	4.2	5.4	Daily Max	4	879712
37	15-Jun-10	Zinc	µg/L	60	90	Daily Max	2	879713
38	16-Jun-10	Ammonia	mg/L	4.2	5.3	Daily Max	4	879714
39	30-Jun-10	Ammonia	mg/L	1.2	2.3	Monthly Ave	1	879715
40	30-Jun-10	DCBM	µg/L	0.56	0.8	Monthly Ave	2	879716
41	30-Jun-10	Copper	µg/L	3.22	3.5	Monthly Ave	4	879717

	Date	Parameter	Units	Limit	Measured	Period Type	Remarks	CIWQS
42	30-Jun-10	Zinc	µg/L	30	90	Monthly Ave	2	879718
43	13-Jul-10	DCBM	µg/L	1.12	3.5	Daily Max	2	881566
44	13-Jul-10	Zinc	µg/L	60	96	Daily Max	2	881567
45	31-Jul-10	DCBM	µg/L	0.56	3.5	Monthly Ave	2	881568
46	31-Jul-10	Zinc	µg/L	30	96	Monthly Ave	2	881569
47	10-Aug-10	DCBM	µg/L	1.12	10	Daily Max	2	883810
48	10-Aug-10	Zinc	µg/L	60	110	Daily Max	2	883812
49	31-Aug-10	DCBM	µg/L	0.56	10	Monthly Ave	2	883811
50	31-Aug-10	Copper	µg/L	3.22	3.5	Monthly Ave	4	883815
51	31-Aug-10	Cyanide	µg/L	4.26	6.0	Monthly Ave	2	883814
52	31-Aug-10	Zinc	µg/L	30	110	Monthly Ave	2	883813
53	7-Sep-10	DCBM	µg/L	1.12	7.7	Daily Max	2	887854
54	7-Sep-10	Zinc	µg/L	60	84	Daily Max	2	887855
55	30-Sep-10	DCBM	µg/L	0.56	7.7	Monthly Ave	2	887857
56	30-Sep-10	Zinc	µg/L	30	84	Monthly Ave	2	887859
57	5-Oct-10	DCBM	µg/L	1.12	6.9	Daily Max	2	889712
58	5-Oct-10	Zinc	µg/L	60	100	Daily Max	2	889707
59	31-Oct-10	DCBM	µg/L	0.56	6.9	Monthly Ave	2	889713
60	31-Oct-10	Cyanide	µg/L	4.26	5.0	Monthly Ave	4	889714
61	31-Oct-10	Zinc	µg/L	30	100	Monthly Ave	2	889710
62	9-Nov-10	DCBM	µg/L	1.12	3.1	Daily Max	2	893189
63	9-Nov-10	Zinc	µg/L	60	97	Daily Max	2	893190
64	26-Nov-10	Coliform	MPN/100mL	240	2400	Maximum	4	893193
65	30-Nov-10	DCBM	µg/L	0.56	3.1	Monthly Ave	2	893196
66	30-Nov-10	Cyanide	µg/L	4.26	8.2	Monthly Ave	2	893197
67	30-Nov-10	Zinc	µg/L	30	97	Monthly Ave	2	893198
68	7-Dec-10	DCBM	µg/L	1.12	2.9	Daily Max	2	893199
69	7-Dec-10	Zinc	µg/L	60	99	Daily Max	2	893202
70	31-Dec-10	Nitrate	mg/L	45	46	Monthly	4	893203
71	31-Dec-10	DCBM	µg/L	0.56	2.9	Monthly Ave	2	893204
72	31-Dec-10	Copper	µg/L	3.22	4.9	Monthly Ave	2	893206
73	31-Dec-10	Zinc	µg/L	30	99	Monthly Ave	2	893207
74	4-Jan-11	DCBM	µg/L	1.12	3.1	Daily Max	2	893208
75	31-Jan-11	DCBM	µg/L	0.56	3.1	Monthly Ave	2	893275
76	31-Jan-11	Nitrate	mg/L	45	49.8	Monthly Ave	4	893277
77	31-Jan-11	Zinc	µg/L	30	50	Monthly Ave	2	893278
78	15-Feb-11	DCBM	µg/L	1.12	5.3	Daily Max	2	899414
79	15-Feb-11	Zinc	µg/L	60	110	Daily Max	2	899415
80	28-Feb-11	Cyanide	µg/L	4.26	5.0	Monthly Ave	4	899416
81	28-Feb-11	Zinc	µg/L	30	110	Monthly Ave	2	899417
82	28-Feb-11	DCBM	µg/L	0.56	5.3	Monthly Ave	2	899418
83	15-Mar-11	DCBM	µg/L	1.12	2.2	Daily Max	2	899426
84	15-Mar-11	Zinc	µg/L	60	110	Daily Max	2	899427
85	20-Mar-11	Turbidity	NTU	5	17.5	≤5% of time	4	899430
86	20-Mar-11	Turbidity	NTU	2	3.4	Daily Ave	4	899442
87	31-Mar-11	Cyanide	µg/L	4.26	5	Monthly Ave	4	899443

	Date	Parameter	Units	Limit	Measured	Period Type	Remarks	CIWQS
88	31-Mar-11	DCBM	µg/L	0.56	2.2	Monthly Ave	2	899452
89	31-Mar-11	Zinc	µg/L	30	110	Monthly Ave	2	899454
90	12-Apr-11	DCBM	µg/L	1.12	3.4	Daily Max	2	902029
91	12-Apr-11	Zinc	µg/L	60	70	Daily Max	4	902030
92	30-Apr-11	DCBM	µg/L	0.56	3.4	Monthly Ave	2	902031
93	30-Apr-11	Copper	µg/L	3.22	5	Monthly Ave	2	902032
94	30-Apr-11	Zinc	µg/L	30	70	Monthly Ave	2	902033
95	10-May-11	DCBM	µg/L	1.12	3	Daily Max	2	904748
96	10-May-11	Copper	µg/L	3.22	4.8	Monthly Ave	2	904749
97	10-May-11	Cyanide	µg/L	8.54	9	Daily Max	4	904752
98	10-May-11	Zinc	µg/L	60	100	Daily Max	2	904753
99	31-May-11	DCBM	µg/L	0.56	3	Monthly Ave	2	904754
100	31-May-11	Cyanide	µg/L	4.26	9	Monthly Ave	2	904755
101	31-May-11	Zinc	µg/L	30	100	Monthly Ave	2	904756
102	6-Jun-11	Turbidity	NTU	2	3.5	Daily Ave	4	906076
103	6-Jun-11	Turbidity	NTU	5	8.4	≤5% of time	4	906077
104	14-Jun-11	DCBM	µg/L	1.12	6.8	Daily Max	2	906072
105	14-Jun-11	Zinc	µg/L	60	75	Daily Max	2	906074
106	30-Jun-11	DCBM	µg/L	0.56	6.8	Monthly Ave	2	906073
107	30-Jun-11	Zinc	µg/L	30	75	Monthly Ave	2	906075
108	12-Jul-11	DCBM	µg/L	1.12	6.9	Daily Max	2	909266
109	12-Jul-11	Zinc	µg/L	60	100	Daily Max	2	909271
110	31-Jul-11	DCBM	µg/L	0.56	6.9	Monthly Ave	2	909267
111	31-Jul-11	Zinc	µg/L	30	100	Monthly Ave	2	909277
112	31-Jul-11	Copper	µg/L	3.22	5.7	Monthly Ave	2	909280
113	31-Jul-11	Cyanide	µg/L	4.26	6	Monthly Ave	2	909284
114	9-Aug-11	DCBM	µg/L	1.12	4	Daily Max	2	910809
115	9-Aug-11	Zinc	µg/L	60	110	Daily Max	2	910811
116	31-Aug-11	DCBM	µg/L	0.56	4	Monthly Ave	2	910810
117	31-Aug-11	Zinc	µg/L	30	110	Monthly Ave	2	910812
118	31-Aug-11	Cyanide	µg/L	4.26	5.3	Monthly Ave	2	910813
119	13-Sep-11	DCBM	µg/L	1.12	5.9	Daily Max	2	914221
120	13-Sep-11	Zinc	µg/L	60	110	Daily Max	2	914223
121	30-Sep-11	DCBM	µg/L	0.56	5.9	Monthly Ave	2	914222
122	30-Sep-11	Zinc	µg/L	30	110	Monthly Ave	2	914224
123	30-Sep-11	Cyanide	µg/L	4.26	7.4	Monthly Ave	2	914225
124	30-Sep-11	Copper	µg/L	3.22	3.6	Monthly Ave	4	914226
125	11-Oct-11	DCBM	µg/L	1.12	5.9	Daily Max	2	914232
126	11-Oct-11	Zinc	µg/L	60	110	Daily Max	2	914234
127	31-Oct-11	DCBM	µg/L	0.56	5.9	Monthly Ave	2	914233
128	31-Oct-11	Zinc	µg/L	30	110	Monthly Ave	2	914236
Time Schedule Order R5-2011-0909 adopted 3 November 2011								
129	30-Nov-11	Zinc	µg/L	30	130*	Monthly Ave	2	917453
130	31-Dec-11	Zinc	µg/L	30	130*	Monthly Ave	2	917844
131	10-Jan-12	Cyanide	µg/L	8.54	13*	Daily Max	2	925205
132	31-Jan-12	Cyanide	µg/L	4.26	13*	Monthly Ave	2	925206

	Date	Parameter	Units	Limit	Measured	Period Type	Remarks	CIWQS
133	29-Feb-12	Cyanide	µg/L	4.26	7.7*	Monthly Ave	2	921637
134	29-Feb-12	Zinc	µg/L	30	140*	Monthly Ave	2	921638
135	31-Mar-12	Cyanide	µg/L	4.26	6.7*	Monthly Ave	2	924344
136	30-Apr-12	Cyanide	µg/L	4.26	7.2*	Monthly Ave	2	926312
137	31-May-12	Cyanide	µg/L	4.26	6.6*	Monthly Ave	2	928644

* - Measured concentration exceeded the TSO effluent limitation; therefore, the WDRs effluent violation is subject to MMPs.

DCBM: dichlorobromomethane

Remarks:

1. Serious Violation: For Group I pollutants that exceed the effluent limitation by 40 percent or more.
2. Serious Violation: For Group II pollutants that exceed the effluent limitation by 20 percent or more.
3. Non-serious violation falls within the first three violations in a six-month period, thus is exempt.
4. Non-serious violation subject to mandatory penalties.

VIOLATIONS AS OF:	**5/31/2012**
Group I Serious Violations:	7
Group II Serious Violations:	84
Non-Serious Exempt from MMPs:	0
Non-serious Violations Subject to MMPs:	46
Total Violations Subject to MMPs:	**137**

Mandatory Minimum Penalty = (91 serious Violation + 46 Non-Serious Violations) x $3,000 = $411,000

CITY OF JACKSON CALIFORNIA

"Preserving Our Past, Enriching Our Present, Building Our Future"
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August 11, 2011

California Regional Water Quality Control Board
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670

Attention: Wendy Wyels

Regarding: City of Jackson WWTP Compliance Projects and Schedules

Per the Regional Water Board's request, the City of Jackson has prepared a suite of projects that can be implemented essentially immediately (i.e., funding is available in the wastewater fund as the projects are timed for completion in FY 2014/15, and CEQA documents and permits are not needed), that are designed to improve compliance with effluent limitations on nitrate (NO_3) ammonia (NH_3), turbidity (Turb), coliform (Coli), dichlorobromomethane (DCBM), cyanide (CN), aluminum (Al), copper (Cu), and zinc (Zn). These Project Elements are presented in Attachment A, along with estimated costs and a breakdown of how we have assigned those costs to each of the specific areas where compliance improvements are needed. As presented in Attachment A, the Project Elements cover general types of improvements: Secondary Process Improvements, Filter Improvements, Disinfection System Improvements, and Field Studies Facilitating Compliance.

Secondary Process Improvements. The core of the City's propused compliance project is the Secondary Process Improvements Project. This is because if the current 25-year old secondary treatment process is improved to align with more contemporary processes designed to address contemporary effluent limitations, then improvements in effluent concentrations for all of the aforementioned constituents of concern will be achieved:

- NO_3 and NH_3. When treating wastewaters of high Sierra surface water origins, it has been demonstrated time and time again (Auburn, Nevada City, Grass Valley, Colfax, etc.) that the pH must be stabilized to allow the autotrophic nitrifying bacteria to co-exist with the more robust heterotrophic denitrifying bacteria in a simultaneous nitrification/denitrification process. Wastewater Engineering (4th Edition, 2003, p.615 and 623) suggests a process pH of 7.0 to 7.2 to maintain a simultaneous nitrification/denitrification process. As will be discussed under "Metals" the upper 7.2 value is the target of the City's Secondary Process Improvement project.

DO must also be monitored and controlled very carefully to achieve simultaneous nitrification/ denitrification because nitrifiers are strict aerobes and denitrification occurs only under anoxic to anaerobic conditions. Thus, a careful and "real-time" control on DO levels in the activated sludge process is necessary to maintain barely aerobic conditions in the bulk fluid of the wastewater (allowing nitrifiers to metabolize ammonia) while concurrently fostering anoxic conditions in micro-sites within the activated sludge microbial particles (allowing denitrifiers in the particles to metabolize nitrate). Wastewater Engineering (4^{th} Edition, 2003, p.615 and 623) suggests an oxidation DO concentration less than about 0.5 mg/L if sludge ages and hydraulic residence times are maximized to foster nitrifier activity under such hostile environmental conditions.

Turbidity and Coliform. If the secondary treatment process is not stable biologically because of pH loss, diurnal swings in DO concentrations, and nitrification occurring to varying extents, then compliance with turbidity and coliform limitations is difficult, even with effluent filters. Unstable biological processes have poorly settling sludge which escapes the secondary clarification process and can easily overwhelm the solids removal capacity of effluent filters, particularly effluent filters that do not have the benefit of a functional coagulation process, such as is the case with the City's system. This results in turbidity violations as well as coliform violations stemming from the difficulty of disinfecting effluent containing particulates, i.e., turbidity. Additionally, unstable nitrification/denitrification processes produce NO_2 (nitrite) from time-to-time which has a very high chlorine demand (4 parts chlorine for every part of N in the NO_2 form, see Wastewater Engineering, 4^{th} Edition, 2003, p.615). When NO_2 may be in the secondary process effluent, chlorination is unreliable (i.e., coliform violations will occur) unless excessive chlorination doses are used (which cause DCBM and CN violations).

DCBM and CN. As noted above, if the nitrification/denitrification process can be stabilized with real-time pH and DO monitoring and control features, then effluent turbidity and the potential for NO_2 production by the treatment process are reduced. This reduces the need for excessive chlorination, and thereby reduces the potential formation of DCBM and CN because DCBM and CN formation are both a direct function of chlorine dose and the amount of organics (particulate or dissolved) present in the effluent.

Metals. In "The Fate of Metals in Wastewater Treated by the Activated Sludge Process and Membrane Bioreactors: A Brief Review" (Journal of Environmental Monitoring, 12 (1), January 2010), Santos and Judd report that "the only consistent trend in metals removal is that it is most effectively achieved through effluent solids separation". In "Study of Various Parameters in the Biosorption of Heavy Metals on Activated Sludge" (World Applied Science Journal 5, 2009, pp.32-40), Ajay Kumar et al report: "activated sludge presents a negative net charge at surface level which facilitates its binding with positive cations. The metals are in competition with the

protons in the solution at low pH". They go on to show that in general metals adsorption to activated sludge increases materially as pH concentrations increase above 7.0.

In these contexts, the City's metals compliance plan is in complete agreement with and complementary to the NO_3 and NH_3 compliance plan: Increase the activated sludge process pH reliably to about 7.2 via an automated lime addition to maximize both the nitrification system denitrification process and metals adsorption to the activated sludge particles . The metals-laden activated sludge particles from a stable process will experience better effluent solids separation in the secondary clarification process, as well as in the more lightly loaded effluent filters with the benefit of a functional coagulation system. As will be discussed, the City is also proposing to add a functional coagulation system in front of the existing effluent filters to further enhance effluent solids separation, and therefore effluent metals removals.

As to the City's expectations with these improvements, Santos and Judd report a metals removal range for activated sludge of 51 to 87% and for MBR (membrane filtered activated sludge) of 64 to 92%. Between stabilizing the treatment process, increasing the process pH to 7.2, and enhancing effluent filtration, the City expects to improve its metals removal percentages within these reported ranges. The biochemistry and adsorption kinetics are sufficiently complex that the degree of success with these measures with specific regards to metals removal will have to be determined and optimized under field conditions, hopefully with protection under an appropriate CDO or TSO adopted by the Regional Water Board.

Allocation of Costs to Specific Contaminants. As noted, these important upgrades to the existing secondary treatment process are of general benefit to all of the constituents of concern. There is no known credible way to scientifically apportion, say the cost of pH control, to nitrogen compounds versus metals removal versus general effluent quality improvements that reduce turbidity, coliform, DCBM, and CN violations. As such, the total Secondary Process Improvements cost was split equally among nine constituents of concern. Thus 2/9ths of the total cost were assigned to reducing NO_3 and NH_3 violations, 2/9ths were assigned to reducing Turbidity and Coliform violations, 2/9ths were assigned to redueing DCBM and CN violations, and 3/9ths were assigned to reducing Cu, Zn, and Al violations.

Filter Improvements. This project consists of two distinct components. The first is the replacement of the old filter media with new media meeting the original design specification. The second is essentially replacing all existing 25-year old coagulation equipment with modern flow-paced equipment. Once the foregoing Secondary Process Improvements are in place and functioning, the replacement of the existing coagulation equipment with a modern system is driven primarily by the need to absolutely maximize effluent solids separation for the purpose of maximizing metals removal. As such, the total cost of these Filter Improvements is assigned to reducing Cu, Zn, and Al violations.

Disinfection System Improvements. As noted in Attachment A, these improvements consist of two specific projects:

- Moving the point of chlorination from before filtration (with the associated interference from particles and residual organics), to after filtration.
- Increasing the chlorine input mixing energy at the new post-filter chlorination point.

The benefit of moving the chlorination point from pre-filter to post-filter on reducing chlorine dose and therefore on reducing DCBM and CN formation is obvious. Accordingly the entire cost of moving the effluent chlorination point is assigned to reducing DCBM and CN violations.

It is noteworthy to comment on why pre-filter chlorination was practiced. Pre-filter chlorination helped to improve filter performance under the high loads of solids that episodically escaped the secondary clarification process because the current treatment process is relatively unstable in a simultaneous nitrification/denitrification mode of operation. With the Secondary Process Improvements, pre-filter chlorination should no longer be necessary because of reduced solids loads to the filters as discussed above.

Increasing the mixing energy at the chlorination point is a widely recognized means to increase the disinfection efficiency of a given chlorine dose, or alternatively, a means to decrease the chlorine dose to achieve a given level of effluent disinfection. The exact means of this improvement in disinfectant efficacy is not understood fully, but is believed to include:

- Forcing (by hydraulic pressure gradient) initial mix free chlorine deeply and quickly into the interiors of any residual effluent particles such that the interiors of these particles are disinfected by highly toxic free chorine rather than by any less toxic combined that may diffuse into the interiors of the particles over time.
- Disrupting (by hydraulic pressure gradient, i.e., shear) larger particles into smaller particles which are easier to disinfect.

Even with the proposed Secondary Process Improvements and Filter Improvements, there will be particles in the effluent from time to time. High mixing energy reduces the chlorine dose needed to disinfect the effluent during these eventualities. Wastewater Engineering (4th Edition, 2003, p.1244) notes:

> "The importance of initial mixing on the disinfection process cannot be overstressed. It has been shown that application of chlorine in a highly turbulent regime ($N_R \geq 10^4$) will

result in kills two orders of magnitude greater than when chlorine is added separately to a conventional rapid-mix reactor under similar conditions".

Because the objective of rapid mix for the City is reduced chlorine doses to reduce DCBM and CN formation, the total cost of rapid mix is assigned to reducing DCBM and CN violations.

Field Studies Facilitating Compliance. The City's existing WDR Order No. R5-2007-0133 requires 20:1 effluent dilution in Lake Amador by 25 October 2012 (Order III.E, page 9). This effectively limits the long-term average effluent dilution requirement in Jackson Creek (the sole major tributary to Lake Amador) to 20:1. However, on any given day, the effluent discharge to Jackson Creek may receive as little as 5:1 dilution. Under the City's plan to comply with Order III.E, the City has no plan to ever discharge to a dry streambed under Basin Plan objectives calling for avoidance of effluent-dominated stream conditions.

Considering that 1) the City has demonstrated that Jackson Creek has assimilative capacity for the constituents of concern; 2) the City is working with Amador Water Agency (the water utility) in the area of source-control efforts (particularly for metals); 3) effluent metals reduction beyond what is being proposed requires a completely new process in the form of either chemical precipitation or reverse osmosis (RO) treatment; and 4) the City is an economically disadvantaged community, the City's compliance plan includes conducting a mixing and dilution study as described in the State Implementation Policy, and as successfully completed and permitted for the City of Angels (aka, Angels Camp). The mixing zone and dilution study will address seven constituents of concern: NO_3, NH_3, DCBM, CN, Cu, Zn, and Al. As such, the cost of completing the study is divided equally among the seven constituents being studied, as shown in Attachment A. If the City can fund this important compliance project, now, the results may be available by mid 2012 for inclusion in the City's NPDES permit renewal Report of Waste Discharge. This should assist in minimizing the chance of a 2012/13 adopted Order being reopened in 2013/14.

The foregoing represents the City's proposed compliance projects to reduce violations of effluent limitations on NO_3, NH_3, Turbidity, Coliform, DCBM, CN, AL, Cu, and Zn. The City has funds on-hand to implement all of these proposed compliance projects. A schedule for implementing these proposed projects is provided as Attachment B.

The total cost estimate of $464,000 is believed to be sufficient to cover the mandatory minimum penalties that may accumulate prior to the implementation of a Time Schedule Order going back to the date of the City's previous Administrative Civil Liability Order No. R5-2010-0531. The projects have been planned to ensure that the City will have sufficient time to complete the projects within the given time periods and equally importantly, to fund the projects with operating and capital outlay funds to be programmed in the City's wastewater fund budget.

If you need any further information, please feel free to call me immediately. City staff and our consultants are at your service in developing equitable solutions to these complex problems. Thank you very much for facilitating the meeting to get this important matter of business for the City back on track.

Sincerely,

City of Jackson

Michael Daly, City Manager

/attachments

cc: Jackson City Council
Eric Neuschmid, Chief Wastewater Treatment Plant Operator
Harold Welborn, Stantec
Diana Messina, RWQCB

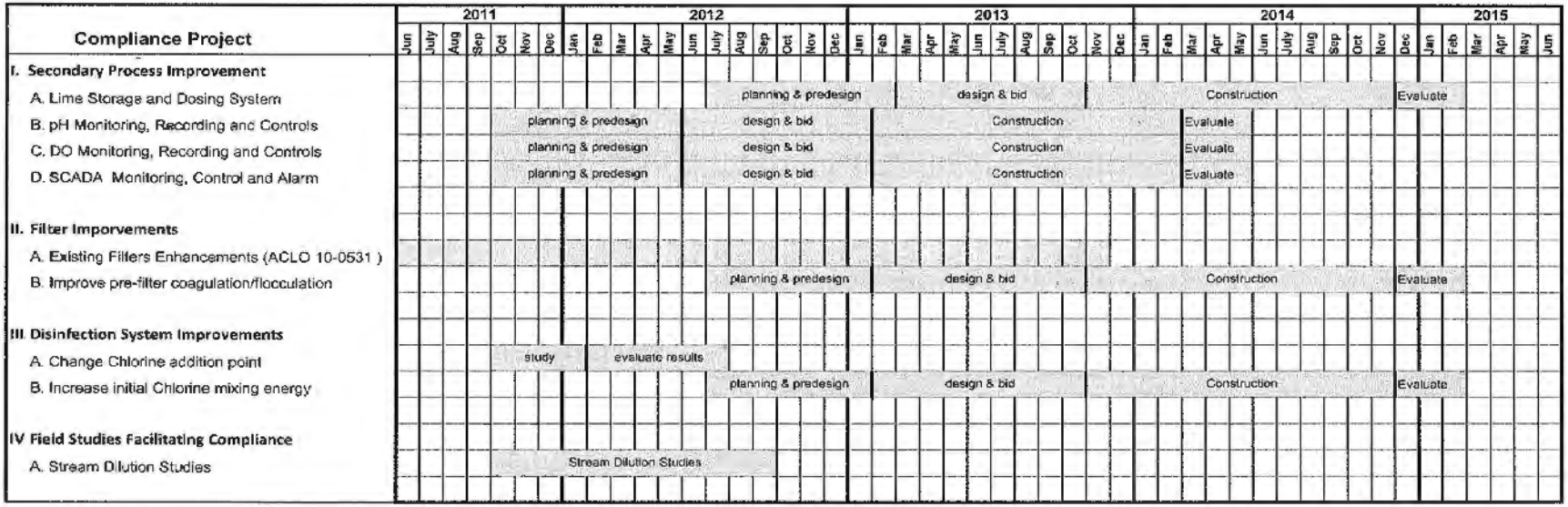
ATTACHMENT A: CITY OF JACKSON - WASTEWATER COMPLIANCE PROJECTS

Project Elements	Costs x $1,000 Assigned To Compliance Issue Targeted				
	NO3, NH3	Turb, Coli	DCBM, CN	Cu, Zn, Al	Totals
I. Secondary Process Improvement					
A. Lime Storage and Dosing System to provide stable pH in the simultaneous Nitrification/Denitrification Activated Sludge Process	22	22	22	30	96
B. pH Monitoring, Recording and Controls on Lime Dosing System	9	9	9	15	42
C. DO Monitoring, Recording and Controls to avoid over or under-aerating	9	9	9	15	42
D. SCADA Monitoring for improved Nil/Denit Activated Sludge Process Control	16	16	16	24	72
II. Filter Imporvements					
A. Existing Filters Enhancements (ACL Order -0531 Project for $135,000), ongoing					
C. Improve pre-filter coagulation/flocculation				30	30
III. Disinfection System Improvements					
A. Change Chlorine addition point			30		30
B. Increase initial Chlorine mixing energy			72		72
IV. Field Studies Facilitating Compliance					
A. Stream Dilution Studies	18	18	18	26	80
TOTAL ESTIMATED COSTS, X $1,000	74	74	176	140	464

Job No. 184030218

August 11, 2011

ATTACHMENT B
City of Jackson NPDES Permit (WDR R5-2007-0133)
Compliance Projects Schedules



Job No. 184030218

August 11, 2011