

Wastewater

Briefing

3-12-93



Alaska State Legislature

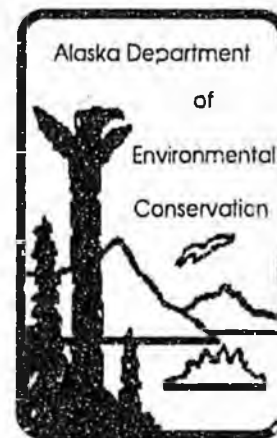
HOUSE RESOURCES COMMITTEE

P.O. Box V
State Capitol
Juneau, Alaska 99811
(907) 465-3715

DATE: March 26, 1993
TO: HOUSE RESOURCES COMMITTEE MEMBERS
FROM: CHAIRMAN BILL WILLIAMS *BW*
SUBJECT: Water and Wastewater Works Advisory Board

The attached information was sent to the committee as follow-up to our briefing by the Water and Wastewater Works Advisory on March 19th.

Water and Wastewater Works Advisory Board



State of Alaska
Department of Environmental Conservation

March 12, 1993

House Resource Committee
Room 128 Capitol
Juneau, Alaska 99801-1182

ATTN: Honorable Bill Williams

RE: Remote Maintenance Worker Program

Dear Chairperson Williams:

Thank you for the opportunity to address the House Resource Committee regarding the Water and Wastewater Advisory Board.

During the presentation a member of the committee requested specific information regarding the details of the remote maintenance worker (RMW). Enclosed are copies of the RMW 1993 Annual Report which provides historical and current program details.

We trust that this information is sufficient for your needs at the present time. If you have any questions or comments please contact Bill Fagan, Operations Assistance Program Manager, with the Department at 465-5142.

Sincerely,

A handwritten signature in cursive script, appearing to read "John Hargesheimer", with a long horizontal flourish extending to the right.

John M. Hargesheimer, PE
Board Secretary

ATTACHMENTS: RMW Annual Report

cc: Bill Fagan, ADEC-FCO

STATE OF ALASKA

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DEPT. OF ENVIRONMENTAL CONSERVATION

March 2, 1993

The Honorable Steve Frank
Alaska State Senate
State Capitol, Room 518
Juneau, AK 99801-1182

Dear Senator Frank:

The following information regarding the Remote Maintenance Worker (RMW) program is provided in response to your questions during the Facility Construction and Operation BRU budget meeting on February 24.

The current RMW program provides service to the following areas:

Bristol Bay Area Health Corporation - Henry Shade, RMW (20 villages)

Aleknagik	Ekwok	Naknek
Chignik Bay	Goodnews Bay	New Stuyahok
Chignik Lagoon	Igiugig	Perryville
Chignik Lake	Ivanof Bay	South Naknek
Clark's Point	Koliganek	Togiak
Dillingham	Levelock	Twin Hills
Egegik	Manokotak	

Tanana Chiefs Corporation - Dan Koch and Bill Dozette, RMWs (27 villages)

Alatna	Galena	Nulato
Allakaket	Hughes	Rampart
Arctic Village	Huslia	Ruby
Beaver	Kaltag	Stevens Village
Birch Creek	Koyukuk	Takotna
Chalkyitsik	Manley	Tanana
Circle	Minto	Tanacross
Dot Lake	Nikolai	Tetlin
Eagle	Northway	Venetie

Southeast Alaska Regional Health Corporation - Jim Ginnaty, RMW (13 villages)

Angoon	Kasaan	Port Protection
Craig	Klawock	Saxman
Hoonah	Klukwan	Thorne Bay
Hydaburg	Port Alexander	Yakutat
Kake		

Norton Sound Health Corporation - Jay Daw, Temporary RMW (15 villages)

Brevig Mission	Koyuk	Stebbins
Diomedes	St. Michael	Teller
Elim	Savoonga	Unalakleet
Gambell	Shaktoolik	Wales
Golovin	Shishmaref	White Mountain

Yukon Kuskokwim Health Corporation - Patrick McAree (St. Mary's area) and Wally Wallace (Bethel area), RMWs (22 villages)

Alakanuk	Kotlik	Pilot Station
Aklachak	Kwethluk	Pitkas Point
Akiak	Marshall	Russian Mission
Atmautluak	Mountain Village	St. Mary's
Eek	Napakiak	Sheldon's Point
Emmonak	Napaskiak	Tuluksak
Kasigiuk	Nunapitchuk	Tuntutuliak
	Oscarville	

Maniilaq Association - Craig Nordgren, RMW (11 villages)

Ambler	Kivalina	Point Hope
Buckland	Kobuk	Selawik
Deering	Noatak	Shungnak
Kiana	Noorvik	

If RMW program coverage were to be expanded to include additional villages, the Department recommends the following approach:

Three areas comprised of 33 villages are the most immediate candidates for expansion of the RMW program:

--Bethel area (a second position for 15 more villages) covering the villages along the coast from Scammon Bay to Platinum. The villages in the Yukon-

Kuskokwim Delta have a serious problem with compliance with the drinking water regulations. The area operators are in serious need of training to bring the area into compliance with state and federal rules. The cost of initiating additional service in the Yukon-Kuskokwim Delta is estimated at \$120,000. Adding this RMW position would bring the total to three RMWs in the Yukon-Kuskokwim Delta.

--Kodiak Island (one position for six (6) villages) where the Kodiak Island Village Utility Council has requested assistance that could easily be provided. Kodiak Island is a relatively compact service area with good air transportation and a history of water of sewer problems. If an agreement could be negotiated with the Cook Inlet Corporation, additional villages could be added to this service area on the north side of Cook Inlet. This position would cost approximately \$75,000 to initiate if only the Kodiak villages are covered; \$100,000 if Cook Inlet villages are added.

--Aniak area (one position for 12 villages) covering the villages on the upper Kuskokwim River from Kalskag upward and four villages on the Yukon River from Grayling to Holy Cross. Assistance in this area is desperately needed. The area is covered by both Yukon-Kuskokwim Health Corporation and Tanana Chiefs Conference. An agreement will need to be negotiated between these two corporations. However, it is most economical to serve the Yukon villages from Aniak than from any other hub. This position is estimated to cost \$100,000.

Other major areas which need RMW coverage include:

--Aleutian Chain, including the communities from Ivanof Bay to the end of the chain, as well as the Pribilof Islands. Villages in this region could be served from Cold Bay or Unalaska but travel would be very expensive. The total number of villages serviced would be 15.

--Iliamna, including the communities within the administrative areas of the Bristol Bay Area Health Corporation and the Cook Inlet Association. An agreement similar to the one needed in the Aniak area would be necessary. The total number of villages serviced would be eight.

--Glennallen area, including villages on the road system between Glennallen and Valdez. The total number of villages serviced would be 15.

Service from the Remote Maintenance Worker program is not required for the North Slope Borough. The Borough government currently provides operator assistance to the villages within the borough boundaries.

RMW PROGRAM PERFORMANCE

It has always been difficult to quantify cost savings to the State resulting from the RMW program and whether systems are being "properly" operated and maintained. For example many maintenance activities will not immediately show a cost savings, but savings will be shown through long-term record keeping. In an effort to better quantify future program successes, the Department has developed performance measures which will be used beginning in FY 94. However, we feel the program has been extremely valuable as indicated by:

1. **Uninterrupted service** - the majority (90% or more) of the communities serviced by RMWs have a consistent supply of water available with few interruptions. Over the last few years there has been only one catastrophic system failure. Most problems that develop are immediately addressed and service is maintained.
2. **Bacteriological sampling compliance** - this is also a good indicator of proper operation. Prior to the RMW program, routine drinking water sampling was virtually non-existent. There has been steady progress in each RMW service area. As detailed in our 1993 Annual RMW Report, sampling compliance (submitting samples) has reached an all-time high at a 75% compliance rate, with a couple areas having 100% compliance.
3. **Operator training/certification** - a few years ago there were almost no certified operators in villages serviced by the RMWs. The Department of Environmental Conservation (DEC), Public Health Service (PHS) and the Health Corporations recognized that we needed to build self-esteem in operators and decrease the operator turnover rate so we improved and increased operator training efforts. Even though the operator turnover rate has decreased, it will always be a problem and there will be a need for ongoing training. In addition, certification regulations require continued training to maintain valid operator certifications. The RMWs have played significant roles in certifying operators. As the 1993 Annual RMW Report indicates, each RMW service area now has a significant number of certified operators. They are beginning level certifications and we have a long way to go, but we feel this is a significant indicator of proper operator attention. The operators who have not been certified yet or have not been able to pass the exams have received both classroom and over-the-shoulder training. I would estimate that over 90% of all the operators within the RMW service areas have received some type of formal training. Operator training is not adequate to insure proper maintenance. They must receive proper managerial and financial support from the community. Local governments must operate

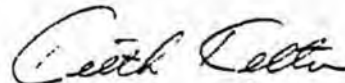
March 2, 1993

effectively if systems are to function on a long-term basis. The RMWs are assisting in these training functions.

4. Communities view the program as a success. A recent survey of communities served by the RMWs indicated that they view the RMWs as integral parts to their water and sewer utility operations and they consider the program a success and worth retaining.
5. Economic Savings - as mentioned above, there has been a significant reduction in major wintertime system failures. This has saved the State millions of dollars and has allowed these resources to be used in new system construction rather than system replacement. Additional RMWs would result in similar cost savings through expanded village coverage.

I hope this will help address your questions. If you would like more detailed information on the success of the RMW program, I would be happy to provide it.

Sincerely,



Keith Kelton
Director

BF/SS (h:\oo\clerical\Nagan\Frank)

Enclosure

cc: The Honorable Al Adams
The Honorable Tim Kelly
The Honorable Gene Therriault
Kris Lethin, Legislative Liaison, Governor's Office



Alaska's Remote Maintenance Worker Program
January 1993
Maintaining Rural Water and
Wastewater Systems

Prepared by:
Alaska Department of Environmental Conservation
Division of Facility Construction and Operation



REMOTE MAINTENANCE WORKER PROGRAM ANNUAL REPORT

JANUARY 1993

The Remote Maintenance Worker program began in 1981 with one person located in Saint Mary's serving ten Yukon Delta villages. This first Remote Maintenance Worker (RMW) provided skilled assistance to communities in an effort to keep village water and sewer systems functioning while providing on-the-job training to local operators.

That was 12 years ago. Today eight RMWs serve a total of 108 villages located in seven geographically separate service areas. The RMWs are centrally located in "hub" communities to facilitate travel. The "hub" communities are Saint Mary's (Yukon Delta), Bethel (Immediate Bethel Area), Dillingham (Bristol Bay Area), Kotzebue (Northwest Arctic), Nome (Norton Sound Area), Sitka (Southeast Alaska) and Fairbanks (Interior Alaska). A map showing the service areas covered by the RMWs is located in Appendix A.

Over the years there have been many significant advancements and service changes within each service area. Due to the consistency and longevity of the program in service areas such as Saint Mary's and Dillingham, improvements can be seen that have not yet been realized in other service areas. Each service area has continued to improve the operation and maintenance of the water and sewer systems in the communities within their boundaries. Service delivery improves at varying rates between service areas depending on the length of time that RMW services have been available. Specific improvements and survey results for evaluating future improvements are discussed later in this report.

During 1992, accomplishments were made in the areas of regionalized operator training activities, computerized communication systems and implementation of preventive maintenance management systems. In addition, there were no emergency declarations as a result of failed water and sewer systems.

Improving operation and maintenance programs and skills are relatively easy to identify where they can be visually observed. However, these improvements are very difficult to quantify and prove to others who are not familiar with the skills required by a water operator. For this reason, standards for evaluating the various RMW program grantees have been developed by the Department.

Performance standards and surveys can tell us what the program has done in the past and how it is presently doing. However, the future of the RMW program is not so clear. There are approximately 100 villages which do not receive the services of the RMW program. In addition, the majority of the villages which are currently served by the program have not yet progressed to a level where they are self-sufficient, consequently, they still need considerable assistance. This situation is very disturbing considering declining state revenues which could lead to decreases in program general funds. The program must continue to receive technical and financial support from the state if it is to remain viable. However, participating villages, grantees and others must recognize the need for the program to evolve and become more self-supporting if it is to remain viable on a long-term basis. Issues of State funding, support and future development of the program are discussed in the last two sections of this report.

IMPROVEMENTS OVER THE YEARS

The RMW program has resulted in many improvements over the years within each community served. Improvement has been in the areas of record keeping, improved operation and maintenance skills, increased fiscal support of the water and sewer systems by the community, reduced costs of operation and maintenance, and compliance with State and Federal drinking water regulations.

Record keeping in all the communities served by a RMW has progressed from no records to several years worth without interruption. This has been especially beneficial to engineers seeking information on water usage and production capabilities at facilities needing upgrading. Long term records are being used to monitor water usage and to discover leaks in circulating loops. These kinds of records are now being kept in

Pilot Station and Saint Mary's and have resulted in savings by reducing chemicals added to the water, electrical costs of pumping lost water, as well as the amount of water that must be processed to meet community needs. Records must be consistently recorded day to day, month to month for several years if trends are to be analyzed. In addition to improved water usage record keeping, there has also been improvement in equipment, maintenance, finance and process record keeping.

The RMWs help to educate and remind communities of bacteriological sampling requirements, thus helping to improve drinking water monitoring compliance. Bacteriological monitoring as required by the State drinking water regulations (18 AAC 80) has reached an overall 75 percent mark where RMWs are present with several service areas having 100 percent compliance with state monitoring requirements.

Establishing more reasonable user fees has been a significant improvement within particular villages. The Saint Mary's area RMW was able to assist three of his villages in negotiating substantial increases in the water rates paid by the school district. He did this by developing graphs using water usage and production cost records kept by the operators. In at least two cases he was successful in negotiating a fee twice the original. The longer the service time of the RMW, the better the rapport with the operators and city officials. The RMWs with the longest service are best able to assist the communities.

Another example of improvements facilitated by the RMW and the diligence of the village operator to the proper operation of his facilities is the reduction of fuel consumed by the water and sewer utility. In 1987, Mountain Village used 19,632 gallons of fuel to add heat to the water circulating through the distribution system. By changing some of the operational procedures and instilling in the operators the necessity of proper operation, the 1988 fuel consumption was reduced to 8,126 gallons. Because the operators have continued to properly operate and maintain the heat-add system of the distribution lines the fuel consumption has been below 8,000 gallons since 1988. The amount of fuel consumed in one year (1987) now lasts almost 2.5 years.

In the Dillingham service area the operators no longer wait several

days to get replacement pumps for their facilities. The RMW has established a shop where old centrifugal and chemical feed pumps are rebuilt and stored until they are needed in a village. The pump is put on a plane and is usually in the village the same day it is requested by the operator. The RMW also repairs motors by changing the armatures. This has saved the villages money and time by having a reliable and quick source for pumps and spare parts.

In an effort to identify areas where improvements could be achieved, a survey was sent to all the communities now being served by a RMW. The survey was sent to city clerks, city administrators, council members as well as the operators of the water facilities in each community. These individuals are in the best position to be aware of the improvements, activities and changes in their community as a result of the RMW visits to their village. The results of that survey are provided below:

Three hundred fifty questionnaires were mailed. Seventy nine of the questionnaires were returned with 73 being completed. The six incomplete questionnaires were marked RMW unknown. These were from areas where the services of the RMW have been available for less than five years. In the areas where the program has been available for five years or more the response was significant. Eighty nine percent of the respondents said the RMW program benefitted their village. Ninety one percent said there had been an improvement in the operation and maintenance of the water and wastewater facilities since the RMW program began to serve their village.

According to the survey results the RMWs are knowledgeable about the equipment within the various facilities and they provide accurate information about the maintenance to the operators. The RMWs average 1-2 visits per year and usually explain the reason for their visit to city officials as well as their findings and recommendations. About 85 percent of the respondents said they receive trip reports from the RMW and are satisfied with the service received.

The survey did reveal the problem of user fee collection in rural areas. Villages still have a problem with establishing and collecting fees for the water and wastewater services within their community. Only 49

percent of the respondents have a water and sewer ordinance. Of these, many do not collect fees or they collect insufficient fees.

Overall, the villages appear to believe the RMW program has made improvements in their villages and is worth retaining even if they were asked to share in some of the expenses of the program. They would also be willing to participate in a regional cooperative that would support the RMW program activities. However, given the current fiscal status of the respondents only 21 percent said their councils would be willing to contribute funds to help maintain the RMW program or establish a cooperative. A positive point is that 32 percent said "maybe" they would be able to contribute funds to retain the RMW program or establish a cooperative.

ACCOMPLISHMENTS OF 1992

A move was made in 1992 to expand the traditional RMW role to go beyond mechanical repair, emergency response and on-the-job training.

During 1992 the RMWs began to participate in classroom presentations by helping instruct workshops. Certification of operators by the State has become one of the priorities in each service area. The RMWs assist in this by participating in the actual classroom training sessions preparing the operators for the certification examination. A special arrangement was made with the State certification program to allow the RMWs to proctor an Operator-in-Training examination immediately following the preparatory class. A total of 11 basic operator training and certification review classes were held. Four classes were taught with the assistance of Village Safe Water and the Public Health Service Planning and Training Unit. Seven classes were developed and taught by the RMWs in two different service areas. Tanana Chiefs Conference RMW program held three classes. Twenty two individuals attended. Thirteen now have a beginning level State certification. Southeast Alaska Regional Health Corporation held four training classes during 1992 with 14 individuals attending. A total of 66 village operators passed a State operator certification examination during 1992. The following table shows the effort of the RMWs in getting water operators certified by the State. However, this does not mean that all of the villages

with a certified operator are in full compliance with the certification requirements, but it is the first significant step.

Grantee Service Areas	# Certified Operators In Service Area	# of Villages (in Service Area with Certified Operators)	% of Villages
Southeast Alaska	16	8	61%
Bristol Bay	8	5	38%
Kuskokwim River	1	1	10%
Yukon Delta	7	5	50%
Norton Sound	11	7	47%
Maniilaq	10	5	50%
Tanana Chiefs	13	10	40%
TOTALS	66	41	37%

Through efforts of the RMWs the village water and wastewater operators are now being recognized within professional organizations. During 1992, three rural Alaskan operators were honored for outstanding achievement by the Alaska Water Management Association. The three operators were from Hydaburg, Huslia and Tuntutuliak. All three villages are covered by the RMW program. By recognizing rural operators as professionals just as the operators within the boundaries of any large municipality, the RMW program is establishing pride in a job well done.

Two service areas benefitted from the joint efforts of the Department of Environmental Conservation, Department of Community and Regional Affairs and the Public Health Service who provided utility and financial management training to village administrators, councils and clerks during 1992. The State, Regional Health Corporations and the Alaska Sanitation

Task Force recognize that solving sanitation problems goes beyond improving the knowledge and training of the water and wastewater operators. The Saint Mary's RMW has begun to coordinate and work with a newly created Remote Utility Business Advisor position located within his service area.

Each RMW has been connected to the Department of Environmental Conservation's electronic mail system. Trip reports, quarterly reports, annual reports and other general messages are now transmitted through the Department's computer network. The same information can be transmitted to all affected parties virtually at the same time. Emergency information can be transmitted to Village Safe Water, the Drinking Water Program, Public Health Service, and the Operations Assistance Unit at the same time. This helps reduce the number of phone calls and instances of misunderstandings about situations due to second or third hand conversations. All interested parties can now communicate more easily.

The e-mail system also allows the RMWs to exchange information about preventive maintenance and computer programs used in effective record keeping. It also provides a mechanism where RMWs can brainstorm troublesome maintenance problems. Some of the RMWs now use portable computers and access the e-mail system daily. This tool also allows more effective communication between the Department's program manager and the RMWs or Grantee's manager.

Preventive maintenance plans were developed by each Remote Maintenance Worker during 1992, which was another worthwhile accomplishment. The Southeast Alaska Regional Health Corporation RMW has developed a preventive maintenance program for all of the villages in his service area. He is in the process of implementing these plans with the operators and city officials. By implementing the preventive maintenance plans equipment longevity is increased and the cost of maintenance is reduced. Maintenance is no longer crisis driven but prevention driven. Some of the plans within the various service areas were developed using computer programs. These programs are provided to the communities who use computers in their water and wastewater record keeping procedures. The programs also provide community officials a list of duties to be performed by the operator on a daily, weekly,

monthly and annual basis. These tasks are also incorporated into the schedule printed out for the manager or mayor to use as an effective management tool. By developing and implementing more comprehensive preventive maintenance programs public health is better protected, as are the state and federal government investments in sanitation facilities.

There were no emergency declarations in 1992 which was a major accomplishment in itself. Consequently, the majority of state funding was spent on upgrading facilities or establishing new facilities where none existed, instead of on emergency replacement of water and sewer systems.

One last example of an accomplishment achieved in 1992, was the Bethel RMW efforts at Tuntutuliak. Through the guidance and assistance of the Bethel Area RMW, Tuntutuliak was able to repair and reopen their water plant after three years. The plant had frozen four years ago. By helping the community negotiate with a nonprofit organization within the village, the RMW was able to satisfy all factions within the community that the system would be properly operated. With the support of the nonprofit and RMW technical assistance, the operator was able to repair and reopen the facility. By knowing the community and the individuals the RMW was able to facilitate the agreement. This is something that could not be done by someone living outside the area and not familiar with the circumstances within the community.

PROGRAM STANDARDS DEVELOPED

As previously discussed, the Department developed performance measures for evaluating program grantees. The developed measures will set measurable goals for each grantee to achieve during the grant or contract period. If the grantees are to achieve these goals, the operators within their service area must acquire specific skills. These skills can be obtained through the knowledge transfer and training efforts of the grantee's RMW.

To gain a sense of improvement over the months, each grantee will be evaluated at the beginning of the FY 94 grant period and again at the end of the period. The subsequent evaluations will be done once per

year. Each evaluation will be compared to the previous one to determine improvement during the grant period. Each service area will have an area specific set of measures because service differs due to the number of villages served, development of maintenance skills within the area, longevity of RMW program service, and fiscal capabilities. Some of the performance measures that will be included in the FY 94 grant are as follows:

1. Certification of village operators in water and wastewater system operations by the State operator certification program.
2. Water supply source protection from pollution by oil spills or other pollutants.
3. Village operators attending and completing training courses (includes correspondence and classroom).
4. Compliance with State drinking water and wastewater disposal regulations.
5. Development and implementation of preventive maintenance plans within all the communities in the service area.

Other measures will be added to fit the level of expertise of the operators within an RMW service area. A more complete list of possible performance measures that may be attached to future grants or contracts for each service area is located in Appendix B.

SUPPORT FUNDING AND DEVELOPMENT OF THE REMOTE MAINTENANCE WORKER PROGRAM

Because rural Alaska lacks the tax base to support the program alone, the RMW program depends on the support of the State for its continuing success. The Department has encouraged the continued support and increased funding for the program, but recognizes that evolution of the program should not be solely a state responsibility. Declining state revenues dictate the need to provide non-general fund

support. FY 93 funding was reduced approximately 1.8 percent from FY 92 levels. Further reductions in program funding will be reflected in reduced services and support to those villages which are currently covered by the program.

As indicated in the survey results, many villages appear willing to help support the RMW program with funds. However, the amount of funds these communities could contribute would be small. Not all the villages within a service area can afford to contribute money. Some can only contribute moral support. These are the communities that need the services of the RMW the most.

Due to limited State resources and possible future reductions in program funding, grantees were asked to explore methods of generating additional resources and/or shifting their current resources and services within each area while controlling or cutting costs within the program. Each service area was to consider shifting their limited financial and technical resources to villages which are most in need of training away from those that have achieved a higher degree of self-sufficiency. However, those villages that have made a genuine effort to improve and become more self-sufficient cannot be completely dropped from the program. Many villages quickly lose self-sufficiency with local administration turnover and minor problems which turn into major catastrophes.

With more efficient use of resources in mind, the Department also asked the grantees to determine if the resources allocated to them could be shifted to other communities not yet receiving the RMW service in addition to shifting them to less self-sufficient communities within the service area. To date, two communities in the Norton Sound area have been identified as no longer needing routine training and assistance. These are Unalakleet and Shaktoolik. These communities have competent, certified operators who have the support of their respective city governments. The City of Dillingham has been identified in the Dillingham area as meeting the same standards as Shaktoolik and Unalakleet. The Bristol Bay Health Corporation has proposed the village of Platinum be added to their routine training and assistance list. Dillingham, Shaktoolik, and Unalakleet will still receive emergency

assistance if they request aid from their local RMW. Other communities will be identified later in this fiscal year in other service areas. These are a good examples of efforts being made to utilize resources more efficiently.

As stated earlier, there are currently 108 villages covered by the RMW program, but there are still another 100 villages that need the services of the program. If program service is to be extended, innovative means such as those described above must be employed to expand and support the RMW program. The program will dictate whether increased state funding is necessary or not. A well funded and managed RMW program does not always have to be the responsibility of the State. With time, the communities within the service areas could assume the program through cooperatives, regional authorities or other means.

The RMW program helps to improve the environmental health of the communities they serve. By training the operators to perform routine preventive maintenance, sampling, monitoring and testing of drinking water and sewage disposal systems, the probability of waterborne communicable illness is reduced. The standards for environmental health in rural Alaska are the same as in urban Alaska. However, technical assistance and resources are not always available to the village operator that are available to the urban operator. The RMW program strives to achieve those standards in the areas they serve. However, rural communities must be willing to help fund and support the program by committing resources, seeking available training, collecting and paying service fees, having sound financial and management systems in place and educating future community leaders. All citizens of Alaska are affected when these standards are not met since we all pay the costs associated with health care in one way or another.

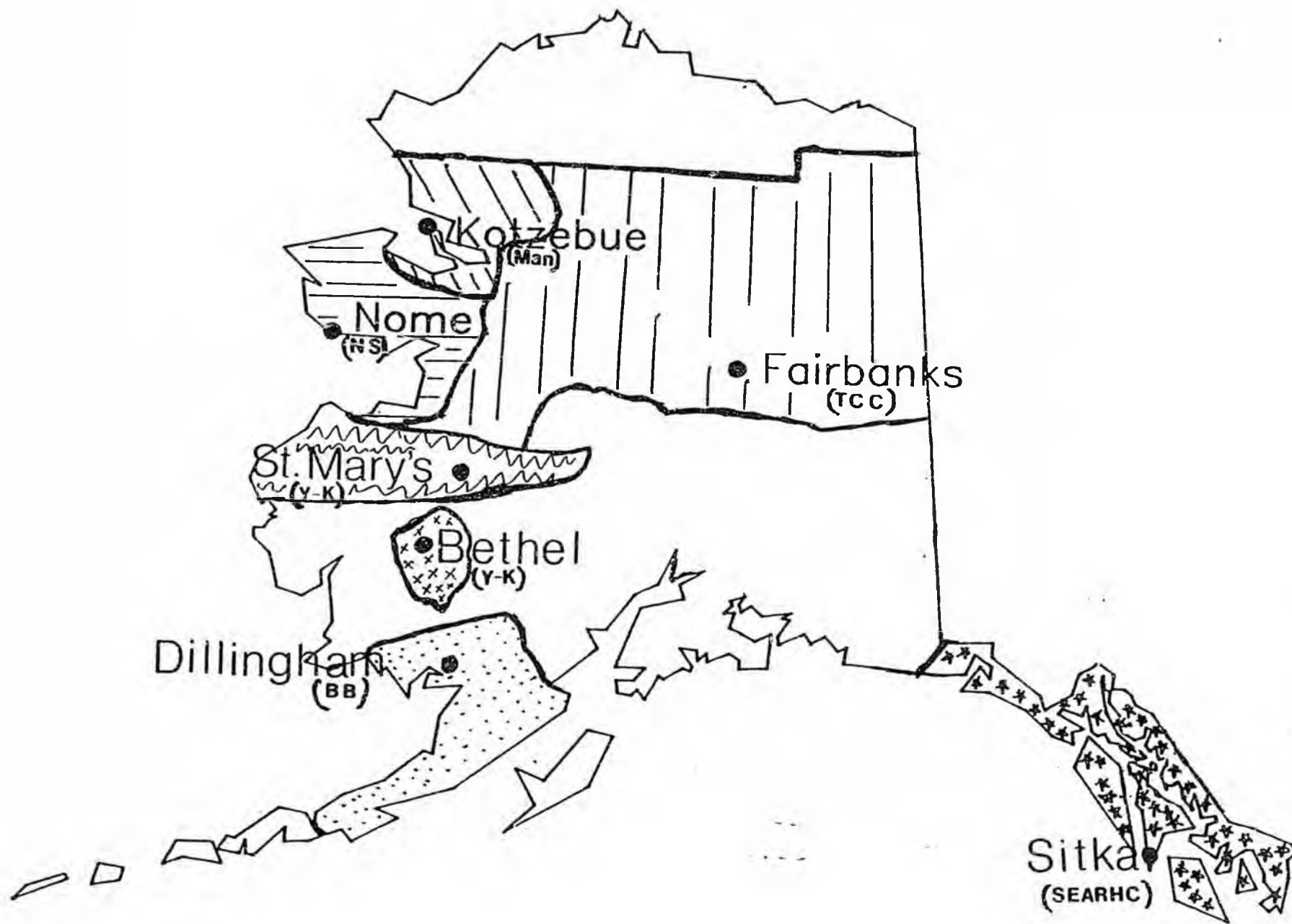
FUTURE EXPANSION OF THE REMOTE MAINTENANCE WORKER PROGRAM

The ultimate goal is for the RMW program to be expanded to provide services to all villages across the state through an equal partnership of State and local resources to form a complete network of RMW services.

Providing statewide coverage would also allow a re-evaluation of service area boundaries to better serve all the villages from the "hub" communities. Those villages not in a current RMW service area would begin to improve their operation and maintenance skills, gain compliance with the State and Federal drinking water regulations, and begin to experience the benefits of the program. In doing so, these villages would be taking initial steps toward proper operation and maintenance in a self-sufficient manner.

Assuming the RMW program cannot be expanded state-wide during any one fiscal year, DEC recommends that the program be expanded to the Kuskokwim Delta first, then to the Kodiak Island area. These villages have difficulty meeting the State drinking water regulations. There are approximately 15 villages from Scammon Bay to Platinum that could immediately benefit from the services of the RMW program.

RMW Service Areas



APPENDIX B

PERFORMANCE MEASURES FOR EVALUATING REMOTE MAINTENANCE WORKER PROGRAMS

Operational Source/Water Quality

- Number of system problems addressed.
- Number oil spills around supply source.
- Number of times during the year community is without water due to equipment or operational problems.
- + Number of villages in compliance with all drinking water and operator regulations.
- + Number of RMW training sessions with sampling and monitoring as main topic.
- + Number of times RMW has checked the testing procedures or corrected deficiencies in procedures at each village.
- + Number of villages with adequate supply of chemicals on hand.

Operator Competence

- + Number of village operators certified by State Operator Certification Program.
- + Number of operators preparing monthly reports to city councils.
- + Number of operators requesting spare parts for emergency situations from City Council/Administration.
- Number of emergency calls to VSW/PHS for assistance.
- + Number of villages where people use safe potable water instead of creek or river as drinking water source.
- Number of times operator failed to complete a training course.
- Number of NOV or boil water notices issued to the villages in RMW service area.
- + Number of operators who have completed basic operator courses.
- Number of times sewer services are inoperable due to equipment or operational

problems.

Level of Community Commitment

- + Number of times operator is sent to training at village expense.
- + Number of villages with adequate water and sewer budgets using costs identified in the Operation and Preventive Maintenance Management Plan.
- + Number of villages with proper maintenance tools and equipment on hand. (Does RMW have to bring tools each trip, or is community self-sufficient as identified in O&M plan.)
- + Number of villages with operator for water and sewer only.
- Number of facilities the village has had during the last eight years.
- + Number of villages with developed, working preventative maintenance plans.

Grantees Commitment

- + Number of operation and preventive maintenance plans developed by RMW.
- + Number of operation and preventive maintenance plans implemented by RMW.
- + Submittal of all trip, quarterly and annual reports in a timely manner (number of times reports were submitted on time).
- + Number of routine calls from operator or community to RMW or from RMW to operators to check operations and potential problems.
- + Number of alternative sources of funds or resources grantee has identified for supplementing the RMW program.
- + Number of times RMW has presented reports, findings, comments and recommendations to city councils.
- + Number of staff meetings during fiscal year between RMW's and their supervisors to plan travel; tasks completed; villages problems and concerns; review level of self-sufficiency of each community with respect to the RMW Program Development Plan.
- + Number of routine training trips by the RMW.
- Number of emergency trips made by the RMW.

General

(Is Grantee agreeable and making efforts to address issues.) Innovative approaches and plans for evolving and stimulating the RMW program in their service area to follow the program development path for community self-sufficiency, regionalization and/or cooperative formation efforts.

- Number of complaints, problems or concerns posed to DEC and DCFA concerning the lack of cooperative efforts between RMWs and RUBAs (where applicable).
- Number of complaints from PHS and VSW staff concerning lack of cooperation from RMWs.
- Number of complaints DEC receives from communities about RMW.

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Operations Assistance Dept. of Environmental Conservation

Presented by the Water and Wastewater Works Advisory Board

Abstract

The state has expended large capital appropriations in the construction of water and wastewater facilities. Furthermore, it is clear that the State needs to protect its investment in utility systems. Many existing systems risk premature failure unless a greater emphasis is placed on routine operation and maintenance and utility management.

To protect public health and capital investments in water and wastewater facilities, long-range operator certification and training programs must be maintained. This is difficult in the face of declining state and federal revenues. In order for certification and training programs to continue to be effective, there must be adequate routine annual operator certification and training budgets. ❖

Alaska's geographically and culturally diverse populous has unique water and wastewater needs. Approximately one-half of the state's 550,000 people are located in urban areas served by large conventional community water and sewer sys-

Table I, State Funding History for Sanitation Projects in Millions of \$s

Fiscal Year	Municipal Grant	Village Water	Safe Direct DOA	Total
82	\$9.36	\$1.61		\$10.97
83	\$4.59	\$0.52	\$26.40	\$31.51
84	\$28.19	\$0.69	\$108.59	\$137.47
85	\$15.70	\$7.97	\$127.07	\$150.74
86	\$1.82	\$0.87	\$17.78	\$20.47
87	\$14.88	\$10.38	\$45.96	\$71.22
88	\$5.89	\$5.62	\$4.31	\$15.82
89	\$11.80	\$6.24	\$7.54	\$25.58
90	\$7.05	\$11.16	\$8.90	\$27.11
91	\$7.49	\$6.85	\$13.04	\$27.38
92	\$11.60	\$27.16	\$17.56	\$56.32
93	\$17.21	\$24.50	\$12.56	\$54.27
				\$628.86

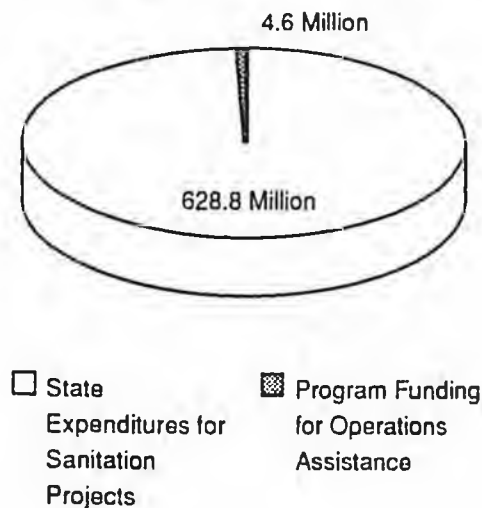
Table II, Federal Sanitation Funding for Alaska in Millions of \$s

Year	EPA Grants/ Indian Health		HUD	Total
	Loans	Service		
82	\$13.90	\$8.89		\$22.79
83	\$13.90	\$8.89	\$3.50	\$26.29
84	\$13.90	\$4.66	\$2.35	\$20.91
85	\$13.90	\$5.21	\$2.65	\$21.76
96	\$13.90	\$4.39	\$9.25	\$27.54
87	\$13.40	\$4.93	\$3.09	\$21.42
88	\$12.90	\$7.16	\$2.25	\$22.31
89	*10.60	\$8.29	\$3.47	\$22.36
90	\$10.90	\$5.30	\$4.39	\$20.59
91	\$12.30	\$15.00	\$3.00	\$30.30
92	\$11.60	\$15.00	\$5.00	\$31.60
93		\$10.00	\$3.40	\$13.40
				\$281.27

tems. The remaining rural Alaskan families also desire community water and wastewater services. Often unique and innovative systems are required to overcome restraints imposed by climatic and geographical conditions. Competent operators are required to provide safe water supplies and adequate wastewater disposal

Tables I and II depict sanitation project funding during the past 12 years. There has been a combined expenditure of more than \$910,000,000 in federal and state monies for new and improved sanitation facilities. Table I depicts annual state funding appropriated for water, wastewater and solid waste projects over the past 12 years. Sanitation systems require significant operation and maintenance expenditures. Frequent system fail-

Figure I, State Expenditures for Sanitation Projects vs. Operations Assistance Program Funding Since FY82



ures, often preventable by adequate operator training and utility management, result in service interruptions and community health concerns.

An effective water and wastewater facilities program includes proper operation and maintenance of the constructed systems to delay capital replacement costs while providing community health services. The annual investment in the Alaska Department of Environmental Conservation's (ADEC) Operations Assistance Unit is a cost-effective budget expense to enhance public health and to protect new capital expenditures.

The Division of Facility Construction and Operation of ADEC is responsible for protecting the State's investment in water and wastewater facilities, the public's health and the environment by ensuring that these facilities are properly operated and maintained. The Operations Assistance Unit consists of three individual components: Operator Certification and Training, Remote Maintenance Worker (RMW) and a Federal, over-the-shoulder training grant. The Unit currently has a staff of four with an annual budget of \$332,700 which includes general funds, operator receipts, federal 104(g)(1) funds and the Governor's Water/Wastewater Works Advisory Board funds. This figure does not include the \$784,800 RMW grant funds. Table III represents funding for the Operations Assistance Unit over the past five years.

Figure I compares sanitation (capital) project funding with Operations Assistance Program funding since FY82.

The Advisory Board is an integral part of the State's Operator Certification and Training Program. The Board is a "working board" which specifically serves to advise the program staff regarding operator certification and training. The Board hears operator's appeals, determines regulatory policies and guidelines, assists with the development of regulations and reviews other related issues including reciprocity with other states.

The volunteer board is technically oriented and consists of engineers, operators, facility managers and other individuals that are actively involved and interested in the water and wastewater industry. This important group has proven to be an especially beneficial resource to the Department in providing direction to the operator certification and training program. Recently, the Department has taken steps to further utilize the Board's technical capabilities, requesting assistance in regulatory developments impacting the water and wastewater industry and related issues.

The mandatory state Operator Certification Training Program evolved from an industry-initiated, voluntary program in 1976. Subsequently, 18 AAC 74 required that water treatment and distribution systems, as well as, wastewater treatment and collection facilities be classified and operated by certified personnel. Continuing education requirements as well as separate certifications are required for all operators.

Certification of operators involves reviewing and evaluating applications for experience and education; development and grading of 20 different exams; coordination of special Operator in Training (OIT) courses and exams for village operators; record keeping, notification and resolution of operator concerns. These certification efforts represent a significant portion of the staff's work load and significant endeavors to effectively manage the 630 currently certified operators holding a combined total of more than 1,100 certificates. In addition, substantial effort and staff time is allocated towards training and certification of operators of smaller systems which do not require certified operators.

During 1992, 579 exams were given from Ketchikan to Barrow which required arranging and coordinating 64 proctor sites. Operator atten-

Table III
Operations Assistance Program Funding X 1,000

Fiscal Year	General Fund	Operator Receipts	Remote Maint. Worker	104(G)(1) Over/Shoulder	Advisory Board	Total
89	\$86.00	\$27.00	\$585.00	\$35.00	\$5.00	\$738.00
90	\$93.00	\$18.00	\$538.00	\$35.00	\$5.00	\$689.00
91	\$291.00	\$20.00	\$577.00	\$35.00	\$5.00	\$928.00
92	\$280.00	\$18.00	\$799.00	\$35.00	\$5.00	\$1,137.00
93	\$272.00	\$20.00	\$784.00	\$35.00	\$5.00	\$1,116.00
						\$4,608.00

dance at proctor sites ranged from one to over 30 examinees. Advisory Board members often serve as proctors. Table IV depicts the number of certified operators by level and classification as of January 1, 1993.

By statute, certification regulations only apply to systems with 100 or more service connections or which are used by 500 or more people. Approximately 90 systems serving 446,305 people (80% of the state's population), currently fit this category. However, the majority of systems, those serving less than 500 people, are also encouraged to have certified operators.

An integral part of the certification program is the continuous classification of all systems in the state by the Department to determine the skill level required to operate each system. Currently, the Department is re-evaluating the system classifications of the 90 systems that serve greater than 500.

Recently adopted drinking water regulations require "qualified" operators in many of the smaller rural Alaskan systems. This expanded emphasis has increased the number of systems requiring

certified or "qualified" operators and classification. Approximately 160 additional systems not currently subject to state certification are affected. Additional classification, training and certification efforts are necessary to fulfill the needs of all Alaskan communities as well as comply with regulatory requirements.

System size is not always a good indicator of system complexity or susceptibility to catastrophic failure. To effectively operate and maintain a system, an operator needs specialized training in operations and maintenance as well as sampling, monitoring, and reporting.

ADEC's training program has traditionally consisted of:

- ☛ Operator Lending Library - available by mail for in-house training.

- ☛ Technical Assistance - to operators and communities.

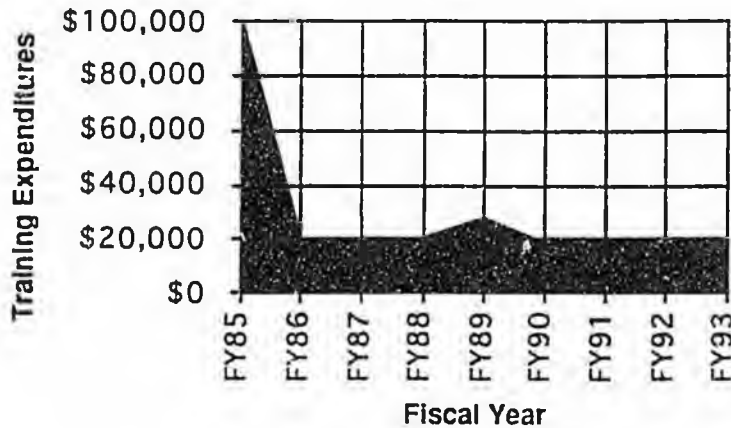
- ☛ Training Material Development - The Operations assistance Unit has recently worked with UAF and private trainers to develop training videos and short and correspondence courses for rural operators.

Table IV
Active Certificates*

	OIT	I	II	III	IV	Total
Water Distribution	47	87	57	21	13	225
Water Treatment	115	97	78	49	30	369
Wastewater Collection	31	69	57	7	12	176
Wastewater Treatment	38	87	98	73	42	338
Total	231	340	290	150	97	1108

* Numbers reflect total number of active certificates, not total number of operators. Operators may hold more than one certificate.

**Figure II
Training Budget**



☛ **Communication and Coordination of Training Opportunities** - development of ADEC/private training calendar and quarterly newsletter distributed to a mailing list of over 1,500. In addition, ADEC is now actively involved in joint training efforts with the Public Health Service, the Department of Community and Regional Affairs, the Alaska Water Management Association and others. DEC has developed and will be publishing a 50 page, comprehensive "Training Resource Directory" which will detail all state, private and

federal training resources.

The Operations Assistance Unit has not been able to fund and sponsor short courses since FY90 due to an insufficient training budget. However, staff has been coordinating with PHS and DCRA to offer basic operator and utility management courses in FY92 and FY93. Figure II depicts the ADEC training budget for the past nine years. Operator receipts are also used to update the library, publish the newsletter and other operator services. Prior to 1986 the program spent approximately \$100,000 yearly specifically for training. Cost-cutting measures impacted the program and the training funds were lost. Subsequently, ADEC instituted

a fee system which generates approximately \$18,000 to \$20,000 dollars per year.

If you have further questions regarding the Operations Assistance Unit of ADEC or the Water/Wastewater Works Advisory Board, please feel free to contact the Department or one of the Board members.❖

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