EPC COMMISSION MINUTES & AGENDA

MONTH December

YEAR 1987

ADM-1-1-1
December 1987

MEETING AGENDA
ENVIRONMENTAL PROTECTION COMMISSION
WALLACE STATE OFFICE BUILDING
December 14-15, 1987

Meeting Convenes at 1:30 p.m., December 14, 1987 fourth floor conference room and reconvenes on December 15, 8:30 a.m.

Appointment: Carl Metzger Harold Smith - City of Lakeview — 1:45 p.m.
Break — 3:00 p.m.

Meeting Reconvenes 8:30 a.m. December 15

Public Participation — 10:00 a.m.

Appointment:
Brent Parker - Jasper County (Item #13) — 9:00 a.m.
Hilltop Feeders — 10:30 a.m.
Ron Walker - Timberline Assoc. — 11:00 a.m.

1. Approval of Agenda.

2. Approval of Minutes of November 17, 1987.

3. Director's Report. (Wilson) Informational.

4. Supplemental Federal Water Supply Grant. (Kuhn) Decision.

5. Department Wide Budget Priorities. (Kuhn) Decision.

6. Monthly Reports. (Stokes) Informational.

7. Briefing - EPD Enforcement Process. (Stokes) Informational.

8. Penalty Computations. (Combs) Informational. (Closed Session).

9. Status Report - GRA-Iron Foundry. (Stokes) Informational. (Closed Session).

10. Status Report - Flood Plain Mapping Plan. (Stokes) Informational.

Tabled until January 11. Status Report - LeHigh Clay Products. (Stokes) Informational.

12. Briefing - Status/Enforceability of Interim Rules. (Stokes) Informational.

13. Notice of Intended Action--Chapter 38, Private Well Construction Permits. (Stokes) Decision.

14. Briefing - Radon. (Dept. of Public Health) Informational. Authorized Under 455B.187. (Stokes) Informational.

Tabled until January 15. Nuclear Wastes Recycling-Oklahoma. (Bender) Informational.

16. Proposed Declaratory Ruling: Acco Unlimited Corporation. (Combs) Decision.

17. Referrals to Attorney General's Office. (Combs) Decision.

18. Address Items for Next Meeting.

20. Status Report on Small Business Assistance Center. (Bender) Informational.

21. Status Report on Center for Health Effects of Environmental Contamination. (Combs) Informational.

19. Demonstration Grant Rules. (Bender) Decision.

22. Legislation Package - Wild

NEXT MEETING DATES

January 19, 1988
February 15-16, 1988
March 21-22, 1988

ADA-1-1-1 V5
December 1987

MINUTES
ENVIRONMENTAL PROTECTION COMMISSION
Wallace State Office Building
Fourth Floor Conference Room
Des Moines, Iowa
December 14-15, 1987

The meeting of the Environmental Protection Commission was held at the Wallace State Office Building in Des Moines, Iowa convening at 1:30 p.m. on Monday, December 14, 1987.

MEMBERS PRESENT

Donna Hammitt, Charlotte Mohr, Gary Priebe, Nancylee Siebenmann, Keith Uhl, Clark Yeager, Robert Schlutz.

MEMBERS ABSENT

Catherine Dunn, Richard Timmerman.

ADOPTION OF AGENDA

The following items were added to the agenda:

Appointment: Carl Metzger, City of Ankeny - 1:45 p.m., December 14
Brent Parker, Jasper County Sanitarian - 9:00 a.m., December 15
Ron Walder - 11:00 a.m., December 15

19. Demonstration Grant Rules. (Bender) Decision.

20. Status Report on Small Business Assistance Center. (Bender) Informational.

21. Status Report on Center for Health Effects of Environmental Contamination. (Combs) Informational.

22. Legislative Proposal (Uhl) Informational.

Motion was made by Charlotte Mohr to approve the agenda as amended. Seconded by Nancylee Siebenmann. Motion carried unanimously.

ADOPTION OF MINUTES

Motion was made by Nancylee Siebenmann to approve the minutes of November 17, 1987 as presented. Seconded by Donna Hammitt. Motion carried unanimously.

DIRECTOR'S REPORT

Director Larry Wilson reported that the Low Level Waste Advisory Committee will meet this Wednesday at 10:00 a.m. to discuss preparation for the next meeting of the Low Level Radioactive Waste Compact Commission, which will be Friday, December 18, in St. Louis, Missouri. Mr. Wilson stated that he heard from Michigan last week and their legislature had passed the siting

legislation that was necessary for Michigan to continue as host state in the compact.

Mr. Wilson reported that he presented the Department of Natural Resources FY-89 budget to the Governor last week. He added that he felt that it went very well.

SUPPLEMENTAL FEDERAL WATER SUPPLY GRANT

Stan Kuhn, Division Administrator, Administrative Services Division, presented the following item.

The department has received a supplemental federal water supply grant to purchase the below-listed equipment. Commission approval is requested to purchase the following:

Number of Units Ordered	Description of Item	Amount Estimated
6	8550-021 IBM Personal System 12 Model 50	$54,439.00
6	8512-001 IBM Personal System 12 14" Color Monitor	
6	4869-001 IBM External 5.25" 360KB Diskette Drive PS12	
6	6450245 8760 External Drive Adapter C (Channel)	
6	4202 001 IBM Proprinter XL	
6	1525612 5612 Parallel Printer Cable	
6	6280060 0957 DOS 3.3 or Newer	
6	9047 Lotus 1-2-3 Version 2.01 or Newer	
6	9445 DBase III	
6	9904 Displaywrite 4	
4	8550 021 IBM Personal System 12 Model 50	
4	8512 001 IBM Personal System 12 14" Color Monitor	
4	4869 001 IBM External 5.25" 360KB Diskette Drive PS12	
4	6450245 8760 External Drive Adapter Channel	
4	83X9702 2000 3270 Connection /A Channel	
2	4202 001 IBM Proprinter XL	
2	1525612 5612 Parallel Printer Cable	
4	6280060 0957 DOS 3.3 or Newer	
4	9047 Lotus 1-2-3 Version 2.01 or Newer	
4	DBase III	
4	9969 PC 3270 Emulation Program Version 3.0	
4	IBM 3191 Model 610 Terminals with Amber Screen and 122 Keyboard	

The equipment will be used to phase out the use of EPA's model state information system and computer link at Research Triangle Park, North Carolina by upgrading and providing a direct computer link between the University hygienic laboratory and the department's newly developed water supply data system.

Motion was made by Donna Hammitt to approve the supplemental federal water supply grant to purchase computer equipment in the amount of $54,439.00. Seconded by Gary Priebe. Motion carried unanimously.

FY89 BUDGET REQUEST, DEPARTMENT-WIDE BUDGET PRIORITIES

Stan Kuhn, Division Administrator, Administrative Services Division, presented the following item.

The attached schedule presents the department-wide priority ranking of the FY89 request decision packages as requested by the Environmental Protection Commission at the last meeting.

The decision package narratives have been paraphrased to readily indicate whether any particular package involves restoring or continuing an existing activity or if it involves increasing the budget above FY88 levels. A more complete decision package narrative can be found, if desired, by referencing back to the narratives presented for each division in the November FY89 budget item.

Priority Nos. 0001 through 0034, with the exceptions of 0010 and 0017, represent restoring programs from the "base" budget level to the current FY88 level.

Priority Nos. 0035 through 0051 generally represent increases in facility maintenance, equipment purchases, and staffing above, or in addition to, FY88 activity levels.

Priorities 0052 and 0053 represent increments in five percent grant funding in addition to the $493,000 already requested as a supplemental for FY88 and $957,548 included in the "base" request for FY89. In other words, the $493,000, the $957,548 and priority 0052, $1,742,000, together, will provide a five percent match for all the federal grants expected to be available through federal fiscal year 1988.

Priority 0053, $1,105,000, would provide a five percent match for the federal funds expected to be available in federal fiscal year 1989. From a cash flow point-of-view, much of the funding requested in priority 0052 and all of the funding requested in priority 0053 will not be needed (will not be paid out) until or subsequent FY90. The funds requested as a supplemental and in the "base" should be sufficient to handle most of the cash "pay-out" in FY89.

The state prioritization process does not specifically involve including the general fund capital request in the same priority scheme as operational and special programs. It is listed lowest in this schedule, priority No. 0054, as a reflection of the reality that the G.A. typically considers funding capital projects only after all of the operational and special issues have been handled.

Approval of the attached priority listing is respectfully requested.

Larry Wilson explained the procedure used in development of the department-wide budget priorities.

Discussion followed regarding Fish and Wildlife Division items, bonding, grants and rank.

Motion was made by Charlotte Mohr to approve the FY89 Budget Request, Department-wide Budget Priorities. Seconded by Donna Hammitt. Motion carried unanimously.

APPOINTMENT--CARL METZGER, CITY OF ANKENY

Carl Metzger, City Manager with the City of Ankeny, addressed the Commission stating that Ankeny is ready to move with its next ICA project. Due to the slow budget process at the congressional level anticipated funds will not be available until the first quarter of 1988. Mr. Metzger stated that their request is that the DNR make available to the City of Ankeny, a grant of $1.7 million out of the reserve funds that are under the control of the Commission. Mr. Metzger stated that this request has the effect of advancing what will probably happen in the spring and will reduce the City of Ankeny's allocation for 1988. If this request is granted, it will save the City of Ankeny just under one million dollars, as they will be able to take advantage of their low bid.

Allan Stokes stated that the City of Ankeny has approval of plans and specifications for the south interceptor, as well as a lift station. If Congress had moved on appropriations, Ankeny would be in line for a grant.

Mr. Stokes stated that there is approximately $1.9 million in the grant reserve fund. He added that those dollars are there in case a bid comes in above what the engineer estimates would be for eligible projects costs; those monies would be there to pay for those kinds of costs.

Mr. Stokes explained options the Commission could take as follows: 1) give Ankeny a phase-segmented grant and waive the 60 percent cap; 2) deny Ankeny's request which would in effect require the ICA communities to readdress priorities within the ICA area; 3) grant Ankeny's request. Mr. Stokes stressed that if the Commission chooses option three and another community would request a grant increase, we would have to deny their request until such time as the 1988 dollar allotment is received. He added that if Congress would not come through with our allotment to make the reserve fund whole, we will have funded ICA projects using 1987 funds in excess of the 60 percent cap contained in Commission rules.

Mr. Stokes suggested that, if the Commission grants Ankeny's request, it be stipulated that when the 1988 federal dollars are received, the amount of money which was granted to Ankeny go back into the reserve fund to make it whole.

A lengthy discussion followed regarding the reserve fund, grant fund appropriations, not paying for work already done, 60 percent cap, handling similar requests and the effect it would have on additional requests for reserve funds.

Motion was made by Nancylee Siebenmann to commit up to $1.7 million in reserve funds for the City of Ankeny to be used for that city only. Also, that the conditions apply that the 1988 funds received from congressional

appropriations be used to replenish this amount in the reserve fund, and that this sum count towards the ICA 60 percent cap for FY 88, and that there be payback by the City of Ankeny by January 1, 1989. Seconded by Keith Uhl.

Clark Yeager offered a friendly amendment to stipulate that the payback by the City of Ankeny be made by June 1, 1988.

Nancylee Siebenmann concurred with the amendment.

Chairman Schlutz requested a roll call vote. "Aye" votes were cast by Commissioners Hammitt, Mohr, Siebenmann, Uhl, Yeager and Schlutz. "Nay" vote was cast by Commissioner Priebe. Motion carried 6 to 1.

MONTHLY REPORTS

Allan Stokes, Division Administrator, Environmental Protection Division, presented the following item.

The following monthly reports are enclosed with the agenda for the Commission's information.

1. Rulemaking Status Report

2. Variance Report

3. Hazardous Substance/Emergency Response Report

4. Enforcement Status Report

5. Contested Case Status Report

Members of the department will be present to expand upon these reports and answer questions.

IOWA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION COMMISSION
RULEMAKING STATUS REPORT
DECEMBER 1, 1987

PROPOSAL	DRAFT TO COMMISSION	NOTICE PUBLISHED	RULES REVIEW COMMITTEE	HEARING	SUMMARY OF COMMENTS & RECOMMENDATIONS TO COMMISSION	RULES ADOPTED	RULES PUBLISHED	RULE EFFECTIVE
1. Ch. 23 - MPDES & NPDES	10/20/87	11/18/87	12/10/87	12/07/87 12/10/87 12/11/87				
2. Ch. 38 Private Well Construction Permit	12/15/87							
3. Ch. 80, 81 Ag Drainage Well Registration	10/20/87	---	12/10/87	---	---	10/20/87	11/18/87	10/23/87
4. Ch. 91 - Construction Grants	10/22/87	11/18/87	12/10/87	12/08/87				
5. Chs. 100, 102 - Liquids in Landfills	10/20/87	11/18/87	12/10/87	12/07/87 12/10/87 12/11/87				
6. Ch. 102 Storage Sludge at Landfills	11/17/87	12/14/87		1/06/88 1/07/88 1/08/88				
7. Chs. 100,102 Landfill Ground Water Monitoring	10/20/87	11/18/87	2/14/87	12/07/87 12/10/87 12/11/87				
8. Ch. 120 - Shelter Well Criteria	10/20/87	11/18/87	12/10/87	12/07/87 12/10/87 12/11/87				
9. Ch. 141 - Used Oil	6/17/87	8/12/87		9/08/87 9/09/87 9/10/87	10/20/87	10/20/87	12/30/87	2/03/88
10. Ch. 144 - Household Hazardous Materials	11/17/87	---		---	---	11/17/87	12/16/87	11/17/87
11. Ch. 109 - Criteria for Siting Low-Level Radioactive Waste Facilities	8/14/87	9/09/87	10/12/87	10/01/87 10/02/87 10/04/87	11/17/87	11/17/8	12/16/87	1/20/88

Suspended

MONTHLY VARIANCE REPORT 11/20/87

Facility	Program	Engineer	Subject	Decision	Date
1 Maytag Co.- Newton	Air Quality		Equipment Malfunction	approved	11/12/87
2 Hoopeston/Prime Beef	Air Quality	Municipal Engr.	Water Supply	denied	11/17/87
3 OH,City of(Windhills)	Wastewater Const.	Veenstra & Kimm	Aerated Lagoon Hydraulic load	approved	11/07/87
4 Ankeny, City of	Wastewater Const.	Veenstra & Kimm	Pump Clogging Protection	approved	11/13/87
5 S.Panorama San. Dist.	Wastewater Const.	McClure Engineering	Emergency Power	approved	11/13/87
6 Inwood, City of	Wastewater Const.	DeWild,Grant,et al	Site Separation	denied	11/17/87
7 University Park,City of	Wastewater Const.	Borden & Associates	Lagoon Piping	denied	11/19/87
8 J. Clark Burns	Flood Plain		Percent Length Red.	approved	11/02/87
9 Bell Water Co(Asbury)	Watersupply Const.	Wallace, Holland	Installation Procedures	approved	11/02/87
10 Sully, City of	Watersupply Oper.	Butts Engineering	Water Monitoring	approved	11/23/87

REPORTS OF HAZARDOUS CONDITIONS

During the period of November 1, 1987 through November 30, 1987, reports of 48 hazardous conditions were forwarded to the Central Office. Two incidents are highlighted, followed by a general summary and the number per field office.

Date Reported and County	Description: Material, Amount, Date of Incident, Cause, Location, Impact	Responsible Party	Response and Corrective Actions
11/16/87 SCOTT	A tanker truck overfilled a storage tank at 1718 South Concord in Davenport, Iowa on November 26, 1987, and 300 gallons of solvent containing 80% methylene chloride and 20% ethanol were spilled.	Sears Manufacturing P.O. Box 367 Davenport, Iowa 52808	About 100 gallons of liquid were pumped into drums. The remaining product was contained in the soil with visqueen liner. The visqueen and soil were excavated and placed in drums for disposal at a hazardous waste site.
11/18/87 POLK	A tanker truck pumped 900 gallons of gasoline into a monitoring well at 3200 Grand Avenue in Des Moines, Iowa on November 18, 1987.	McMillan Oil Co. 2nd Avenue & I-80 Des Moines, Iowa and University of Osteopathic Medicine & Health Sciences, 3200 Grand Avenue Des Moines, Iowa	Some product was recovered by pumping from monitoring wells near the tank. Further assessment will determine other methods for recovery of additional product.

Numbers in Parentheses Represent Reports for the Same Period in Fiscal Year 1987

		Substance Type				Mode				
Month	Total # of Incidents	Petroleum Product	Agri. Chemical	Other Chemicals and Substances	Handling and Storage	Pipeline	Highway Incident	RR Incident	Fire	Other
Oct	69	47	4	18	53	0	9	1	2	4
Nov	48 (24)	35 (12) UST-19	3 (3)	10 (9)	37 (17) UST-19	0 (0)	4 (5)	0 (1)	1(0)	6(1)

Total # of Incidents Per Field Office This Period

Field Office	01	02	03	04	05	06
This Period	3	7	10	2	14	12

Enforcement Report Update

The following new enforcement actions were taken last month:

Name, Location and Field Office Number	Program	Alleged Violation	Action	Date
Hitchcock Scrap Yard, Inc. Pacific Junction (4)	Air Quality	Open Burning	Order/Penalty	10/30
City of Story City, (3)	Wastewater	Municipal Improvement Plan	Order	11/3
Twin County Dairy, Inc. Iowa City (6)	Wastewater	Effluent limitations, monitoring and reporting	Order/Penalty	11/3
City of Farley (1)	Wastewater	Effluent violations	Order	11/10
City of Leon (5)	Wastewater	Effluent violations	Order -	11/10
Petroleum Marketing Co. Malcolm (5)	Wastewater	Effluent violations, monitoring and reporting compliance schedule	Order/Penalty	11/10
City of Braddyville ( )	Wastewater	Monitoring and reporting	Order/Penalty	11/10
Geneva Grain and Lumber Geneva (2)	Wastewater	Prohibited discharge	Order/Penalty	11/10
J.C. White Excavating Co. & City of Des Moines (5)	Solid Waste	C & D open dumping	Order/Penalty	11/16
City of Mechanicsville (6)	Wastewater	Compliance schedule, MIP, plan of action	Order/Penalty	11/16
City of Sidney (4)	Wastewater	Compliance schedule, MIP, plan of action	Order/Penalty	11/16
City of Keota (6)	Wastewater	MIP, plan of action	Order	11/16
St. John's Lutheran Church Decorah (1)	Drinking Water	Monitoring and reporting - nitrate	Order/Penalty	11/16
Tracy Improvement Co. Tracey (5)	Drinking Water	No certified operator	Order/Penalty	11/16
Dodds Valley View Water Assn., Bettendorf (6)	Drinking Water	Monitoring and reporting - radioactivity	Order/Penalty	11/16
Finlan Landfill and Larry White - Waukon	Solid Waste	Permit renewal	Order/_	11/16
Curries Mfg. Company Mason City (2)	Air Quality	Failure to obtain a permit	Order/Penalty	11/16
Curries Company Mason City (2)	Wastewater	Prohibited discharge	Order/Penalty	11/18
Highway #3 MHP, Cedar Falls (1)	Drinking Water	Failure to monitor - nitrates	Order/Penalty	11/18
HP Junsen Subdivision Ames (5)	Drinking Water	Failure to monitor - bacteria	Order/Penalty	11/18
IBP, Inc./Langenfeld Denison (4)	Wastewater	Prohibited discharge	Referral to AG	11/17
Jim Industries/Lesmar Pleasant Valley (6)	Solid Waste	Open dump/penalty	Referral to AG	11/17

Enforcement Report Update

The following new enforcement actions were taken last month: (continued)

Name, Location and Field Office Number	Program	Alleged Violation	Action	Date
City of Ankeny (5)	Wastewater	Prohibited discharge	Referral to AG	11/17
Big Rock Tap (6)	Drinking Water	Monitoring/penalty	Referral to AG	11/17
City of Washington (6)	Wastewater	Compliance schedule	Referral to AG	11/17
Finlan Landfill (1)	Solid Waste	Permit/fee	Referral to AG	11/17
City of Tabor (4)	Wastewater	Compliance schedule MIP	Order/Penalty	11/18
City of Clarinda (4)	Wastewater	Compliance schedule MIP	Order	11/25
City of Tipton (6)	Wastewater	MIP/plan of action	Order	11/25
Iowa-Illinois Gas & Elec.	Air Quality	Other violations	Order/Penalty	11/25
City of Earling (4)	Wastewater	MIP/plan of action	Order/Penalty	11/30
City of Massena (4)	Wastewater	MIP/plan of action	Order/Penalty	11/30
City of Lohrville (3)	Wastewater	MIP/plan of action	Order	11/30
Hardin Co. SSW Disp. Comm. (2)	Solid Waste	Daily operation	Order/Penalty	11/30

Summary of Administrative Penalties

The following administrative penalties are due:

NAME/LOCATION	AMOUNT	DUE DATE
*Shelter Shield (Buffalo Center)	$1,000	12-03-86
*Cedar Hills Apartments (Dubuque)	1,000	12-29-86
*City of Dysart	400	3-13-87
*Country Corner Cafe (Pacific Junction)	451	8-05-87
*JTM Indust./MacDade/Leamer (Pleasant Valley)	1,000	8-12-87
*Big Rock Tap	660	9-21-87
*Elings/Catron/Frey (Des Moines)	1,000	10-18-87
Twelve Mile House (Bernard)	339	10-28-87
**K & K Truckstop (Lenox)	62	11-01-87
*OK Lounge (Marion)	448	11-01-87
Timberline Assoc. Ltd (W. Burlington)	1,000	11-02-87
Ottumwa Industrial Airport	1,000	11-23-87
J.G. White Excavating (Des Moines)	1,000	11-29-87
City of Gravity	100	11-30-87
Pleasant Creek Estates (Shellsburg)	200	11-30-87
Keokuk Landfill, Inc.	600	11-30-87
Trausch Co., Inc. (Carroll)	850	12-01-87
Northwestern States Cement (Mason City)	1,000	12-01-87
City of Brighton	700	12-04-87
Arlene's Cafe (Turin)	212	12-07-87
City of Lynnville	100	12-08-87
**Lawrence Payne (Ottumwa)	700	12-15-87
**Ken Turner (Fort Madison)	50	12-15-87
Mark Wallin (Essex)	500	12-15-87
**Accent Lawn and Leisure (Mt. Joy)	500	12-15-87
Kimballton Utilities	100	12-19-87
Cotter Elementary School (Columbus Junction)	100	12-19-87
City of Arcadia	200	12-19-87
City of Hornick	200	12-19-87
City of Earlville	100	12-20-87
City of Liscomb	224	12-30-87
Dalluge Turkey Farm (Grafton)	300	12-30-87
Kossuth County SLF	700	1-01-88
City of Winfield	500	1-01-88
Robert Moehle (Sheffield)	300	1-01-88
Hawkeye Tiling (Jesup)	1,000	1-01-88

Administrative Penalties Due (Continued)

NAME/LOCATION	AMOUNT	DUE DATE
City of Sheldon	900	1-02-88
City of Albion	500	1-02-88
Hitchcock Scrap Yard, Inc. (Pacific Jct)	1,000	1-03-88
Stan Moser (Hudson)	250	1-05-88
Twin County Dairy, Inc. (Iowa City)	600	1-05-88
Petroleum Marketing Co. (Malcolm)	900	1-12-88
City of Mount Vernon	500	1-15-88
Geneva Grain and Lumber (Geneva)	500	1-17-88
J.C. White Excavating Co. (Des Moines)	500	1-17-88
City of Sidney	1,000	1-17-88
St. John's Lutheran Church (Decorah)	100	1-17-88
City of Tabor	700	1-17-88
Curries Mfg. Co. (Mason City)	600	1-17-88
Tracy Improvement Co. (Tracy)	200	1-17-88
City of Mechanicsville	1,000	1-18-88
Highway #3 Mobile Home Park (Cedar Falls)	490	1-19-88
Curries Mfg. Co. (Mason City)	600	1-20-88
H.F. Jensen Subdivision (Ames)	345	----
Iowa-Illinois Gas and Electric (Davenport)	1,000	----
City of Massena	300	----
City of Earling	1,000	----
Hardin County SLF	500	----
*Chico's Supper Club (Burr Oak)	954	6-10-88

The following administrative penalties have been appealed:

NAME/LOCATION	AMOUNT
Kula and Boge (Martelle)	$1,000
Handi-Klasp, Inc, (Webster City)	1,000
Munn and Traum (Davenport)	100
Iowa City Regency MHP	1,000
Bianchi Meyrat Lagoon (Des Moines)	600
Thomas E. Lemon (Barnum)	700
Clarion Farmer's Coop	750
Great Rivers Coop (Atavia)	1,000
Village Oaks Homeowners Ass'n (Blue Grass)	424
City of Wapello	500
City of Newell	500
Gradert, Ernest and Kevin (Sibley)	500
Stanton Cooperative	1,000
City of University Park	500
Wilton Steel Processing (Wilton)	1,000
City of Wilton	1,000
Spectra Health Care (Storm Lake)	580
John Hanson, Winnebago Industries	600
White Consolidated Industries (Webster City)	1,000
City of Braddyville	600

The following administrative penalties were paid in November:

NAME/LOCATION	AMOUNT
Van Deist Supply Co. (Webstr City)	$1,000
City of Inwood	200
Skyline Inn (Dubuque)	100
**Len Turner	100
AMPEL, Inc. (Des Moines)	600
Follett's Tap (Camanche)	100
Cutty's of Okoboji (Spirit Lake)	212
City of Montour	100
Shiloh (Kalona)	100
City of Sheldahl	100
City of Ferguson	50
St. Cecelia-St. Joe School (Bode)	50
Powesheik Rural Water	125
Rich Metals (Davenport)	750
Ottumwa-Wapello County SLF	600
Dodds Valley View Water Ass'n (Bettendorf)	100

* Referred to the Attorney General
** On Payment Schedule

DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION COMMISSION
CONTESTED CASES
DECEMBER, 1987

DATE RECEIVED	NAME OF CASE	ACTION APPEALED	PROGRAM	ASSIGNED TO	STATUS
10-17-85	City of Bevington	Administrative Order	WM	Hanson	Hearing continued.
1-23-86	Calvein Soil Service	Administrative Order	WM	Lande	Hearing continued; cleanup study progressing.
6-18-86	ASM - Clinton	Administrative Order	Air	Lande	Hearing continued.
9-10-86	Kula and Kaye	Administrative Order	SW	Lande	Negotiating before filing. Removal completed.
10-29-86	Mandi-Klamp Company, Inc.	Administrative Order	AQ/WM/SW	Lande	Hearing set for 12-10-87
12-02-86	City of Waukee	Administrative Order	WS	Hanson	Hearing continued.
12-11-86	Eleice Reese	Permit Condition	FP	Clark	Hearing set for 12-09-87.
12-29-86	Francis Hamberlin	Administrative Order	FP	Clark	Hearing set for 1-25-88.
3-10-87	Greiner	Administrative Order	FP	Clark	Proposed Decision 10-19-87; appealed.
3-23-87	Traum and Mann	Administrative Order	SW	Kennedy	Negotiating before filing.
5-12-87	Iowa City Regency MHP	Administrative Order	WM	Hanson	Hearing held 11-03-87.
5-28-87	Simonhi-Heyrat Lagoon (Hank Smith)	Administrative Order	WM	Kennedy	Hearing continued.
6-02-87	Willow Creek Dam/Zerkle et.al	Permit Issuance	FP	Clark	Negotiating before filing.
7-30-87	Transcon Company, Inc.	Administrative Order	WM/WC	Lande	Settled.
6-11-87	Thomas Lennon	Administrative Order	FP	Clark	Hearing set for 01-12-88.
8-10-87	Great Rivers Co-op	Administrative Order	WC	Lande	Hearing continued; study proceeding.
8-17-87	City of Wapello	Administrative Order	WM	Hanson	Hearing held 10/27/87; briefs filed 11/30/87.
8-17-87	City of Donnellson	Administrative Order	WM	Hanson	Hearing continued.
8-27-87	Village Oaks Homeowners Assn.	Administrative Order	WS	Murphy	Hearing continued.
9-01-87	City of Hawell	Administrative Order	WM	Hanson	Hearing continued; settlement close.
9-02-87	City of Mt. Vernon	Administrative Order	WM	Hanson	Settled.
9-17-87	Brodert, Kevin and Ernest	Administrative Order	AQ	Lande	Hearing set for 12-11-87.
9-23-87	Ottumwa-Wapello County SLF	Administrative Order	SW	Kennedy	Settled.
10-02-87	Bremer County	Permit Denial	SW/AQ	Lande	Hearing continued.
10-09-87	City of Milton	Administrative Order	WM	Lande	Hearing Set for 12-15-87.
10-09-87	Evanco Industries, Inc.	SWA Denial	SW	Lande	Hearing Continued.
10-12-87	Ancent Lawn & Leisure	Administrative Order	AQ	Lande	Settled.
10-14-87	Stanton Cooperative	Administrative Order	WC	Lande	Hearing Set for 12-18-87.
10-14-87	Milton Steel Processing, Inc.	Administrative Order	WM	Lande	Hearing Set for 12-22/87.
10-22-87	University Park	Administrative Order	WM	Hanson	Hearing Set for 1-02-88.
10-23-87	Marketmark, Mallin	Administrative Order	WC	Lande	Settled.
11-09-87	Winnebago Industries	Administrative Order	SW	Kennedy	Negotiating before filing.
11-17-87	White Consolidated Industries	Administrative Order	WM	Murphy	New Case.
11-18-87	City of Brooklyville	Administrative Order	WM	Clark	New Case.

Allan Stokes stated that there was a change on item 7 on the Rulemaking Status Report. He explained that the code editor took exception with some of the formatting in the rule and wanted some of the items changed. By the time the changes were made, there was not enough time to get the rule published and out to hearing by December 9, 10 and 11. The hearing dates have been rescheduled for January 6, 7 and 8, 1988. Attempt was made to get notice of the change out to anyone who may have had an interest in these hearings.

BRIEFING -- EPD ENFORCEMENT PROCESS

Allan Stokes, Division Administrator, Environmental Protection Division, presented the following item.

Mr. Stokes displayed transparencies showing the source of enforcement actions and the route a complaint takes through the department. He gave a detailed explanation of the process from time of receipt of complaint to an administrative order, or final action taken by the Attorney General's office. Mr. Stokes also distributed a typical sample enforcement packet depicting each step taken through this process.

Mr. Stokes stated that the process seems to be working well, but it is continually being refined and improved.

PENALTY COMPUTATIONS

Mike Murphy, Legal Bureau, stated that a motion is needed to go into closed session pursuant to the Code of Iowa, Chapter 21.5h to avoid disclosure of specific law enforcement matters, such as allowable tolerances or criteria for selection, prosecution or settlement of cases, which if disclosed would facilitate disregard or requirements imposed by law.

Motion was made by Clark Yeager to go into closed session. Seconded by Charlotte Mohr.

Chairman Schlutz requested a roll call vote. "Aye" votes were cast by Commissioners Hammitt, Mohr, Priebe, Siebenmann, Uhl, Yeager and Schlutz. Motion carried 7 to 0.

Motion was made by Nancylee Siebenmann to adjourn the closed session and go into open session. Seconded by Clark Yeager.

Chairman Schlutz requested a roll call vote. "Aye" votes were cast by Commissioners Hammitt, Mohr, Priebe, Siebenmann, Uhl, Yeager and Schlutz. Motion carried 7 to 0.

No action was taken in closed session.

RECESS

Chairman Schlutz recessed the meeting at 5:05 p.m., Monday, December 14.

MEETING RECONVENES 8:30 A.M., TUESDAY, DECEMBER 15, 1987

BRIEFING --RADON

Allan Stokes stated that radon is not dealt with at the state level by the Department of Natural Resources. He added that the Department of Public Health has been active in the radon program, and John Eure from that department is present to give a briefing on radon.

John Eure distributed an information packet which is generally sent out to the public to answer inquiries on radon. He explained that radon is a noble gas, chemically inactive, and a part of what is known as the uranium series. He further explained how radon gases will pass from the soil to the air. The factor that brings radon into the home is the difference in pressure between inside the basement and the soil pressure. The second factor is the entry points such as cracks in the floor, joints between the slab and the wall, and anywhere that gas can pass from soil to air through the shield of the house. Mr. Eure also explained how the problem can be corrected by producing a vacuum under the slab.

Mr. Eure distributed a list of companies that provide services in measuring radon. They will provide test kits for a cost in the range of $12.50 to $30.

Mr. Eure stated that radon cannot cause any health effects other than increased risks of lung cancer.

APPOINTMENT -- BRENT PARKER

Brent Parker, Jasper County Sanitarian, addressed the Commission, speaking for himself as well as other associations as follows: the Iowa Environmental Health Association, the Iowa Public Health Association, the Land Improvement Contractor's Association, the Iowa Groundwater Association, the Local Health Director's Association, Iowa Water Well Association and the Iowa State Association of Counties. He stated that this group has met and discussed the impacts of the groundwater bill and what effects they might have on rulemaking with DNR.

Mr. Parker stated their concerns with the proposed rules for private well construction permits. Their main concern was with enforcement of these rules. Mr. Parker stated that some counties already have rules concerning private wells and it is his feeling that rules that deal with private systems are better enforced at the county level.

Mr. Parker stated that he would like to see the DNR commit one person for resource, and have that person contact the counties to encourage them to set up their permit program and also to provide them with a training seminar to help them implement the rules. He added that many of the counties need to learn about well drilling, well construction, and installation specifications in order to meet the requirements of the permit program.

Mr. Parker stated that there should be uniformity and consistency throughout the state with enforcement of these rules.

Discussion followed on possible certification of well drillers.

Director Larry Wilson commented that information is available to anyone who wants it in regards to implementation of these rules. The department cannot contact all counties, but the counties can call in for assistance from department staff. The county supervisors have the responsibility to provide a sanitarian, or some type position, to see that all mandates upon their county are fulfilled.

Discussion followed regarding education relating to rules, training seminars, the department's policy for providing information, and counties responsibility for enforcement of rules.

Allan Stokes stated that the rules are written that it is the state that will issue the permits and the county has to ask for, and receive delegation of the program from the DNR.

STATUS REPORT -- FLOODPLAIN MAPPING PLAN

Allan Stokes, Division Administrator, Environmental Protection Division presented the following item.

In 1982 the Iowa Legislature adopted Senate File 368 which required, at the time, the Department of Water, Air and Waste Management to prepare a plan to delineate flood plain and floodway boundaries for selected stream reaches by January 1, 1986. Senate File 511 amended it to extend the original submittal date for the plan to June 30, 1986. The significant point is that the plan for flood plain mapping shall be for the period of June 30, 1986 to December 31, 2004. Progress reports and proposed implementation schedules were to be submitted biennially to the general assembly. The department may modify the plan, as needed, in response to changing circumstances. A key part of the mandate was to establish a priority system for mapping of flood plain areas.

Copies of the plan, that was submitted to the House and Senate in June 1986, were distributed to each Commissioner.

Allan Stokes stated that the plan identified that there are approximately 500 areas in the state that needed flood plain mapping. Of those areas, 125 communities have completed flood plain mapping studies. Mr. Stokes noted that a listing of those communities is contained in the report which was distributed to the Commissioners. Also contained in the report is a listing of 385 communities that still have a need to address mapping of flood plain areas within their boundaries.

Mr. Stokes discussed details of cost estimates, priority and grouping systems, and criteria used for ranking each group. Using that priority system, the plan identified approximately 33 high priority areas.

Mr. Stokes stated that nothing has been done as far as progress with the plan. The legislature has never appropriated any money to carry out the plan, and there is no money available within the department to apply to conducting this mapping program. The first biennial report will be prepared to be given to the general assembly during the 1988 session.

PUBLIC PARTICIPATION

Andrea Jilovec, representing the Iowa Water Well Association, addressed the Commission stating that their association feels they are at a threshold in making a difference in groundwater protection. Ms. Jilovec added that they are moving ahead to educate their members, county sanitarians, and all interested state and agency people in groundwater protection. This includes education regarding proper well construction and proper well abandonment. She stated that they would like to see more enforcement of the rules that are currently being developed by the department. Ms. Jilovec stated that, as private business people, the responsibility to act as enforcers should not fall on their shoulders. Ms. Jilovec stated that her main concern is that the proposed rules and regulations are enforced.

STATUS REPORT --GRA-IRON FOUNDRY

Allan Stokes, Division Administrator, Environmental Protection Division, presented the following item.

Allan Stokes stated that, because some of the topics to be discussed are potentially litigation items, it is recommended by legal staff that it be handled in closed session.

Mike Murphy stated that a motion is needed to go into closed session pursuant to Code of Iowa, Chapter 21.5c to discuss strategy with counsel in matters that are presently in litigation or where litigation is imminent where its disclosure would be likely to prejudice or disadvantage the position of the governmental body in that litigation.

Motion was made by Clark Yeager to go into closed session. Seconded by Charlotte Mohr.

Chairman Schlutz requested a roll call vote. "Aye" votes were cast by Commissioners Hammitt, Mohr, Priebe, Siebenmann, Uhl, Yeager and Schlutz. Motion carried 7 to 0.

Motion was made by Nancylee Siebenmann to adjourn the closed session and go into open session. Seconded by Donna Hammitt.

Chairman Schlutz requested a roll call vote. "Aye" votes were cast by Commissioners Hammitt, Mohr, Priebe, Siebenmann, Uhl, Yeager and Schlutz. Motion carried 7 to 0.

No action was taken in closed session.

REFERRALS TO THE ATTORNEY GENERAL'S OFFICE

Mike Murphy, Bureau Chief, Legal Bureau, presented the following item.

The Director requests the referral of the following to the Attorney General for appropriate legal action. Litigation reports have been provided to the Commissioners and are confidential pursuant to Iowa Code section 22.7(4).

Hilltop Feeders; Jorgenson, J.E. and Harris - air quality

Timberline Associates Limited Partnership - drinking water

HILLTOP FEEDERS; JORGENSON, J.E. AND HARRIS

Mark Landa, Legal Bureau, briefed the Commission on the history of this case. Mr. Landa stated that the crux of this matter is that these persons and corporations, since 1981, have operated a grain roaster for the purpose of roasting grains including Captan treated corn, without a permit from the department and without pollution control equipment. Mr. Landa elaborated on the details of this case.

APPOINTMENT -- HILLTOP FEEDERS -- TOM JORGENSON

Tom Jorgenson, representing Jerry Jorgenson and Hilltop Feeders addressed the Commission stating that he is not representing Harris Jorgenson, adding that Harris Jorgenson no longer has any connection with Hilltop Feeders.

Mr. Jorgenson described the roaster referred to in this case. He stated that his client is purchasing Captan corn from Pioneer Seeds and is roasting it in compliance with EPA standards, then feeding the corn to cattle at a confinement feedlot. Mr. Jorgenson stated that he became involved in this case in August 1987 when his client received a letter from the department requiring that roasting be stopped, testing be conducted, application for a permit to operate the equipment be submitted, and results of testing be submitted to the department. Mr. Jorgenson wrote the department stating his client's position that they did not feel they needed to have a permit. Mr. Jorgenson stated that he asked the department for the standards they would have to comply with once the testing was completed. He added that response was not received from the department until October 5, 1987, but it did not state what the standards were. Mr. Jorgenson's clients were notified in November 1987 that they would be referred to the Attorney General.

Mr. Jorgenson stated that he received a letter on December 2, from Mark Landa, spelling out what they were to test for. Mr. Jorgenson stated that his main point today is that he feels it is not necessary to refer his clients to the Attorney General at this time. He added that he feels that the department and his client are close to resolving this matter. He stated that there are some inconsistencies between his client and the department regarding the agriculture exemption, and in regards to the roaster being a permanent one. Mr. Jorgenson stated that he is asking the Commission allow the department and his client to get back to the negotiating table to get this worked out. He stated that his client is willing to submit, to the department, a proposal to add certain pieces of control equipment to curb pollution.

Keith Uhl asked why the department wants to refer this case in light of Mr. Jorgenson's offer to negotiate, do testing, and add pollution control equipment.

Mark Landa responded that this case goes back six years where these parties have made representations that they would agree to do what the department is requesting, including testing and adding pollution control equipment. Since

there has been no results, the department is recommending referral to guarantee that the requirements of the department will be done.

Discussion followed regarding exemption for agriculture, emission data, and standards for testing.

Nancylee Siebenmann commented that she regrets that the department was not a little more responsive in terms of standards, but the bottom line is that these people have been repeatedly subjecting the people of Iowa to some form of particulate, and perhaps, other noxious and toxic types of substances.

Motion was made by Nancylee Siebenmann for referral to the Attorney General's Office. Seconded by Donna Hammitt.

Discussion followed regarding standards for testing, the number of penalty days and total amount of penalty.

The Commission decided to go into closed session for further discussion on this case.

Nancylee Siebenmann withdrew her motion for referral. Donna Hammitt withdrew her second.

Mike Murphy explained that motion is needed to go into closed session pursuant to Code of Iowa, Chapter 21.5c to discuss strategy with counsel in matters that are presently in litigation or where litigation is imminent where its disclosure would be likely to prejudice or disadvantage the position of the governmental body in that litigation.

Motion was made by Gary Priebe to go into closed session. Seconded by Clark Yeager.

Chairman Schlutz requested a roll call vote. "Aye" votes were cast by Commissioners Hammitt, Mohr, Priebe, Siebenmann, Uhl, Yeager and Schlutz. Motion carried 7 to 0.

Motion was made by Gary Priebe to adjourn the closed session and go into open session. Seconded by Charlotte Mohr.

Chairman Schlutz requested a roll call vote. "Aye" votes were cast by Commissioners Hammitt, Mohr, Priebe, Siebenmann, Uhl, Yeager and Schlutz. Motion carried 7 to 0.

Motion was made by Nancylee Siebenmann for referral to the Attorney General's Office only on the issue of roasting the Captan treated seed. Seconded by Donna Hammitt. Motion carried unanimously.

DELETION OF ITEMS 11, 12 AND 15

Chairman Schlutz requested that, due to the bad weather conditions and to allow the Commissioners to finish in time to drive home, the informational items be deleted from the agenda and be rescheduled next month. The Commission was in agreement to delete items number 11, 12 and 15.

Timberline Associates Limited Partnership

James Combs stated that, due to weather conditions today, Mr. Ron Walder will not be able to make it to this meeting and has asked that the matter be postponed until the January 1988 meeting.

Motion was made by Keith Uhl to table this referral until the January 1988 meeting. Seconded by Donna Hammitt. Motion carried unanimously.

LEGISLATION PROPOSAL

Keith Uhl presented the following proposal to be included in the department's legislative package for 1988. An act relating to the sewage works revolving loan fund, by providing for definitions, for the execution of capitalization grant agreements, for the loan of fund monies to municipalities, for the provisions of loan contracts with such municipalities and their review by the Department of Natural Resources legal staff, for the authority of the Commission to establish rules for the revolving loan program and for the issuance of bonds for the state match for such capitalization grants.

Mr. Uhl explained that this bill would give the Commission the authority to issue $20 million in bonds for a revolving loan fund. It would provide a source of money the state can loan to local communities as matching financing to qualify for federal grants. He added that the bonds would be tax-exempt to allow the Commission to loan the proceeds to communities at below market rates. The communities would return a share of local sewer user revenues to the Commission to pay off the bonds. Mr. Uhl stated that payment of the bonds would be the obligation of the Commission and not the state.

Mr. Uhl further explained all items of the bill in detail. A lengthy discussion followed and the Commission decided that the only changes needed in the draft, which Mr. Uhl distributed, were in Sections 3 and 6. In Section 3, line 2, the words "or" and "free" should be deleted, which will indicate this will be low interest loans, rather than interest free loans. In Section 6, the words "Attorney General" should be deleted and replaced with the wording "DNR legal staff."

Motion was made by Gary Priebe to approve the draft bill as part of the department's 1988 legislative package, with the amendments noted in Sections 3 and 6 of the draft. Seconded by Donna Hammitt. Motion carried unanimously.

CHAPTER 38 -- PRIVATE WATER WELL CONSTRUCTION PERMITS AUTHORIZED UNDER 455B.187

Allan Stokes, Division Administrator, Environmental Protection Division, presented the following item.

The Commission is requested to approve the Notice of Intended Action for Chapter 38 of the IAC.

Chapter 38 of IAC is proposed to implement the issuing of new private water well drilling and construction permits as authorized under Chapter 455B.187, Code of Iowa, as amended by Section 304 (HF631, 1987 Acts).

Upon authorization by the Commission, three public hearings on the proposed rules will be held throughout the state beginning on February 3, 1988, and written and oral comments will be received through February 18, 1988. The results of the comments and recommendations are scheduled to be brought back to the Commission at the March, 1988 meeting.

Implementation of these rules will allow the department to issue approximately 2,000 private water well drilling and construction permits per year, and to register about 4,000 existing wells per year.

ENVIRONMENTAL PROTECTION COMMISSION [567]
Notice of Intended Action

Pursuant to the authority of Iowa Code section 455B.187 as amended by 1987 Iowa Acts, House File 631, section 304, the Environmental Protection Commission intends to create a new Chapter 38, "Private Water Well Construction Permits."

Iowa Code section 455B.187, as amended by 1987 Iowa Acts, House File 631, section 304, requires all landowners or landowners' agents to obtain private well construction permits from the Department of Natural Resources prior to the construction of any new wells on their property. In addition, the Department is precluded from issuing a permit to an applicant until all existing wells on the property have been registered with the Department. Also, the authority to issue private well construction permits may be delegated to county boards of supervisors, but the Department retains concurrent authority. Further, all counties may issue emergency drilling permits in those cases where emergency drilling is necessary to fulfill an immediate need for water. The Department intends to create a new Chapter 38(455B), to implement these statutory provisions. Generally, this chapter provides procedures and conditions governing applications for and issuance of private water well construction permits.

More specifically, the proposed rules: (i) define the type of wells requiring construction permits; (ii) require a twenty-five dollar ($25) filing fee per application; (iii) require all permitted wells to be constructed by a registered driller in accordance with Chapters 37 (Registration of Water Well Contractors) and 49 (Nonpublic Water Wells) of these rules; (iv) authorize each county board of supervisors or the board's designee to grant emergency well construction permits to satisfy an immediate need for water; and (v) provide for a well construction permit to expire after one calendar year from the date of issuance if well construction is not started prior to that date. Further, the proposed rules specify the conditions under which a drilling permit could be denied and outline the appeal procedures. Finally, the procedures for delegating the Department's permit-issuing authority to the counties are specified in addition to the conditions under which such a delegation may be revoked by the Department.

In accordance with Iowa Code section 17A.31, notice is hereby given that these rules may have an impact on small business.

Any interested person may file written comments or suggestions on the proposed rules through February 18, 1988. Such written materials should be directed to Victor Okereke, Iowa Department of Natural Resources, Wallace State Office Building, 900 East Grand, Des Moines, Iowa 50319-0034. Persons are also invited to present oral or written comments at public hearings which

will be held on February 3, 1988 at 1:00 p.m. at the Iowa Western Community College, Continuing Education Building, Room 002, Council Bluffs, Iowa 51501; on February 5, 1988 at 1:00 p.m. in the fifth floor conference room, Wallace State Office Building, 900 East Grand, Des Moines, Iowa 50319-0034; and on February 8, 1988 at 1:00 p.m. at the Iowa Department of Natural Resources, Geological Survey Bureau, Trowbridge Hall, 123 North Capitol, Iowa City, Iowa 52242.

Copies of the proposed rules may be obtained from the Records Section, Iowa Department of Natural Resources, Wallace State Office Building, 900 East Grand, Des Moines, Iowa 50319-0034.

These rules are intended to implement 1987 Iowa Acts, House File 631, section 304 and Iowa Code subsection 455B.105(12).

Chapter 38
PRIVATE WATER WELL CONSTRUCTION PERMITS

567--38.1(455B) Definitions.

"Abandoned well" means a water well which is no longer in use or which is in such a state of disrepair that continued use for the purpose of accessing groundwater is unsafe or impracticable.

"Agreement" means a signed document between the department and the county board of supervisors with which the department delegates the authority to issue private well drilling permits to the county board of supervisors or its designee.

"Contiguous" means any number of parcels of land that physically touch one another except that tracts of land separated by roads, railroads, or streams shall be deemed contiguous.

"Contractor" means a person engaged in the business of well construction or reconstruction. The term may include a corporation, partnership, sole proprietorship, association or any other business entity, as well as any employee or officer of such an entity.

"Construction" means the physical act or process of making a water well including, but not limited to, siting, excavation, construction and installation of equipment and materials necessary to maintain and operate the well.

"Department" means the Iowa Department of Natural Resources.

"Director" means the director of the department or a designee.

"Groundwater" means any water below the surface of the earth.

"Inactive water well" means a water well which is not currently in use and is capped or sealed to prevent the entrance of contaminants into the well, but is in such a condition that it can be activated to produce a safe supply of water.

"Landowner" means an individual, trust, partnership, corporation, government or governmental subdivision or agency, association or other legal entity that has legal or equitable title to a piece of land.

"Landowner's agent" means a person who acts for or in place of the landowner by authority from the landowner.

"Private water well" means a well that does not supply a public water supply system.

"Protected source" means a surface water or groundwater source recognized by rule as deserving special protection in order to ensure its long-term availability, in terms of either quality or quantity, or both, to preserve the public health and welfare.

"Public water supply system" means a system for the provision to the public of piped water for human consumption, if such system has at least fifteen (15) service connections or regularly serves an average of at least twenty-five (25) individuals daily at least sixty (60) days out of the year. Such term includes (1) any collection, treatment, storage, and distribution facilities under control of the supplier of water and used primarily in connection with such system, and (2) any collection (including wells) or pretreatment storage facilities not under such control which are used primarily in connection with such system.

"Water well" means an excavation that is drilled, cored, bored, augered, washed, driven, dug, jetted, or otherwise constructed for accessing groundwater. Water well does not include an open ditch or drain tiles.

567--38.2(455B) Forms. The following application form is currently in use:

Application for a permit to construct a new private water well. 11/87. 542-0988.

567--38.3(455B) Permit requirement.

38.3(1) When permit required. A landowner or landowner's agent shall not drill or construct a new private water well without first obtaining a well construction permit issued by the department or by a county board of supervisors or the board's designee authorized to issue such permits pursuant to rule 38.15(455B). Examples of private water wells requiring well construction permits include, but are not limited to: domestic wells, livestock wells, irrigation wells, recreational wells, monitoring wells, heat pump wells, industrial wells, and dewatering wells.

38.3(2) Exemptions. Examples of excavations that are not private water wells and so do not need private water well construction permits and need not be reported include, but are not limited to: soil borings, percolation test holes, sand and gravel and limestone exploration holes, excavations for storing and extracting natural gas or other products, gravel pits and quarries. Test holes, used to determine the availability, quality or depth of groundwater are also exempt provided that all the following conditions are met.

a. The use of the test hole is limited to the conduct of the test only.

b. The duration of the test is not more than seven consecutive days.

c. The test hole is properly closed immediately after the test is completed.

38.3(3) Caveat. Nothing in these rules shall be construed as exempting public water supply wells from the construction permit and water withdrawal permit provisions of part 567, Iowa Administrative Code.

567--38.4(455B) Form of application. Application shall be made on forms supplied by the department. Each application shall list all wells, including abandoned wells, on the applicant's property contiguous to the well site described in the application and shall describe the location of each well site. The location shall be given in the form of a legal land description (section, township and range) to the nearest quarter of a quarter of a section and noted on a map or aerial photograph. The list of wells to be registered shall include but is not limited to abandoned wells, inactive wells, agricultural drainage wells, irrigation wells, domestic wells and livestock wells.

567--38.5(455) Fees.

38.5(1) Fee payment. Each application shall be accompanied by a nonrefundable fee of twenty-five dollars ($25) in the form of a check or money order payable to the Department of Natural Resources, unless a county board of supervisors or the board's designee is authorized to issue private well construction permits pursuant to rule 38.15(455B). In such cases where the permitting authority is delegated to the county, the county board of supervisors may set a different fee and shall designate the terms for fee payment. More than one proposed well on one contiguous piece of property may be listed on one application and only one fee need be paid irrespective of the number of wells listed on the application form. A proper application shall consist of a fully and properly completed form and nonrefundable fee.

38.5(2) Exemption. The department is exempt from the fee payment requirements of these rules.

567--38.6(455B) Well maintenance and reconstruction. A private well construction permit is not required for the repair, maintenance, rehabilitation or reconstruction of an existing well. Changes in physical dimensions included in these exemptions include, but are not limited to: deepening the well and changing the diameter or length of the casing or the screen. Replacement wells do require a private well construction permit.

567--38.7(455B) Emergency permits.

38.7(1) Granting of emergency permit. Each county board of supervisors or the board's designee may grant an emergency permit to a landowner or the landowner's agent if emergency drilling is necessary to meet an immediate need for water. The emergency permit and application must be signed by the board of supervisors or the board's designee and shall be on forms obtained from the department prior to the emergency well construction taking place.

38.7(2) Submittal to department. A copy of the permit application signed by the chairperson of the board of supervisors and fee shall be sent to the department within thirty days of the granting of the permit by the county board of supervisors or its designee. In the event the permitting authority has been delegated to the county, no fee need be remitted to the department.

567--38.8(455B) Permit issuance and conditions.

38.8(1) When issued. Upon receipt of a complete application, the department shall issue a permit to the landowner or landowner's agent except as provided in rules 38.7(455B), 38.12(455B) and 38.15(455B).

38.8(2) Not withdrawal permit. Each permit shall include notification that a private well construction permit is not a water withdrawal permit and does not eliminate the necessity of obtaining any water withdrawal permits required in Chapters 51 and 52 of these rules. A water withdrawal permit is required before an applicant can withdraw more than 25,000 gallons of water per day, from any source or combination of sources in the state of Iowa.

38.8(3) Construction by registered well driller. Each well construction permit shall require that each well shall be constructed by a registered well driller in compliance with Chapters 37 and 49 of these rules.

567--38.9(455B) Noncompliance. Violations of any of the provisions of this chapter may be addressed by the department pursuant to Iowa Code sections 455B.109, 455B.175 and 455B.191.

567--38.10(455B) Expiration of a permit. A private well construction permit shall expire one calendar year from the date of issuance. If construction of the proposed well is not started prior to the expiration date, a new application plus a new nonrefundable fee must be filed with the department or the county board of supervisors pursuant to rule 38.15(455B).

567--38.11(455B) Transferability. A private well construction permit is not transferable.

567--38.12(455B) Denial of a permit. The department may deny a private well construction permit if granting the permit would lead to the violation of state law, would result in groundwater contamination, would lead to withdrawal from a protected source; or the director determines that the well would threaten public health or the environment.

567--38.13(455B) Appeal of a permit denial. Any applicant aggrieved by a decision issued under the provisions of this chapter may file a notice of appeal with the director. The notice of appeal must be filed within thirty (30) days of the date of the permit decision. The form of the notice of appeal and appeal procedures are governed by Chapter 7 of these rules.

567--38.14(455B) Effective date. The provisions of this chapter of the rules shall become effective on _____, ____.

567--38.15(455B) Delegation of authority to county board of supervisors.

38.15(1) Application by board. A county board of supervisors requesting the authority to issue private well construction permits shall apply to the department in accordance with Chapter 28E, Code of Iowa. The application shall include statements of agreement to comply with this chapter of the Iowa Administrative Code. Additional information may be requested by the department.

38.15(2) County standards. The county board of supervisors may impose additional standards as local conditions dictate, but cannot be less stringent than those required by the provisions of this chapter.

38.15(3) Information to department. The delegation agreement shall provide for the method, format and frequency of reporting all permit application information to the department.

38.15(4) Board authority After delegation of authority to a county board of supervisors, all applications in that county shall be made to the board or its designee.

38.15(5) Term of delegation. The delegation of authority shall be for up to five years and may be redelegated at the discretion of the department.

567--38.16(455B) Concurrent authority of the department. Notwithstanding the delegation of permit granting authority pursuant to rule 38.15(455B), the department reserves the right to exercise concurrent authority. In cases where the board or its designee fails to act on an application, or the director determines that a particular application cannot be appropriately evaluated by the board or its designee, the department may review such an application without invoking the provisions of rule 38.17(455B).

567--38.17(455B) Revocation of delegation agreement. The department may revoke the delegation to issue private well construction permits if the board

of supervisors or its designee: failed or refused to carry out the provisions of this chapter in a timely manner; or violated any of the provisions of the delegation of authority agreement with the department.

_____
Date

_____
Larry J. Wilson, Director

Discussion took place on the meaning of contiguous property and which wells would need permits.

Motion was made by Gary Priebe to approve Notice of Intended Action--Chapter 38, Private Well Construction Permits. Seconded by Charlotte Mohr. Motion carried unanimously.

PROPOSED DECLARATORY RULING: ACCO UNLIMITED CORPORATION

James Combs, Division Administrator, Coordination and Information Division, presented the following item.

Enclosed is a proposed Declaratory Ruling of the Director in response to a Petition filed by ACCO Unlimited Corporation. As indicated in the Proposed Ruling, the request pertains to the need for construction permits and engineering certification for addition to public drinking water supplies of simple chemical feed systems which include bulk chemical storage. The ruling is that a construction permit is required, and rules of the department which allow waiver of engineering certification for simple chemical feed systems do not apply where bulk chemical storage is included.

The Proposed Ruling becomes the final ruling of the department unless it is appealed to the Commission by the Petitioner within ten days of receipt, or the Commission decides to review it on its own motion. If the Petitioner appeals or the Commission decides to review, this matter will be presented for decision. In that event, you may approve the ruling, reverse or modify it, request additional information and defer decision, or decline to issue a ruling. If there is no appeal and you do not choose to review it, the Proposed Ruling becomes the final Declaratory Ruling.

The Commission chose not to review the proposed ruling.

EMERGENCY ADOPTION--CHAPTER 209, DEMONSTRATION GRANT RULES, SOLID WASTES GRANTS

Ruth Bender, Division Administrator, Waste Management Authority Division, presented the following item.

Mrs. Bender distributed a draft copy of the proposed rules and stated that the rules provide for financial assistance, through grants, to encourage alternatives to landfill and municipal solid wastes. The grant program will be administered by the Waste Management Authority Division.

Mrs. Bender stated that these rules were incorrectly filed under an Energy and Geological Resources chapter. That division developed the rules prior to the Waste Management Authority Division's staffing, as that is where the expertise was at that time. The rules were sent to public hearing last week and one comment was received. The rules are being presented to the Commission as they should be correctly adopted and implemented under the authority of the Waste Management Authority Division.

Motion was made by Clark Yeager to send Chapter 209, Demonstration Grant Rules for Solid Waste Grants through the required notice of intended action process since this Commission is responsible for endorsing it. Seconded by Gary Priebe.

Keith Uhl asked if there are any downside risks in delaying implementation of the rules.

Ruth Bender stated that there are three grant proposals that have received approval under a grant program from oil overcharge funds, but they are recommended to be funded out of the Demonstration Grant Program because they are solid waste projects. If this rule is not implemented, those three grantees would have to wait even further to receive funds. Under the oil overcharge fund, if not used these grant funds would, after a two-year period beginning July 1, 1987, revert to the energy fund.

Chairman Schlutz called for a vote on the motion by Clark Yeager to send the rules to notice of intended action. Motion carried unanimously.

STATUS REPORT ON SMALL BUSINESS ASSISTANCE CENTER

Ruth Bender, Division Administrator, Waste Management Authority Division, presented the following item.

Mrs. Bender stated that last month the Commission approved a memorandum of agreement, between the DNR and University of Northern Iowa, for the development of a plan for the Small Business Assistance Center. The agreement indicated that UNI must submit a draft plan to the department by December 10, 1987. The final plan will be submitted to the General Assembly on January 15, 1988.

The department received a draft plan from UNI last week and staff is reviewing it and will recommend necessary changes. It will then go to full review of an advisory committee to the Small Business Assistance Center. The advisory committee includes representatives from Iowa State University, the University of Iowa, University of Northern Iowa, the Department of Natural Resources, Department of Economic Development, Small Business Administration and several others.

The plan will include a mission statement, a plan of action to include a program for developing an information base, an outreach program to assist small businesses in understanding state and federal regulations, and will promote alternatives to land disposal and identify advantages to proper substance management. A copy will be sent to each Commissioner as soon as it is finalized.

STATUS REPORT ON CENTER FOR HEALTH EFFECTS OF ENVIRONMENTAL CONTAMINATION

James Combs, Division Administrator, Coordination and Information Division, presented the following item.

Mr. Combs stated that the establishment of the Center for Health Effects of Environmental Contamination (CHEEC) has been contracted with the University of Iowa, and received Commission approval earlier this fall. The department received a copy of their report last week. The report discusses the creation of the center and its objectives. Their primary objective is to do some exposure assessment and risk assessment to toxic substances and other conditions in the environment. They are primarily doing some research to provide information to decision and policy makers in terms of determining how to deal with some of the human health effects of environmental contamination.

The center is administered by a board which was established in the mandating bill. Most of the members are faculty members from the University of Iowa, along with a representative from the Department of Natural Resources, the Health Department, and the Department of Agriculture and Land Stewardship.

The report also contains a compilation of all drinking water data that is available in the state.

Mr. Combs stated that since this report is a lengthy volume, a copy will be made available to each house of the General Assembly rather than making 150 copies. Mr. Combs stated that after he has reviewed the first draft, he will send a copy to each Commissioner. The report is due the General Assembly by January 15, 1988.

Chairman Schlutz stated, and Director Wilson concurred, that after the Commission has received a copy of the report and reviewed it, an electronic meeting may be called if needed.

ADDRESS ITEMS FOR NEXT MEETING

-- Report on Insurance Program for LUST

-- Attorney General Response on Override Policy

-- Discussion on Role of Commission in SBAC, CHEEC and Leopold Center

-- Chemical Dealers Association--How Funds from Tax on Chemicals and Fertilizers will be Spent

NEXT MEETING DATES

January 19-20 1988
February 15-16, 1988
March 21-22, 1988

ADJOURNMENT

Motion was made by Gary Priebe to adjourn the meeting. Seconded by Clark Yeager. Motion carried unanimously.

With no further business to come before the Environmental Protection Commission, Chairman Robert Schlutz adjourned the meeting at 2:45 p.m., Tuesday, December 15, 1987.

Larry J. Wilson, Director

Charlotte Mohr, Secretary

(E:12-87.sac)

ENVIRONMENTAL PROTECTION COMMISSION

December 14, 1987

NAME	COMPANY OR AGENCY	CITY
(Please print)		
Patrick Beard	City Attorney	Ankeny
Kevin Cherryhomes	Hygienic Lab	Iowa City
Scott Gray	UPI	Des Moines
Jeff Daubenmier	CR Gazette	Des Moines
L. H. Haynie	Bond Counsel	Des Moines ICA
HAROLD SMITH	CITY ENGINEER	DES MOINES
W Mason Mott	Bond Counsel	Des Moines ICA
W. R. Veenstra	Veenstra & Kimm	West Des Moines
Carl Metzger	City of Ankeny	Ankeny, Ia.
Lloyd Witte	City of Des Moines	Des Moines
Ria Deerson	ICA	Des Moines
H B Veenstra	Veenstra & Kimm	West Des Moines
Richard Clark	City of Ankeny	Ankeny, Ia
CKAY HENDERSON	Radio IA	DM
VINTON BICHEN	IA Citizen Action Assoc	DSM

ENVIRONMENTAL PROTECTION COMMISSION

December 15, 1987

NAME	COMPANY OR AGENCY	CITY
(Please print)		
Brent Parker	Jasper Co. Board of Health	Newton
Andrew Shaw	Iowa Water well Assn.	DM
Chapman	Health Regent	"
Tom Jorgensen	Hilltop Feeder's of IA	DM
Jim Daubenmire	CR Gazette	DM
Tom Seery	AP	DM

There is no item brief for items 7, 8, 9, 10, 11, 12, 14, and 15. These items will be presented in a verbal report with hand-outs possibly being distributed at the meeting.

ENVIRONMENTAL PROTECTION COMMISSION

ITEM 4 DECISION

SUPPLEMENTAL FEDERAL WATER SUPPLY GRANT

The department has received a supplemental federal water supply grant to purchase the below-listed equipment. Commission approval is requested to purchase the following:

Number of Units Ordered	Description of Item	Amount Estimated
6	8550-021 IBM Personal System 12 Model 50	$54,439.00
6	8512-001 IBM Personal System 12 14" Color Monitor	
6	4869-001 IBM External 5.25" 360KB Diskette Drive PS12	
6	6450245 8760 External Drive Adapter C (Channel)	
6	4202 001 IBM Proprinter XL	
6	1525612 5612 Parallel Printer Cable	
6	6280060 0957 DOS 3.3 or Newer	
6	9047 Lotus 1-2-3 Version 2.01 or Newer	
6	9445 DBase III	
6	9904 Displaywrite 4	
4	8550 021 IBM Personal System 12 Model 50	
4	8512 001 IBM Personal System 12 14" Color Monitor	
4	4869 001 IBM External 5.25" 360KB Diskette Drive PS12	
4	6450245 8760 External Drive Adapter Channel	
4	83X9702 2000 3270 Connection /A Channel	
2	4202 001 IBM Proprinter XL	
2	1525612 5612 Parallel Printer Cable	
4	6280060 0957 DOS 3.3 or Newer	
4	9047 Lotus 1-2-3 Version 2.01 or Newer	
4	DBase III	
4	9939 PC 3270 Emulation Program Version 3.0	
4	IBM 3191 Model 610 Terminals with Amber Screen and 122 Keyboard	

The equipment will be used to phase out the use of EPA's model state information system and computer link at Research Triangle Park, North Carolina by upgrading and providing a direct computer link between the University hygienic laboratory and the department's newly developed water supply data system.

Stan Kuhn
November 20, 1987

(I03.MIN/sc)

ENVIRONMENTAL PROTECTION COMMISSION

ITEM 5 DECISION

FY89 Budget Request, Department-Wide Budget Priorities

The attached schedule presents the department-wide priority ranking of the FY89 request decision packages as requested by the Environmental Protection Commission at the last meeting.

The decision package narratives have been paraphrased to readily indicate whether any particular package involves restoring or continuing an existing activity or if it involves increasing the budget above FY88 levels. A more complete decision package narrative can be found, if desired, by referencing back to the narratives presented for each division in the November FY89 budget item.

Priority #'s 0001 through 0034, with the exceptions of 0010 and 0017, represent restoring programs from the "base" budget level to the current, FY88 level.

Priority #'s 0035 through 0051 generally represent increases in facility maintenance, equipment purchases, and staffing above, or in addition to, FY88 activity levels.

Priorities 0052 and 0053 represent increments in 5% grant funding in addition to the $493,000 already requested as a supplemental for FY88 and $957,548 included in the "base" request for FY89. In other words, the $493,000, the $957,548, and priority 0052, $1,742,000, together, will provide a 5% match for all the federal grants expected to be available through federal fiscal year 1988.

Priority 0053, $1,105,000, would provide a 5% match for the federal funds expected to be available in federal fiscal year 1989. From a cash flow point-of-view much of the funding requested in priority 0052 and all of the funding requested in priority 0053 will not be needed (will not be paid out) until or subsequent to FY1990. The funds requested as a supplemental and in the "base" should be sufficient to handle most of the cash "pay-out" in FY89.

The state prioritization process does not specifically involve including the General fund capital request in the same priority scheme as operational and special programs. It is listed lowest in this schedule, priority # 0054, as a reflection of the reality that the G.A. typically considers funding capital projects only after all of the operational and special issues have been handled.

Approval of the attached priority listing is respectfully requested.

Stan Kuhn

DNR DEPARTMENT WIDE PRIORITIES
FY89 BUDGET REQUEST

Priority	Description	FTE	Amount
Base	All Base Packages, All Programs	703.79	$32,441,371
0001	Parks, Restore ten park maint. staff and support	10.00	232,310
0002	Forestry, Nursery. Restore Planting by 50% to FY88 Levels	9.13	192,799
0003	EPD Division, Restore field clerical staff to current.	1.50	34,620
0004	FW Division, Restore fish, wildlife, and enforcement to 80% of current level.	17.00	426,600
0005	Geology, Restore sediment analysis activities.	.50	21,240
0006	Administrative Services Division, Supplies and Postage to 85% of the FY88 level.		52,080
0007	Coordination and Information Restore fair maintenance.	.30	5,100
0008	Fish and Wildlife, Restore operations to 90% of FY88.	38.78	1,197,820
0009	Parks, Restore staffing to 100% of FY88 level.	79.44	913,751
0010	Environmental Protection Div., Provide for increases in UHL contract.		200,000
0011	Environmental Protection Div., Restore water withdrawal prog.	3.00	121,636
0012	Administrative Services Div., Restore clerical and support to 90% of FY88 level.	6.00	269,482
0013	Administrative Services Div., Restore land acquisiting staff to FY88 level.	4.00	140,640
0014	Administrative Services Div., Restore construction services staff to FY88 level.	19.00	603,785
0015	Parks, Restore maintenance supplies to FY88 level.		161,936

0016	Environmental Protection Div., Restore floodplain program to FY88 level.	8.00	304,648
0017	Low-level Radioactive Waste Compact assessement		78,000
0018	Forestry, Restore technical assistance to FY88 level.	2.00	69,754
0019	Fish and Wildlife Div., Restore operations to 95% of FY88 level.	22.00	667,801
0020	Coordination and Information Div., Restore Clear Lake, Ia City and Outdoor rec planning to FY88 level.	3.00	121,072
0021	Geology, Restore drilling program for research to FY88 level.	3.00	80,338
0022	Forestry, Restore inmate crew supervision at Yellow River to FY88 level.	1.00	37,285
0023	Geology, Restore collection of subsurface data and analysis of drill cuttings to FY88 level.	3.00	75,259
0024	Fish and Wildlife Div., Restore operations to FY88 level.	42.64	835,328
0025	Forestry, Restore nursery operations to FY88 level.	3.00	34,483
0026	Parks, Restore field surveys for plant and animal communities to FY88 level.	1.00	31,908
0027	Administrative Services Div., Restore Budgets and Grants staff and D.P. staff to FY88 level.	4.00	133,805
0028	Administrative Services Div., Restore safety program staff to FY88 level.	1.00	26,000
0029	Administrative Services Div., Restore clerical and fiscal support staff to FY88 level.	5.30	101,864

0030	Coordination and Info. Div., Restore staff for newsletter/ radio/TV spot production to FY88 level.	2.00	57,464
0031	Forestry, Restore staff to conduct insect and disease surveys and tech. assistance to landowners to FY88 level.	2.08	36,390
0032	Geology, Restore staff to assess water availability from Mo. river to SW Iowa.	.50	21,325
0033	Parks, Restore research budget for preserves studies to FY88 level.		33,600
0034	Coordination and Info. Div., Restore graphic art and photographic support to FY88 level.	2.50	73,435
0035	Parks, provide for increased utility cost due to new construction.		20,000
0036	Parks, increase facility maint. and equipment to pre-1985 levels.		650,000
0037	Environmental Protection Div., Increase floodplain services and dam inspections above current level.	5.00	275,000
0038	Environmental Protection Div., Establish financing mechanism for local sewage works.		19,710,720
0039	Forestry, provide for replacement of high priority equipment.		86,000
0040	Geology, analyze drill cuttings to conform to state rules.	1.00	41,350
0041	Geology, Replace Drilling Rig.		30,000
0042	Mississippi River Basin Assoc. Assessement.		35,000
0043	Coordination and Info. Div., Improve planning capabilities above FY88 level.	1.00	46,000
0044	Admin. Services Div., office equipment, new and replacement.		50,000

0045	Geology, USGS cooperative program, drilling, maps, and stream gauging.		46,496
0046	Coordination and Info. Div., Improve magazine circulation and TV spot production above FY88 level.		25,000
0047	Coordination and Info. Div., Productivity improvement through additional personal computers.		45,000
0048	Coordination and Info. Div., Equipment and maintenance items for Conservation Ed. Center.		45,000
0049	Parks, add, above FY88 level, one park attendent each for George Wyth and Nine Eagles.	2.00	41,000
0050	Parks, increase, above FY88 level, scientific studies and maintenance of state preserves.		28,350
0051	Green Thumb Program, increase from base budget to FY88 level.	5.35	55,125
0052	5% Sewage Grant Program. This package increases funding to the level necessary to match all federal funds through FFY88.		1,742,000
0053	5% Sewage Grant Program. This package provides sufficient state funds to match expected FFY89 federal grant funds.		1,105,000
0054	Capital Acquisition and Development. This package requests projects funded through the General Fund.		2,697,000
	Total	1,012.81	66,608,970

Note: Totals reflect only that portion of the budget funded, either partially or completely, by the State General fund and appropriations from the Fish and Wildlife trust fund for operations. Programs and capitals funded completely with earmarked funds, and not involving appropriated funds, are not included in the above total. Thus, the above total does not reflect the complete FY89 DNR budget.

ENVIRONMENTAL PROTECTION COMMISSION

ITEM 6 INFORMATIONAL

MONTHLY REPORTS

The following monthly reports are enclosed with the agenda for the Commission's information.

1. Rulemaking Status Report
2. Variance Report
3. Hazardous Substance/Emergency Response Report
4. Enforcement Status Report
5. Contested Case Status Report

Members of the department will be present to expand upon these reports and answer questions.

Allan Stokes
December 1, 1987

IOWA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION COMMISSION
RULEMAKING STATUS REPORT
DECEMBER 1, 1987

PROPOSAL	DRAFT TO COMMISSION	NOTICE PUBLISHED	RULES REVIEW COMMITTEE	HEARING	SUMMARY OF COMMENTS & RECOMMENDATIONS TO COMMISSION	RULES ADOPTED	RULES PUBLISHED	RULE EFFECTIVE
1. Ch. 23 - NSPS & NESHAPS	10/20/87	11/18/87	12/10/87	12/09/87 12/10/87 12/11/87				
2. Ch. 38 Private Well Construction Permit	12/15/87							
3. Ch. 50, 51 Ag Drainage Well Registration	10/20/87	—	12/10/87	—	—	10/20/87	11/18/87	10/23/87
4. Ch. 91 - Construction Grants	10/20/87	11/18/87	12/10/87	12/08/87				
5. Chs. 100, 102 - Liquids in Landfills	10/20/87	11/18/87	12/10/87	12/09/88 12/10/87 12/11/87				
6. Ch. 102 Sewage Sludge at Landfills	11/17/87	12/16/87		1/06/88 1/07/88 1/08/88				
7. Chs. 100,103 Landfill Ground Water Monitoring	10/20/87	11/18/87	2/10/87	12/09/87 12/10/87 12/11/87				
8. Ch. 135 - Sniffer Well Criteria	10/20/87	11/18/87	12/10/87	12/09/87 12/10/87 12/11/87				
9. Ch. 143 - Used Oil	6/17/87	8/12/87		9/08/87 9/09/87 9/10/87	10/20/87	10/20/87	12/30/87	2/03/88
10. Ch. 144 - Household Hazardous Materials	11/17/87	—		—	—	11/17/87	12/16/87	11/17/87
11. Ch. 152 - Criteria for Siting Low-Level Radioactive Waste Facilities	6/19/87	9/09/87	10/13/87	10/01/87 10/02/87 10/06/87	11/17/87	11/17/8	12/16/87	1/20/88

*Projected

E:MPM/CI-I251J03.FRM

MONTHLY VARIANCE REPORT 11/30/87

No.	Facility	Program	Engineer	Subject	Decision	Date
1	Maytag Co.- Newton	Air Quality		Equipment Malfunction	approved	11/12/87
2	Hospers(re:Pkrlnd Beef	Air Quality	Municipal Engr.	Water Supply	denied	11/17/87
3	DM,City of(HlndHills)	Wastewater Const.	Veenstra & Kimm	Aerated Lagoon Hydraulic load.	approved	11/07/87
4	Ankeny, City of	Wastewater Const.	Veenstra & Kimm	Pump Clogging Protection	approved	11/13/87
5	S.Panorama San. Dist.	Wastewater Const.	McClure Engineering	Emergency Power	approved	11/13/87
6	Inwood, City of	Wastewater Const.	DeWild,Grant,et al	Site Separation	denied	11/17/87
7	University Park,City of	Wastewater Const.	Barden & Associates	Lagoon Piping	denied	11/19/87
8	J. Clark Burns	Flood Plain		Percent Length Red.	approved	11/02/87
9	Ball Water Co(Asbury)	Watersupply Const.	Wallace, Holland	Installation Procedures	approved	11/02/87
10	Sully, City of	Watersupply Oper.	Butts Engineering	Water Monitoring	approved	11/23/87

REPORTS OF HAZARDOUS CONDITIONS

During the period of November 1, 1987 through November 30, 1987, reports of 48 hazardous conditions were forwarded to the Central Office. Two incidents are highlighted, followed by a general summary and the number per field office.

Date Reported and County	Description: Material, Amount, Date of Incident, Cause, Location, Impact	Responsible Party	Response and Corrective Actions
11/16/87 SCOTT	A tanker truck overfilled a storage tank at 1718 South Concord in Davenport, Iowa on November 26, 1987, and 300 gallons of solvent containing 80% methylene chloride and 20% ethanol were spilled.	Sears Manufacturing P.O. Box 367 Davenport, Iowa 52808	About 100 gallons of liquid were pumped into drums. The remaining product was contained in the soil with visqueen liner. The visqueen and soil were excavated and placed in drums for disposal at a hazardous waste site.
11/18/87 POLK	A tanker truck pumped 900 gallons of gasoline into a monitoring well at 3200 Grand Avenue in Des Moines, Iowa on November 18, 1987.	McMillan Oil Co. 2nd Avenue & I-80 Des Moines, Iowa and University of Osteopathic Medicine & Health Sciences, 3200 Grand Avenue Des Moines, Iowa	Some product was recovered by pumping from monitoring wells near the tank. Further assessment will determine other methods for recovery of additional product.

Numbers in Parentheses Represent Reports for the Same Period in Fiscal Year 1987

		Substance Type				Mode				
Month	Total # of Incidents	Petroleum Product	Agri. Chemical	Other Chemicals and Substances	Handling and Storage	Pipeline	Highway Incident	RR Incident	Fire	Other
Oct	69	47	4	18	53	0	9	1	2	4
Nov	48 (24)	35 (12) UST-19	3 (3)	10 (9)	37 (17) UST-19	0 (0)	4 (5)	0 (1)	1(0)	6(1)

Total # of Incidents Per Field Office	01	02	03	04	05	06
This Period	3	7	10	2	14	12

bkp/KRI216P01.01

DATE: December 1, 1987

TO: EPC

FROM: Mike Murphy

RE: Enforcement Report Update

The following new enforcement actions were taken last month:

Name, Location and Field Office Number	Program	Alleged Violation	Action	Date
Hitchcock Scrap Yard, Inc. Pacific Junction (4)	Air Quality	Open Burning	Order/Penalty	10/30
City of Story City, (5)	Wastewater	Municipal Improvement Plan	Order	11/3
Twin County Dairy, Inc. Iowa City (6)	Wastewater	Effluent limitations, monitoring and reporting	Order/Penalty	11/3
City of Farley (1)	Wastewater	Effluent violations	Order	11/10
City of Leon (5)	Wastewater	Effluent violations	Order	11/10
Petroleum Marketing Co. Malcolm (5)	Wastewater	Effluent violations, monitoring and reporting compliance schedule	Order/Penalty	11/10
City of Braddyville ( )	Wastewater	Monitoring and reporting	Order/Penalty	11/10
Geneva Grain and Lumber Geneva (2)	Wastewater	Prohibited discharge	Order/Penalty	11/10
J.C. White Excavating Co. & City of Des Moines (5)	Solid Waste	C & D open dumping	Order/Penalty	11/16
City of Mechanicsville (6)	Wastewater	Compliance schedule, MIP, plan of action	Order/Penalty	11/16
City of Sidney (4)	Wastewater	Compliance schedule, MIP, plan of action	Order/Penalty	11/16
City of Keota (6)	Wastewater	MIP, plan of action	Order	11/16
St. John's Lutheran Church Decorah (1)	Drinking Water	Monitoring and reporting - nitrate	Order/Penalty	11/16
Tracy Improvement Co. Tracey (5)	Drinking Water	No certified operator	Order/Penalty	11/16

MM:bag/M334L07.01

DATE: December 1, 1987

TO: EPC

FROM: Mike Murphy

RE: Enforcement Report Update

The following new enforcement actions were taken last month:

Name, Location and Field Office Number	Program	Alleged Violation	Action	Date
Dodds Valley View Water Assn., Bettendorf (6)	Drinking Water	Monitoring and reporting - radioactivity	Order/Penalty	11/16
Finlan Landfill and Larry White - Waukon	Solid Waste	Permit renewal	Order/	11/16
Curries Mfg. Company Mason City (2)	Air Quality	Failure to obtain a permit	Order/Penalty	11/16
Curries Company Mason City (2)	Wastewater	Prohibited discharge	Order/Penalty	11/18
Highway #3 MHP, Cedar Falls (1)	Drinking Water	Failure to monitor - nitrates	Order/Penalty	11/18
HP Junsen Subdivision Ames (5)	Drinking Water	Failure to monitor - bacteria	Order/Penalty	11/18
IBP, Inc./Langenfeld Denison (4)	Wastewater	Prohibited discharge	Referral to AG	11/17
Jim Industries/Leamer Pleasant Valley (6)	Solid Waste	Open dump/penalty	Referral to AG	11/17
City of Ankeny (5)	Wastewater	Prohibited discharge	Referral to AG	11/17
Big Rock Tap (6)	Drinking Water	Monitoring/penalty	Referral to AG	11/17
City of Washington (6)	Wastewater	Compliance schedule	Referral to AG	11/17
Finlan Landfill (1)	Solid Waste	Permit/fee	Referral to AG	11/17
City of Tabor (4)	Wastewater	Compliance schedule MIP	Order/Penalty	11/18
City of Clarinda (4)	Wastewater	Compliance schedule MIP	Order	11/25
City of Tipton (6)	Wastewater	MIP/plan of action	Order	11/25
Iowa-Illinois Gas & Elec.	Air Quality	Other violations	Order/Penalty	11/25

MM:bsg/M334L07.01

DATE: December 1, 1987

TO: EPC

FROM: Mike Murphy

RE: Enforcement Report Update

The following new enforcement actions were taken last month:

Name, Location and Field Office Number	Program	Alleged Violation	Action	Date
City of Earling (4)	Wastewater	MIP/plan of action	Order/Penalty	11/30
City of Massena (4)	Wastewater	MIP/plan of action	Order/Penalty	11/30
City of Lohrville (3)	Wastewater	MIP/plan of action	Order	11/30
Hardin Co. SSW Disp. Comm. (2)	Solid Waste	Daily operation	Order/Penalty	11/30

MM:bsg/M334L07.03

M E M O R A D U M

DATE: December 1, 1987

TO: Environmental Protection Commission

FROM: Mike Murphy

SUBJECT: Summary of Administrative Penalties

The following administrative penalties are due:

NAME/LOCATION	AMOUNT	DUE DATE
*Shelter Shield (Buffalo Center)	$1,000	12-03-86
*Cedar Hills Apartments (Dubuque)	1,000	12-29-86
*City of Dysart	400	3-13-87
*Country Corner Cafe (Pacific Junction)	451	8-05-87
*JTM Indust./MacDade/Leamer (Pleasant Valley)	1,000	8-12-87
*Big Rock Tap	660	9-21-87
*Elings/Catron/Frey (Des Moines)	1,000	10-18-87
Twelve Mile House (Bernard)	339	10-28-87
**K & K Truckstop (Lenox)	62	11-01 87
*OK Lounge (Marion)	448	11-01-87
Timberline Assoc. Ltd (W. Burlington)	1,000	11-02-87
Ottumwa Industrial Airport	1,000	11-23-87
J.C. White Excavating (Des Moines)	1,000	11-29-87
City of Gravity	100	11-30-87
Pleasant Creek Estates (Shellsburg)	200	11-30-87
Keokuk Landfill, Inc.	600	11-30-87
Trausch Co., Inc. (Carroll)	850	12-01-87
Northwestern States Cement (Mason City)	1,000	12-01-87
City of Brighton	700	12-04-87
Arlene's Cafe (Turin)	212	12-07-87
City of Lynnville	100	12-08-87
**Lawrence Payne (Ottumwa)	700	12-15-87
**Ken Turner (Fort Madison)	50	12-15-87
Mark Wallin (Essex)	500	12-15-87
**Accent Lawn and Leisure (Mt. Joy)	500	12-15-87
Kimballton Utilities	100	12-19-87
Cotter Elementary School (Columbus Junction)	100	12-19-87
City of Arcadia	200	12-19-87
City of Hornick	200	12-19-87
City of Earlville	100	12-20-87
City of Liscomb	224	12-30-87
Dalluge Turkey Farm (Grafton)	300	12-30-87
Kossuth County SLF	700	1-01-88
City of Winfield	500	1-01-88
Robert Moehle (Sheffield)	300	1-01-88
Hawkeye Tiling (Jesup)	1,000	1-01-88

* Referred to the Attorney General
** On Payment Schedule

MPM:rg/E:I122N01.01

Administrative Penalties Due (Continued)

NAME/LOCATION	AMOUNT	DUE DATE
City of Sheldon	900	1-02-88
City of Albion	600	1-02-88
Hitchcock Scrap Yard, Inc. (Pacific Jct)	1,000	1-03-88
Stan Moser (Hudson)	250	1-05-88
Twin County Dairy, Inc. (Iowa City)	600	1-05-88
Petroleum Marketing Co. (Malcolm)	900	1-12-88
City of Mount Vernon	500	1-15-88
Geneva Grain and Lumber (Geneva)	500	1-17-88
J.C. White Excavating Co. (Des Moines)	500	1-17-88
City of Sidney	1,000	1-17-88
St. John's Lutheran Church (Decorah)	100	1-17-88
City of Tabor	700	1-17-88
Curries Mfg. Co. (Mason City)	600	1-17-88
Tracy Improvement Co. (Tracy)	200	1-17-88
City of Mechanicsville	1,000	1-18-88
Highway #3 Mobile Home Park (Cedar Falls)	490	1-19-88
Curries Mfg. Co. (Mason City)	600	1-20-88
H.P. Jensen Subdivision (Ames)	345	----
Iowa-Illnois Gas and Electric (Davenport)	1,000	----
City of Massena	300	----
City of Earling	1,000	----
Hardin County SLF	500	----
*Chico's Supper Club (Burr Oak)	954	6-10-88

The following administrative penalties have been appealed:

NAME/LOCATION	AMOUNT
Kula and Boge (Martelle)	$1,000
Handi-Klasp, Inc, (Webster City)	1,000
Munn and Traum (Davenport)	100
Iowa City Regency MHP	1,000
Bianchi Meyrat Lagoon (Des Moines)	600
Thomas E. Lennon (Barnum)	700
Clarion Farmer's Coop	750
Great Rivers Coop (Atavia)	1,000
Village Oaks Homeowners Ass'n (Blue Grass)	424
City of Wapello	500
City of Newell	500
Gradert, Ernest and Kevin (Sibley)	500
Stanton Cooperative	1,000

* Referred to the Attorney General
** On Payment Schedule

MPM:rg/E:I122N01.01

Administrative Penalties Appealed (continued):

NAME/LOCATION	AMOUNT
City of University Park	500
Wilton Steel Processing (Wilton)	1,000
City of Wilton	1,000
Spectra Health Care (Storm Lake)	580
John Hanson, Winnebago Industries	600
White Consolidated Industries (Webster City)	1,000
City of Braddyville	600

The following administrative penalties were paid in November:

NAME/LOCATION	AMOUNT
Van Deist Supply Co. (Webstr City)	$1,000
City of Inwood	200
Skyline Inn (Dubuque)	100
**Ken Turner	100
AMPEL, Inc. (Des Moines)	600
Follett's Tap (Camanche)	100
Cutty's of Okoboji (Spirit Lake)	212
City of Montour	100
Shiloh (Kalona)	100
City of Sheldahl	100
City of Ferguson	50
St. Cecelia-St. Joe School (Bode)	50
Powesheik Rural Water	125
Rich Metals (Davenport)	750
Ottumwa-Wapello County SLF	600
Dodds Valley View Water Ass'n (Bettendorf)	100

* Referred to the Attorney General
** On Payment Schedule

MPM:rg/E:I122N01.01

DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION COMMISSION
CONTESTED CASES
DECEMBER, 1987

DATE RECEIVED	NAME OF CASE	ACTION APPEALED	PROGRAM	ASSIGNED TO	STATUS
10-17-85	City of Bevington	Administrative Order	HW	Hansen	Hearing continued.
1-23-86	Oelwein Soil Service	Administrative Order	HW	Landa	Hearing continued; cleanup study progressing.
6-12-86	ADM - Clinton	Administrative Order	Air	Landa	Hearing continued.
9-10-86	Kula and Boge	Administrative Order	SW	Landa	Negotiating before filing. Removal completed.
10-29-86	Handi-Klamp Company, Inc.	Administrative Order	AQ/HW/SW	Landa	Hearing set for 12-10-87
12-03-86	City of Haukee	Administrative Order	WS	Hansen	Hearing continued.
12-11-86	Eloise Reese	Permit Condition	FP	Clark	Hearing set for 12-09-87.
12-24-86	Francis Heaberlin	Administrative Order	FP	Clark	Hearing set for 1-25-88.
3-18-87	Greiner	Administrative Order	FP	Clark	Proposed Decision 10-19-87; appealed.
3-25-87	Traum and Munn	Administrative Order	SW	Kennedy	Negotiating before filing.
5-12-87	Iowa City Agency MHP	Administrative Order	HW	Hansen	Hearing held 11-03-87.
5-28-87	Bianchi-Meyrat Lagoon (Hank Smith)	Administrative Order	HW	Kennedy	Hearing continued.
6-08-87	Hillow Creek Dam/Zarble et.al	Permit Issuance	FP	Clark	Negotiating before filing.
7-30-87	Trausch Company, Inc.	Administrative Order	HW/HC	Landa	Settled.
6-11-87	Thomas Lennon	Administrative Order	FP	Clark	Hearing set for 01-12-88.
8-10-87	Great Rivers Co-op	Administrative Order	HC	Landa	Hearing continued; study proceeding.
8-17-87	City of Hapello	Administrative Order	HW	Hansen	Hearing held 10/27/87; briefs filed 11/20/87.
8-17-87	City of Donnellson	Administrative Order	HW	Hansen	Hearing continued.
8-27-87	Village Oaks Homemakers Assn.	Administrative Order	WS	Murphy	Hearing continued.
9-01-87	City of Newell	Administrative Order	HW	Hansen	Hearing continued; settlement close.
9-02-87	City of Mt. Vernon	Administrative Order	HW	Hansen	Settled.
9-17-87	Gradert, Kevin and Ernest	Administrative Order	AQ	Landa	Hearing set for 12-11-87.
9-23-87	Ottumwa-Hapello County SLF	Administrative Order	SW	Kennedy	Settled.
10-05-87	Bremer County	Permit Denial	SW/AQ	Landa	Hearing continued.

E:MPM/CI-I251J02.FMM

DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION COMMISSION
CONTESTED CASES
DECEMBER, 1987

DATE RECEIVED	NAME OF CASE	ACTION APPEALED	PROGRAM	ASSIGNED TO	STATUS
10-09-87	City of Wilton	Administrative Order	WW	Landa	Hearing Set for 12-15-87.
10-09-87	Everco Industries, Inc.	SWA Denial	SW	Landa	Hearing Continued.
10-15-87	Accent Lawn & Leisure	Administrative Order	AQ	Landa	Settled.
10-16-87	Stanton Cooperative	Administrative Order	WC	Landa	Hearing Set for 12-18-87.
10-16-87	Wilton Steel Processing, Inc.	Administrative Order	WW	Landa	Hearing Set for 12-22/87.
10-22-87	University Park	Administrative Order	WW	Hansen	Hearing Set for 1-05-88.
10-23-87	Hartstack, Wallin	Administrative Order	WC	Landa	Settled.
11-09-87	Winnebago Industries	Administrative Order	SW	Kennedy	Negotiating before filing.
11-17-87	White Consolidated Industries	Administrative Order	WW	Murphy	New Case.
11-18-87	City of Braddyville	Administrative Order	WW	Clark	New Case.

E:MPM/CI-I251302.FRM

A Plan for Mapping Iowa Flood Plains

Prepared by:

Iowa Department of Water, Air and Waste Management
Henry A. Wallace Building
900 East Grand
Des Moines, Iowa 50319
515/281-8960

Submitted to:

General Assembly

Adopted by:

Iowa Water, Air and Waste Management Commission

February 18, 1986

Table of Contents

		Page
	Summary	i
	Mapping Plan Implementation Approach	iv
Chapter 1	Introduction	1
	A. Purpose	1
	B. Legislative Mandate	1
	C. Goal and Objectives	2
Chapter 2	Flood Plain Management	3
	A. Iowa Department of Water, Air and Waste Management's Role	3
	B. Federal Role	3
	C. Local Governmental Role	4
	D. Neighboring States' Management Role	5
	E. Other States	6
Chapter 3	Elements of Flood Plain Mapping	8
	A. Definition of Terms	8
	B. Contents of Flood Plain Study	9
Chapter 4	Statewide Flood Plain Mapping Needs and Benefits	10
	A. Locations	10
	B. Criteria for Maps	11
	C. Benefits for Flood Plain Mapping and Flood Plain Management	11
Chapter 5	Development of a Priority Ranking System for Flood Plain Mapping	18
	A. Goals and Limitations	18
	B. Alternative Ranking Systems	18
Chapter 6	Flood Plain Mapping Priority List	21
Chapter 7	Mapping Implementation Options	24
	A. Estimating Mapping Costs	24
	B. Funding Options	31
	C. Completing Mapping Projects	33
	D. Budget Alternative	34
	E. Local Implementation	37
	List of Sources	38
Appendix A	Communities with Completed Flood Plain Mapping Studies	A-1
Appendix B	Communities Lacking Flood Plain Mapping Studies	B-1

Summary

In 1982 the Iowa Legislature adopted Senate File 368 which required the Department of Water, Air and Waste Management prepare a plan to delineate flood plain and floodway boundaries for selected stream reaches by January 1, 1986. The plan was to cover a twenty year period, yet have capabilities to respond to changing circumstances. Progress reports and proposed implementation schedules were to be submitted biennially to the general assembly. Senate File 511 amended 455B.262 to extend the original submittal date for the plan to June 30, 1986.

The encouragement of wise use and management of flood plains through structural and nonstructural means is the goal of flood plain mapping. A flood plain map and its supporting documentation are also the primary tools necessary to achieve effective flood plain management. Through the management of flood plain activities, numerous benefits are achieved such as the reduced loss to public and private property and utilities, reduced economic interruptions, and reduced relief and rescue efforts during flood conditions.

The Department of Water, Air and Waste Management's current program in flood plain management promotes the protection of life and property from floods and the orderly development in flood plains. The Department's program reviews and regulates certain construction activities, sets minimum standards, and has performed very limited mapping efforts in flood plains. The majority of the existing flood plain mapping in Iowa has been performed by federal agencies.

In Iowa, the Federal Emergency Management Agency (FEMA) has primarily encouraged local adoption of flood plain regulations by providing insurance incentives, disaster assistance and generalized flood plain maps, construction standards and guidelines, and general information. Although FEMA has made large strides in providing assistance in these many areas, additional needs for assistance exist for many Iowa communities and counties. The most significant need (with which FEMA has provided great assistance in meeting) is the detailed flood plain map. Such a document constitutes the basic building block for community and county efforts at non-structural flood damage reduction.

Historically, FEMA has assisted in supplying 125 communities and parts of two counties with detailed flood plain maps. Another 204 communities have received more generalized flood plain maps under FEMA's emergency program. However, this falls short of meeting the needs of all communities and counties. Additionally, FEMA funds for detailed and generalized mapping are presently being funneled into the coastal flood prone areas. Future funding for any FEMA mapping is questionable. This will place yet more strain on state and local personnel and resources to enact flood damage reduction measures.

Flood plain mapping needs center around three major areas. These areas are the urbanized areas located in flood plain hazard zones, interior river segments supporting extensive cottage and home sites within the flood plain, and the extensive agriculturalized flood plain areas needing or having in part large levee systems. As noted above, approximately 125 communities and urbanized areas currently have been mapped. However, another 385 or more urban areas require flood plain mapping. Two river reaches having concentrated cottage/home development have been identified as significantly benefiting from flood plain mapping. Other river segments will likely benefit from mapping as development increases.

Complete mapping of the state's flood plain would be ideal. This would provide information to be used so that the state's flood losses would be reduced. Costs associated to complete all needed flood plain mapping within Iowa have not been determined at this time. However, based on the estimated mapping costs prepared for the noted priority areas, the cost to complete the entire state may very well require a long term commitment well beyond the planning horizon of the year 2004. Just for the 31 communities and two river segments included in the listing of priority areas of this plan, an estimated cost of $2.5 million is needed for flood plain mapping. The costs of flood plain mapping are not without benefits derived. Both tangible and non-tangible benefits are realized by communities, property owners, governmental agencies and the environment. Through mapping and implementation of management within flood plains, communities and property owners can realize significant reductions of federal flood insurance premiums. Proper construction and siting within flood plain resulting from local flood plain management can result in a reduction of: property and environmental damage, loss of life, and taxpayer funds for disaster aid.

A major part of this plan is developing a means for ranking the various mapping projects in an order of importance and completion schedules. It is proposed that the projects be divided into three different groups. Group I is the highest priority group and contains those Iowa communities which have been identified by the Department's flood plain management staff and by FEMA officials as having the greatest need for mapping studies. It is intended, therefore, that these Group I projects will be completed first before proceeding to the Group II project list. Several methods were evaluated to rank the communities and stream segments requiring flood plain mapping. The recommended priority system ranked the 31 communities and two river segments noted in Group I in order of their sequence for completion. The priority system gave consideration to areas where uncontrolled flood plain development could lead to environmental degradation, where communities have expressed willingness to regulate flood plain development, and where geographic and economic conditions exist to promote urban and industrial growth.

Several options for funding the mapping projects are also discussed in this planning document. The basic funding approaches center around the state's share of the project costs. State appropriated levels will remain variable with the rate of mapping projects completed a function of the appropriated levels. Requests for state appropriations will be assembled biennially.

This planning document also addresses methods to complete the individual mapping projects. Either complete contracting for finished mapping products or contracting key elements with the products finished by Department staff are the two basic methods. There are pros and cons for both of these methods; however, it is recommended that products should be completed by Department staff with limited contracting for sections which the Department does not have sufficient equipment. These contracted items would be for aerial photography, manuscript map production and some field cross-sectional surveying. Finished products would be prepared by staff.

There is at least one other potential funding alternative which could be utilized to complete individual mapping projects. This alternative would encompass cooperative efforts between the Department and one or more federal agencies which have an interest in flood plain mapping. Possible cooperating agencies involved are the Corps of Engineers and the U.S. Geological Survey. Funding would be some type of "cost-sharing" arrangement; preliminary discussions with

the agencies indicate that the federal portion would possibly be 50%. Since neither federal agency has significant funds available, this alternative is quite tentative. However, it is possible that the Department could complete at least some mapping projects for substantially less cost by entering a cooperative agreement.

The accompanying chapters presents the suggested approach to establish an ongoing mapping activity for Iowa communities and stream reaches. The basic needs are also presented and the means to secure these needs.

Mapping Plan Implementation Approach

The findings of this planning document recommend the flood plain mapping to be carried out first for the communities and stream reaches noted in Table 1. The completion of the mapping needs for these communities should follow the priority noted as consistently as possible. Legislatively appropriated funds are recommended to be used by the Department to prepare completed flood plain maps meeting fed ral standards. Some contract work will be secured by the Department to complete such items as aerial photography, map production and field survey work. All mapping work will be coordinated by departmental staff.

The following are the typical activities to be performed by the Department for implementing a flood plain mapping program for Iowa. The described activities below are not in sequential order.

<u>First Biennial Period</u>

1. Legislative: Briefly review existing departmental rules to insure that the proposed mapping activities, community cost sharing and subcontracting elements and required adoption of flood plain ordinances by local jurisdiction are consistent and can be undertaken. If minor rule revisions are warranted, these modifications will be carried out under administrative rule procedures.

   Prepare a legislative package to request fund appropriations for the first biennial period. This document will describe the mapping priority list, contract items and staff responsibility. Approximately $224,000 annually or $448,000 biennially would represent projects expected to be completed in the first two years. This would include Projects 2 through 9 on the priority list and a segment of Project 1 for the first year and Projects 10 through 14 for the second year. Approximately $50,000 is included in each year for work on Project 1 (Des Moines River, Red Rock to Ottumwa) and $60,000 is being included in the Wapsipinicon River for the second year.

2. Administrative: The Department will contact the communities and counties contained in Group I to determine their willingness to participate in the mapping effort. Proposed rule making activities will be performed to require adoption of approved flood plain ordinances by the local jurisdiction within one year of completion of a final flood plain map.

   Necessary administrative steps will be taken by the Department to obtain staff positions for mapping coordination and production. This planning document recommends two staff positions to begin the flood plain mapping activities. These positions would be as a draftsman (construction technician) and an environmental engineer.

3. Technical: The Department would fill the two flood plain mapping positions and begin required training (or acquainting) staff with the program. Primary training may be required on the

state's modeling program for flood flow and flood elevations calculations. Mapping format, specific needs for each project, and federal coordination must be undertaken also by the new staff positions.

Contracting procedures must be determined for securing services for such items as aerial photography, manuscript map production, and some field survey work. The specific contracting needs for each mapping product projected to be performed in the first biennial period will be determined. Some field data, photography may be available for some communities or stream reaches.

Extensive coordination should be carried out early in the year to secure funding or technical assistance from the Rock Island Corps of Engineers in mapping the river reach from Red Rock to Ottumwa.

Actual mapping work is not expected to begin until later in the first year of the biennial period. Contract procurement, community participation, and staff limitations will likely delay the start-up.

Second Biennial Period

This period should reflect a simple continuation of the mapping projects listed on the priority ranking (Table 1). Several aspects may warrant review or reconsideration. The following areas are suggested considerations.

1. Legislative: Submit the necessary appropriation package for the second biennial period. Contained in the package will be revisions to the priority list, modifications necessary from the preceeding period and a summary of previous period's activities. Projects 15 through 24 would be expected to be completed in the second period. This would be a biennial appropriation of approximately $448,000, with $140,000 included for the Wapsipinicon River and $100,000 more for the Des Moines River (Red Rock to Ottumwa).

2. Technical: The staff should review the priority ranking for effectiveness or new factors which should be included. After two years of mapping projects, some modifications may be warranted. However, it is not anticipated that a major revision to the priority list would be justified. Other staff activities and duties should continue to remain the same during this period.

Following Biennial Periods

The subsequent periods would be carried out similar to Period 2. Request for funding and small changes in the priority list would be varying. At some point in time, the Group II communities should be priority ranked. The ranking criteria should remain similar to the preceeding approach, but should account for modifications which improve the ranking. Funding levels may fluctuate biennially but should continue as high as possible to complete the mapping needs in a timely manner.

Chapter 1

INTRODUCTION

A. Purpose

The Department has prepared this planning document to establish what the flood plain mapping needs are in Iowa, develop the methods to secure the needed mapping products, and to discuss the options and issues encountered. Numerous factors have recently arisen which caused the state to consider developing a flood plain mapping plan. These factors will be discussed in greater detail in this document; however, the foremost factor is the diversion of federal funds previously available to Iowa for mapping flood plains.

Numerous benefits from flood plain mapping can be gained for communities, property owners, and state and federal agencies. One of the most tangible benefits occurs in the reduction of flood insurance rates for property owners. Greater detail of these benefits will be discussed in later chapters.

This planning document will develop a flexible mapping approach. Modifications, refinements and additions may occur as necessary. Flexibility is necessary to insure that the mapping can continue and that funds are spent in the most beneficial manner.

B. Legislative Mandate

In 1982, the Iowa General Assembly enacted legislation (Senate File 368) that called for the development of a flood plain mapping plan. The intent of this legislation was to provide flood plain mapping boundaries in order for the Department to more efficiently and effectively carry out the flood plain permit program. Below is a copy of the legislation and mandate for the flood plain mapping plan:

Pursuant to 455B.262, Code of Iowa, as amended by Senate File 511:

"The department shall also develop and the commission shall adopt no later than June 30, 1986, a plan for delineation of flood plain and floodway boundaries for selected stream reaches in the various river basins of the state. Selection of the stream reaches and assignment of priorities for mapping of the selected reaches shall be based on consideration of flooding characteristics, the type and extent of existing and anticipated flood plain development in particular stream reaches, and the needs of local governmental bodies for assistance in delineating flood plain and floodway boundaries. The plan of flood plain mapping shall be for the period from June 30, 1986, to December 31, 2004. After the commission adopts a plan of flood plain mapping, the department shall submit a progress report and proposed implementation schedule to the general assembly biennially. The commission may modify the flood plain mapping plan as needed in response to changing circumstances."

Senate File 511 amended 455B.262 to extend the original submittal date to June 30, 1986. The extension was necessary to assemble additional documentation on project cost estimations. The additional documentation has been incorporated into this plan.

C. Goal and Objectives

The primary goal of flood plain mapping is to encourage the wise use of flood plains through proper structural and nonstructural management practices. Flood plain mapping is the basic tool used to identify the location and extent of management activities.

The problem facing state and local governmental entities is the inability to specifically identify or locate the extent and boundaries of flooding along developed or developing flood plains. Uncontrolled construction and development within the flood plain often leads to widespread damages during flooding. These damages are to both private and public properties, the environment and loss of life. Therefore, the objective is to provide a means to secure the necessary flood plain maps and supporting technical data for state, county and local governments to implement effective flood plain management activities. A departmental requirement will be proposed in rule form to require implementation of approved flood plain ordinances by the jurisdictions receiving state supported mapping. This would allow local jurisdictions to issue building permits at the local level.

Chapter 2

FLOOD PLAIN MANAGEMENT

A. Iowa Department of Water, Air and Waste Management's Role

The Department has jurisdiction over all flood plains and floodways in the state for the purpose of establishing and implementing a program to promote the protection of life and property from floods and to promote the orderly development and wise use of the flood plains in the state.

The Department or any local government authorized to act for the Department requires any person desiring to construct or maintain a structure, dam, obstruction, deposit or excavation, or allow the same in any flood plain or floodway to obtain a flood plain development permit. Currently Department staff activities include reviewing and issuing orders to the projects subject to state rules. For these projects, usually isolated from other construction or development, individual cross sectional flood plain information is required from the applicant. However, for many construction and urban development projects within corporate boundaries, no review for consistency with flood plain rules is performed by governmental agencies. For these larger tracts of flood plain which are developed (or developing) mapping becomes necessary. To efficiently enable the governing authority to determine if such projects are required to be regulated or for determining other pertinent information about a flood plain situation, detailed maps are a useful and integral part of a flood plain management and enforcement program. The type of maps needed should include natural resource data such as hazard conditions, soils mapping, topographic contours, wetlands and other pertinent resource information.

Presently Iowa and FEMA regulations require that those communities with flood insurance hazard maps prevent new construction within the floodway unless it can be demonstrated that the cumulative effect of the proposed construction will not increase the water surface elevation of the base flood more than one foot at any point within the water course reach.

The departmental staff currently carry on a very limited technical role in flood plain mapping in Iowa. It is primarily a coordination role with federal agencies. However, this staff, as part of their responsibility under the predecessor agency, the Natural Resources Council, had carried out a more expanded role in actual mapping and coordination of securing mapping products.

B. Federal Role

The Federal role in nonstructural flood plain management is to provide: incentives and guidance, including subsidized flood insurance (National Flood Insurance Program - NFIP); standard setting for state and local activities as a condition to flood insurance; disaster assistance; grants in aid for acquisition; mapping; technical assistance; public education; and research.

Congress established the NFIP with the passage of the National Flood Insurance Act of 1968. Broadened and modified since then, the insurance portion of the program has been administered by the Federal Insurance Administration

of the Federal Emergency Management Agency (FEMA). Congress created the NFIP in order to mitigate future damage and provide protection for property owners against potential losses.

Most NFIP flood plain mapping and technical assistance has been focused on urban areas which contain flood prone areas with the greatest potential for loss.

In Iowa to date FEMA has primarily encouraged local adoption of regulations by providing insurance incentives, disaster assistance and generalized maps, standards, guidelines and information. With the anticipation of reduced federal, state and local spending in the 1980's there will be yet more strain placed on personnel and resources to enact flood damage reduction measures. Therefore the program priorities for Iowa's flood plain management should be carefully established yet remain flexible enough to allow change if severe flood hazard and development pressures occur..

Federal funding for flood plain management is very limited for the ongoing 1986 fiscal year. Some Iowa communities have been on a FEMA priority mapping list; however, their funding outlook is problematical at best. In the last year, six communities of the original 37 identified in this plan as priority areas for mapping have been able to achieve funding through arrangements with the Army Corps of Engineers and FEMA. However, the chances are low that such arrangements can be made for the next Federal fiscal year and beyond. FEMA official funding priorities now lie entirely along coastal regions of the U.S.. Furthermore, Federal Fiscal Year 1987 is officially targeted to be the last year new mapping contracts will be let under FEMA auspices. The Army Corps of Engineers may do mapping in a few communities under a cooperative agreement with the state. Thus, primary funding for flood plain mapping activities in Iowa will need to be borne at other governmental levels, such as by local communities themselves, or by state/local cost share agreements.

C. Local Governmental Role

Local governments role in flood plain management should be to adopt flood plain zoning and building codes under state authorized legislation once the flood plain areas have been satisfactorily mapped. Local governments must also assure maintenance funds are available to update flood plain maps such as when urbanization and development of watersheds result in increased flood flows. The public's return on investment from completing and updating mapping will consist of:

1) Minimize public cost to provide equal or greater protection against flooding.

2) Reduced economic interruptions.

3) Reduced loss of personal health and property.

4) Reduced loss to municipal utilities.

5) Reduced relief and rescue efforts provided by public and private funds.

6) Protecting environment from unwise development.

7) Valuable planning tool for future development.

Local special government divisions such as flood control districts also play important flood plain management roles in some areas. These roles will become more important, particularly for metropolitan areas, where storm water management is being integrated with flood plain management within each watershed.

D. Neighboring States' Management Role

Bordering states of Iowa have the following general flood plain programs and mapping procedures:

WISCONSIN has one of the oldest and most comprehensive flood plain programs in the nation. The state establishes mandatory standards for flood plain regulations to be adopted by local governments after completion of adequate flood plain mapping. The state coordinating agency is the Department of Natural Resources whose staff is involved in a wide range of activities. Priority is placed on training local officials and providing planning and engineering assistance to local units of government. Additionally, Wisconsin has a state-funded mapping grant program which provides financial aid to communities to cover 50% of the cost of developing large scale topographic maps.

Basically the Department administers a flood plain mapping assistance program to provide counties, cities and small communities with financial assistance to produce adequate topographic mapping of flood plains and to delineate flood plain and floodway boundaries. The Department has a statewide priority list for awarding mapping grants based on the following criteria:

1) Adequacy of existing mapping.

2) Existence of an approved flood plain ordinance.

3) Status of studies to develop flood profiles for areas to be mapped.

4) Potential for future development in areas to be mapped.

5) Applications made by two or more counties, cities or villages which would enable mapping of an entire river system.

6) The availability of funds for mapping from other sources.

MINNESOTA has a statewide flood plain management program where the state has minimum standards that must be adopted and administered by local governments. All mapping used to delineate flood plain zoning districts include flood plains, floodways, and flood fringe areas. Flood plain outlines in urban or developing areas must be delineated upon either detailed topographic maps (not more than 500 feet/inch) or an aerial mosaics orthophotos or suitable street maps not exceeding this scale. In rural areas the same applies except that the scale must not exceed 1,000 feet/inch. The state has a long-standing commitment to develop informational materials such as technical report series, model ordinance series, and flood plain management informational brochures.

NEBRASKA initiated a 20 year flood plain mapping plan in 1967 with the Natural Resources Commission being the state coordinator. The state delineates floodway and flood fringe areas and then local units are required to adopt adequate regulations to meet minimum state standards. The Platte River basin was the first priority for mapping with specific counties being the actual boundaries of mapping. Use of low level (6,000 feet) aerial photography is commonly used in their flood plain delineation.

ILLINOIS - The Department of Transportation is directed to define flood plains on a township-by-township basis. The statute charges that department with the planning, development and evaluation of the most effective combination of retention storage, channel improvement and flood plain preservation. Their flood plain maps show the boundaries of the regulatory flood plain and the encroachment limits. Associated drawings show the bottom profile, water surface profile of the regulatory flood and regulatory flood protection elevation profile.

MISSOURI - The Department of Natural Resources is the state coordinating agency for the NFIP which in essence is the flood plain management program for the state. The main efforts of this agency are directed toward the administration of the NFIP, reduction of future flood damages through advanced planning and preparedness; implementation of the Governor's Executive Order on Flood Plain Management; and, giving assistance to local governments.

E. Other States

As part of state regulatory efforts or assistance to local efforts, many states are involved in flood plain mapping. Some states have technical standards for floodway delineation, mapping or regulation of uses that exceed the federal standards. In several instances, the state has review and approval authority on the designation of flood plains. Some states perform their own technical flood plain mapping studies. Several have performed or are performing flood plain mapping studies as Federal Insurance Administration (FIA) contractors. These are some examples of innovative mapping efforts:

- The District of Columbia is undertaking a study of estuary and tidal flooding that will produce a hydraulic model to be used for flood area management.

- In Arizona and Wisconsin, state money is available to local governments for developing better flood plain maps.

- Colorado has a "piggy-back" contract with FIA contractors to provide flood plain mapping in urban areas at a scale of one inch to 200 feet.

- Maryland uses state funds and coastal zone management assistance funds to develop maps at a scale of one inch to 60 feet based on FIA studies and state tax maps.

The role of most states in flood plain management has also been in setting standards, performing very limited mapping, providing technical assistance, and educating the public. A majority of the states have programs for regulating flood plain development or have established standards for local regulations. Statutes establishing state programs usually include a requirement

that the state agency map areas or assist local governments in mapping flood plain areas. In most states, mapping is a prerequisite to the enforcement of state flood plain regulations. Maryland (and Iowa) also require permits for flood plain uses in unmapped areas.

Chapter 3

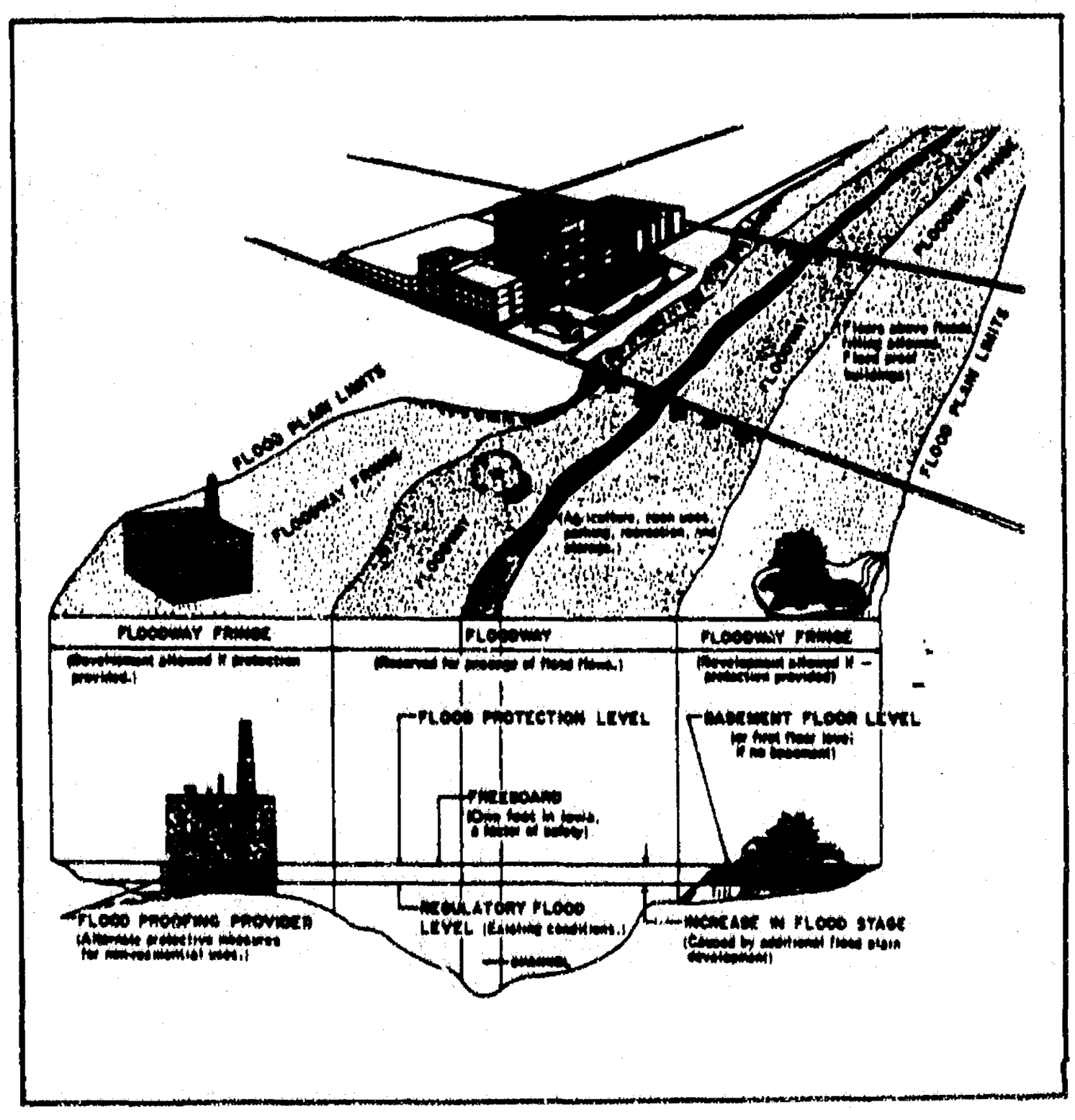
ELEMENTS OF FLOOD PLAIN MAPPING

A. Definition of Terms

To understand flood plain mapping, there are several terms which are universally used in federal, state and local regulations. The cross sectional view below is an idealized view of an Iowa stream with the principle regulatory components included.

1) Regulatory Flood Plain

The flood plain is that area which would be covered by waters from a flood which, on the average, will occur once every 100 years. The boundaries of the regulatory flood plain will be shown on the state flood plain maps issued for each area drained by a river and its tributaries.



VIEW OF REGULATORY FLOOD PLAIN

2) Floodway

The floodway within the flood plain is that portion required to store and convey the flood water of the regulated flood with no significant increase in water surface elevation. This area is subject to higher velocities and inundation with appreciable depths at frequent intervals.

3) Floodway Fringe

That portion of the flood plain outside the floodway. The flood fringe could be quite wide on large streams, quite small or nonexistent on small streams.

4) Encroachment Limits

A smoothed boundary based upon hydraulic analysis indicating the maximum channel-ward encroachment which may be undertaken without significantly increasing flood stage. The encroachment limit forms the common boundary of the floodway fringe and the floodway. On small streams and steepwalled valleys, encroachment limits may coincide with the boundary of the regulatory flood plain.

5) Freeboard

A safety factor usually expressed in terms of a certain amount of feet above a calculated flood level. Freeboard compensates for the many unknown factors that contribute to flood heights greater than the height calculated.

B. Contents of Flood Plain Study

For the flood plain mapping requirements in Iowa, a relatively simple report is prepared for the stream(s) or river(s) requiring management of any development and construction. For most communities, the reports will include only several streams where a significant volume of runoff will cause flooding into surrounding properties. Not all waterways, gullies, and ditches will be mapped. For each studied stream or river segment, several cross section surveys of the flood plain would be made noting the elevations and configuration of the flood plain. The resulting hydrology and hydraulics of the stream would be modeled to delineate the regulatory floodway, flood plain, and corresponding elevations along the entire studies stream segment. The final mapping products will primarily consist of a plan view map delineating these regulatory components as well as a reach profile (or graph) depicting regulatory components.

Chapter 4

STATEWIDE FLOOD PLAIN MAPPING NEEDS AND BENEFITS

A. Locations

Ideally, it would be convenient to have completed flood plain mapping for all interior Iowa streams, rivers and natural lakes. However, the cost of this convenience would be very high. The Department has therefore defined three major areas of need and has placed them in a relative order of importance.

1) The first need area should be to map urbanized areas which are located in identified flood plain hazard zones. Some of this mapping has been completed in Iowa through the National Flood Insurance Program (NFIP) identifying the 100 year flood protection elevation. Not all Iowa communities have participated in the voluntary NFIP and therefore do not have a completed flood plain map.

   The State of Iowa has recognized approximately 550 flood prone communities which would benefit from flood plain management. This list of communities was established in the mid-1970's through the cooperative efforts of Iowa Natural Resources Council staff and FEMA officials. Over the years the list has been modified and updated as changes were noted or necessitated by altering conditions. Approximately 125 of the communities (listed in Appendix A) have detailed flood plain maps completed either by NFIP or by state and local efforts.

   Most of the NFIP maps were based on existing watershed conditions. With additional urban development flood flows can increase by two to six times and, therefore, existing maps in some areas should be periodically updated to provide additional freeboard elevations beyond the 100 year flood elevation for these urbanized conditions. Examples of Iowa communities where very rapid urbanization has created the need for continued updating of completed flood plain maps are in West Des Moines on Jordan Creek and the City of Marion for areas located on Indian Creek.

   The 385 Iowa communities (listed in Appendix B) with their respective flood related watercourses, are those that have been determined to have a need for flood plain management but for which flood plain mapping has not yet been completed. This list was taken from the master list of all Iowa flood prone communities. Some of the communities on the master list have completed mapping. For other communities it was determined that flood plain management and mapping efforts were not necessary and they were therefore dropped from the list.

2) The second need area should be to map all interior stream and river segments which support heavy recreational activities and/or provide cottage/home dwelling sites. These sites are usually constructed on the stream banks which are in the floodway. A few of these types of watersheds and segments have once again been mapped through local planning efforts but the majority of these type watershed areas remain unmapped or need updating. Examples of stream or rivers, for the purpose of this need area, would be the Des Moines River directly below Red Rock Reser-

voir and the Wapsipinicon River from the communities of Littleton down to Independence. Both of these segments have attracted recent heavy construction of cottage/home dwellings either on or very near river banks. Other river segments may benefit from flood plain mapping, however their rate of home site development is much slower than the two mentioned above.

3) The third and least important mapping need is to complete all other interior agriculturally related rivers and streams which are covered by flood plain management regulations or which present specific flooding problems. Streams and rivers in this group are those that have, as an example, undergone extensive channelization, have had dikes and levees constructed along the flood plain and either lack natural timber or have had timber cleared to allow farming up to the stream or river bank. This flood plain alteration has, in some cases, significantly affected flood flows and flood elevations. Flood plain mapping will provide a means to determine areas subject to damage where management practices are required. Prime examples of where these conditions exist are on the Skunk River from the City of Ames down through Keokuk County, and, essentially the entire length of the Nishnabotna River. The remaining interior rivers, streams and natural lakes are not noted as having an important need for flood plain mapping. As noted above, it would be a convenience to have this mapping for property owners and governmental agency's occasional use.

B. Criteria for Maps

For the mapping need areas 1 and 2 above, the criteria necessary for a useful flood plain map should parallel that used by the NFIP in their Federal Emergency Management Agency (FEMA) detailed study and flood plain mapping efforts. FEMA mapping is principally designed for insurance needs. It does lack some of the detail needed for sophisticated flood plain management but has adequate detail and has been relatively satisfactory for flood plains under lighter development pressures. This would satisfy most of Iowa's needs. Map scales could range from 1" = 600' for approximate flood maps in rural (Priority 3) areas to a range of 1" = 100' to 1" = 400' with 2' contour intervals on orthophoto or topographic base maps for more highly urbanized need areas (Priorities 1 and 2). One-hundred year and five-hundred year flood protection, with a required 1.0 foot freeboard, are the standard frequencies of floods which are used for regulatory purposes. Thus, the parameters delineated upon the flood plain map would indicate these flood plains and their corresponding floodways.

The third mapping need is of low importance because, according to departmental flood plain management staff, any new rural levees or channel change projects involved on these types of flood plain areas do not necessarily require the use of detailed watershed maps. Existing U.S. Geological Survey 7.5 minute topographic maps are generally adequate for use in conjunction with project design data in reviewing those type structures.

C. Benefits for Flood Plain Mapping and Flood Plain Management

As stated earlier, the primary goal of flood plain mapping and management is to encourage wise future use of flood plains. This will ultimately reduce human suffering and property damage resulting from floods and will lessen

the need for expensive flood control structures, such as dams, reservoirs, and levees.

One of the more tangible benefits for communities with flood plain mapping is the availability of lower cost flood insurance. This benefits people owning or buying property in the flood plain to insure, at lower cost, against flood losses.

FEMA works with the state and local communities to identify flood hazard areas and publishes a Flood Hazard Boundary Map (FHBM) of those areas. When the community chooses to join the National Flood Insurance Program (NFIP), it then requires permits be obtained for all proposed construction or other development to ensure that construction materials and methods used will minimize flood damage. In return, the federal government makes a limited amount of flood insurance available. Subsidized premium rates are charged for all structures and/or their contents regardless of their flood risk. This is the Emergency Phase of the NFIP.

When a community completes detailed flood plain mapping and enforces flood plain management and ordinances, that meet at least the minimum standards for flood hazard reduction set forth by FEMA, it becomes eligible for the Regular Program phase of the National Flood Insurance Program which offers lower rates and higher insurance ceilings. For instance:

> Before community flood plain mapping, a single family, one-story, no basement, Zone A dwelling would be provided an insurance rate of $.45/$100 property value, a ceiling value of $35,000 on the dwelling, and $10,000 on the contents which would cost $.55/$100 value.
>
> After the community completes mapping, the same dwelling would be provided insurance rates of $.15/$100 for the first $35,000 and $.06/$100 up to $185,000 for additional dwelling insurance. For contents of the same dwelling, the new rates would be $.30/$100 for the first $10,000 and the next additional $50,000 would cost $.11/$100.

Over the last five years, the National Flood Insurance Program has had the following participation in Iowa.

NFIP DATA FOR THE STATE OF IOWA

Year	Number of Communities Participating				Policies in Force	*Claims Submitted	*Amount Paid
	Emergency	Regular	Suspended	Total			
1980	208	80	0	288	8,506	103	$ 355,508
1981	210	99	0	309	9,867	495	$ 832,717
1982	220	123	0	343	8,811	700	$1,160,897
1983	224	136	0	360	8,186	819	$1,250,533
1984	227	145	1	372	7,738	932	$1,341,613

*These are cumulative totals for the state.

Another benefit which is derived from flood hazard mapping and flood plain management is that a participating community can protect its residents against much of the devastating financial and human loss and suffering which would result from future disasters. Included as examples of the cost of flood disasters are several following exhibits. The first two attachments document specific damages suffered by the small southwestern Iowa communities of Emerson and Hastings from a severe June, 1982, flood event. Specific statistics concerning financial flood damages are included in former Governor Ray's June 19, 1982, letter to the SBA. The newspaper clipping is included to show the problems Emerson encountered after its request for federal reconstruction and damage mitigation assistance was denied. It is of interest that none of the effected property owners in Emerson carried flood insurance coverage. The third attachment contains more generalized financial flood damage statistics from the Office of Disaster Services and from the Red Cross. None of these examples are intended to document all public (and associated private) damages which accrue from disastrous flood events. They are intended merely to present statistical evidence of some of the costs associated with flooding within this state.

Also, these are the kinds of costs and damages which flood plain management attempts to reduce. Careful local regulation of new construction in identified flood plains will result in construction and land use practices that can reduce flood losses and the high costs associated with flood disaster to all levels of government. Taxpayer funds and private donations typically required for flood disaster aid can be reduced. Careful locally based flood plain management can significantly benefit a community and, if it is sufficently effective, pay for itself.

From an environmental standpoint, flood plain mapping can also be a benefit. Many of this state's environmentally sensitive areas such as parks, greenbelts, or wetlands are located along or in flood plains and if mapping was completed, these sensitive areas can be better identified for use by the general public.

From a departmental standpoint, completion of flood plain mapping can also result in a substantial benefit. Communities or counties with completed mapping and which have adopted ordinances are often capable of and have the jurisdiction to handle many of the day-to-day inquiries, work requests or solve minor problems relating to their particular flood plain. Thus, the required amount of Department staff time spent in this routine type of work is reduced. Department staff is still called upon to handle the more complex issues in those communities and counties, such as permitting bridges and culverts and reviewing variance requests.

Governor Robert D. Ray's Letter

Office of the Governor

STATE CAPITOL
DES MOINES, IOWA 50319

ROBERT D. RAY
GOVERNOR

June 19, 1982

Mr. Bill Powell
Regional Administrator
Small Business Administration
911 Walnut - 23rd Floor
Kansas City, Missouri 64106

Dear Mr. Powell:

I am writing to ask your urgent action in declaring Mills and Fremont Counties disaster areas so that residents there will be eligible for much needed federal assistance.

On June 14-15, 1982, a severe weather front moved across southwestern and south central Iowa generating localized rainfall amounts of 5 to 10 inches, hail, and strong winds. The communities of Emerson and Hastings in Mills County were hit especially hard by flash flooding, as drainage systems were unable to keep abreast of the huge volume of water generated by this storm system. In Emerson, water rose as high as five feet essentially destroying the merchandise and equipment in all of the businesses of the town. In addition, water inundated many homes destroying personal property and causing structural damage. Some damage has also been reported to homes in Fremont County.

Damage surveys of Mills and Fremont Counties indicate a need for financial assistance to rebuild and repair structures and service equipment, and to replace inventories and personal property. The survey also indicates that insurance coverage against flooding is non-existent. Statistics reflecting the extensiveness of the damage and the need for financial assistance are reported as shown on Attachment 1.

Based on the above information, I respectfully request that Mills County and Fremont County be declared disaster areas for the purpose of providing low interest, long-term loans to the individuals, families, and businesses suffering losses due to this disaster.

Sincerely,

Robert D. Ray
Governor

ATTACHMENT 1

NUMBER OF LOSS CATEGORY	LOSS VALUE OF STRUCTURE AND CONTENTS	AVERAGE % INSURANCE COVERAGE	UNINSURED LOSS
MILLS COUNTY			
EMERSON			
14 businesses - major damage	$ 3,000,000.	0%	$ 3,000,000.
15 homes - major damage	450,000.	0%	450,000.
7 homes - minor damage	56,000.	0%	56,000.
1 apartment building minor damage	8,000.	0%	8,000.
Sub Total:	$ 3,514,000.		$ 3,514,000.
HASTINGS			
1 business - major damage	$ 400,000.	0%	$ 400,000.
6 homes - major damage	180,000.	0%	180,000.
1 mobile home - major damage	10,000.	0%	10,000.
Sub Total:	$ 590,000.		$ 590,000.
Total:	$ 4,104,000.		$ 4,104,000.
FREMONT COUNTY			
Rural homes in northern sections of the county, as surveyed by SBA official.	unknown	0%	unknown

Newspaper Article

IOWA PRESS
CLIPPING BUREAU
Des Moines, Iowa

Press
Charles City Ia.
[illegible]
Cir. [illegible] NOV 12 [illegible]

Iowa town asks for foreign aid

98

[illegible]

FINANCIAL FLOOD DAMAGE ESTIMATES

Iowa Office of Disaster Services	
Year	*$ - Property Only
1979	3,000,000
1980	1,000,000
1981	No Record Available
1982	3,000,000
1983	None - Drought Year
1984	10,000,000

*Agricultural losses are not included.

American Red Cross (Des Moines)	
Year	Money Spent for Evacuation, Temporary Housing ($)
1983	$185,000
1984	$ 57,000 ($35,000 in Ames)

Chapter 5

DEVELOPMENT OF A PRIORITY RANKING SYSTEM FOR FLOOD PLAIN MAPPING

A. Goals and Limitations

As mentioned earlier, complete mapping of the state's flood plain would be ideal. This would provide information to be used so an ongoing plan for reducing the state's flood losses could be administered. However, the costs associated for complete flood plain mapping would be immense (into the millions of dollars). Several significant limitations prevent achieving the complete mapping of the state's flood plain in a very short time frame.

The first limitation is that many reaches of Iowa streams are adjacent to agricultural land and are without development pressures. These reaches would not accrue sufficient benefits from flood plain mapping to warrant the expenditure of funds. Reaches which are "urban and subject to new construction", however, are numerous and do represent a major mapping task. Thus, in order to determine the most worthy projects, an objective means of selection is required.

The second limitation is that considerable time and expense is associated with completing all the flood plain needs. At this time it is unrealistic to expect that all funds would be available. Thus, some prioritization system is needed.

At this time a detailed weighted priority point system for assembling a twenty year priority list of all communities and/or stream segments needing flood plain/floodway mapping was not prepared. Time alone would prohibit gathering all of the types of information needed to establish an all inclusive, long term detailed weighted priority system. Examples of the types of data needed are: frequency or duration of flooding; areas flooded and percent in urban, commercial or farmland; percent of community affected; extent of complaints or community requests for assistance; extent of previous mapping; stream characteristics such as environmentally sensitive, high quality water or legislatively protected water; or, water quality impact from the flooding event.

B. Alternative Ranking Systems

1) FEMA Systems

Several attempts have been made by FEMA in the past to establish a priority list of Iowa communities needing flood plain/floodway mapping. A variety of models have been formulated which would generate a point system to rank these projects. In general these have been used to compare the most worthy Iowa communities with those projects of other states.

More recently FEMA has abandoned these formulas in favor of a system that would utilize departmental staff and their acquired knowledge in producing a list of deserving communities. While such a subjective system does identify flood prone communities, it fails to accurately indicate which should be mapped first. This ability to rank is necessary for this planning endeaver due to the current economic restraints. This

subjective method of ranking was therefore considered for use in the mapping strategy, but it was rejected for its shortcomings.

2) Cost-Effective System

A cost-effective type of ranking system was also considered for use in this mapping plan. This system would simply place those projects with the best cost-effective ratios at the top of the list. In other words, the lowest project mapping costs but which affect the highest property cost values would represent a favorable cost-effective ratio. Projects, on the other hand, having a relatively high mapping price tag but upon completion would only affect a low number of properties or those with low property values, would be considered unfavorably cost-effective and would be ranked lower on the list. This system would represent a fair and equitable method of ranking. The problem with this method is that property values cannot be adequately determined until the actual mapping work has been completed.

3) Grouping System

The third alternative ranking system considered consists of grouping mapping areas. Within each group, priority considerations are determined.

Group I - This is the highest priority group and it contains those communities and/or stream segments that have been identified by Department flood plain management staff as having the greatest remaining need for flood plain/floodway mapping.

Group II - This is the second highest group and contains communities and/or stream segments which have not been identified by Department flood plain staff in the past as having a critical need for mapping. This group of communities and/or stream segments, however, are ones in which there is apparent new development occurring which may or may not be located in the flood plain. Within this group specific priority levels can be established using the same method as was used in Group I after Group I projects have been completed.

Group III - This group of communities and/or stream segments are ones which have not been identified by Department staff as having a critical need for mapping and there has been no recent development in the area. A list of these communities and/or stream segments can be prepared but no priority levels will be established until Group I and Group II projects have been completed.

Within each of the groups, a ranking system can be established by using the four priority considerations (A, B, C and D) below:

A) Critical Resource Area Development - This refers to an area where development should be strictly controlled because development may lead to environmental degradation. Examples would be those stream segments identified as "high potential" in the Protected Water Areas program or those stream segments classified as protected in Chapter

72 in which case that development may require channelization for property protection.

B) Community Cooperation - These are communities which have expressed a need for flood plain/floodway mapping and a willingness to regulate flood plain development.

C) New Development Potential - Those stream segments where there are desirable scenic or recreational qualities that have attracted past development and/or will attract new development; or those communities in which geographic and economic conditions exist which naturally promote urban and industrial growth.

D) FEMA List Projects - These are communities which were designated, through a cooperation effort of FEMA officials and Iowa flood plain management staff, as having the greatest remaining need for flood plain mapping. These determinations were based on a combination of various factors including the degree of flood hazard, past regulatory activity and the expressed desires to obtain a flood insurance study.

The priority score or points for each community or stream segment was calculated based on the applicable priority consideration or combination of considerations. The following relationships were used:

4 = A		For the above mentioned
3 = B		consideration(s) exist-
2 = C		ing for each community
1 = D		or stream segment.
0 = none		

Projects with the highest points or scores in priority Group I would be the highest ranking to receive the funding first.

4) Alternative Grouping System

A fourth alternative ranking system was considered which is a slight modification of alternative number three. The priority groups were identical but considerations "A" and "C" were reversed for the purpose of assigning points. Consideration "A", critical resource area development, would be given 1.0 point and consideration "C", new development potential, would be given 4.0 points. The combinations of considerations would be identical to those in the previous ranking system except for the reversal of those two considerations and their respective points. The net difference between the final priority list between the two grouping systems (3 and 4) would be to switch communities 10 through 13 with communities 15 through 20. This switch would not affect the higher priority communities and stream segments.

It is recommended that considerations be given to revising the priority list as new issues and requirements arise which would affect the funding priority. It is not this plan's intention to provide a long term system which serves all needs and accounts for all considerations. Annual or biennial review is specified in the legislative mandate.

Chapter 6

FLOOD PLAIN MAPPING PRIORITY LIST

It is recommended that the third ranking alternative, mentioned previously, be employed to rank those communities and/or streams for which flood plain/floodway mapping needs are the greatest. From the list of 385 communities identified earlier as having a need for flood plain mapping, 31 of those communities were identified as projects having, historically, the highest priority needs. In addition, the two highly developing stream segments, mentioned earlier, were added to this list making for a total of 33 projects comprising priority Group I.

One of the stream segments is the Des Moines River below Red Rock Dam to Ottumwa, approximately 45 river miles, which has experienced both continuous economic and residential growth and therefore should be governed by a sound flood plain management plan including detailed mapping. It is recommended that consideration be given to segmenting the mapping of this stream reach. A total cost was included at this point in the analysis. However, since the project costs represent approximately 50% of the total Group I costs, it may delay other community mapping needs if funding is limited. Coordination with the Corps of Engineers - Rock Island should be pursued to determine if joint funding is feasible.

The other stream segment is the Wapsipinicon River segment between Littleton and Independence also deserves special flood plain consideration. This eleven mile segment in addition to being on the Iowa Conservation Commission's list of high potential for protected waters is also experiencing continued residential growth.

These 33 projects were rated and ranked using the priority scheme outlined earlier in this proposed ranking alternative. Projects were given a consideration "A" value of 4.0 points if they were located on a high quality water as designated by the Department's water quality standards; were listed on the Iowa Conservation list of high potential protected areas; were on the Iowa Natural Features Inventory list; or, were on the Department's protected stream designation list.

Projects were given a consideration "B" value of two points if that particular community or the residents located along a stream segment had specifically requested, from the Department, flood plain mapping assistance.

Consideration "C" values of one point were awarded to a project if in the community there was a positive population growth trend from 1960 through 1980 according to U.S. Census figures.

A consideration "D" value of one point was given to all of the communities in priority Group I. These communities were designated on an FEMA list as having the greatest remaining needs for mapping. The additional point is awarded to help assure that these project scores in priority Group I are higher and are at least considered prior to looking at future projects in priority Group II.

Projects with equal "consideration sum scores" were chronologically ranked using a "product value score" obtained from multiplying an employment index figure for the community (obtained from the Iowa Development Commission's directory of Iowa

Manufacturers) times the percentage population change of the community during the period 1960 - 1980.

Table 1 represents the final priority ranking for the 33 communities and stream segments listed as Group I projects. Stream segments and communities in Groups II and III were not listed. This endeaver was restrained by the realization of financial limitations for flood plain mapping. Since the mapping plan contains a clause for biennial progress reports and maintains flexibility, priorities within these groups can be developed as the mapping plan progresses.

Table 1

Group I Priority Ranking

Group I Priority Ranking		Considerations Priority Points A	B	C	D	Priority Score	Tie Breaking Product Value	Approx. Cost Thousands Dollars
1	Des Moines River: Red Rock Dam to Ottumwa, IA	4	2	1	-	7		1,320.6
2	Decorah	4	-	1	1	6	60.0	30.4
3	Dike	4	-	1	1	6	57.0	18.2
4	Carroll	4	-	1	1	6	44.2	24.8
5	Janesville	4	-	1	1	6	36.0	20.6
6	Shell Rock	4	-	1	1	6	33	28.3
7	Maquoketa	4	-	1	1	6	11.2	30.4
8	Panora	4	-	1	1	6	2.0	20.6
9	Volga	4	-	1	1	6	- 14	24.8
10	Iowa Falls	4	-	-	1	5	18.7	30.2
11	Clarksville	4	-	-	1	5	7.0	32.5
12	Wapsipinicon River: Littleton to Independence	4	-	1	-	5	0.0	440.5
13	Sioux Rapids	4	-	-	1	5	- 1.1	18.8
14	Rock Rapids	-	2	-	1	3		36.3
15	Denver	-	-	1	1	2	167	20.0
16	Parkersburg	-	-	1	1	2	34.0	24.8
17	Emmetsburg	-	-	1	1	2	26.6	16.5

Table 1

Group I Priority Ranking
- Continued -

Group I Priority Ranking		Considerations Priority Points A	B	C	D	Priority Score	Tie Breaking Product Value	Approx. Cost Thousands Dollars
18	Sumner	-	-	1	1	2	8.0	32.5
19	Traer	-	-	1	1	2	6.5	31.4
20	Akron	-	-	1	1	2	-1.0	30.4
21	Perry	-	-	-	1	1	18.0	24.8
22	Sibley	-	-	-	1	1	11.9	28.3
23	Shenandoah	-	-	-	1	1	7.2	30.4
24	Correctionville	-	-	-	1	1	3.0	16.5
25	Delhi	-	-	-	1	1	2.0	27.1
26	Guthrie Center	-	-	-	1	1	2.0	20.6
27	Corning	-	-	-	1	1	0.0	24.8
28	Colfax	-	-	-	1	1	0.0	30.4
29	Farmington	-	-	-	1	1	0.0	20.0
30	Belle Plaine	-	-	-	1	1	1.9	24.8
31	Griswold	-	-	-	1	1	2.4	16.5
32	Alton	-	-	-	1	1	8.4	18.8
33	Wyoming	-	-	-	1	1	- 12	30.2
							Total	$2,544,800

Chapter 7

MAPPING IMPLEMENTATION OPTIONS

Introduction

This section of the planning document addresses the procedures involved in generating a flood plain and floodway map in some detail. The cost for carrying out these specific procedures is documented. The reasons for utilizing these procedures are also briefly discussed. The procedures involved (in compiling a flood plain boundary map) treated herein include aerial photography, surveying of cross sections, engineering analysis, and final report preparation.

A. Estimating Mapping Costs

In the past, the State of Iowa has appropriated very limited funding for flood plain mapping. In order to provide a basis for an informed decision on the merits of this project, initial cost estimates have been provided for the (higher priority) Group I projects. These cost estimates are included in Table 1.

These initial estimates have been compared with similar cost estimates prepared by other government agencies and consulting engineer firms which have recently prepared Flood Insurance Studies for FEMA in Iowa. The estimates are based on procedures and information obtained from the Rock Island District Corps of Engineers. The evaluation also made use of further information from the Rock Island Corps of Engineers, the U.S. Geological Survey (St. Paul District), and consulting engineering firms from Waterloo, Iowa, and Sioux Falls, South Dakota, for purposes of comparison. A summary of the information obtained from these sources is presented in Table 2. The results of this analysis are broken down into specific procedures and covered in greater detail in the following subsections.

1) Aerial Photography (Photogrammetry) and Surveying

The area to be mapped is that which would be occupied by the five-hundred year flood. This was approximated from U.S.G.S. topographic maps, 1:24,000 scale with ten (10) foot contour lines. Since the actual mapping studies will accurately determine the elevations and the aerial extent of these flood events, the approximations used are at best "ballpark" figures and are not intended to represent accurate cost figures. Likewise, the figures are based on fiscal year 1984 and are subject to change in succeeding years.

The length of stream reach to be mapped was assumed to extend one mile above and one mile below the corporated limits of each community project. This distance was necessary to insure consideration of man made and natural features which influences the flood plain and flood way within the community. The two river segment projects were calculated in river miles as measured from the U.S.G.S. maps.

Table 2

Comparative Cost Estimating Procedures

ACTIVITY	Organization			
	Corps of Engineers (Rock Island District)	Private Contractor #1	Private Contractor #2	U.S. Geological Survey (St. Paul District)
Aerial Photography (includes contract administration) $/acre of flood plain	$13.00/acre	$13.00/acre	$10-15/acre	N/Available
Cost of Engineering Time (includes benefits and administrative costs) $/hour	$25.00/hour	$40-45/hour Proj. Manager $30-35/hour EIT	$45/hour Proj. Manager $35/hour EIT	$56/hour Proj. Manager $36/hour GS-11
Engineering Analysis Time Allocation hours				
1) Hydrology	48 hours	50 hours	60 hours	48 hours
2) Hydraulics	80 hours	80 hours	100 hours	80 hours
3) Drafting	40 hours	60 hours	40 hours	50 hours
4) Final Report	80 hours	60 hours	60 hours	80 hours
Total Hours	248 hours	250 hours	260 hours	258 hours
Data Source for Estimates	Iowa and W. Illinois	Towns in E. Iowa	Five Towns in S. Dakota and N.W. Iowa (averge population 1,500)	Average of Minnesota towns with population < 5,000

Approximately one-half of the communities in the priority I group list were randomly selected in order to establish a project cost range. These costs were then extrapolated to the remaining community projects comprising the priority Group I list. The two river segments were estimated separately and were not used in estimating costs for the remaining projects. It is of interest to note that the combined costs of the two river segment projects represent nearly two-thirds of the total cost of all the Group I projects.

Aerial photogrammetry can be defined as the science of measuring land features from photographs taken from the air. The term is more generally applied to all operations and products which involve the use of aerial photography. According to FEMA specifications for aerial mapping and surveying for preparation of Flood Insurance Studies (FIS), photogrammetry should be used if the 100-year flood plain cannot be delineated to an accuracy equal to that obtainable with a five-foot interval topographic map (ground survey methods implied).

Usual photogrammetric methods will provide cross-section data and topographic contours of the flood plain. The photogrammetric maps can also provide engineers with location of hydraulic controls, a discernment of the amount of development within a flood plain, and estimates of hydraulic roughness factors (for use in computer hydraulic modeling). The level of photogrammetry varies -- some consultants that the Department has worked with achieve two foot contour line base maps by flying separate elevations; others have provided 10 foot contour maps from high-quality photogrammetric methods. The flood plain mapping plan has specified that the final product from aerial mapping and surveying will include production of a manuscript map with two foot contour lines.

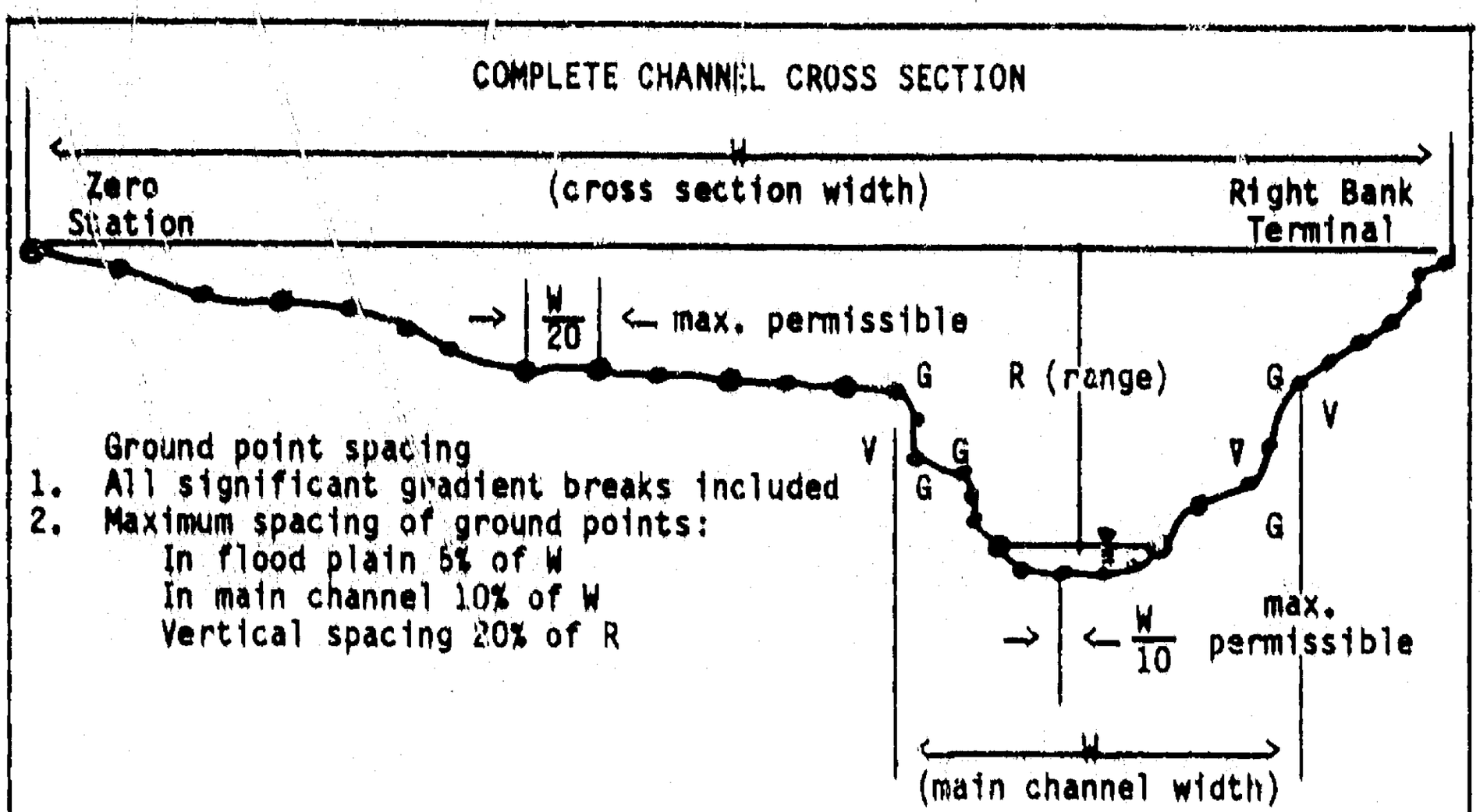
The use of aerial photogrammetry does not mean that ground surveying becomes unnecessary. If aerial photographs are to be used for making simple measurements of distances and elevations (for the purpose of constructing topographic, flood plain boundary maps), a certain amount of ground control is needed to fix the scale of the photographs, the map, and also to define a vertical datum which is then used to establish the contour lines on the maps. Furthermore, ground surveying is needed to define channel bottom cross sectional geometry (which is impossible with aerial methods) and to define hydraulic controls. A practical example of this need is demonstrated by bridges -- the underside of a bridge would necessarily have to be ground surveyed. Finally, map accuracy checks by the use of ground survey profile procedure is essential. All these ground survey activities can be lumped into the general term or concept "photogrammetric control". Spacing of cross section elevations as required by FEMA specifications is presented in Figure 1 as an illustrative example of the overall data obtained by the combination of photogrammetry and ground surveying.

2) <u>Advantages and Disadvantages of Photogrammetric Mapping</u>

The main advantages of the compilation of topographic maps (including flood plain boundary maps) by using aerial photographs over ground methods are as follows: the speed of their compilation, the reduction in the amount of ground control surveying required to control the mapping, the high accuracy of the locations of planimetric features, the excellent reproduction of the configuration of the ground by continuously traced contour lines, and the freedom from interference by bad weather and inaccessible terrain. Also, by the proper selection of flying heights, focal lengths, and plotting instruments, and by proper placement of ground control, photogrammetric mapping can be designed for any map scale ranging from 1 inch = 20 feet down to 1 inch = 20,000 feet and smaller, and for a contour interval as small as one-half foot. Because of the wealth of detail that can be seen in a vertical photograph, the resulting photogrammetric map will be more complete than will a comparable map produced by ground methods.

Figure 1

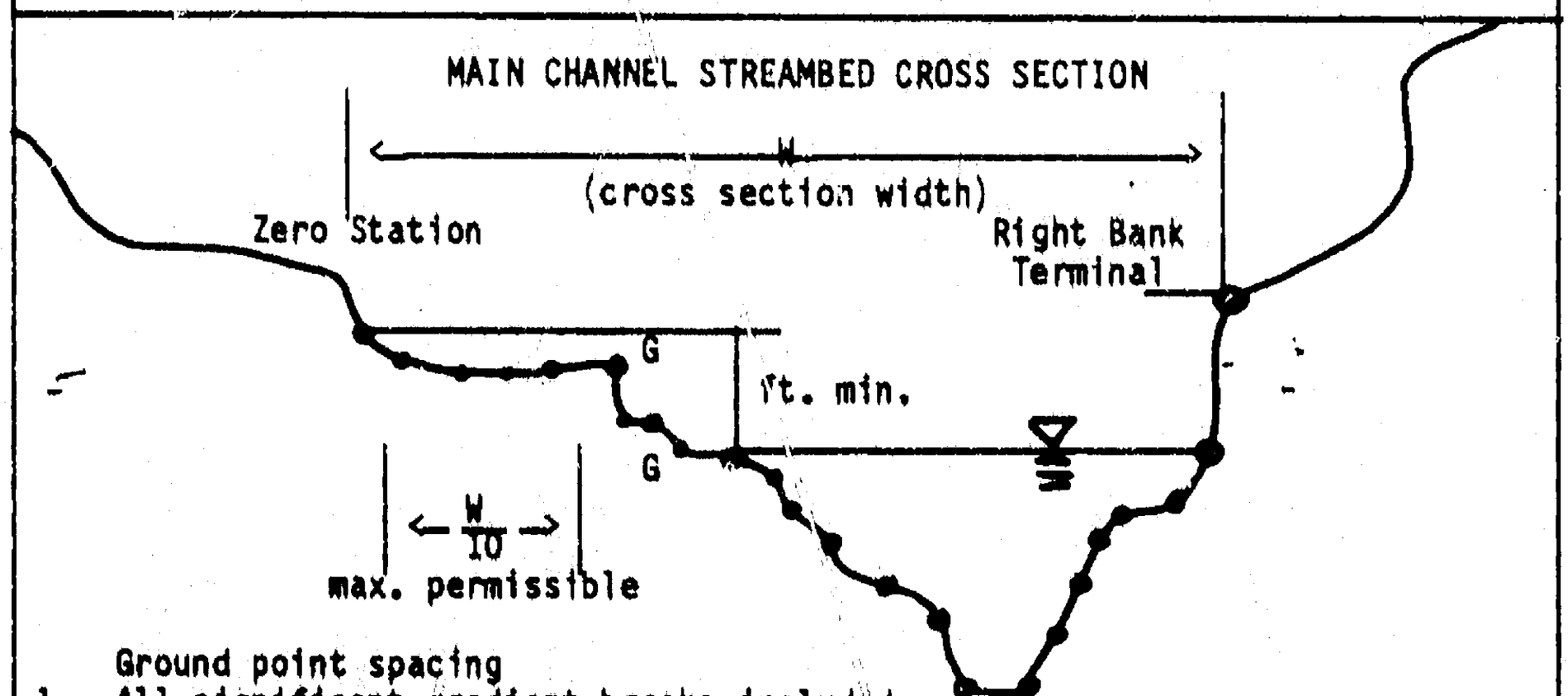
Examples of Cross Section Ground Point Spacing



Ground point spacing
1. All significant gradient breaks included
2. Maximum spacing of ground points:
   In flood plain 5% of W
   In main channel 10% of W
   Vertical spacing 20% of R

G Significant break in gradient
V Spaced to satisfy vertical limit

Figure 1A



Ground point spacing
1. All significant gradient breaks included
2. Maximum spacing of ground points 10% of W

Figure 1B

Among the disadvantages of mapping by using aerial photographs are the following: the difficulty of plotting in areas containing heavy ground cover, such as high grass, timber, and underbrush; the high cost per acre of mapping areas five acres or less in extent; the difficulty of locating positions of contour lines in flat terrain; and the necessity for field editing and field completion. Field completion is required where the ground cannot be seen in the vertical photograph because of ground cover, where spot elevations must be measured in flat terrain, and where such planimetric features as overhead and underground utility lines must be located on the map. Editing is necessary to include road classification, section boundary lines, drainage classification, and names of places, roads, and other map features (Moffitt and Bouchard 1975).

However, despite these disadvantages (which necessitate some use of ground surveying), it must be strongly emphasized that aerial photogrammetry is definitely the best approach in mapping flood plains. The only reasonble alternative is ground surveying to obtain all necessary topographic and cross section data (using standard differential or trigonometric leveling methods, to an accuracy of at least the order of hundredths of a foot). Such methodology would take longer, not be as accurate, and be considerably more expensive.

3) Accuracy (Rationale)

Photogrammetric mapping is costly because of technical complexity and because of the accuracy required for flood plain mapping studies. The accuracy which is obtained from the combination of photogrammetry and horizontal and vertical ground control surveying is essential in producing a quality mapping effort. FEMA specifications for Aerial Mapping and Surveying state that "the map accuracies called for are critical, thus map accuracy checks, by ground survey profile procedure, shall be required." An explanation of the rationale (and benefits) for obtaining this level of accuracy is documented herein. There are four reasons for accuracy in mapping which can be readily identified:

First, extremely accurate elevations are required for future use by the public in determining required (and reasonably protected) first-floor elevations for their residences.

Secondly, and similarly, such information is needed to determine if basements on residential structures are allowable, and the degree of flood protection they need.

Third, accurate elevation information is necessary for construction of flood depth-damage relationships. These are invaluable in documenting, and in estimating, flood damages.

Fourth, establishment of accurate flood elevations is fundamental to evaluation of new and replacement structures (such as bridges and culverts) which span the stream channel.

Also, it must be noted that the need for good data is indispensable in computer modeling of flood flows. This is especially important for less pristine, more developed flood plains, such as the smaller urban areas

which this plan primarily addresses. These areas can have more diversified flow situations, such as split flow arising from obstructions, and storm sewer flow contributions. Such situations are impossible to model without extremely accurate elevation data; it cannot be overemphasized in such flow situations that modeling without this is really a waste of time and resources.

Finally, possible errors in the photogrammetric and surveying data can magnify the costs of a study immensely. The U.S. Geological Survey provided an example of a FIS in a Minnesota town of population 2,500 where a surveying error added $10,000 to the final cost of the study. Also, departmental flood plain management staff have emphasized that, due to the complex nature of open channel hydraulics, inadequate data or data errors cause great difficulties in perfecting the final computer hydraulic model. The engineer may spend three or four times the normal, expected amount of time on computer modeling tracking the error source. The nature of hydraulic flow models makes it inherently difficult to track unexpected errors, as a trial and error process of tracking the error is necessary.

4) <u>Cost Estimation - Aerial Photography and Surveying</u>

The cost of aerial photogrammetry was fixed at thirteen dollars per acre of flood plain. This included the production of the manuscript map on MYLAR with a scale of 1.0 inch = 400 feet with two foot contour lines.

An average of five cross sections were assumed to be required for each community project reach. Where known hydraulic controls existed, such as a bridge or culvert, an additional cross section was added. In order to accomplish the field work associated with a cross section, a survey crew of three would be needed. This crew would be capable of completing one cross section per day at an estimated cost of $600/day (based on 1984 costs).

It was difficult for the various sources that were contacted to report their costs arising from aerial photography in terms of dollars/acre; most calculate these costs a little differently. For instance, cost of aerial photography will depend on the amount of ground control surveying that is conducted, and one of the consultants typically factors all surveying costs into overall cost of aerial photography. Another contractor typically factors costs of ground surveying into reconaissance, hydrology, and hydraulics. However, once the costs obtained from private and public sources are translated to dollars/acre for photography and dollars/day of ground surveying, it appears that the generalized cost estimates used in this plan are representative.

5) <u>Engineering Analysis</u>

The time required for analysis was estimated to be:

Hydrology - 48 hours/watercourse
Hydraulics - 80 hours/watercourse
Final Map - 40 hours/community
(i.e., drafting by a technician)

The hourly rate to perform this type of work was established at $25.00 per person. This figure is within the federal range for contracted services and is reasonably close to the state's cost for a full time environmental engineer including salary, benefits and administrative costs.

The Department's Administrative Services Division was asked to provide cost estimates, especially for indirect costs. The Department, in the last year, revised its budgeting allowance for indirect costs to a salaries and wages base. The results of their analysis are given in Table 3.

Tables 2 and 3 show that the cost of $26/hour for an engineer (including salary, benefits and administrative support) is low compared to the experience of the consultants. Even allowing for considerations of profit within the private sector, it appears that the Department's per hour cost estimate for engineering staff is on the lower end of the cost range as seen in Table 2.

Table 3

Hourly Cost to WAWM

Environmental Engineer III

FTE Equivalent

Salary/Fringes	$35,000/year
Travel Allowance	$ 1,000/year
Indirect Costs, at 0.52	$18,200/year
	= $54,200/year

$54,720/52 weeks in a year/40 hours in a week

gives an hourly cost of

$26.00/hour

As for the Department's time allocation for engineering analysis, the generalized costs are quite reasonable. Further research shows that 80 hours may be too little time allocated for the hydraulics, but that is probably balanced by the fact that 80 hours for final report preparation is possibly too high (considering a certain standardization of reports is possible if mapping several different communities concurrently). The 40 hours noted for drafting is comparable to the further information re-

ceived. It was observed that the most variable factor in time allocation here was for the hydrology. For a community on a stream which has previously been studied for mapping purposes, the hydrologic analysis is relatively simple. But for streams which have no previous study record, it is considerably more difficult to develop a computerized model or similar method which will adequately represent existing conditions. The time spent on hydraulic modeling of flow conditions will vary less; the estimate of 80 hours/watercourse appears sufficient.

6) Final Report Preparation

The final product of the mapping studies will consist of a report and maps delineating the flood plain and floodway. The final report was estimated to require eighty hours of labor which would be a combination of the technician and engineer's time at the rate previously stated. This equates to $2,000.00 per project based on the $25.00 hourly rate mentioned above.

The costs associated with printing the report were set at $1,300.00 per project. This assumed that 100 copies would be produced for each project. In many cases this would prove to be more than sufficient with fewer copies generally produced.

Conclusion

Table 4 presents a sample budget for Guthrie Center, one of the communities on the Group I priority list, as an example of how the estimates were made. It must be emphasized that these estimates are merely hypothetical; actual costs in the field likely vary from these numbers. Nonetheless, the conclusion of staff is that the research documented within this section indicates that these cost estimates are quite adequate. A higher cost for engineering services could be used, but a comparison of our estimates with the other information we received shows that these estimates are within the range experienced by public and private sources. Certainly no downward revisions are warranted. The primary variables in estimating costs for any individual study will be the amount of area which needs mapping and the number of surveyed cross sections needed. However, every project will have a substantial fixed cost. It seems unlikely that any project could be completed (with meaningful results) for under $15,000.

B. Funding Options

The Department's budget does not include funds for flood plain mapping. Therefore the funds must come from either the federal government; from state appropriated funds; or, from the local communities themselves either by shouldering the entire cost or by cost sharing with state and/or federal funds.

It was stated earlier that the reduced FEMA funds are all presently being funneled into mapping for flood prone coastal areas and within the next few years there probably will not be any FEMA mapping funds available. Although the Army Corps of Engineers have expressed some interest in a cost share project with the state, this effort would be limited to only a few projects. The Department and state, therefore, should not rely on the federal govern-

Table 4	
Sample Budget - Community of Guthrie Center	
Aerial Photo, 640 acres @ $13.00/acre	$ 8,320
Cross-Sections - 8 @ $600/section	4,800
Engineering Analysis	4,200
Final Report & Printing	3,300
Total Project Cost = $20,620	

ment for completing any additional mapping in Iowa. Likewise, there are no other federal programs, known at this time, from where specifically earmarked flood plain mapping funds could be obtained. Therefore, local communities in cooperation with the state will be the only likely sources for funding flood plain mapping work.

A special note should be made on the funding potential for the Des Moines River segment (Red Rock to Ottumwa) listed as highest priority in Table 1. A very significant cost is associated with completing this project. Thus, consideration should be given in seeking additional federal funds for part of the project and/or in segmenting the project over several years. It is suggested that additional coordination continue with the Rock Island District Corps of Engineers to determine if a mutual funding of the mapping would be feasible. Staged mapping and mutual funding would allow for other high priority community mapping projects to be completed.

The Department's role in the funding of flood plain mapping will be to determine project priorities; estimate associated costs; and, then put together a legislative needs package defining the amount and requesting the needed funds. The following funding options are presented to only demonstrate the various concepts available for consideration.

1) Zero Funding

In this scenario no funding of any kind would be available during the forseeable future. While flood plain mapping of communities or stream segments would not be accomplished, the Department should establish and maintain a data base for all potential projects. Flood prone areas should be delineated on maps for individual communities or stream segments and property dollar losses, both public and private, should be at least estimated on an annual basis. Such records would definitely assist Department staff in ranking future mapping needs and would be of benefit in drafting a legislative needs package when requesting appropriation for flood plain mapping funds.

2) Limiting Funding

This option relies on the accurate ranking of projects so that any funds appropriated by the state are put to the best use. This option represents a realistic situation since there is an anticipation of some funding being appropriated but probably not more than enough for a few projects per year. These funds would go first to high ranking projects in Group I which are ready to proceed and/or are willing to cost share the mapping costs.

3) Full Funding

This option is one in which the legislature would appropriate needed funds for mapping all identified high priority flood plain projects. The estimated costs associated with completing flood plain mapping for Group I projects is $2.5 million. The approximately 344 identified Group II and Group III projects would have a total cost in the range of $3.3 million. Over a twenty year period this means that approximately $300,000 would be needed per year based on today's cost. This does not include costs which would be associated if additional river reaches were later identified.

4) Local Cost Sharing

This option would have the community share in the work of maintaining a data base and sharing project costs with the state allocated funds. Types of data base information that the Department would expect the community to maintain would be delineating on a map those flood prone sections of a community and establishing an annual property dollar loss associated with community flooding. Project cost sharing could be agreed to in various different ways such as: 1) the community paying a straight percentage of final mapping costs; 2) the community paying up front a percentage of estimated costs at time of contract award; 3) the community covering remaining costs after the state has provided a set dollar amount or percent of estimated costs; or, 4) the community providing key technical field data for use in preparing mapping reports such as field surveys or aerial photography or another soft match. Method No. 2 (and possibly Method No. 4) requiring up front money or technical products indicates a community's commitment to flood plain mapping. It encourages the community to obtain a competitive mapping contract cost estimate while being responsible for procuring a product complying with minimum criteria.

C. Completing Mapping Projects

The Department has three methods available in getting the desired flood plain mapping completed once funding has been obtained.

1) Contracting

All phases of the mapping work would be contracted. A qualified bidder in an outside firm capable of providing at a minimum FEMA equivalent quality work. The Department through means of a contract officer, would be responsible for; bidding document preparation, bidder evaluation, overseeing progress on the project and for assuring quality control

throughout the entire work effort. It is estimated that .75 FTE will be required to address the technical and administrative responsibilities of the contract.

2) Partial Contracting

This method calls for only a portion of the mapping work to be completed by an outside firm. Certain work portions of the flood plain mapping project such as aerial photography, manuscript map production and actual cross section surveying are tasks in which the Department cannot justify undertaking in-house because of either specialized equipment needs or specialized staffing requirements. Therefore these portions of the flood plain mapping work would be contracted out to a qualified bidder under the supervision of the Department contract officer. It is estimated that .5 FTE will be required to address the technical and administrative responsibilities of the contract.

Department staff, presently employed or which could justifiably be employed, could perform flood plain mapping tasks such as engineering analysis, final map preparation and preparing the final report. For these efforts the Department would need to maintain at least one environmental engineer and one draftsman or construction technician. The exact number of each of the two classifications of staff would depend on the funding available and consequently the number of simultaneous projects under contract. It must be noted that in-house mapping would mean additional responsibilities for the Department. In order to carry out the present responsibilities and any additional flood plain mapping responsibilities, additional staff would be needed.

3) Cooperative Agreement

This method incorporates the technical resources available in several federal agencies (i.e., the U.S. Geological Survey and the Corps of Engineers). Within these federal agency's functions and activities, a certain type or level of flood plain mapping is necessary. The cooperative agreement would seek to produce a mapping product which expands their individual product to a product satisfying the flood plain mapping requirements in Iowa. The final mapping product would likely be completed by the federal agency with Iowa monetarily contributing to the cooperative agreement.

Since the availability of federal funding is usually uncertain, specific details of this type of agreement are not available. However, cooperative agreements in Iowa are not uncommon for these agencies and state or local governments. It is possible that the Department could complete at least several projects for a substantial cost savings over the projected project costs. It is not expected that all mapping needs could be completed by cooperative agreements. Thus some combination of cooperative agreement and contracting/partial contracting would more realistically fulfill the existing flood plain mapping needs.

D. Budget Alternative

Several alternative budgets have been prepared to further compare the methods for completing the mapping projects. These budgets will present annual

costs projected for either partial contracting of the mapping or total contracting. Development of these budgets have attempted to consistently use the same assumptions and line item costs where appropriate.

For the first three biennial periods, or six years, an average of ten projects per year are assumed to be completed. An increased project completion rate is likely after the first six years as the communities having a need generally are smaller in size. No inflationary factors have been incorporated into this budget evaluation.

1) Partial Contracting

Under this alternative, as discussed above, Department staff would perform a major part of the mapping activities. These include engineering analysis, report writing, map completion, report printing and contract administration. Contract items would include aerial photography and manuscript map production. It is assumed that all field survey work in securing stream cross-sections would be the responsibility of the local jurisdiction. This would constitute the local share in the mapping effort. The annual budget would be:

A) Department Activities

- Staffing 2 FTE's - Environmental Engineer III	$ 35,000
- Environmental Specialist II	$ 27,000
- Data Processing	$ 5,000
- Printing $1,300 per project (100 copies) 10 projects per year	$ 13,000
Department subtotal	$ 80,000
Administrative cost (52% of salary and wages)	$ 32,240
Department Activities Total	$112,240

B) Contracting Items - Aerial photography and manuscript map production

10 projects per year at 960 acres per project $13.00 per acre for all work	$124,000
Contract items subtotal	$124,000
Project Officer - EE III (.5 FTE)	$ 17,500
Administrative cost (.52% of salary and wages)	$ 9,100
Contract - Related Items Total	$150,600

C) Local Items - All cross section survey work

10 projects per year with approximately 8 cross-sections per project $600.00 per cross-section	$ 48,000
Total Annual Project Costs	$310,840

2) Contracting

Under this alternative, as briefly discussed above, the complete flood plain map and support documentation would be contracted. Administration, product review and coordination would be performed by Department staff. Local jurisdictions would still be responsible for securing all

cross-sectional surveys. This approach is similar to the FEMA and Corps of Engineers mapping contracts except for the local share.

A) Contract Items

- Aerial Photography	
10 projects per year with 960 acres per project	
$13.00 per acre	$124,000
- Engineering Analysis	
10 projects at 168 hours per project	
$25.00 per hour	$ 42,000
- Final Report	
10 projects at 80 hours per project	
$25.00 per hour	$ 20,000
- Printing	
10 projects at $1,300 per project (100 copies)	$ 13,000
Contract items Total	$199,000

B) Department Review and Contract Administration

Staff review engineer (.75 FTE)	$ 26,250
Department review subtotal	$ 26,250
Administrative cost (52% of salary and wages)	$ 13,650
Department Review Total	$ 39,900

C) Local Items - All cross-sectional surveys

10 projects per year	
8 cross-sections per project	$ 48,000
Total Annual Project Cost	$286,900

Discussion

Method "2. Contracting" provides the advantage that if funding varies from year to year, the number of projects completed per year likewise fluctuate. The Department would not have to increase or decrease staff in accordance with the changing workload. Contracting provides much greater flexibility to the Department to match available funds to staff. The disadvantage of this method is that contracting an entire mapping project may make quality control of final products more difficult if various contractors are selected. The cost difference between the two alternative favor contracting by approximately 8 percent. However, this difference is within the expected range of estimating variations.

Method "1. Partial Contracting" has the advantage that entire mapping project could be expected to have greater quality control of the final products. The slightly higher annual costs reflect the different means of estimating state staffing costs verses the contracting products. However, the two alternatives have essentially the same costs. The disadvantage, of course, involves the uncertainty of year to year funding which could result in fluctuating workloads and the need for in-house staff.

In conclusion, it appears that a combination of the two systems would provide optimal benefit for implementing and utilizing flood plain map-

ping funds. If adequate funds exist, to warrant the Department hiring staff to complete tasks for a full year's work of projects, partial contracting of the work should be implemented. If funds are not available to provide a full staff year's worth of mapping activities, the entire mapping project should then be contracted to an outside firm since it is probably not cost-effective for the Department to interview, hire, and train an employee for anything less than a full year's employment.

E. Local Implementation

Upon completion of the final flood plain map, the local jurisdiction should undertake steps to develop local flood plain ordinances. In order to encourage hasty implementation, it is recommended that Department rules be developed which require adoption of approved ordinances within one year of completion of the final flood plain map. These types of ordinances are not new, with many communities already having them in-place. It is anticipated that local implementation would be voluntarily sought as the benefits are significant.

LIST OF SOURCES

1. FEMA Engineering and Surveying Guidelines. Provided by Kansas City Regional Office - Region VII. Appendix 5 - Aerial Mapping and Surveying Specifications.

2. Surveying. Francis Moffitt and Harry Bouchard, 6th Ed., 1975, Harper & Row, New York.

3. Telephone conversations with:

   A. Michael Ryan, Project Engineer, Brice-Petrides-Donohue, Waterloo, IA.

   B. Len Megebauer, Project Engineer, DeWild, Grant, Reckert & Associates, Sioux Falls, SD and Rock Rapids, IA.

   C. George Carlson, Chief of Hydraulics, U.S. Geological Survey, Minnesota District, St. Paul, MN.

   D. Al Schulz, FEMA Region #7, Kansas City.

4. Letter to Chuck Farnham, Rock Island District, U.S. Army Corps of Engineers, Rock Island, IL.

   Request dated 10-25-85.
   Reply dated _____.

5. Oral consultations with WAWM staff:

   Jack Riessen, Chief, FPPB
   Bill Cappuccio, NFIP Coordinator
   Morris Preston, Chief, RDB
   Bill Bandurski
   Ralph Turkle
   Michael Anderson
   Mark Slatterly

Appendices.

Appendix A
Communities With Completed Flood Plain Mapping Studies

Algona
Ames
Ankeny
Atlantic
Audubon
Avoca
Bellevue
Bettendorf
Black Hawk Co.
Buffalo
Burlington
Camanche
Cambridge
Cascade
Cedar Falls
Cedar Rapids
Center Point
Central City
Charles City
Chelsea
Cherokee
Clarinda
Clinton
Clive
Coggon
Coralville
Council Bluffs
Crescent
Creston
Davenport
Denison
Des Moines
Des Moines Co.
Dubuque
Dubuque Co.
Dunkerton
Durango
Dyersville
Elk Run Heights
Elkader
Emerson
Estherville
Evansdale
Fairfax
Fairfield
Forest City
Fort Dodge
Fort Madison
Glenwood
Greene
Grimes
Guttenberg
Hampton
Hancock
Harlan
Hastings
Hawarden
Hiawatha
Hudson
Humboldt
Ida Grove
Independence
Iowa City
Irwin
Johnson Co.
Johnston
Keokuk
Keosauqua
Kirkman
LaPorte City
Lakeview
Lansing
LeClaire
LeMars
Lee County
Leland
Linn Grove
Malvern
Manchester
Marengo
Marion
Marquette
Marshalltown
Mason City
Maxwell
McGregor
Mills Co.
Minden
Missouri Valley
Monticello
Montrose
Muscatine
Muscatine Co.
Nashua
Neola
New Hartford
New Vienna
Nichols
Oakland
Ottumwa
Pacific Junction
Palo
Panorama Park
Pleasant Hill
Polk Co.
Pottawattamie Co.
Princeton
Red Oak
Riverdale
Robins
Sageville
Scott Co.
Sioux City
Spencer
Story City
Story Co.
Underwood
Urbandale
Vinton
Waterloo
Waverly
Webster City
West Branch
West Des Moines
West Liberty
Wilton
Windsor Heights
Worthington

Appendix B
Communities Lacking Flood Plain Mapping Studies

Town	County	Population	Watercourse	Priority Group
Ackley	Franklin	1,900	Beaver Creek	II
Adel	Dallas	2,846	North Raccoon River	II
Ainsworth	Washington	547	North Long Creek	II
Akron	Plymouth	1,517	Big Sioux River	I
Albion	Marshall	739	Honey Creek	II
Alburnett	Linn	411	Dry Creek	II
Alden	Hardin	953	Iowa River	II
Alta Vista	Chickasaw	314	Elk Creek	II
Alton	Sioux	986	Floyd River	I
Alvord	Lyon	246	Mud Creek - Rock River	II
Anamosa	Jones	4,958	Wapsipinicon River	II
Anita	Cass	1,153	Turkey Creek	III
Anthon	Woodbury	687	Little Sioux River	II
Aplington	Butler	1,027	Beaver Creek	II
Aredale	Butler	88	Boylan Creek	III
Arion	Crawford	207	Boyer River	II
Arthur	Ida	288	Odebolt Creek	II
Ashton	Osceola	441	Otter Creek	III
Aurelia	Cherokee	1,143	Dry Creek Bed	II
Bagley	Guthrie	370	Mosquito Creek	III
Baldwin	Jackson	198	Bear Creek	III
Bancroft	Kossuth	1,082	Mud Creek	II
Barnum	Webster	198	South Branch Lizard Creek	II
Battle Creek	Ida	919	Maple River	II
Beacon	Mahaska	530	Muchakinock Creek	III
Beaver	Boone	85	Beaver Creek	III
Bedford	Taylor	1,692	East Fork 102 River	III
Belle Plaine	Benton	2,903	Dry Creek	I
Belmond	Wright	2,505	Iowa River	III
Bennett	Cedar	458	Bennett Creek	II
Bertram	Linn	216	Big Creek	II
Bevington	Madison	60	Middle River	II
Blairstown	Benton	695	Prairie Creek	II
Blockton	Taylor	280	Platte River Ditch	III
Bonaparte	Van Buren	489	Des Moines R., Coates Cr.	III
Bondurant	Polk	1,283	Mud Creek	II
Bradgate	Humboldt	151	W. Branch Des Moines River	III
Brandon	Buchanan	337	Lime Creek	II
Brayton	Audubon	170	East Nishnabotna River	III
Bronson	Woodbury	289	Elliot Creek	II
Brooklyn	Poweshiek	1,509	Bear Creek	II
Brunsville	Plymouth	140	Mink Creek	II
Buck Grove	Crawford	84	Unnamed Creek	II
Calumet	O'Brien	212	Mugga Creek	III
Carbon	Adams	110	Middle Nodaway River	III

Appendix B
Communities Lacking Flood Plain Mapping Studies
- Continued -

Town	County	Population	Watercourse	Priority Group
Carlisle	Warren	3,073	North River	II
Carroll	Carroll	9,705	Middle Raccoon	I
Carson	Pottawattamie	716	West Nishnabotna River	II
Carter Lake	Pottawattamie	3,438	Missouri River	II
Casey	Guthrie	473	Middle River	III
Castana	Monona	228	Maple River	III
Center Junction	Jones	182	Mineral Creek	III
Centerville	Appanoose	6,558	Manson Creek	III
Chariton	Lucas	4,987	Chariton River	III
Charlotte	Clinton	442	Deep Creek	II
Charter Oak	Crawford	615	East Soldier River	III
Chatsworth	Sioux	110	Six Mile Creek	II
Chillicothe	Wapello	131	Des Moines River	III
Churdan	Greene	540	Hardin Creek	III
Clarksville	Butler	1,424	Shell Rock River	I
Clayton	Clayton	68	Mississippi River	III
Clear Lake	Cerro Gordo	7,458	Beaverdam Creek	II
Clemons	Marshall	175	Minerva Creek	III
Clermont	Fayette	602	Turkey River	II
Clutier	Tama	249	Salt Creek	III
Colfax	Jasper	2,211	South Skunk River	I
Columbus Junction	Louisa	1,429	Iowa River	II
Conrad	Grundy	1,133	Wolf Creek	II
Conway	Taylor	93	E. One Hundred and Two R.	II
Coon Rapids	Carroll	1,448	Middle Raccoon River	III
Corning	Adams	1,939	East Nodaway River	I
Correctionville	Woodbury	935	Bacon Creek	I
Corwith	Hancock	480	Boone River	III
Coulter	Franklin	264	Unnamed Creek	III
Cromwell	Union	157	Unnamed Creek	II
Cumberland	Cass	351	Pettitts Branch Creek	III
Cushing	Woodbury	270	Bacon Creek	II
Dakota City	Humboldt	1,072	East Fork Des Moines River	II
Danbury	Woodbury	492	Maple River	III
Dawson	Dallas	229	North Raccoon River	III
Dayton	Webster	941	Skillet Creek	II
Decorah	Winneshiek	7,991	Upper Iowa River	I
Dedham	Carroll	321	Brushy Creek	III
Defiance	Shelby	383	W. Fork Nishnabotna River	III
Delhi	Delaware	511	Honey Creek	I
Deloit	Crawford	345	Otter Creek	II
Denver	Bremer	1,647	Quarter Section Rise	I
Desota	Dallas	1,035	Bugler Creek	II
Diagonal	Ringgold	362	West Fork Grand River	III

Appendix B
Communities Lacking Flood Plain Mapping Studies
- Continued -

Town	County	Population	Watercourse	Priority Group
Dike	Grundy	987	Black Hawk Creek	I
Donahue	Scott	289	Mud Creek East Branch	II
Dows City	Crawford	616	Boyer River	II
Dows	Wright	771	Iowa River	III
Dumont	Butler	815	West Fork Cedar	II
Dundee	Delaware	164	Maquoketa River	III
Dunlap	Harrison	1,374	Boyer River	II
Durant	Cedar	1,583	Mud Creek	II
Earlham	Madison	1,140	Bear Creek	II
Earling	Shelby	520	Mosquito Creek	II
Early	Sac	670	Unnamed Creek	III
East Peru	Madison	124	S. Fork Clanton Creek	III
Eddyville	Monroe	1,116	Des Moines River	II
Elberon	Tama	194	East Branch Salt Creek	III
Eldon	Wapello	1,255	Des Moines River	III
Eldora	Hardin	3,063	Iowa River	III
Eldridge	Scott	3,279	Hickory Creek	II
Elgin	Fayette	702	Turkey River	III
Elkport	Clayton	98	Volga River	III
Elliot	Montgomery	493	East Nishnabotna River	I
Ellsworth	Hamilton	480	South Skunk River	III
Elma	Howard	714	Little Wkapsie River	II
Ely	Linn	425	Hoosier Creek	II
Emmetsburg	Palo Alto	4,621	West Fork Des Moines R.	I
Epworth	Dubuque	1,380	Whitewater Creek	II
Exira	Audubon	978	East Nishnabotna River	III
Fairbank	Buchanan	980	Little Wapsie River	II
Farmersburg	Clayton	276	Roberts Creek	II
Farmington	Van Buren	869	Des Moines River	I
Farnhamville	Calhoun	461	Hardin Creek	II
Fayette	Fayette	1,515	Volga River	III
Fenton	Kossuth	394	Lotts Creek	III
Ferguson	Marshall	173	South Timber Creek	III
Fertile	Worth	372	Beaver Creek	III
Floyd	Floyd	408	Cedar River	II
Fonda	Pocahontas	863	Cedar Creek	III
Fort Atkinson	Winneshiek	374	Turkey River	II
Fraser	Boone	139	Des Moines River	II
Fredericksburg	Chickasaw	1,075	East Fork Wapsie River	II
Frederika	Bremer	223	Wapsie River	III
Fredonia	Louisa	224	Iowa River	II
Galva	Ida	420	Halfway Creek	III
Garber	Clayton	140	Turkey River	III
Garrison	Benton	411	Hinkle Creek	III

Appendix B
Communities Lacking Flood Plain Mapping Studies
- Continued -

Town	County	Population	Watercourse	Priority Group
Garwin	Tama	626	Deere Creek	II
George	Lyon	1,241	Little Rock River	II
Gilbert	Story	805	Keigley Branch	II
Gilbertville	Black Hawk	740	Cedar River	II
Gillett Grove	Clay	93	Little Sioux River	III
Gladbrook	Tama	970	Wolf Creek	II
Goldfield	Wright	789	Boone River	II
Granger	Dallas	619	Beaver Creek	II
Grant	Montgomery	143	West Nodaway River	III
Gray	Audubon	108	Unnamed Creek	III
Green Island	Jackson	103	Maquoketa	II
Griswold	Cass	1,176	Baughman's Creek	I
Grundy Center	Grundy	2,880	Black Hawk Creek	II
Guernsey	Poweshiek	83	English River	III
Guthrie Center	Guthrie	1,713	South Raccoon River	I
Hanlontown	Worth	213	Unnamed Creek	III
Harpers Ferry	Allamakee	258	Mississippi River	II
Hartford	Warren	761	Unnamed Creek	II
Harvey	Marion	275	Des Moines River	III
Havelock	Pocahontas	279	North Lizzard Creek	III
Hazleton	Buchanan	877	Otter Creek	II
Hills	Johnson	547	Iowa River	II
Hinton	Plymouth	659	West Branch Floyd River	II
Holland	Grundy	278	Black Hawk Creek	II
Hopkinton	Delaware	774	Maquoketa River	II
Hornick	Woodbury	239	W. Fork Little Sioux River	III
Hospers	Sioux	655	Floyd River	II
Hubbard	Hardin	852	Honey Creek	II
Imogene	Fremont	188	Hunter Branch	III
Inwood	Lyon	755	Unnamed Creek	II
Iowa Falls	Hardin	6,174	Iowa River	I
Jackson Junction	Winneshiek	94	Crane Creek	II
Jamaica	Guthrie	275	Unnamed Creek	II
Janesville	Black Hawk	840	Cedar River	I
Jefferson	Greene	4,854	Drainage Ditch 132	II
Jewell	Hamilton	1,145	Drainage Ditch	II
Kanawha	Hancock	756	West Otter Creek	II
Kellogg	Jasper	654	North Skunk River	II
Kimballton	Audubon	362	Indian Creek	III
Kingsley	Plymouth	1,209	W. Fork Little Sioux River	II
Kinross	Keokuk	79	Unnamed Creek	III
Kiron	Crawford	317	Otter Creek	II
Knierim	Calhoun	125	East Cedar Creek	III
Lacon	Warren	376	Mill Branch	III

Appendix B
Communities Lacking Flood Plain Mapping Studies
- Continued -

Town	County	Population	Watercourse	Priority Group
Ladora	Iowa	289	Bear Creek	III
Lake Park	Dickinson	1,123	Silver Lake	II
Lamoni	Decatur	2,705	Tributary	II
Lamont	Buchanan	554	Lamont Creek	III
Latimer	Franklin	441	Spring Creek	III
Lawler	Chickasaw	534	Crane Creek	III
Lawton	Woodbury	447	Elliot Creek	II
LeGrand	Marshall	921	Tributary	II
Lehigh	Webster	654	Crooked Creek	II
Leon	Decatur	2,094	McGruder Creek	II
Lester	Lyon	274	Mud Creek	II
Letts	Louisa	473	Indian Creek	II
Lime Springs	Howard	476	Millers Creek	III
Linn Grove	Buena Vista	205	Little Sioux River	III
Little Port	Clayton	106	Volga River	III
Little Rock	Lyon	490	Little Rock River	III
Little Sioux	Harrison	251	Little Sioux River	III
Livermore	Humboldt	490	East Fork Des Moines River	III
Logan	Harrison	1,540	Boyer River	III
Lohrville	Calhoun	521	Cedar Creek	III
Lowden	Cedar	717	Yankee Run Creek	II
Lucas	Lucas	292	White Breast Creek	III
LuVerne	Kossuth	481	Prairie Creek	III
Lytton	Calhoun	377	Camp Creek	III
Malcom	Poweshiek	418	Little Bear Creek	III
Manilla	Crawford	1,020	W. Fork W. Nishnabotna R.	II
Manly	Worth	1,496	Rose Creek	II
Manning	Carroll	1,609	West Nishnabotna River	III
Mapleton	Monona	1,495	Maple River	III
Maquoketa	Jackson	6,313	Maquoketa River	I
Marble Rock	Floyd	419	Shell Rock	III
Marne	Cass	162	Indian Creek	III
Martensdale	Warren	438	Middle River	II
Marysville	Marion	84	Unnamed Creek	III
Masonville	Delaware	150	Prairie Creek	III
Massena	Cass	518	Unnamed Creek	II
Maurice	Sioux	288	West Branch	II
Maynard	Fayette	561	Little Volga River	II
McIntire	Mitchell	197	Wapsie River	III
Melrose	Monroe	218	Cedar Creek	II
Merrill	Plymouth	737	West Branch Floyd River	II
Miles	Henry	398	Elk River	II
Millville	Clayton	50	Little Turkey	III
Mingo	Jasper	303	Indian Creek	II

Appendix B
Communities Lacking Flood Plain Mapping Studies
- Continued -

Town	County	Population	Watercourse	Priority Group
Mitchell	Mitchell	193	Cedar River	III
Monmouth	Jackson	210	Bear Creek	III
Montezuma	Poweshiek	1,485	Moone Creek	II
Montour	Tama	387	Iowa River	III
Moorhead	Monona	264	Soldier River	III
Moorland	Webster	257	Hardin Creek	III
Moravia	Appanoose	706	South Soap	II
Mount Sterling	Van Buren	96	Fox River	II
Moville	Woodbury	1,273	West Fork	II
Mystic	Appanoose	665	Wolf Branch	III
Newell	Buena Vista	913	North Raccoon River	II
New Hampton	Chickasaw	3,940	Spring Creek	II
Nichols	Muscatine	375	Big Slough	II
Nora Springs	Floyd	1,572	Shell Rock	II
North Buena Vista	Clayton	155	Mississippi River	II
North Liberty	Johnson	2,046	Muddy Creek	II
Northwood	Worth	2,193	Shell Rock River	II
Norway	Benton	633	Prairie Creek	II
Oakville	Louisa	470	Iowa River	II
Ocheydan	Osceola	599	Ocheyedan River	III
Odebolt	Sac	1,299	Odebolt Creek	III
Oelwein	Fayette	7,564	Otter Creek	III
Olin	Jones	735	Walnut Creek	II
Osterdock	Clayton	35	Turkey River	III
Oto	Woodbury	172	Little Sioux	III
Oxford	Johnson	676	Clear Creek	II
Oxford Junction	Jones	600	Wapsie River	III
Oyens	Plymouth	146	Deep Creek	II
Panama	Shelby	229	Mosquito Creek	III
Panora	Guthrie	1,211	Middle Raccoon River	I
Parkersburg	Butler	1,968	Beaver Creek	I
Paton	Greene	291	East Buttrick Creek	III
Patterson	Madison	138	Middle River	III
Perry	Dallas	7,053	North Raccoon River	I
Persia	Harrison	355	Mosquito Creek	II
Pierson	Woodbury	408	Pierson Creek	III
Pilot Mound	Boone	223	Unnamed Creek	II
Pisgah	Harrison	307	Soldier Creek	III
Plainfield	Bremer	469	Cedar River	II
Plymouth	Cerro Gordo	463	Shell Rock River	II
Pocahontas	Pocahontas	2,352	Lizard Creek	II
Portsmouth	Shelby	240	Mosquito Creek	II
Prescott	Adams	349	East Nodaway River	II
Preston	Jackson	1,120	Cooper Creek	II

Appendix B
Communities Lacking Flood Plain Mapping Studies
- Continued -

Town	County	Population	Watercourse	Priority Group
Protivin	Howard	368	Bohemian Creek	II
Quasqueton	Buchanan	599	Wapsie River	II
Randolph	Fremont	223	Deere Creek	III
Raymond	Black Hawk	655	Unnamed Creek	II
Reasnor	Jasper	277	South Skunk River	II
Redfield	Dallas	959	Middle Raccoon River	III
Reinbeck	Grundy	1,808	Black Hawk Creek	II
Remsen	Plymouth	1,592	Deep Creek	II
Riceville	Howard	919	Wapsie River	II
Ricketts	Crawford	143	Middle Soldier River	II
Rinard	Page	97	Cedar Creek	III
Rippey	Greene	304	Snake Creek	III
Riverside	Washington	826	North English River	II
Riverton	Fremont	342	Nishnabotna River	III
Rock Falls	Cerro Gordo	148	Shell Rock River	III
Rockford	Floyd	1,012	Shell Rock	II
Rock Valley	Sioux	2,706	Rock River	II
Rockwell	Cerro Gordo	1,039	West Fork River	II
Rockwell City	Calhoun	2,276	Lake Creek	III
Roland	Story	1,005	Bear Creek	II
Rome	Henry	113	Skunk River	III
Rudd	Floyd	460	Flood Creek	II
Runnells	Polk	295	Mud Creek	III
Russell	Lucas	593	Honey Creek	II
Rutland	Humboldt	163	W. Branch Des Moines River	III
Ryan	Delaware	390	Buck Creek	II
Sabula	Jackson	824	Mississippi River	III
Sac City	Sac	3,000	North Raccoon River	III
Saint Olaf	Clayton	138	Roberts Creek	III
Scarville	Winnebago	82	Lime Creek	III
Schaller	Sac	832	Halfway Creek	III
Searsboro	Poweshiek	134	Unnamed Creek	III
Sergeant Bluff	Woodbury	2,416	Missouri River	II
Seymour	Wayne	1,036	Walnut and Shoal Creeks	III
Shannon City	Ringgold	93	West Fork Grand River	III
Sheffield	Franklin	1,224	West Fork Cedar	II
Sheldon	O'Brien	5,003	Floyd River	II
Shell Rock	Butler	1,478	Shell Rock River	I
Shellsburg	Benton	771	Bear Creek	II
Shenandoah	Page	6,274	East Nishnabotna River	I
Sibley	Osceola	3,051	Otter Creek	I
Silver City	Mills	291	Silver Creek	II
Sioux Center	Sioux	4,588	Unnamed Creek	II
Sioux Rapids	Buena Vista	897	Little Sioux River	I

Appendix B
Communities Lacking Flood Plain Mapping Studies
- Continued -

Town	County	Population	Watercourse	Priority Group
Smithland	Woodbury	282	Smokey Hollow Creek	III
Soldier	Monona	257	Soldier River	III
Solon	Johnson	969	Mill Creek	II
Somers	Calhoun	220	East Cedar Creek	II
South English	Keokuk	211	Unnamed Creek	III
Spillville	Winneshiek	415	Turkey River	II
Spirit Lake	Dickinson	3,976	Unnamed Creek	II
Springville	Linn	1,165	Big Creek	II
Stacyville	Mitchell	538	Little Creek River	III
Stanley	Buchanan	154	West Branch - Buffalo Cr.	III
Steamboat Rock	Hardin	387	Iowa River	III
Stockton	Muscatine	240	Mud Creek	II
Storm Lake	Buena Vista	8,814	Boyer Creek	II
Sumner	Bremer	2,335	Little Wapsie River	I
Swisher	Johnson	654	Swisher Creek	II
Thompson	Winnebago	668	Unnamed Creek	III
Thor	Humboldt	200	Unnamed Creek	III
Thornton	Cerro Gordo	442	Bailey Creek	III
Thurman	Fremont	221	Plum Creek	III
Tiffin	Johnson	413	Clear Creek	II
Tipton	Cedar	3,055	Sugar Creek	II
Titonka	Kossuth	607	Buffalo Creek	III
Toledo	Tama	2,445	Dear Creek	III
Traer	Tama	1,703	Wolf Creek	I
Union	Hardin	515	Iowa River	III
Unionville	Appanoose	150	Unnamed Creek	III
University Park	Mahaska	645	Spring Creek	II
Ute	Monona	479	East Soldier River	III
Vail	Crawford	490	East Boyer River	II
Van Meter	Dallas	747	Raccoon River	II
Ventura	Cerro Gordo	614	Unnamed Creek	II
Victor	Iowa	1,046	Bear Creek	II
Villisca	Montgomery	1,434	Middle Nodaway River	III
Volga City	Clayton	310	Volga River	I
Wadena	Fayette	230	Volga River	III
Walcott	Muscatine	1,425	Mud Creek	II
Walford	Benton	285	Unnamed Creek	II
Walker	Linn	733	Blue Creek	II
Wallington	Emmet	256	West Fork Des Moines River	II
Wall Lake	Sac	892	DD #60 - Lime Creek	II
Wapello	Louisa	2,011	Iowa River	II
Washta	Cherokee	320	Little Sioux River	II
Waterville	Allamakee	157	Paint Creek	III
Waucoma	Fayette	308	Crane Creek	III

Appendix B
Communities Lacking Flood Plain Mapping Studies
- Continued -

Town	County	Population	Watercourse	Priority Group
Wellman	Washington	1,125	North English River	II
Wellsburg	Grundy	761	South Fork Beaver Creek	III
Welton	Clinton	119	Silver Creek	II
Westfield	Plymouth	199	Big Sioux River	II
Westgate	Fayette	263	Little Wapsie	II
Westside	Crawford	387	East Boyer River	II
What Cheer	Keokuk	803	Coal Creek	III
Wheatland	Clinton	840	Yankee Run Creek	II
Whiting	Monona	734	Cleghorn Ditch	II
Wilton	Muscatine	2,502	Mud Creek	II
Winfield	Henry	1,042	East Fork Crooked Creek	II
Wiota	Cass	181	Unnamed Creek	III
Woden	Hancock	287	Buffalo Creek	II
Woodbine	Harrison	1,463	Boyer River	II
Woodburn	Clarke	207	Unnamed Creek	II
Woolstock	Wright	235	Eagle Creek	III
Wyoming	Jones	746	Bear Creek	I
Yorktown	Page	123	Unnamed Creek	III
Zearing	Story	630	Middle Minerva Creek	II
Zwingle	Dubuque	119	Otter Creek	II

ENVIRONMENTAL PROTECTION COMMISSION

ITEM 13

DECISION

CHAPTER 38 -- PRIVATE WATER WELL CONSTRUCTION PERMITS AUTHORIZED UNDER 455B.187

The Commission is requested to approve the Notice of Intended Action for Chapter 38 of the IAC.

Chapter 38 of IAC is proposed to implement the issuing of new private water well drilling and construction permits as authorized under Chapter 455B.187, Code of Iowa, as amended by Section 304 (HF631, 1987 Acts).

Upon authorization by the Commission, three public hearings on the proposed rules will be held throughout the state beginning on February 3, 1988, and written and oral comments will be received through February 18, 1988. The results of the comments and recommendations are scheduled to be brought back to the Commission at the March, 1988 meeting.

Implementation of these rules will allow the department to issue approximately 2,000 private water well drilling and construction permits per year, and to register about 4,000 existing wells per year.

Victor I. Okeroke

December 2, 1987

(118.MIN/sc)

ENVIRONMENTAL PROTECTION COMMISSION [567]
Notice of Intended Action

Pursuant to the authority of Iowa Code section 455B.187 as amended by 1987 Iowa Acts, House File 631, section 304, the Environmental Protection Commission intends to create a new Chapter 38, "Private Water Well Construction Permits."

Iowa Code section 455B.187, as amended by 1987 Iowa Acts, House File 631, section 304, requires all landowners or landowners' agents to obtain private well construction permits from the Department of Natural Resources prior to the construction of any new wells on their property. In addition, the Department is precluded from issuing a permit to an applicant until all existing wells on the property have been registered with the Department. Also, the authority to issue private well construction permits may be delegated to county boards of supervisors, but the Department retains concurrent authority. Further, all counties may issue emergency drilling permits in those cases where emergency drilling is necessary to fulfill an immediate need for water. The Department intends to create a new Chapter 38(455B), to implement these statutory provisions. Generally, this chapter provides procedures and conditions governing applications for and issuance of private water well construction permits.

More specifically, the proposed rules: (i) define the type of wells requiring construction permits; (ii) require a twenty-five dollar ($25) filing fee per application; (iii) require all permitted wells to be constructed by a registered driller in accordance with Chapters 37 (Registration of Water Well Contractors) and 49 (Nonpublic Water Wells) of these rules; (iv) authorize each county board of supervisors or the board's designee to grant emergency well construction permits to satisfy an immediate need for water; and (v) provide for a well construction permit to expire after one calendar year from the date of issuance if well construction is not started prior to that date. Further, the proposed rules specify the conditions under which a drilling permit could be denied and outline the appeal procedures. Finally, the procedures for delegating the Department's permit-issuing authority to the counties are specified in addition to the conditions under which such a delegation may be revoked by the Department.

In accordance with Iowa Code section 17A.31, notice is hereby given that these rules may have an impact on small business.

Any interested person may file written comments or suggestions on the proposed rules through February 18, 1988. Such written materials should be directed to Victor Okereke, Iowa Department of Natural Resources, Wallace State Office Building, 900 East Grand, Des Moines, Iowa 50319-0034. Persons are also invited to present oral or written comments at public hearings which will be held on February 3, 1988 at 1:00 p.m. at the Iowa Western Community College, Continuing Education Building, Room 002, Council Bluffs, Iowa 51501; on February 5, 1988 at 1:00 p.m. in the fifth floor conference room, Wallace State Office Building, 900 East Grand, Des Moines, Iowa 50319-0034; and on February 8, 1988 at 1:00 p.m. at the Iowa Department of Natural Resources, Geological Survey Bureau, Trowbridge Hall, 123 North Capitol, Iowa City, Iowa 52242.

Copies of the proposed rules may be obtained from the Records Section, Iowa Department of Natural Resources, Wallace State Office Building, 900 East Grand, Des Moines, Iowa 50319-0034.

These rules are intended to implement 1987 Iowa Acts, House File 631, section 304 and Iowa Code subsection 455B.105(12).

Chapter 38
PRIVATE WATER WELL CONSTRUCTION PERMITS

567--38.1(455B) Definitions.

"Abandoned well" means a water well which is no longer in use or which is in such a state of disrepair that continued use for the purpose of accessing groundwater is unsafe or impracticable.

"Agreement" means a signed document between the department and the county board of supervisors with which the department delegates the authority to issue private well drilling permits to the county board of supervisors or its designee.

"Contiguous" means any number of parcels of land that physically touch one another except that tracts of land separated by roads, railroads, or streams shall be deemed contiguous.

"Contractor" means a person engaged in the business of well construction or reconstruction. The term may include a corporation, partnership, sole proprietorship, association or any other business entity, as well as any employee or officer of such an entity.

"Construction" means the physical act or process of making a water well including, but not limited to, siting, excavation, construction and installation of equipment and materials necessary to maintain and operate the well.

"Department" means the Iowa Department of Natural Resources.

"Director" means the director of the department or a designee.

"Groundwater" means any water below the surface of the earth.

"Inactive water well" means a water well which is not currently in use and is capped or sealed to prevent the entrance of contaminants into the well, but is in such a condition that it can be activated to produce a safe supply of water.

"Landowner" means an individual, trust, partnership, corporation, government or governmental subdivision or agency, association or other legal entity that has legal or equitable title to a piece of land.

"Landowner's agent" means a person who acts for or in place of the landowner by authority from the landowner.

"Private water well" means a well that does not supply a public water supply system.

"Protected source" means a surface water or groundwater source recognized by rule as deserving special protection in order to ensure its long-term availability, in terms of either quality or quantity, or both, to preserve the public health and welfare.

"Public water supply system" means a system for the provision to the public of piped water for human consumption, if such system has at least fifteen (15) service connections or regularly serves an average of at least twenty-five (25) individuals daily at least sixty (60) days out of the year. Such term includes (1) any collection, treatment, storage, and distribution facilities under control of the supplier of water and used primarily in connection with such system, and (2) any collection (including wells) or pretreatment storage facilities not under such control which are used primarily in connection with such system.

"Water well" means an excavation that is drilled, cored, bored, augered, washed, driven, dug, jetted, or otherwise constructed for accessing groundwater. Water well does not include an open ditch or drain tiles.

567--38.2(455B) Forms. The following application form is currently in use:
Application for a permit to construct a new private water well. 11/87. 542-0988.

567--38.3(455B) Permit requirement.
38.3(1) When permit required. A landowner or landowner's agent shall not drill or construct a new private water well without first obtaining a well construction permit issued by the department or by a county board of supervisors or the board's designee authorized to issue such permits pursuant to rule 38.15(455B). Examples of private water wells requiring well construction permits include, but are not limited to: domestic wells, livestock wells, irrigation wells, recreational wells, monitoring wells, heat pump wells, industrial wells, and dewatering wells.
38.3(2) Exemptions. Examples of excavations that are not private water wells and so do not need private water well construction permits and need not be reported include, but are not limited to: soil borings, percolation test holes, sand and gravel and limestone exploration holes, excavations for storing and extracting natural gas or other products, gravel pits and quarries. Test holes, used to determine the availability, quality or depth of groundwater are also exempt provided that all the following conditions are met.
a. The use of the test hole is limited to the conduct of the test only.
b. The duration of the test is not more than seven consecutive days.
c. The test hole is properly closed immediately after the test is completed.
38.3(3) Caveat. Nothing in these rules shall be construed as exempting public water supply wells from the construction permit and water withdrawal permit provisions of part 567, Iowa Administrative Code.

567--38.4(455B) Form of application. Application shall be made on forms supplied by the department. Each application shall list all wells, including abandoned wells, on the applicant's property contiguous to the well site described in the application and shall describe the location of each well site. The location shall be given in the form of a legal land description (section, township and range) to the nearest quarter of a quarter of a section and noted on a map or aerial photograph. The list of wells to be registered shall include but is not limited to abandoned wells, inactive wells, agricultural drainage wells, irrigation wells, domestic wells and livestock wells.

567--38.5(455) Fees.
38.5(1) Fee payment. Each application shall be accompanied by a nonrefundable fee of twenty-five dollars ($25) in the form of a check or money order payable to the Department of Natural Resources, unless a county board of supervisors or the board's designee is authorized to issue private well construction permits pursuant to rule 38.15(455B). In such cases where the permitting authority is delegated to the county, the county board of supervisors may set a different fee and shall designate the terms for fee payment. More than one proposed well on one contiguous piece of property may be listed on one application and only one fee need be paid irrespective of the number of wells listed on the application form. A proper application shall consist of a fully and properly completed form and nonrefundable fee.
38.5(2) Exemption. The department is exempt from the fee payment requirements of these rules.

567--38.6(455B) Well maintenance and reconstruction. A private well construction permit is not required for the repair, maintenance, rehabilitation or reconstruction of an existing well. Changes in physical dimensions included in these exemptions include, but are not limited to: deepening the well and changing the diameter or length of the casing or the screen. Replacement wells do require a private well construction permit.

567--38.7(455B) Emergency permits.

38.7(1) Granting of emergency permit. Each county board of supervisors or the board's designee may grant an emergency permit to a landowner or the landowner's agent if emergency drilling is necessary to meet an immediate need for water. The emergency permit and application must be signed by the board of supervisors or the board's designee and shall be on forms obtained from the department prior to the emergency well construction taking place.

38.7(2) Submittal to department. A copy of the permit application signed by the chairperson of the board of supervisors and fee shall be sent to the department within thirty days of the granting of the permit by the county board of supervisors or its designee. In the event the permitting authority has been delegated to the county, no fee need be remitted to the department.

567--38.8(455B) Permit issuance and conditions.

38.8(1) When issued. Upon receipt of a complete application, the department shall issue a permit to the landowner or landowner's agent except as provided in rules 38.7(455B), 38.12(455B) and 38.15(455B).

38.8(2) Not withdrawal permit. Each permit shall include notification that a private well construction permit is not a water withdrawal permit and does not eliminate the necessity of obtaining any water withdrawal permits required in Chapters 51 and 52 of these rules. A water withdrawal permit is required before an applicant can withdraw more than 25,000 gallons of water per day, from any source or combination of sources in the state of Iowa.

38.8(3) Construction by registered well driller. Each well construction permit shall require that each well shall be constructed by a registered well driller in compliance with Chapters 37 and 49 of these rules.

567--38.9(455B) Noncompliance. Violations of any of the provisions of this chapter may be addressed by the department pursuant to Iowa Code sections 455B.109, 455B.175 and 455B.191.

567--38.10(455B) Expiration of a permit. A private well construction permit shall expire one calendar year from the date of issuance. If construction of the proposed well is not started prior to the expiration date, a new application plus a new nonrefundable fee must be filed with the department or the county board of supervisors pursuant to rule 38.15(455B).

567--38.11(455B) Transferability. A private well construction permit is not transferable.

567--38.12(455B) Denial of a permit. The department may deny a private well construction permit if granting the permit would lead to the violation of state law, would result in groundwater contamination, would lead to withdrawal from a protected source; or the director determines that the well would threaten public health or the environment.

567--38.13(455B) Appeal of a permit denial. Any applicant aggrieved by a decision issued under the provisions of this chapter may file a notice of appeal with the director. The notice of appeal must be filed within thirty (30) days of the date of the permit decision. The form of the notice of appeal and appeal procedures are governed by Chapter 7 of these rules.

567--38.14(455B) Effective date. The provisions of this chapter of the rules shall become effective on _____, ____.

567--38.15(455B) Delegation of authority to county board of supervisors.

38.15(1) Application by board. A county board of supervisors requesting the authority to issue private well construction permits shall apply to the department in accordance with Chapter 28E, Code of Iowa. The application shall include statements of agreement to comply with this chapter of the Iowa Administrative Code. Additional information may be requested by the department.

38.15(2) County standards. The county board of supervisors may impose additional standards as local conditions dictate, but cannot be less stringent than those required by the provisions of this chapter.

38.15(3) Information to department. The delegation agreement shall provide for the method, format and frequency of reporting all permit application information to the department.

38.15(4) Board authority After delegation of authority to a county board of supervisors, all applications in that county shall be made to the board or its designee.

38.15(5) Term of delegation. The delegation of authority shall be for up to five years and may be redelegated at the discretion of the department.

567--38.16(455B) Concurrent authority of the department. Notwithstanding the delegation of permit granting authority pursuant to rule 38.15(455B), the department reserves the right to exercise concurrent authority. In cases where the board or its designee fails to act on an application, or the director determines that a particular application cannot be appropriately evaluated by the board or its designee, the department may review such an application without invoking the provisions of rule 38.17(455B).

567--38.17(455B) Revocation of delegation agreement. The department may revoke the delegation to issue private well construction permits if the board of supervisors or its designee: failed or refused to carry out the provisions of this chapter in a timely manner; or violated any of the provisions of the delegation of authority agreement with the department.

_____
Date

_____
Larry J. Wilson, Director

(EP38.MIN/sc)

IOWA DEPARTMENT OF NATURAL RESOURCES

Date Received

APPLICATION FOR A PERMIT TO CONSTRUCT A NEW PRIVATE WATER WELL

For more information, write:

Department of Natural Resources
Water Supply Section
900 East Grand Avenue
Des Moines, Iowa 50319-0034

OR call: 515/281-6595

NOTE: Read the instructions on the reverse side before completing application form.

For Official Use Only:

Emergency Permit: [ ] Yes* [ ] No
County Name: _____
Name of Officer: _____
Title: _____
Signature: _____
Date: _____
Application No.: _____
Permit No.: _____

*For Emergency Permits Only

Signature _____
(Chairperson, Board of Supervisors)

(A) PROPOSED WELL

Well #	(i) Use	(ii) Estimated Depth (ft)	(iii) Location	(iv) County Name
1			___1/4 of ___1/4 of Section ___, T___, R___, East/West	
2			___1/4 of ___1/4 of Section ___, T___, R___, East/West	
3			___1/4 of ___1/4 of Section ___, T___, R___, East/West	

(B) EXISTING WELLS

Well #	(i) Use	(ii) Depth (ft)	(iii) Location	(iv) County Name	(v) Date of Constr. (mo/yr)	(vi) Status
1			___1/4 of ___1/4 of Section ___, T___, R___, East/West			
2			___1/4 of ___1/4 of Section ___, T___, R___, East/West			
3			___1/4 of ___1/4 of Section ___, T___, R___, East/West			
4			___1/4 of ___1/4 of Section ___, T___, R___, East/West			

(C) I certify the above information is true and correct to the best of my knowledge; and that I will furnish additional information to the department as may be requested.

CERTIFICATE: _____

Print Name of Applicant Title (Owner, Agent, Etc.) Signature

_____

Mailing Address (Number & Street) City

_____

State Zip Phone # Date

IWR form (Nov 87) 542-0988

INSTRUCTIONS

Read the following instructions before completing this application. Improper or incomplete applications may delay issuing of a permit.

1. When to use this form. This form is to be used to apply for all new private well construction permits including emergency permits.

2. All applicants must fill out Parts A, B and C of this application form.

3. List all proposed wells and all existing wells on a contiguous piece of property under single ownership on one application. Use additional sheets if necessary.

Section A: PROPOSED WELL(S) INFORMATION

(i) Use: Choose from the list below the use that most accurately describe the primary use of each proposed well listed. Enter that number on the space provided.
(ii) Depth: Record the approximate depth of each proposed well (if known).
(iii) Location: Record the location of each proposed well listed on the application in terms of Section, Township (T) and Range (R) to the nearest ¼ of the ¼ of a section. Use the example shown below. Remember to indicate whether the range (R) is east or west.
(iv) County Name: Record the county name.

Section B: EXISTING WELL(S) INFORMATION

Report all existing wells on one contiguous piece of property; i.e., any number of parcels of land under a single ownership that physically touch one another. Tracts of land separated only by roads, railroads or streams are deemed contiguous.

(i) Use: Choose from the list below the number that most accurately describes the primary use of each existing well listed. Enter the number on the space provided.
(ii) Depth: Record the approximate depth of each existing well (if known).
(iii) Location: Record the location of each existing well reported on this application. See Section A (iii) of these instructions for an explanation of how to report the location(s).
(iv) County Name: Record the county name.
(v) Date of Construction: To the best of your knowledge, what is the date each existing well was constructed (month/year). Record each date on the space provided.
(vi) Status: Choose from the list below the current status of each existing well and enter the number.

(1) active and in use
(2) inactive and in good condition
(3) abandoned or in disrepair
(4) properly closed, filled, sealed, capped

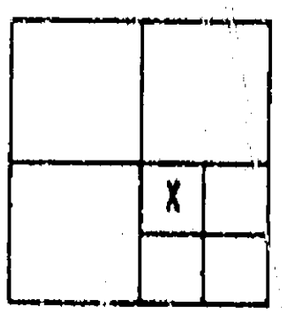
Section C: Information about the applicant. The applicant should be the title holder or authorized agent of record of the land on which the proposed well(s) is/are located and may be an individual, trust corporation, partnership, political subdivision, etc. An authorized agent is a person, company, etc. who is authorized by the landowner to act on the owner's behalf in applying for a permit to drill a new well. Such an agent might be an attorney, a tenant, corporate office, etc.

USES OF PROPOSED OR EXISTING WELLS

(1) municipal/public/community water supply
(2) domestic/household
(3) irrigation
(4) livestock/agricultural
(5) industrial/commercial
(6) heating and air conditioning
(7) monitoring/observation
(8) agricultural drainage
(9) dewatering
(10) injection
(11) fire protection
(12) abandoned
(13) recreational
(14) other

EXAMPLE OF A WELL LOCATION

The well shown in the diagram is located in the NW 1/4 of the SE 1/4 of the Section shown. (NW = northwest, SE = southeast.)



FEE SCHEDULE

DNR Fee Schedule: A $25 nonrefundable fee is required if application must be filed with DNR. The $25 fee is also required for emergency permits processed by counties for the state.

County Fee Schedule: A different fee schedule may be in effect in counties that accept delegation to issue private water well construction permits. Check with county for applicable fees before filing application.

IOWA DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL PROTECTION COMMISSION

ITEM 16 DECISION

PROPOSED DECLARATORY RULING: ACCO UNLIMITED CORPORATION

Enclosed is a proposed Declaratory Ruling of the Director, in response to a Petition filed by ACCO Unlimited Corporation. As indicated in the Proposed Ruling, the request pertains to the need for construction permits and engineering certification for addition to public drinking water supplies of simple chemical feed systems which include bulk chemical storage. The ruling is that a construction permit is required, and rules of the department which allow waiver of engineering certification for simple chemical feed systems do not apply where bulk chemical storage is included.

The Proposed Ruling becomes the final ruling of the department unless it is appealed to the Commission by the Petitioner within ten days of receipt, or the Commission decides to review it on its own motion. If the Petitioner appeals or the Commission decides to review, this matter will be presented for decision. In that event you may approve the ruling, reverse or modify it, request additional information and defer decision, or decline to issue a ruling. If there is no appeal and you do not choose to review it, the Proposed Ruling becomes the final Declaratory Ruling.

Mike Murphy
Government Liaison Bureau
November 23, 1987

87327DNR0007

ACCO Unlimited Corporation
3300 N.W. 55 Avenue
Johnston, Iowa 50131
515 278 0487
EVERYTHING FOR WATER

October 15, 1987

Government Liason Bureau
Iowa Department of Natural Resources
Wallace State Office Building
Des Moines, Iowa 50319

RE: Petition for Declaratory Ruling

Gentlemen:

Simple chemical feed systems include mini-bulk.

We are asking that the necessity of submitting permits and regulatory engineering certificates both be lifted.

The paper work is too costly, time consuming and too confusing.

The bottom line is reliability of vendor to notify state, install the system and have an in-field inspection take place with the City, State and Vendor personnel all being present.

This is the way we have been doing business for 25 years and the system works.

Sincerely yours,

ACCO UNLIMITED CORPORATION

Andy Christenson

AC:shm

MEMBER
APWA
IWWA
IEHA
MFCA
PHA
IGA
PWA
IWCA
IPH
VPCA
IWA

IOWA DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL PROTECTION COMMISSION

IN THE MATTER OF THE PETITION OF ACCO UNLIMITED CORPORATION FOR DECLARATORY RULING ON IOWA CODE SECTION 455B.183 and 567-41.12(4), IOWA ADMINISTRATIVE CODE	PROPOSED RULING

INTRODUCTION

On October 19, 1987, the department received a letter termed a Petition for Declaratory Ruling, from Acco Unlimited Corporation, asking that "the necessity of submitting permits and regulatory engineering certificates both be lifted (for) simple chemical feed systems includ(ing) mini-bulk." Although lacking in detail, the department is familiar enough with the background and issues that a formal response can be made. The company sells "shelf-item" chemical feed systems for drinking water systems regulated as public water supplies by the department. The systems sometimes include chemicals, such as liquid chlorine, to be supplied from bulk containers. Department rules require that construction permits be obtained for addition of chemical feed systems, among other things, to public water supplies. There are special provisions for waiver of engineering requirements for simple chemical feed systems; however, a permit is still required and certain conditions have to be met. When bulk storage and supply of chemicals is part of the system, both the requirement to obtain a permit and to have a registered professional engineer certify the plans and specifications apply. Petitioner desires that both the permit and engineering requirements be voided for simple chemical feed systems, including "mini-bulk".

The purpose of a Declaratory Ruling is to obtain a formal agency determination, binding on both the agency and the petitioner, as to how the law of the agency applies to a particular fact situation. Insofar as the petitioner is asking what the law requires for simple chemical feed systems, the Declaratory Ruling procedure is the proper vehicle and this ruling is intended to answer that question. Insofar as this request asks for a change in the law, this is not the proper vehicle. However, the department's rationale in this ruling should be construed as a declination to initiate any change in its rules and a resistance to any effort to obtain statutory change.

DISCUSSION

Iowa Code section 455B.183(1) prohibits the construction, installation or modification of any public water supply system or part thereof without a written permit from the department. Iowa Code section 455B.173(3) authorizes and requires the Environmental Protection Commission to promulgate rules relating to the construction of public water supply systems and the conditions under which the director shall issue construction permits for such systems. The Commission has done so at 567--40-41, Iowa Administrative Code. Iowa Code section 114.16 prohibits state agencies from accepting engineering documents without the certification of a registered professional engineer. Iowa Code section 114.2 defines "engineering documents" as all plans, specifications, drawings, and reports, if the preparation thereof constitutes or requires the practice of professional engineering. The latter term includes planning or design of construction of facilities wherein the public welfare, or the safeguarding of life, health or property is or may be concerned, when such service requires the application of engineering principles and data.

Rule 41.12(455B) of the department contains the permit requirements for public water supply construction or modification. Rule 40.2(455B) contains definitions. Permit application procedures are also contained in chapter 40 of the rules. Rule 41.12(3) prohibits construction or modification of a "project" without or contrary to a construction permit from the department or an authorized local public works department (water main extension only). Certification of plans and specifications by a registered professional engineer is required. Limited exceptions or modifications to these requirements are provided in rules 41.12(3)"b" (emergency), 41.12(4) (waiver of engineering, but not permit, for simple chemical feed or self-contained treatment units), and 41.12(6) (standard specifications for water main). "Maintenance", defined as replacement of equipment or materials necessary to maintain operation but which does not alter system capacity, water quality or treatment method, does not require a permit.

Installation of chemical treatment, and storage facilities for chemicals in connection with public water supplies are modifications which clearly require a permit. There is no exception to the permit requirement, except for maintenance, which is no modification at all, and temporary emergency construction, for which engineering supervision and followup permit are required. This is a statutory requirement with obvious public health and safety purposes. There have been attempts to remove or modify this requirement in the past, which have not succeeded in the Iowa General Assembly. In part this is due to the fact that the federal law and regulations of the Safe Drinking Water Act, which this agency is implementing (see Iowa Code section 455B.177(2)) require agency review of construction of public water supplies to assure comliance with drinking water quality standards. In greater part this is due to sound public policy concerns of Iowa policy-makers, including this department, that the provision of

drinking water to the public should be subject to governmental oversight.

This is not to say that the department is unconcerned with the the costs involved with permit requirement. That is why the reasonable exceptions and modifications to permit and engineering requirements cited above have been made in the rules. The department in particular went to substantial effort in amending its rules regarding engineering requirements in 1985, when it promulgated 41.12(4). While still requiring a permit for simple chemical feed systems, the requirement for having engineering certification for such projects may be waived under certain conditions. The waiver is for situations where basically "shelf item" equipment is added to a system, where the specifications are so standardized, the installation is so routine, and the public health and safety concerns are properly safeguarded, that engineering review and oversight are not necessary.

When the department adopted these engineering waiver rules, it was familiar with shelf item equipment that included essentially self-contained chemical supply facilities and off-the-shelf chemical replacement facilities (referred to commonly as "carboys"). The department could rely on quality assurance done at the factory and a record of safe operation of such facilities. Use of bulk storage facilities such as those used by the Petitioner were not commonly used at that time, in the department's experience. The concerns the department has with bulk storage include the size of the bulk storage, space available and impact on the surrounding equipment if the chemicals are corrosive, shelf life of the chemicals and whether it makes sense to use bulk storage in a particular case, preventative measures appropriate to avoid accidental siphonage of chemicals into the water supply, the structural integrity of the storage equipment, the ability to provide routine maintenance, and safety considerations in transferring bulk chemicals to the storage facilities. All of these are matters appropriate for engineering review and certification as to proper installation.

CONCLUSION

In summary, it is appropriate to require a permit for all chemical additions to public water supplies; it is appropriate to waive engineering certification in relatively simple cases; and the added complexities brought about by use of bulk storage make waiver of engineering review and certification inappropriate. The Iowa Code and department rules require a permit and engineering certification for such facilities.

LARRY J. WILSON, DIRECTOR
DEPARTMENT OF NATURAL RESOURCES

Dated this 25th day of November, 1987

IOWA DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL PROTECTION COMMISSION

ITEM 17 DECISION

REFERRALS TO THE ATTORNEY GENERAL

The Director requests the referral of the following to the Attorney General for appropriate legal action. Litigation reports have been provided to the Commissioners and are confidential pursuant to Iowa Code section 22.7(4).

Hilltop Feeders;Jorgenson, J.E. and Harris - air quality
Timberline Associates Limited Partnership - drinking water

Mike Murphy
November 30, 1987

87334DNR0021

Item #19- Demonstration Grant Rules

ENVIRONMENTAL PROTECTION COMMISSION [567]

Department of Natural Resources

Notice of Intended Action

Pursuant to the authority of 1987 Iowa Acts, H.F. 631, sections 111 and 405, the Environmental Protection Commission gives notice of intended action to adopt a new Chapter 209, "Solid Wastes Grants," under new Title XII Iowa Administrative Code.

The purpose of Title XII, Chapter 209 is to provide financial assistance through grants and other means to encourage the adoption of alternatives to land filling municipal solid wastes. The state of Iowa has determined that it is beneficial to the state's environment and economy to encourage such activities. This program is designed to demonstrate alternative means of solid waste management that may be applied throughout the state. The state will also examine the environmental impacts of solid waste landfill alternatives under this grant program.

These same rules were noticed in a notice of intended action on November 18, 1987 as ARC 8137 originally filed by the Energy and Geological Resources Division (565). These rules were proposed prior to the staffing of the new Waste Management Authority which has the authority for proposing these rules. Termination of the Energy and Geological Resources Division's notice of intended action is being filed simultaneously with these rules, and will appear in ARC ____.

New title XII is being added to the Environmental Protection Commission rules to accommodate the Waste Management Authority rules.

Any interested person may make written suggestions or comments prior to January 19, 1988. Such written materials should be directed to the Waste Management Authority

Division, Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319.

Persons who wish to convey their views orally should contact Stuart Schmitz, 515/281-8499; or at the Department's offices on the fifth floor of the Wallace State Office Building, Des Moines, Iowa 50319. Also, there will be a public hearing on Tuesday, January 19, 1988 at 11:00 a.m. in the conference room on the fifth floor of the Wallace State Office Building, Des Moines, Iowa. Interested persons who wish to present their views orally or in writing at this hearing should contact Stuart Schmitz at least one day prior to the public hearing.

This rule is intended to implement 1987 Iowa Acts, H.F. 631, sections 111 and 405.

ITEM 1. New Title XII and Chapter 209 is proposed as follows:

Title XII

Chapter 209

Solid Wastes Grants

567--209.1(72 GA, H.F. 631, sections 111 and 405) Goal. The goal of this program is to demonstrate alternative methods for managing solid wastes. Also, the program is designed to reduce the environmental effects related to disposal of solid wastes in Iowa landfills. These goals will be achieved through specific actions, as outlined in 1987 Iowa Acts, H.F. 631, the Groundwater Protection Act, and include the following hierarchy of waste management priorities in descending order of preference: (a) volume reduction at the source; (b) recycling/reuse, (c) combustion with energy recovery and refuse derived fuels production; and (d) combustion for volume reduction.

209.2(72 GA, H.F. 631, sections 111 and 405) Purpose. The purpose of this program is to provide grants and other financial assistance to local governments and commercial establishments for the purpose of demonstrating innovative alternatives to solid waste disposal. Projects sponsored by the Department of Natural Resources must meet one of the criteria outlined in the program goal for reducing materials being disposed of in sanitary landfills.

209.3(72 GA, H.F. 631, sections 111 and 405) Definitions.

"Sanitary landfill" means a sanitary disposal project where solid waste is buried between layers of earth.

"Eligible candidate" means any unit of local government, not-for-profit organization and for profit commercial establishments located in Iowa.

"Eligible project" means any project which is capable of recycling solid wastes, reducing the amount of solid wastes sent to a sanitary landfill, or producing energy from the solid wastes.

"Energy production" is defined as the direct conversion of solid wastes into useful process heat and/or electricity or the production of processed fuels which can be used in place of coal, natural gas or oil.

"Department" means the Iowa Department of Natural Resources.

"Grants" means financial assistance in the form of cash payments to eligible candidates for certain considerations.

"Financial assistance" means monetary assistance other than grants including interest buydowns on loans.

"Groundwater protection act" means 1987 Iowa Acts, H.F. 631 which sets forth laws pertaining to the protection of Iowa's groundwater resources through reduced disposal of solid wastes at landfills, and pesticides and provides grants to encourage better management of Iowa's groundwater resources.

"Petroleum overcharge allocation" means 1987 Iowa Acts, S.F. 517 which allocates and appropriates Iowa's petroleum overcharge refunds generated from Stripper Well, Exxon, Amoco and other petroleum overcharge settlements.

"Waste management authority" means the waste management authority division of the Department of Natural Resources established by 1987 Iowa Acts, S.F. 796.

209.4(72 GA, H.F. 631, Sections 111 and 405) Role of the Department of Natural Resources. The Department of Natural Resources is responsible for the administration of funds for projects sponsored under these rules. The Department will assure that funds disbursed will meet guidelines established by the Groundwater Protection Act, the Allocation of

Petroleum Overcharge Funds, the Waste Management Authority Act.

Any eligible project may be submitted by any eligible candidate for grant consideration under this chapter. The Director will determine which projects will receive funding after review by the Waste Management Authority Division, the Energy and Geological Resources Division and the Environmental Protection Division of the Department.

209.5(72 GA, H.F. 631, sections 111 and 405) Funding sources. The Department will use funds appropriated by the legislature, and other sources that may be obtained for the purpose of achieving the goals outlined in these rules. The Department will assure that monies appropriated for use in this section meet both federal and state guidelines pertaining to their use.

209.6(72 GA, H.F. 631, sections 111 and 405) Eligible projects. The Department may provide grants to eligible candidates for the following types of projects: (a) volume reduction at the source, (b) source separation/recycling; (c) the production of energy or densified refuse-derived fuels; (d) other projects which reduce the amount of material disposed of in landfills; and (e) environmental testing related to the use of municipal solid waste as an energy source. If projects are to be funded from the petroleum overcharge funds, projects must demonstrate either energy savings or the production of fuels which can replace imported sources of energy.

209.7(72 GA, H.F. 631, sections 111 and 405) Project award. Projects will be awarded based on the following criteria. The Department will determine the relative value of each of these factors in deciding which projects will receive funding. The criteria include: (a) the project's nearness to completion; (b) transferability of the project

to other communities and commercial establishments; (c) cost-share by community or commercial establishment; (d) environmental benefits and acceptability; and (e) percentage of municipal solid waste diverted from the landfill; (f) extent to which the project incorporates and reflects the hierarchy of waste management priorities of the state solid waste management policy. When energy projects are being considered for funding, the following additional criteria will be included: (a) commitment from energy market; (b) recovery of noncombustibles, (c) implementation of recycling/source separation projects in conjunction with the energy recovery project.

209.8(72 GA, H.F. 631, sections 111 and 405) Environmental assessments of landfill alternatives. The Department shall reserve funds for determining the environmental consequences of alternatives to solid waste landfilling. Such projects shall include, but not be limited to, testing air emissions generated by the combustion of municipal solid waste and an analysis of the ash generated as a result of the combustion of municipal solid waste:

Dated this 15th day of December, 1987.

Larry J. Wilson, Director

(E19A.RUL/sc)

Item # 22 - Legislation Package

FILE

BY

Passed Senate, Date _____ Passed House, Date _____

Vote: Ayes _____ Nays _____ Vote: Ayes _____ Nays _____

Approved _____

A BILL FOR

An Act relating to the sewage works revolving loan fund, by providing for definitions, for the execution of capitalization grant agreements, for the loan of fund monies to municipalities, for the provisions of loan contracts with such municipalities and their review by the ~~attorney general~~ DNR for the authority of the commission to establish rules for the revolving loan program and for the issuance of bonds for the state match for such capitalization grants.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF IOWA:

S.F. _____ H.F. _____

Section 1. Chapter 455B, Code of Iowa 1987, is amended by adding the following new Sections as a new part 5 of division III:

NEW SECTION. 455B.290 REVOLVING LOAN FUND.

There is established a separate, permanent and perpetual fund to be known as the "sewage works revolving loan fund." This fund shall include sums appropriated to the sewage works revolving loan fund by the General Assembly, sums allocated to the state expressly for the purposes of establishing a revolving fund concept under the Clean Water Act, all receipts by the sewage works revolving loan fund, and any other sums designated for deposit to the sewage works revolving loan fund from any source public or private. All monies appropriated to and deposited in the sewage works revolving loan fund are hereby appropriated for and shall be used and administered by the department as a dedicated fund for the purposes provided in this part 5 of division III.

When used in said part, and unless the context requires otherwise:

1. "Cost" means all costs, charges, expenses or other indebtedness incurred by a municipality as reasonable and necessary for carrying out all works and undertakings necessary or incident to the accomplishment of any project.

2. "Municipality" means a city or other governmental body, or combination thereof, as defined in section 455.B241(4).

3. "Revolving loan fund" means the sewage works revolving loan fund established pursuant to this part 5 of division III.

4. "Project" means the construction of any publicly owned treatment works (as defined in section 212 of the Clean Water Act) or the implementation and development of management programs established under sections 319 and 320 of the Clean Water Act.

5. "Clean Water Act" means the federal Water Pollution Control Act of 1972, Pub. L. No. 92-500, as amended by the Water Quality Act of 1987, Pub. L. No. 100-4, published in 33 U.S.C. §§ 1251-1376.

Section 2. NEW SECTION. 455B.291 CAPITALIZATION GRANTS AND ACCOUNTING.

In each fiscal year after July 1, 1988, the department may prepare and deliver intended use plans and enter into capitalization grant agreements with the administrator of the United States Environmental Protection Agency under the terms and conditions set forth in Title VI of the Clean Water Act and may accept capitalization grants for the revolving loan fund in accordance with payment schedules established by the

administrator. All such payments from the administrator shall be deposited in the dedicated revolving loan fund created in section 455B.290. No portion of the state's construction grant allotment under Title II of the Clean Water Act shall be diverted to the revolving loan fund.

The department shall establish fiscal controls and accounting procedures during appropriate accounting periods for payments and disbursements received and made by the revolving loan fund and for fund balances at the beginning and end of the accounting periods.

Section 3. NEW SECTION. 455B.292 LOANS TO MUNICIPALITIES.

Money in the revolving loan fund shall be used solely to make low ~~or~~ interest-~~free~~ loans to municipalities to finance or refinance the cost of any project listed as fundable on the state project priority list established by the commission. The municipalities to which loans are to be made, the purposes of the loan, the amount of each such loan, the interest rate thereon and the repayment terms thereof, which may vary between municipalities, shall be determined by the director, subject to the approval of the commission, in compliance with and subject to the terms and conditions of Title VI of the Clean Water Act.

Section 4. NEW SECTION. 455B.293 CONTRACTS.

The director shall, in the name of the state, contract with any municipality concerning projects for which financial assistance is granted from the revolving loan fund, subject to the approval of the commission. The contract may include such provisions as may be agreed upon by the parties, and shall include, in substance, the following provisions:

1. That the recipient of a loan will maintain project accounts in accordance with generally accepted government accounting standards;

2. That the recipient of a loan will establish a dedicated source of revenue for repayment of the loan;

3. That such repayment of the loan shall be made solely and only from rates and charges imposed upon and collected from users of the project, and shall not be a general obligation debt or liability of the municipality receiving said loan within the meaning of any constitutional or statutory debt limitation, nor a pledge of the municipality's credit or taxing power;

4. That after reasonable notice by the administrator, the recipient of a loan shall make available to the administrator such records as the administrator reasonably requires to review and determine compliance with Title VI of the Clean Water Act; and

5. That if the recipient of a loan subsequently receives a grant under section 201(g) of the Clean Water Act for construction of treatment works and an allowance under section 201(l)(1) for non-federal funds expended for such planning and preparation, such recipient will promptly repay such loan to the extent of such allowance.

Each loan shall be evidenced by the appropriate promissory note of the municipality payable to the revolving loan fund in form satisfactory to the director. The director is authorized to require in connection with any loan from the revolving loan fund such documents, instruments, certificates, legal opinions and any other information as the director may deem necessary.

Section 5. NEW SECTION. 455B.294 RULES.

The commission may adopt such rules as are necessary for the effective administration of this part 5 of this division III.

Section 6. NEW SECTION. 455B.295 ~~REVIEW OF~~ CONTRACTS BY ~~ATTORNEY GENERAL~~. Staff legals —

All contracts entered into pursuant to this part 5 of this division III shall be subject to approval of the Attorney General as to form. All payments by the state from the Revolving Loan Fund pursuant to such contracts shall be made after review and by warrant of the director of revenue and finance to the credit of the municipality and shall be used for the payment of costs of a project.

Section 7. NEW SECTION. 455B.296 BONDS ISSUED FOR STATE MATCH.

1. The commission may issue its negotiable bonds in principal amounts as, in the opinion of the commission, are necessary to provide funds for the twenty percent state match required to receive capitalization grants under the Clean Water Act. However, the commission shall not have a total principal amount of bonds outstanding at any time in excess of twenty million dollars. The bonds shall be deemed to be investment securities and negotiable instruments within the meaning of and for all purposes of chapter 554, the uniform commercial code.

2. Bonds issued by the commission are payable solely and only from the revenues credited to the revolving loan fund. Taxes or appropriations shall not be pledged for the payment of the bonds. Bonds are not an obligation of this state or any political subdivision of this state other than the commission within the meaning of any constitutional or statutory debt limitations, but are special obligations of the commission payable solely and only from the sources provided in this division, and the commission shall not pledge the general credit or taxing power of this state or

any political subdivision of this state or make its debts payable out of any moneys except those of the revolving loan fund.

3. Bonds must be authorized by a resolution of the commission. However, a resolution authorizing the issuance of obligations may delegate and fix the details of an issue of bonds or notes by an appropriate certificate of the authorized officer.

4. The bond proceedings shall provide for the purpose of the bonds, principal amount and principal maturity or maturities, the interest rate or rates or the maximum interest rate, the date of the bonds and the dates of payment of interest on the bonds, their denomination, the terms and conditions upon which parity bonds may be issued, and the establishment within or without the state of a place or places of payment of principal of and interest on the bonds. The purpose of the bonds may be stated in the bond proceedings in terms describing the general purpose or purposes to be served. The commission may cause to be issued a prospectus or official statement in connection with the offering of the bonds. Bonds may be issued in coupon or in registered form, or both. Provision may be made for the registration of bonds with coupons attached as to principal alone, or as to both principal and interest, their exchange for bonds so registered, and for the conversion or reconversion into bonds with coupons attached of any bonds registered as to both principal and interest, and for reasonable charges for registration, exchange, conversion, and reconversion. Bonds shall be sold in the manner and at the time determined by the commission. Chapter 75 and sections 23.12 through 23.16 do not apply to these bonds. The bonds are negotiable instruments. The bond proceedings may contain additional provisions as to:

a. The redemption of bonds prior to maturity at the option of the commission at the price and on the terms and conditions provided in the bond proceedings.

b. Other terms of the bonds and concerning execution and delivery of the bonds.

c. The delegation of responsibility for any act relating to the issuance, execution, sale, redemption, or other matter pertaining to the bonds to any other officer, agency of the state, or other person or body.

d. Additional agreements with the bondholders relating to the bonds.

e. Payment from the proceeds of the sale of the bonds of all legal and financial expenses incurred by the commission in the issuance, sale, delivery, and payment of the bonds.

f. Other matters, alike or different, which may in any way affect the security of the bonds and the protection of the bondholders.

5. The power to issue bonds includes the power to issue obligations in the form of bond anticipation notes or other forms of short-term indebtedness and to renew these notes by the issuance of new notes. The holders of notes or interest coupons of notes have a right to be paid solely from those revenues credited to the revolving loan fund which were pledged to the payment of the bonds or renewal notes, or both, as the commission provides in the bond proceedings authorizing the notes. The notes may be additionally secured by covenants of the commission to the effect that the commission will do those acts authorized by this division and necessary for the issuance of the bonds or renewal notes in appropriate amount, and either exchange the bonds or renewal notes for the notes, or apply the proceeds of the notes, to the extent necessary to make full payment of the principal of and interest on the notes at the time contemplated, as provided in the bond proceedings. For this purpose, the commission may issue bonds or renewal notes in a principal amount and upon terms as authorized by this division and as necessary to provide funds to pay when required the principal of and interest on the outstanding notes. All provisions for and references to bonds in this division are applicable to notes authorized under this subsection to the extent not inconsistent with this subsection.

6. The commission may authorize and issue bonds for the refunding, including funding and retirement, and advance refunding with or without payment or redemption prior to maturity, of bonds previously issued by the commission. These bonds may be issued in amounts sufficient for payment of the principal amount of the prior bonds, any redemption premiums on the prior bonds, principal maturities of bonds maturing prior to the redemption of the remaining bonds on a parity with them, interest accrued or to accrue to the maturity date or dates of redemption of the bonds, and project costs including expenses incurred or to be incurred in connection with this issuance, refunding, funding, and retirement. Subject to the bond proceedings, the portion of proceeds of the sale of bonds issued under this subsection to be applied to principal of and interest on the prior bonds shall be credited to the appropriate account for the prior bonds. Bonds authorized under this subsection shall be deemed to be issued for those purposes for which the prior bonds were issued and are subject to the provisions of this division pertaining to other bonds. Refunding bonds may be issued without regard to whether or not the bonds to

refunded are payable on the same date or different dates or due serially or otherwise.

Section 8. NEW SECTION. 455B.297 ADDITIONAL POWERS OF COMMISSION.

In connection with the issuance of the bonds or in order to secure the payment of the bonds and interest on the bonds, the commission may by resolution:

1. Provide that the bonds be secured by a first lien on the revenues and receipts received or to be received into the revolving loan fund, from income from moneys received from the sale of bonds, and from any other moneys which are available for the payment of bond service charges.

2. Pledge for the benefit of the bondholders any part of the receipts in the revolving loan fund. The pledge shall be effective without physical delivery or further act and moneys in the fund may be applied for the purposes as pledged without the necessity of an Act of appropriation.

3. Establish, authorize, set aside, regulate, and dispose of reserves and sinking funds.

4. Provide that sufficient amounts of the proceeds of the sale of the bonds may be used to fully or partially fund any and all reserves or sinking funds set out by the bond resolution.

5. Prescribe the procedure, if any, by which the terms of any contract with bondholders may be amended or abrogated, the amount of the bonds whose holders must consent thereto, and the manner in which the consent may be given.

6. Purchase bonds, out of funds available for that purpose, which shall be canceled, at a price not exceeding either of the following:

a. If the bonds are then redeemable, the redemption price then applicable plus accrued interest to the next interest payment date.

b. If the bonds are not then redeemable, the redemption price applicable on the first date after the purchase upon which the bonds become subject to redemption plus accrued interest to that date.

Section 9. NEW SECTION. 455B.298 NONLIABILITY OF THE STATE AND ITS OFFICIALS.

Bonds issued are special limited obligations of the commission and are not a debt or liability of the state or any other political subdivision within the meaning of any constitutional or statutory debt limitation and are not a pledge of the state's credit or taxing power within the meaning of any constitutional or statutory limitation or provision and, except as provided in this division, an appropriation shall not be made, directly or indirectly, by the state or any political subdivision of the state for the

payment of bonds. The bonds are special obligations of the commission payable solely from the revolving loan fund. Funds from the general fund of the state shall not be used to pay interest or principal on the bonds if revenues deposited in the revolving loan fund are insufficient.

The members of the commission or other person executing the bonds is not personally liable for the payment of the bonds. The bonds are valid and binding obligations of the commission notwithstanding the fact that before the delivery of the bonds any of the officers whose signatures appear on the bonds cease to be officers of the state. From and after the sale and delivery of the bonds, they shall be incontestable by the commission.

Section 10. NEW SECTION. 455B.299 BONDS AS LEGAL INVESTMENTS.

Bonds are securities in which all public officers and bodies of the state and all municipalities and political subdivisions of this state, all insurance companies and associations and other persons carrying on an insurance business, all banks, bankers, trust companies, savings banks, and savings associations, including savings and loan associations, building loan associations, investment companies, and other persons carrying on a banking business, all administrators, guardians, executors, trustees, and other fiduciaries and all other persons who are now or may be authorized to invest in bonds or other obligations of this state may properly and legally invest funds including capital in their control or belonging to them. The bonds are also securities which may be deposited with and may be received by all public officers and bodies of the state and all municipalities and legal subdivisions of this state for any purpose for which the deposit of bonds or other obligations of the state is now or may be authorized.

Section 11. NEW SECTION. 455B.300 RIGHTS OF BONDHOLDERS.

The bond proceedings may provide that a holder of bonds or a trustee under the bond proceedings, except to the extent that the holder's rights are restricted by the bond proceedings, may by legal proceedings, protect and enforce any rights under the laws of this state or granted by the bond proceedings. These rights include the right to compel the performance of all duties of the commission required by this division or the bond proceedings; to enjoin unlawful activities; and in the event of default with respect to the payment of any principal of or interest on bonds or in the performance of a covenant or agreement on the part of the commission in bond proceedings, to apply to a court to appoint a receiver to receive and administer the funds which

are pledged to the payment of bonds or which are the subject of the covenant or agreement, with full power to pay and to provide for payment of any principal of or interest on bonds and with powers accorded receivers in general equity cases, excluding power to pledge additional funds or other income or moneys of the commission, the state, or governmental agencies of the state to the payment of the bonds.

EXPLANATION

This bill makes revisions to Chapter 455B to create a new sewage works revolving loan fund.

Section 1 creates a separate, perpetual fund known as the sewage works revolving loan fund and provides for definitions.

Section 2 gives the commission the authority to enter into capitalization grant agreements with the United States Environmental Protection Agency.

Section 3 provides that the commission may loan money in the revolving loan fund to municipalities located within the state for wastewater treatment projects.

Section 4 provides for the terms of loan agreements between municipalities and the state for loans from the revolving loan fund.

Section 5 permits the commission to adopt rules for administering the revolving loan fund.

Section 6 provides for the attorney general's review of loan agreements between the state and municipalities receiving loans from the revolving loan fund.

Section 7 provides for the issuance of bonds by the commission to fund the state match for capitalization grants.

Section 8 provides for additional powers of the commission in connection with the issuance of bonds for the state match.

Section 9 provides for the nonliability of the state and its officials in connection with the issuance of bonds.

Section 10 provides for the bonds being legal investments within the state.

Section 11 provides for the rights of the holders of the bonds.

Sources of Information

If you would like further information or explanation on any of the points mentioned in this booklet, you should contact your state radiation protection office.

If you have difficulty locating this office, you may call your EPA regional office listed below. They will be happy to provide you with the name, address, and telephone number for your appropriate state contact.

State—EPA Region

Alabama—4	Idaho—10	Missouri—7	Pennsylvania—3
Alaska—10	Illinois—5	Montana—8	Rhode Island—1
Arizona—9	Indiana—5	Nebraska—7	South Carolina—4
Arkansas—6	Iowa—7	Nevada—9	South Dakota—8
California—9	Kansas—7	New Hampshire—1	Tennessee—4
Colorado—8	Kentucky—4	New Jersey—2	Texas—6
Connecticut—1	Louisiana—6	New Mexico—6	Utah—8
Delaware—3	Maine—1	New York—2	Vermont—1
District of Columbia—3	Maryland—3	North Carolina—4	Virginia—3
Florida—4	Massachusetts—1	North Dakota—8	Washington—10
Georgia—4	Michigan—5	Ohio—5	West Virginia—3
Hawaii—9	Minnesota—5	Oklahoma—6	Wisconsin—5
	Mississippi—4	Oregon—10	Wyoming—8

EPA Regional Offices

EPA Region 1
Room 2203
JFK Federal Building
Boston, MA 02203
(617) 223-4845

EPA Region 2
26 Federal Plaza
New York, NY 10278
(212) 264-2515

EPA Region 3
841 Chestnut Street
Philadelphia, PA 19107
(215) 597-8320

EPA Region 4
345 Courtland Street, NE.
Atlanta, GA 30365
(404) 881-3776

EPA Region 5
230 South Dearborn Street
Chicago, IL 60604
(312) 353-2205

EPA Region 6
1201 Elm Street
Dallas, TX 75270
(214) 767-2630

EPA Region 7
726 Minnesota Avenue
Kansas City, KS 66101
(913) 236-2803

EPA Region 8
Suite 1300
One Denver Place
999 18th Street
Denver, CO 80202
(303) 293-1710

EPA Region 9
215 Fremont Street
San Francisco, CA 94105
(415) 974-8076

EPA Region 10
1200 Sixth Avenue
Seattle, WA 98101
(206) 442-7660

United States Environmental Protection Agency | Office of Air and Radiation

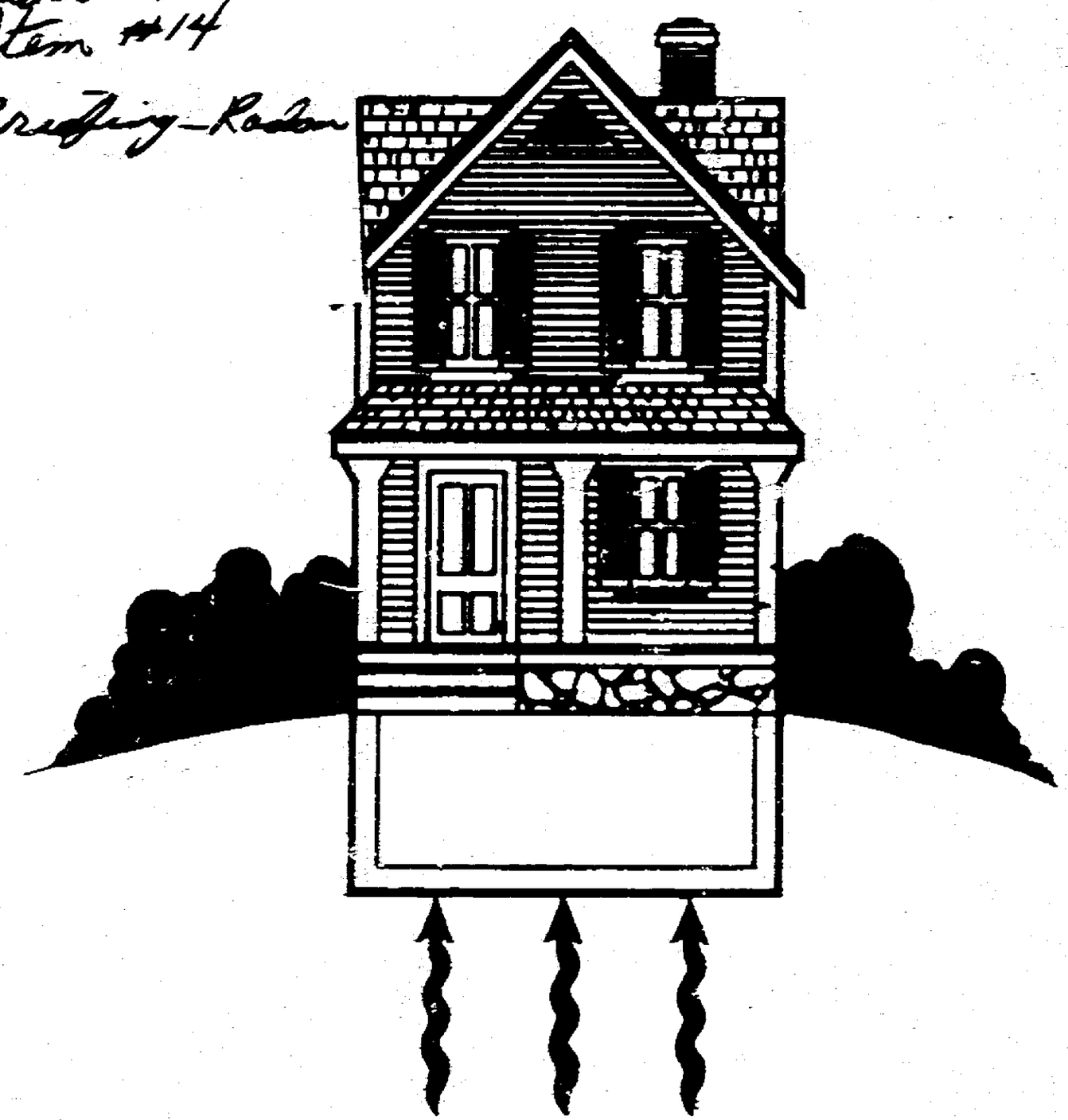
U.S. Department Of Health and Human Services | Centers for Disease Control

August 1986 | OPA-86-004

A Citizen's Guide To Radon

What It Is And What To Do About It

Hand-onto
Item #14
Briefing-Radon



The U.S. Environmental Protection Agency and the U.S. Centers for Disease Control are concerned about the increased risk of developing lung cancer faced by persons exposed to above-average levels of radon in their homes. This pamphlet is a joint effort by EPA and CDC. Its purpose is to help readers to understand the radon problem and decide if they need to take action to reduce radon levels in their homes.

For Sale by the Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

The U.S. Environmental Protection Agency and the U.S. Centers for Disease Control strive to provide accurate, complete, and useful information. However, neither the agencies, nor other persons contributing to or assisting in the preparation of this booklet—nor any person acting on the behalf of any of these parties—makes any warranty, guarantee, or representation (express or implied) with respect to the usefulness or effectiveness of any information, method, or process disclosed in this material or assumes any liability for the use of—or for damages arising from the use of—any information, method, or process disclosed in this material.

What is radon?

Radon is a radioactive gas which occurs in nature. You cannot see it, smell it, or taste it.

Where does radon come from?

Radon comes from the natural breakdown (radioactive decay) of uranium. Radon can be found in high concentrations in soils and rocks containing uranium, granite, shale, phosphate, and pitchblende. Radon may also be found in soils contaminated with certain types of industrial wastes, such as the byproducts from uranium or phosphate mining.

In outdoor air, radon is diluted to such low concentrations that it is usually nothing to worry about. However, once inside an enclosed space (such as a home) radon can accumulate. Indoor levels depend both on a building's construction and the concentration of radon in the underlying soil.

How does radon affect me?

The only known health effect associated with exposure to elevated levels of radon is an increased risk of developing lung cancer. Not everyone exposed to elevated levels of radon will develop lung cancer, and the time between exposure and the onset of the disease may be many years.

Scientists estimate that from about 5,000 to about 20,000 lung cancer deaths a year in the United States may be attributed to radon. (The American Cancer Society expects that about 130,000 people will die of lung cancer in 1986. The Surgeon General attributes around 85 percent of all lung cancer deaths to smoking.)

Your risk of developing lung cancer from exposure to radon depends upon the concentration of radon and the length of time you are exposed. Exposure to a slightly elevated radon level for a long time may present a greater risk of developing lung cancer than exposure to a significantly elevated level for a short time. In general, your risk increases as the level of radon and the length of exposure increase.

How certain are scientists of the risks?

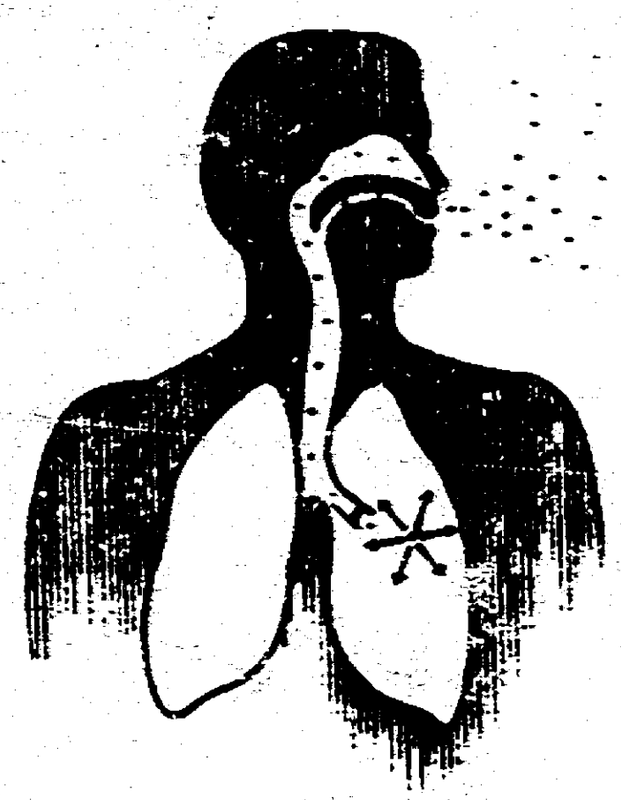
With exposure to radon, as with other pollutants, there is some uncertainty about the amount of health risk. Radon risk estimates are based on scientific studies of miners exposed to varying levels of radon in their work underground. Consequently, scientists are considerably more certain of the risk estimates for radon than they are of those risk estimates which rely solely on studies of animals.

To account for the uncertainty in the risk estimates for radon, scientists generally express the risks associated with exposure to a particular level as a range of numbers. (The risk estimates given in this booklet are based on the advice of EPA's Science Advisory Board, an independent group of scientists established to advise EPA on various scientific matters.)

Despite some uncertainty in the risk estimates for radon, it is widely believed that the greater your exposure to radon, the greater your risk of developing lung cancer.

How does radon cause lung cancer?

Radon, itself, naturally breaks down and forms radioactive decay products. As you breathe, the radon decay products can become trapped in your lungs. As these decay products break down further, they release small bursts of energy which can damage lung tissue and lead to lung cancer.



When did radon become a problem?

Radon has always been present in the air. Concern about elevated indoor concentrations first arose in the late 1980's when homes were found in the West that had been built with materials contaminated by waste from uranium mines. Since then, cases of high indoor radon levels resulting from industrial activities have been found in many parts of the country. We have only recently become aware, however, that houses in various parts of the U.S. may have high indoor radon levels caused by natural deposits of uranium in the soil on which they are built.

Does every home have a problem?

No, most houses in this country are not likely to have a radon problem; but relatively few houses do have highly elevated levels. The dilemma is that, right now, no one knows which houses have a problem and which do not. You may wish to call your state radiation protection office to find out if any high levels have been discovered in your area.

Many states, as well as the federal government, are sponsoring work to identify areas of the country which are likely to have indoor radon problems. However, early results from this work are inconclusive. If you are concerned that you may have an indoor radon problem, you should consider having your home tested.

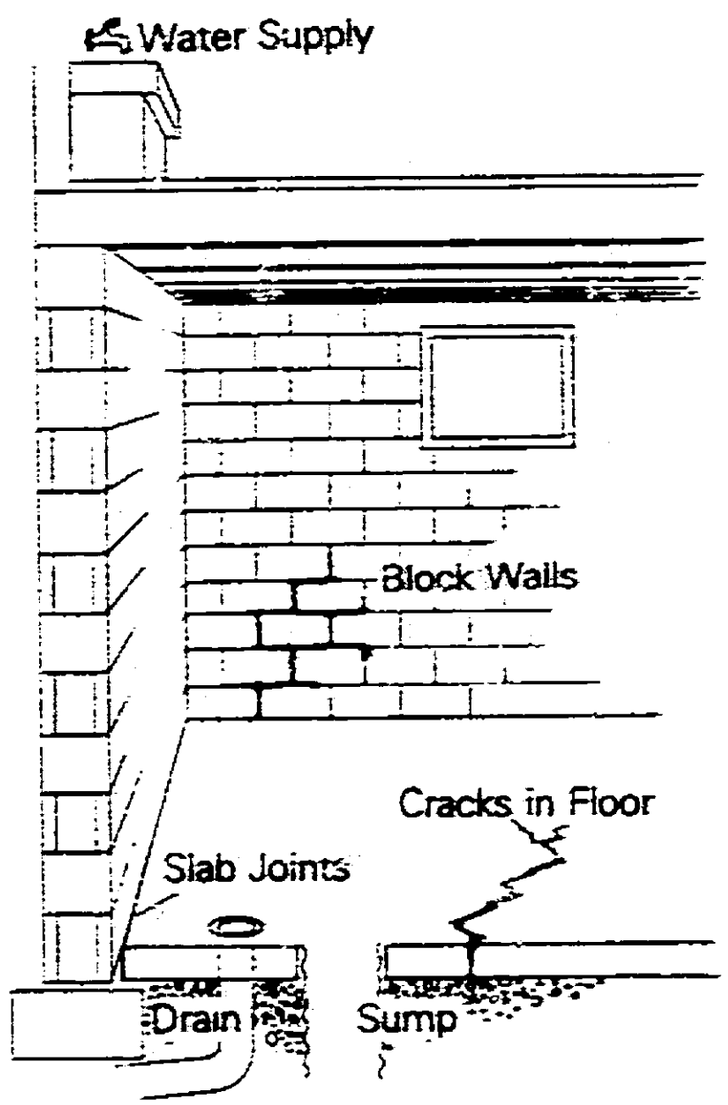
How does radon get into a home?

Radon is a gas which can move through small spaces in the soil and rock on which a house is built. Radon can seep into a home through dirt floors, cracks in concrete floors and walls, floor drains, sumps, joints, and tiny cracks or pores in hollow-block walls.

Radon also can enter water within private wells and be released into a home when the water is used. Usually, radon is not a problem with large community water supplies, where it would likely be released into the outside air before the water reaches a home. (For more information concerning radon in water, contact your state's radiation protection office.)

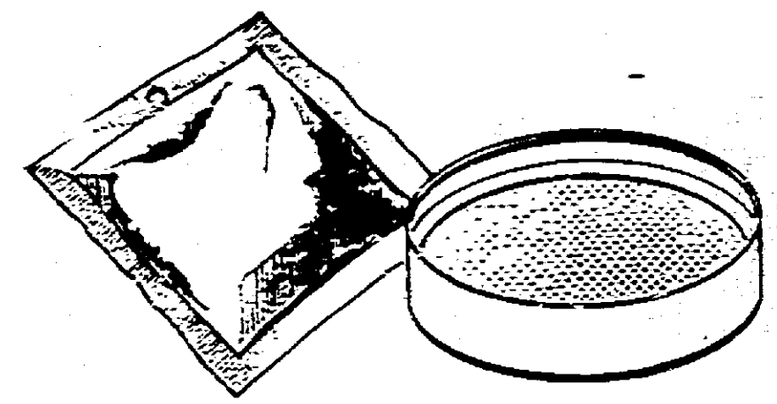
In some unusual situations, radon may be released from the materials used in the construction of a home. For example, this may be a problem if a house has a large stone fireplace or has a solar heating system in which heat is stored in large beds of stone. In general, however, building materials are not a major source of indoor radon.

Common Radon Entry Points

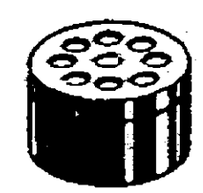


How is radon detected?

Since you cannot see or smell radon, special equipment is needed to detect it. The two most popular, commercially-available radon detectors are the charcoal canister and the alpha track detector. Both of these devices are exposed to the air in your home for a specified period of time and sent to a laboratory for analysis.



Charcoal Canisters
Test Period: 3 to 7 days
Approximate Cost: $10 to $25 for one canister



Alpha Track Detectors
Minimum Test Period: 2 to 4 weeks
Approximate Cost: $20 to $50 for one detector; discounts for multiple detectors

There are other techniques—requiring operation by trained personnel—which can be used to measure radon levels, but such techniques may be more expensive than the devices shown above.

Your measurement result will be reported to you in one of two ways. Results from devices which measure radon decay products are reported as "Working Levels" (WL). Results from devices which measure concentrations of radon gas are reported as "picocuries per liter" (pCi/l).

How can I get a radon detector?

Homeowners in some areas are being provided with detectors by their state or local government. In many areas, private firms offer radon testing. Your state radiation protection office may be able to provide you with information on the availability of detection devices or services.

The U.S. Environmental Protection Agency conducts a Radon Measurement Proficiency Program. This voluntary program allows laboratories and businesses to demonstrate their capabilities in measuring indoor radon. The names of firms participating in this program can be obtained from your state radiation protection office or from your EPA regional office.

How should radon detectors be used?

Obtaining a useful estimate of the radon level in your home may require that several detectors be used to make measurements in different areas. Following the steps below should provide the information needed as you decide whether or not further action is advisable. (In making radon measurements, you should be sure to follow the instructions of the manufacturer as to the proper exposure period for the particular device you are using.)

Step One: The screening measurement

The first step you should take is to have a short-term "screening" measurement made to give you an idea of the highest radon level in your home. Thus, you can find out quickly and inexpensively whether or not you have a potential radon problem.

The screening measurement should be made in the lowest livable area of your home (the basement, if you have one). All windows and doors should be closed for at least 12 hours prior to the start of the test, and kept closed as much as possible throughout the testing period. This is necessary to keep the radon level relatively constant throughout the testing period. Because of the need to keep the windows closed as much as possible, we recommend that you make short-term radon measurements during the cool months of the year.

Step Two: Determining the need for further measurements

In most cases, the screening measurement is not a reliable measure of the average radon level to which you and your family are exposed. Since radon levels can vary greatly from season to season as well as from room to room, the screening measurement only serves to indicate the *potential* for a radon problem. Depending upon the result of your screening measurement, you may need to have follow-up measurements made to give you a better idea of the average radon level in your home.

The following guidance may be useful to you in determining the urgency of your need for follow-up measurements.

If your screening measurement result is **greater than about 1.0 WL** or **greater than about 200 pCi/l**, you should perform follow-up measurements as soon as possible. Expose the detectors for no more than one week. Doors and windows should be closed as much as possible during testing. You should also consider taking actions (see page 13) to immediately reduce the radon levels in your home.

If your screening measurement result is **about 0.1 WL to about 1.0 WL** or **about 20 pCi/l to about 200 pCi/l**, perform follow-up measurements. Expose detectors for no more than three months. Doors and windows should be closed as much as possible during testing.

If your screening measurement result is **about 0.02 WL to about 0.1 WL** or **about 4 pCi/l to about 20 pCi/l**, perform follow-up measurements. Expose detectors for one year, or make measurements of no more than one week duration during each of the four seasons.

If your screening measurement result is **less than about 0.02 WL** or **less than about 4 pCi/l**, follow-up measurements are probably not required. If the screening measurement was made with the house closed up prior to and during the testing period, there is relatively little chance that the radon concentration in your home will be greater than 0.02 WL or 4 pCi/l as an annual average.

Step Three: The follow-up measurement

Follow-up measurements will provide you with a relatively good estimate of the average radon concentration to which you and your family are exposed. **We strongly recommend that you make follow-up measurements before you make any final decisions about whether to undertake major efforts to permanently correct the problem.**

Follow-up measurements should be made in at least two lived-in areas of your home. If your home has lived-in areas on more than one floor, you should make measurements in a room on each of the floors. An example is to take a measurement in the living room on the first floor and another in a second-floor bedroom. The results of the follow-up measurements should be averaged together.

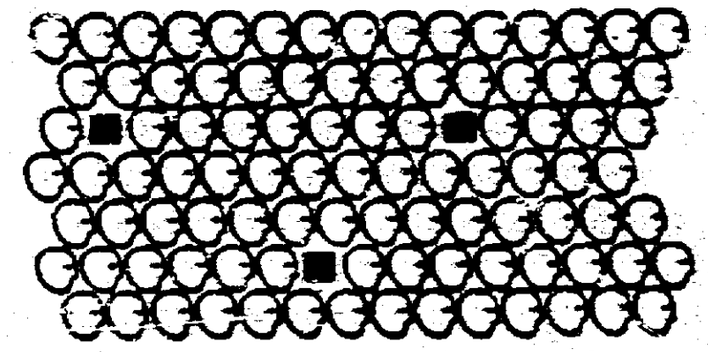
What do my test results mean?

The results of your follow-up measurements provide you with an idea of the average concentration throughout your home. The actual risk you face depends upon the amount of time you are exposed to this concentration.

The figures on the facing page illustrate the number of lung cancer deaths, out of a group of 100 people, that scientists would attribute to exposure to specific levels of indoor radon. The first three figures assume that these 100 individuals spent 75 percent of their time in the dwelling for 70 years. The numbers below each picture indicate what scientists consider to be a reasonable range of estimates of lung cancer deaths that could be attributed to the radon exposure. This is **in addition to** the number of lung cancer deaths attributed to other causes. (On average, about four people out of a hundred die of lung cancer from all causes combined.) The pictures represent the midpoint of the ranges.

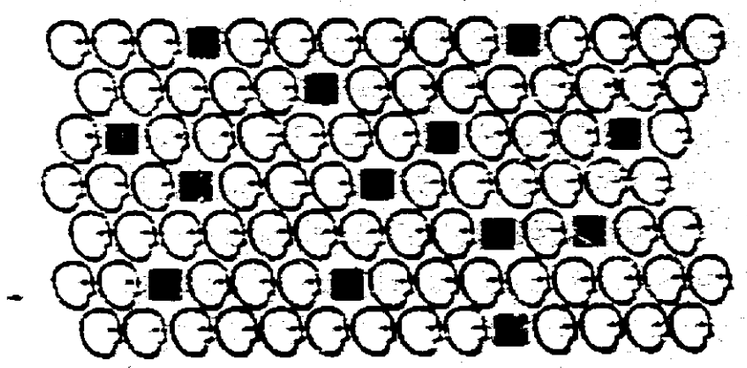
Lung Cancer Deaths Associated With Exposure To Various Radon Levels Over 70 Years

WL = 0.02
pCi/l = 4



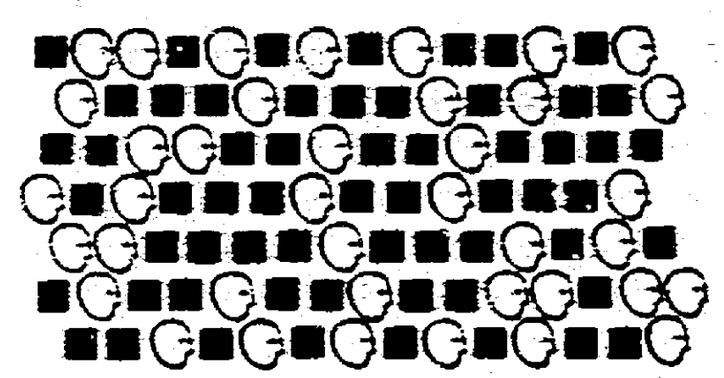
Between 1 and 5 out of 100

WL = 0.1
pCi/l = 20



Between 6 and 21 out of 100

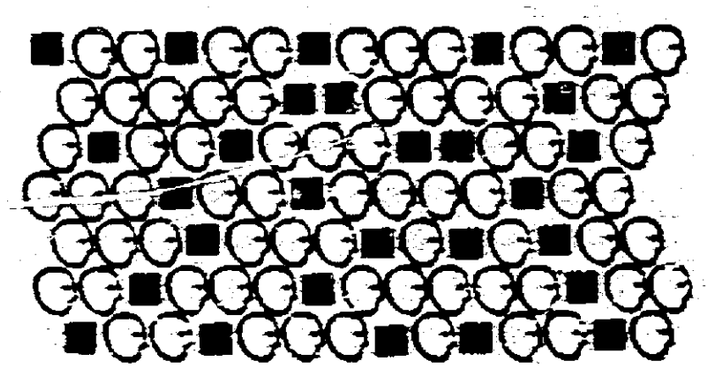
WL = 1.0
pCi/l = 200



Between 44 and 77 out of 100

If these same 100 individuals had lived only 10 years (instead of 70) in houses with radon levels of about 1.0 WL, the number of lung cancer deaths expected would be:

WL = 1.0
pCi/l = 200



Between 14 and 42 out of 100

Another way to think about the risk associated with radon exposure is to compare it with the risk from other activities. The chart below gives an idea of how exposure to various radon levels over a lifetime compares to the risk of developing lung cancer from smoking and from chest x-rays. The chart also compares these levels to the average indoor and outdoor radon concentrations.

As you look at the chart, be sure to use the proper radon-level column for your results (either WL or pCi/l).

Radon Risk Evaluation Chart

pCi/l	WL	Estimated number of lung cancer deaths due to radon exposure (out of 1000)	Comparable exposure levels	Comparable risk
200	1	440—770	1000 times average outdoor level	More than 60 times non-smoker risk
				4 pack-a-day smoker
100	0.5	270—630	100 times average indoor level	
				20,000 chest x-rays per year
40	0.2	120—380		
				2 pack-a-day smoker
20	0.1	60—210	100 times average outdoor level	
				1 pack-a-day smoker
10	0.05	30—120	10 times average indoor level	
				5 times non-smoker risk
4	0.02	13—50		
				200 chest x-rays per year
2	0.01	7—30	10 times average outdoor level	
				Non-smoker risk of dying from lung cancer
1	0.005	3—13	Average indoor level	
				20 chest x-rays per year
0.2	0.001	1—3	Average outdoor level	

How quickly should I take action?

In considering whether and how quickly to take action based on your test results, you may find the following guidelines useful. EPA believes that you should try to permanently reduce your radon levels as much as possible. Based on currently available information, EPA believes that levels in most homes can be reduced to about 0.02 WL (4 pCi/l).

If your results are about 1.0 WL or higher, or about 200 pCi/l or higher:
Exposures in this range are among the highest observed in homes. Residents should undertake action to reduce levels as far below 1.0 WL (200 pCi/l) as possible. We recommend that you take action within several weeks. If this is not possible, you should determine, in consultation with appropriate state or local health or radiation protection officials, if temporary relocation is appropriate until the levels can be reduced.

If your results are about 0.1 to about 1.0 WL, or about 20 to about 200 pCi/l:
Exposures in this range are considered greatly above average for residential structures. You should undertake action to reduce levels as far below 0.1 WL (20 pCi/l) as possible. We recommend that you take action within several months.

If your results are about 0.02 to about 0.1 WL, or about 4 pCi/l to about 20 pCi/l:
Exposures in this range are considered above average for residential structures. You should undertake action to lower levels to about 0.02 WL (4 pCi/l) or below. We recommend that you take action within a few years, sooner if levels are at the upper end of this range.

If your results are about 0.02 WL or lower, or about 4 pCi/l or lower:
Exposures in this range are considered average or slightly above average for residential structures. Although exposures in this range do present some risk of lung cancer, reductions of levels this low may be difficult, and sometimes impossible, to achieve.

Remember: There is increasing urgency for action at higher concentrations of radon. The higher the radon level in your home, the faster you should take action to reduce your exposure. If you find elevated radon concentrations in your home, you should take the relatively easy, short-term actions described on page 13.

Are there other factors I should consider?

Most of the risk information given in this pamphlet, as well as the recommendations for taking corrective action, are based on the general case. Your individual living patterns could influence your assessment of your risk and your decisions about the need for further action. Your answers to the following questions may help you evaluate your personal risk.

- Does anyone smoke in your home? Scientific evidence indicates that smoking may increase the risk of exposure to radon. In addition, smoking significantly increases your overall risk of lung cancer.

- Do you have children living at home? Although there are no studies of children exposed to radon to determine whether they are more sensitive than adults, some scientific studies of other types of radiation exposure indicate that children may be more sensitive. Consequently, children could be more at risk than adults from exposure to radon.

- How much time does any family member spend at home? The risk estimates given in this pamphlet assume that 75 percent of a person's time is spent at home. If you or your family spend more or less time at home, you should take this into consideration.

- Does anyone sleep in your basement? Since radon concentrations tend to be greater on the lower levels of a home, a person who sleeps in the basement is likely to face a greater risk than a person who sleeps in a second-floor bedroom.

- How long will you live in your home? The risk estimates in this booklet are based on the assumption that you will be exposed to the radon level found in your home for roughly 70 years. As you evaluate your potential risk, therefore, you might consider the total amount of time you expect to live in your home. But remember: other houses you have lived in—or will live in—may have the same or higher radon levels.

How can I reduce my risk from radon?

Your risk of lung cancer from exposure to radon depends upon the amount of radon entering your home and the length of time it remains in your living areas. Listed below are some actions you might take to immediately reduce your risk from radon. These actions can be done quickly and with minimum expense in most cases.

- Stop smoking and discourage smoking in your home. By doing so, you should reduce your family's overall chance of developing lung cancer, as well as reducing your family's risk from radon exposure.

- Spend less time in areas with higher concentrations of radon, such as the basement.

- Whenever practical, open all windows and turn on fans to increase the air flow into and through the house. This is especially important in the basement.

- If your home has a crawl space beneath, keep the crawl-space vents on all sides of the house fully open all year.

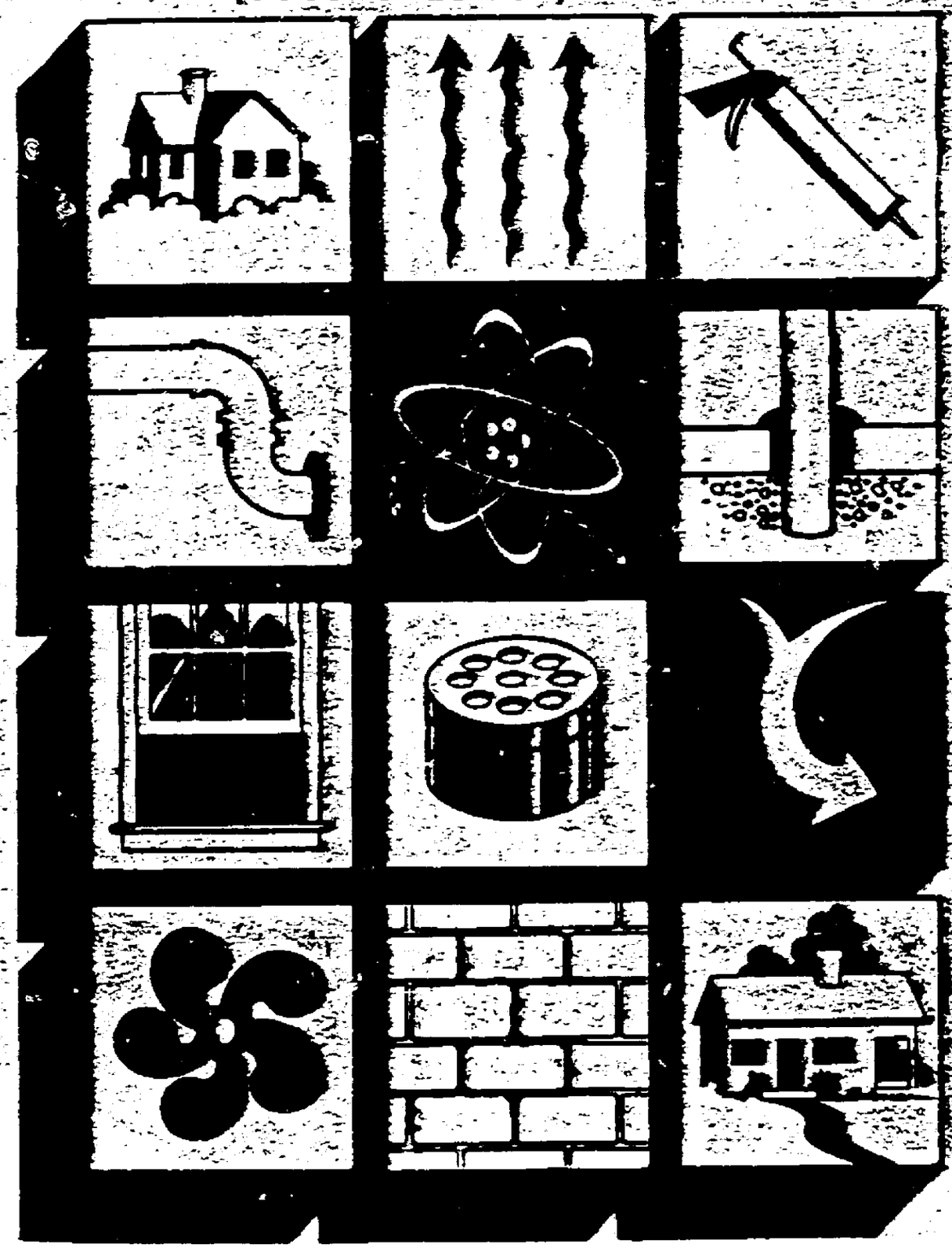
While the above actions will help reduce your risk from radon, they generally do not offer a long-term solution. You can find more information about permanent, cost-effective solutions to a radon problem in the EPA publication, *Radon Reduction Methods: A Homeowner's Guide*. A copy of this booklet may be obtained from your state radiation protection office or from your EPA regional office.

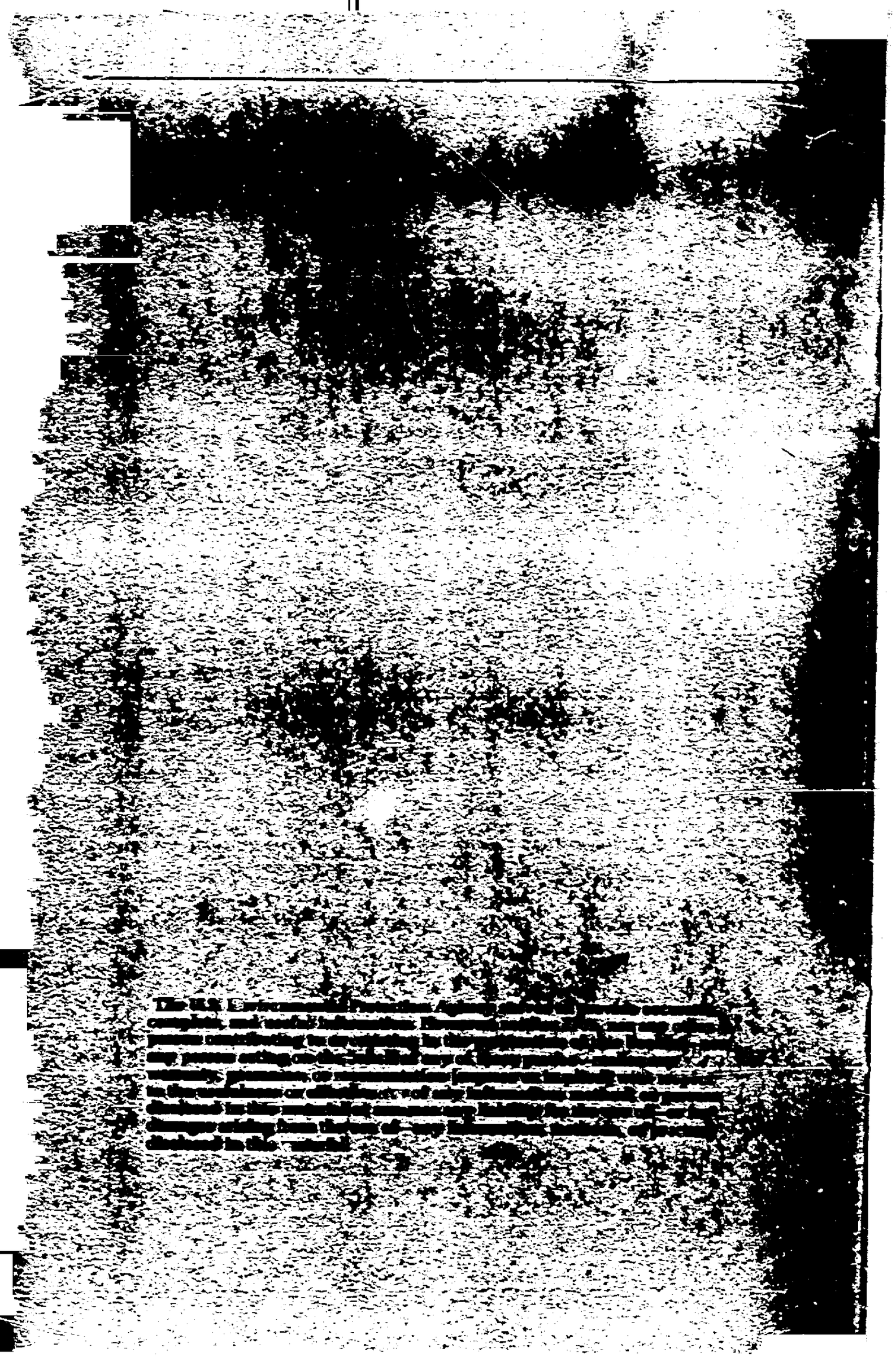
Before undertaking major modifications to your home, we recommend that you consult with your state radiation protection office to obtain whatever specific advice or assistance they may be able to provide for your particular situation.

September 1987
OPA-87-110

A Homeowner's Guide

(Second Edition)





EPA Study

The U.S. Environmental Protection Agency (EPA) is studying the effectiveness of various ways to reduce high concentrations of radon in houses. While our work is far from complete, we have gained some information which may be of immediate use to homeowners. We are publishing this booklet to share what we have learned with those whose radon problems demand prompt action.

The booklet describes methods that have been tested successfully—by EPA and/or other research groups—on houses with high indoor radon levels. The information presented here is concerned primarily with radon which enters a house from the underlying soil. Additional information will be published as it becomes available.

Unique Problems

The first lesson to learn about radon reduction is this: No two houses are alike. Even houses that look the same have small differences in existing conditions that can affect radon entry and the design and effectiveness of reduction techniques. Underlying soils also vary greatly, even among houses which sit close together. These differences will affect the results obtainable from using the radon reduction methods described here.

General Information

This booklet is intended primarily for homeowners who already have had their homes tested for radon and have decided that they need to take some action to reduce radon levels. If you are uncertain of the meaning of such test results, or if you need general information about radon in houses, read the EPA booklet, *A Citizen's Guide to Radon: What It Is And What To Do About It* (OPA-86-004). To get a copy, contact your state radon program office (see list at the end of this booklet).

Performing screening and follow-up measurements prior to a decision to mitigate (that is, to reduce radon levels), is strongly encouraged. The results of follow-up measurements will enable the homeowner to make a well-informed decision about health risks and the need for remedial action. As mitigation often entails spending a significant amount of money, follow-up measurements should be reliable estimators of the actual maximum potential exposures of the occupants.

Using Contractors

Many radon remedies require the skilled services of a professional contractor who is experienced in radon reduction procedures. (EPA and the states are currently working to increase the number of experienced contractors.) Due to the skills required, do-it-yourself efforts are recommended only for homeowners with these special skills.

This booklet does not attempt to give the homeowner detailed instructions for corrective action. But, the information here should help you make informed decisions on what type of remedy is needed, and may assist you in evaluating proposals from contractors.

We cannot overemphasize the importance of carefully selecting a contractor and reviewing any proposal for radon reduction work at your house. Asking for business references and checking with your local Better Business Bureau or Chamber of Commerce will help you ensure that a contractor is reputable. Many states will provide lists of contractors doing radon mitigation work, and some states have certification programs for radon measurement and mitigation.

Getting a second opinion from another contractor or from one of your state's radiological health officials can help you decide if a proposal is reasonable. You should be certain to get a written estimate of costs which stipulates the work to be done. Because radon reduction work is so new, most contractors will not guarantee a reduction in radon levels.

A few contractors may be willing to guarantee a radon concentration of less than 4 pCi/L (picocuries per liter);

however, for a contractor to make this promise he should first thoroughly evaluate the potential for radon reduction methods to work in your home.

Technical Information

Those homeowners who are confident they have the tools, equipment, and skills to do the job themselves may want to read EPA's more detailed manual, *Radon Reduction Techniques for Detached Houses: Technical Guidance* [EPA/625/5-86/019]. Single copies can be obtained by writing:

U.S. EPA
Center for Environmental Research Information
26 West St. Clair Street
Cincinnati, Ohio 45268

Methods

This booklet describes various methods which may reduce the level of radon in your house—either by preventing its entry or by replacing contaminated indoor air. Some of the methods are simple, some are complex, and some are much more expensive than others.

The effectiveness of any one method will depend upon the unique characteristics of each house, the level of radon, the routes of radon entry, and how thoroughly a job is done. No one can guarantee that these methods will work as they did in the test houses.

Sometimes a single method may be sufficient, but often—especially where levels are high—several methods will need to be combined to achieve acceptable results.

Mitigation Follow-up

Once an action (or combination of actions) has been performed, it is important that you have further testing done to determine the level to which radon has been reduced. Some states provide this service. If the radon levels have not been satisfactorily lowered, additional mitigation steps may be taken, and the testing process repeated. All tests should be performed in exactly the same manner as the test which confirmed the high radon levels in your house.

Due to the many factors affecting the performance of any reduction technique, a trial-and-error approach often will be necessary to achieve lasting radon reductions. If short-term testing indicates that radon has been reduced to an acceptable level, you may wish to test on a long-term basis.

Before Choosing a Radon Reduction Method

The selection of appropriate and cost-effective radon reduction techniques for a specific house depends on how well the source of the indoor radon problem is understood, how house characteristics affect radon entry rates, and how candidate radon reduction systems influence the radon entry process. Definition of these factors is possible through a series of diagnostic observations and measurements made before, during, and after radon reduction systems are installed.

Diagnostics begin with a house survey. This involves visual inspection to identify possible radon entry routes and any construction features which could influence the design of later radon reduction techniques. Diagnostics should also include an evaluation of the ease of soil gas movement underneath the concrete slab if sub-slab soil ventilation is a potential control option. If ventilation techniques are to be considered, the natural air infiltration rate also should be measured. The measurement of radon levels in well water is a good way to learn whether water is an important contributor to the airborne radon level. Similarly, measuring gamma levels inside and outside the house can help identify the possibility of building materials as a radon source.

As with radon reduction techniques, the skills needed to perform radon diagnostics are beyond the capabilities of most homeowners. Diagnostic methods are mentioned here only as supplemental information to assist homeowners when working with radon diagnosticians and mitigators.

New Construction

If you are planning to build a new home and are concerned about the potential for elevated indoor radon levels, you should consider measures to prevent radon entry into the house. It is typically less expensive to build a home that resists radon entry than to reduce a radon problem after construction.

A recent EPA document, *Radon Reduction in New Construction: An Interim Guide* (OPA-87-009), is available to assist home builders and others interested in potential radon prevention alternatives in new construction. The suggestions contained in this guide represent current knowledge and experience gained primarily from radon reduction tests and demonstrations on existing houses.

Until some of these techniques have actually been applied during the construction of new homes, the applicability, cost-effectiveness, radon-prevention effectiveness, and durability of the techniques cannot be fairly assessed. Ongoing EPA-sponsored field testing of radon prevention techniques in new construction should provide a better evaluation of radon prevention alternatives. The results of these studies will be published in future technical guidance documents.

Radon in Water

The potential concern with radon in water is the airborne radon released when water is used. The amount of radon that is given off from water depends on the amount in the water initially. The amount given off will increase as the temperature of the water increases and as the surface area exposed to air increases.

In the home, activities and appliances that spray or agitate heated water (showers, dishwashers, and clothes washers) create the largest release of waterborne radon. However, the level of radon in household water must be very high to significantly influence the overall level in the air within a house. As a rule of thumb, 10,000 pCi/L of radon in the incoming household water is equivalent to 1 pCi/L of radon in the indoor air.

In some areas, especially in the northeast and west, water from private wells or small community water systems can contain sufficient radon to contribute significantly to elevated levels within a house. Water from large community water supplies releases most of its radon before it reaches individual houses.

Two techniques can be considered to remove radon from water. The first requires either spraying water into a contained air space, introducing air bubbles into the water, or storing water in a tank until the radon has decayed. The second uses granular activated carbon (GAC) to remove radon from the water. The GAC method has been more widely tested and is more commonly used in individual homes. Radiation buildup in the unit itself may cause exposure and disposal problems.

For more detailed information on radon in water see the recent EPA booklet, *Removal of Radon From Household Water* (OPA-87-011).

Air Cleaners

The radon reduction methods discussed in this booklet concentrate on methods of removing radon gas or preventing radon gas from even entering the house. Since the radon health hazard is associated with the products of radon decay (which are chemically active), and not the radon itself (which is an inert gas), it is appropriate to ask whether it is feasible to remove the radon decay products without removing the radon gas itself.

Air cleaners are devices which either filter or electrostatically remove particles—such as dust or radon decay products—from the air. Air cleaners are commonly used to condition indoor air for a variety of health and comfort reasons, and there have been attempts to market air cleaners to reduce radon decay products. At this time, EPA does not endorse the use of air cleaners as a method of reducing radon decay products in indoor air because this technology has not been demonstrated to be effective in reducing the health risks associated with radon.

Although air cleaners will remove some of the radon decay products, many questions remain concerning the relative health effects of the decay products that are not removed and the potential impacts of the undiminished source of radon decay products. Until more is known, EPA believes that the available data do not warrant discontinuing the use of air cleaners already installed, nor can we suggest installing air cleaners to reduce your risk of exposure to radon and its decay products.

Some people also ask whether the radon gas itself can be removed from the indoor air. While some limited research has been done on using charcoal to filter the air, it appears that extremely large quantities of charcoal would be required. This is not yet a demonstrated or even clearly feasible approach.

Method

Natural Ventilation

How It Works

Replaces radon-laden indoor air with outdoor air and neutralizes pressure. This is most often achieved by opening windows.

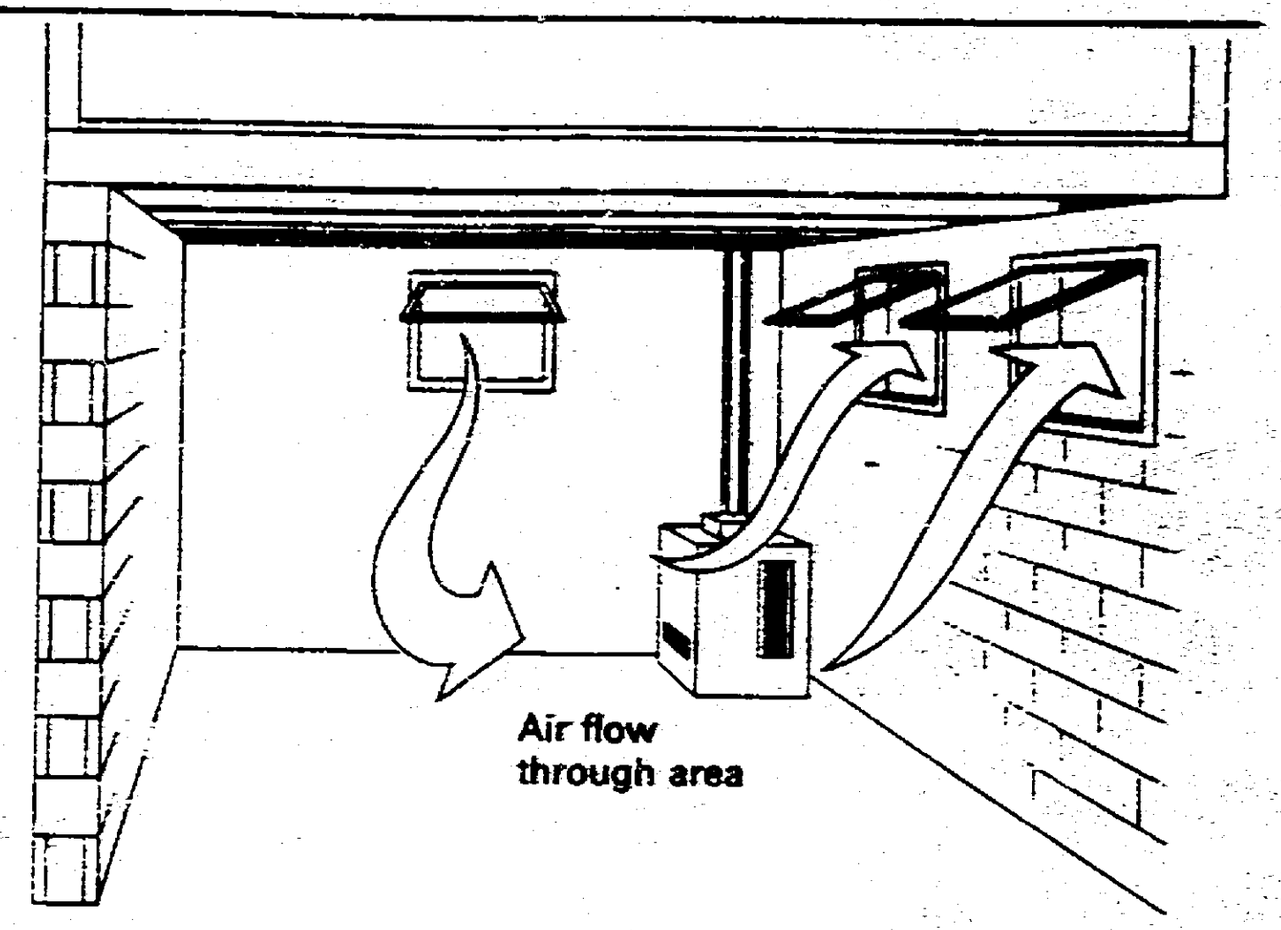
Some natural ventilation occurs in every house as air is drawn through tiny cracks and openings by temperature and pressure differences between indoor and outdoor air. In the average American house, outside air equal in volume to the inside air infiltrates about once every hour. In technical terms, this is called 1.0 ach (air changes per hour). Newer houses, which are generally "tighter," may have air exchange rates as low as 0.1 ach (one-tenth that of the average house). The rate in older houses, on the other hand, may be more than twice the average (2.0 ach).

Cost

There are no installation costs unless devices must be purchased to hold windows or vents in an open position, or to detect or prevent unauthorized entry through these openings.

Use of natural ventilation in cold weather will increase your heating costs substantially. For example, if you were to increase the air exchange rate to eight times its normal level in your basement and still maintain comfortable temperatures there, your annual house heating bill could be as much as three times greater than normal.

If you normally run an air conditioner in hot weather, your cooling costs will be similarly greater.



Reductions

The opening of windows, doors, and vents is a very effective, universally applicable radon reduction technique that can be readily implemented by the homeowner. If done properly, natural ventilation is consistently capable of high reductions, probably above 90 percent if a sufficient number of windows and vents is opened. High reductions result because natural ventilation both reduces the flow of soil gas into the house, by neutralizing the pressure difference between indoors and out, and dilutes any radon in the indoor air with outdoor air.

Limitations

The primary shortcoming of natural ventilation is that extreme weather makes this technique impractical year-round in most parts of the country, due to discomfort and/or increased heating and cooling costs. Open windows can also compromise the security of the house.

Procedure

You should ventilate the lowest level of your house, where it is in direct contact with the primary source of radon: the soil. If you have a basement or crawl space, that is the area to ventilate. (If you ventilate your basement, you may find it more economical or comfortable to close it off and limit its use.) If your house sits on a concrete slab, then your only choice is to ventilate the living area. Opening windows around all levels of your house (including the main living area) is recommended whenever outdoor conditions permit.

As noted earlier, radon is drawn into your house when the air pressure in the basement or lowest level is less than the air pressure in the surrounding soil. Therefore, it is imperative that any ventilation system does not further reduce the air pressure within your house and increase this "pull." To guard against this, be certain to open vents or windows equally on all sides of the house. Also, avoid the use of exhaust fans.

When ventilating unheated areas, be sure to take precautions to prevent pipes from freezing.

Forced Ventilation

How It Works

Replaces radon-laden indoor air with outdoor air and neutralizes pressure if the fan is big enough. Uses fans to maintain a desired air exchange rate independent of weather conditions. (Much of the information in the preceding section on "Natural Ventilation" is applicable to "Forced Ventilation" as well.)

Rather than relying on natural air movement, forced air fans can be used to provide a controlled amount of forced ventilation. For example, a fan could be installed to continuously blow fresh air into the house through the existing central forced-air heating, ducting, and supply registers with windows and doors remaining closed. Alternatively, fans could blow air into the house through protected intakes through the sides of the house, or could be mounted in windows. A fan could also be installed to blow outdoor air into a crawl space.

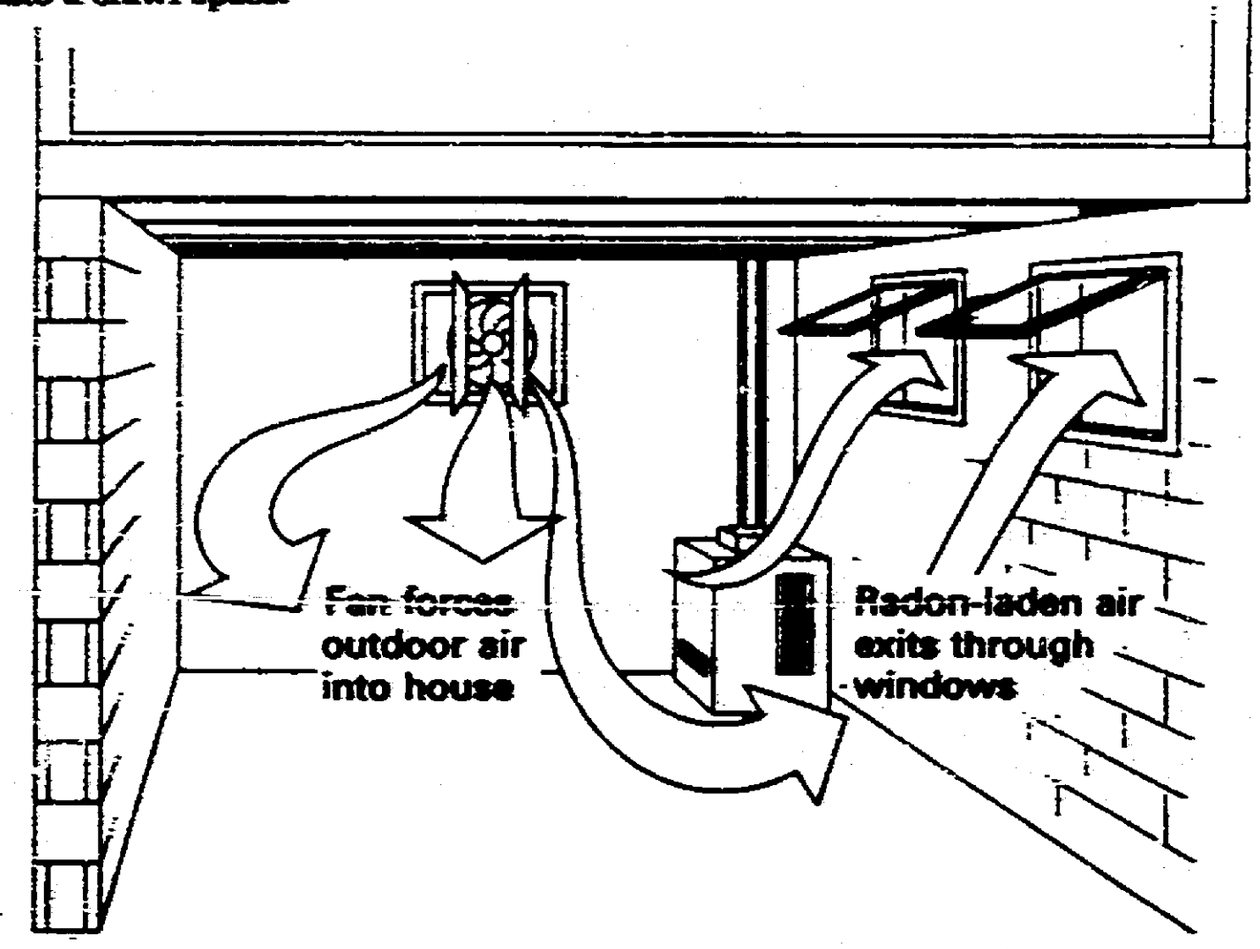
Cost

The installation costs for forced-air systems ranging from simple window fans to elaborate heating, ventilation, and air conditioning (HVAC) systems will range from $25 to as much as $1,000.

The additional cost of electricity for forced-air systems will vary depending upon the size of the fans, the number of fans used, and the amount of use. A single window fan can have electricity costs as low as $20 per year, while a central furnace fan may cost $275 a year to operate.

Use of forced ventilation throughout cold weather will substantially increase your heating costs. As with natural ventilation, if you were to increase the air exchange rate to eight times its normal level in your basement while maintaining comfortable temperatures there, your annual house heating bill could be as much as three times greater than normal.

If you normally have an air conditioner running in hot weather, your cooling costs will be similarly greater.



Reductions

As pointed out in the preceding section, "tight" houses with low air exchange rates are likely to benefit more from ventilation increases than are houses with high exchange rates. In a typical house, to achieve a 90-percent reduction of radon you will probably need a 500 to 1,000 cfm (cubic feet per minute) fan.

Limitations

Forced ventilation, like natural ventilation, can be employed in most houses, but, in many cases, the trade-off in decreased comfort and/or excessive heating or cooling costs may prove unacceptable. This approach may be useful as an interim measure with very high radon levels.

Procedure

You should ventilate the lowest level of your house. (Closing off and not using a basement may also be advisable.) Ventilating all levels is recommended whenever outdoor conditions permit. Air should be blown into the house and allowed to exit through windows or vents on adjacent or opposite sides. In many homes, blowing air in through an existing central furnace is quite practical. The use of an exhaust fan to pull air out of the house may decrease the interior air pressure and draw more radon inside. The use of whole-house fans is not recommended because they typically operate in the exhaust mode.

Air distribution and ventilation rates can be controlled by the sizing and location of fans and the use of louvered air deflectors. EPA's experience suggests that you should install two or three fans rated at twice the air moving capacity calculated to be needed for the desired increased ventilation.

When ventilating unheated areas, be sure to take precautions to prevent pipes from freezing.

Heat Recovery Ventilation (HRV)

How it works

Replaces radon-laden indoor air with outdoor air.

A device called a "heat recovery ventilator" (sometimes referred to as an "air-to-air heat exchanger") uses the heat in the air being exhausted to warm the incoming air. In an air-conditioned house in warm weather, the process is reversed: The air being exhausted is used to cool the incoming air. This saves between 50 and 80 percent of the warmth (or coolness) that would be lost in an equivalent ventilation system without the device.

Installation

Ducted units are designed, installed, and balanced by experienced heating/ventilation/air conditioning contractors. Wall-mounted units are generally less complex, and can sometimes be installed directly by the homeowner.

Cost

Installation costs (materials and labor) will range from $800 to $2,500 for ducted units and are roughly $400 for wall-mounted units.

The cost for electricity to operate one of the larger units with two 200-cfm fans is about $30 per year.

Using a heat recovery ventilator could save you 50 to 80 percent of the increase in heating and cooling costs that would result from achieving a comparable amount of ventilation without heat recovery.

Reductions

A radon reduction of 50 to 75 percent can be achieved in houses of typical size and infiltration rate, assuming between 200 and 400 cfm of HRV capacity. Reductions can be greater in tight houses. Reductions will vary throughout the house, depending on ducting configurations.

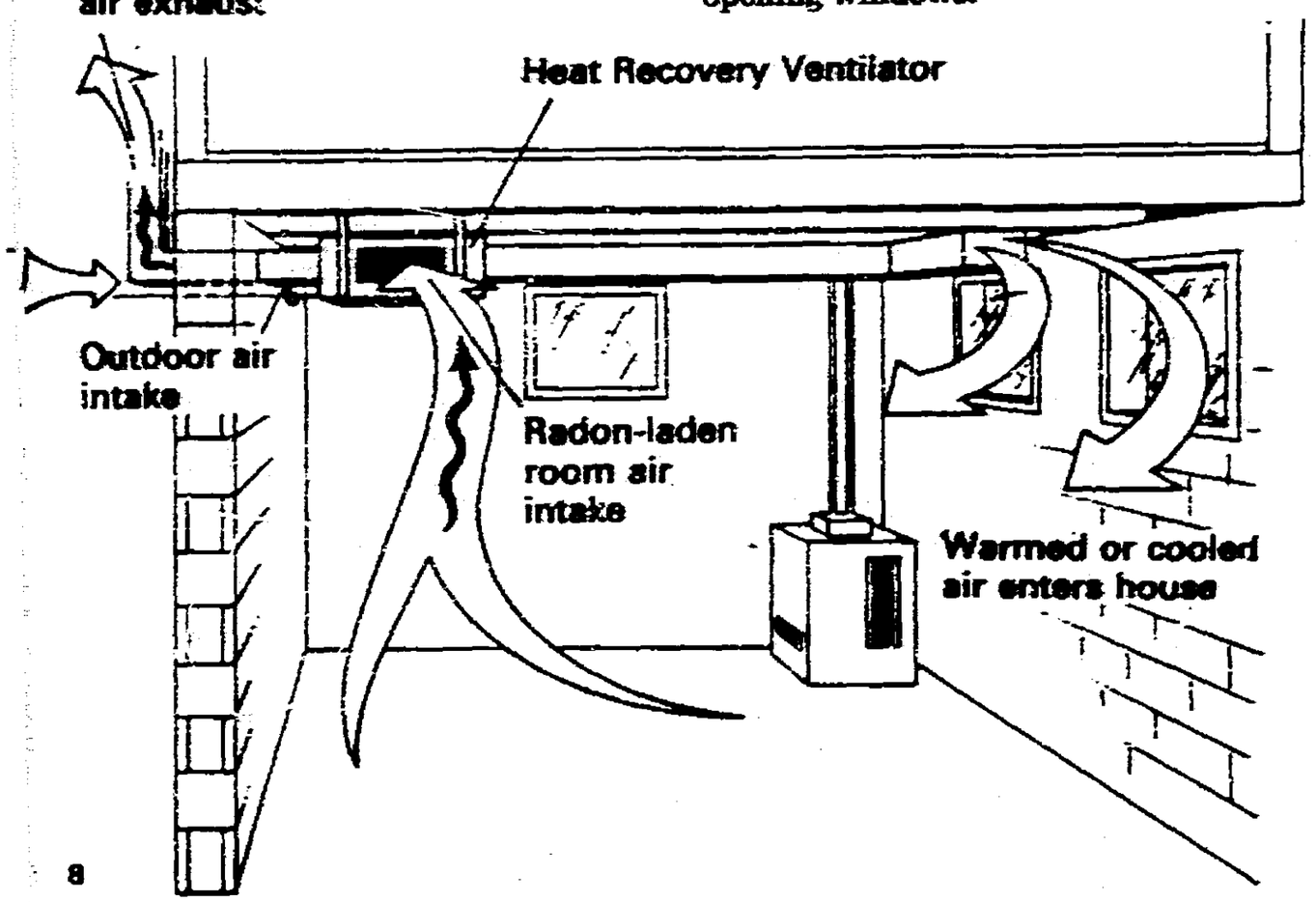
Limitations

The applicability of HRVs for radon reduction will likely be limited to situations where only moderate reductions are needed and where winters are cold. If an HRV is intended to serve as a stand-alone measure to achieve 4 pCi/L in a house of typical size and infiltration rate, the initial radon in the house could be no greater than 10 to 15 pCi/L. Greater reductions can be achieved in tight houses.

Procedure

To simplify the necessary ducting runs to different parts of the house, the heat recovery ventilator unit, consisting of the core and fans, can be located in an inconspicuous part of the house—such as an unfinished basement or utility room. Care must be taken to keep fresh air supply registers well-removed from return air withdrawal points, locating the radon-laden air returns in the basement or lowest level. It is crucial that the flow-rates in the fresh air intake duct and the radon-laden air exhaust duct be balanced. If more air is exhausted than is brought in, the house will become depressurized and even more radon may be drawn into the house. Be sure the balancing is done with no pressure difference between indoors and outdoors, since the unit will tend to maintain any pressure difference that exists when it is balanced.

Heat recovery ventilators are usually cost-effective only if operated during cold weather or in hot weather if the indoor versus outdoor temperature difference is large. At other times, the same amount of ventilation and radon removal can be achieved by simply opening windows.



Covering Exposed Earth

How It Works

Reduces the flow of radon into the house.

Exposed earth—in basement cold-rooms, storage areas, drain areas, sumps, and the like, as well as in crawl spaces—is often a major entry point for radon.

Installation

Requires installation by competent, experienced contractors or highly skilled homeowners.

Cost

Covering or sealing small areas (and ventilating covered air spaces as necessary) often costs under $100. Pouring a new slab would cost considerably more in a large unpaved area.

The annual cost for operating a fan would be about $30.

Reductions

Since radon can seep through any small opening, the degree of radon reduction achieved by sealing any particular area cannot be predicted. Effectively blocking a major entry point, however, should result in some reductions of the overall radon level in your house. In houses with marginal radon problems, covering exposed earth, along with sealing cracks and openings, may be a sufficient remedy.

Covering exposed earth is also likely to enhance the effectiveness of most other radon reduction methods, such as block-wall ventilation and sub-slab suction.

Limitations

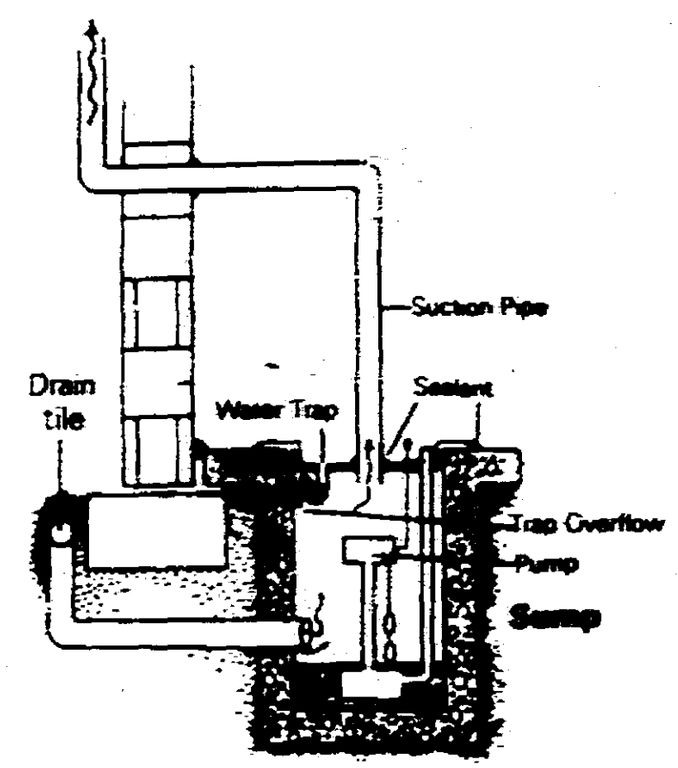
As a house settles and reacts to external and internal stresses, covered areas can open again. Therefore, periodic checking and maintenance are required.

Procedure

Any basement earthen floor should be excavated as necessary and a poured concrete floor installed. Before the concrete is poured, four inches of crushed stone should be placed over the earthen floor to permit easy radon reduction by sub-slab suction if needed at a later date. All joints must be carefully sealed. When the covering encloses an air space, such as that around a sump pump, a small fan should be installed to exhaust the air to the outside, preferably at roof level.

A crawl space connected to a basement can be covered, ventilated, and/or sealed off from the basement.

A crawl space not connected to a basement can be ventilated (as discussed in the section on natural ventilation), or the earthen floor can either be covered with a gas-proof liner (with passive vents to the outside) or covered with concrete.



Sealing Cracks and Openings

How It Works

Reduces the flow of radon into the house.

Radon is a gas that can pass through any opening in a floor or wall which touches the soil. It can enter your house through: openings around utility pipes, joints between basement floors and walls including perimeter (French) drains, other floor drains (especially those that discharge to dry wells), the holes in the top row of concrete blocks, and tiny cracks and openings (such as the pores in concrete blocks). Sealing such cracks and openings is often an important preliminary step when other methods are used. For houses with marginal radon problems, sealing alone may be sufficient.

In some houses, certain areas will be difficult, if not impossible, to seal without significant expense. These include: the top of block walls, the space between block walls and exterior brick veneer, and openings concealed by masonry fireplaces and chimneys.

Installation

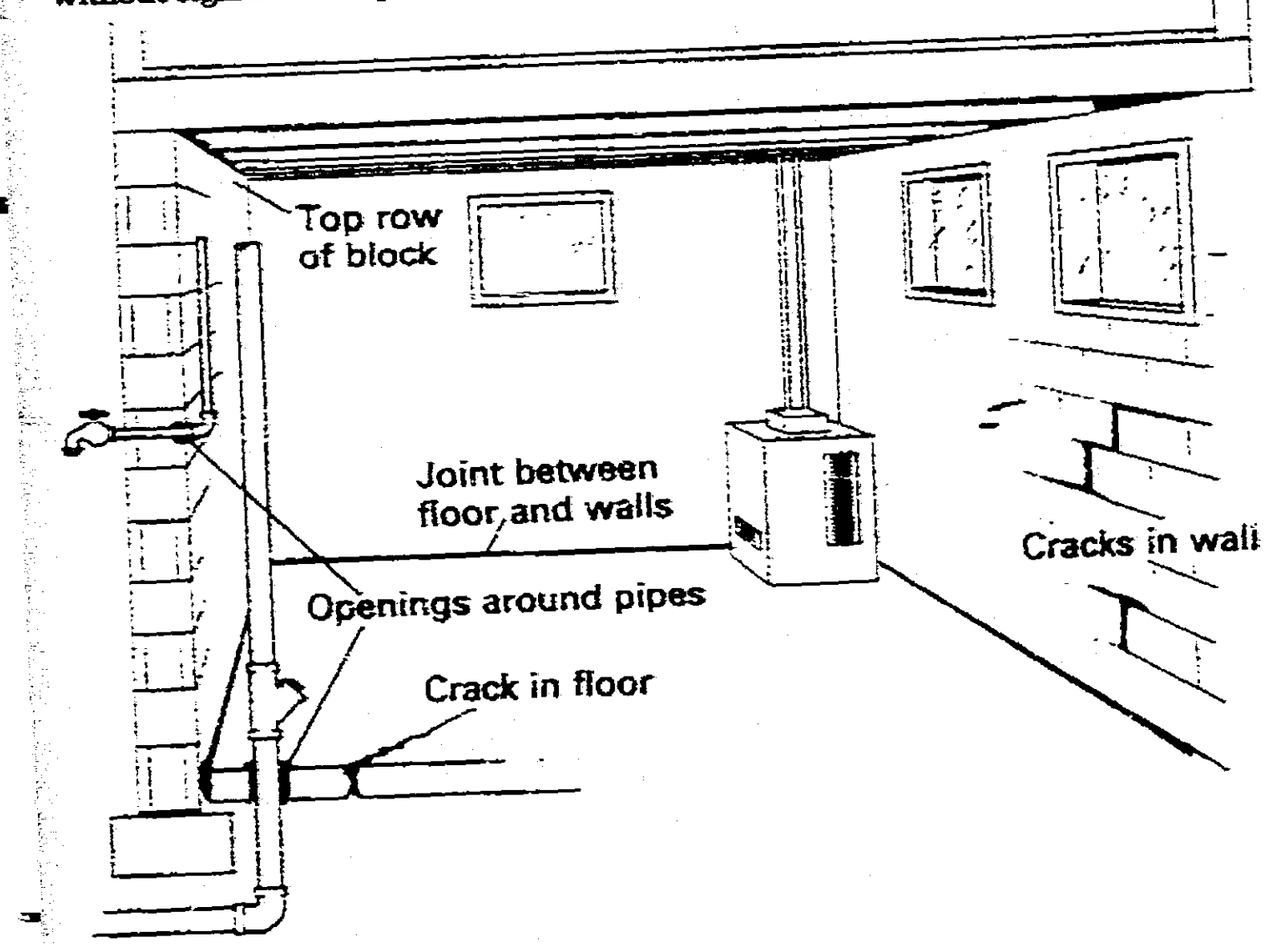
Since effective sealing generally requires meticulous surface preparation and carefully controlled application of appropriate substances, the work is often most effectively done by experienced and competent contractors or highly skilled homeowners.

Cost

Costs are highly variable. Do-it-yourself closure of accessible major entry points can be low in cost. Putting traps in drains and covering sumps can be low to moderate in cost. Applying membranes and coatings can be expensive.

Reductions

When sealing is used alone, you should expect only low to moderate reductions in radon levels. If sealing is done thoroughly—and all exposed earth is covered—reductions may be sufficient in some houses. Sealing is required for block-wall ventilation and some sub-slab suction systems to work effectively.



Limitations

It is very difficult to find all the cracks and openings in your house. This method may have little effect on radon entry unless nearly all the entry points are sealed. Furthermore, settling of the house and other stresses may create more cracks as time passes. Also, the openings in the top row of concrete blocks in a wall are often inaccessible or otherwise difficult to seal tightly. As a house settles and reacts to external and internal stresses, old seals can deteriorate and new cracks can appear. The aging process ultimately ends the ability of sealants to block out soil gases. Therefore, checking and maintenance are required at least yearly.

Procedure

If possible, the holes in the top row of concrete blocks in the basement walls should be sealed with mortar or urethane foam.

Seal wall and floor joints with flexible polyurethane membrane sealants.

Cracks and utility openings should be enlarged enough to allow filling with compatible, gas-proof, non-shrinking sealants.

A water trap should be installed in floor drains connecting to drainage or weeping-tile systems. Water traps allow water that collects on basement floors to drain away but greatly reduce or entirely eliminate entry of soil gas, including radon. Water traps must be kept filled with water to be effective.

Perimeter drains (French drains) should be filled with a urethane foam; however, some alternative plan for water drainage should be provided.

Porous walls (especially block walls) require the application of waterproof paint, cement, or epoxy to a carefully prepared surface.

Drain-Tile Suction

How It Works

Water is drained away from the foundation of some houses by perforated pipes called drain tiles. Drain tiles are rarely completely filled with water. If these drain tiles form a partial or continuous loop around the house, they may be used to pull radon from the surrounding soil and vent it away from the house.

Installation

Normally requires installation and testing by competent, experienced professionals. Some homeowners, however, might be able to install a drain-tile suction system themselves (particularly where work inside the house does not require removing concrete).

Cost

Installation costs (labor and materials) would be between $700 and $1,500 for an exterior drain system and between $800 and $2,500 for a system that drains into a sump. The actual cost will largely depend upon the amount and location of piping and the fan location. For simple exterior installations, the cost of materials (fan, plastic piping, and some incidentals) should not exceed $300.

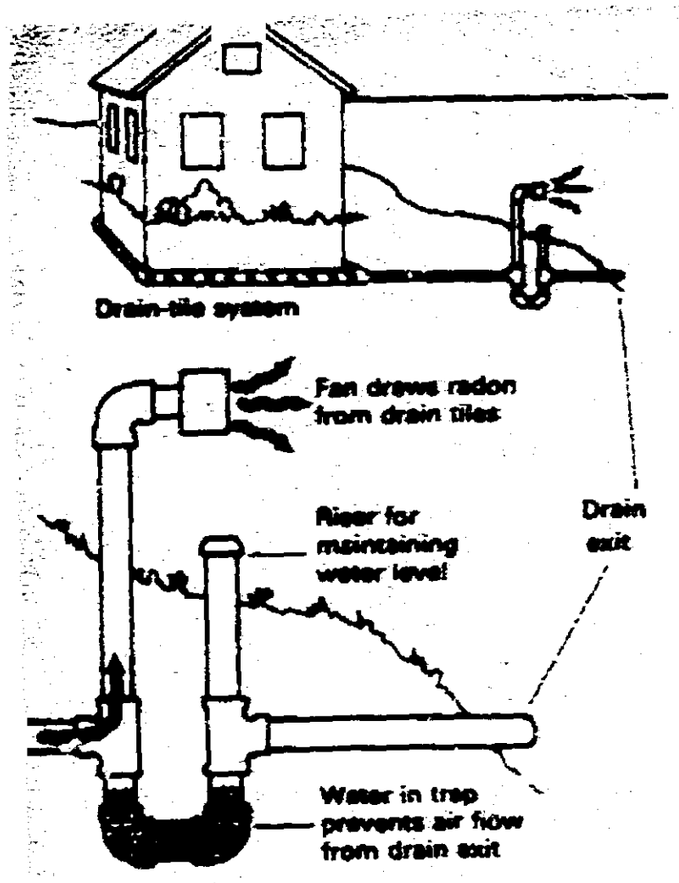
Operating costs should be roughly $30 per year for fan electricity and $100 per year for the heating penalty resulting from increased house ventilation.

Reductions

In some houses, the installation of a drain-tile suction system has resulted in radon reductions of over 99 percent.

Limitations

The primary disadvantage of drain-tile suction is that many houses will not



have complete drain-tile loops. Installation of drain tiles in houses that do not have them is sometimes not cost-effective. If some portion of the perimeter footing does not have drain tiles beside it or if the tiles are damaged or blocked, that portion of the perimeter might fail to be effectively treated. It is very difficult to determine how extensive the drain tiles are around a house. If drain tiles are likely to form a large portion of a complete loop, the advantages of the drain-tile suction approach may make it more cost-effective to try this approach first before attempting a more expensive technique.

Procedure

Water collected by drain tiles normally flows through a pipe to a drainage area away from the house or into a sump. Radon can be pulled from the soil beneath a house by attaching an exhaust fan to the collection pipe or to the sealed sump (see page 9).

To prevent outside air from being drawn from the end of the collection pipe, a water-filled trap should be installed in the pipe beyond the point where the fan is attached. This trap (similar to the trap beneath a kitchen sink) must be placed below the freeze line. The trap must be kept filled with water in order to be effective.

Sub-Slab Suction

How It Works

The lowest floor of most houses, other than those built over crawl spaces, consists of a concrete slab poured over the earth or on top of crushed rock (aggregate). Radon can be drawn from under the slab and vented away from the house.

Installation

Installation of a sub-slab suction system is not an easy "do-it-yourself" job, but some installations might be successfully completed by a homeowner with the necessary skills. A do-it-yourself installation might be most logically attempted when it is known that a good layer of aggregate underlies the slab.

Cost

Installation cost for a multiple-pipe, through-the-slab system would be about $900 to $2,500 if completed by a professional. Material costs for a fan, piping, and incidentals would be about $300. Typical operating costs would be roughly $30 per year for electricity and $100 per year for the heating penalty resulting from increased house ventilation.

Reductions

Installation of a sub-slab suction system can reduce indoor radon levels by 80 to 99 percent. In many cases, reductions of 95 to 99+ percent have been achieved when good permeability exists beneath the slab.

Limitations

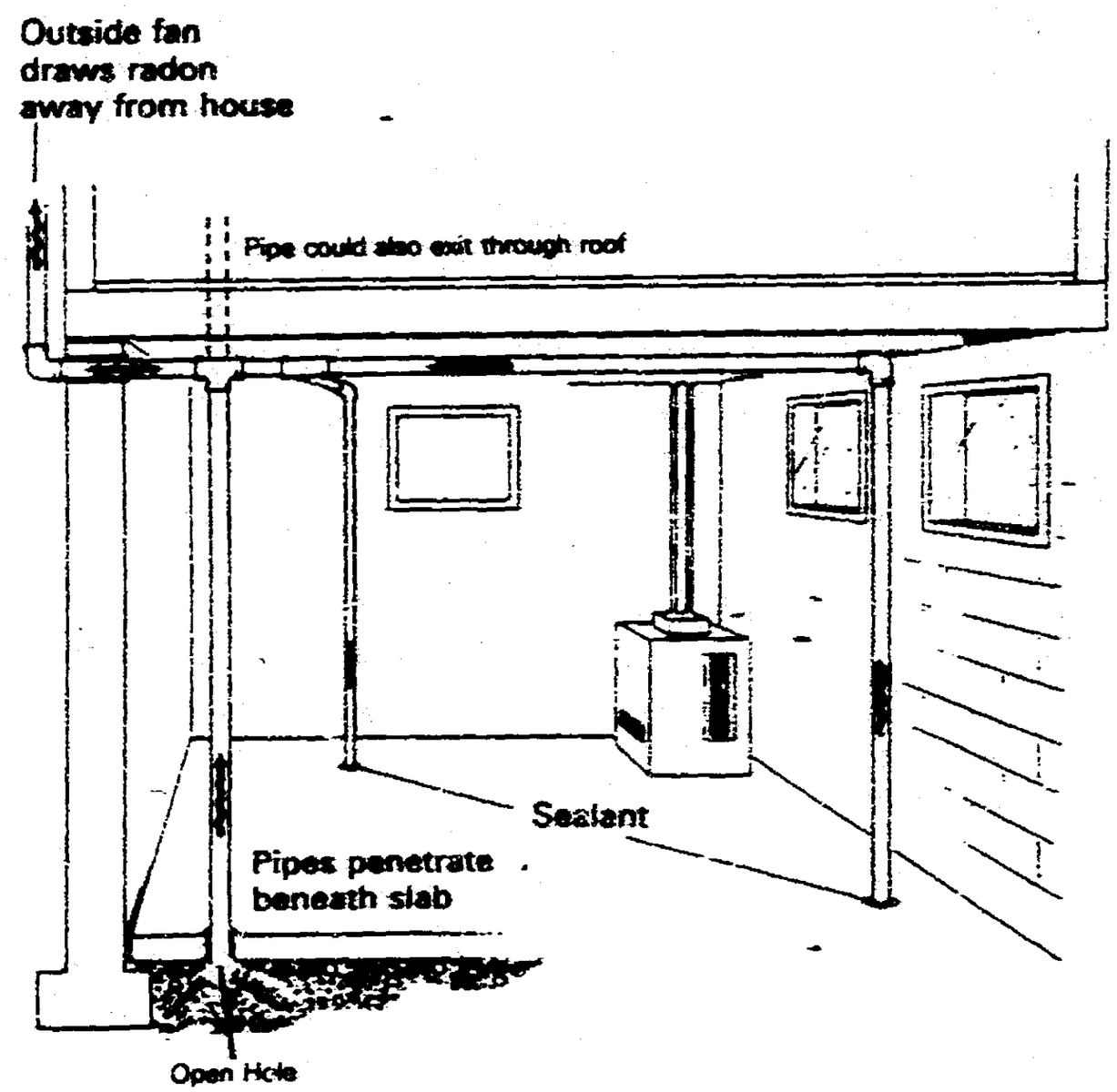
Sub-slab suction has been one of the most widely used and successful radon reduction techniques. It is most useful with foundations built on good aggregate or on highly permeable soil.

When permeability under the slab is not so good, sub-slab suction will often still be applicable. If permeability is less than desirable, more suction pipes might be needed. Positioning of the suction pipe also may become more important.

Sub-slab suction systems require both a fan capable of maintaining at least 0.5 to 1.0 inch pressure and closure of accessible openings in the slab.

Procedure

A fan is used to ventilate soil gas away from the foundation by means of individual pipes which are inserted into the region under the concrete slab. The pipes can be inserted vertically downward through the slab from inside the house, as illustrated, or can be inserted horizontally through a foundation wall at a level beneath the slab. This latter approach is more practical for slabs poured near the surface of the ground. Pipes should exhaust at roof level, away from windows and vents that could permit the gas to re-enter the house.



Block-Wall Ventilation

How it Works

Draws radon from the spaces within concrete block walls before it can enter the house ("wall suction") or blows air into block walls so that radon is prevented from entering the walls ("wall pressurization").

The concrete blocks used to construct many basement walls contain hollow spaces which are connected both horizontally and vertically. Radon from the soil—which enters the wall through joints or tiny pores and cracks—can travel through these connected spaces and enter the basement through similar openings on the interior side or through the openings in the top row of block.

Installation

Requires installation and testing by competent, experienced professionals or highly skilled homeowners.

Cost

The installation of a series of exhaust pipes in an unfinished basement would cost from $1,500 to $2,500. A baseboard collection system in a similar basement would cost about $2,000 or more to install.

Annual operating costs would typically be $30 to $60 for electricity and $200 to $400 for additional heating costs.

Reductions

Very effective (up to 99 percent radon reduction) in houses with good closure and sealing of all major wall openings. In other houses, radon reduction will be significantly less.

Limitations

Applicable only to houses with hollow block basement walls. Block-wall suction may not be successful if you cannot seal the top of the walls, the space between the walls and any exterior brick veneer, and openings that could be concealed by masonry fireplaces or chimneys. Noticeable cracks and openings should be sealed.

Block walls dividing the interior of a basement sometimes penetrate the floor and touch the underlying soil. Exhaust pipes must be installed in all such walls.

Procedure

There are two basic approaches to block-wall ventilation.

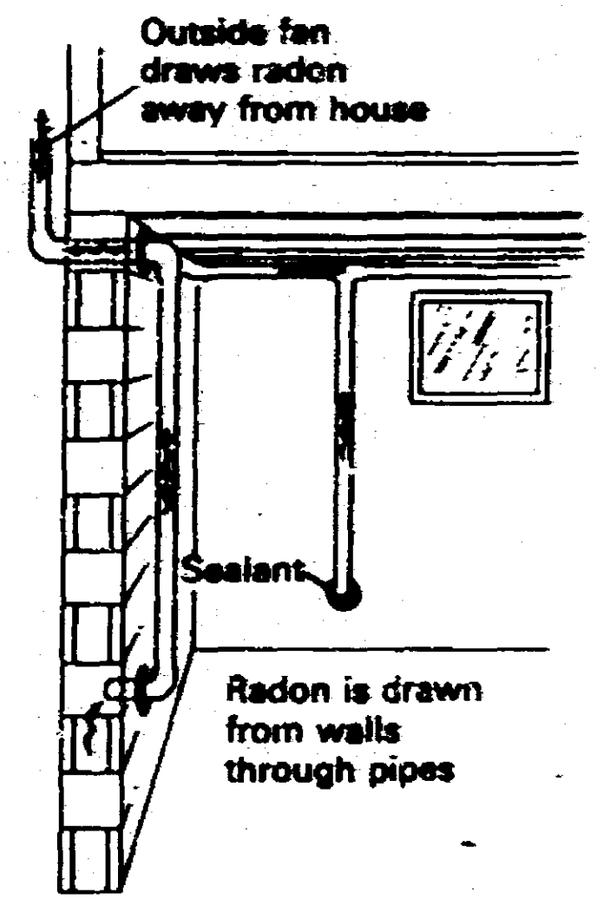
Although this method can be used for any radon level, it is best suited to levels above 0.2 WL (40 pCi/L). The easiest approach is to insert one or two pipes into each wall and use fans to draw radon out of the walls and vent it outdoors, or use fans to pressurize the walls to prevent radon entry. The other approach involves the installation of a sheet metal "baseboard" duct around the perimeter of the basement. Holes are drilled behind the duct into the hollow spaces within the blocks. This second approach produces more uniform ventilation and may be more pleasing in appearance.

In houses which have channel drains cast in the concrete floor next to the block walls, the baseboard approach should work particularly well, since it would ventilate the drains as well as the walls.

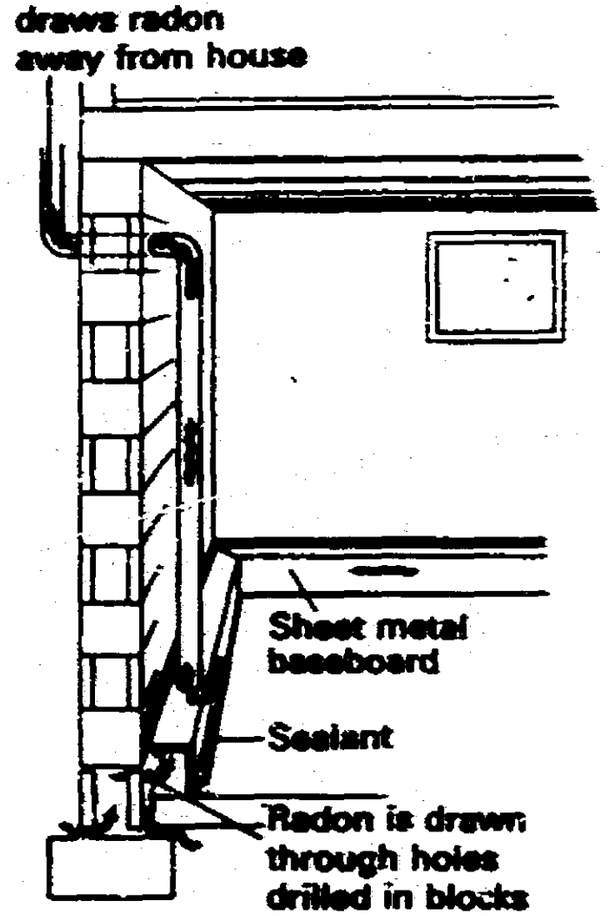
For either wall-ventilation approach to work, all major holes (especially the tops of the blocks) must be sealed. As we pointed out previously, this might be difficult—if not impossible—to do in certain places. (Both of the approaches are shown below in the "suction" mode.)

Pipes should exhaust at roof level away from windows and vents that could permit the gas to re-enter the house.

Pipe-in-wall approach



Baseboard approach



Prevention of House De-pressurization

How It Works

Reduces the amount of radon drawn into your house.

Some exhaust fans and combustion units (such as woodstoves and fireplaces) can lower the air pressure in your house by consuming air and/or exhausting it to the outside. The lower the air pressure in your house, compared to that in the soil, the more radon-laden air may be drawn inside from the underlying soil.

Installation

If exhaust fans must be used, slightly open windows near the fans. Likewise with windows near fireplaces, woodstoves, and other combustion units. Doing so will facilitate the flow of make-up air from outdoors. Install a permanent system to supply outdoor air to household combustion units. For central, forced-air heating and cooling systems, seal off any cold-air return registers that are located in the basement. This reduces leakage of basement air into ducts.

Close air-flow bypasses (openings through the floor between stories) to inhibit air movement up through the house. Close openings through the house shell on upper levels to reduce air outflow from the house.

Note: Many combustion units are designed to accept outside air, but for many others a modification is not only illegal but may be unsafe. Gas furnaces are a prime example. In this case, directing outdoor air to a point near the furnace or enclosing the furnace in a room that is vented outdoors are appropriate measures.

Cost

Some causes of depressurization can be eliminated by the homeowner with little cost.

Installation costs for providing supplemental air will vary greatly depending upon the type and location of the combustion unit being modified. For some, there may be a slight increase in operating cost due to the typically lower temperature of the air being heated.

Reductions

Because each situation is different, it is impossible to predict the reduction in radon levels that can be expected as a result of reducing sources of depressurization in a house. There have been a number of individual applications where radon reduction has been significant.

Limitations

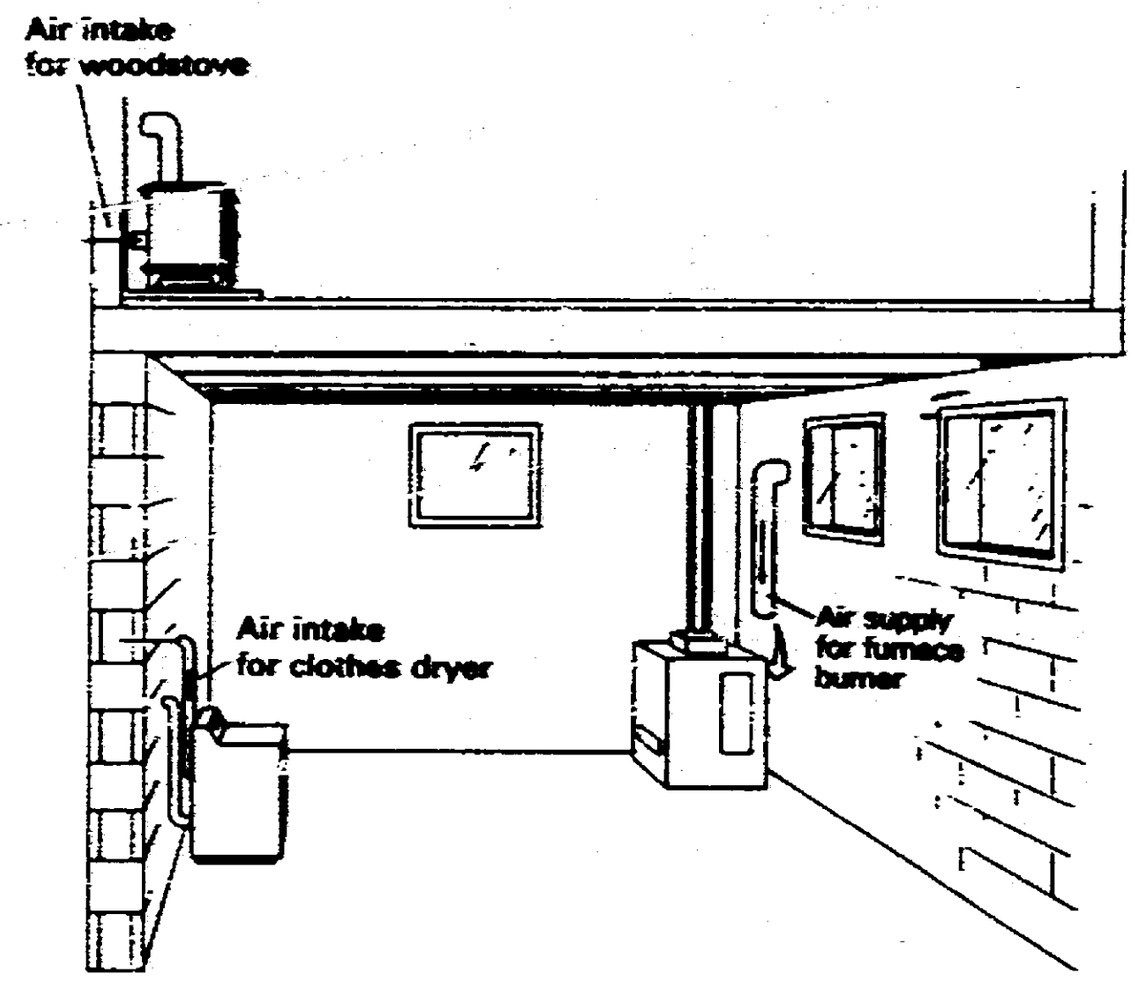
The effectiveness of depressurization reduction techniques for lowering radon levels will be time-dependent. For example, a technique aimed at reducing depressurization by an exhaust fan or a fireplace could have a significant impact when the appliance is being operated; however, the average annual effect will be lower if the appliance is operated for only a relatively small percentage of the year.

Procedure

Follow the procedures given under "Installation." When possible, avoid the use of exhaust fans or provide a route for outdoor air entry to compensate for exhausted house air.

Provide outdoor air in the vicinity of combustion units. Ductwork or piping can be run from any suitable exterior wall to the combustion unit. A manual or automatic damper should be placed in such ductwork to prevent entry of cold air when the stove or furnace is not in operation. Screen the outside end of ductwork to bar pests and debris.

Ensure that windows on the downwind side of the house are opened only when windows on the upwind side are also open.



House Pressurization

How it works

Maintains that part of the house which is in contact with the soil at a pressure higher than that of the air in the soil. This prevents soil gas—including radon—from entering the home. The most common application of this method is to blow upstairs air into the basement; however, in some homes, blowing upstairs air into a crawl space may also be applicable.

Installation

Requires installation by competent, experienced contractor or a careful and skilled homeowner.

Cost

Varies depending upon the work required to tighten the basement shell. Installation cost typically would be comparable to a simple wall ventilation system ($1,500-$2,500). Operating costs will include the electricity to run the fan (about $30 to $40 per year) and the heating penalty resulting from increased infiltration upstairs caused by the fan (as much as $400 to $500 per year).

Reductions

Initial results from a few basement pressurization applications indicate that radon reductions of 70 to 90 percent are possible.

Limitations

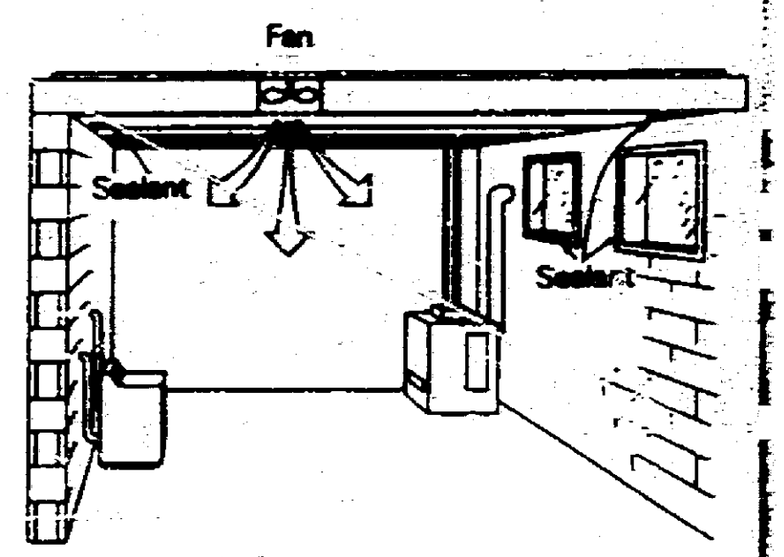
The application of this technique is strictly limited to houses with either basements or heated crawl spaces that are relatively tightly sealed from the living area. Care must be taken to prevent back-drafting of upstairs combustion units. Also, the performance of the system could be completely negated if homeowners open basement doors or windows.

Some homeowners may object to fan noise and vibration if the fan is mounted in the floor of living areas. To overcome that problem, the fan may be mounted on the basement floor and ducted to the living area.

This is one of the least-tested techniques. Structural effects and reliability are not well known.

Procedure

Tighten shell between the basement or crawl space and the upstairs and between the basement or crawl space and the outdoors. Blow upstairs air down in the basement or crawl space. If openings must be made in the upstairs floor, the openings should have a reasonable cross-section to avoid suffering a severe energy penalty.



Comparison of Features

Method	Installation Cost	Operating Cost	Maximum Possible Reductions*	Comments
Natural ventilation:				Useful immediate step to reduce high radon levels.
Basement or lowest floor	Minimal	High to very high	Up to 90+%	
Crawl space	Minimal	Moderate	Up to 90+%	
Forced ventilation:				More controlled than natural ventilation.
Basement or lowest floor	Low to moderate	Very high	Up to 90+%	
Crawl space	Low to moderate	Moderate	Up to 90+%	
Heat recovery ventilation				Air intake and exhaust must be equal. Also, expect lower radon reductions for houses with moderate to high air exchange rates.
Ducted	Moderate to high	Low to moderate	50-75%	
Wall mounted	Low to moderate	Low to moderate	No data available	
Covering exposed earth	Moderate to high	Low	Site specific	Required to make most other methods work.
Sealing cracks and openings	Minimal to high	Nominal	Site specific	Required to make most other method work.
Drain-tile suction	Moderate to high	Low	Up to 99+%	Works best when drain is continuous, unblocked loop.
Sub-slab suction	High	Low	Up to 99+%	Works best with good aggregate or highly permeable soil under slab.
Block-wall ventilation	High	Low	Up to 99+%	Applies to block-wall basements. Sub-slab suction may be needed to supplement.
Prevention of house depressurization	Low to moderate	Low	Site specific	May be required to make other methods work. May see seasonal impact.
House pressurization	Moderate to high	Moderate	Up to 90% (limited data)	Most cost-effective when basement is tightly sealed.

*These represent generally the best reductions that a single method can accomplish. You may get higher or lower reductions depending on the unique characteristics of your house. It is likely that reductions in your house will not be as great as those shown. Especially with high initial radon levels, several methods may have to be combined to achieve acceptable results.

Sources of Information

If you would like further information or explanation about any of the points mentioned in this booklet, you should contact your state radon program office listed at the end of this booklet.

If you have difficulty obtaining needed information, you may call your EPA regional office listed below. The radiation program staff will be happy to provide you with assistance.

EPA Regional Offices

EPA Region 1
JFK Federal Building
Boston, MA 02203
(617) 565-3234

EPA Region 2
(2AIR-RAD)
26 Federal Plaza
New York, NY 10278
(212) 264-4418

Region 3 (3AH14)
841 Chestnut Street
Philadelphia, PA 19107
(215) 597-4084

EPA Region 4
345 Courtland Street, N.E.
Atlanta, GA 30365
(404) 347-2904

EPA Region 5 (5AR28)
230 South Dearborn Street
Chicago, IL 60604
(312) 886-6185

EPA Region 6 (6T-AS)
1445 Ross Avenue
Dallas, TX 75202-2733
(214) 655-7208

EPA Region 7
726 Minnesota Avenue
Kansas City, KS 66101
(913) 236-2803

EPA Region 8
(8HWM-RP)
999 18th Street
One Denver Place, Suite 1300
Denver, CO 80202-2413
(303) 293-1648

EPA Region 9 (A-3)
215 Fremont Street
San Francisco, CA 94105
(415) 974-8378

EPA Region 10
1200 Sixth Avenue
Seattle, WA 98101
(206) 442-7660

State–EPA Region

Alabama	4	Kansas	7	North Carolina	4
Alaska	10	Kentucky	4	North Dakota	8
Arizona	9	Louisiana	6	Ohio	5
Arkansas	6	Maine	1	Oklahoma	6
California	9	Maryland	3	Oregon	10
Colorado	8	Massachusetts	1	Pennsylvania	3
Connecticut	1	Michigan	5	Rhode Island	1
Delaware	3	Minnesota	5	South Carolina	4
District of Columbia	3	Mississippi	4	South Dakota	8
Florida	4	Missouri	7	Tennessee	4
Georgia	4	Montana	8	Texas	6
Hawaii	9	Nebraska	7	Utah	8
Idaho	10	Nevada	9	Vermont	1
Illinois	5	New Hampshire	1	Virginia	3
Indiana	5	New Jersey	2	Washington	10
Iowa	7	New Mexico	6	West Virginia	3
		New York	2	Wisconsin	5
				Wyoming	8

State Radon Contacts

Alabama
Radiological Health Branch
Alabama Department of Public Health
State Office Building
Montgomery, AL 36130
(205) 261-5313

Alaska
Alaska Department of Health and Social Services
P.O. Box H-06F
Juneau, AK 99811-0613
(907) 465-3019

Arizona
Arizona Radiation Regulatory Agency
4814 South 40th Street
Phoenix, AZ 85040
(602) 255-4845

Arkansas
Division of Radiation Control and Emergency Management
Arkansas Department of Health
4815 W. Markham Street
Little Rock, AR 72205-3867
(501) 661-2301

California
Indoor Quality Program
California Department of Health Services
2151 Berkeley Way
Berkeley, CA 94704
(415) 540-2134

Colorado
Radiation Control Division
Colorado Department of Health
4210 East 11th Avenue
Denver, CO 80220
(303) 331-4812

Connecticut
Connecticut Department of Health Services
Toxic Hazards Section
150 Washington Street
Hartford, CT 06106
(203) 566-8167

Delaware
Division of Public Health
Delaware Bureau of Environmental Health
P.O. Box 637
Dover, DE 19903
(302) 736-4731

District of Columbia
DC Department of Consumer and Regulatory Affairs
614 H Street, NW, Room 1014
Washington, DC 20001
(202) 727-7728

Florida
Florida Office of Radiation Control
Building 18, Sunland Center
P.O. Box 15490
Orlando, FL 32858
(305) 297-2095

Georgia
Georgia Department of Natural Resources
Environmental Protection Division
205 Butler Street, SE
Floyd Towers East, Suite 1166
Atlanta, GA 30334
(404) 656-6905

Hawaii
Environmental Protection and Health Services Division
Hawaii Department of Health
591 Ala Moana Boulevard
Honolulu, HI 96813
(808) 548-4383

Idaho
Radiation Control Section
Idaho Department of Health and Welfare
Statehouse Mail
Boise, ID 83720
(208) 334-5879

Illinois
Illinois Department of Nuclear Safety
Office of Environmental Safety
1035 Outer Park Drive
Springfield, IL 62704
(217) 546-8100 or (800) 225-1245 (in State)

Indiana
Division of Industrial Hygiene and Radiological Health
Indiana State Board of Health
1330 W. Michigan Street, P.O. Box 1964
Indianapolis, IN 46206-1964
(317) 633-0153

Iowa
Bureau of Environmental Health
Iowa Department of Public Health
Lucas State Office Building
Des Moines, IA 50319-0075
(515) 281-7781

Kansas
Kansas Department of Health and Environment
Forbes Field, Building 321
Topeka, KS 66620-0110
(913) 862-9360 Ext. 288

Kentucky
Radiation Control Branch
Cabinet for Human Resources
275 East Main Street
Frankfort, KY 40621
(502) 564-3700

Louisiana
Louisiana Nuclear Energy Division
P.O. Box 14690
Baton Rouge, LA 70898-4690
(504) 925-4518

Maine
Division of Health Engineering
Maine Department of Human Services
State House Station 10
Augusta, ME 04333
(207) 289-3826

Maryland
Radiation Control Department of the Environment
7th Floor Mailroom
201 W. Preston Street
Baltimore, MD 21201
(301) 333-3130 or (800) 872-3666

Massachusetts
Radiation Control Program
Massachusetts Department of Public Health
23 Service Center
North Hampton, MA 01060
(413) 586-7525 or (617) 727-6214 (Boston)

Michigan
Michigan Department of Public Health
Division of Radiological Health
3500 North Logan, P.O. Box 30035
Lansing, MI 48909
(517) 335-8190

Minnesota
Section of Radiation Control
Minnesota Department of Health
P.O. Box 9441
717 SE Delaware Street
Minneapolis, MN 55440
(612) 623-5359 or (800) 652-9747

Mississippi
Division of Radiological Health
Mississippi Department of Health
P.O. Box 1700
Jackson, MS 39215-1700
(601) 354-6657

Missouri
Bureau of Radiological Health
Missouri Deparment of Health
1730 E. Elm, P.O. Box 570
Jefferson City, MO 65102
(314) 751-6083

Montana
Occupational Health Bureau
Montana Department of Health and Environmental Sciences
Cogswell Building A113
Helena, MT 59620
(406) 444-3671

Nebraska
Division of Radiological Health
Nebraska Department of Health
301 Centennial Mall South
P.O. Box 95007
Lincoln, NE 68509
(402) 471-2168

Nevada
Radiological Health Section
Health Division
Nevada Department of Human Resources
505 East King Street, Room 202
Carson City, NV 89710
(702) 885-5394

New Hampshire
New Hampshire Radiological Health Program
Health and Welfare Building
6 Hazen Drive
Concord, NH 03301-6527
(603) 271-4588

New Jersey
New Jersey Department of Environmental Protection
[illegible]
Trenton, [illegible]
(609) [illegible] or
(800) [illegible] (in State)
or
(201) [illegible]
Radon Field Office
New Mexico
Surveillance [illegible]
Section
New Mexico Radiation Protection Bureau
P.O. Box [illegible]
Santa Fe, NM 87504-0968
(505) 827-2957

New York
Bureau of Environmental Radiation Protection
New York State Health Department
Empire State Plaza, Corning Tower
Albany, NY 12237
(518) 473-3613 or
(800) 458-1158 (in State)
or
(800) 342-3722 (NY Energy Research & Development Authority)

N. Carolina
Radiation Protection Section
North Carolina Department of Human Resources
701 Barbour Drive
Raleigh, NC 27603-2008
(919) 733-4283

N. Dakota
Division of Environmental Engineering
North Dakota State Department of Health & Consolidated Laboratories
Missouri Office Building
1200 Missouri Avenue, Room 304
P.O. Box 5520
Bismarck, ND 58502-5520
(701) 224-2348

Ohio
Radiological Health
[illegible]
Columbus, OH 43212
(614) [illegible] or
(800) 523-4439 (in Ohio only)

Oklahoma
Radiation and Special Hazards Service
Oklahoma State Dept. of Health
P.O. Box 53551
Oklahoma City, OK 73152
(405) 271-5221

Oregon
Oregon State Health Department
1400 S.W. 5th Avenue
Portland, OR 97201
(503) 229-5797

Pennsylvania
Bureau of Radiation Protection
Pennsylvania Department of Environmental Resources
P.O. Box 2063
Harrisburg, PA 17120
(717) 787-2480

Puerto Rico
Puerto Rico Radiological Health Division
G.P.O. Call Box 70184
Rio Piedras, PR 00936
(809) 767-3563

Rhode Island
Division of Occupational Health and Radiological Control
Rhode Island Department of Health
206 Cannon Bldg.
75 Davis Street
Providence, RI 02908
(401) 277-2438

S. Carolina
Bureau of Radiological Health
South Carolina Dept. of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201
(803) 734-4200/4631

S. Dakota
Office of Air Quality and Solid Waste
South Dakota Dept. of [illegible]
Pierre, SD 57501
Joe Foss Building
Room 217
523 E. Capitol
Pierre, SD 57501-3181
(605) 773-3153

Tennessee
Division of Air Pollution Control
Customs House
701 Broadway
Nashville, TN 37219-5403
(615) 741-4634

Texas
Bureau of Radiation Control
Texas Department of Health
1100 West 49th Street
Austin, TX 78756-3189
(512) 835-7000

Utah
Bureau of Radiation Control
Utah State Department of Health
State Health Department Building
P.O. Box 16690
Salt Lake City, UT 84116-0690
(801) 538-6734

Vermont
Division of Occupational and Radiological Health
Vermont Department of Health
Administration Building
10 Baldwin Street
Montpelier, VT 05609-0201
(802) 828-2886

Virginia
Bureau of Radiological Health
Department of Health
109 Governor Street
Richmond, VA 23219
(804) 786-5932 or (800) 468-0138 (in State)

Washington
Environmental Protection Section
Washington Office of Radiation Protection
Thurston/Airdustrial Center
Building 5, LB-13
Olympia, WA 98504
(206) 753-5962

W. Virginia
Industrial Hygiene Division
[illegible]
Charleston, WV 25305
(304) 348-3526/5427

Wisconsin
Division of Health
Section of Radiation Protection
Wisconsin Dept. of Health and Social Services
3708 Odana Road
Madison, WI 53719
(608) 273-5180

Wyoming
Radiological Health Services
Wyoming Department of Health and Social Services
Hathway Building
4th Floor
Cheyenne, WY 82002-0710
(307) 777-7956

NAME OF COMPANIES PROVIDING SERVICES IN MEASURING RADON AND/OR RADON PROGENY

EXCERPTED FROM

U.S. ENVIRONMENTAL PROTECTION AGENCY DOCUMENT ENTITLED

RADON/RADON PROGENY CUMULATIVE PROFICIENCY REPORT

BY

BUREAU OF ENVIRONMENTAL HEALTH
IOWA DEPARTMENT OF PUBLIC HEALTH
LUCAS STATE OFFICE BUILDING
DES MOINES, IOWA 50319

515/281-4928 or 515/281-3478

Table of Contents

	Page
Introduction	1
Selection of Measurement Method	1
Program Requirements	4
Explanation of Acronyms	4
Table 1: Measurement Companies Serving Your State	6

INTRODUCTION

Recent public concern over the health effects from exposure to radon has greatly increased the demand for companies qualified to measure radon and radon progeny in indoor air. In response to States' requests for assistance, the U.S. Environmental Protection Agency's Office of Radiation Programs has developed the Radon/Radon Progeny Measurement Proficiency (RMP) Program. Under this program, any company offering measurement services -- directly, or indirectly through another company -- is invited to demonstrate its proficiency in measuring radon gas and/or radon progeny levels.

The program's immediate objective is to assist States and the public in selecting companies that have demonstrated competence in measuring indoor radon and/or radon progeny. This is achieved by evaluating, on a semiannual basis, the proficiency of companies' detector operations, and the quality of their data management. Those companies that demonstrate proficiency in each of these areas are listed in the Proficiency Report. The program's long-term objectives are to promote standard measurement procedures among measurement companies and to establish quality assurance procedures for all measurement companies.

The RMP Program is not designed for accrediting measurement companies. Nor does it certify, recommend, or endorse participating companies. The inclusion of a company in this report should not be interpreted as a certification or accreditation of that company. This report is only a source of measurement companies that have demonstrated capabilities for measuring radon and radon progeny levels.

The testing periods are referred to as test "rounds". Each round consists of two tests -- a performance test and a follow-up test. A company enrolls its measurement methods (e.g., activated charcoal adsorption) for evaluation. EPA tells the company to submit a specific number and type of detectors (e.g., charcoal canisters) for exposure to known levels of radon and/or radon progeny. After exposure, EPA returns the detectors to the company. The company analyzes the detectors and reports its measurement results to EPA. EPA compares the measurement results with the known levels of exposure. If a company fails any of the program requirements in the performance test, it must retest in the follow-up test. The same detector submittal and exposure procedures are followed for the follow-up test. Companies that fail this second attempt may participate in the next test round.

Only companies having meet all the program requirements for a method in either the performance or the follow-up test are listed in this Proficiency Report. Table 1 lists, in alphabetical order, all the proficient companies offering measurement services in your State.

SELECTION OF MEASUREMENT METHOD

Several different measurement methods may be used to determine the radon or radon progeny concentrations in houses. In practice, the choice of a method is often dictated simply by availability -- if an adequate method is available, you use it. If alternative methods are available, then the cost or the duration of the measurement may become the deciding factor.

EPA has developed measurement protocols for seven different methods, and believes that any of them, when used in accordance with EPA protocols, can produce valid results. This does not mean that all measurements made according to the suggested protocols will produce results with identical uncertainties. However, it does mean that the listed methods are capable of producing adequate results for screening or follow-up purposes.

Each method has its own advantages and disadvantages. Users must decide which method is best suited to their situations. The following sections describe the characteristics of the seven methods, pointing out some of the advantages and disadvantages of each one. This summary is not exhaustive, but is intended to guide the user in making an informed selection of a measurement method.

Continuous Radon Monitoring (CR) and Continuous Working-Level Monitoring (CW)

These measurement methods are similar in that they use an electronic detector to accumulate and store information related to the periodic (usually hourly) average concentration of radon gas or radon progeny. They are installed in houses according to guidelines in the EPA protocol, and then turned on or programmed for the desired operating time — a minimum of six hours for screening and twenty-four hours for follow-up measurements. At the end of the test, the monitor must be retrieved, and the results must be analyzed by a skilled instrument operator.

Advantages

- Relatively short measurement duration.
- Hourly results can track the variation of concentrations in the house.
- Very precise (most models).
- Results are available on site (for CW).

Disadvantages

- Relatively expensive, cost may range from $100 to $300, depending on the type of services provided.
- Requires a skilled instrument operator.
- This, as does any short-term measurement, requires careful control of closed-house conditions twelve hours before and during the test.

Alpha-Track Detection (AT)

The alpha-track method measures radon. An AT detector is a small sheet of special plastic material enclosed in a filtered container. The container collects the radon progeny on the filter paper while the radon gas enters the container. As the gas and some of the short-lived progeny decay, they emit alpha particles that permanently mark the plastic sheet.

The detectors are installed in the home according to guidelines in the EPA protocol. They are left for periods of up to three months for screening and twelve months for follow-up measurements. At the end of the desired testing period, they must be returned to the distributor or analytical laboratory for processing and evaluation.

Advantages

- Relatively low-cost services; cost may range from $20 to $60.
- No special skills required for making the measurement.
- Can be distributed by mail.
- Completely passive, needs no external power.

- Can measure the long-term average concentrations over a twelve-month period, which is the optimal measure of long-term concentrations.

Disadvantages

- Relatively long measurement period necessary; three months is the recommended minimum for currently available detectors.

Activated Charcoal Adsorption (CC)

The charcoal adsorption method measures radon gas. The detectors for this method consist of variously configured containers filled with a measured amount of activated charcoal. The container is often perforated or screened to keep the charcoal from falling out and to filter out radon progeny. All charcoal adsorbers are stored in airtight containers when not being used for sampling.

Charcoal adsorbers can be received through the mail from a distributor. They are installed in the home for up to seven days, according to guidelines in the EPA protocols. At the end of testing, an adsorber is resealed and returned to the distributor or analytical laboratory for processing and evaluation.

Advantages

- Low cost for services; costs may range from $10 to $25.
- Can be distributed by mail.
- No special skills needed for making the measurement.
- Completely passive, needs no external power.
- With proper analysis, can yield precise results.

Disadvantages

- Some charcoal adsorbers are more sensitive than others to temperature and humidity.
- Limited to short-term testing.
- Requires, as does any short-term measurement, careful control of closed-house conditions twelve hours before and during the test.

Radon Progeny Integrating Sampling Unit-RPISU (RP)

The RP method measures radon progeny. RP detectors have a flow-rate air pump that pulls air continuously through a detector assembly. Depending on the model, the unit can be installed and operated by homeowners or skilled operators for three days or longer according to guidelines in the EPA protocol. At the end of that time, the homeowner sends it to the distributor, or an operator removes the unit and returns it to the analysis laboratory for processing and evaluation.

Advantages

- Directly measures concentrations of radon decay products.
- Relatively short measurement period.
- The detector assembly and some entire units can be sent by mail.
- There is extensive experience in the use of RPISU's; therefore, measurement errors are well established.

Disadvantages

- Relatively expensive; cost may range from $40 to $150, depending on type of service provided.
- Some models may be both heavy and awkward to move.

- May be limited to locations with AC power.
- Some units must be installed and picked up by a skilled instrument operator.
- Because of the highly reactive nature of radon decay products, measurements are much more susceptible to sampling error than radon gas measurements.

Grab Sampling - Radon (GR) and Radon Progeny (GP)

The grab sampling methods measure concentrations of radon gas or radon progeny concentrations. The radon grab sample is collected in a special flask holding 100 to 2,000 cubic centimeters of air. The radon progeny grab sample is collected by drawing air through a filter, upon which progeny, if present in the air, are collected. Both samples can be acquired simultaneously with some detector systems. All sampling should be done in accordance to guidelines in the EPA protocol.

For results of the grab radon test, operators must return to their offices to analyze the exposed detectors, and must delay the analysis for at least four hours after the sample is taken. For most grab working-level tests (radon progeny), operators can perform the analysis on location in an hour or less.

Advantages

- Results are quickly obtained.
- Equipment can be portable.
- Some detector systems can sample both radon and radon progeny simultaneously.
- Can acquire and evaluate several samples per day.
- Conditions during the measurement are known to the operator.

Disadvantages

- Relatively expensive; costs may range from $80 to $300, depending on the type of services offered.
- Very short measurement periods may not be representative of the long-term average concentrations.
- Requires a skilled operator.
- Requires, as does any short-term measurement, careful control of closed-house conditions twelve hours before and during the test.

PROGRAM REQUIREMENTS

For each method, participants must send with their applications a copy of the operating instructions they provide homeowners and/or those used by an instrument operator. These instructions must reflect the measurement procedures found in the EPA documents, "Interim Indoor Radon and Radon Decay Product Measurement Protocols" and "Interim Protocols for Screening and Follow-up Radon and Radon Decay Product Measurement". They must be accepted by, and on file with, EPA by the end of the follow-up test.

Once enrolled, a company must meet EPA's minimum screening-measurement requirements for each method. A company must meet all detector and analysis result deadlines as listed on its program schedule. Applications, detectors, and analysis reporting forms received after a scheduled deadline will not be considered in the performance evaluation process. A company's detector(s) must be tested every round to maintain its proficiency listing.

EXPLANATION OF ACRONYMS

Methods	Units
AT - Alpha-Track Detection	(pCi/l)
CC - Activated Charcoal Adsorption	(pCi/l)
CR - Continuous Radon Monitoring	(pCi/l)
CW - Continuous Working-Level Monitoring	(WL)
GR - Grab Radon Sampling	(pCi/l)
GW - Grab Working-Level Sampling	(WL)
RP - Radon Progeny Integrated Sampling/RPISU	(WL)

Measurement Units

pCi/l - Picocuries per liter, radon gas measurement units.

WL - Working-level, radon progeny measurement units.

Others

DT - Detector(s) damaged or lost through no fault of the participant.

TABLE 1
MEASUREMENT COMPANIES SERVING IOWA

* Company	Measurement Methods
ABE Radiation Measurements Lab Box 214 Lenhartsville, PA 19534 (215) 766-4153	CC
AIDCO Maine Corp Grassy Pond House Rindge, NH 03461 (603) 899-5166	CC
ARIX Sciences, Inc. 1200 E. High St. Pottstown, PA 19464 (215) 327-1140	GR,GM
Accu-Test Suite 115-343 1350 Beverly Road McLean, VA 22101 (703) 448-8088	AT,CC
Accurate Air Testing 1209 Piney Woods Drive Friendswood, TX 77546 (713) 482-5097	CC
Advanced Radiation Monitoring Serv. 2219 Prosperity Portage, MI 49081 (616) 323-9483	CC
Affiliated Building Inspectors, Inc 7223 Delfield Street Chevy Chase, MD 20815 (301) 986-8888	AT

* Company	Measurement Methods
Air Check, Inc. Box 2000 Arden, NC 28704 (704) 684-0868	CC
Air Sciences, Inc/Overman Assoc. P.O. Box 378 Bonne Terre, MO 63628 (314) 358-4011	CC
Air-N-Sol Corporation P. O. Box 437 Frenchtown, NJ 08825 (201) 996-2028	GM,GR,GM
Alpha Control, Inc. 8407 Good Luck Rd. Riverdale, MD 20737 (301) 474-0071	AT,CC
Alpha Spectra P. O. Box 6772 Denver, CO 80208 (303) 377-2118	CC
Amersham Corporation 2636 South Clearbrook Drive Arlington Heights, IL 60005 (312) 593-6300	AT,CC
Appalachian Envir. Testing Inc 106 South Union St. Suite 326 Danville, VA 24541 (804) 792-1300	AT

* More detailed information on the measurement companies' services and past performances is available upon request from your State Radiation Representative's Office.
+ Non-commercial laboratory for research purposes or State agency's assistance only.

TABLE 1
MEASUREMENT COMPANIES SERVING IOWA

* Company	Measurement Methods
Applied Energy Company 3316 Augusta Avenue Omaha, NE 68144 (402) 334-5881	CC
Applied Health Physics Inc. 2986 Industrial Blvd. Box 197 Bethel Park, PA 15102 (412) 563-2242	AT,CC,CR,CW,GR,GW
Applied Radon Test. & Reduct'n 52205 Warehime Rd. Cumberland, OH 43732-9804 (614) 638-2078	CC
Barcon, Inc. 599 Waldron Road LaVergne, TN 37086 (615) 793-7993	AT,CC
Barringer Laboratories, Inc. 15000 West Sixth Avenue,Suite 300 Golden, CO 80401 (303) 277-1687	CC
Battelle 505 King Avenue Columbus, OH 43201 (614) 979-5163	AT,CC,CR
Bowling Green Radon Laboratory P. O. Box 83 Bowling Green, KY 42101 (502) 842-6200	CC

* Company	Measurement Methods
CDS Technologies, Inc. 5050 Tilghman Street Allentown, PA 18104 (215) 398-7125	AT,CC
CMT Inc. 2813 Rio Vista Emporia, KS 66801 (316) 342-2780	CC
Camp Dresser & McKee Inc. Raritan Plaza 1, Raritan Ctr. Edison, NJ 08818 (201) 225-7000	CC,CR,CW,GR,GW
Camroden Associates RD #4 Box 62 Rome, NY 13440 (315) 865-4289	AT,CC,CR,GR
Canberra Industries Inc. One State Street Meriden, CT 06450 (203) 238-2351	CC
Capital Materials Testing Inc. P. O. Box 81 Latham, NY 12110 (518) 783-3150	CC
Cavin Analytical Consultants P. O. Box 454 Snellville, GA 30278 (800) 533-1224	CC,GR,GW

* More detailed information on the measurement companies' services and past performances is available upon request from your State Radiation Representative's Office.
+ Non-commercial laboratory for research purposes or State agency's assistance only.

TABLE 1
MEASUREMENT COMPANIES SERVING IOWA

* Company	Measurement Methods
Centarus Corporation P. O. Box 513 Glasgow, KY 42141 (502) 651-2398	CC
Chem-Safe Inc. 1345 Research & Technology Pk. Pullman, WA 99163 (509) 335-0922	CC
+ Chemical Engineering Unit, RTI Research Triangle Institute P. O. Box 12194 Research Triangle Park, NC 27709 (919) 541-6261 (919) 541-6747	CR
Clean Air Engineering, Inc. 207 North Woodmark Lane Palatine, IL 60067 (312) 991-3300	CC
Columbia Radiological Test Lab 4064 Victoria Court Columbia, MO 65201 (314) 443-3638	AT
Commonwealth Eng. & Technology 3113 North Front Street Harrisburg, PA 17110 (717) 232-2288	CC
Con-Test, Inc. 126 Shaker Road East Longmeadow, MA 01028 (413) 525-1198	GM

* Company	Measurement Methods
Core Laboratories Inc 420 West First St Casper, Wy 82601 (303) 235-5741	GR
EKS RadTech 1000 Herald Square Aston, PA 19014 (215) 358-9425 (215) 358-9426	CC
ENV Services, Inc. 216 Goddard Blvd., Suite 117 King of Prussia, PA 19406 (800) 345-8094 (215) 337-8222	GM
Eberline Instrument Corp. P. O. Box 2108 Santa Fe, NM 87504-2108 (505) 471-3232	GR
Electro Mechanical Concepts 130 Mountaineer Lane West Mifflin, PA 15122 (412) 276-2272	CC
EnRad, Inc./Rad. T. & Eng. Inc 18706 B. North Frederick Road Gaithersburg, MD 20879 (301) 948-8040	AT,CC
Energy Marketing Midwest, Inc E-57 Rd, Box 93 Kelley, IA 50134 (515) 769-2400	CC

* More detailed information on the measurement companies' services and past performances is available upon request from your State Radiation Representative's Office.
+ Non-commercial laboratory for research purposes or State agency's assistance only.

TABLE 1
MEASUREMENT COMPANIES SERVING IOWA

* Company	Measurement Methods
Envirohazards Management, Inc. P. O. Box 1064 So. Orange, NJ 07079 (201) 761-7228	CC
Environmental Chemistry 1233 Ogden Street, Suite 504 Denver, Colorado 80218 (303) 831-0437	CC
Environmental Sys. Service Ltd P. O. Box 220 College Park, MD 20740 (301) 779-0808	CC
Environmental Systems Service P. O. Box 512 Culpeper, VA 22701 (703) 825-6660	CC
Enviroserv 15 Buckley Hill Road Morristown, NJ 07960 (2010 285-1055	CC
Envirotest P.O. Box 223 North Ridgeville, OH 44039-0223 (216) 327-9432	CC
Frazier Co., The 15105 Industrial Rd. Omaha, NE 68144 (402) 330-3400	CC

* Company	Measurement Methods
Future Medical Systems, Inc. 387 Regency Ridge Centerville, OH 45459 (513) 436-2215	CC
GEOMET Technologies, Inc. 20251 Century Boulevard Germantown, MD 20874 (301) 428-9808	AT,CC
Garden St. Home Inspection Svc 476 Valley Rd. West Orange, NJ 07052 (201) 678-3333	CC
General Health Physics Inc. 7217 Lockport Pl Lorton, VA 22079 (703) 550-7525	CC
Health Physics Associates, Inc. RD1 Box 798 Lanhartsville, PA 19534 (215) 756-4153	CC
Health Physics Associates, Ltd. 3304 Commercial Avenue Northbrook, Illinois 60062 (312) 564-3330	CC
Health and Safety Associates 35 Grove Street Medford, MA 02155 (617) 488-7081	AT,CC

* More detailed information on the measurement companies' services and past performances is available upon request from your State Radiation Representative's Office.
+ Non-commercial laboratory for research purposes or State agency's assistance only.

TABLE 1
MEASUREMENT COMPANIES SERVING IOWA

* Company	Measurement Methods
Home Inspection Service, Inc. 1918 Southland Ave. Highland Park, IL 60035 (312) 432-8881 (312) 831-4645	CC
Home Sentry Inc. P. O. Box 555 Midland Park, NJ 07432 (201) 652-2497	CC
Home Testing Service 70 Wabasso St. Waltham, MA 02154 (617) 862-3440	CC
Hudson Valley Radon Testing Corp. P.O. Box 790 Poughkeepsie, NY 12601 (914) 431-8424 (914) 486-8751	CC
Inflitec P.O. Box 1533 Falls Church, VA 22041 (703) 820-7696	CC,GR
Inspex of Boulder, Inc. 2966 Valmont Street, Suite 300 Boulder, CO 80301 (303) 442-8996	CC
JRW Industries, Inc. 2312 North Second Street Harrisburg, PA 17110 (717) 236-1416	CC
K & J Solar Service 1142 Fillmore St. Denver, CO 80206 (303) 388-8872	CC
KSE, Inc. P. O. Box 388 Amherst, MA 01004 (413) 549-5806	CC
Key Technology, Inc. P.O. Box 502 Jonestown, PA 17036 (717) 274-8310	CC
Leptoff Associates P.O. Box 4180 Woodbridge, VA 22194 (703) 491-8700	CC
+ MIT/MIT Radon Project Building 26, Rm # 421 Cambridge, MA 02139 (617) 253-4161	CC,GR
+ Maine Public Health Laboratory Statehouse Station #12 Augusta, ME 04333 (207) 289-2727	CC
Microbac Labs, Hanover, PA 701 3rd. Street Hanover, PA 17331 Not Installed Yet	CC

* More detailed information on the measurement companies' services and past performances is available upon request from your State Radiation Representative's Office.
+ Non-commercial laboratory for research purposes or State agency's assistance only.

TABLE 1
MEASUREMENT COMPANIES SERVING IOWA

* Company	Measurement Methods
Microbac Labs, MA Testing Division 202 Bussey Street Dedham, MA 02021 (617) 326-7117	CC
Microbac Labs, New Castle, PA R. D. #3, Pulaski Road New Castle, PA 16105 (412) 654-4212	CC
Microbac Labs, Pittsburgh, PA 4580 McKnight Road Pittsburgh, PA 15237 (412) 931-5861	CC
Microbac Labs, Schiller Div. 449 Rochester Road Pittsburgh, PA 15237-1733 (412) 369-4830	CC
Microbac Labs, Seaway Div 542-544 Conkey Street Hammond, IN 46324 (219) 932-1770	CC
NODAR, Inc. Route 5 Box 333R Athens, AL 35611 (205) 729-1900	CW
National Radon Control, Inc. P.O. Box 5342 North Branch, NJ 08876 (201) 231-0844	RP

* Company	Measurement Methods
Niton Corporation P. O. Box 9163 Lexington, MA 02173 (617) 222-4929	CC,GR
Northeast Radon Testing Svc., Inc. P. O. Box 94 Stormville, NY 12582 (914) 221-0238	CC
Northeastern PA Envir. Council P. O. Box 3113 Scranton, PA 18505 (717) 961-1150	CC
Nuclear Sources & Services Inc. P. O. Box 34042 Houston, TX 77234 (713) 841-0391	CC
Nucleon Lectern Associates, Inc. 2919 Olney-Sandy Spring Road Suite D Olney, MD 20832 (301) 774-3301	AT,CC,CW,GR
O. K. Rama Corp. 174 Flock Rd. Mercerville, NJ 08619 (609) 588-9627	CC
+ Oak Ridge Assoc. Universities Professional Training Program P. O. Box 117 Oak Ridge, TN 37831-0117 (615) 576-5517	CC

* More detailed information on the measurement companies' services and past performances is available upon request from your State Radiation Representative's Office.
+ Non-commercial laboratory for research purposes or State agency's assistance only.

TABLE 1
MEASUREMENT COMPANIES SERVING IOWA

* Company	Measurement Methods
Phoenix Labs L. Forbes Road Route 1, Box 247 Colebrook, NH 03576 (603) 237-5773	CC
Princeton Testing Laboratory Princeton Service Center 3490 U.S. Route 1 Princeton, NJ 08540 (609) 452-2037	AT,CC
Pylon Electronic Development 147 Colonnade Rd. Nepean, Ont., Canada K2E7L9 (613) 226-7920	CW,GW
Pyramid Environmental Systems, Inc. P. O. Box 648 Sparta, NJ 07871 (201) 729-9375	CW
R.A.D. Service & Instruments Ltd. 50 Silver Star Blvd., Unit 208 Scarborough, Ontario M1V2W4 Canada (416) 298-9200	RP
RAD Environmental Services 2306 Rodeo Drive Durham, NC 27704 (919) 688-9228	AT,CC,CR,CW,GR,GW
RAF Engineering Hillside Road Rockaway, NJ 07866 (201) 983-9041	AT,CC
RISE 280 Broadway Providence, RI 02903 (401) 272-1040	CC
Rad-Elec, Inc. 124 North Barry Street Olean, NY 14760 (716) 945-5012	AT,CC
Radiation Data Div. Princeton Geophysical Svc 1200 State Road Princeton, NJ 08540 (609) 921-6712	CC
Radiation Protection Services P. O. Box 2295 Darien, CT 06820-1295 (203) 324-7967	CC
Radiation Safety Engineering 6106 South Ash, Suite 1 Tempe, AZ 85283 (602) 897-9459	CC
Radiation Safety Services, Inc. 1584 Ashland Avenue Evanston, IL 60201-4070 (312) 866-7744	AT,GW
Radon Alert Detection Center P. O. Box 323 Flourtown, PA 19031 (800) 345-6348 (215) 247-9197	AT,CC

* More detailed information on the measurement companies' services and past performances is available upon request from your State Radiation Representative's Office.
+ Non-commercial laboratory for research purposes or State agency's assistance only.

MEASUREMENT COMPANIES SERVING IOWA

• Company	Measurement Methods
Radon Project, The P. O. Box 90069 Pittsburgh, PA 15224 (412) 687-3393	CC
Radon Research Group P.O. Box 1143 Germantown, MD 20874 800/445-8436, MD 800/544-8436	AT
Radon Safety Services, Inc. Box 441 New Providence, NJ 07974 (201) 825-8267	CC,RP
Radon Surveys, Div. Cope Tech Svcs 3508 87th Pl. Kenosha, WI 53142 (414) 694-3730	CC
Radon Testing Corp. of America RTCA 12 W. Main Street Elmsford, NY 10523 800/457-2366, 800/537-7822 -NY	CC
Radon Testing Svc, Pittsburgh, PA P. O. Box 19425 Pittsburgh, PA 15213 (412) 687-1533	CC
Radon Testing Svcs, Baltimore, MD P. O. Box 7999 Baltimore, MD 21221-0999 (301) 321-8008	CC

• Company	Measurement Methods
Radonics, Inc. (Div. of Gemini Research) 5101-D Backlick Road Annandale, VA 22003 (703) 941-0070	CC
Radonix 34 Dogwood Lane Middletown, PA 17057 (717) 944-5520	CC
Real Estate Support Services 7901 Flying Cloud Drive, #132 Eden Prairie, MN 55344 (612) 941-7558	CC
Recon Systems, Inc. P.O. Box 480 Three Bridges, NJ 08887 (201) 782-5900	AT,CC
Rogers & Assoc. Engineering Corp. 515 East 4500 South, Suite G-300 Salt Lake City, UT 84107 (801) 263-1600	AT,CC,GR
Ross Systems, Inc. 174 Route 94 Blairstown, NJ 07825 (201) 362-5571	AT,CC
Roy F. Weston, Inc. One Weston Way (Bldg. 4-2) West Chester, PA 19380 (215) 692-3030 ext 2746	GR,GW

• More detailed information on the measurement companies' services and past performances is available upon request from your State Radiation Representative's Office.

• Non-commercial laboratory for research purposes or State agency's assistance only.

TABLE 1
MEASUREMENT COMPANIES SERVING IOWA

* Company	Measurement Methods
Radon Analysts, Inc. P. O. Box 500 Livingston Manor, NY 12758 (914) 439-5111 (914) 292-2277	CC
Radon Analysis Incorporated RR#1 Box 561M Fox Run Road Stewartsville, NJ 08886 (201) 479-6088	CC
Radon Consultants, Inc., VA 4012 N. 36th Street Arlington, VA 22207 (703) 522-6669 (301) 736-7040	AT,CC
Radon Detection Services, Inc., GA P. O. Box 708172 Roswell, GA 30076 (404) 993-1471	AT,CC
Radon Detection Services, Inc., MD P. O. Box 1195 Laurel, MD 20707 (301) 725-2021	AT,CC,CW,GR,GW
Radon Detection Services, Inc., NJ P.O. Box 418 Ringoes, NJ 08551 (201) 788-3080	AT,CC,CW,GW
Radon Detection Services, Inc., PA P. O. Box 3208 Allentown, PA 18106 (215) 481-9585	AT,CC,CW,GW

* Company	Measurement Methods
Radon Detection Systems, CO 2300 Central Ave. Suite B-1 Boulder, CO 80301 (303) 444-6282	AT,CC,GW
Radon Detection and Control P. O. Box 222 Georgetown, PA 15043 (412) 573-0202	CC
Radon Engineering Services Inc 3129 Overton Rd. Birmingham, AL 35223 (205) 967-2665	CC
Radon Engr, a Unit of PSI Engr, Inc One Lethbridge Plaza Mahwah, NJ 07430 (201) 529-8300	AT,CC
Radon Environ. Monitoring, Inc Box 5305 Evanston, IL 60204 (312) 328-8628	AT
Radon Measurement and Services 13131 West Cedar Drive Lakewood, CO 80228 (303) 980-0086	AT,CC,GR,GW
Radon Measurements Inc. 2918 West T. C. Jester Houston, TX 77018 (713) 683-8227	AT,CC

* More detailed information on the measurement companies' services and past performances is available upon request from your State Radiation Representative's Office.
+ Non-commercial laboratory for research purposes or State agency's assistance only.

TABLE 1
MEASUREMENT COMPANIES SERVING IOWA

* Company	Measurement Methods
* US E.P.A., Las Vegas, NV 4220 S. Maryland Parkway LaPlaza Bldg.C, Room 632 Las Vegas, NV 89109 (702) 798-2447	GR
US Radon Testing Service 1200 S. Arlington Ridge Road Suite 709 Arlington, VA 22202 (703) 892-8962	CC
Univ of Texas School of Pub. Health P. O. Box 20186 Houston, TX 77225 (713) 792-4431	CC
Univ. of Pittsburgh Radon Project Physics Department Pittsburgh, PA 15217 (412) 624-9245	AT,CC
* University of Lowell 1 University Avenue Lowell, MA 01854 (617) 453-1045	CC
Virginia Radon Service, Inc. Box 332 B Route 1 Roseland, VA 22967 (804) 277-5491	CC
W. S. Fleming and Associates 6310 Fly Road E. Syracuse, NY 13057 (315) 437-1869	AT,CC,CR,CW,GR
* Wilkes College Physics Dept. Wilkes-Barre, PA 18766 (717) 824-4651 ext 481	AT,CC,CR,CW,GR
Wright Lab Services, Inc. 3240 Schoolhouse Road Middletown, PA 17057 (717) 944-5541	CC

* More detailed information on the measurement companies' services and past performances is available upon request from your State Radiation Representative's Office.
* Non-commercial laboratory for research purposes or State agency's assistance only.

TABLE 1
MEASUREMENT COMPANIES SERVING IOWA

* Company	Measurement Methods
Ryan Nuclear Laboratories 7030 D Huntley Rd Columbus, OH 43229 (614) 848-4414	CC
Scientific Analysis, Inc. 8012 East Shirley Lane Montgomery, AL 36117 800/345-2676 800/638-8348+724	CC
Scientific Testing Associates Star Route Box 124 Topping, VA 23169 (804) 758-5726	CC
SepTech N. 7826 Howard Spokane, WA 99208 (509) 467-8274	CC,GR
Sorensen Enterprises, Inc. 886 W. Hunt Rd. Alcoa, TN 37701 (615) 984-1376	CC
Southern Radon Services, Inc. 1000 Johnson Ferry Rd. Suite B-145 Marietta, GA 30068 (404) 565-3886	CC,CW
Standor Radon Detection 598 S. Edgewood Drive Jacksonville, FL 32205 (904) 388-0284	AT,CC
TCS Industries, Inc. 4320 Crestview Road Harrisburg, PA 17112 (717) 657 7032	CC
TEQ Corporation 93 Main Street Duryea, PA 18642 (717) 457-0233	AT,CC,CR,CW
TMA/Eberline, Health Physics 5635 Kircher Blvd. N.E. Albuquerque, NM 87109 (505) 245-9931	CC,GR
Teledyne Isotopes 50 Van Buren Avenue Westwood, NJ 07675 (201) 664-7070	CC
Terradex Corporation 3 Science Road Glenwood, IL 60425 (312) 755-7911	AT
Testing 1. 2. 3 50 Freeway Drive Cranston, RI 02920 (401) 461-0530	AT,CC
+ US Army Envir. Hygiene Agency Radiological & Inorganic Chem. Div. Aberdeen Proving Ground, MD 21010-5422 (301) 671-2519/2837	CC

* More detailed information on the measurement companies' services and past performance is available upon request from your State Radiation Representative's Office.
+ Non-commercial laboratory for research purposes or State agency's assistance only.

CONSULTANTS AND CONTRACTORS ATTENDING TRAINING ON RADON MITIGATION AT IOWA STATE UNIVERSITY OCTOBER 22 and 23, 1987

Name	Firm	Address	Phone No.
Harvey Johnson	Johnson's Energy Service	104 Central Drive Forest City, IA 50436	515/582-2998
Tom Gabrilson	Gabrilson Htg. & A/C	5442 Cary Avenue Davenport, IA 52807	319/386-9000
Charlie Stephenson	Mechanical Equipment Services Corp.	P.O. Box 2080 Des Moines, IA 50318	515/276-9131
Tom Voightman	Professional House Doctors	599 Short Avenue Marengo, IA 52301	319/642-7133
Dane J. Shearer	Professional House Doctors, Inc.	1406 E. 14th St. Des Moines, IA	515/265-0865
Glenn Burns		10519 N.W. 102nd Ct. Granger, IA 50109	515/999-2542
Vince Schaefer Const.		3220 Beaver Des Moines, IA 50310	515/279-4600
Bob Buck	Buck Const. Co., Inc.	217 22nd Ames, IA 50010	515/236-1202
Rob Kruthoff	Northwest Furnace Co., Inc.	3139 5th Avenue S. Fort Dodge, IA 50105	515/955-7262
Ernie Backerman	Backerman Const.	1061 28th St. Spirit Lake, IA 51360	712/336-3199
Ken Kofoed	Landon-Landon & Assoc.	702 S. 3rd Avenue Marshalltown, IA 50158	515/753-6666
Tom Peters and Ed Schisler	B & T, Inc.	222 S. Rolff Davenport, IA 52802	319/322-8749
William Holland and Bill Eich	Bill Eich Const. Co.	Box 63 Spirit Lake, IA 51360	712/336-4436
Thomas E. Mack	E.F. Mack	11 So. 8th Ave. Marshalltown, IA 50158	515/753-7328

Appointment - Carl Metzger - City of Ankeny

December 9, 1987

Environmental Protection Commission
Department of Natural Resources
Wallace State Office Building
902 East 9th Street
Des Moines, Iowa 50316

Members of the Commission:

The City of Des Moines, acting in its capacity as Operating Agency for the Des Moines Integrated Community Area, would like to express its support for the request of the City of Ankeny that reserve fund monies be provided to it in advance of the anticipated 1988 Federal grant funds so as to enable the City of Ankeny to take advantage of the extremely favorable construction bid it recently received for its wastewater treatment project. As you know, that bid was solicited with the expectation that the 1988 Federal grant funds would be available to defray project costs; and the bid expires on December 27, 1987. If the City of Ankeny must rebid the project after the 1988 Federal grant funds finally become available, the cost of its project will undoubtedly be higher than the current bid amount.

The ICA has a direct interest, as does the public at large, in seeing the City of Ankeny construct its wastewater treatment project as soon as possible and for the lowest possible cost. If the project is rebid at a higher cost, the difference between the two bids will come directly from the 60-percent share of the 1988 Federal grant funds expected to flow to the ICA's project. That difference would most likely be significant.

The City has been advised by its Bond Counsel, Ahlers, Cooney, Dorweiler, Haynie, Smith & Allbee, that the Commission's regulations appear to permit the use of reserve fund monies requested by the City of Ankeny. Briefly, reserves for grant increases fall outside the 60-percent maximum Federal grant amount provision (567-91.6(4)(g)); and such discretionary reserves, "if not needed in the fiscal year . . . may be made available to other projects" according to the Priority List (567-91.7(3)(a)). Such funds could be utilized in anticipation of the expected 1988 Federal grant funds, with an offsetting adjustment made to the reserve fund once the 1988 grant funds become available. Funding for projects of other communities would not be affected.

CITY OF DES MOINES
ENGINEERING DEPARTMENT
CITY HALL
EAST FIRST AND LOCUST
DES MOINES, IOWA 50307
(515) 283-4001
ALL-AMERICA CITY 1949,1976,1981

ica DES MOINES 201

In the interest of constructing wastewater treatment projects within the State at the lowest possible cost, therefore, the Des Moines ICA urges you to act favorably on the request of the City of Ankeny.

Sincerely,

Harold E. Smith
Director
ICA Operating Agency

HES:MAI:bhh

[redacted]

Mr. Robert Schlutz
Chairman
Iowa Environmental Protection Commission
Wallace Building
Des Moines, Iowa 50319

Dear Mr. Schlutz,

The funding issue related to the City of Ankeny's Southern Interceptor and Force Main project is of great importance to us in light of the current delay in congressional appropriation action on the 1988 funding for these projects. I request your consideration in awarding the city a grant by allocating a portion of the uncommited reserves for grant increases to this project. The following is an overview of the reasons for this request.

The city is under state administrative order mandate to complete this project not later than October 1, 1988. We have proceeded with the finalization of design, advertising for bids and the receipt of bids based on a schedule that 1) would meet the mandated completion date, and 2) would fall in line with the anticipated appropriation of 1988 funds and the offering of a grant for the project prior to the start of construction.

We have a very favorable bid on the interceptor and force main phase of this project. The engineers estimate for this portion of the project was $3,229,315. The city has received the apparent low bid on this project of $2,310,734.35. This translates into a total savings of $918,580 on this phase of construction, or a grant requirement savings of $688,935 computed at 75% grant level. Quite obviously, neither the city, nor any other party associated with funding of this project, can afford to lose this bid and its savings on the project.

Our bid letting date was October 28, 1987, and provided for a sixty day period in which to award a contract. We have had all documents reviewed by the project reviewers at the state Department of Natural Resources, and have received verbal concurrence with the award of a contract. However, because there is currently no funding upon which a grant can be extended, the department has not provided written acceptance of the apparent low bidder.

Office of Mayor • 211 S.W. Walnut • Ankeny, Iowa 50021 • (515) 964-5500

The award of this contract, under the terms of our specifications, must be made by December 27, 1987, or the bids expire. The contractor could agree to an extension of his bid, but they have indicated that they are currently not willing to agree to such an extension.

We have been advised that grant offers should not be expected for forty-five to sixty days after signature of an appropriations bill. If action is taken by congress by the middle of December, and with the holidays falling closely behind this action, its impossible to see a grant offer being extended to the city for our project until the middle of February to the first of March.

If we award this contract by December 27, 1987, all work completed before a grant offer is received will be ineligible for grant funding. This project was designed, let and bid to be commenced and diligently pursued over the winter months. The contractor has suggested a schedule which would actively utilized his manpower and equipment during these winter months. The delay in receiving a grant could accumulate a sizable construction cost by our contractor which would be ineligible.

The City of Ankeny requests that a portion of the uncommited reserve funds for construction projects be allocated for award of a grant in an amount to cover the $2,310,734.35 construction contract, so that a contract can be awarded, and construction can proceed to meet the imposed completion date. This amount would reduce the City of Ankeny's 1988 ICA allocation to the balance of the City of Ankeny's project, the Saylor Creek Lift Station.

The City of Ankeny is not asking for more funding on this project, actually less because of a favorable bid. Because of a lack of timely action by congress, we are asking for an allocation of uncommited reserve funds which will remove these timing barriers, and alleviate an unanticipated financial burden.

I appreciate you are hearing this request at your meeting on December 14, 1987. The city shall have representation at your meeting to answer any questions you may have.

Sincerely,

Ollie J. Weigel

Ollie J. Weigel
Mayor