

ALBERTA



UTILITY OPERATOR

NEWSLETTER

WINTER 2000 - NUMBER ONE

FEATURE FACILITY: Anthony Henday Water Treatment Plant by Joe Vandenerboom, Head Operator



1974, construction commenced on the water plant in 1975, and on the pipeline in 1976. The project was completed in 1977, with production and pumping beginning in November 1977. The provincial government operated the AHWTP from 1977 to 1992. In 1992 the legislature and the owners incorporated the MVRWSC and operation was taken over in 1993. The MVRWSC is directed by a Board, which consists of one member of council from each town and an independent administrator.

The AHWTP is a Class III water treatment facility and is capable of treating 13,636 m³ of water per day. The

The Mountain View Regional Water Services Commission (MVRWSC) owns and operates the Anthony Henday Water Treatment Plant (AHWTP) which is situated along the banks of the Red Deer River north west of Innisfail. It is a regional water treatment plant and currently services a population of just under 25,000 people in six communities.

History

The idea of a regional system was conceived in 1973, when the towns of Innisfail, Bowden, Olds, Didsbury, Carstairs and Crossfield approached the provincial government about building a water treatment plant and pipeline to provide a safe reliable source of potable water for its citizens. Approval was given in



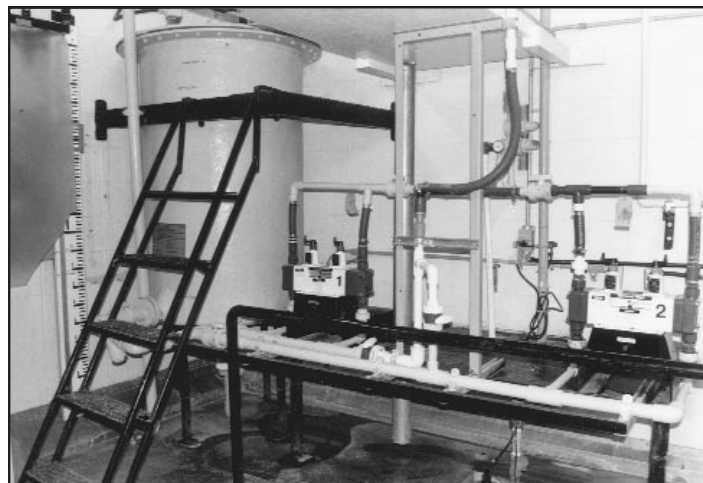
LEFT: JOE VANDENERBOOM, HEAD OPERATOR
RIGHT: JOHN A. MacDONALD, PLANT MANAGER

Red Deer River is the source of water for the AHWTP and originates in the Rocky Mountains east of Lake Louise. The Little Red Deer River and Medicine River are the two main tributaries and enter the Red Deer River downstream of Dickson Dam but still upstream of the AHWTP. Each can provide unique characteristics in the raw water during spring break-up or periods of heavy rain, when turbidity can exceed 8000 NTU and colour over 200 true colour units.

Raw water is drawn into the low lift pump house (LLPH) where four pumps transfer water to the clarifier in the main plant. Potassium permanganate can be added in the LLPH during times of high colour to aid in colour removal and control taste and odour.

Flocculation, sedimentation, and clarification are achieved in a Solids Contact Upflow Clarifier. Liquid aluminium sulphate is the primary coagulant and an anionic or cationic polymer is used as a coagulant aid depending on the raw water conditions. Each chemical is added at the flash mixer prior to entering the clarifier.

Hydrated lime is added as slurry to the centre reaction zone for softening and alkalinity control to activate the alum during periods of low turbidity. Effluent water from the clarifier has an elevated pH and requires recarbonation. A submerged combustion burner produces carbon dioxide and lowers the pH from 9.0 to 7.6. After recarbonation, the water is chlorinated with chlorine gas for disinfection and proceeds to the three rapid sand filters.



CHEMICAL FEED



CHLORINE ROOM



SOLIDS CONTACT UPFLOW CLARIFIER

Filtration is the final polishing process for the water. CaCO₃ precipitates from the recarbonation process, floc carries over from the clarifier, and protozoans are removed in the dual media rapid sand filters.

Treated water is stored in a 3,410 m³ clear well which has a detention time of about two hours. Water is pumped to the Innisfail reservoir using two 100 HP pumps via a 10" diameter pipeline. Water pumped to Bowden, Olds, Didsbury, Carstairs and Crossfield is achieved by using two 600 HP pumps or two 1500 HP pumps (via a 16" diameter pipeline) depending upon demand. All process waste and backwash wastewater is discharged to two settling lagoons where the solids settle out, and the supernatant is returned back to the process stream.

A number of cost saving measures and equipment upgrades have been implemented since the plant has been privatized and are outlined below.

- A reduction in chemical usage, without compromising water quality.
- A reduction in natural gas consumption, due to raw water not being pre-heated.
- Less frequent cleaning of settling lagoons because of lower chemical dosages.

- Lowered electricity costs after entering into a time of day power use agreement with TransAlta Utilities.

The changes above amount to thousands of dollars saved per year, and these savings are passed on to the customer.

Upgrades to the plant include:

- 1994 – PLC upgrade: removal of old Bristol Control system and installation of Modicon PLC modules.
- 1994 – Removal of old pressure chlorination system to new Wallace & Tiernan vacuum system.
- 1995 – Second 600 HP vertical turbine pump installed.
- Dec 1996 to Jan/Feb 1997 – Filter upgrades. Old media removed and Leopold clay under drains. Replaced media and installed AWI stainless steel flexscour under drain system.

The PLC, high lift and flash mixer upgrades were done utilizing the services of Associated Engineering.

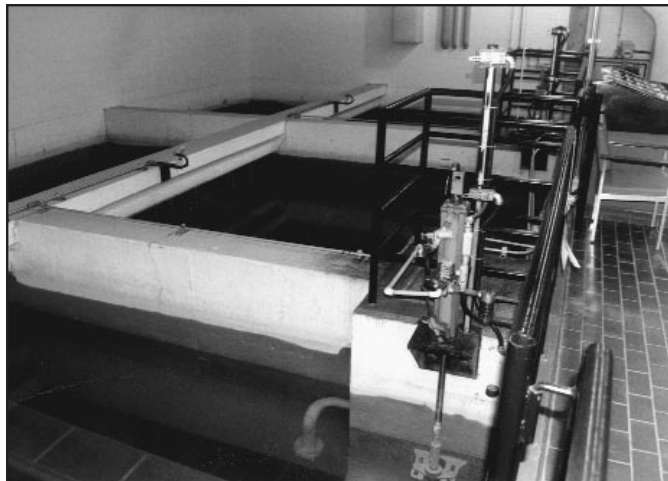
Through close consultation with Anthratch Western Inc., (AWI) it was determined the flexscour system would best suit the application and AWI did all of the work.

The PLC has proven to be a useful tool to the operator in the control and operation of the water treatment plant.

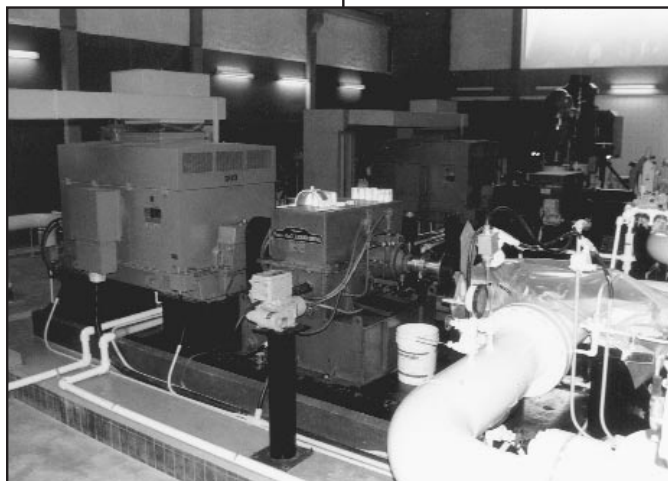
The new filter under drains have significantly improved the treated water quality, and have reduced the amount of backwash water used.

Future Projects

Due to the high pumping demands to the towns during peak days, a 6,800 m³ mid-line reservoir and pumping station is proposed to be built just south of Olds. Currently the water is pumped from the AHWTP to Crossfield with no reservoir or booster pumps. On a peak day, all the customers combined use a flow of 12,000 m³ per day. The new reservoir is to be constructed over the summer of 2000 and anticipated to be in operation by November 2000.



DUAL MEDIA RAPID SAND FILTERS



500 HP DISTRIBUTION PUMPS

With the existing plant near capacity, preliminary studies have been undertaken to see what new technologies will be best suited to be used in a new water treatment plant. This will optimistically be constructed and operational by April 2002. Estimated costs of these projects is \$12,000,000, with zero debt after all is completed.

Summary

The MVRWSC is a good example of a successful private water utility company. It boasts of low, if not the lowest, water rates in the province of \$0.50/m³ for municipal consumers. All revenue is from sales of water and covers wages, operating costs (gas, electricity), chemical, etc., and after expenses are paid there remains enough money for a fair profit. All profits are invested and are used to cover past upgrades and future

projects. The Board of Directors for the MVRWSC, are a very progressive group and have a dynamic vision of the future for the Water Treatment Plant, staff and water quality for the consumer.



LEOPOLD BLOCKS AND EFFLUENT PIPE FROM FILTERS DURING FILTER REFIT

PERSONAL PROFILE

JOE VANDENAKERBOOM

Head Operator

Anthony Henday Water Treatment Plant



Joe was born in Saskatoon, Saskatchewan. At the age of 8, Joe and his family moved to Rocky Mountain House, Alberta where he grew up. Joe finished high school in Rocky Mountain House and in the summer of 1984 he started working for the Town. From 1984 to 1987 Joe spent most of his time working in public works and utilities for the Town of Rocky Mountain House.

In 1988, Joe enrolled in the Westerra (NAIT) Water and Wastewater Technology Program and also became the first recipient of the AWWOA bursary. He served his practical experience with the Town of Rocky Mountain House, the Town of Canmore and a local gas plant. In August of 1989, Joe accepted a utility operator position with the Town of Ponoka. In August of 1995 he left Ponoka to join the Anthony Henday Water Treatment Plant/Mountain View Regional Water Services as an Operator I. This proved to be a good career move as he is now the head operator at the facility.



In 1997, Joe obtained his Level III Water Treatment certification. He is currently working his way toward Level IV Water Treatment certification but he also holds Water Distribution II, Wastewater Collection I and Wastewater Treatment I.

Joe likes to "get involved" so in March of 1999 he ran for a position on the executive of the Alberta Water and Wastewater Operators Association (AWWOA). He was elected, representing operators in the 10,000 to 100,000 population category. Joe is currently working on the "Operator of the Year" Committee as well as the Publicity and Promotions Committee. He would like to see more feedback from the AWWOA members to the executive so that they can better serve the membership.

As head operator, Joe does most of the scheduling, and is in charge of the laboratory quality assurance/quality control, boiler operations, monthly and annual reports, remote meter stations, water sampling, pipeline location (80 km of pipeline) for utility crossings and routine maintenance projects. The treatment plant is a Class III facility, employing eight people. The facility treats



water from the Red Deer River and pumps the product to six communities via the regional pipeline. The plant capacity is 14,000 m³/day. For a more detailed look at the facility check out the "Feature Facility" elsewhere in this Alberta Utility Operator.

Joe Vandenaekerboom is single and lives in the Town of Innisfail. His hobbies include camping, fishing, and model railroading. Joe would like to mention that he enjoys the challenges (like spring break-up) of the job and the great location. He would also like to credit his past and current supervisors for encouraging him to progress to where he is now.

AWWOA CHAIRMAN'S REPORT

by Mike Pelletier

Well it seems we cruised through the millennium without too much trouble. It's nice to see the work put into preparation paid-off.

We've been having quite a mild winter so far, which to anyone who enjoys the winter snow is a problem. Any amount of snow we do get seems to melt away. It quite hard on the snowmobile's, but will make for an easy spring run-off.

Progress is still being made on the Level III and IV study guides, as well as the advanced treatment programs. The study guides should be available on the A.W.W.O.A. website shortly.

March is approaching and so is the A.W.W.O.A. seminar. This year's 25th Annual Seminar is gearing up to be as always, a great source of information and experience sharing. Hope to see you there.

Your Chairman
Mike Pelletier

1998/99 AWWOA BURSARY AWARD Recipient: Ken Grant

Ken has been with the Town of Millet since 1988 and is currently their Operator III. In 1996 Ken decided that he wanted to improve his knowledge in the Water and Wastewater field and approached the Town about supporting his desire to attend the NAIT Water and Wastewater Technical Program. The Town was supportive of his initiative. So began a couple of years of putting money aside for this endeavour. Ken, as a member of AWWOA, approached the Association for a Bursary in 1998 and was chosen as the 1998/99 recipient of an award of \$2000. Ken not only put together the money to attend NAIT he also achieved outstanding marks.

Ken would like to thank his wife and 3 children, the teachers at NAIT, the Town of Millet, and the AWWOA for their support over the past 2 years. Ken would like everyone to know that the NAIT course was excellent and would highly recommend it to anyone.

WATER FOR PEOPLE - UPDATE

\$1960 Raised
At Silent Auction



The Calgary & Area WFP Committee has been busy. Over eighty people who attended the AWWA Networking Meeting in Calgary on January 13 helped to raise \$1960 for Water for People.

The generous donations from individuals and organizations made it possible for the Calgary & Area WFP Committee organize a silent auction. People had the opportunity to bid on everything from golf shirts, Calgary Flames tickets, gift certificates for hotels and restaurants, artwork to adventure day trips.

Thank you to the suppliers who were so generous in their contributions:

As well as the recent silent auction, the Calgary and Area WFP Committee hosted a "Murder Mystery Night", at the Deane House in Calgary on January 20th. This evening of unique entertainment proved to be full of laughs, intrigue, mystery and a whole lot of fun! Thank you to everyone who supported this murder mystery fundraising event and who assisted in raising an additional \$630.00 for such a worthy cause.

One hundred percent of monies raised at these Water for People events will go directly to our adopted project in the Midnapore District, West Bengal State, India. There are five schools in this district, each needs \$2200 (US) to construct water and sanitation facilities.

Through the efforts of Water for People Committees in Western Canada, we funded two projects in 1999. The monies raised at the silent auction and the murder mystery will help build the third school build their wells and latrines.

Hot Off the Presses!! Get Your Now!!

The much sought after AWWOA "Operator Handbooks", that were available to 1999 Seminar attendees have been reprinted and are now available for Sale, for the low, low price of \$7.00 each.

To order yours, please contact Terry Chapman at:

Alberta Water and Wastewater Operators Association
P.O. Box 34010, 196 A Kingsway Mall PO
EDMONTON, AB, T5G 3G4

IRON AND MANGANESE REMOVAL COURSE

January 25 & 26, 2000

A very successful course on Iron and Manganese Removal was recently conducted in Red Deer and Innisfail. The course was sponsored by the Alberta Water and Wastewater Operators Association and Alberta Environment, but a number of other groups worked together to make the course possible. The reference material used was a manual developed by Anthratech Western Inc.



FILTER BACKWASH TESTING

for Saskatchewan Environment. Thanks to Gus Feitzelmayer of Saskatchewan Environment for permission to use the manual. We would also like to thank Mr. David Hambley of AWI and his



DAVID HAMBLEY DESCRIBES FILTER OPERATION

people, Mr. Sheldon Swanson and Mr. Kevin Reilly for ensuring a successful course. Another of the course highlights was Mr. Garry Drachenberg of Associated Engineering. Garry was one of the lecturers and conducted one of the four field workstations.

The second day of the course included a trip to the Anthony Henday Water Treatment Plant where tours and workstations helped everyone apply the theory. Thanks to Mr. John MacDonald and the operators of the plant for their hospitality and assistance.

As you can see, it took a number of people, working together, to put this course on but all 33 people who attended felt it was a resounding success.

OPERATOR TRAINING COURSES – 2000

To register for any of the Alberta Environment/AWWOA sponsored courses listed below please complete the application form in the 1999/2000 Training Brochure. Additional information on the courses and the application for training is also available at the AWWOA website at: www.awwoa.ab.ca. Return the application, along with the registration fee, to the address indicated on the form. If a purchase order is being used please allow sufficient additional time for processing. In cases where more applications are received than can be accommodated, they will be accepted on a first received basis.

COURSE	LOCATION	DATES
Level II Certification Preparation Course	Edmonton	March 1 & 2, 2000
Alberta Operators Seminar	Banff	March 7 - 10, 2000
Chlorination Workshop	Calgary	April 11 - 14, 2000
Level I Certification Preparation Course Part "A"	Edmonton	April 4 & 5, 2000
Level I Certification Preparation Course Part "B"	Edmonton	May 16 & 17, 2000
Small Water Systems Course	Edmonton	April 26, 2000
Small Wastewater Systems Course	Edmonton	April 27, 2000

Correspondence/Homestudy Course

Level I Certification Preparation Correspondence
 Level II Certification Preparation Correspondence
 Small Water System Homestudy Course
 Small Wastewater Systems Homestudy Course

Wastewater Treatment Operations "A" Homestudy Course
 Wastewater Treatment Operations "B" Homestudy Course
 Rotating Biological Contactor (R.B.C.) Homestudy Course
 Pumps; Theory, Operation & Maintenance Homestudy Course

25th ANNUAL ALBERTA WATER & WASTEWATER OPERATORS ASSOCIATION OPERATORS SEMINAR March 7 - 10, 2000

The Alberta Water and Wastewater Operators' Association Annual Seminar will be held at the Banff Park Lodge, March 7 - 10, 2000. An activities outline is attached.

The Seminar is intended as an updating and general technical information session. It is designed for treatment plant operators, distribution and collection system operators, foremen and superintendents. A wide variety of topics relating to water treatment, wastewater treatment, water distribution and wastewater collection will be covered. The Annual General Meeting of the AWWOA will be held March 8, during the technical sessions.

The registration fee is \$116.00 per person (plus GST). Seminar Proceedings will be available on the AWWOA website only.

To obtain further information or to register for the seminar contact Kathy Abramowski at 780-427-7713 or write to:

Alberta Water and Wastewater Operator's Association
Box 34010, 196A Kingsway Mall P.O.
EDMONTON, AB, T5G 3G4

A tentative list of the presentations and a program of the seminar timetable follows:

PRESENTATIONS 2000 ALBERTA OPERATORS SEMINAR - Tentative

1. AWWA Satellite Teleconference
"Taste and Odour Control"
2. "Leadership and Motivation in the Workplace and in Daily Living", Fred Delvecchio, Director, Washington Environmental Training Centre.
3. "Parallel Series: A New Kind of Pumping", Richard Jacobs, P. Eng., National Manager, Municipal & Utilities, John Brooks Co. Ltd., Mississauga, Ontario
4. "Synthetic Liner Usage in the Wastewater Industry", Russ Ayers-Berry, CEO and Joe Cassidy, President, Lambourne Environmental Protection Ltd., Eckville, Alberta
5. "Optimizing Performance of Self Backwashing Filters", Shelson Swanson, P.Eng., AWI, Calgary.
6. "Advantages of the DAF Process and Automation", Ron Harker, President, Aquasmart Systems. Saskatoon, Saskatchewan.
7. "Basic Gas Detectors (Sensors, Calibration and Verification)", Mike Orchison, Western Canada Regional Sales Manager, A.I.M., Safe-Air Products, Austin Texas.
8. "Generating Revenue through Bulk Water Sakes and Septage Receiving", Darell Stang, Technical Support Representative, Municipal Solutions, Ltd., St. Albert.
9. "A Brief History of RBC's and Their Future", Rick Johnson, BCA Clearwater Group, Surrey, BC.
10. "Modern Developments in Rapid Gravity Sand Filtration", Mike Adkins, P.Eng., Vice President, Water and Wastewater, BCA Clearwater Group, Surrey, BC.
11. "Water Treatment System Process Efficiencies Using Mixed Oxidants for Pre and Post Treatment", Eldon Heppner, President, Proline Systems (Sask) Ltd., Saskatoon and Jacqueline E. Barnett, VP MIOX Corporation, Albuquerque, New Mexico.
12. "Management of Sewer Infrastructure Through Standardized CCTV Sewer Inspections", Marek Pawlowski, City of Burnaby, BC.
13. "Non Contacting Flow and Level Measurement", Ernest Higginson, VP, Greyline Instruments/Simark Controls, Long Sault, Ontario.
14. "How to Use your SCADA System to Automatically Produce Water and Sewer Reports", Taylor Green, RET, Automation System Manager, Nason Contracting Group, St. Albert, Alberta.
15. "Modified Slow Sand Filtration Project in Kikino", Garry Drachenberg, P.Eng., Associated Engineering Alberta Ltd., Edmonton.
16. "High Density Polyethylene (HDPE): The Water system of the 21st Century", Terry Shles, Product Manager, Central Plastics, Shawnee, Oklahoma.
17. "From Conventional Drying Beds to High Rate, High Capacity Vacuum Dewatering Beds", Paul M. R. White, President, US Environmental Products, Charlotte, North Carolina.
18. "Manufacturing & Testing of PVC Pipe", Gordon Lefort, P.Eng., IPEX Inc., Langley, BC.
19. "Optimized of Wastewater Stabilization Lagoons", Jim Leask, Surface Water Specialist, Nelson Environmental Inc., Winnipeg, Manitoba.

ACTIVITIES OUTLINE 2000 ALBERTA OPERATORS SEMINAR

Tuesday March 7, 2000

6:45 p.m. - 9:00 p.m. Equipment and Product Displays
7:00 p.m. - 9:00 p.m. Registration
Wine and Cheese Reception

Wednesday, March 8, 2000

8:00 a.m. - 9:00 a.m. Registration
9:00 a.m. - 12:00 noon Technical Presentations
12:00 noon - 1:30 p.m. Lunch Break
Displays
1:30 p.m. - 2:30 p.m. Technical Presentations
2:30 p.m. - 5:00 p.m. Displays

Thursday, March 9, 2000

9:00 a.m. - 12:00 noon Technical Presentations
10:00 a.m. - 2:00 p.m. AWWA Teleconference
(lunch included)
12:00 noon - 1:30 p.m. Lunch Break
1:30 p.m. - 4:00 p.m. Technical Presentations
6:00 p.m. - 7:00 p.m. Reception
7:00 p.m. - 1:00 a.m. Banquet and Entertainment

Friday March 10, 2000

9:00 a.m. - 12:00 noon Workshop
12:00 noon Seminar Closing

ALBERTA WATER AND WASTEWATER OPERATORS ASSOCIATION NOTICE OF MOTION Proposed Bylaw Changes

The following are the proposed changes to the AWWOA Bylaws, which will be discussed at the Annual General Meeting in March 2000, at the Annual Banff Operators Seminar.

These changes/additions are highlighted in **bold** and will read as follows:

D ii a.

A letter ballot plainly marked Vice Chair shall be mailed to the Vice Chair at the same time all ballots are mailed to the membership. This ballot is to be opened by the scrutineers in case of a tie vote with only that portion pertaining to the tie vote being counted.

The Alberta Utility Operator is published three times a year by the Municipal Program Development Branch of the Environmental Sciences Division, Alberta Environmental Protection, as a means to exchange information for those involved in the operation of water and wastewater facilities. The contents do not necessarily reflect official opinion or policy and, unless otherwise stated, should not be construed as policy or regulations. **The Alberta Utility Operator** and Alberta Environmental Protection allow the Alberta Water and Wastewater Operators Association to publish noteworthy information in this newsletter, however, we cannot be held responsible for the accuracy of information submitted. Contributions, comments and criticisms are welcome.

ALBERTA UTILITY OPERATOR
MUNICIPAL PROGRAM DEVELOPMENT BRANCH
ENVIRONMENTAL SCIENCES DIVISION
ALBERTA ENVIRONMENTAL PROTECTION
5th Floor, 9820-106 Street
Edmonton, Alberta T5K 2J6