

ALBERTA



UTILITY OPERATOR

NEWSLETTER

SUMMER 2001 - NUMBER TWO

FEATURE FACILITY:

The City of Camrose Water Treatment

The City of Camrose, located approximately 80 km southeast of Edmonton on Highway 13, is one of the most rapidly growing communities in Alberta. Camrose currently has a population of approximately 15,300 and is a major service centre for the area southeast of Edmonton.

The source of water for the City of Camrose is Dried Meat Lake, approximately 15 km south of the City. Dried Meat Lake is actually a 16 km long wide section of the Battle River. Water flows from the lake through boom screens to a one-day settling pond, is passed through microscreens, and then pumped to a collector well station located on the terrace above the lake. Three 75 kW turbine pumps then transfer water to the treatment plant through the 600 mm force main.



City of Camrose Water Treatment Plant

Treatment at the water plant consists of aeration, addition of powdered activated carbon (for taste, odour and organics removal) and conventional treatment. Coagulation, flocculation, and clarification are employed, using alum and polymer addition, as well as lime softening and pH control. Clarified water is then filtered, employing constant rate filtration and dual media rapid gravity filters. Chlorine and ammonia are added to maintain a combined residual for

disinfection. Hydrofluosilicic acid is added to maintain a constant fluoride residual. Treated water flows to the treated water reservoirs and pumping stations then to the distribution system.

Although the City of Camrose has been meeting current approval requirements for the water treatment facility, City Council recently had a "state of the art" ultra violet (UV) disinfection system installed at the treatment plant. Ultra violet disinfection provides additional protection from infectious organisms by "inactivating" them so that they cannot



Gerry Siewert "At The Controls"

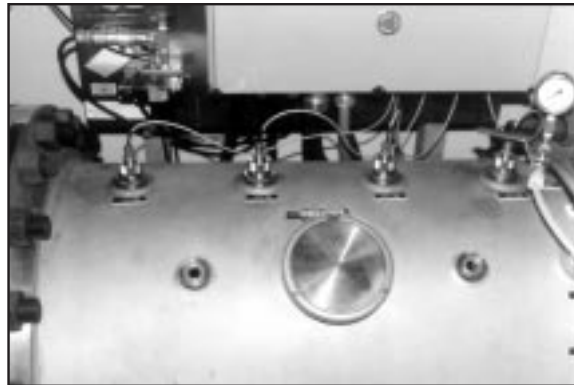


U.V. System During Installation

reproduce. Recent testing of ultra violet disinfection systems has shown that ultra violet is effective, if properly applied, in inactivating cryptosporidium, giardia, and other microorganisms. This pro-active additional disinfection process is intended to provide protection beyond the existing chlorination system. The installation, one of the first of its type in Western Canada, was also chosen because it does not produce disinfection byproducts like most other disinfectants. The Camrose application will certainly be a good "test" of this type of system, as seasonal variations in dissolved organics, color and hardness will likely have an impact on treatment efficiency. EPCOR Water Services, as the Western Canada distributor of the Sentinel™ disinfection system manufactured by Calgon Carbon Corporation, partnered with the City to pilot, install, and test the system. The system commenced operation in early April of 2001 and is



In Line Installation



Four U.V. Sensors

still undergoing evaluation. The system employs four 24-inch in-pipe quartz lamps, running at 6 to 6.5 amps, consuming four kW each. Currently the sleeve cleaning mechanism is being activated manually, however, automatic cleaning is an option. The ultra violet lamps are rated for approximately 3,000 hours of normal use.

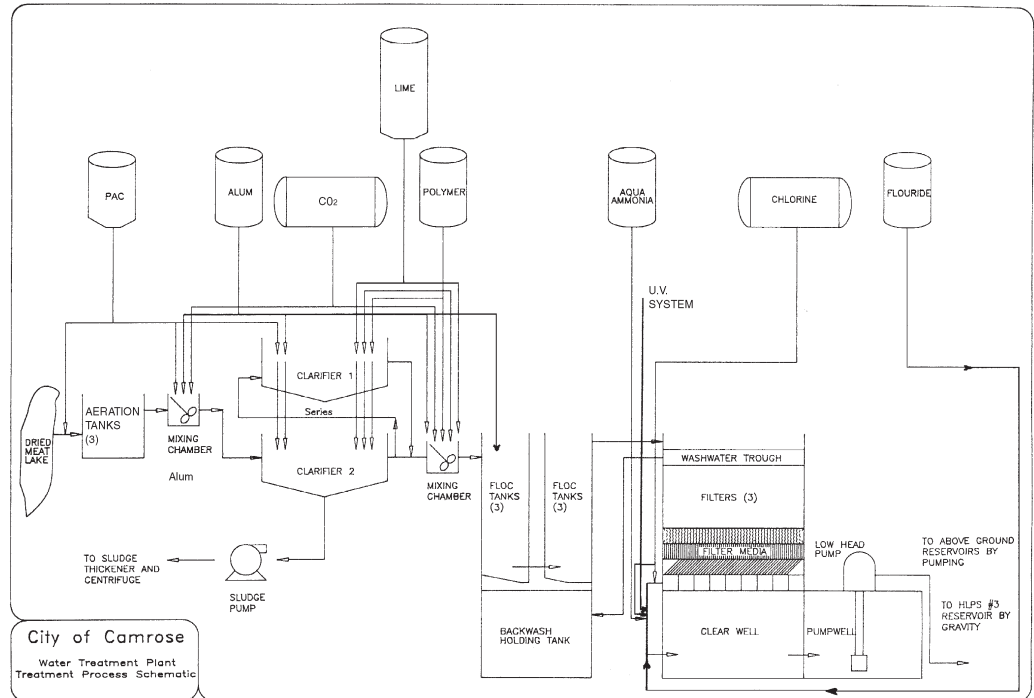
The application of ultra violet disinfection for surface water treatment is a relatively new technology, and water providers and regulators will certainly be watching with interest as it is applied in the City of Camrose.

Thanks to the following people for their assistance in making this article possible:

- | | |
|-------------------|----------------|
| Mr. Gerry Siewert | Chief Operator |
| Mr. Allan Baier | Operator |
| Mr. Jeff Forre | Operator |
| Mr. Bill Rindero | NAIT Student |



Control Module



City of Camrose
Water Treatment Plant
Treatment Process Schematic



Ron Bayne Service Award

Congratulations to Harold Lewis! Harold was awarded the Ron Bayne Service Award at the Annual Alberta Water and Wastewater Operators Seminar in Banff on March 8th.

The Ron Bayne Service Award is given to recognize the contribution of an individual to the goals of the Association as well as long dedicated service to the Association while on the executive. This is a person who has furthered the goals of training, education and certification of water and wastewater operators in the Province of Alberta. Harold has been a member of the AWWOA for 25 years, served 6 full terms on the executive and was also Chairman in 1985/1986. A well deserved award.

PERSONAL PROFILE KEITH BEILMAN County of Wetaskiwin No. 10



Keith has been a member of the Alberta Water and Wastewater Operators Association for six years and was successful this spring at running for the Association executive,

representing communities under 3000 population. He is currently on the AWWOA Nominations Committee as well as the Safety Committee. Keith is also a member of the Kiskayo Trail Committee, (part of the TransCanada Trail) working to develop and maintain a multi-use path around Pigeon Lake.

Keith and Susan are looking forward to a new addition to the family in September. They live at Pigeon Lake, close to much of his work, and enjoy the quality of life that it brings. He enjoys mountain biking in the summer and snowmobiling in the winter, "right out the back door". He also enjoys most sports and reading.

If you happen to be in Wetaskiwin (car shopping?), Keiths' office is in the County Office and Shop facility, right across the way from the Reynolds Museum.



Keith is a Western Canadian boy, born in Dodsland, Saskatchewan. If you have never been to Dodsland it is south west of North Battleford, where Keith "grew up" and went to school. In 1982 he moved to Edmonton to work in the oil patch and seismic industry. When oil activity went down Keith decided to try something else. While trying to enroll in the Forestry program at NAIT his career investigation showed job prospects were bleak. His interest then started leaning to the water industry and in 1988 he enrolled in the Westerra "now NAIT" Water and Wastewater Program in Stony Plain. After completing his first term, Keith worked his practicum with the City of Lloydminster in water and wastewater treatment. Since graduation he has obtained experience with Sunshine Village (utility operator), Insituform Group Ltd. (Edmonton), and six years at the E.L. Smith and Rossdale water treatment plants in Edmonton. In 1996 Keith applied for and obtained a position with the County of Wetaskiwin as Utility Officer/Development Officer where he enjoys the "quality of life" and not working shift work.

As Utility Officer with the County of Wetaskiwin (pop. approximately 11,000), Keith is in charge of water, sewer, landfills and transfer stations. He also does work in the residential development department. He works with a great staff and progressive County council that allows him the flexibility to operate the Utilities Department in a municipality experiencing rapid growth. The county is 135 km long and 35 km wide. Facilities include two pumphouses with wells and chlorinators, five wastewater lagoon systems with 17 lift stations, two Class IIC landfills and seven transfer stations. Being on call 24/7 keeps him very busy. Keith is fully certified at Level I in water treatment and distribution as well as wastewater collection and treatment. He recently became certified in Municipal Waste Facility Operations.

CONGRATULATIONS

The AWWOA would like to congratulate Karen Waldick, of the Village of Linden, for receiving the AWWOA "Operator of the Year" award for 2000.

Congratulations Karen, you are an asset to your community, and to the Association.



Doug Thorson, AWWOA Chairman presenting to Karen Waldick

MESSAGE FROM THE AWWOA CHAIRMAN Gerard Hollman

Dear Fellow Operators,

The Banff Operators Seminar turned out to be a big success again. Banff is a beautiful setting for a seminar and break from our busy schedules. I would personally like to congratulate the Water for People group who had a well-organized plan to raise over \$11,000.00 at our seminar. The five members of our executive, Bob Vatcher, Del Morrison, Joe Vandenerboom, Terry Chapman, and Doug Thorson (and Mike Yakemchuk) that let their hair go for the Water for People cause need to be thanked, that takes a lot of guts.

I would like to thank all the people involved who helped put an event of this size together; they include the organizing committee, sub-committees, speakers, suppliers, hotel staff and all the operators that attended. We keep looking at ways to improve the seminar so if anybody has any ideas we would surely like to hear them and see if they would work into the program.

Hopefully Mother Nature will take care of us so that we're not too dry this summer. Until next time, keep up the good work so that we keep Alberta operators one-step above the rest.

AWWOA Chairman
Gerard Hollman

Alberta Water and Wastewater Operators Association NOTICE OF MEETING

Pursuant to Bylaws article IIEii the AWWOA is hereby notifying all members of the AWWOA that the Semi-annual General Meeting of the Association will be held on Monday, October 29, 2001 at 1:00 pm in Salon 13 and 14 of the Shaw Conference Centre, Edmonton. A quorum of 20 AWWOA members will ensure that the meeting occurs. The Semi-annual General Meeting is held in conjunction with the Western Canada Water and Wastewater Association Annual Conference.

Water Well Rehabilitation WORKSHOP July 9 and 10, 2001 Red Deer



*Dr. Roy Cullimore, President, Droycon Industries Inc.
George Alford - right - Water Well Rehabilitation Specialist*

The Alberta Water and Wastewater Operators Association, in cooperation with Alberta Environment organized another timely and practical workshop in Red Deer recently. The attendance (over 55) was a good indication of the interest in the water well industry. Judging by the discussions and the numerous questions from the attendees the workshop was very useful. Many suggested that the workshop be conducted again.

Sincere thanks to the excellent speakers;

Dr. Roy Cullimore, President of
Droycon Industries Inc.,
George Alford, ARCC Inc.,
Florida (GA)
Lori Johnston, M.Sc.,
Draycon Bioconcepts Inc.
Brent Keevil, M.Sc., P.Eng.,
AWRC Inc.



*Lori Johnston, M.Sc.,
Microbiology Research Consultant
Droycon Bioconcepts Inc.*

Watch for a sequel planned for early February, 2002.



*"Lots of questions during the breaks"
Brent Keevil, M.Sc., P.Eng. - centre - AWRC Technical Manager*

WCWWA "SERVING THE WORLD CONFERENCE"

The 2001 WCWWA 'SERVING THE WORLD CONFERENCE' will be held in Edmonton from October 28th to October 31st at the Shaw Conference Centre

Three workshops are planned for Sunday-Water Borne Pathogens, Water and Wastewater Automation and thirdly Improving Water Utility Management Through Artificial Intelligence.

Four tours are planned Sunday, two in the morning, two in the afternoon. Morning tours will be at the E.L. Smith Water Treatment Plant and the Edmonton Composting Facility. The E.L. Smith Water Treatment Plant tour will include the remote operation system and ultraviolet pathogen inactivation unit as well as an overview of the current treatment process. The Edmonton Composting Facility is the largest municipal solid waste and wastewater biosolids co-composter in North America. Afternoon tours are the Gold Bar Wastewater Treatment Plant tour which includes the recent BNR upgrade, door control systems and new grit and screenings facilities; and the Public Works Yard and Edmonton Ring Road which will tour the City of St Albert Public Works facilities and the construction activities on the \$250 million Anthony Henday Drive portion of the Edmonton Ring Road Project

Reserve your hotel room at the Westin early 1-800-937-8461. For current information about the conference, visit www.wcwwa.ca/2001Conf/home.htm. or call 1-877-283-2003.

STEP UP TO YOUR FUTURE - STEP UP TO EDUCATION!

Are you ready to seize a unique opportunity to increase your skills needed to meet the rapidly challenging and changing world of Water and Wastewater technologies?

The AWWOA can help you get your career in gear with a "one time only" bursary award for full time and outreach study. If you are an AWWOA member in good standing and a Municipal or Utility employee in the Water or Wastewater field, you can apply.

See the AWWOA Website at www.awwoa.ab.ca and click on the "Inside AWWOA" then go to the "Bursary Award" button for further details. If you don't have web access, write to:
Andy Maguire, C/O AWWOA, PO Box 34010,
196A Kingsway Mall PO, Edmonton, AB T5G 3G4

Check it out, what have you got to lose?

NOMINATIONS

Do you want a say in government programs that affect Water and Wastewater treatment operators?

Interested in a higher profile in Municipal, Utility, Company or Public Works?

Care to submit direction to the Western Canada Water and Wastewater Association?

How about being a key driver in training, provincial operator certification programs, setting proficiency standards and encouraging the best possible operations for Water and Wastewater facilities in Alberta.

Are you up to that kind of challenge?

The AWWOA needs you as an executive member of our Association. We are looking at nominations for all sizes, categories and regions of operations in Alberta. Grab this opportunity and challenge to be elected to represent your peers in the Water and Wastewater fields for Alberta. Submit your nominations to Andy Maguire C/O AWWOA, Edmonton, AB.

FINAL

Notice to All Persons Responsible for Operation of Landfills and Composting Facilities in Alberta

Alberta Regulation 192/96, passed in August of 1996 outlines the requirement for supervision of all Class II or Class III landfills and Class I or Class II compost facilities by certified operators. The compliance deadline, as stated in the Regulations is **September 1, 2001.**

To date, well over 100 municipal waste facility operators have been certified and many more are currently in the process of obtaining certification.

Additional information about the Municipal Waste Facility Operator Certification Program, including the Certification Guidelines can be obtained on the Alberta Environment website at <http://www.gov.ab.ca/env/> or you can contact Del Morrison at (780) 427-8130.

COURSES OFFERED 2001 - 2002

The following courses are still being offered. If you wish to register for any of these courses please mail or fax your registration in with your payment to: (780) 427-5204. If you require more information please contact Del Morrison at (780) 427-8130. Please note: registrations are limited, so register early.

COURSE	LOCATION	DATES
Level I Certification Preparation Course Part "A"	Edmonton	October 3 & 4, 2001
Level I Certification Preparation Course Part "B"	Edmonton	November 13 & 14, 2001
Hydrant & Valve Seminar	Edmonton	December 12 & 13, 2001
Cross Connection Control – Inspectors Course	Edmonton	January 14 - 18, 2002
Filter Surveillance	Calgary	January 22 & 23, 2002
Management & Supervision for Operators	Edmonton	February 12 - 14, 2002
Alberta Operators Seminar	Banff	March 12 - 15, 2002
Level II Certification Preparation Course	Edmonton	March 20 & 21, 2002
Chlorination Workshop	Calgary	April 16 - 18, 2002
Level I Certification Preparation Course Part "A"	Edmonton	April 2 & 3, 2002
Level I Certification Preparation Course Part "B"	Edmonton	May 15 & 16, 2002
Small Water Systems Course	Red Deer	May 1, 2002
Small Wastewater Systems Course	Red Deer	May 2, 2002

2001 CERTIFICATION EXAM SCHEDULE

Anyone who is interested in writing the exams may request application forms from:

Alberta Environment
Regulatory Assurance Division
Approvals Support Branch
5th Floor, 9820 - 106 Street
EDMONTON, AB, T5K 2J6
Fax: (780) 427-5204

The **DEADLINE** for receipt of completed applications for examinations is listed below. Applications received after the deadlines, for any reason, **WILL NOT** be accepted. **IT IS THE RESPONSIBILITY OF THE INDIVIDUAL WHO IS APPLYING FOR CERTIFICATION TO ENSURE THAT HIS/HER APPLICATION IS RECEIVED ON TIME.** Applications must be prepared for and reviewed by the Certification Advisory Committee. Completed applications and a copy of transcripts or diplomas/degrees as well as other **RELEVANT** information must be submitted.

November 15, 2001	Edmonton	September 20, 2001
November 15, 2001	Calgary	September 20, 2001
March 12, 2002	Banff	January 20, 2002
May 28, 2002	Edmonton	April 10, 2002
May 28, 2002	St. Paul	April 10, 2002
May 29, 2002	Red Deer	April 10, 2002
May 29, 2002	Peace River	April 10, 2002
May 30, 2002	Medicine Hat	April 10, 2002
May 30, 2002	Grande Prairie	April 10, 2002
May 30, 2002	Lethbridge	April 10, 2002
May 31, 2002	Calgary	April 10, 2002
May 31, 2002	Fort McMurray	April 10, 2002

ALBERTA OPERATOR OF THE YEAR - 2001

The Alberta Water and Wastewater Operators Association solicits nominations for "Operator of the Year". Municipal officials, plant managers, or any member of the Alberta Water and Wastewater Operators Association may submit nominations.

NOMINATION GUIDELINES

1. The nominee must be a certified operator and a "member in good standing" of the Alberta Water and Wastewater Operators Association.
2. Written nominations must be received by January 31, 2002 for the March 2002 Presentation.
3. The nominee must have provided exemplary service to the water and wastewater operations field over an extended period of time.

Written nominations can be sent to:

Allan Kendrick
77 Michichi Dr.
Drumheller, Alta.

T0J 0Y1
Fax # 403-823-1353

Email Kendric@telusplanet.net

Andy Maguire
C/O The AWWOA
P.O. Box 34010
196A Kingsway Mall PO
Edmonton, Alta.
T5G 3G4

SUSTAINABLE WATER WELL INITIATIVE BIOFOULING AND WATER WELLS IN THE M.D. OF KNEEHILL, AB



As part of the Sustainable Water Well Initiative (SWWI), this fact sheet reports on a recent study into the potential role of groundwater bacteria in the reduction of well yields and water quality in the

Municipal District (M.D.) of Kneehill, Alberta, Canada. The work was carried out by PFRA in partnership with the M.D. of Kneehill, Alberta Environmental Protection (AEP) and Droycon of Regina, Saskatchewan.

The main study objectives were:

- To confirm the extent and type of groundwater supply problems,
- To determine the impact of naturally occurring nuisance bacteria in groundwater on water quality, well production rates, and well life expectancy, and
- To make recommendations on how best to treat these problems.

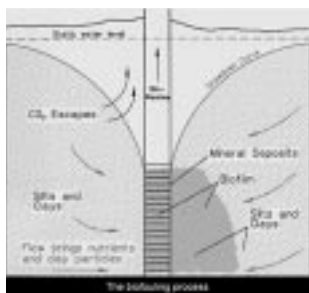


Submersible well pump covered with red slime

What is biofouling?

Biofouling is the term used to describe water well deterioration caused by microbiological activity (i.e.: bacteria). Well deterioration can take the form of:

- deteriorating water quality over time. This includes taste and odour as well as other water quality problems
- reduced well yield due to clogging of well screens or the aquifer itself
- red or black slime on pumps, well screens, or in the distribution system (toilet tanks, cisterns, etc.). These slimes can lead to increased corrosion of steel well casing, stainless steel well casing, stainless steel well screens, etc.

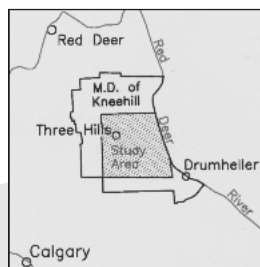


Nuisance bacteria are naturally present in groundwater. Pumping a well in increases the food supply for these bacteria, causing their population to rapidly expand in the vicinity of the well and in the distribution system. The bacteria form a slime or biofilm, that captures mineral scale and other deposits that move to the well during pumping. These deposits can

reduce water quality, well yield, and well life expectancy.

How was the study carried out

A sixteen township area (Township 29 to 32, Ranges 21 to 24 W4) was identified for study. Many water users in the targeted area have had to repeatedly replace wells whose yield had deteriorated since original installation. Biofouling was suspected as being the cause of this deterioration.



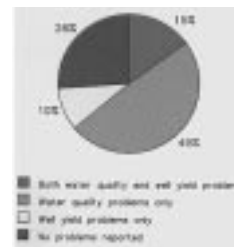
For the study area, PFRA, Droycon, AEP, and the M.D. of Kneehill:

- carried out detailed survey of 275 well owners to gather basic well information (age, depth, etc.) and information on water supply problems.
- collected water samples from 134 wells for microbial testing
- performed intensive diagnostic testing on seven water wells (including more detailed microbiological sampling, visual well inspection using a downhole camera, and pump testing), and
- undertook lab testing to develop a new well treatment process to rehabilitate wells that are severely biofouled.

STUDY FINDINGS:

Well Owners Survey

About 74% of the wells being used were reported to have well yield problems, water quality problems, or both.



Water quality was a more common concern than well yield. This difference may be due to owners' perceptions, as a slight change in water quality is more noticeable than a gradual reduction in well yield over time.

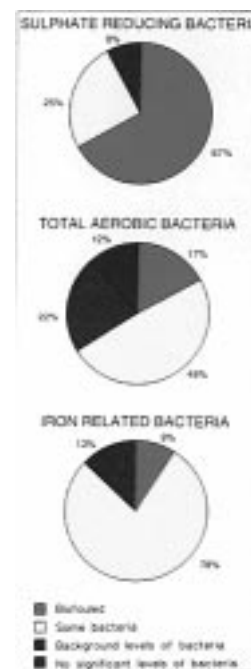
The most common water quality concerns were taste and odour.

Pumps pulled for maintenance or inspection were often covered with red slime, black slime, or both.

Less than one-third of the wells were reported to have undergone some form of well maintenance or treatment.

Results of Microbiological Testing

- About 68% of the wells show evidence of being biofouled with high populations of one or more bacteria types. Bacteria was present at lower populations in most of the other wells tested, suggesting that biofouling may be at an earlier stage in those wells.
- Although biofouling occurs at varying rates in different wells, evidence to date suggests that biofouling is progressive and will eventually occur in most of the wells in the study area.
- Sulfate reducing bacteria is the dominant bacteria type in the study area, although iron related bacteria and total aerobic bacteria are also present. All of these bacteria cause clogging, corrosion, odours, and other problems.
- Well replacement due to performance deterioration becomes increasingly likely after 15 years. Most wells appear to show very few symptoms of biofouling for the first five years.



- A reduction in yield is likely occurring in all of the biofouled wells located within the study area. Owners of low yielding wells are likely the first to notice a reduction in yield. Owners whose usage is much less than the well's capacity would likely not notice a gradual decline in yield, unless they are carefully monitoring the well.

To be continued . . . watch for the fall Alberta Utility Operator for Part II

TRENCH COLLAPSE

A

MHSA recently learned about a near miss trenching collapse that occurred in a small town in Alberta. The Town crew dug a trench 10 to 12 feet deep to reach a water shut-off valve. There was approximately 6" water in the trench, and the walls were straight cut. There was no shoring or cage used.

One worker was in the trench, digging with a spade, when one of the side walls started to give way. The worker's rubber boots got stuck in the mud, but he managed to escape – just barely.

The town estimated that approximately 200 to 300 pounds of dirt caved in. (Note that two feet of dirt on someone's chest weighs approximately 700 pounds, so the actual weight of dirt in this incident may have been more. It is important to recognize that 700 pounds distributed over a worker's chest makes it impossible for him to breath, even if his face and shoulders are clear.)



*OUR MISSION:
To Help Municipalities
Prevent Workplace Injury
and Illness.*

Unfortunately, trench collapse is still a fairly common incident to occur in Alberta. The regulations are clear, the proper procedures are straight forward, and the equipment to do the job properly is available to any employer. This incident should be a reminder to us all: if we don't take the proper precautions, things will go wrong, and people can get hurt.

Employers should ensure that for trenching or any other work:

- hazards have been identified,
- procedures are developed,
- equipment is properly maintained and available,
- workers are trained,
- monitoring is in place (including both inspections and adequate supervision), and
- corrective actions are taken if any problems are found

To learn more about proper trenching and excavation, or any other health & safety topic, give AMHSA a call at 780-955-3701 or email: emsha@telusplanet.net, www.amhsa.net.

IN MEMORIAM

The AWWOA would like to offer condolences to the family of Randy Ducharme, Public Works Foreman with the M.D. of Greenview. Randy passed away suddenly on July 17. He was a 14 year member of the AWWOA and WCWWA

The AWWOA would like to offer condolences to the family of Bill Orr, and to the Town of Bowden, on the event of his passing. Bill was involved in the day to day operations in the water and wastewater industry for the better part of 25 years, serving a number of communities in the past, including Bowden as their public works and utilities foreman. Bill was a member of the AWWOA for 21 years.

The Alberta Utility Operator is published three times a year by the Regulatory Assurance Division, Approvals Support Branch, Alberta Environment, 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 Environment 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
REGULATORY ASSURANCE DIVISION
APPROVALS SUPPORT BRANCH
ALBERTA ENVIRONMENT
5th Floor, 9820-106 Street
Edmonton, Alberta T5K 2J6