

## APPENDIX A

### Data dictionary

Table A.1 MapInfo Data dictionary (Department of Public Works and Town of Country Planning, 2008)

OBJECTID	ACODE	DESCRIPTION
1	ADMIN	ADMINISTRATIVE BOUNDARY
2	BLDG	BUILDING
3	CMPMJU	COMPREHENSIVE PLAN MAJOR LAND USE
4	COMP_BND	COMPREHENSIVE PLAN BOUNDARY
5	CONSRV	CONSERVATIVE AREA
6	CONTROL	COORDINATE CONTROL POINT
7	GRID	GRID LINE
8	HYDROL	HYDROLOGICAL LINE
9	HYDROP	HYDROLOGICAL POLYGON (AREA)
10	LANDCLAS	LANDUSE CLASSIFICATION
11	LAND_OWN	LAND OWNER
12	LANDSUM	LANDUSE SUMMARY CLASSIFICATION
13	MUNISAN	MUNICIPALITY SANITARY
14	PHOTO_CAT	AERIAL PHOTO CATALOG
15	PLLU	LAND USE PLAN
16	PLRC	ROAD CENTER LINE PLAN
17	PLRD	ROAD EDGE PLAN
18	RAIL	RAIL TRAIN
19	RAILEDGE	RAIL EDGE TRAIN
20	ROADCL	ROAD CENTER LINE
21	ROADEDGE	ROAD EDGE
22	SPOT	ELEVATION SPOT
23	STRUCT	STRUCTURAL
24	TOPO	TOPOGRAPHY
25	TEXT_ALL	TEXT DESCRIPTION

Table A.2 Administrative boundary, ADMIN

COLUMN NAME	DATA TYPE	DESCRIPTION	DATA
AREA	Float	Polygon area	
PERIMETER	Float	Polygon perimeter	
ADMIN#	Integer	Internal number	
ADMIN_ID	Integer	User-id	
AD_CHANGWAT	Character (2)	Province-id	
AD_AMPHOE	Character (2)	District-id	
AD_TAMBOL	Character (2)	Sub district-id	
AD_VILLAGE	Character (2)	Village-id	
AD_CHANGWATNAME	Character (35)	Province Name	
AD_AMPHOENAME	Character (35)	District Name	
AD_TAMBOLNAME	Character (35)	Sub district Name	
AD_VILLAGENAME	Character (35)	Village Name	

Table A.3 Building, BLDG

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon area
PERIMETER	Float	Polygon perimeter
BLDG#	Integer	Internal number
BLDG_ID	Integer	User-id
BL_ID	Integer	Building-id
BL_TYPE	Character (2)	Building Type 1 = Detached House 2 = Semi-Detached House 3 = Town House 4 = Terraced House 5 = Home or Cottage 6 = Hotel, Flat, Condominium, Mansion 7 = Houseboat, Hut 8 = Other
BL_FRONTAGE	Float	Building Width (m)
BL_HEIGHT	Float	Building Height (m)
BL_DEPTH	Float	Building Depth (m)
BL_NSTOREY	Integer	Building Storey
BL_NUNIT	Integer	Occupancy Unit (Units)
BL_UNIT_F	Character (1)	Occupancy From
BL_NRESIDENT	Float	Number of resident
BL_EMPLOY	Float	Number of Employ
BL_OWNER	Integer	Owner
BL_AREA	Float	Building area
BL_AREA_FLAG	Character (1)	Building area from
BL_TAX_ID	Integer	Building Tax id
PRJ_ID	Integer	Project id

Table A.4 Building use id

BL_USE	Integer	Building Use ID
		1000 Residential
		1100 Residential
		1200 Palace
		1300 Official Resident
		1600 Conservation Residential
		1800 Other Residential
		2000 Commercial Building
		2100 Office Building
		2200 Business Type
		2210 Market
		2220 Hotel
		2230 Commercial
		2240 Gas Station
		2280 Other Business
		2300 Bank
		2400 Recreation Business
		2410 Theater
		2420 Night Club, Karaoke
		2480 Other recreation business
		2800 Other commercial business
		3000 Industrial Business
		3100 Industrial Type
		3110 Factory
		3120 Animal slaughter
		3300 Warehouse
		3400 Industrial Specific
		3800 Other Industrial
		4000 Mix use Utility
		4100 Residential and Office Building
		4110 Residential & Office
		4120 Residential & Services
		4200 Industrial and commerce
		4300 Residential and Industrial
		5000 Facility
		5130 Airport
		5140 Port & Warehouse
		5150 Bus terminal
		5160 Train station
		5180 Other transport station
		5200 Telephone Organization
		5210 Office
		5220 Sub-Station

Table A.4 Building use id (continued)

BL_USE	Integer	Building Use ID
		5230 Office and Sub-Station
		5300 Electricity Authority
		5310 Office
		5320 Sub-station
		5330 Office and Sub-Station
		5400 Waterworks Authority
		5410 Office
		5420 Sub-station
		5430 Office and Sub-Station
		5500 Environmental Authority
		5510 Waste Collection and management
		5520 Waste water management
		5800 Other facility
		6000 Public Utility
		6100 Education
		6110 Kindergarten
		6120 Primary School
		6130 Secondary School
		6140 Mix Education
		6141 Kindergarten & Primary School
		6142 Kindergarten & Primary & Secondary School
		6143 Primary & Secondary School
		6150 Vocational School
		6160 University
		6180 Other School
		6200 Religious institution
		6210 Temple
		6220 House of priest
		6230 Church
		6240 Mosque
		6250 Shrine
		6260 Crematorium
		6270 Tomb
		6280 Other Religious place
		6300 Government Office
		6310 Provincial Hall
		6320 District Office
		6330 Municipal Office
		6340 Police Station
		6350 Fire Station
		6360 Post Office

Table A.4 Building use id (continued)

BL_USE	Integer	Building Use ID
		6370 Correctional
		6380 Other government office
		6400 Enterprises
		6500 Public Health
		6510 Health and hygiene center
		6520 Clinic
		6530 Hospital
		6600 Art and Culture
		6610 Cultural center
		6620 Museum
		6630 Library
		6640 Art galleries
		6650 Community hall
		6800 Other utilities
		6810 Embassies
		6820 Foreign agencies e.g. UN, FAO
		6830 Welfare foundation
		7200 Conservation area to the art and culture of Thailand
		7210 Archaeological site
		7220 Memorial monument
		7300 Recreation
		7320 Sport
		7321 Outdoor stadium without amphitheater
		7322 Outdoor stadium with amphitheater
		7323 Indoor stadium
		7324 Indoor & Outdoor stadium
		7330 Zoo
		7340 Amusement park
		7380 Other recreation
		8180 Green house
		8310 Stockyard
		8500 Irrigation
		9998 Other

Table A.5 Building Description

BL_DATE	Date	Construction date
BL_MATL	Integer	Materials for Construction
		1 = Concrete
		2 = Wood
		3 = Concrete and Wood
		8 = Other
		9 = Unknown Materials
BL_NAME	Character (150)	Building Name
BL_HOUSENUM	Character (10)	Building House Number
BL_VILLNUM	Character (10)	Village Number
BL_VILLAGE	Character (35)	Village Name
BL_ROAD	Character (30)	Road Name
BL_TAMBOL	Character (30)	Sub-district Name
BL_AMPHOE	Character (30)	District Name
BL_CHANGWAT	Character (30)	City Name
BL_POSTCODE	Character (5)	Post code
BL_ADDRESS	Character (180)	Building address

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Table A.6 Comprehensive Plan Major Land Use, CMPMJU

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon Area
PERIMETER	Float	Polygon Perimeter
CMPMJU#	Integer	Internal Number
CMPMJU-ID	Integer	User-ID
EX_USE	Integer	Land use ID
		1000 = Residential Zone
		1110 = Low density residential area
		1120 = Moderate density residential area
		1130 = High density residential area
		2000 = Commercial Zone
		3000 = Industrial Zone
		3100 = Industrial Factory
		3300 = Warehouse
		3400 = Special Industry
		4000 = Mix use
		5000 = Public Utility
		6000 = Facility
		6100 = Education
		6200 = Religion
		6300 = Government
		6400 = Enterprises
		6500 = Public Health
		6600 = Art and Culture
		6800 = Other Public utility
		7000 = Conservation & Recreation area
		7100 = Environmental conservation area
		7200 = Conservation areas for art and culture of Thailand
		7220 = Memorial monument
		7300 = Recreation zone
		7310 = Public park
		7311 = Provincial level
		7312 = Community level
		7312 = The neighborhood level
		7320 = Sport
		7321 = Outdoor stadium without amphitheater
		7380 = Other recreation
		8000 = Agriculture
		8100 = Agriculture area



Table A.6 Comprehensive Plan Major Land Use, CMPMJU (continued)

COLUMN NAME	DATA TYPE	DESCRIPTION
		8200 = Aquaculture area
		8300 = Livestock
		9000 = Green Zone
		9100 = Forest
		9500 = Hydrology zone
		9510 = Water resource
		9520 = Basin zone
		9530 = Island
		9540 = Beach
		9998 = Other
EX_FAR	Float	FAR
EX_BCR	Float	BCR (%)
EX_POP	Integer	Number of population
EX_DENSITY	Float	Density
EX_NUNIT	Integer	Number of residential units
PRJ_ID	Integer	Project ID

Table A.7 Comprehensive plan boundary, COMP\_BMD

COLUMN NAME	DATA TYPE	DESCRIPTION	DATA
AREA	Float	Polygon area	
PERIMETER	Float	Polygon perimeter	
COMP_BND#	Integer	Internal number	
COMP_BND_ID	Integer	User-id	

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Table A.8 Conservative Area, CONSRV

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon area
PERIMETER	Float	Polygon perimeter
CVAREA#	Integer	Internal number
CVAREA_ID	Integer	User-id
CV_ID	Integer	Conservative Area ID
CV_USE	Integer	Conservative use ID
		7100 = Environmental conservation area
		7110 = The area of land reform
		7120 = Protected forest
		7121 = Terrestrial forest
		7122 = Mangrove forest
		7123 = Mangrove with Terrestrial forest
		7130 = National park
		7140 = Forest park
		7150 = Wildlife Sanctuary
		7160 = Permanent Forest
		7170 = Temporary forest
		7200 = The conservation area to Thai art
		7210 = Ancient remains
CV_NAME	Character(60)	Conservation areas name
CV_NO	Character(10)	Agency-id
CV_AGCY	Character(15)	Agency name
CV_ST_LAW#	Integer	Law number (start date)
CV_ST_DATE	Date	Start date
CV_ST_BOOK#	Integer	Volume Government Gazette (start date)
CV_ST_SECT#	Integer	Section in Government Gazette (start date)
CV_END_LAW#	Integer	Law number (end date)
CV_END_DATE	Date	End date

Table A.8 Conservative Area, CONSRV (continued)

COLUMN NAME	DATA TYPE	DESCRIPTION
CV_END_BOOK#	Integer	Volume Government Gazette (end date)
CV_END_SECT#	Integer	Section in Government Gazette (end date)

Table A.9 Coordinate control point, CONTROL

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon area
PERIMETER	Float	Polygon perimeter
CONTROL#	Integer	Internal number
CONTROL_ID	Integer	User-id
CN_ID	Character(8)	ID Control point
		Type of control point
		1 = GPS
		2 = Level Measurement
		3 = GPS and Level measurement
		4 = Calculate and monitor with GPS
		8 = Other
		9 = Unknown method
CN_DATE	Date	Survey date
CN_XCOOR	Float	X-coordinate
CN_YCOOR	Float	Y-coordinate
CN_ZVAL	Float	Height
CN_OWNER	Character(20)	Evidence pins owner
		1 = Department of Town and Country Planning
		2 = The Department of military maps.
		3 = Department of Lands
		4 = Royal Irrigation Department
		5 = Royal forest department

Table A.10 Grid line, GRID

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon area
PERIMETER	Float	Polygon perimeter
GRID#	Integer	Internal number
GRID_ID	Integer	User-id

Table A.11 Hydrological Line, HYDROL

COLUMN NAME	DATA TYPE	DESCRIPTION
FNODE#	Integer	From node
TNODE#	Integer	To node
LPOLY#	Integer	Left polygon
RPOLY#	Integer	Right polygon
LENGTH	Float	Length
HYDRO#	Integer	Internal number
HYDRO_ID	Integer	User-id
HY_USE	Integer	Hydrological Line
		8510 = Irrigation canal
		8520 = Reservoir dam, weir
		9500 = Hydrology
		9510 = Water resources
		9511 = River
		9512 = The canal water, with water throughout the year.
		9513 = The canal water, without water throughout the year.
		9514 = Pond with water throughout the year.
		9515 = Pond without water throughout the year.
		9516 = Lake
		9517 = Sea

Table A.11 Hydrological Line, HYDROL (continued)

COLUMN NAME	DATA TYPE	DESCRIPTION
		9518 = Other water resources
		9520 = low-lying
		9530 = Island
		9540 = Beach
HY_LNAME	Character(35)	Hydrological Line Name

Table A.12 Hydrological polygon, HYDROP

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon area
PERIMETER	Float	Polygon perimeter
HYDRO#	Integer	Internal number
HYDRO_ID	Integer	User-id
HY_USE	Integer	Hydro line-id
		8510 = Irrigation canal
		8520 = Reservoir dam, weir
		9500 = Hydrology
		9510 = Water resources
		9511 = River
		9512 = The canal water, with water throughout the year.
		9513 = The canal water, without water throughout the year.
		9514 = Pond with water throughout the year.
		9515 = Pond without water throughout the year.
		9516 = Lake
		9517 = Sea
		9518 = Other water resources
		9520 = low-lying

Table A.12 Hydrological polygon, HYDROP (continued)

COLUMN NAME	DATA TYPE	DESCRIPTION
		9530 = Island
		9540 = Beach

Table A.12 Hydrological polygon, HYDROP (continued)

COLUMN NAME	DATA TYPE	DESCRIPTION
HY_PNAME	Character (35)	Water resource name
HY_PVAL	Float	Water volume
HY_PQUAL	Character (5)	Water quality id
HY_POWNER	Integer	Code pond owners
HY_PQUAL1	Character (1)	Code Type 1 water quality
HY_PQUAL2	Character (1)	Code Type 2 water quality
HY_PQUAL3	Character (1)	Code Type 3 water quality
HY_PQUAL4	Character (1)	Code Type 4 water quality
HY_PQUAL5	Character (1)	Code Type 5 water quality

Table A.13 Landuse classification, LANDCLAS

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon area
PERIMETER	Float	Polygon perimeter
LANDCLAS#	Integer	Internal number
LANDCLAS_ID	Integer	User-id
LC_USE	Integer	Landuse-id
		8110 = Field
		8120 = Farm
		8130 = Plantation
		8140 = Mixed use field and farm
		8150 = Sault-farm
		8210 = Fish ponds

Table A.13 Landuse classification, LANDCLAS (continued)

COLUMN NAME	DATA TYPE	DESCRIPTION
		8220 = Shrimp ponds
		8300 = Livestock
		8320 = Pasture
		8400 = Agricultural lands mix
		8800 = Other agricultural land
		9100 = Forest area
		9110 = Forest
COLUMN NAME	DATA TYPE	DESCRIPTION
		9120 = grove wood
		9130 = Mangrove forest
		9200 = Marsh area
		9300 = Arid area
		9400 = Mining area
		9600 = Vacancy
		9610 = Empty identify unusable
		9620 = Waste land
		9800 = Other landuse
PRJ_ID	Integer	Other landuse project number

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Table A.14 Land owner, LAND\_OWN

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon area
PERIMETER	Float	Polygon perimeter
LAND_OWN#	Integer	Internal number
LAND_OWN_ID	Integer	User-id
LO_CP_NAME_ABV	Character (2)	Land owner initial name
LO_CODE	Character (6)	Land owner code
LO_NAME	Character (250)	Land owner name
LO_GRP	Integer	Land owner group ID
LO_DOT	Character (250)	Dot label
LO_SUB	Character (250)	Order code ownership

Table A.15 Landuse summary classification, LAND\_SUM

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon Area
PERIMETER	Float	Polygon Perimeter
LANDSUM#	Integer	Internal Number
LANDSUM_ID	Integer	User-ID
LC_USE	Integer	Land use code from the code of the data overlay are: BLDG, LANDCLAS, HYDROP, ROADEDGE, RAILEDGE

Note: That all information must not overlap except BLDG has type 7 on HYDROP and the priority of information as follows: (1) ROADEDGE, (2) BLDG, (3) RAILEDGE, (4) HYDROP, (5) LANDCLAS, respectively.



Table A.16 Municipality sanitary, MUNISAN

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon area
PERIMETER	Float	Polygon perimeter
MUNISAN#	Integer	Internal number
MUNISAN_ID	Integer	User-id
MS_PNAME	Character (35)	Municipality name
MS_PTYPE	Integer	Municipality Type
		11 = City municipal
		12 = Municipality
		13 = Municipal district
		20 = Sukhapiban (candle)
MS_LAW#	Integer	A number of regulations
MS_ST_DATE	Date	Start date
MS_BOOK#	Integer	Volume of regulations
MS_SECT#	Integer	Section of regulations
MS_TEXT	Character (16)	Subtitles area
MS_PMSTYPE	Integer	Municipality ID and Sukhapiban ID
		1 = Municipality
		2 = Sukhapiban

Table A.17 Aerial photo catalog, PHOTO\_CAT

COLUMN NAME	DATA TYPE	DESCRIPTION
IMAGE	Character (128)	The name and the stored image file.
XMIN	Float	Coordinates X at least in geographical coordinates
YMIN	Float	Coordinates Y at least in geographical coordinates
XMAX	Float	Coordinates X at most in a geographical coordinates
YMAX	Float	Coordinates Y at most in a geographical coordinates
PC_IMAGE_DT	Date	Manufacturing date aerial imagery

Table A.18 Land use plan, PLLU

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon area
PERIMETER	Float	Polygon perimeter
PLLU#	Integer	Internal number
PLLU_ID	Integer	User-id
		Land use id
		1110 = Low density residential area
		1120 = Moderate density residential area
		1130 = High density residential area
		1600 = Conservation for residents
		2000 = Commercial Zone
		3200 = Industrial and warehouse
		3300 = Warehouse
		3400 = Special Industry
		3500 = General industry is non-polluting to environment and warehouse
		4100 = Mix use residential and commercial
		5000 = Public Utility
		5500 = Maintain environmental
		6100 = Education
		6200 = Religion
		6300 = Government
		6400 = Enterprises
		6500 = Public Health
		6600 = Art and Culture
		6700 = Military zone
		6800 = Other Public utility
		7110 = Land reform areas
		7180 = Protected forest

Table A.18 Land use plan, PLLU (continued)

COLUMN NAME	DATA TYPE	DESCRIPTION
		7190 = Environment conservation and tourism
		7200 = Conservation areas for art and culture of Thailand
		7300 = Recreation zone
		7350 = Open space for recreation and the environment
		7360 = Open space for environment and fisheries
		7370 = Open space for recreation, animal husbandry and maintain environmental quality
		8600 = Rural and agricultural
		8700 = Conservation of rural areas and agriculture
PL_DENS_H	Integer	Density (high) (pop/rai)
PL_DENS_L	Integer	Density (low) (pop/rai)
PL_FAR_MAX	Float	Max. FAR
PL_BCR_MAX	Float	Max. BCR (%)
PL_BLOCK	Character (5)	The number of land use in each area
PRJ_ID	Integer	Town Planning Scheme ID

Table A.19 Road center line plan, PLRC

COLUMN NAME	DATA TYPE	DESCRIPTION
FNODE#	Integer	From node
TNODE#	Integer	To node
LPOLY#	Integer	Left polygon
RPOLY#	Integer	Right polygon
LENGTH	Float	Length
PLRC#	Integer	Internal number
PLRC_ID	Integer	User-id
PR_CODE	Character (4)	Id road in town
		The first letter shows the obligations of the road
		P = Intercity road
		M = Main road
		C = The secondary road
		L = Minor road
		The second character indicates the number of road channels.
		2 = 2 road channels
		3 = 3 road channels
		4 = 4 road channels
		5 = 5 road channels
		6 = 6 road channels
		8 = 8 road channels
		The third character indicates the traffic direction
		U = Road without median Island
		D = Road with median Island has deep groove
		R = Road with median Island has raised edge.
		P = Road with median Island has colored bound
		O = One-way road

Table A.19 Road center line plan, PLRC (continued)

COLUMN NAME	DATA TYPE	DESCRIPTION
PR_CODE	Character (4)	The forth character indicates the city street
		B = Bicycle road
		F = Frontage road
		S = Side walk
PR_LTYPE	Integer	Road Type ID
		1 = Existing
		2 = The original road improvements
		3 = Old road extension
		4 = Road project
PR_PTYPE	Character (1)	Road type in legal
		0 = Existing
		1 = Compel road
		2 = Roadway suggestion
PR_FUNC	Character(1)	The duty of road
		P = Intercity road
		M = Main road
		C = The secondary road
		L = Minor road
PR_MAT	Character(2)	Road surface
		C = Concrete
		AC = Asphalt concrete
		A = Asphalt
		P = Non-asphalt road
		O = Other
		U = Unknow
PR_CAT	Character (1)	Road name
PR_NUM	Integer	Sort number street name (According to the Regulation)
PR_ROW	Float	Road width

Table A.19 Road center line plan, PLRC (continued)

COLUMN NAME	DATA TYPE	DESCRIPTION
PR_SPEED	Integer	Driving speed
PR_DRIVETIME	Float	Driving time
PR_VOLUME	Float	Traffic volume
PR_CAPACITY	Float	Road capacity
PR_VOC	Float	The proportion of the traffic volume with the capacity
PR_CATNUM	Character(3)	Road category number
PRJ_ID	Integer	Project ID

Table A.20 Road edge plan, PLRD

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon area
PERIMETER	Float	Polygon perimeter
PLRD#	Integer	Internal number
PLRD_ID	Integer	User-id
PR_USE	Integer	Landuse code = 5110
PR_PTYPE	Character (2)	Road type id
		10 = Existing road
		11 = Existing road with explained enforce
		12 = Existing road with extended recommendations
		21 = Project road with enforce
		22 = Project road with recommendations

Table A.21 Rail train, RAIL

COLUMN NAME	DATA TYPE	DESCRIPTION
FNODE#	Integer	From node
TNODE#	Integer	To node
LPOLY#	Integer	Left polygon
RPOLY#	Integer	Right polygon
LENGTH	Float	Length
RAIL#	Integer	Internal number
RAIL_ID	Integer	User-id
RL_NAME	Character (35)	Rail train name

Table A.22 Rail edge train, RAILEDGE

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon area
PERIMETER	Float	Polygon perimeter
RAILEDGE#	Integer	Internal number
RAILEDGE_ID	Integer	Use-id
RLE_USE	Integer	USE = 5120

Table A.23 Road center line, ROADCL

COLUMN NAME	DATA TYPE	DESCRIPTION
FNODE#	Integer	From node
TNODE#	Integer	To node
LPOLY#	Integer	Left polygon
RPOLY#	Integer	Right polygon
LENGTH	Float	Length
ROADCL#	Integer	Internal number
ROADCL_ID	Integer	User-id
RC_LTYPE	Integer	Road id
		1 = Asphalt concrete road
		2 = Non-asphalt road
		3 = Walkway
		6 = Road way between buildings
		8 = Other
		9 = Unknown
RC_LNAME	Character (100)	Road name
RC_LNUM	Character (8)	Road number
RC_LOWNER	Integer	Road owner id
RC_BUILT	Integer	Road built year
RC_FUNC	Character (1)	Road function
		P = Intercity road
		M = Main road
		C = The secondary road
		L = Minor road



Table A.24 Road edge, ROADEDGE

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon area
PERIMETER	Float	Polygon perimeter
ROADEDGE#	Integer	Internal number
ROADEDGE_ID	Integer	User – id
RDE_USE	Integer	Road edge id
		5110 = Road

Table A.25 Elevation spot, SPOT

COLUMN NAME	DATA TYPE	DESCRIPTION
AREA	Float	Polygon area
PERIMETER	Float	Polygon perimeter
SPOT#	Integer	Internal number
SPOT_ID	Integer	User – id
SP_ELEV	Float	Elevation
SP_TYPE	Integer	Elevation type
		1 = On the mountain
		2 = On the road
		8 = On the other terrain

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Table A.26 Structural, STRUC

COLUMN NAME	DATA TYPE	DESCRIPTION
FNODE#	Integer	From node
TNODE#	Integer	To node
LPOLY#	Integer	Left polygon
RPOLY#	Integer	Right polygon
LENGTH	Float	Length
STRUCT#	Integer	Internal number
STRUCT_ID	Integer	User - id
ST_LTYPE	Integer	Type – id
		1 = fence
		2 = Wall
		3 = Wood bridge
		4 = Concrete bridge (Include steel bridge)
		5 = Dam
		6 = Underground pipe
		7 = Middle Creek Dam
		8 = High voltage transmission line
		9 = Fuel pipe line
		10 = earth dam
		98 = Other
		99 = unknown

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Table A.27 Topography, TOPO

COLUMN NAME	DATA TYPE	DESCRIPTION
FNODE#	Integer	From node
TNODE#	Integer	To node
LPOLY#	Integer	Left polygon
RPOLY#	Integer	Right polygon
LENGTH	Float	Length
TOPO#	Integer	Internal number
TOPO_ID	Integer	User – id
TP_LTYPE	Integer	Topography line type
		1 = Index
		2 = Intermediate
		3 = Depression
		4 = Summit line
		8 = Other
TP_ELEV	Integer	Topography elevation

## APPENDIX B

### Rate of human loss

Table B.1 The rate of human loss in the building for each structural type,  
Slight Structural Damage

No.	Building Type	Casualty Severity Level			
		Severity 1	Severity 2	Severity 3	Severity 4
1	W1	0.05	0	0	0
2	W2	0.05	0	0	0
3	S1L	0.05	0	0	0
4	S1M	0.05	0	0	0
5	S1H	0.05	0	0	0
6	S2L	0.05	0	0	0
7	S2M	0.05	0	0	0
8	S2H	0.05	0	0	0
9	S3	0.05	0	0	0
10	S4L	0.05	0	0	0
11	S4M	0.05	0	0	0
12	S4H	0.05	0	0	0
13	S5L	0.05	0	0	0
14	S5M	0.05	0	0	0
15	S5H	0.05	0	0	0
16	C1L	0.05	0	0	0
17	C1M	0.05	0	0	0
18	C1H	0.05	0	0	0
19	C2L	0.05	0	0	0
20	C2M	0.05	0	0	0
21	C2H	0.05	0	0	0
22	C3L	0.05	0	0	0
23	C3M	0.05	0	0	0
24	C3H	0.05	0	0	0
25	PC1	0.05	0	0	0
26	PC2L	0.05	0	0	0
27	PC2M	0.05	0	0	0
28	PC2H	0.05	0	0	0
29	RM1L	0.05	0	0	0
30	RM1M	0.05	0	0	0

Table B.1 The rate of human loss in the building for each structural type,  
Slight Structural Damage (continued)

No.	Building Type	Casualty Severity Level			
		Severity 1	Severity 2	Severity 3	Severity 4
31	RM2L	0.05	0	0	0
32	RM2M	0.05	0	0	0
33	RM2H	0.05	0	0	0
34	URML	0.05	0	0	0
35	URMM	0.05	0	0	0
36	MH	0.05	0	0	0
37	S3C3	0.05	0	0	0
38	W1C3	0.05	0	0	0
39	W2C3	0.05	0	0	0



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Table B.2 The rate of human loss in the building for each structural type,  
Moderate Structural Damage

No.	Building Type	Casualty Severity Level			
		Severity 1	Severity 2	Severity 3	Severity 4
1	W1	0.25	0.03	0	0
2	W2	0.2	0.025	0	0
3	S1L	0.2	0.025	0	0
4	S1M	0.2	0.025	0	0
5	S1H	0.2	0.025	0	0
6	S2L	0.2	0.025	0	0
7	S2M	0.2	0.025	0	0
8	S2H	0.2	0.025	0	0
9	S3	0.2	0.025	0	0
10	S4L	0.25	0.03	0	0
11	S4M	0.25	0.03	0	0
12	S4H	0.25	0.03	0	0
13	S5L	0.2	0.025	0	0
14	S5M	0.2	0.025	0	0
15	S5H	0.2	0.025	0	0
16	C1L	0.25	0.03	0	0
17	C1M	0.25	0.03	0	0
18	C1H	0.25	0.03	0	0
19	C2L	0.25	0.03	0	0
20	C2M	0.25	0.03	0	0
21	C2H	0.25	0.03	0	0
22	C3L	0.2	0.025	0	0
23	C3M	0.2	0.025	0	0
24	C3H	0.2	0.025	0	0
25	PC1	0.25	0.03	0	0
26	PC2L	0.25	0.03	0	0
27	PC2M	0.25	0.03	0	0
28	PC2H	0.25	0.03	0	0
29	RM1L	0.2	0.025	0	0
30	RM1M	0.2	0.025	0	0
31	RM2L	0.2	0.025	0	0
32	RM2M	0.2	0.025	0	0
33	RM2H	0.2	0.025	0	0
34	URML	0.35	0.4	0.001	0.001
35	URMM	0.35	0.4	0.001	0.001
36	MH	0.25	0.03	0	0
37	S3C3	0.25	0.025	0	0
38	W1C3	0.225	0.0275	0	0
39	W2C3	0.2	0.025	0	0

Table B.3 The rate of human loss in the building for each structural type,  
Extensive Structural Damage

No.	Building Type	Casualty Severity Level			
		Severity 1	Severity 2	Severity 3	Severity 4
1	W1	1	0.1	0.001	0.001
2	W2	1	0.1	0.001	0.001
3	S1L	1	0.1	0.001	0.001
4	S1M	1	0.1	0.001	0.001
5	S1H	1	0.1	0.001	0.001
6	S2L	1	0.1	0.001	0.001
7	S2M	1	0.1	0.001	0.001
8	S2H	1	0.1	0.001	0.001
9	S3	1	0.1	0.001	0.001
10	S4L	1	0.1	0.001	0.001
11	S4M	1	0.1	0.001	0.001
12	S4H	1	0.1	0.001	0.001
13	S5L	1	0.1	0.001	0.001
14	S5M	1	0.1	0.001	0.001
15	S5H	1	0.1	0.001	0.001
16	C1L	1	0.1	0.001	0.001
17	C1M	1	0.1	0.001	0.001
18	C1H	1	0.1	0.001	0.001
19	C2L	1	0.1	0.001	0.001
20	C2M	1	0.1	0.001	0.001
21	C2H	1	0.1	0.001	0.001
22	C3L	1	0.1	0.001	0.001
23	C3M	1	0.1	0.001	0.001
24	C3H	1	0.1	0.001	0.001
25	PC1	1	0.1	0.001	0.001
26	PC2L	1	0.1	0.001	0.001
27	PC2M	1	0.1	0.001	0.001
28	PC2H	1	0.1	0.001	0.001
29	RM1L	1	0.1	0.001	0.001
30	RM1M	1	0.1	0.001	0.001
31	RM2L	1	0.1	0.001	0.001
32	RM2M	1	0.1	0.001	0.001
33	RM2H	1	0.1	0.001	0.001
34	URML	2	0.2	0.002	0.002
35	URMM	2	0.2	0.002	0.002
36	MH	1	0.1	0.001	0.001
37	S3C3	1	0.1	0.001	0.001
38	W1C3	1	0.1	0.001	0.001
39	W2C3	1	0.1	0.001	0.001

Table B.4 The rate of human loss in the building for each structural type,  
Complete Structural Damage – no collapse

No.	Building Type	Casualty Severity Level			
		Severity 1	Severity 2	Severity 3	Severity 4
1	W1	5	1	0.01	0.01
2	W2	5	1	0.01	0.01
3	S1L	5	1	0.01	0.01
4	S1M	5	1	0.01	0.01
5	S1H	5	1	0.01	0.01
6	S2L	5	1	0.01	0.01
7	S2M	5	1	0.01	0.01
8	S2H	5	1	0.01	0.01
9	S3	5	1	0.01	0.01
10	S4L	5	1	0.01	0.01
11	S4M	5	1	0.01	0.01
12	S4H	5	1	0.01	0.01
13	S5L	5	1	0.01	0.01
14	S5M	5	1	0.01	0.01
15	S5H	5	1	0.01	0.01
16	C1L	5	1	0.01	0.01
17	C1M	5	1	0.01	0.01
18	C1H	5	1	0.01	0.01
19	C2L	5	1	0.01	0.01
20	C2M	5	1	0.01	0.01
21	C2H	5	1	0.01	0.01
22	C3L	5	1	0.01	0.01
23	C3M	5	1	0.01	0.01
24	C3H	5	1	0.01	0.01
25	PC1	5	1	0.01	0.01
26	PC2L	5	1	0.01	0.01
27	PC2M	5	1	0.01	0.01
28	PC2H	5	1	0.01	0.01
29	RM1L	5	1	0.01	0.01
30	RM1M	5	1	0.01	0.01
31	RM2L	5	1	0.01	0.01
32	RM2M	5	1	0.01	0.01
33	RM2H	5	1	0.01	0.01
34	URML	10	2	0.02	0.02
35	URMM	10	2	0.02	0.02
36	MH	5	1	0.01	0.01
37	S3C3	5	1	0.01	0.01
38	W1C3	5	1	0.01	0.01
39	W2C3	5	1	0.01	0.01



Table B.5 The rate of human loss in the building for each structural type,  
Complete Structural Damage – with collapse

No.	Building Type	Casualty Severity Level			
		Severity 1	Severity 2	Severity 3	Severity 4
1	W1	40	20	3	5
2	W2	40	20	5	10
3	S1L	40	20	5	10
4	S1M	40	20	5	10
5	S1H	40	20	5	10
6	S2L	40	20	5	10
7	S2M	40	20	5	10
8	S2H	40	20	5	10
9	S3	40	20	3	5
10	S4L	40	20	5	10
11	S4M	40	20	5	10
12	S4H	40	20	5	10
13	S5L	40	20	5	10
14	S5M	40	20	5	10
15	S5H	40	20	5	10
16	C1L	40	20	5	10
17	C1M	40	20	5	10
18	C1H	40	20	5	10
19	C2L	40	20	5	10
20	C2M	40	20	5	10
21	C2H	40	20	5	10
22	C3L	40	20	5	10
23	C3M	40	20	5	10
24	C3H	40	20	5	10
25	PC1	40	20	5	10
26	PC2L	40	20	5	10
27	PC2M	40	20	5	10
28	PC2H	40	20	5	10
29	RM1L	40	20	5	10
30	RM1M	40	20	5	10
31	RM2L	40	20	5	10
32	RM2M	40	20	5	10
33	RM2H	40	20	5	10
34	URML	40	20	5	10
35	URMM	40	20	5	10
36	MH	40	20	3	5
37	S3C3	40	20	4	7.5
38	W1C3	40	20	4	7.5
39	W2C3	40	20	5	10

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