FLOOD DAMAGE DATA BASE MANAGEMENT SYSTEM

* * FDDBMS **

User's Guide

#201, 11830 - 111 Avenue
Edmonton, Alberta
T5G 0E1

FDDBMS

User's Guide

Version 3.0 — March 1983

TABLE OF CONTENTS

1.0 INTRODUCTION

The Flood Damage Data Base Management System (FDDBMS) described in this user's guide has undergone an evolutionary process over the past three years of development and refinement. Version 3.0 is presented in CP/M disk format and has been developed on the KAYPRO II computer by Non-Linear Systems Inc. The FDDBMS model may be configured to run on compatible CP/M computers with 64K RAM and two disk drives. Software required to be sulpplied by the user is Microsoft BASIC.

1.1 Conventions Used in this Manual

To make reading this manual a little easier, certain conventions and phrases should be clarified. It is assumed that the user has basic familiarity with CP/M conventions.

- "(cr)" means hit the RETURN key.
- When a command to the computer is shown, your response will be shown boldfaced.
- Filenames RES*.* - refers to residential related files
  COM*.* - refers to commercial related files

2.0 MAKING A WORKING COPY

Before using FDDBMS on your KAYPRO II, you should make a working copy. FDDBMS requires a disk of its own. For convenience, let's create the working copy of FDDBMS on your CP/M working disk. Use the following directions to move the program associated with Uniform to your CP/M disk.

1) Put the CP/M working disk into drive A and press the reset buton on the back of your KAYPRO II. After a few seconds you should get the CP/M signon message and prompt.

2) Place your FDDBMS master disk into drive B.

3) Now we'll copy the FDDBMS programs to the CP/M working disk with the following command:

A> pip a:=b:*.*[v] (cr)

If you got a DISK WRITE ERROR message while you were copying FDBBMS, then the disk that you were copying to is full. In this case, you must either erase some files from your CP/M working disk using the ERA command or you should try using another disk and repeating the above steps until you are successful.

4) FDDBMS should now be on your CP/M working disk. You may remove the FDDBMS master disk from drive B and put it in a safe place along with your other master disks.

Because the individual programs associated with FDDBMS take up less space, you may elect to copy these files to other disks.

3.0 GETTING STARTED WITH FDDBMS

The FDDBMS working disk contains eight (8) programs of which three (3) relate to the residential and three (3) to the commercial database calculating to edit (create input), calculate damages (output) and print input/output results. The two (2) remaining programs are used to create stage-frequency curves for each zone and reach and stage-damage curves for use by the *CALC.BAS programs. The programs supplied on the working FDDBMS disk are as follows:

1. RESEDIT.BAS
2. RESCALC.BAS
3. RESPRT.BAS
4. COMEDIT.BAS
5. COMCALC.BAS
6. COMPRT.BAS
7. FLDELEV.BAS
8. FLDDAM.BAS

3.1 Using FDDBMS to Create and Calculate Residential Data.

It is recommended that a working disk be made with the following programs; RESEDIT.BAS, RESCALC.BAS, RESPRT.BAS, FLDELEV.BAS, FLDDAM-.BAS AND MBASIC. A detailed description of each main program is provided in the Appendix. A brief description of the function of each of the main programs is provided below.

1. RESEDIT - creates a new input data file or accesses and edits an existing input data file.

2. RESCALC - access an existing input data file together with a compiled stage-damage file to create a new output data file.

3. RESPRT - access existing input data file and prints file for hardcopy, access existing output data file and prints file for hardcopy; can do either or both

4 FLDELEV - creates compiled stage-frequency file for RESCALC

5. FLDDAM - creates compiled stage-damage file for RESCALC.

Recommended convention for data filenames:

Input data file: _____.IR_

(i) Up to 8 letters to describe community

(ii) Extention I for input
R for residential
_ number 1 to 9 for subfiles

Output data file: _____.OR_

(i) Up to 8 letters to describe community

(ii) Extension O for output
R for residential
_ number 1 to 9 for subfiles

Note: Should be same as for input except for "O"

Compiled FLDELEV file: REL___.D

(i) REL for Residential ELevations

(ii) First three (3) letters of Community

(iii) Extension "D" for data

Note: One file may be created for all communities, however since a large file increases computational time for RESCALC it is recommended that communities with a large number of reaches be made into individual compiled elevation files.

Compiled FLDDAM file: RDAM.D

(i) RDAM for Residential DAMage

(ii) Extension "D" for data

Note: Since damage file is common to all residential units there is no need for differentiation.

3.2 Using FDDBMS to Create and Calculate Commercial Data.

It is recommended that a working disk be made with the following programs; COMEDIT.BAS, COMCALC.BAS, COMPRT.BAS, FLDELEV.BAS, FLD-DAM.BAS AND MBASIC. A detailed description of each main program is provided in the Appendix. A brief description of the function of each of the main programs has been provided in the previous section; just replace "RES" with "COM" for main program description and "R" with "C" for input/output data files.

3.3 Drive Locations for Programs and Files.

It is recommended that the main programs be stored on drive A and that input/output data and compiled stage-elevation and stage-damage files be stored on drive B.

APPENDIX A

MAIN PROGRAM DESCRIPTIONS

APPENDIX A
MAIN PROGRAM DESCRIPTIONS

A.0 General

The following is a detailed description of the main programs for the FDDBMS. It is assumed that the working disk containing the programs together with the MBASIC is installed in drive A and that the data files to be created and accessed are in drive B. Note: All filenames and extensions should be input in "capitals" (use CAP LOCK if available)

A.1 RESEDIT.BAS Program

This program is to be used for the creation and editing of residential input data files. The following steps should be followed to run the program.

1) A>**B:MBASIC**

2) Ok
RUN "A:RESELEV.BAS"

3) Input todays data as yy/mm/dd: **83/04/01** (cr)

4) Selection Menu will be shown on screen:

<A>DD TO FILE OR CREATE NEW FILE
<E>DIT & EXAMINE FILE
<M>ERGE FILES
<Q>UIT

SELECTION ???

Type in A,E,M or Q

5) Case 1: **A**
Input: filename e.g., **CRAVEN.IR1** (cr)
Confirm: **Y or N** (cr)

Start inputting at Record Number 1

1. Zone, Reach, Number (0,0,0) to Quit: **A,1,106** (cr)
2. Civic Address, Street Name: **0,DIVISION AVE** (cr)
3. Unit Type: **A** (cr)
4. Grade Elevation, Height to Main Floor: **533.4,1.0** (cr)
5. Basement, Garage, Outdoor Storage: **Y,Y,Y** (cr)
6. Classification: **CW2** (cr)
7. Flood Fringe: **0** (cr)

On last input (item 7) complete results will be presented on screen. User can choose the following:

<N>EXT RECORD: <C>OMMENT: <Q>UIT: <# TO EDIT>

If a mistake is made type number 1 to 7 and re-input correct values. Results are redisplayed after each change. When all changes are made or if no changes are necessary, user may type **N** to go to next record or **Q** to quit. On quitting follow menu commands until program re-boots into MBASIC system.

6) Case 2: **E** (cr)
Input: filename e.g., **CRAVEN.IR1** (cr)
Confirm: **Y or N** (cr)

Selection Menu will be displayed:

<S>EQUENTIAL THROUGH FILE
<N>UMBER SEARCH
<A>DDRESS SEARCH
<Q>UIT

SELECTION ???

(i) **S** - this provides a sequential review (see screen display) of all the records from first to last. The User may stop at any record to edit.

ii) **N** - request unit number for input will search through and display selected number

iii) **A** - request civic number, and street address. NOTE: will not function if civic number = 0.

7) Case 3: **M**

Will merge two input data files.

A.2 RESCALC.BAS

This program takes an input data file together with compiled stage-damage and stage-frequency files to create an output file. Note: Will not accept an output filename same as one existing output filename on a disk. Call it another name or erase existing file. The following steps should be followed to run program.

1) A>**B:MBASIC** if already in drive B and in BASIC follow next step

2) Ok
RUN "A:RESCALC.BAS"

3) Input today's date as yy/mm/dd: **83/04/01** (cr)

4) Input the name of the Data Input File.
FILENAME OR 'Q' TO QUIT: **CRAVEN.IR1** (cr)
Confirm **Y** or **N** (cr)

5) Input the name of the Output Data File or 'Q' to Quit
FILENAME: **CRAVEN.OR1** (cr)
Confirm **Y** or **N** (cr)

6) Input the name of the Flood Elevation File
FILENAME OR 'Q' TO QUIT: **RELABCD.D** (cr)

7) Input the name of the Damage Coefficients File
FILENAME: **RDAM.D** (cr)
Confirm **Y** or **N** (cr)

8) After item 7) the program will begin computing, the screen will list each unit number at which current computation is taking place. The user should allow for between 6-12 seconds per record. At completion the computer reverts to the Basic system with the "Ok" symbol on screen.

9) Error messages may be shown for bad records. System may hang up. Note error message, reset system. Edit error, restart at 1).

A.3 RESPRT.BAS

This program prints input (*.IR*) files and or output (*.OR*) files. The following steps should be followed to run program.

1) A>**B:MBASIC** if already in drive B and in Basic follow next step.

2) Ok
RUN "A:RESPRT.BAS" (cr)

3) Input today's data as yy/mm/dd: **83/04/01** (cr)

4) Selection Menu:

< I>INPUT DATA FILE
< O>UTPUT DATA FILE
< Q>UIT

SELECTION???

(i) I - will ask for Input filename and confirm and output to printer

(ii) O - will ask for Input filename and confirm and output filename and confirm and output to printer

A.4 FLDELEV.BAS

This program creates a compiled stage-frequency file by zone and reach for use on RESCALC and COMCALC. The following steps should be followed to create compiled file.

1) A **B:MBASIC** (cr)

2) Ok
LOAD "A:FLDELEV.BAS" (cr)

3) Ok
LIST (cr)
Make sure lines 1000 - 8000 are empty.

4) Insert lines 1000 on up to 8000 as required
1000 DATA N,M1,M3,M4

N = Total Number of lines following tha make up data file
M1 to M4 = Return Flood in years e.g., 10,50,100,500

1010 DATA Z,R,E1,E2,E3,E4

Z = 1 or 2 Letters representing zone
R = Number representing reach
E1 to E4 = Flood Levels for respective floods in metres

Repeat above to N.
Sample input file is attached as Exhibit following page A10.

5) When completed insertion type:
RUN (cr)

6) Input the name of Flood Elevation File
FILENAME: REL___.D (cr)
Confirm Y or N (cr)

7) Compiled file will be stored on drive B disk.

A.5 FLDDAM.BAS

This program creates a compiled stage-damage file for residential and commercial units for use on RESCALC and COMCALC respectively. The following steps should be followed to create compiled file.

1) A>**B:MBASIC** (cr)

2) Ok
LOAD "A:FLDDAM.BAS" (cr)

3) Ok
LIST (cr)
Make sure lines 1000 - 8000 are empty.

4) Insert lines 1000 on up to 8000 as required
1000 DATA N,M

N = Total number of lines following that make up data file
M = Largest number of pairs of points on damage-curve

(i) Residential

1010 DATA "AA1",K,E1,D1,E2,D2,....,EK,DK

AA1 = Code for house classification A,B,C,D
house type A,C,D
number

Mainfloor contents 1
Mainfloor structure 2
Basement contents 3
Basement structure 4

K = Number of pairs of points
E1 = Elevation in metres
D1 = Damage in dollars

Repeat to N

(ii) Commercial

1010 DATA "A1","S1",K,E1,D1,.....,EK,DK

A1 = Commercial Classification code
S1 = Structural Classification code
K = Number of pairs of points
E1 = Elevation in metres
D1 = Damage in dollars/square metre

Repeat to N

Sample data files are shown on following Exhibit.

5) When completed insertion type:

RUN (cr)

6) Input the name of Flood Damage File:

FILENAME: **RDAM.D** or **CDAM.D** (cr)

Confirm **Y** or **N** (cr)

7) Compiled file will be stored on drive B disk.

```
1300 DATA 42,3
1300 DATA "AA1",5,.15,7733,.3,8255,.6,9382,.75,10024,1.05,10228
1310 DATA "AA2",6,.1,8838,.3,21309,1.52,28958,1.82,36823,2.4,36824,2.7,42224
1320 DATA "AA3",2,.15,4198,.9,4377
1330 DATA "AA4",3,.1,0,.3,6382,2.4,15220
1340 DATA "AC1",5,.45,7967,1.2,8257,1.5,12789,2.4,13274,2.55,15874
1350 DATA "AC2",8,.1,4419,.3,7365,1.52,13257,1.82,24058,2.4,27986,4.27,43698,4.88,43698,5.2,45170
1360 DATA "AC3",4,1.2,0,1.35,3269,1.5,3635,2.35,3788
1370 DATA "AC4",3,.1,0,.3,6382,2.4,15220
1380 DATA "AD1",5,.6,8974,2.4,8974,2.55,13459,3,15906,3.75,16315
1385 DATA "AD2",8,.1,3553,.3,8407,2.52,21906,2.74,30787,3.35,33511,3.66,37892,4.88,37892,5.2,40260
1390 DATA "AD3",3,.15,3030,.6,3751,.75,3788
1395 DATA "AD4",3,.3,1964,1.52,3928,2.4,4419
1400 DATA "BA1",5,.15,4095,.3,4371,.6,5233,.75,5309,1.05,5417
1410 DATA "BA2",6,.1,4680,.3,11284,1.52,15340,1.82,19500,2.4,19500,2.7,22360
1420 DATA "BA3",2,.15,2223,.9,2318
1430 DATA "BA4",3,.1,0,.3,3390,2.4,8060
1440 DATA "BC1",5,.45,4219,1.2,4372,1.5,6772,2.4,7030,2.55,8406
1450 DATA "BC2",8,.1,2340,.3,3900,1.52,7020,1.82,12740,2.4,14820,4.27,23140,4.88,23140,5.2,23920
1460 DATA "BC3",4,1.2,0,1.35,1731,1.5,1925,2.35,2006
1470 DATA "BC4",3,.1,0,.3,3380,2.4,8060
1480 DATA "BD1",5,.6,4752,2.4,4725,2.55,7126,3,8423,3.75,8640
1490 DATA "BD2",8,.1,1881,.3,4452,2.52,11600,2.74,16303,3.35,17746,3.66,20066,4.88,20066,5.2,21320
1500 DATA "BD3",3,.15,1605,.6,1992,.75,2006
1510 DATA "BD4",3,.3,1040,1.52,2080,2.4,2340
1520 DATA "CA1",4,.15,3441,.45,4170,.6,4238,.75,4528
1530 DATA "CA2",6,.1,4420,.3,8840,1.52,13260,1.82,17680,2.4,17680,2.7,20280
1540 DATA "CA3",4,.15,1844,.45,2051,.6,2233,.75,2249
1550 DATA "CA4",4,.1,1300,.3,2860,2.1,5980,2.4,6760
1552 DATA "CC1",5,.45,2273,1.2,2355,1.5,3648,2.4,3786,2.55,4528
1554 DATA "CC2",8,.1,1260,.3,2101,1.52,3781,1.82,6862,2.4,7982,4.27,12463,4.88,12463,5.2,12684
1556 DATA "CC3",4,1.2,0,1.35,932,1.5,1037,2.35,1081
1558 DATA "CC4",3,.1,0,.3,1821,2.4,4341
1560 DATA "CD1",5,.6,2091,2.4,2091,2.55,3203,3.15,3733,3.75,3809
1570 DATA "CD2",8,.1,1560,.3,3692,2.52,9620,2.74,13520,3.35,14716,3.66,16640,4.88,16640,5.2,17680
1580 DATA "CD3",4,.15,640,.45,713,.6,777,.75,782
1590 DATA "CD4",3,.3,1040,1.52,2080,2.4,2340
1600 DATA "DA1",5,.15,2492,.3,2625,.45,2891,.75,3206,1.05,3248
1610 DATA "DA2",6,.05,1560,.1,1560,.1,4420,.3,14300,1.52,15600,1.82,17680
1620 DATA "NA1",5,.15,2831,.3,2933,.45,3259,.75,3365,1.5,3431
1630 DATA "NA2",6,.1,7540,.3,15080,.6,17160,1.52,18460,1.82,22620,.3,22620
1640 DATA "MA1",5,.15,2931,.3,2933,.45,3259,.75,3365,1.5,3431
1650 DATA "MA2",6,.1,5460,.3,13260,.92,15080,1.52,16380,1.82,19760,2.9,19760
```

EXHIBIT

RESIDENTIAL DAMAGE DATA

```
1390 DATA 25,9
1400 DATA "A1","S1",7,.15,11,.3,25,.6,45,.9,68,1.2,76,1.5,83,1.8,85
1410 DATA "B1","S1",7,.15,0,.3,91,.6,205,.9,318,1.2,364,1.5,409,1.8,455
1420 DATA "C1","S1",8,.15,47,.3,142,.6,284,.9,473,.12,662,1.5,851,1.8,898,2.4,945
1430 DATA "C2","S1",7,.15,136,.3,272,.6,408,.9,953,1.2,1089,1.5,1225,1.8,1361
1440 DATA "C3","S1",8,.15,90,.3,120,.6,150,.9,270,1.2,330,1.5,450,1.8,570,2.4,600
1450 DATA "C4","S1",7,.15,44,.3,89,.6,178,.9,267,1.2,356,1.5,400,1.8,444
1460 DATA "C5","S1",7,.15,20,.3,26,.6,49,.9,72,1.2,92,1.5,104,1.8,115
1470 DATA "C6","S1",7,.15,98,.3,182,.6,288,.9,379,1.2,470,1.5,561,1.8,606
1480 DATA "D1","S1",8,.15,26,.3,44,.6,65,.9,87,1.2,97,1.5,107,1.8,112,2.4,116
1490 DATA "E1","S1",8,.15,9,.3,29,.6,57,.9,114,1.2,171,1.5,237,1.8,271,2.4,285
1500 DATA "F1","S1",8,.15,22,.3,44,.6,88,.9,177,1.2,265,1.5,353,1.8,398,2.4,441
1510 DATA "G1","S2",6,.15,14,.3,80,.6,163,.9,318,1.2,354,1.5,362
1520 DATA "H1","S3",8,.15,0,.3,5,.6,9,.9,18,1.2,27,1.5,36,1.8,41,2.4,45
1530 DATA "I1","S1",7,.15,3,.3,7,.6,12,.9,20,1.2,28,1.5,33,1.8,39
1540 DATA "J1","S1",8,.15,11,.3,32,.6,75,.9,118,1.2,225,1.5,291,1.8,312,2.4,323
1550 DATA "K1","S1",8,.15,8,.3,16,.6,32,.9,65,1.2,81,1.5,97,1.8,129,2.4,162
1560 DATA "L1","S2",9,.15,29,.3,66,.6,95,.9,146,1.2,168,1.5,170,1.8,186,2.4,201,3,202
1570 DATA "M1","S2",6,.15,0,.3,0,6,16,2.4,16,3,162,3.65,202
1580 DATA "N1","S4",4,.3,29,.6,93,.9,126,1.2,127
1584 DATA "P1","S2",9,.15,14,.3,33,.6,47,.9,73,1.2,84,1.5,85,1.8,93,2.4,100,3,101
1596 DATA "R1","S4",4,.3,14,.6,46,.9,63,1.2,63
1590 DATA "S1","ZZ",8,.1,35,.3,41,.61,44,.91,47,1.22,49,1.52,50,2.44,55,2.74,62
1600 DATA "S2","ZZ",9,.1,12,.3,13,.61,15,.91,16,1.22,16,1.52,17,2.44,17,2.74,25,4.88,26
1610 DATA "S3","ZZ",9,.1,34,.3,48,.61,54,.91,61,1.22,65,1.52,69,2.44,81,2.74,100,3.05,147
1620 DATA "S4","ZZ",8,.1,35,.3,41,.61,44,.91,47,1.22,49,1.52,50,2.44,55,2.74,62
```

EXHIBIT

COMMERCIAL DAMAGE DATA

```
1000 DATA 5,10,50,100,500
1010 DATA A,1,0,531.72,532.15,533.19
1020 DATA A,2,0,531.54,531.97,532.98
1030 DATA B,1,418.64,419.66,419.95,420.34
1040 DATA B,2,418.45,419.45,419.68,420.01
1050 DATA C,1,491.80,492.00,492.20,492.80
```

EXHIBIT

SAMPLE FLOOD ELEVATION DATA

APPENDIX B

CASE EXAMPLE: FLOOD PLAIN MANAGEMENT PROGRAM DATA COLLECTION PROJECT

APPENDIX B
CASE EXAMPLE

B.0 Floodplain Management Program Data Collection Project.

This case example was a project completed for Saskatchewan Environment in March 1983. Flood damage data base were inventoried for ten communities in Saskatchewan as listed below.

1. Battlefords
2. Carrot River
3. Craven
4. La Ronge
5. Prince Albert
6. Regina
7. Roche Percee
8. Saskatoon
9. Tantallon
10. Tisdale

The following sections will describe inventory input data format for residential and commercial units, stage-frequency and stage damage format and filenames used in the project.

B.1 Residential Input Data

The following items are required for each residential record.

No.	Item	Format	Description
1.	Zone	2 letters	Area containing a number of reaches (A-Z)
	Reach	Integer	Number of Sections within a zone (0-9)
	Number	Integer	Structure number (1-999999)
2.	Civic Address	6 Number/Letter	House number (1-999999)
	Street Name	20 Letters	Street Name
3.	Unit Type	1 letter	Bungalow, 1½ storey, 2 storey (A,C or D)
4.	Grade Elevation	Real Number	Geodetic elevation of ground level
	Height to Main Floor	Real Number	Distance ground to main floor
5.	Basement	1 letter	Basement inventory (Y,N or P)
	Garage	1 letter	Garage inventory (Y or N)
	Outdoor Storage	1 letter	Storage inventory (Y or N)
6.	Classification	3 letters	See Table
7.	Flood Fringe	Integer	See Table

The Zone designations for the project are as follows:

Community		Zone
Roche Percee		A
Tantallon		B
Craven		C
Carrot River		D
Tisdale		E
La Ronge		F
Prince Albert		G
Battlefords		H
Saskatoon		I
Regina:	Pilot Butte Creek	J
	Wascana Creek	K
	N. Storm Channel	L
	S. Storm Channel	M

RESIDENTIAL CLASSIFICATION

AB or AW1 (2/3)	2000 ft^2	custom built	category/wood or brick/quality
BB or BW1 (2/3)	2000 ft^2	average	category/wood or brick/quality
CB or CW1 (2/3)	1000 ft^2	post war	category/wood or brick/quality

DW1	Mobile Home, double	good
2	Mobile Home, double	poor
3	Mobile Home, single	good
4	Mobile Home, single	poor

M99 Multiwalk up/No. of units per floor

N99 Apartment Tower/No. of units per floor

UNIT TYPE

A	Bungalow/side split/bi-level
B	Ranch-Style
C	4-level split
D	Two storey
E	Walk-up apartment
F	Apartment tower
G	Mobile home
H	Duplex/4-plex
I	Row housing

FLOOD FRINGE

Description		Code
500 year -	flood fringe/floodway	1,3,5,7,9
-	flood fringe	5,9
-	floodway	1,3,7
100 year -	flood fringe/floodway	1,3,9
-	flood fringe	1,9
-	floodway	3
Ground level greater than 500 year fringe		0

B.2 Commercial Input Data

The following items are required for each commercial record:

No.	Item	Format	Description
1.	Zone	2 letters	Area containing a number of reaches (A-Z)
	Reach	Integer	Number of sections within a zone (0-9)
	Number	Integer	Structure number (1-999999)
2.	Civic Address	6 number/letter	House number (1-999999)
	Street Name	20 letters	Street name
3.	Unit Type	2 letters	See table
4.	Grade Elevation	Real number	Geodetic elevation of ground level
	Height to Main Floor	Real number	Distance ground to main floor
5.	Area/Stories	Integer/Integer	Floor Area in m^2/starting floor level to ending
6.	Ancilliary Buildings	1 letter	Note (Y or N)
	Outdoor Storage	1 letter	Note (Y or N)
	Construction Type	1 letter	Note (W,B,S,C)
7.	Flood Fringe	Integer	See Table

COMMERCIAL AND INSTITUTIONAL

A1	General Office
B1	Medical
C1	Shoes
C2	Clothing
C3	Stereos/TV
C4	Paper Products
C5	Hardware/Carpet
C6	Miscellaneous Retail
D1	Furniture/Appliance
E1	Groceries
F1	Drugs
G1	Auto
H1	Hotels
I1	Restaurants
J1	Personal Service
K1	Financial
L1	Warehouse/Industrial
M1	Theatres
N1	Other/Institutional
P1	Agricultural
R1	Recreational

B.3 Stage-Frequency Data

These are common to both residential and commercial database. First value of data is zone (A-M) as shown on table. Next are reaches (1-9). These have been selected on the basis of changes in water level elevations. The next four (4) values are flood elevations pertaining to the 1:10, 1:50, 1:100 and 1:500 flood levels for the reach.

B.4 Stage-Damage Data

1. Residential

There are six (6) categories pertaining to the classification code A,B,C,D,M and N type units. For A,B and C units there are three (3) types. A,C, and D relates to 1 storey, 1½ storey and 2 storey units. For each category and type there are two sets of damage curves 1 and 2 for contents and structure. Where applicable for categories with basements, curves 3 and 4 refers to contents and structural damage for basement. For multi-walkup and apartment categories (M and N), two digit notation defines the number of units on each floor in input data damage curve data pertains to each unit only.

e.g. BA1 - B class house
A type bungalow
1 contents damage

2. Commercial

There are twenty-one (21) classes of structure coding, A1 to R1 as per table. For commercial, four types of construction (structural) class are provided S1 to S4. See exhibit for example.

B.5 Files

For file extension convention see main text.

	Communities		Filename
1.	Tantallon		TANTAL.IR1/.OR1/.IC1/.OC1
2.	Craven		CRAVEN.IR1/.OR1/.IC1/.OC1
3.	Roche Percee		ROCHEP.IR1/.OR1/.IC1/.OC1
4.	Carrot River		CARROTR.IR1/.OR1/.IC1/.OC1
5.	Tisdale		TISDALE.IR1/.OR1/.IC1/.OC1
6.	Battlefords		BATTFORD.IR1/.OR1/.IC1/.OC1
7.	Saskatoon		SASKTOON.IR1/.OR1/.IC1/.OC1
8.	La Ronge		LARONGE.IR1/.OR1/.IC1/.OC1
9.	Prince Albert		PRALBERT.IR1/.0R1/.IC1/.OC1 PRALBERT.IR2/.OR2 PRALBERT.IR3/.OR3
10.	Regina	(Pilot Butte)	REGINA.IR1/.OR1/.IC1/.OC1
		(Wascana)	REGINA.IR2/.OR2/.IC2/.OC2
		(N.Storm)	REGINA.IR3/.OR3/.IC3/.OC3
		(S.Storm)	REGINA.IR4/.OR4/.IC4/.OC4

1. Flood Elevations (compiled)

Communities		Filename
Tantallon, Craven Roche Percee, Carrot River		RELABCD.D
La Ronge		RELLAR.D
Tisdale		RELTIS.D
Battlefords		RELBAT.D
Saskatoon		RELSAS.D
Prince Albert		RELPRI.D
Regina	(Pilot Butte)	RELREG1.D
	(Wascana)	RELREG2.D
	(N.Storm)	RELREG3.D
	(S.Storm)	RELREG4.D

The above files are common to residential and commercial data.

2. Flood Damage (Compiled)

Only two common files are used, RDAM.D for residential data and CDAM.D for commercial.