EOSR - Attachment 1

July 3, 2012

City of Ukiah

Ms. Cathleen Goodwin
State of California Regional Water Quality Control Board
North Coast Region
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403

Re: Request for One-Time Emergency Discharge to Land from the Ukiah Wastewater Treatment Plant

Dear Ms. Goodwin:

As you are aware, the City of Ukiah (City) operates a tertiary wastewater treatment facility that discharges to the Russian River during winter months and to percolation ponds during summer months. There are three existing percolation ponds with a total capacity of 110 million gallons: Ponds 1 and 2 each have a capacity of 27.5 million gallons and Pond 3 has a capacity of 55 million gallons.

As described in its Report of Waste Discharge for the renewal of its NPDES permit, the City has recently experienced difficulties with disposal through the percolation ponds because it has been unable to empty the ponds at the end of the summer for maintenance. This has resulted in a decrease in percolation rate. This year, with the late spring rains, this situation has become urgent and the City is in danger of overtopping the ponds, which would result in a discharge of treated effluent to the Russian River during the discharge prohibition season.

The City owns 40 acres directly south of the wastewater treatment plant that is currently fallow pasture land, illustrated in Attachment 1. The City is requesting to be allowed to temporarily dispose of tertiary treated effluent on this property through irrigation at agronomic rates beginning as soon a temporary infrastructure is in place and lasting only until October 15, 2012 when discharges to the Russian River commence.. The City believes this practice will be safe, effective and because of the urgent nature of the situation, provides the best strategy for protecting water quality.

This letter and its attachments are intended to demonstrate the urgent, safe and effective nature of this request. The City's Plan of Disposal, which was submitted with its Report of Waste Discharge provides further evidence of the efficacy of land disposal for the City and describes the City plans to move to a long-term compliance strategy that involves land disposal.

300 SEMINARY AVENUE UKIAH, CA 95482-5400
Phone# 707/463-6200 Fax# 707/463-6204 Web Address: www.cityofukiah.com

Urgency

The City currently has less than 1/4 feet of freeboard on its storage ponds. Pond levels have been rising because influent rates are exceeding the percolation capacity of the ponds. Unless the City can empty and maintain the percolation ponds, this situation will continue to get worse. Current influent rates are approximately 2.5 million gallons per day.

Safety

The City operates a tertiary treatment plant with a design capacity of 7.0 million gallons per day. It has adequate capacity to treat the entire influent stream to tertiary levels if necessary. Attachment 2 demonstrates that the City's treatment facility complies with the redundancy and reliability requirements established by Title 22 for reclamation facilities. Irrigation of fodder crops with disinfected tertiary effluent is an allowable reclamation use under Title 22. The City's effluent is appropriate for this proposed practice.

The City is proposing to irrigate at agronomic rates. Irrigation flows can be metered and tracked through the influent flow meter to the AWT (filter) facilities. The City will operate in accordance with the Irrigation Management Plan, included as Attachment 3. The City will maintain 100-foot setbacks from all waterways and will report monthly the acreage, quantity of water used as well as copies of daily inspection reports.

Effectiveness

As part of its Plan of Disposal, the City performed a number of water balances to model the behavior of its combined disposal system under a variety of operating conditions. One of these water balances included:

- Russian River Discharge at 1% dilution
- Percolation at the ponds current (impaired) percolation rates
- Irrigation of the 40 acres of City owned property

This water balance scenario, which included operating data from the past five years, indicated that the City would be able to substantially reduce the volume stored in the percolation ponds if irrigation was also used. This water balance scenario, included as Attachment 4, illustrates that the proposed land disposal will provide effective relief for the percolation ponds and could result in the City's ability to empty and maintain one or more of the ponds before next winter.

The City appreciates your consideration of this request and willingness to assist the City in making these temporary modifications to maximize protection of water quality.

Sincerely,

Tim Eriksen, Director of Public Works

Attachment 1 – Temporary Emergency Use Area

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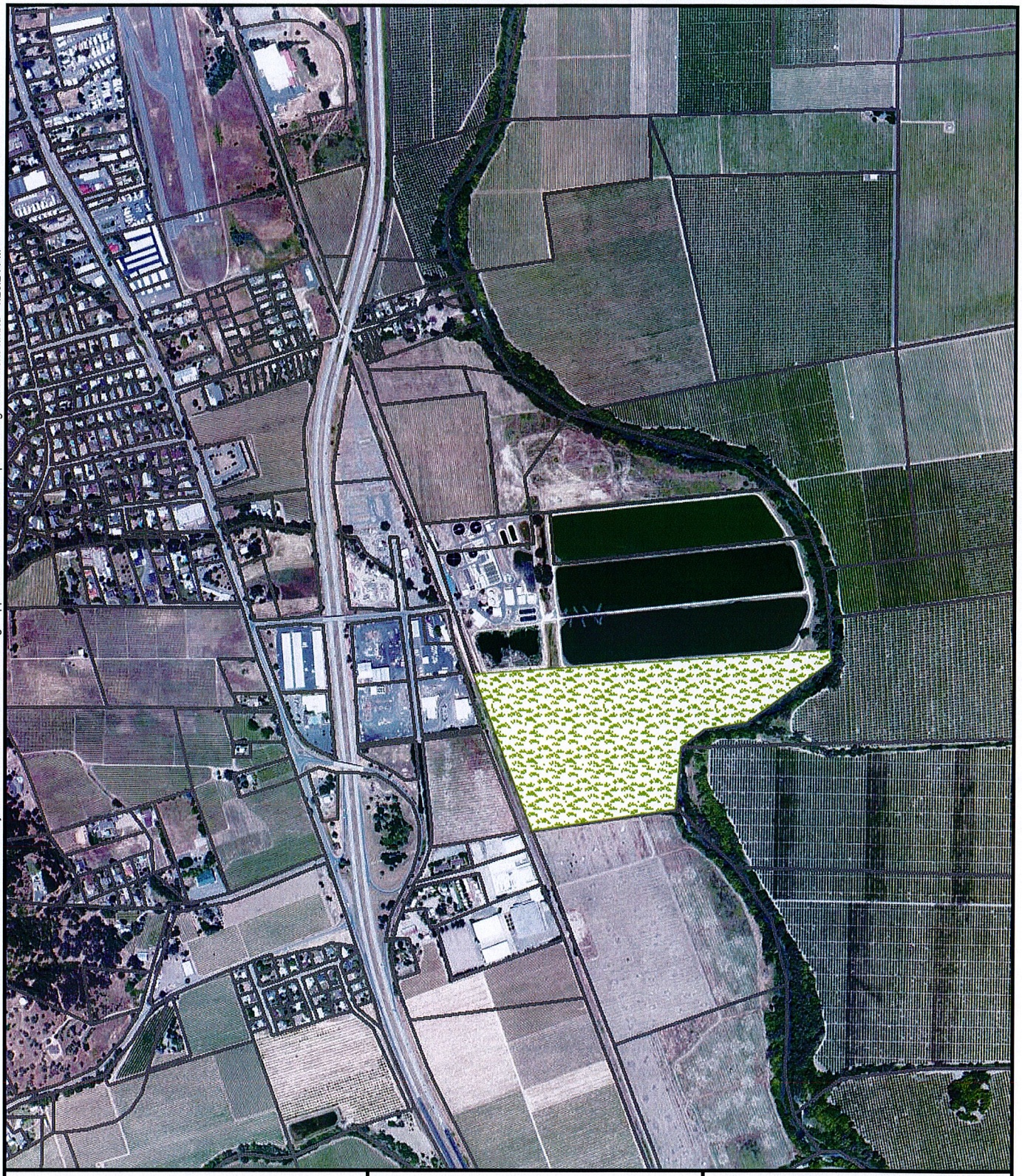

Legend

Proposed Disposal Area

0 500 1,000 2,000 ft

1 inch = 1,000 feet printed at 8.5x11

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Sources: USDA: Aerial NAIP 2009 1 meter resolution; Humboldt County GIS: Parcels, Blueline Streams.

Cartography	Date	Project #
CAD	7/2/2012	0250211003

Attachment 1
Proposed Disposal Area

City of Ukiah
Plan of Disposal

GHD

www.ghd.com

Attachment 2 – Title 22 Reliability Matrix for the Ukiah WWTP

City of Ukiah – AWT System Reliability Plan for up to 2 MGD of Recycled Water Production

System Component	Capacity	Number	Reliability Strategy
AWT Feed Pumps	4 MGD	3	2 redundant units
Influent Turbidimeter	NA	1	Alarm for high turbidity reads to SCADA and auto-dialer. Spare turbidimeter on site for failure.
Chemical Feed Pumps	NA	1 for ferric acid 2 for polymer	Alarm for low tank level reads to SCADA and auto-dialer. Spare feed pump on site for failure. Alarmed for pump failure, low dilution water
Filters	2 MGD	4	3 redundant units
Effluent Turbidimeter	NA	1	Alarm for high turbidity reads to SCADA and on call auto-dialer. Alarm level set well below permit requirements. Spare turbidimeter on site for failure.
Chlorine Contact Basin InfluentResidual Analyzer – A3	NA	1	Alarmed for high/low level. Controls dosing to AWT Contact Basins. Spare analyzer on site for failure.
Chlorine Dosing Pumps	NA	1	Alarm for low tank level reads to SCADA and auto-dialer. Spare feed pump on site for failure. Alarmed for failure
Chlorine Contact Basin	250,000 gallons	2	1 redundant unit
Chlorine Contact Basin Effluent Residual Analyzer – A4	NA	1	Alarm for low residual reads to SCADA and auto-dialer. Spare analyzer on site for failure. Read only Device. When *discharging to River, receives dechlorinated sample, with hourly automated switch to non-dechlorinated effluent as analyzer reliability check and record of residual following chlorine contact.*
Chlorine Storage	12,000 gallons	1	Alarm for low tank level reads to SCADA and auto-dialer.
Sample Pumps 1) underground chlorine contactor inlet P60211 2) underground chlorine contactor outlet (also feeds AWT influent turbidimeter) P60213 3) Chlorine Contact Basin influent for influent chlorine residual analyzer P60215 4) Chlorine Contact Basin effluent for CL2 effluent chlorine anlayzer 5) Post dechlorination to verify absence of chlorine residual P60411	NA	5	2 spare sample pumps on site. *Samples are taken by both Sample Pump 4 and Sample Pump 5when discharging to the Russian River.* *Samples are taken by only Sample Pump 4 when discharging to the percolation ponds.*

Attachment 3 – Use Area Management Plan

City of Ukiah
Temporary Emergency Irrigation - Use Area Management Plan

The Use Area Management Plan is intended to provide for protection of public health and water resources when the City of Ukiah (City) is operating in temporary, emergency, irrigation mode.

Potable Water System Protection
The temporary irrigation area will be disconnected from the potable water system. There are no potable water wells within 100 feet of the temporary irrigation area.

Environmental Water Quality Protection
When using the temporary emergency irrigation area the City will:

- Maintain 100-foot setbacks from the Russian River and bordering creeks
- Inspect the irrigation system and repair breaks prior to beginning daily irrigation
- Routinely adjust sprinkler heads to achieve 80% coverage
- Routinely inspect for and remove obstructions that would interfere with free rotation and smooth operation of any sprinkler
- Apply water at agronomic rates based on general guidance provided in Table 2 below
- Refrain from using fertilizer when recycled water is in use
- Inspect the site daily for evidence of runoff
- Cease irrigation if runoff is observed, until it is corrected
- Cease irrigation if windblown spray is being carried off the site, until winds subside
- Limit irrigation to the hours of 7:30 am until 9:00 pm with general supervision by plant staff during normal business hours and with an on-call operator available to return for evening shutdown.
-

Worker Protection
Workers shall be informed that recycled water is being used for irrigation and reminded of plant protocol for managing tertiary treated effluent. Workers shall be trained in the contents of this use area management plan.

Public Notice
The City will be irrigating with recycled water that meets Title 22 tertiary standards for unrestricted use. The site is relatively remote, partially fenced and is unlikely to be accessed by the public. The City will place warning signs with the label "Recycled Water – Do Not Drink" in English and Spanish at 500-foot intervals along the property lines. Irrigation will take place generally between the hours of 7:30 am to 9:00 pm, weather permitting. The wastewater treatment plant is staffed from the hours of 7:30 am until approximately 4:00 pm, which allows operations staff to monitor access to the site, during much of the irrigation period, and provide further information to the public. When weather conditions permit irrigation in the late afternoon and early evening, the on-call plant operator will return to shut down the system.

Emergency Procedures
City will stop irrigating in the event of an emergency (fire, earthquake, power loss). City will notify regional board within 24 hours of any event that results in an unplanned shutdown of the irrigation operation.

Agronomic Application
The City's Urban Water Management Plan provides the following information on rainfall and ETo in the City.

Table 1 – Climatic Factors Influencing Irrigation

	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
ETo (in)	0.98	1.58	3.02	4.64	5.98	7.00	7.98	7.03	5.18	3.36	1.42	0.92
Rainfall (in)	5.38	5.70	3.72	2.97	0.83	0.30	0.02	0.00	0.12	1.14	3.97	11.08

The United States Environmental Protection Agency's, (USEPA's) Water Sense Water Budget Tool approach was used to estimate the agronomic application rate. This tool uses the following formula to estimate agronomic application rates:

$$LWRh = RTM \times ((ETo \times KL) - Re)) \times A/CU$$

Where:
LWRh = Landscape Water Requirement
RTM = Runtime Multiplier = 1/ Irrigation Efficiency and Irrigation Efficiency = 0.7
ETo = ETo in the area
KL = 0.85
Re = 50% of Rainfall
A = Area in square feet
CU = 1.6043 to convert to gallons

Based on this formula, the agronomic application rate for fodder crops is presented in Table 2. Because this information is based on average rates it provides guidance for the City but is not considered a prescriptive number.

Table 2 Agronomic Rate Estimates

Month	RTM	KL	Eto	Rainfall	Landscape Water Requirement		
					gallons/ square foot	gallons/acre	Million Gallons/month over site
Jan	1.43	0.85	0.98	5.38	-0.93	-	-
Feb	1.43	0.85	1.58	5.7	-0.58	-	-
Mar	1.43	0.85	3.02	3.72	1.13	49,167.2	1.97
April	1.43	0.85	4.64	2.97	2.59	112,814.5	4.51
May	1.43	0.85	5.98	0.83	4.27	186,091.6	7.44
June	1.43	0.85	7.00	0.30	5.21	226,950.2	9.08
July	1.43	0.85	7.98	0.02	6.04	263,094.7	10.52
Aug	1.43	0.85	7.03	0.00	5.33	232,013.1	9.28
Sept	1.43	0.85	5.18	0.12	3.89	169,327.9	6.77
Oct	1.43	0.85	3.36	1.14	2.19	95,414.4	3.82
Nov	1.43	0.85	1.42	3.97	-0.16	-	-
Dec	1.43	0.85	0.92	11.08	-2.76	-	-

Attachment 4 – Summary Water Balance for Irrigation on City-owned Property

WATER BALANCE - EXISTING CONDITIONS AND PERCOLATION (0.5 MGD/POND), CITY IRRIGATION, 1% DISCHARGE LIMIT

Assumptions

Allowable river discharge (%)	1%	City Irrigation Area (ac)	40.00	Irrigation Efficiency (%)	80%
AWT Max Output (MGD)	7.0	RWMP Scenario	None		
Percolation Rate (MGD)	1.50				

DATE	INFLOWS			OUTFLOWS						Max Storage Volume (MG)
	Total Wastewater Inflow (MGD) [1]	Precipitation Inflow to the Ponds (MG) [3]	Total Inflows (MGD) [1]+[3]	Allowable AWT Output (MGD) [7]	Gross Irrigation Potential for City (MG) [13]	Gross Irrigation Potential for reuse (MG) [14]	Evaporation from Ponds (MG) [16]	Average Percolation from Ponds (MG) [17]	Total outflow (MG) [7]+[13]+[14]+[16]+[17]	
Jan-06	263.66	10.16	273.82	216.04	0.82	0.00	0.72	45.00	262.58	11.24
Feb-06	169.67	5.81	175.48	140.26	2.05	0.00	1.60	32.77	176.68	16.60
Mar-06	255.95	13.16	269.11	216.59	1.59	0.00	0.51	46.50	265.19	18.74
Apr-06	232.32	8.10	240.42	199.63	4.12	0.00	2.20	45.00	250.95	18.03
May-06	120.34	0.47	120.81	45.35	9.38	0.00	5.96	34.76	95.44	34.43
Jun-06	77.44	0.01	77.45	0.00	11.13	0.00	7.25	45.00	63.38	48.50
Jul-06	60.33	0.00	60.33	0.00	11.20	0.00	9.46	46.50	67.16	48.31
Aug-06	58.27	0.00	58.27	0.00	9.45	0.00	8.12	46.50	64.07	41.48
Sep-06	56.05	0.00	56.05	0.00	7.62	0.00	6.58	45.00	59.20	35.63
Oct-06	67.15	0.24	67.39	34.39	5.02	0.00	3.69	46.50	89.60	31.92
Nov-06	67.78	5.45	73.23	39.72	1.80	0.00	1.25	40.15	82.92	10.26
Dec-06	101.10	7.53	108.63	92.89	0.74	0.00	1.01	28.20	122.84	6.87
Jan-07	104.60	0.62	105.22	60.25	1.46	0.00	1.71	38.87	102.29	4.15
Feb-07	153.85	10.16	164.01	123.10	1.54	0.00	1.00	42.00	167.64	24.88
Mar-07	183.21	0.46	183.66	86.52	4.77	0.00	3.24	39.40	133.93	53.67
Apr-07	86.80	2.75	89.55	50.50	3.86	0.00	3.73	45.00	103.10	53.14
May-07	69.20	0.89	70.09	17.11	7.82	0.00	6.47	46.50	77.91	39.91
Jun-07	55.75	0.00	55.75	0.00	10.28	0.00	7.91	45.00	63.19	32.06
Jul-07	52.22	0.19	52.41	0.00	10.82	0.00	8.61	46.50	65.92	24.39
Aug-07	55.20	0.00	55.20	0.00	9.25	0.00	8.44	46.50	64.19	11.00
Sep-07	76.40	0.16	76.56	0.00	7.09	0.00	5.91	45.00	58.00	20.92
Oct-07	82.30	2.08	84.38	32.54	4.66	0.00	2.45	46.50	86.14	20.98
Nov-07	54.60	1.07	55.67	31.84	1.49	0.00	1.37	39.50	74.20	18.29
Dec-07	79.20	9.17	88.37	51.42	0.72	0.00	0.73	37.91	90.78	5.78
Jan-08	197.20	14.46	211.66	144.48	0.74	0.00	0.70	46.50	192.42	31.20
Feb-08	199.70	5.08	204.78	161.14	1.69	0.00	1.49	43.18	207.50	23.72
Mar-08	131.70	1.43	133.13	65.29	5.01	0.00	2.77	46.50	119.58	32.10
Apr-08	78.50	0.16	78.66	43.50	6.69	0.00	4.65	45.00	99.85	31.33
May-08	62.70	0.00	62.70	17.46	8.92	0.00	6.51	38.56	71.45	9.58
Jun-08	52.50	0.00	52.50	0.00	10.22	0.00	8.51	34.70	53.43	1.86

DATE	INFLOWS			OUTFLOWS						Max Storage Volume (MG)
	Total Wastewater Inflow (MGD) [1]	Precipitation Inflow to the Ponds (MG) [3]	Total Inflows (MGD) [1]+[3]	Allowable AWT Output (MGD) [7]	Gross Irrigation Potential for City (MG) [13]	Gross Irrigation Potential for reuse (MG) [14]	Evaporation from Ponds (MG) [16]	Average Percolation from Ponds (MG) [17]	Total outflow (MG) [7]+[13]+[14] +[16]+[17]	
Jul-08	55.10	0.07	55.17	0.00	10.62	0.00	6.54	38.02	55.18	1.28
Aug-08	54.60	0.05	54.65	0.00	9.55	0.00	6.91	38.12	54.57	1.34
Sep-08	59.70	0.23	59.93	0.00	7.37	0.00	5.67	44.80	57.84	3.39
Oct-08	69.40	1.08	70.48	25.68	3.83	0.00	3.76	38.75	72.01	2.86
Nov-08	69.90	9.00	78.90	19.80	1.61	0.00	1.68	45.00	68.09	12.66
Dec-08	43.80	3.78	47.58	39.56	0.99	0.00	1.22	26.63	68.40	11.83
Jan-09	32.79	0.22	33.01	34.68	1.43	0.00	1.37	0.50	37.98	0.06
Feb-09	80.25	9.16	89.41	94.74	0.89	0.00	0.90	24.22	120.76	12.19
Mar-09	113.15	3.50	116.65	83.82	3.66	0.00	2.89	33.60	123.96	6.92
Apr-09	56.63	0.55	57.18	28.74	5.72	0.00	4.19	24.61	63.26	5.76
May-09	69.13	3.33	72.46	18.72	6.50	0.00	5.05	38.18	68.44	6.38
Jun-09	34.36	0.00	34.36	0.00	8.50	0.00	5.41	26.24	40.15	5.59
Jul-09	51.89	0.00	51.89	0.00	11.19	0.00	8.27	31.94	51.40	1.15
Aug-09	60.32	0.00	60.32	0.00	9.40	0.00	7.66	42.92	59.97	1.51
Sep-09	61.58	0.01	61.59	0.00	6.92	0.00	6.44	44.91	58.28	4.73
Oct-09	81.44	2.66	84.10	29.61	4.29	0.00	3.32	46.50	83.72	5.52
Nov-09	87.30	2.18	89.48	30.18	1.86	0.00	1.56	45.00	78.60	15.98
Dec-09	82.07	5.85	87.92	37.55	0.71	0.00	0.74	46.50	85.49	18.64
Jan-10	167.16	15.20	182.36	121.01	0.71	0.00	1.12	46.50	169.34	57.92
Feb-10	159.76	4.64	164.40	131.61	2.13	0.00	1.69	42.00	177.42	37.34
Mar-10	163.08	4.44	167.52	131.99	2.14	0.00	2.54	39.63	176.30	18.25
Apr-10	181.32	7.82	189.14	174.19	3.05	0.00	3.01	30.01	210.27	11.49
May-10	123.00	2.78	125.78	41.40	7.33	0.00	4.81	34.83	88.37	39.94
Jun-10	78.40	0.18	78.58	0.00	9.67	0.00	6.62	45.00	61.28	57.24
Jul-10	63.02	0.00	63.02	0.00	11.30	0.00	7.55	46.50	65.35	57.18
Aug-10	62.43	0.00	62.43	0.00	9.46	0.00	6.88	46.50	62.84	54.87
Sep-10	59.75	0.15	59.90	0.00	7.32	0.00	5.19	45.00	57.50	56.89
Oct-10	92.05	6.06	98.11	104.09	3.93	0.00	2.97	45.16	156.15	57.50
Nov-10	109.15	4.61	113.76	97.66	1.30	0.00	1.42	21.17	121.54	4.23
Dec-10	196.73	10.98	207.71	193.15	0.88	0.00	0.75	19.72	214.50	8.46
Jan-11	164.07	1.97	166.04	150.30	1.95	0.00	1.22	19.14	172.62	7.80
Feb-11	148.66	3.91	152.57	126.38	1.71	0.00	1.59	35.11	164.79	22.20
Mar-11	249.30	13.39	262.69	203.16	3.05	0.00	1.81	43.92	251.93	14.46
Apr-11	153.23	1.61	154.84	97.67	5.92	0.00	3.69	38.81	146.08	20.51
							MAX STORAGE FOR WATER BALANCE			57.92
							MAX STORAGE OCCURS IN			Jan-10