

May 31, 2007

File No.: 53-042-002-003

Mr. David Curran, P.Eng.
Northeast Boreal Region
Alberta Environment
111 Twin Atria Building
4999 – 98 Avenue
Edmonton, Alberta T6B 2X3

Dear Mr. Curran:

Re: 2006 Gold Bar Wastewater Treatment Plant Annual Report

The 2006 Gold Bar Wastewater Treatment Plant Annual Report provides a summary of the plant performance as required under sections 4.1.4 and 6.1.4 of the Approval to Operate No. 639-02-00. All analytical data included in the report were developed by the Gold Bar Wastewater Laboratory, which has been accredited for specific tests listed in the scope of accreditation approved by Canadian Association for Environmental Analytical Laboratories (CAEAL). Chronic and acute toxicity bioassays were conducted by contract laboratories that were accredited for these tests. The report consists of the following tables:

- Table 1 - "2006 Plant Performance Summary" provides a summary of the Gold Bar Wastewater Treatment Plant performance as required under section 6.1.4 (a) and (b) of the Approval. A total of 93,446 megalitres (ML) of wastewater came to the Gold Bar Wastewater Treatment Plant and 99.8% of the flow received primary treatment during 2006. Secondary/tertiary treatment was provided to 90,482 ML (96.8%) of the flow.

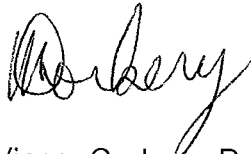
All analytical data in the table was developed on 24-hour composite samples collected by autosamplers at the sampling locations specified in Table 6.1 of the Approval. The 24-hour composite samples were retained in locked refrigerators until the Laboratory staff removed them the following morning. The discrete samples for *E. coli* determinations were collected randomly every day. All conditions and limits specified in the Table 5-1 of the Approval were met during 2006.

- Table 2 – "Environmental Release Reports & Administrative Notifications Made to Alberta Environment and Environment Canada", followed by "2006 Wastewater Treatment Annual Operational Summary", as required under section 6.1.4 (c), (d), and (e).

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- Table 3 - "Gold Bar Wastewater Treatment Plant Chemical Use by Plant Operations" summarizes, as required under section 6.1.4 (g), all chemicals used in 2006 to operate the Wastewater Treatment Plant. The table includes the name and monthly quantity of chemicals added to the wastewater in the wastewater treatment process.
- Table 4 - "2006 Effluent Toxicity" summarizes chronic and acute toxicity testing as outlined in the Approval to Operate, section 6.1.4 (f) and 4.1.4 (d). Both acute and chronic toxicity testing were carried out by contract laboratories in accordance with the Environment Canada Biological Tests Methods (Environment Canada 1990 and 1992). Three grab samples of the plant's treated effluent were collected in 2006 for the acute and chronic toxicity testing. The acute testing included 96-hour rainbow trout static toxicity, 48-hour static toxicity using *Daphnia magna* and 15-minute Microtox tests using luminescence bacteria. Seven-day *Ceriodaphnia dubia*, fathead minnows survival and reproductive impairment tests, and 76-hour *Selenastrum* growth inhibition tests were used to determine chronic toxicity. All three samples appeared to be nontoxic to the organisms used for the acute and chronic testing.
- Table 5 - "2006 Summary of Gold Bar Wastewater Laboratory Proficiency Testing" provides a summary of quality assurance data as required in the section 6.1.4 (f) and 4.1.4 (h). All data were developed in the Gold Bar Wastewater Laboratory from analyzing proficiency testing samples for BOD, TSS, NH₃-N, TP and *E. coli*. Sixteen (16) sets of the proficiency evaluation samples provided by CAEAL, Alberta Research Council (ARC), and Clinical Microbiology Proficiency Testing (CMPT) were analyzed in 2006 and spread out throughout the year. The sample suppliers used the 2006 data developed by all participating laboratories to statistically evaluate each laboratory's performance and to develop "z-score" for each sample. The z-score equal or greater than 3.00 is considered a reject. The data in the table indicates that the instruments and the methodology used by the Laboratory were under control during the time of testing.

Yours truly,



Vince, Corkery, P. Eng.
Director, Wastewater Treatment

Enclosures

- c. J. Hodgson, Ph.D., P. Eng. Manager, Drainage Branch
C. Ward, P. Eng. Director, Drainage Planning
W. Brockbank, P. Eng., Environmental Manager, Drainage Operations

TABLE 1: 2006 PLANT PERFORMANCE SUMMARY

MONTH	FLOW (ML)						BOD/CBOD (mg/L)			TSS (mg/L)			TP (mg/L)		NH3-N (mg/L)		E. coli		TOTAL DIGESTED SLUDGE VOL (ML)			
	PBP	Raw	SBP	SEF	MPW		TBP	RAW	SEF	TBP	RAW	SEF	TBP	SEF	TBP	SEF	TBP	SEF		CFU/100 mL	SEF	
JAN	AVG	0.00	233.23	0.00	233.23	-	-	292	4.5	-	-	383	5.9	-	-	0.83	-	-	-	-	-	
	MIN	0.00	211.11	0.00	211.11	-	-	214	E2.6	-	-	280	3.2	-	-	0.30	-	-	-	-	4	
	MAX	0.00	295.00	0.00	295.00	-	-	360	14	-	-	596	14	-	-	2.30	-	-	-	-	-	
FEB	AVG	0.00	225.29	0.00	225.29	-	-	303	4.3	-	-	300	4.5	-	-	0.57	-	-	-	-	7	
	MIN	0.00	198.53	0.00	198.53	-	-	234	2.9	-	-	184	2.7	-	-	0.31	-	-	-	-	-	
	MAX	0.00	265.00	0.00	240.80	-	-	376	6.2	-	-	412	10	-	-	1.35	-	-	-	-	-	
MAR	AVG	0.00	246.94	5.42	241.52	-	247	286	4.5	295	351	4.6	9.37	0.78	24.1	4.14	1,800,000	3	-	-	73.3	
	MIN	0.00	202.36	6.44	202.36	-	220	212	3.0	188	256	3.2	8.46	0.40	19.9	1.12	1,800,000	3	-	-	-	
	MAX	0.00	323.84	51.04	281.30	-	322	326	6.4	436	473	8.6	10.0	1.42	31.5	6.23	1,800,000	3	-	-	-	
APR	AVG	0.00	241.94	2.49	239.45	-	225	296	4.0	244	370	4.4	11.1	0.87	32.2	7.24	1,000,000	2	-	-	74.9	
	MIN	0.00	210.62	3.47	210.62	-	E179	235	<2	163	292	2.7	9.11	0.39	23.5	1.25	1,000,000	2	-	-	-	
	MAX	0.00	280.87	24.57	277.40	-	275	378	6.0	444	540	7.7	12.2	1.89	46.7	12.50	1,000,000	2	-	-	-	
MAY	AVG	0.00	267.71	15.01	252.70	1.90	259	254	3.9	364	334	6.2	10.1	0.59	20.0	3.83	1,500,000	5	-	-	80.2	
	MIN	0.00	201.80	0.11	201.80	-	132	132	2.4	140	208	2.4	6.07	0.19	13.4	1.00	1,500,000	5	-	-	-	
	MAX	0.00	266.08	268.58	303.90	-	363	382	5.7	952	544	14	14.9	1.97	32.5	6.16	1,500,000	5	-	-	-	
JUN	AVG	4.20	281.82	17.31	264.51	2.10	182	228	2.9	217	271	3.4	6.57	0.62	17.9	0.82	1,800,000	7	-	-	81.3	
	MIN	126.04	237.30	1.25	237.30	-	122	98	2.1	114	84	2.0	4.57	0.15	10.7	0.07	1,800,000	7	-	-	-	
	MAX	126.04	424.25	153.96	313.10	-	253	305	5.3	456	448	14	8.29	1.51	34.1	2.97	1,800,000	7	-	-	-	
JUL	AVG	0.36	281.16	13.64	267.52	2.32	174	257	3.0	194	278	3.8	8.43	0.69	22.6	0.29	1,500,000	6	-	-	81.8	
	MIN	2.88	230.10	2.61	230.10	-	104	169	2.2	82.0	188	2.4	5.98	0.26	14.6	0.04	1,500,000	6	-	-	-	
	MAX	5.23	510.00	126.31	510.00	-	257	365	4.5	356	420	7.1	12.0	1.64	36.7	1.53	1,500,000	6	-	-	-	
AUG	AVG	0.00	277.20	13.97	263.23	E2.29	91	272	3.0	137	278	3.2	8.36	0.94	27.3	0.99	1,900,000	4	-	-	78.7	
	MIN	0.00	230.26	0.68	230.26	-	81	136	E2	71	200	1.5	4.53	0.15	18.2	0.04	1,900,000	4	-	-	-	
	MAX	0.00	458.99	147.49	317.20	-	E322	376	8.9	180	400	8	12.3	2.13	31.4	2.45	1,900,000	4	-	-	-	
SEP	AVG	0.00	293.66	22.33	271.32	2.07	135	235	2.3	131	259	2.5	5.08	0.32	17.2	0.47	1,100,000	2	-	-	80.3	
	MIN	0.00	235.66	5.34	235.66	-	64	86	<2	64	188	0.9	2.68	0.10	8.6	0.05	1,100,000	2	-	-	-	
	MAX	0.00	529.19	219.19	315.10	-	248	336	2.8	246	376	4.1	11.8	1.05	29.5	2.04	1,100,000	2	-	-	-	
OCT	AVG	0.00	258.97	6.82	252.16	2.35	153	273	<2.4	136	305	3.1	6.36	0.64	22.8	0.75	1,800,000	4	-	-	140	
	MIN	0.00	208.60	3.38	208.16	-	119	184	<2	84	204	2.3	4.70	0.19	15.7	0.15	1,800,000	4	-	-	-	
	MAX	0.00	310.90	46.84	284.00	-	189	376	3.4	192	440	5.6	8.07	2.60	28.0	2.48	1,800,000	4	-	-	-	
NOV	AVG	0.00	235.66	0.00	235.66	2.27	-	292	5.0	-	306	5.2	-	0.45	-	3.42	-	-	-	-	77.7	
	MIN	0.00	202.30	0.00	202.30	-	-	236	<2	-	236	2.5	-	0.23	-	1.53	-	-	-	-	-	
	MAX	0.00	258.20	0.00	258.20	-	-	507	35.0	-	364	22.7	-	1.16	-	6.95	-	-	-	-	-	
DEC	AVG	0.00	226.58	0.00	226.58	2.62	-	294	3.4	-	295	4.9	-	0.36	-	3.67	-	-	-	-	74.6	
	MIN	0.00	193.74	0.00	193.74	-	-	E240	2.2	-	220	3.2	-	0.20	-	0.91	-	-	-	-	-	
	MAX	0.00	249.70	0.00	249.70	-	-	369	4.9	-	352	10	-	0.69	-	7.04	-	-	-	-	75.8	
TOTAL		137.10	93,446	2,964	90,482																	996
2006	AVG	0.38	255.9	8.1	247.8	2.23	195	252.5	3.4	215	287	4.0	8.17	0.59	23.0	3.15	1,550,000	4	-	-	-	
2005	AVG	0.00	236.2	7.03	229.1	-	214	247.0	3.5	250	279	5.6	7.76	0.57	20.9	2.50	1,730,000	11	-	-	-	

PBP = Plant Bypass
 TBP = Total Bypass (including plant and/or secondary)
 SBP = Secondary Bypass
 SEF = Secondary Effluent
 BOD = Biological Oxygen Demand
 CBOD = Inhibited BOD
 TSS = Total Suspended Solids
 TP = Total Phosphorus
 NH3-N = Ammonia as nitrogen
 MPW = Membrane Product Water

**TABLE 2: ENVIRONMENTAL RELEASE REPORTS & ADMINISTRATIVE NOTIFICATIONS MADE TO ALBERTA
ENVIRONMENT & ENVIRONMENT CANADA
2006 ANNUAL SUMMARY**

Release Reports: 11
Administrative Notifications: 6

AE REFERENCE NO. DATE, TIME & LOCATION	AMOUNT & TYPE OF RELEASE	CAUSE OF RELEASE	IMMEDIATE RESPONSE	PLANS TO PREVENT SIMILAR RELEASE? WRITTEN REPORT REQUESTED?
ASSET MANAGEMENT & PUBLIC WORKS DEPARTMENT – DRAINAGE SERVICES BRANCH				
AE 167290 January 12 @2:18 – 2:29 pm Gold Bar Wastewater Treatment Plant, 0977 – 50 Street	2.03 ML Non-disinfected effluent (Not contained)	UV Disinfection of the effluent was disrupted for a period of 11 minutes to enable the switching of the main power feeds to the plant as described in the UV system maintenance project. This project received approval from the regional Approvals Manager on October 29, 2004.	None.	ISO 14001 Improvement Report will be generated. AE Yes EC Yes
AE 167298 January 14 @6:15 to 8:00 am Gold Bar Wastewater Treatment Plant, 0977 – 50 Street	8.99 ML Non-disinfected effluent (Not contained)	UV disinfection of the effluent was disrupted for a period of 105 minutes due to a main breaker failure. On-call electrical personnel were dispatched to switch electrical feeders which was done following standard operating procedures.	None.	ISO 14001 Improvement Report will be generated. AE Yes EC Yes
AE 167370 January 23 @1:00 pm Gold Bar Wastewater Treatment Plant, 0977 – 50 Street	Approx. 30 L Cement cutting slurry (with PH = 12.8) (Contained)	A concrete cutting contractor performing a job on the GBWWTP site emptied the cutting water slurry generated during the concrete cutting operation into an on-site storm drainage catch basin.	The released cement slurry was removed from the storm drainage catch basin using a vacuum truck. This catch basin, the down stream storm pipes and the next two down stream catch basins on the system were thoroughly flushed with water to remove any residual cement slurry.	AE Yes EC Yes
AE 168927 March 30 @ 7:51 am Gold Bar WWTP 10977 – 50 Street @Digester #2	1000 m3 Nitrogen Gas (Not contained)	Nitrogen gas was used to purge the headspace above the liquid level in digester #4.	None.	AE: Yes EC: Yes
AE 170109 April 11 @8:00 pm Gold Bar WWTP 10977 – 50 Street @Digester #2	750 m3 Nitrogen Gas (Not contained)	Nitrogen gas was used to purge the headspace above the liquid level in digester #4.	None.	AE: Yes EC: Yes
AE 171121 May 24 @11:42 to 11:47 am Gold Bar WWTP 10977 – 50 Street	Unknown amount Non-disinfected wastewater effluent (Not contained)	UV disinfection was disrupted due to a power interruption.	Non.	ISO 14001 improvement report will be generated. AE: Yes EC: Yes
AE 171949 June 14 @ 09:30 Goldbar WWTP 10977-50 Street @ main Biogas Flare	Indeterminate amount Biogas (62% Methane, 37% CO2, 1% Other Gases (H2S, NOx, Sox) (Not contained)	An open purge valve allowed biogas destined for the lag flare to accumulate inside the piping enclosure.	Isolate the flare, bring the backup flares into service and redirect the flow of the lag flare biogas to the back up flares.	Maintenance and permitting procedures are being modified to include a checkout list of the equipment prior to the biogas system returning to service. AE: Yes EC: Yes
AE 173983	750 Cubic Metres	Nitrogen gas was used to purge	None.	

**TABLE 2: ENVIRONMENTAL RELEASE REPORTS & ADMINISTRATIVE NOTIFICATIONS MADE TO ALBERTA
ENVIRONMENT & ENVIRONMENT CANADA
2006 ANNUAL SUMMARY**

AE REFERENCE NO. DATE, TIME & LOCATION	AMOUNT & TYPE OF RELEASE	CAUSE OF RELEASE	IMMEDIATE RESPONSE	PLANS TO PREVENT SIMILAR RELEASE? WRITTEN REPORT REQUESTED?
July 19 @ 10:30-11:00 am Goldbar WWTP 10977-50 Street @ Digester #3	Nitrogen Gas (Not contained)	the headspace above the liquid level in digester #3.		AE: Yes EC: Yes
AE 176134 August 22 @ 10:50-10:55 pm Goldbar WWTP 10977-50 Street	1.78 ML Undisinfected treated wastewater (Not contained)	Loss of electricity supply to WWT during electrical storm caused the UV disinfection system to shut down. During 8 minute period that the UV process was not operational, wastewater entered the N. Saskatchewan River without disinfection.	Within 8 minutes, disinfection system was functional.	AE: Yes EC: Yes
AE 178010 September 24 Goldbar WWTP 10977-50 Street	1 Litre Hydraulic fluid (Contained)	Hydraulic fluid was spilled during repairs to hydraulic system on a piece of equipment.	Absorbant pads were placed on the spilled fluid.	EMS Improvement report will be created. AE: No EC: No
AE 179727 December 9, 2006 00:00 – 03:00 Middle Mixing Gas Feed Line of Digester #2, Goldbar Wastewater Treatment Plant	Indeterminate amount Biogas (62% Methane, 37% CO2, 1% Other Gases (H2S, NOx, Sox) (Not contained)	Leak discovered during a routine inspection of the operating conditions. Leak from leaking header valve.	Valve was isolated and locked out by Process Operations.	Replacement of the valve, followed by inspection and testing prior to putting it into service. AE: Yes EC: Yes

ADMINISTRATIVE NOTIFICATIONS

AE 170516 – 2006-04-20 - FEC Sampler Failure

Due to a power failure the sampler that collects the treated wastewater composite sample failed. A 24-hour composite sample of the treated wastewater was not collected as per the requirements of Approval 639-02-00, Section 6.1.1.

AE 171716 - 2006-05-25 - Bypass e.Coli analysis missed

An analysis for E. Coli was not performed on a secondary bypass sample as required by Approval 639-02-00, Section 6.1.1

AE 173859 - 2006-07-11 - Bypass Sampler Failure.doc

A valid composite sample of the secondary bypass flow was not collected as per the requirements of Approval 639-02-00, Section 6.1.1.

AE 174704 - 2006-07-26 - FEC Sample Temperature.doc

A valid composite sample of treated wastewater was not collected as per the requirements of Approval 639-02-00, Section 6.1.1. The refrigerator that houses the 24 hour composite sample of treated wastewater malfunctioned resulting in an elevated sample temperature (above 4C). Four samples were affected by this malfunction. Sample dates are July 22, 24, 25 and 26.

AE 176177 - 2006-08-25 - No Valid Bypass Sample

A valid composite sample of secondary bypass flow was not collected as per the requirements of Approval 639-02-00, Section 6.1.1. During the wet weather flow event on August 23, 2006 the sample container used to collect the secondary bypass sample leaked. The remaining sample was not representative of the bypass flow. There will be no analytical results reported to Alberta Environment for this bypass event.

AE 178733 - 2006-11-20 FEC e.Coli analysis missed

**TABLE 2: ENVIRONMENTAL RELEASE REPORTS & ADMINISTRATIVE NOTIFICATIONS MADE TO ALBERTA
ENVIRONMENT & ENVIRONMENT CANADA
2006 ANNUAL SUMMARY**

An analysis for E. coli was not performed on the treated wastewater effluent sample for November 20, 2006 as required by Approval 639-02-00, Section 6.1.1.

Prepared by:
Allan Mumby
Environmental Coordinator
Wastewater Treatment



**Approval 639-02-00
 Wastewater Treatment Monthly Operational Summary
 Prepared for Alberta Environment
 January 2006**

Supervising Operators	<ul style="list-style-type: none"> • Vince Corkery • Terry Chapman
Level IV Operators	<ul style="list-style-type: none"> • Ray Gale • Lonnie Waterhouse

Functional Location & Description	Operating Condition	Comments
C-WW-BLD Buildings	Normal	
C-WW-BYP Bypass	Normal Winter Mode	
C-WW-CBF Clover Bar Biosolids Recycling Facility	Normal Winter Mode	Nutri-Gold not Operating this year. Lagoon Operations focused on decanting and biosolids redistribution within the working cells. Wastewater Treatment is participating with City of Edmonton Waste Management responses to odour complaints within the Northeast Industrial Area Airshed.
C-WW-CEX Centre of Excellence	Normal	
C-WW-DIG Digesters	Normal	Digester 2 cleaned during January/February 2006. Inspection of Mixing system identified plugging problems leading to the mixing problems experienced in 2005. Foaming levels within acceptable Operating Limits for digester process control for all digesters except Digester 3. Digester 3 operated at reduced operating level to compensate for foam generation.
C-WW-DIS Disinfection	Normal	Disinfection process (as measured by Fecal Coliforms and E.Coli) performed within Approval requirements. Two interruptions in electrical service to the Ultraviolet Disinfection Facility were experienced on January 12 and 14, 2006. Both releases of undisinfected effluent were reported to Alberta Environment and Environment Canada.

Functional Location & Description	Operating Condition	Comments
C-WW-FER Fermentation	Out of Service	Fermenter is out of service pending Blend Tank Process Control System revisions. System will be out of service until upgraded as part of the Fermenter Capital Project. O&M staff providing input into the Fermenter/Blend Tank redesign.
C-WW-LAB Laboratory	Normal	Laboratory Electrical Supply being reviewed as part of normal preventive maintenance program. Some weaknesses in the Transformer system identified. Planned upgrades being developed to ensure power supply for Process Control and Compliance Analyses.
C-WW-ODR Odour Control	Normal Winter Mode	Odour Control Systems on-line and functional. Some service interruptions due to demand maintenance activities.
C-WW-OUT Outfall	Normal	
C-WW-PCS Process Control System	Normal	Delta V upgrade continuing – upgrade to Delta V version 7.4 complete. Expect discontinuation of FIX DMACS after verification of system operation.
C-WW-PRI Primary	Normal Winter Mode	All Primary Clarifiers were either in service or available for service during January 2006. Primary 1-4 used exclusively during a period of January due to a tie-in to the Raw Influent Channels for Primaries 5-8. The tie-in was to service the EPT (Enhanced Primary Treatment) Construction project. Primary Treatment Efficiency problems experienced during December, 2005 returned to normal in January 2006, except during the tie-in activities.
C-WW-PTR Pretreatment	Normal Winter Mode	Grit Tank 6 returned to service after major overhaul and upgrade. Grit Tank 7 out of service for similar repairs scheduled for 2006.
C-WW-SEC Secondary	Normal Summer Mode (Most tanks operating in Summer Mode)	<p>Total Suspended Solids, Biochemical Oxygen Demand and Nitrogen/Phosphorus Removal Processes (Nitrification and Denitrification) performed within Approval requirements. Reductions in Primary Treatment Efficiency due to EPT construction tie-ins resulted in higher solids, ammonia and phosphorus loads to Bioreactors. Nitrification and phosphorus removal processes were impacted by Primary Effluent strength (higher than normal) during tie-in activities.</p> <p>Nitrogen and Phosphorus removal met Approval requirements for the month of January and is being monitored closely by plant Operations staff. Mode conversion will be based on Mixed Liquor temperatures in the bioreactors. Winter mode conversion is being monitored closely to balance Nitrogen and Phosphorus Removal requirements of the Approval to Operate.</p>

Functional Location & Description	Operating Condition	Comments
C-WW-SSP Sludge /Supernatant Piping	Normal Winter Mode	Supernatant Piping Systems and Decant Systems have been in service. A new component of the pipeline system will be commissioned completely and available for service periodically in February 2006.
C-WW-UTL Utilities	Normal	
C-WW-WAS Waste Activated Sludge Thickening Facility	Normal	

Prepared by	Date
Vince Corkery, P.Eng. Superintendent, Operations and Maintenance	February 21, 2006



Approval 639-02-00
Wastewater Treatment Monthly Operational Summary
Prepared for Alberta Environment
February 2006

Supervising Operators	<ul style="list-style-type: none"> • Vince Corkery • Terry Chapman
Level IV Operators	<ul style="list-style-type: none"> • Ray Gale • Lonnie Waterhouse

Functional Location & Description	Operating Condition	Comments
C-WW-BLD Buildings	Normal	
C-WW-BYP Bypass	Normal Winter Mode	
C-WW-CBF Clover Bar Biosolids Recycling Facility	Normal Winter Mode	Nutri-Gold not Operating this year. Lagoon Operations focused on decanting and biosolids redistribution within the working cells. Wastewater Treatment is participating with City of Edmonton Waste Management responses to odour complaints within the Northeast Industrial Area Airshed.
C-WW-CEX Centre of Excellence	Normal	
C-WW-DIG Digesters	Normal	Digester 2 cleaned during February 2006. Inspection of Mixing system identified plugging problems leading to the mixing problems experienced in 2005. Foaming levels within acceptable Operating Limits for digester process control for all digesters except Digester 3. Digester 3 operated at reduced operating level to compensate for foam generation. Digester 3 to be cleaned during 2 nd Quarter 2006.
C-WW-DIS Disinfection	Normal	Disinfection process (as measured by Fecal Coliforms and E.Coli) performed within Approval requirements.

Functional Location & Description	Operating Condition	Comments
C-WW-FER Fermentation	Out of Service	Fermenter is out of service pending Blend Tank Process Control System revisions. System will be out of service until upgraded as part of the Fermenter Capital Project. O&M staff providing input into the Fermenter/Blend Tank redesign.
C-WW-LAB Laboratory	Normal	Laboratory Electrical Supply being reviewed as part of normal preventive maintenance program. Some weaknesses in the Transformer system identified. Planned upgrades being developed to ensure power supply for Process Control and Compliance Analyses.
C-WW-ODR Odour Control	Normal Winter Mode	Odour Control Systems on-line and functional. Some service interruptions due to demand maintenance activities.
C-WW-OUT Outfall	Normal	
C-WW-PCS Process Control System	Normal	Delta V upgrade continuing – upgrade to Delta V version 7.4 complete. Expect discontinuation of FIX DMACS after verification of system operation.
C-WW-PRI Primary	Normal Winter Mode	All Primary Clarifiers were either in service or available for service during February 2006.
C-WW-PTR Pretreatment	Normal Winter Mode	Grit Tank 6 out of service – plugged after major overhaul and upgrade. Operational issues centre around frequency/duration timing of Grit Tank operating algorithm. Grit Tank 7 out of service for similar repairs scheduled for 2006.
C-WW-SEC Secondary	Normal Summer Mode (Most tanks operating in Summer Mode)	Total Suspended Solids, Biochemical Oxygen Demand and Nitrogen/Phosphorus Removal Processes (Nitrification and Denitrification) performed within Approval requirements. Nitrogen and Phosphorus removal met Approval requirements for the month of February and is being monitored closely by plant Operations staff. Problems with Dissolved Oxygen levels identified as a problem in achieving full nitrification. Problems corrected with increased header pressure setpoint. Winter RAS algorithm impacting Primary Effluent Channel Operation and flow splitting. Problem resolved when 10 process trains returned to service. Mode conversion will be based on Mixed Liquor temperatures in the bioreactors. Winter mode conversion is being monitored closely to balance Nitrogen and Phosphorus Removal requirements of the Approval to Operate.

Functional Location & Description	Operating Condition	Comments
C-WW-SSP Sludge /Supernatant Piping	Normal Winter Mode	Supernatant Piping Systems and Decant Systems have been in service. A new component of the pipeline system has been commissioned completely and was made available for service periodically in February 2006.
C-WW-UTL Utilities	Normal	
C-WW-WAS Waste Activated Sludge Thickening Facility	Normal	

Prepared by	Date
Vince Corkery, P.Eng. Superintendent, Operations and Maintenance	March 23, 2006



Approval 639-02-00
Wastewater Treatment Monthly Operational Summary
Prepared for Alberta Environment
March 2006

Supervising Operators	<ul style="list-style-type: none"> • Vince Corkery • Terry Chapman
Level IV Operators	<ul style="list-style-type: none"> • Ray Gale • Lonnie Waterhouse

Functional Location & Description	Operating Condition	Comments
C-WW-BLD Buildings	Normal	
C-WW-BYP Bypass	Normal Winter Mode	
C-WW-CBF Clover Bar Biosolids Recycling Facility	Normal Winter Mode	An abbreviated Nutri-Gold program may be re-established in 2006. Lagoon Operations focused on decanting and biosolids redistribution within the working cells. Wastewater Treatment is participating with City of Edmonton Waste Management responses to odour complaints within the Northeast Industrial Area Airshed.
C-WW-CEX Centre of Excellence	Normal	
C-WW-DIG Digesters	Normal	Digester 2 filled with final effluent in March 2006 in preparation for returning to full service in April. Inspection of Mixing system identified plugging problems leading to the mixing problems experienced in 2005. Foaming levels within acceptable Operating Limits for digester process control for all digesters except Digester 3 and 4. Digester 3 operated at reduced operating level to compensate for foam generation. Digester 3 to be taken out of service in April and cleaned during 2 nd Quarter 2006.
C-WW-DIS Disinfection	Normal	Disinfection process (as measured by Fecal Coliforms and E.Coli) performed within Approval requirements.

Functional Location & Description	Operating Condition	Comments
C-WW-FER Fermentation	Out of Service	Fermenter is out of service pending Blend Tank Process Control System revisions. System will be out of service until upgraded as part of the Fermenter Capital Project. O&M staff providing input into the Fermenter/Blend Tank redesign.
C-WW-LAB Laboratory	Normal	Laboratory Electrical Supply being reviewed as part of normal preventive maintenance program. Some weaknesses in the Transformer system identified. Planned upgrades being developed to ensure power supply for Process Control and Compliance Analyses.
C-WW-ODR Odour Control	Normal Winter Mode	Odour Control Systems on-line and functional. Some service interruptions due to demand maintenance activities.
C-WW-OUT Outfall	Normal	
C-WW-PCS Process Control System	Normal	Delta V upgrade continuing – upgrade to Delta V version 7.4 complete. Expect discontinuation of FIX DMACS after verification of system operation.
C-WW-PRI Primary	Normal Winter Mode	All Primary Clarifiers were either in service or available for service during March 2006. Primary 6 out of service for one day for chain repair.
C-WW-PTR Pretreatment	Normal Winter Mode	Grit Tank 6 returned to service in March 2006. Grit Tank 7 out of service for major overhaul and upgrade scheduled for 2006.
C-WW-SEC Secondary	Normal Summer Mode (Most tanks operating in Summer Mode)	Total Suspended Solids, Biochemical Oxygen Demand and Nitrogen/Phosphorus Removal Processes (Nitrification and Denitrification) performed within Approval requirements. Nitrogen and Phosphorus removal processes are being monitored closely by plant Operations staff in response to runoff related flows. Problems with Dissolved Oxygen (D.O.) levels related to D.O. probe failures identified as a problem in achieving full nitrification and phosphorus removal. Bioreactors in March were run in both Summer and Winter Mode to balance the Ammonia and Phosphorus removal requirements. Winter mode operation caused more issues with Phosphorus removal than anticipated.

Functional Location & Description	Operating Condition	Comments
C-WW-SSP Sludge /Supernatant Piping	Normal Winter Mode	Supernatant Piping Systems and Decant Systems have been in service. Available system in full operation to return as much supernatant as possible.
C-WW-UTL Utilities	Normal	
C-WW-WAS Waste Activated Sludge Thickening Facility	Normal	

Prepared by	Date
Vince Corkery, P.Eng. Superintendent, Operations and Maintenance	April 27, 2006



City of Edmonton
 Asset Management and Public Works Department
 Drainage Services Branch
 Wastewater Treatment Section

Approval 639-02-00
Wastewater Treatment Monthly Operational Summary
Prepared for Alberta Environment
April 2006

Supervising Operators	<ul style="list-style-type: none"> • Vince Corkery • Terry Chapman
Level IV Operators	<ul style="list-style-type: none"> • Ray Gale • Lonnie Waterhouse

Functional Location & Description	Operating Condition	Comments
C-WW-BLD Buildings	Normal	
C-WW-BYP Bypass	Normal Winter Mode	Five instances of Secondary By-pass occurred during month. No Main Plant by-pass for month.
C-WW-CBF Clover Bar Biosolids Recycling Facility	Normal Winter Mode	An abbreviated Nutri-Gold program may be re-established in 2006. Lagoon Operations focused on decanting and biosolids redistribution within the working cells. Wastewater Treatment is participating with City of Edmonton Waste Management responses to odour complaints within the Northeast Industrial Area Air shed.
C-WW-CEX Centre of Excellence	Normal	
C-WW-DIG Digesters	Normal	Performed Nitrogen purge of Digester # 4 to reduce accumulated foam on liquid surface.
C-WW-DIS Disinfection	Normal	Disinfection process (as measured by Fecal Coliforms and E.Coli) performed within Approval requirements. Added new U.V. unit to process.

Functional Location & Description	Operating Condition	Comments
C-WW-FER Fermentation	Out of Service	Fermenter is out of service pending Blend Tank Process Control System revisions. System will be out of service until upgraded as part of the Fermenter Capital Project. O&M staff providing input into the Fermenter/Blend Tank redesign.
C-WW-LAB Laboratory	Normal	Laboratory Electrical Supply being reviewed as part of normal preventive maintenance program. Some weaknesses in the Transformer system identified. Planned upgrades being developed to ensure power supply for Process Control and Compliance Analyses.
C-WW-ODR Odour Control	Normal Winter Mode	Odour Control Systems on-line and functional. Some service interruptions due to demand maintenance activities and Construction Tie-ins.
C-WW-OUT Outfall	Normal	
C-WW-PCS Process Control System	Normal	Delta V upgrade continuing – upgrade to Delta V version 7.4 complete. Expect discontinuation of FIX DMACS after verification of system operation.
C-WW-PRI Primary	Normal Winter Mode	All Primary Clarifiers were either in service or available for service during April 2006.
C-WW-PTR Pretreatment	Normal Winter Mode	
C-WW-SEC Secondary	Normal Summer Mode (Most tanks operating in Summer Mode)	Total Suspended Solids, Biochemical Oxygen Demand and Nitrogen/Phosphorus Removal Processes (Nitrification and Denitrification) performed within Approval requirements. Nitrogen and Phosphorus removal processes are being monitored closely by plant Operations staff in response to elevated flows (Rain events). All sections converted to Summer Mode April 18.

Functional Location & Description	Operating Condition	Comments
C-WW-SSP Sludge /Supernatant Piping	Normal Winter Mode	Supernatant Piping Systems and Decant Systems have been in service. Available system in full operation to return as much supernatant as possible.
C-WW-UTL Utilities	Normal	
C-WW-WAS Waste Activated Sludge Thickening Facility	Normal	

Prepared by	Date
Terry Chapman Operations Coordinator	May 26, 2006



City of Edmonton
 Asset Management and Public Works Department
 Drainage Services Branch
 Wastewater Treatment Section

Approval 639-02-00
Wastewater Treatment Monthly Operational Summary
Prepared for Alberta Environment
May 2006

Supervising Operators	<ul style="list-style-type: none"> • Vince Corkery • Terry Chapman
Level IV Operators	<ul style="list-style-type: none"> • Ray Gale • Lonnie Waterhouse

Functional Location & Description	Operating Condition	Comments
C-WW-BLD Buildings	Normal	
C-WW-BYP Bypass	Normal Winter Mode	Five instances of Secondary By-pass occurred during month. No Main Plant by-pass for month.
C-WW-CBF Clover Bar Biosolids Recycling Facility	Normal Winter Mode	An abbreviated Nutri-Gold program may be re-established in 2006. Lagoon Operations focused on decanting and biosolids redistribution within the working cells. Wastewater Treatment is participating with City of Edmonton Waste Management responses to odour complaints within the Northeast Industrial Area Air shed.
C-WW-CEX Centre of Excellence	Normal	
C-WW-DIG Digesters	Normal	
C-WW-DIS Disinfection	Normal	Disinfection process (as measured by Fecal Coliforms and E.Coli) performed within Approval requirements. Power failure at U.V. unit (5 minutes) resulted in untreated Effluent to North Sask. River.

Functional Location & Description	Operating Condition	Comments
C-WW-FER Fermentation	Out of Service	Fermenter is out of service pending Blend Tank Process Control System revisions. System will be out of service until upgraded as part of the Fermenter Capital Project. O&M staff providing input into the Fermenter/Blend Tank redesign.
C-WW-LAB Laboratory	Normal	Laboratory Electrical Supply being reviewed as part of normal preventive maintenance program. Some weaknesses in the Transformer system identified. Planned upgrades being developed to ensure power supply for Process Control and Compliance Analyses.
C-WW-ODR Odour Control	Normal Winter Mode	Odour Control Systems on-line and functional. Some service interruptions due to demand maintenance activities and Construction Tie-ins.
C-WW-OUT Outfall	Normal	
C-WW-PCS Process Control System	Normal	Delta V upgrade continuing – upgrade to Delta V version 7.4 complete. Expect discontinuation of FIX DMACS after verification of system operation.
C-WW-PRI Primary	Normal Winter Mode	All Primary Clarifiers were either in service or available for service during May 2006.
C-WW-PTR Pretreatment	Normal Winter Mode	
C-WW-SEC Secondary	Normal Summer Mode (All tanks operating in Summer Mode)	Total Suspended Solids, Biochemical Oxygen Demand and Nitrogen/Phosphorus Removal Processes (Nitrification and Denitrification) performed within Approval requirements. Nitrogen and Phosphorus removal processes are being monitored closely by plant Operations staff in response to elevated flows (Rain events).

Functional Location & Description	Operating Condition	Comments
C-WW-SSP Sludge /Supernatant Piping	Normal	Supernatant Piping Systems and Decant Systems have been in service. Available system in full operation to return as much supernatant as possible.
C-WW-UTL Utilities	Normal	
C-WW-WAS Waste Activated Sludge Thickening Facility	Normal	

Raw Influent Sampler Nonconformance:

Date of Non-conformance	Non-Conformance Description	Comments
May 29, 2006	Raw sampler failed to collect 24-hour composite sample.	The Raw sampler line was plugged. The sampler was reset at midnight.

Prepared by	Date
Terry Chapman Operations Coordinator	June 1, 2006



Approval 639-02-00
Wastewater Treatment Monthly Operational Summary
Prepared for Alberta Environment
June 2006

Supervising Operators	<ul style="list-style-type: none"> • Vince Corkery • Terry Chapman
Level IV Operators	<ul style="list-style-type: none"> • Ray Gale • Lonnie Waterhouse

Functional Location & Description	Operating Condition	Comments
C-WW-BLD Buildings	Normal	
C-WW-BYP Bypass	Normal Mode	Six instances of Secondary By-pass occurred during month. One Main Plant by-pass for month.
C-WW-CBF Clover Bar Biosolids Recycling Facility	Normal Mode	An abbreviated Nutri-Gold program may be re-established in 2006. Lagoon Operations focused on decanting and biosolids redistribution within the working cells. Wastewater Treatment is participating with City of Edmonton Waste Management responses to odour complaints within the Northeast Industrial Area Air shed.
C-WW-CEX Centre of Excellence	Normal	
C-WW-DIG Digesters	Normal	
C-WW-DIS Disinfection	Normal	Disinfection process (as measured by Fecal Coliforms and E.Coli) performed within Approval requirements.

Functional Location & Description	Operating Condition	Comments
C-WW-FER Fermentation	Out of Service	Fermenter is out of service pending Blend Tank Process Control System revisions. System will be out of service until upgraded as part of the Fermenter Capital Project. O&M staff providing input into the Fermenter/Blend Tank redesign.
C-WW-LAB Laboratory	Normal	Laboratory Electrical Supply being reviewed as part of normal preventive maintenance program. Some weaknesses in the Transformer system identified. Planned upgrades being developed to ensure power supply for Process Control and Compliance Analyses.
C-WW-LAB-(Process Samplers) Laboratory	Normal	<p>June 9 – 11: RAW samples from Friday June 9, Saturday June 10 and Sunday June 11 have approximately 8 hours of sample from the next day as sample arm did not advance to empty bottle at midnight. All analytical data are estimated.</p> <p>June 19 - Raw wastewater auto-sampler line was plugged resulting in only partial sample. All data generated on this sample are reported as estimates.</p>
C-WW-ODR Odour Control	Normal Winter Mode	Odour Control Systems on-line and functional. Some service interruptions due to demand maintenance activities and Construction Tie-ins.
C-WW-OUT Outfall	Normal	
C-WW-PCS Process Control System	Normal	
C-WW-PRI Primary	Normal Winter Mode	All Primary Clarifiers were either in service or available for service during June 2006.
C-WW-PTR Pretreatment	Normal Winter Mode	
C-WW-SEC Secondary	Normal Summer Mode (All 10 tanks operating in Summer Mode)	Total Suspended Solids, Biochemical Oxygen Demand and Nitrogen/Phosphorus Removal Processes (Nitrification and Denitrification) performed within Approval requirements. Nitrogen and Phosphorus removal processes are being monitored closely by plant Operations staff in response to elevated flows (Rain events).

Functional Location & Description	Operating Condition	Comments
C-WW-SSP Sludge /Supernatant Piping	Normal	Supernatant Piping Systems and Decant Systems have been in service. Available system in full operation to return as much supernatant as possible.
C-WW-UTL Utilities	Normal	
C-WW-WAS Waste Activated Sludge Thickening Facility	Normal	

Prepared by	Date
Terry Chapman Operations Coordinator	July 6, 2006



City of Edmonton
 Asset Management and Public Works Department
 Drainage Services Branch
 Wastewater Treatment Section

**Approval 639-02-00
 Wastewater Treatment Monthly Operational Summary
 Prepared for Alberta Environment
 July 2006**

Supervising Operators	<ul style="list-style-type: none"> • Vince Corkery • Terry Chapman
Level IV Operators	<ul style="list-style-type: none"> • Ray Gale • Lonnie Waterhouse

Functional Location & Description	Operating Condition	Comments
C-WW-BLD Buildings	Normal	
C-WW-BYP Bypass	Normal Mode	Nine instances of Secondary By-pass occurred during month. Three Main Plant by-passes for month.
C-WW-CBF Clover Bar Biosolids Recycling Facility	Normal Mode	An abbreviated Nutri-Gold program may be re-established in 2006. Lagoon Operations focused on decanting and biosolids redistribution within the working cells. Wastewater Treatment is participating with City of Edmonton Waste Management responses to odour complaints within the Northeast Industrial Area Air shed.
C-WW-CEX Centre of Excellence	Normal	
C-WW-DIG Digesters	Normal	Digester # 3 was pumped down for cleaning.
C-WW-DIS Disinfection	Normal	Disinfection process (as measured by Fecal Coliforms and E.Coli) performed within Approval requirements.

Functional Location & Description	Operating Condition	Comments
C-WW-FER Fermentation	Out of Service	Fermenter is out of service pending Blend Tank Process Control System revisions. System will be out of service until upgraded as part of the Fermenter Capital Project. O&M staff providing input into the Fermenter/Blend Tank redesign.
C-WW-LAB Laboratory	Normal	
C-WW-LAB-(Process Samplers) Laboratory	Normal	Raw influent sampler-all composite samples met Approval requirements. By-pass samplers- No long-term secondary By-pass sample collected on July 10 due to mechanical failure of sampler. Overflowed short term By-pass sample analyzed for July 10 results reported as estimates. Final effluent combined sampler-composite samples collected on July 22, 23, 24, 25, 26 and 27, results reported as estimates due to sampler refrigerator temperature $\geq 10^{\circ}\text{C}$. This does not meet requirements of the sample collection SOP and the Approval.
C-WW-ODR Odour Control	Normal Winter Mode	Odour Control Systems on-line and functional. Some service interruptions due to demand maintenance activities and Construction Tie-ins.
C-WW-OUT Outfall	Normal	
C-WW-PCS Process Control System	Normal	
C-WW-PRI Primary	Normal Winter Mode	All Primary Clarifiers were either in service or available for service during July 2006.
C-WW-PTR Pretreatment	Normal Winter Mode	
C-WW-SEC Secondary	Normal Summer Mode (All 10 tanks operating in Summer Mode)	Total Suspended Solids, Biochemical Oxygen Demand and Nitrogen/Phosphorus Removal Processes (Nitrification and Denitrification) performed within Approval requirements. Nitrogen and Phosphorus removal processes are being monitored closely by plant Operations staff in response to elevated flows (Rain events).

Functional Location & Description	Operating Condition	Comments
C-WW-SSP Sludge /Supernatant Piping	Normal	Supernatant Piping Systems and Decant Systems have been in service. Available system in full operation to return as much supernatant as possible.
C-WW-UTL Utilities	Normal	
C-WW-WAS Waste Activated Sludge Thickening Facility	Normal	

Prepared by	Date
Terry Chapman Operations Coordinator	August 1, 2006



City of Edmonton
 Asset Management and Public Works Department
 Drainage Services Branch
 Wastewater Treatment Section

Approval 639-02-00
Wastewater Treatment Monthly Operational Summary
Prepared for Alberta Environment
August 2006

Supervising Operators	<ul style="list-style-type: none"> • Vince Corkery • Terry Chapman
Level IV Operators	<ul style="list-style-type: none"> • Ray Gale • Lonnie Waterhouse

Functional Location & Description	Operating Condition	Comments
C-WW-BLD Buildings	Normal	
C-WW-BYP Bypass	Normal Mode	Nine instances of Secondary By-pass occurred during month.
C-WW-CBF Clover Bar Biosolids Recycling Facility	Normal Mode	Nutri-Gold program re-established Aug21, 2006. Lagoon Operations focused on decanting and biosolids redistribution within the working cells. Wastewater Treatment is participating with City of Edmonton Waste Management responses to odour complaints within the Northeast Industrial Area Air shed.
C-WW-CEX Centre of Excellence	Normal	
C-WW-DIG Digesters	Normal	Digester # 3 was pumped down for cleaning.
C-WW-DIS Disinfection	Normal	Disinfection process (as measured by Fecal Coliforms and E.Coli) performed within Approval requirements.

Functional Location & Description	Operating Condition	Comments
C-WW-FER Fermentation	Out of Service	Fermenter is out of service pending Blend Tank Process Control System revisions. System will be out of service until upgraded as part of the Fermenter Capital Project. O&M staff providing input into the Fermenter/Blend Tank redesign.
C-WW-LAB Laboratory	Normal	
C-WW-LAB- (Process Samplers) Laboratory	Normal	<ul style="list-style-type: none"> ▪ August 3, 2006 FEC sample-loss of sample due to cracked bottle-report results as estimated data. ▪ August 16, 2006 RAW sample-Approximately 8 hours of sample from Aug 17 delivered to Aug 16 sample. ▪ August 23, 2006 Bypass sample-No sample due to loss of sample from a cracked bottle. ▪ August 25, 2006 RAW sample-Approximately 8 hours of sample from Aug 26 delivered to Aug 25 sample. ▪ August 31, 2006 RAW sample-Approximately 8 hours of sample from Sept 1 was delivered to August 31 sample.
C-WW-ODR Odour Control	Normal Winter Mode	Odour Control Systems on-line and functional. Some service interruptions due to demand maintenance activities and Construction Tie-ins.
C-WW-OUT Outfall	Normal	
C-WW-PCS Process Control System	Normal	
C-WW-PRI Primary	Normal Winter Mode	All Primary Clarifiers were either in service or available for service during July 2006.
C-WW-PTR Pretreatment	Normal Winter Mode	
C-WW-SEC Secondary	Normal Summer Mode (All 10 tanks operating in Summer Mode)	Total Suspended Solids, Biochemical Oxygen Demand and Nitrogen/Phosphorus Removal Processes (Nitrification and Denitrification) performed within Approval requirements. Nitrogen and Phosphorus removal processes are being monitored closely by plant Operations staff in response to elevated flows (Rain events).

Functional Location & Description	Operating Condition	Comments
C-WW-SSP Sludge /Supernatant Piping	Normal	Supernatant Piping Systems and Decant Systems have been in service. Available system in full operation to return as much supernatant as possible.
C-WW-UTL Utilities	Normal	
C-WW-WAS Waste Activated Sludge Thickening Facility	Normal	

Prepared by	Date
Terry Chapman Operations Coordinator	September 6, 2006



City of Edmonton
 Asset Management and Public Works Department
 Drainage Services Branch
 Wastewater Treatment Section

Approval 639-02-00
Wastewater Treatment Monthly Operational Summary
Prepared for Alberta Environment
September 2006

Supervising Operators	<ul style="list-style-type: none"> • Vince Corkery • Terry Chapman
Level IV Operators	<ul style="list-style-type: none"> • Ray Gale • Lonnie Waterhouse

Functional Location & Description	Operating Condition	Comments
C-WW-BLD Buildings	Normal	
C-WW-BYP Bypass	Normal Mode	Five instances of Secondary By-pass occurred during month. One small incident of Main Plant Bypass (minimal splashing at overflow weirs).
C-WW-CEX Centre of Excellence	Normal	
C-WW-DIG Digesters	Normal	
C-WW-DIS Disinfection	Normal	Disinfection process (as measured by Fecal Coliforms and E.Coli) performed within Approval requirements.

Functional Location & Description	Operating Condition	Comments
C-WW-FER Fermentation	Out of Service	Fermenter is out of service pending Blend Tank Process Control System revisions. System will be out of service until upgraded as part of the Fermenter Capital Project. O&M staff providing input into the Fermenter/Blend Tank redesign.
C-WW-LAB Laboratory	Normal	
C-WW-LAB-(Process Samplers) Laboratory	Normal	
C-WW-ODR Odour Control	Normal	
C-WW-OUT Outfall	Normal	
C-WW-PCS Process Control System	Normal	
C-WW-PRI Primary	Normal Winter Mode	Two Primary Clarifiers were taken out of service for Preventive Maintenance for short time periods, but did not impact general treatment processes.
C-WW-PTR Pretreatment	Normal Winter Mode	
C-WW-SEC Secondary	Normal Summer Mode (All 10 tanks operating in Summer Mode)	Total Suspended Solids, Biochemical Oxygen Demand and Nitrogen/Phosphorus Removal Processes (Nitrification and Denitrification) performed within Approval requirements. Nitrogen and Phosphorus removal processes are being monitored closely by plant Operations staff in response to elevated flows (Rain events).

Functional Location & Description	Operating Condition	Comments
C-WW-SSP Sludge /Supernatant Piping	Normal	Supernatant Piping Systems and Decant Systems have been in service. Available system in full operation to return as much supernatant as possible.
C-WW-UTL Utilities	Normal	
C-WW-WAS Waste Activated Sludge Thickening Facility	Normal	

Prepared by	Date
Terry Chapman Operations Coordinator	Oct 12, 2006



City of Edmonton
 Asset Management and Public Works Department
 Drainage Services Branch
 Wastewater Treatment Section

**Approval 639-02-00
 Wastewater Treatment Monthly Operational Summary
 Prepared for Alberta Environment
 October 2006**

Supervising Operators	<ul style="list-style-type: none"> • Vince Corkery • Terry Chapman
Level IV Operators	<ul style="list-style-type: none"> • Ray Gale • Lonnie Waterhouse

Functional Location & Description	Operating Condition	Comments
C-WW-BLD Buildings	Normal	
C-WW-BYP Bypass	Normal Mode	Nine instances of Secondary By-pass occurred during month. No instances of Main Plant By-pass occurred.
C-WW-CBF Clover Bar Biosolids Recycling Facility	Normal Mode	Nutri-Gold program re-established Aug 21, 2006. Lagoon Operations focused on decanting and biosolids redistribution within the working cells. Wastewater Treatment is participating with City of Edmonton Waste Management responses to odour complaints within the Northeast Industrial Area Air shed. Stopped Nutri-Gold Sludge to farmland program – removed 5387 dry tones from Lagoons.
C-WW-CEX Centre of Excellence	Normal	
C-WW-DIG Digesters	Normal	
C-WW-DIS Disinfection	Normal	Disinfection process (as measured by Fecal Coliforms and E.Coli) performed within Approval requirements.

Functional Location & Description	Operating Condition	Comments
C-WW-FER Fermentation	Out of Service	Fermenter is out of service pending Blend Tank Process Control System revisions. System will be out of service until upgraded as part of the Fermenter Capital Project. O&M staff providing input into the Fermenter/Blend Tank redesign.
C-WW-LAB Laboratory	Normal	
C-WW-LAB-(Process Samplers) Laboratory	Normal	Raw influent and Final Effluent composite samples met Approval requirements.
C-WW-ODR Odour Control	Normal	
C-WW-OUT Outfall	Normal	
C-WW-PCS Process Control System	Normal	
C-WW-PRI Primary	Normal Winter Mode	One Primary Clarifier was taken out of service for Preventive Maintenance for a short time period, but did not impact general treatment processes.
C-WW-PTR Pretreatment	Normal Winter Mode	
C-WW-SEC Secondary	Normal Summer Mode (Nine tanks operating in Summer Mode)	Total Suspended Solids, Biochemical Oxygen Demand and Nitrogen/Phosphorus Removal Processes (Nitrification and Denitrification) performed within Approval requirements. Nitrogen and Phosphorus removal processes are being monitored closely by plant Operations staff in response to elevated flows (Rain events).

Functional Location & Description	Operating Condition	Comments
C-WW-SSP Sludge /Supernatant Piping	Normal	Supernatant Piping Systems and Decant Systems have been in service. Available system in full operation to return as much supernatant as possible.
C-WW-UTL Utilities	Normal	
C-WW-WAS Waste Activated Sludge Thickening Facility	Normal	

Prepared by	Date
Terry Chapman Operations Coordinator	Nov 8, 2006



City of Edmonton
 Asset Management and Public Works Department
 Drainage Services Branch
 Wastewater Treatment Section

Approval 639-02-00
Wastewater Treatment Monthly Operational Summary
Prepared for Alberta Environment
November 2006

Supervising Operators	<ul style="list-style-type: none"> • Vince Corkery • Terry Chapman
Level IV Operators	<ul style="list-style-type: none"> • Ray Gale • Lonnie Waterhouse

Functional Location & Description	Operating Condition	Comments
C-WW-BLD Buildings	Normal	
C-WW-BYP Bypass	Normal	<ul style="list-style-type: none"> • No instances of Secondary By-pass occurred • No instances of Main Plant By-pass occurred
C-WW-CBF Clover Bar Biosolids Recycling Facility	Shutdown	<ul style="list-style-type: none"> • Nutri-Gold activities shutdown for winter season
C-WW-CEX Centre of Excellence	Normal	
C-WW-DIG Digesters	Normal	<ul style="list-style-type: none"> • Digester 3 out of 6 remains out-of-service for cleaning and inspection purposes • High efficiency biogas flares experienced freeze-up during periods of -20°C temperatures; back-up flare system put into service; engineered solution in planning stage
C-WW-DIS Disinfection	Normal	<ul style="list-style-type: none"> • Disinfection process (as measured by Fecal Coliforms and E.coli) performed within Approval requirements
C-WW-FER Fermentation	Out of Service	<ul style="list-style-type: none"> • Fermenter is out of service pending Blend Tank Process Control System revisions. System will be out of service until upgrades completed as part of the Fermenter Capital Project
C-WW-LAB Laboratory	Normal	
C-WW-LAB-(Process Samplers) Laboratory	Normal	<ul style="list-style-type: none"> • Raw influent and Final Effluent composite samples met Approval requirements

Functional Location & Description	Operating Condition	Comments
C-WW-OUT Outfall	Normal	
C-WW-PCS Process Control System	Normal	
C-WW-PRI Primary	Normal Winter Mode	
C-WW-PTR Pretreatment	Normal Winter Mode	
C-WW-SEC Secondary	Normal Summer Mode (Nine tanks operating in Summer Mode)	<ul style="list-style-type: none"> Total Suspended Solids, Biochemical Oxygen Demand and Nitrogen/Phosphorus Removal Processes (Nitrification and Denitrification) performed within Approval requirements Alum system was brought into service; dosing to bioreactor 11 commenced to mitigate phosphorus issues with external recycled water client; alum dosing to bioreactors 3, 9 and 10 to address poor settleability
C-WW-SSP Sludge /Supernatant Piping	Normal	<ul style="list-style-type: none"> Supernatant Piping Systems and Decant Systems have been in service. Available system in full operation to return as much supernatant as possible.
C-WW-UTL Utilities	Normal	
C-WW-WAS Waste Activated Sludge Thickening Facility	Normal	

Prepared by	Date
Geoff Heise General Supervisor, Process Operations	December 20, 2006



City of Edmonton
 Asset Management and Public Works Department
 Drainage Services Branch
 Wastewater Treatment Section

**Approval 639-02-00
 Wastewater Treatment Monthly Operational Summary
 Prepared for Alberta Environment
 December 2006**

Supervising Operators	<ul style="list-style-type: none"> • Vince Corkery • Geoff Heise
Level IV Operators	<ul style="list-style-type: none"> • Ray Gale • Lonnie Waterhouse

Functional Location & Description	Operating Condition	Comments
C-WW-BLD Buildings	Normal	
C-WW-BYP Bypass	Normal	<ul style="list-style-type: none"> • No instances of Secondary By-pass occurred • No instances of Main Plant By-pass occurred • South weir gate out-of-service; North gate available for bypass
C-WW-CBF Clover Bar Biosolids Recycling Facility	Shutdown	<ul style="list-style-type: none"> • Nutri-Gold activities shutdown for winter season
C-WW-CEX Centre of Excellence	Normal	
C-WW-DIG Digesters	Normal	<ul style="list-style-type: none"> • Digester 3 out of 6 remains out-of-service for cleaning and inspection purposes • High-efficiency flares in-service. Enclosure installed around south high-efficiency flare to address freeze-up issues • Biogas leak on digester 2 mixing system-reported to Alberta Environment ref#179727
C-WW-DIS Disinfection	Normal	<ul style="list-style-type: none"> • Disinfection process (as measured by Fecal Coliforms and E.coli) performed within Approval requirements
C-WW-FER Fermentation	Out of Service	<ul style="list-style-type: none"> • Fermenter is out of service pending Blend Tank Process Control System revisions. System will be out of service until upgrades completed as part of the Fermenter Capital Project
C-WW-LAB Laboratory	Normal	

Functional Location & Description	Operating Condition	Comments
C-WW-LAB-(Process Samplers) Laboratory	Normal	<ul style="list-style-type: none"> Final Effluent composite samples met Approval requirements. Three instances where Raw influent sample did not meet temperature requirements (12/02/2006, 12/03/2006 and 12/06/2006)
C-WW-OUT Outfall	Normal	
C-WW-PCS Process Control System	Normal	
C-WW-PRI Primary	Normal Winter Mode	
C-WW-PTR Pretreatment	Normal Winter Mode	
C-WW-SEC Secondary	Normal	<ul style="list-style-type: none"> 5 out of 9 in-service bioreactors operating in winter mode (cell 3 aerated); remaining 4 bioreactors operated in summer mode (cell 3 not aerated) Total Suspended Solids, Biochemical Oxygen Demand and Nitrogen/Phosphorus Removal Processes (Nitrification and Denitrification) performed within Approval requirements
C-WW-SSP Sludge /Supernatant Piping	Normal	<ul style="list-style-type: none"> Supernatant Piping Systems and Decant Systems have been in service. Available system in full operation to return as much supernatant as possible.
C-WW-UTL Utilities	Normal	
C-WW-WAS Waste Activated Sludge Thickening Facility	Normal	

Prepared by	Date
Geoff Heise General Supervisor, Process Operations	January 26, 2007

**Table 3: Gold Bar Wastewater Treatment Plant
Chemical Use by Plant Operations**

Chemical Name	Chemical Formula	Alum	Caustic Soda (Bagged)	Caustic Soda (Liquid)	Citric Acid	Hydrogen Peroxide	Liquid Nitrogen	Polymer	Sodium Bisulfite	Sodium Hypochlorite	Softner Salt	
Chemical Supplier		ClearTech Industries Inc.	ClearTech Industries Inc.	ClearTech Industries Inc.	ClearTech Industries Inc.	US Peroxide LLC	Air Liquide Canada Inc.	CIBA Specialty Chemicals	ClearTech Industries Inc.	ClearTech Industries Inc.	ClearTech Industries Inc.	Various-City Stores Inventory
Purpose Used/ Dosage point		Phosphate trimming in secondary effluent / Mixed liquor channel to secondary clarifier	Chemical cleaning of sludge lines	Odour Control - pH adjustment / Membrane tanks	Chemical cleaning of ultrafiltration membranes - reverses inorganic fouling / Membrane tanks	Odour Control - oxidizes H ₂ S / Plant Influent Channels 1 and 2	Purging of biogas system / Digester Headspace and biogas piping	Flocculating agent for Waste Activated Sludge (WAS) / Dissolved Air Flotation Thickening Facility	Chlorine neutralizing agent for ultrafiltration membrane cleaning / Membrane tanks	Odour Control - oxidizes H ₂ S / Odour Control Facilities	Water Softening for Odour Control Chemical Solution / Odour Control Facilities	
Concentration Used		48.5%	50% NaOH - diluted with H ₂ O and heated	50%	50%	50% by Weight	100%	0.25% to 0.35% (introduced as solution)	38 to 44%	12%		Dry Weight
Feed Rate		Used when effluent phosphate concentration >0.5 mg/L P	Applied Sparingly as required	Intermittent	Intermittent	Continuous Feed	Continuous Feed	Continuous Feed		Intermittent	Intermittent	Intermittent
Minimum		8 mg/L				500 kg/day	N/A					
Maximum		50 mg/L				2000 kg/day	As controlled by feed equipment					
Months		Total Used	Total Used	Total Used	Total Used	Total Used	Total Used	Total Used	Total Used	Total Used	Total Used	Total Used
January		litres	kg	litres	litres	kg	sm3	kg	litres	litres	kg	kg
February		0	0.0	0	0	11,709	0	2,052	0	0	0	1,160
March		0	22.7	0	615	1,052	0	1,886	205	12,641	980	980
April		0	181.4	0	0	2,028	0	1,833	0	6,763	1,840	1,840
May		0	0.0	0	0	11,624	0	2,808	0	26,157	980	980
June		0	544.3	0	0	17,546	0	1,749	410	28,253	1,020	1,020
July		0	0.0	0	0	14,260	0	3,663	0	31,625	960	960
August		0	0.0	0	0	23,799	8,000	2,189	0	28,254	540	540
September		0	5.0	410	0	10,645	0	2,624	410	13,224	240	240
October		0	453.6	0	0	17,813	4,000	2,504	0	18,421	1,120	1,120
November		0	0.0	0	0	11,171	0	2,920	0	15,591	700	700
December		0	0.0	0	0	23,300	0	1,752	0	20,107	640	640
2006 - Annual Total		1,280	136.1	0	0	12,528	0	1,887	0	18,983	3,195	720
		1,280	1,343	410	615	157,475	12,000	27,868	1,025	233,525	50,432	10,900

TABLE 4: 2006 EFFLUENT TOXICITY

(Samples collected on January 19, July 11 and November 29, 2006)

Type of Test	Acute	Chronic
Microtox	All non-toxic	-
Daphnia magna	All non-toxic; 0% mortality. All LC 50 \geq 100%	-
Rainbow Trout	All non-toxic. LC 50 > 95%	-
<i>Ceriodaphnia dubia</i>	-	Survival: All LC 50 >100% Growth: All IC 50 >100%
<i>Selenastrum</i> spp	-	Growth: Two IC 50 >100% One IC 50 =99%
<i>Fathead minnows</i>	-	Survival: All LC 50 >100% Growth: Two IC 50 >100% One IC 50 = 98%
n	3	3

n – number of samples analyzed during the year.

TABLE 5: 2006 SUMMARY OF GOLD BAR WASTEWATER LABORATORY PROFICIENCY TESTING

	BOD/ CBOD	TSS	NH₃-N	TP	E. coli
Mean Analyte Recovery (%)	107.0/112.1	101.0	103.8	94.4	87.8
Average z-score	0.608/1.10	0.797	0.563	0.776	1.12
n	18/10	18	18	18	9

n - number of proficiency testing samples (CAEAL, ARC and CMPT) analyzed during the year.