2014 ANNUAL REPORT ON DRINKING WATER QUALITY

Reporting period - JAN 1st - DEC 31st 2014

SOUTH DUNDAS WATER TREATMENT PLANT
99 AUGUSTA ST MORRISBURG

Drinking Water System Number: 220001012
Drinking Water System Owner: Municipality of South Dundas
Drinking Water System Category: Large Municipal Residential

2014 Annual Report

Availability

Public Access via the web	http://www.southdundas.com
Public Access via Public Request	Municipal Offices, 34 Ottawa Street, Morrisburg
Public Notice via Local Newspaper	

Free copies of this report and the Summary report prepared in accordance to Schedule 22 of Ontario Regulation 170/03, are available by public request at the municipal offices, and at *www.southdundas.com*. Notices of availability are generally made through the local newspapers and radio. Further information on the Drinking Water Regulations can be found on the Ministry of the Environment web site at *www.ene.gov.on.ca*.

Drinking Water Quality

The Municipality of South Dundas is proud to present this annual report on drinking water quality. This report has been prepared in accordance to Section 11 of Ontario Regulation 170/03. Regulation 170/03 sets requirements for public waterworks with regard to sampling and testing, levels of treatment, licensing of staff, and notification of authorities and the public about water quality.

2014 Annual Report

Inside This Report

1. Drinking Water System

The water treatment plant (in service date: June 2006) and distribution system provide water to a population of approximately 3,900 residents in Morrisburg and Iroquois.

Raw Water Source

Source water for the South Dundas Regional WTP is the St. Lawrence River. Historically, the unfiltered water quality from this stretch of the St. Lawrence has been excellent.

Raw water turbidity is generally less than 1 NTU, with relatively few events greater than 5 NTU. The actual range of turbidity varies seasonally and by event from a low of about 0.1 NTU to as high as 10 NTU.

Prior to the construction of the South Dundas Regional WTP, the water quality issues most often discussed in this area related to taste and odour.

The range in temperature for raw water varies from about 0.4C to 23C on an annual basis. In terms of predictable operational challenges, temperature is the factor that most directly drives the CT calculation for the facility.

System Description - Treatment

Intake

Raw water is drawn from the St. Lawrence River through a wooden intake structure and approximately 100 m of 450 mm pipe to the low lift pumping station.

Sodium Hypochlorite is added at the opening of the intake for Zebra Mussel control when raw water temperatures are above 10C. The addition of sodium hypochlorite at this location is not for raw water disinfection purposes.

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Raw Water Pumping (Low Lift)

A Low Lift pump house is located at the bottom of Augusta Street, Morrisburg, on the bank of the St. Lawrence River. Water is pumped from the St. Lawrence River via a raw water well using three vertical turbine pumps, each equipped with variable speed drives, along approximately 980 m of 400 mm pipe to the water treatment plant located at 99 Augusta Street, Morrisburg.

The pump house contains an intrusion alarm and the equipment therein is monitored by SCADA.

Filtration

Inside the water treatment facility, water undergoes ultra-filtration through membrane cassettes (ZeeWeed membranes, manufactured by Zenon) which are housed in large concrete tanks. There are three concrete filter tanks, each of which contains two ultra-filtration cassettes.

Taste and Odour Control

Three granular activated carbon (GAC) contactors provide taste and odour control.

Disinfection

Sodium Hypochlorite is used for disinfection. Chlorination takes place at two locations prior to the distribution system:

- At the outlet of the GAC tanks (primary disinfection), and
- On the high lift pump discharge manifold, after the plant chlorine residual analyser (residual disinfection).

Clear well Storage

A two-compartment, baffled clear well storage provides chlorine contact time of approximately 156 minutes at maximum daily flow and maximum water depth.

High Lift Pumping

Four vertical turbine pumps, each equipped with a variable speed drive, discharge water from the treatment facility through a 450 mm discharge manifold. Water exiting the plant enters the Morrisburg distribution system.

Distribution

Water Transmission Main

An 11.5 km water transmission main carries treated drinking water from Morrisburg through the Iroquois booster station, reservoir and elevated storage facility to consumers in Iroquois.

Elevated Storage

The distribution system includes elevated storage facilities in Morrisburg and Iroquois. Storage capacity for the towers is:

945 M^3 Morrisburg: Epoxy Lined, Multi-Legged Steel Tank

945 M^3 Iroquois: Epoxy Lined, Multi-Legged Steel Tank

Water Main & Laterals

There are approximately 15 kms of water mains servicing the connections in Morrisburg and approximately 12 Kms of water mains servicing the connections in Iroquois.

Mains and laterals are constructed of: ductile, PVC, copper or galvanized pipe.

Appurtenances

There are approximately 160 hydrants and 325 valves within the distribution system for both villages.

Iroquois Booster Station and Reservoir

Residual disinfection is provided by sodium hypochlorite injection on the high lift pumping discharge manifold in the booster station.

Clear well storage is provided by a two-compartment, baffled clear well whose volume is designed to provide peak-hour water demand equalization as well as fire and emergency demands.

High lift pumping is accomplished by three pumps discharging through a 300 mm discharge manifold. Water exiting the booster station enters the Iroquois distribution system.

2. Monetary expenses incurred during this reporting period

Under Section 11 of Ontario Reg. 170/03, a description of any major expenses incurred during this reporting period must be included in the annual report. The major expenses for this drinking water system are listed below.

- One of the three low lift pumps has been completely refurbished.
- Zebra mussel Chlorine line replaced between intake crib and Low Lift pump station.
- Primary Chlorine dosing pumps replaced with new in accordance with certificate of approval at the Morrisburg regional treatment plant.
- Three hydrants where replaced on the Morrisburg and Iroquois distribution systems.

3. Notifications submitted in accordance to the Safe Drinking Water Act

Under Ontario Reg. 170/03, notifications were required for any instances where a sample result indicated that a parameter used to measure water quality exceeded a Maximum Acceptable Concentration (MAC). Once a notification is received from a laboratory or an observation of any other indicator of adverse water quality is made by operations personnel, corrective action as dictated by the regulations is initiated in an effort to confirm the initial result. If confirmed, further action may be recommended by the Medical Officer of Health. If not confirmed sampling will typically return to the normal schedule, or depending on the parameter, water operations may choose to increase the sampling frequency to more closely monitor the parameter for a period of time.

- *16/04/14 Morrisburg Distribution Lead sample from hydrant # 91 exceeded MAC of 0.01 mg/L with a test result of 0.024 mg/L Hydrant was flushed and resampled with a result of 0.00002 mg/L AWQI# 116980*

- *07/10/14 Morrisburg Distribution bacteriological sample exceeded MAC. Result reported at 10 coliforms at the standpipe. O. Reg 170/03 resample procedures were implemented and a final result of 0 coliforms was achieved AWQI# 120829.*

4. Definition & Terms

TCU - True Colour Units
mg - Milligram
N/A - Not Applicable
N/D - Non -Detectable
NTU - Nephelometric Turbidity Units - A measure of the amount of particles in water.
mg/l -Milligrams per litre. This is a measure of the concentration of a parameter in water, also called parts per million (ppm).
ug/l - Micrograms per litre, also called parts per billion.
ng/l - Nanograms per litre, parts per trillion.
Parameter-A substance that we sample and analyze for in the water.
AO - Aesthetic objective. AOs are not health related, but may affect the taste, odour, colour or clarity of the water
OG - Operational guideline. Set to ensure efficient treatment and distribution of water.
MAC - Maximum Acceptable Concentration. This is a health-related drinking water standard established for contaminants having known or suspected adverse health effects when above a certain concentration. The length of time the MAC can be exceeded without injury to health will depend on the nature and concentration of the parameter.

5. Water Quality Test Results

Microbiological testing done under schedule 10, 11 or 12 of regulation 170/03, during this reporting period

	Number of Samples	Range of E.Coli or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(Max #)
Raw	52	0-34	0-3,300	0	N/A
Treated	52	0-0	0-0	52	<2-4
Distribution	164	0-0	0-10	65	<2-6

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range Of Results(min#)-(Max#)
Raw Turbidity	8760	0.01 - 4.73
Permeate Turbidity	8760	0.02 - 0.07
Train #1	8760	0.02 – 0.96
Train #2	8760	0.03 – 0.17
Train #3	8760	0.02 – 0.19
Chlorine	8760	0.65 – 2.45

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Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument

Date of Legal Instrument Issued	Parameter	Date Sampled	Result	Unit Of Measure
	Total Suspended Solids	28/01/04	4.00	mg/L
	Total Suspended Solids	25/02/14	25.9	mg/L
	Total Suspended Solids	27/03/14	6.00	mg/L
	Total Suspended Solids	24/04/14	8.00	mg/L
	Total Suspended Solids	29/05/14	8.00	mg/L
	Total Suspended Solids	24/06/14	7.00	mg/L
	Total Suspended Solids	18/07/14	6.00	mg/L
	Total Suspended Solids	06/08/14	6.00	mg/L
	Total Suspended Solids	04/09/14	7.00	mg/L
	Total Suspended Solids	02/10/14	5.00	mg/L
	Total Suspended Solids	06/11/14	6.00	mg/L
	Total Suspended Solids	02/12/14	5.00	mg/L
	*Annual Average Concentration			mg/L

***Municipal Drinking Water Licence – Schedule C – Residue Management 1.5.2**

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Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result value	Unit of Measure	Exceedance
Antimony	28/05/14	0.0001	mg/L	
Arsenic	28/05/14	0.0011	mg/L	
Barium	28/05/14	0.026	mg/L	
Boron	28/05/14	0.021	mg/L	
Cadmium	28/05/14	<0.00002	mg/L	
Chromium	28/05/14	0.002	mg/L	
Lead	14/04/14	0.00040	mg/L	
Mercury	30/05/14	<0.00003	mg/L	
Selenium	28/05/14	<0.001	mg/L	
Sodium	04/03/14	16.0	mg/L	
Uranium	28/05/14	0.00029	mg/L	
Fluoride	04/03/14	0.2	mg/L	
Nitrite	Average/Yr.	<0.1	mg/L	
Nitrate	Average/Yr.	0.35	mg/L	

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Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample date	Result value	Unit of Measure	Exceedance
Alachlor	04/06/14	<0.3	µg/L	
Aldicarb	04/06/14	<3	µg/L	
Aldrin + Dieldrin	05/06/14	<0.02	µg/L	
Atrazine + N-dealkylated metabolites	04/06/14	<0.5	µg/L	
Azinphos-methyl	04/06/14	<1	µg/L	
Bendiocarb	04/06/14	<3	µg/L	
Benzine	27/05/14	<0.5	mg/L	
Benzo(a)pyrene	04/06/14	<0.005	µg/L	
Bromozynil	04/06/14	<0.3	µg/L	
Carbaryl	04/06/14	<3	µg/L	
Carbofuran	04/06/14	<1	µg/L	
Carbon Tetrachloride	27/05/14	<0.2	µg/L	
Chlordane (Total)	05/06/14	<0.04	µg/L	
Chlorpyrifos	04/06/14	<0.5	µg/L	
Cyanazine	04/06/14	<0.5	µg/L	
Diazinon	04/06/14	<1	µg/L	
Dicamba	04/06/14	<5	µg/L	
1,2-Dichlorobenzine	27/05/14	<0.1	µg/L	
1,4-Dichlorobenzine	27/05/14	<0.2	µg/L	
Dichlorodiphenyltrichlorothane (DDT)+metabolites	05/06/14	<0.01	µg/L	
1,2-Dichloroethane	27/05/14	<0.1	µg/L	
1,1-Dichloroethene	27/05/14	<0.1	µg/L	

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Parameter	Sample date	Result value	Unit of Measure	Exceedance
Dichloromethane	27/05/14	<0.3	µg/L	
2-4 Dichlorophenol	04/06/14	<0.1	µg/L	
2,4-Dichlorophenoxy acetic acid (2,4_D)	04/06/14	<5	µg/L	
Diclofop-methyl	04/06/14	<0.5	µg/L	
Dimethoate	04/06/14	<1	µg/L	
Dinoseb	04/06/14	<0.05	µg/L	
Diquat	30/05/14	<5	µg/L	
Diuron	04/06/14	<5	µg/L	
Glyphosate	30/05/14	<25	µg/L	
Heptachlor + Heptachlor Epoxide	05/06/14	<0.1	µg/L	
Lindane (Total)	05/06/14	<0.1	µg/L	
Malathion	04/06/14	<5	µg/L	
Methoxychlor	05/06/14	<0.1	µg/L	
Metolachlor	04/06/14	<3	µg/L	
Metribuzin	04/06/14	<3	µg/L	
Monochlorobenzene	27/05/14	<0.2	µg/L	
Paraquat	30/05/14	<1	µg/L	
Parathion	04/06/14	<3	µg/L	
Pentachlorophenol	04/06/14	<0.1	µg/L	
Phorate	04/06/14	<0.3	µg/L	
Picloram	04/06/14	<5	µg/L	
Polychlorinated Biphenyls (PCB)	05/06/14	<0.05	µg/L	
Prometryne	04/06/14	<0.1	µg/L	
Simazine	04/06/14	<0.5	µg/L	

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Parameter	Sample date	Result value	Unit of Measure	Exceedance
THM	N/A	51.175	µg/L	
Temephos	04/06/14	<10	µg/L	
Terbufos	04/06/14	<0.3	µg/L	
Tetrachloroethylene	27/05/14	<0.2	µg/L	
2,3,4,6-Tetrachlorophenol	04/06/14	<0.1	µg/L	
Triallate	04/06/14	<10	µg/L	
Trichlorothylene	27/05/14	<0.1	µg/L	
2,4,6-Trichlorophenol	04/06/14	<0.1	µg/L	
2,4,5- Trichlorophenoxy acetic acid (2,4,5-T)	04/06/14	<10	µg/L	
Trifluralin	04/06/14	<0.5	µg/L	
Vinyl Chloride	27/05/14	<0.2	µg/L	

South Dundas Water Treatment Plant
99 Augusta Street, Morrisburg

Supervisor of Water & Wastewater
Ian Kemp

2014 Annual Report
Flow Data

Month	Raw Flow	Treated Flow										
					Free Chlorine Residual			Turbidity		NO_2	NO	THM
	Total Flow m^3	Treated Flow m^3	Avg. Day m^3/day	Max Day m^3day	Avg. mg/L	Min. mg/L	Max. mg/L	Min. NTU	Max. NTU	mg/L	mg/L	µg/L
January	148,639.26	134.294.00	4,332.06	5,385.60	1.6	1.04	1.94	0.03	0.04			
February	127,885.74	116,206.68	4,150.24	4,780.29	1.45	1.03	1.74	0.03	0.04	0.1	0.4	25.9
March	149,679.14	136,713.42	4,410.11	4,903.09	1.52	0.83	2.08	0.03	0.04			
April	142,893.48	133,286.95	4,442.90	5,866.00	1.51	0.65	2.45	0.03	0.04			
May	142,298.45	128,644.00	4,149.81	4,751.96	1.52	1.01	2.07	0.04	0.05	0.1	0.4	67.2
June	119,530.00	105,109.00	3,503.63	4,336.00	1.61	1.04	2.17	0.04	0.07			
July	116,662.00	98,627.00	3,181.52	3,590.00	1.39	0.69	1.96	0.03	0.05			
August	109,452.00	91,113.00	2,939.13	3,996.00	1.32	0.66	1.93	0.03	0.05	0.1	0.3	69
September	96,901.61	81,471.58	2,715.72	3,474.35	1.33	0.94	1.75	0.03	0.04			
October	101,168.74	87,797.34	2,832.17	3,806.00	1.56	1.14	2.13	0.03	0.04			
November	90,728.34	80,438.26	2,681.28	3,841.00	1.43	1.08	1.8	0.03	0.04			
December	98,435.88	87,926.95	2,836.35	3,299.00	1.36	1.07	1.63	0.02	0.03	0.1	0.3	42.6
Total	1,444,274.64	1,147,334.18										
Minimum	90,728.34	80,438.26				0.65		0.02				
Maximum	149,679.14	136,713.42	4,442.90	5,866.00			2.45		0.07			
Average	122,348.98	105,940.72	3,514.58	4,335.77	1.466667					0.1	0.35	51.175
ODWS										1	10	100

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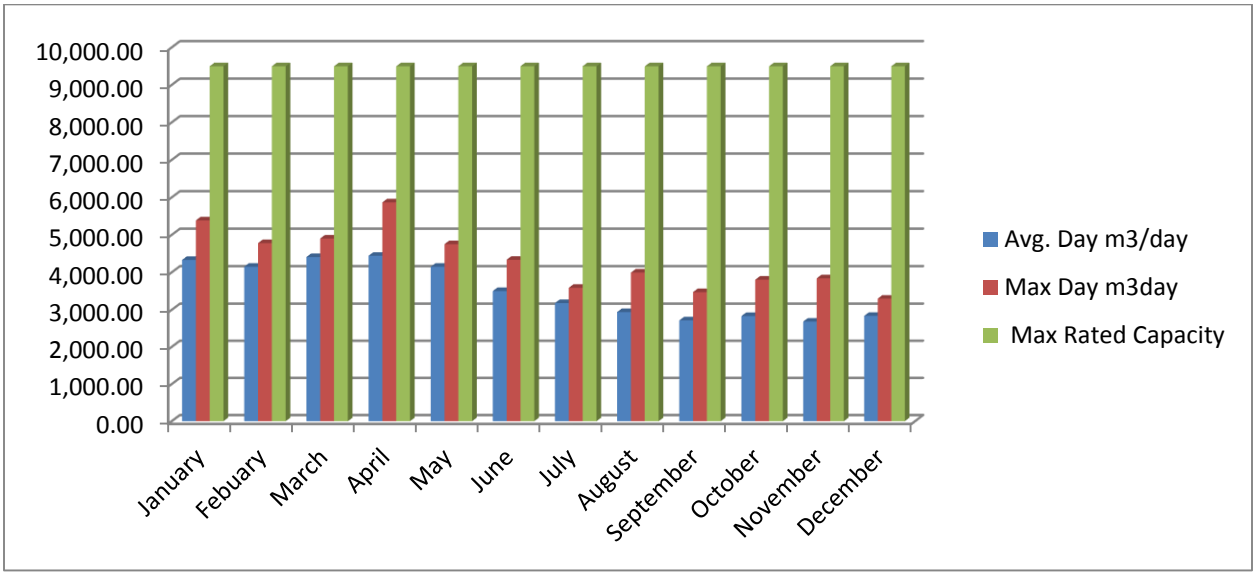
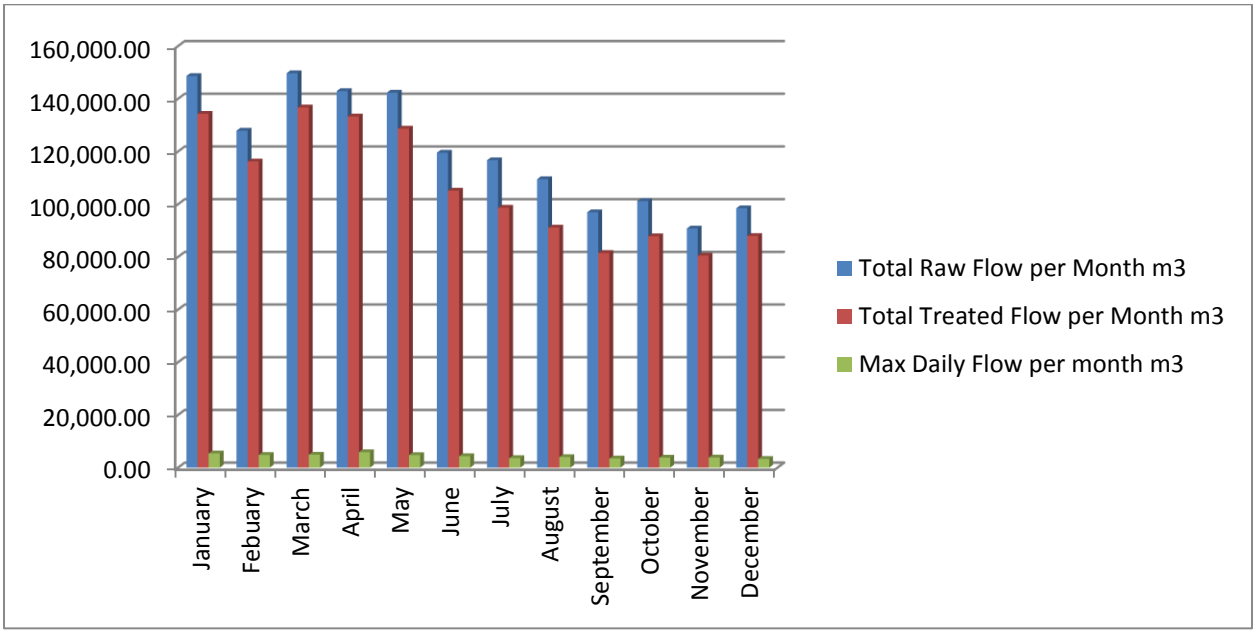
AVERAGE DAILY FLOW 2014 – Showing the daily Maximum Capacity



RAW WATER FLOW and TREATED WATER FLOW – 2014



South Dundas Water Treatment Plant
99 Augusta Street, Morrisburg

Supervisor of Water & Wastewater
Ian Kemp

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		On The Job Training										Iroquois																		
2014	HETEK CONFINED SPACE	OTJ RD7000 and Locate	OTJ Watermain repair	OTJ Primary CL2 System Zenon	Watson Marlow Pump Training	OTJ Williamsburg Lagoon WW	OTJ Use of Lifting Devices	OTJ SCADA Training	OTJ Confined Space	Exam Prep WWT 1 & 2	On Line Training 101	Iroquois Plant Effluent Pumps	Iroquois Plant Bio Solids	Iroquois Rotary Drum Thickener	Iroquois Headworks screen and grit	Iroquois UV Plant	Iroquois Chem Feed Pumps	Iroquois SBR Training	Iroquois BAS Training	Iroquois AERZEN Blower Training	Iroquois Polymer Feed System	WCWCW after accreditation	WHIMIS	TDG	First Aid CPR c+aed	OETC Math 1.1	Standard of Care SDWA Course	Mandatory Renewal course
A. Cassell				**1/0**						**1/3.5**			**3/3.5**	**10/3.5**	**14/3.5**	**17/3.5**		**21/3.5**	**24/3.5**		**27/3.5**		**27/3.7**	**27/3.9**				
Date				√						√			√	√	√	√		√	√		√							
Hrs/Ceu				1						3.5			2	3+4	4	3		4	3		3		0.2	0..2				
N. Hewage	**0/0.7**	**6/0.7**	**11/0.7**									**13/0.7**	**15/0.7**	**18/0.7**	**22/0.7**	**25/0.7**	**27.5/0.7**						**27.5/0.9**	**27.5/1.1**				
Date	√	√	√									√	√	√	√	√	√											
Hrs/Ceu	0.7	6	5									2	2	3	4	3	2.5						0.2	0.2				
I. Kemp					**5/0**	**8/0**						**10/0**	**12/0**	**19/0**	**23/0**	**26/0**	**28.5/0**				**30.5/0**	**30.5/1.1**	**30.5/1.4**	**30.5/1.6**	**30.5/3**		**30.5/3.3**	
Date					√	√						√	√	√	√	√	√				√	√	√	√	√		√	
Hrs/Ceu					5	3						2	2	3+4	4	3	2.5				2	1.1	0.2	0.2	1.4		0.3	
M. McDonald	**Sept**						**2/0**									**5/0**												
Date							√									√												
Hrs/Ceu							2									3												
V. Lauzon	**Sept**						**2/0**													**4/0**								
Date							√													√								
Hrs/Ceu							2													2								
D. Villenueve	**0/0.7**				**5/0.7**	**8/0.7**	**10/0.7**	**13/0.7**		**13/4.2**	**13/4.3**	**15/4.3**	**17/4.3**	**24/4.3**	**28/4.3**	**31/4.3**	**33.5/4.3**	**37.5/4.3**	**40.5/4.3**		**40.5/4.3**		**40.5/4.5**	**40.5/4.7**	**40.5/6.1**	**40.5/6.4**		**40.5/7.1**
Date	√				√	√	√	√		√	√	√	√	√	√	√	√	√	√		√		√	√	√	√		√
Hrs/Ceu					5	3	2	3		3.5	0.1	2	2	3+4	4	3	2.5	4	3				0.2	0.2	1.4	0.3		0.7
C.Witteker							**2/0**		**6/0**			**8/0**	**10/0**	**18/0**	**22/0**	**27/0**				**29/0**	**31/0**		**31/0.2**	**31/.4**				
Date							√		√			√	√	√	√	√				√	√		√					
Hrs/Ceu							2		4			2	2	4+4	4	3+2				2	2		0.2	0.2				