Scenario: M 7.35 Saddle Mountain Fault
Benton County

Casualties Summary Report

	Injury Severity Level														
	Severity 1			Severity 2			Severity 3			Severity 4			Total		
	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM
Commuting	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	0	14	10	0	1	1	0	0	0	0	0	0	0	15	11
Educational	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0
Hotels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	2	1	0	0	0	0	0	0	0	0	0	0	2	1
Other-Residential	10	2	4	1	0	0	0	0	0	0	0	0	11	2	4
Single Family	2	0	1	0	0	0	0	0	0	0	0	0	2	0	1
Total Benton	**12**	**21**	**16**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**22**	**17**

Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
Severity Level 2: Injuries will require hospitalization but are not considered life-threatening.
Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
Severity Level 4: Victims are killed by the earthquake

Number of Buildings Damaged by General Occupancy Class

	Number of Buildings					
	None	Slight	Moderate	Extensive	Complete	Total
Agriculture	258	33	15	1	0	307
Commercial	2121	341	108	5	0	2,575
Education	67	8	3	0	0	78
Government	112	35	17	1	0	165
Industrial	607	110	46	3	0	766
Religion	156	20	7	0	0	183
Other Residential	10410	2,332	1,125	47	0	13,914
Single Family	33,988	1,400	46	1	0	35,435

Structural damage states vary by building type. See HAZUS Technical Manual Vol. I. “Complete damage” indicates structural collapse or is in imminent danger of collapse.

Direct Economic Losses For Buildings

Capital Stock Losses				Income Losses					
Cost Structural Damage	Cost Non-structural Damage	Cost Contents Damage	Inventory Loss	Loss Ratio %	Relocation Loss	Capital Loss	Wages Losses	Rental Income Loss	Total Loss
$7,997,000	$43,564,000	$22,889,000	$572,000	0.49	$5,740,000	$2,250,000	$2,781,000	$3,241,000	$89,032,000

Hospital Functionality

		At Day 1		At day 3		At day 7		At day 30		At day 90	
	Total Number of Beds	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%
Large											
Medium	311	287	92	288	93	310	100	311	100	311	100
Small	32	27	86	28	86	32	99	32	100	32	100
Total	**343**	**314**	**—**	**316**	**—**	**342**	**—**	**343**	**—**	**343**	**—**

Large Hospital: > 150 beds
Medium Hospital: 50-150 beds
Small Hospital: < 50 beds

Highway Bridge Damage

Average Number for Damage State					
Total Number of Bridges	None	Slight	Moderate	Extensive	Complete
155	153	2	0	0	0

Scenario: M 7.35 Saddle Mountain Fault
Benton County

Fire Following Analysis Summary Report

Number of Ignitions	Population Exposed	Value Exposed
5	381	$20,341,000

Potable Water System Performance

	Number of Households Without Water									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
58,697	0	0	0	0	0	0	0	0	0	0

Electrical Power System Performance

	Number of Households Without Power									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
58,697	0	0	0	0	0	0	0	0	0	0

Debris Summary Report

Brick, Wood & Others (tons)	Concrete & Steel (tons)	Total (tons)	Number of Truckloads
7,000	10,000	17,000	680

Shelter Summary Report

Number of Displaced Households	Number of People Needing Short Term Shelter
17	10

Essential Facilities Functionality

	Count	Functionality (%)
		At Day 1
Emergency Operation Center	1	95
Fire Station Facilities	29	94
Police Station Facilities	6	97
School	62	97

Scenario: M 7.35 Saddle Mountain Fault
Franklin County

Casualties Summary Report

	Injury Severity Level														
	Severity 1			Severity 2			Severity 3			Severity 4			Total		
	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM
Commuting	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Commercial	0	6	5	0	1	0	0	0	0	0	0	0	0	7	5
Educational	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0
Hotels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other-Residential	14	3	5	1	0	0	0	0	0	0	0	0	15	3	5
Single Family	2	0	1	0	0	0	0	0	0	0	0	0	2	0	1
Total Franklin	**16**	**12**	**11**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**17**	**13**	**12**

Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
Severity Level 2: Injuries will require hospitalization but are not considered life-threatening.
Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
Severity Level 4: Victims are killed by the earthquake

Number of Buildings Damaged by General Occupancy Class

	Number of Buildings					
	None	Slight	Moderate	Extensive	Complete	Total
Agriculture	155	52	43	9	0	259
Commercial	700	182	97	12	0	991
Education	29	7	4	0	0	40
Government	24	6	3	0	0	33
Industrial	178	48	28	4	0	258
Religion	61	13	7	1	0	82
Other Residential	3610	1,357	1,061	160	3	6,191
Single Family	8,779	794	56	2	0	9,631

Structural damage states vary by building type. See HAZUS Technical Manual Vol. I. “Complete damage” indicates structural collapse or is in imminent danger of collapse.

Direct Economic Losses For Buildings

Capital Stock Losses				Income Losses					
Cost Structural Damage	Cost Non-structural Damage	Cost Contents Damage	Inventory Loss	Loss Ratio %	Relocation Loss	Capital Loss	Wages Losses	Rental Income Loss	Total Loss
$7,136,000	$21,045,000	$10,193,000	$477,000	0.97	$4,408,000	$1,190,000	$1,587,000	$1,757,000	$47,793,000

Hospital Functionality

		At Day 1		At day 3		At day 7		At day 30		At day 90	
	Total Number of Beds	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%
Large											
Medium	132	96	73	97	74	129	98	132	100	132	100
Small											
Total	**132**	**96**	**—**	**97**	**—**	**129**	**—**	**132**	**—**	**132**	**—**

Large Hospital: > 150 beds
Medium Hospital: 50-150 beds
Small Hospital: < 50 beds

Highway Bridge Damage

Average Number for Damage State					
Total Number of Bridges	None	Slight	Moderate	Extensive	Complete
137 (136*)	123	4	3	3	3

* values in parentheses include rounding error.

Scenario: M 7.35 Saddle Mountain Fault
Franklin County

Fire Following Analysis Summary Report

Number of Ignitions	Population Exposed	Value Exposed
1	230	$9,496,000

Potable Water System Performance

	Number of Households Without Water									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
18,183	0	0	0	0	0	0	0	0	0	0

Electrical Power System Performance

	Number of Households Without Power									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
18,183	0	0	0	0	0	0	0	0	0	0

Debris Summary Report

Brick, Wood & Others (tons)	Concrete & Steel (tons)	Total (tons)	Number of Truckloads
6,000	9,000	15,000	600

Shelter Summary Report

Number of Displaced Households	Number of People Needing Short Term Shelter
13	13

Essential Facilities Functionality

	Count	Functionality (%)
		At Day 1
Emergency Operation Center	1	97
Fire Station Facilities	17	79
Police Station Facilities	3	92
School	33	90

Scenario: M 7.35 Saddle Mountain Fault
Grant County

Casualties Summary Report

	Injury Severity Level														
	Severity 1			Severity 2			Severity 3			Severity 4			Total		
	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM
Commuting	0	0	1	0	0	1	0	0	2	0	0	0	0	0	4
Commercial	0	37	41	0	10	12	0	2	2	0	3	4	0	52	59
Educational	0	34	0	0	10	0	0	2	0	0	3	0	0	49	0
Hotels	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Industrial	0	3	2	0	1	0	0	0	0	0	0	0	0	4	2
Other-Residential	158	33	56	35	7	12	2	0	1	4	1	1	199	41	70
Single Family	15	3	6	2	0	1	0	0	0	0	0	0	17	3	7
Total Grant	**174**	**110**	**106**	**37**	**28**	**26**	**2**	**4**	**5**	**4**	**7**	**5**	**217**	**149**	**142**

Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
Severity Level 2: Injuries will require hospitalization but are not considered life-threatening.
Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
Severity Level 4: Victims are killed by the earthquake

Number of Buildings Damaged by General Occupancy Class

	Number of Buildings					
	None	Slight	Moderate	Extensive	Complete	Total
Agriculture	307	59	56	35	18	475
Commercial	1174	188	109	72	33	1,576
Education	48	6	5	4	2	65
Government	45	5	4	5	2	61
Industrial	279	50	31	19	10	389
Religion	109	13	6	3	1	132
Other Residential	9581	2,266	1,805	1,084	620	15,356
Single Family	14,721	1,028	704	89	7	16,549

Structural damage states vary by building type. See HAZUS Technical Manual Vol. I. “Complete damage” indicates structural collapse or is in imminent danger of collapse.

Direct Economic Losses For Buildings

Capital Stock Losses				Income Losses					
Cost Structural Damage	Cost Non-structural Damage	Cost Contents Damage	Inventory Loss	Loss Ratio %	Relocation Loss	Capital Loss	Wages Losses	Rental Income Loss	Total Loss
$40,547,000	$102,081,000	$39,426,000	$2,406,000	3.18	$22,060,000	$7,300,000	$7,311,000	$8,756,000	$229,886,000

Hospital Functionality

		At Day 1		At day 3		At day 7		At day 30		At day 90	
	Total Number of Beds	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%
Large											
Medium	161	150	93	150	93	160	100	161	100	161	100
Small	38	28	73	28	74	37	98	38	100	38	100
Total	**199**	**178**	**—**	**178**	**—**	**197**	**—**	**199**	**—**	**199**	**—**

Large Hospital: > 150 beds
Medium Hospital: 50-150 beds
Small Hospital: < 50 beds

Highway Bridge Damage

	Average Number for Damage State				
Total Number of Bridges	None	Slight	Moderate	Extensive	Complete
272	256	5	3	3	5

Scenario: M 7.35 Saddle Mountain Fault
Grant County

Fire Following Analysis Summary Report

Number of Ignitions	Population Exposed	Value Exposed
3	57	$3,390,000

Potable Water System Performance

	Number of Households Without Water									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
27,584	837	3	253	1	0	0	0	0	0	0

Electrical Power System Performance

	Number of Households Without Power									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
27,581	3,198	12	2,078	8	911	3	184	0.7	4	0

Debris Summary Report

Brick, Wood & Others (tons)	Concrete & Steel (tons)	Total (tons)	Number of Truckloads
48,000	80,000	128,000	5,120

Shelter Summary Report

Number of Displaced Households	Number of People Needing Short Term Shelter
131	152

Essential Facilities Functionality

	Count	Functionality (%)
		At Day 1
Emergency Operation Center	1	97
Fire Station Facilities	52	84
Police Station Facilities	13	86
School	60	83

Scenario: M 7.35 Saddle Mountain Fault
Kittitas County

Casualties Summary Report

	Injury Severity Level														
	Severity 1			Severity 2			Severity 3			Severity 4			Total		
	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM
Commuting	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Commercial	0	10	11	0	2	2	0	0	0	0	1	1	0	13	14
Educational	0	6	1	0	1	0	0	0	0	0	0	0	0	7	1
Hotels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	2	1	0	0	0	0	0	0	0	0	0	0	2	1
Other-Residential	21	3	8	4	1	1	0	0	0	0	0	0	25	4	9
Single Family	6	1	2	1	0	0	0	0	0	0	0	0	7	1	2
Total Kittitas	**27**	**22**	**23**	**5**	**4**	**4**	**0**	**0**	**1**	**0**	**1**	**1**	**32**	**27**	**29**

Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
Severity Level 2: Injuries will require hospitalization but are not considered life-threatening.
Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
Severity Level 4: Victims are killed by the earthquake

Number of Buildings Damaged by General Occupancy Class

	Number of Buildings					
	None	Slight	Moderate	Extensive	Complete	Total
Agriculture	117	25	27	12	4	185
Commercial	646	131	115	46	12	950
Education	17	4	4	2	1	28
Government	25	4	5	2	1	37
Industrial	201	33	35	18	6	293
Religion	56	9	7	3	1	76
Other Residential	5,262	988	659	342	92	7,343
Single Family	8,665	1,172	428	33	4	10,302

Structural damage states vary by building type. See HAZUS Technical Manual Vol. I. “Complete damage” indicates structural collapse or is in imminent danger of collapse.

Direct Economic Losses For Buildings

Capital Stock Losses				Income Losses					
Cost Structural Damage	Cost Non-structural Damage	Cost Contents Damage	Inventory Loss	Loss Ratio %	Relocation Loss	Capital Loss	Wages Losses	Rental Income Loss	Total Loss
$12,251,000	$43,983,000	$17,483,000	$622,000	2.14	$8,196,000	$3,333,000	$4,332,000	$3,997,000	$94,197,000

Hospital Functionality

		At Day 1		At day 3		At day 7		At day 30		At day 90	
	Total Number of Beds	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%
Large											
Medium											
Small	25	21	85	21	85	24	97	25	100	25	100
Total	**25**	**21**	**—**	**21**	**—**	**24**	**—**	**25**	**—**	**25**	**—**

Large Hospital: > 150 beds
Medium Hospital: 50-150 beds
Small Hospital: < 50 beds

Highway Bridge Damage

Average Number for Damage State					
Total Number of Bridges	None	Slight	Moderate	Extensive	Complete
257 (258*)	234	8	5	8	3

* values in parentheses include rounding error.

Scenario: M 7.35 Saddle Mountain Fault
Kittitas County

Fire Following Analysis Summary Report

Number of Ignitions	Population Exposed	Value Exposed
2	23	$921,000

Potable Water System Performance

	Number of Households Without Water									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
14,952	696	5	284	2	2	0	0	0	0	0

Electrical Power System Performance

	Number of Households Without Power									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
14,952	1,184	8	850	6	434	3	104	0.7	1	0

Debris Summary Report

Brick, Wood & Others (tons)	Concrete & Steel (tons)	Total (tons)	Number of Truckloads
14,000	21,000	35,000	1,400

Shelter Summary Report

Number of Displaced Households	Number of People Needing Short Term Shelter
100	85

Essential Facilities Functionality

	Count	Functionality (%)
		At Day 1
Emergency Operation Center	2	80
Fire Station Facilities	27	86
Police Station Facilities	5	88
School	18	85

Scenario: M 7.35 Saddle Mountain Fault
Lincoln County

Casualties Summary Report

	Injury Severity Level														
	Severity 1			Severity 2			Severity 3			Severity 4			Total		
	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM
Commuting	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Educational	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hotels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other-Residential	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single Family	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Lincoln	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
Severity Level 2: Injuries will require hospitalization but are not considered life-threatening.
Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
Severity Level 4: Victims are killed by the earthquake

Number of Buildings Damaged by General Occupancy Class

	Number of Buildings					
	None	Slight	Moderate	Extensive	Complete	Total
Agriculture	123	1	0	0	0	124
Commercial	248	2	0	0	0	250
Education	15	0	0	0	0	15
Government	19	0	0	0	0	19
Industrial	56	0	0	0	0	56
Religion	36	0	0	0	0	36
Other Residential	3,618	28	2	0	0	3,648
Single Family	3,970	3	0	0	0	3,973

Structural damage states vary by building type. See HAZUS Technical Manual Vol. I. “Complete damage” indicates structural collapse or is in imminent danger of collapse.

Direct Economic Losses For Buildings

Capital Stock Losses				Income Losses					
Cost Structural Damage	Cost Non-structural Damage	Cost Contents Damage	Inventory Loss	Loss Ratio %	Relocation Loss	Capital Loss	Wages Losses	Rental Income Loss	Total Loss
$15,000	$237,000	$176,000	$5,000	0.03	$6,000	$3,000	$5,000	$3,000	$450,000

Hospital Functionality

		At Day 1		At day 3		At day 7		At day 30		At day 90	
	Total Number of Beds	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%
Large											
Medium	95	95	100	95	100	95	100	95	100	95	100
Small	44	44	99	44	99	44	100	44	100	44	100
Total	**139**	**139**	**—**	**139**	**—**	**139**	**—**	**139**	**—**	**139**	**—**

Large Hospital: > 150 beds
Medium Hospital: 50-150 beds
Small Hospital: < 50 beds

Highway Bridge Damage

Average Number for Damage State					
Total Number of Bridges	None	Slight	Moderate	Extensive	Complete
181	181	0	0	0	0

Scenario: M 7.35 Saddle Mountain Fault
Lincoln County

Fire Following Analysis Summary Report

Number of Ignitions	Population Exposed	Value Exposed
0	0	$0

Potable Water System Performance

	Number of Households Without Water									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
4,276	0	0	0	0	0	0	0	0	0	0

Electrical Power System Performance

	Number of Households Without Power									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
4,276	0	0	0	0	0	0	0	0	0	0

Debris Summary Report

Brick, Wood & Others (tons)	Concrete & Steel (tons)	Total (tons)	Number of Truckloads
0	0	0	0

Shelter Summary Report

Number of Displaced Households	Number of People Needing Short Term Shelter
0	0

Essential Facilities Functionality

	Count	Functionality (%)
		At Day 1
Emergency Operation Center	1	100
Fire Station Facilities	12	100
Police Station Facilities	4	100
School	16	100

Scenario: M 7.35 Saddle Mountain Fault
Walla Walla County

Casualties Summary Report

	Injury Severity Level														
	Severity 1			Severity 2			Severity 3			Severity 4			Total		
	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM
Commuting	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
Educational	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hotels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other-Residential	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Single Family	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Walla Walla	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**

Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
Severity Level 2: Injuries will require hospitalization but are not considered life-threatening.
Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
Severity Level 4: Victims are killed by the earthquake

Number of Buildings Damaged by General Occupancy Class

	Number of Buildings					
	None	Slight	Moderate	Extensive	Complete	Total
Agriculture	204	11	3	0	0	218
Commercial	1,039	70	14	0	0	1,123
Education	59	3	1	0	0	63
Government	59	4	1	0	0	64
Industrial	326	25	6	0	0	357
Religion	84	5	1	0	0	90
Other Residential	5,908	510	99	1	0	6,518
Single Family	14,493	181	4	0	0	14,678

Structural damage states vary by building type. See HAZUS Technical Manual Vol. I. “Complete damage” indicates structural collapse or is in imminent danger of collapse.

Direct Economic Losses For Buildings

Capital Stock Losses				Income Losses					
Cost Structural Damage	Cost Non-structural Damage	Cost Contents Damage	Inventory Loss	Loss Ratio %	Relocation Loss	Capital Loss	Wages Losses	Rental Income Loss	Total Loss
$970,000	$7,070,000	$4,034,000	$137,000	0.2	$552,000	$318,000	$426,000	$329,000	$13,836,000

Hospital Functionality

		At Day 1		At day 3		At day 7		At day 30		At day 90	
	Total Number of Beds	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%
Large											
Medium	274	256	93	256	94	272	99	274	100	274	100
Small	29	27	94	27	94	29	100	29	100	29	100
Total	**303**	**283**	**—**	**283**	**—**	**301**	**—**	**303**	**—**	**303**	**—**

Large Hospital: > 150 beds
Medium Hospital: 50-150 beds
Small Hospital: < 50 beds

Highway Bridge Damage

Average Number for Damage State					
Total Number of Bridges	None	Slight	Moderate	Extensive	Complete
175 (177*)	173	2	0	0	0

* values in parentheses include rounding error.

Scenario: M 7.35 Saddle Mountain Fault
Walla Walla County

Fire Following Analysis Summary Report

Number of Ignitions	Population Exposed	Value Exposed
2	63	$3,867,000

Potable Water System Performance

	Number of Households Without Water									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
20,557	0	0	0	0	0	0	0	0	0	0

Electrical Power System Performance

	Number of Households Without Power									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
20,557	0	0	0	0	0	0	0	0	0	0

Debris Summary Report

Brick, Wood & Others (tons)	Concrete & Steel (tons)	Total (tons)	Number of Truckloads
1,000	1,000	2,000	80

Shelter Summary Report

Number of Displaced Households	Number of People Needing Short Term Shelter
1	0

Essential Facilities Functionality

	Count	Functionality (%)
		At Day 1
Emergency Operation Center	1	99
Fire Station Facilities	18	99
Police Station Facilities	4	99
School	38	99

Scenario: M 7.35 Saddle Mountain Fault
Yakima County

Casualties Summary Report

	Injury Severity Level														
	Severity 1			Severity 2			Severity 3			Severity 4			Total		
	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM	2:00 AM	2:00 PM	5:00 PM
Commuting	0	0	1	0	0	1	0	0	1	0	0	0	0	0	3
Commercial	0	21	16	0	2	2	0	0	0	0	0	0	0	23	18
Educational	0	7	0	0	1	0	0	0	0	0	0	0	0	8	0
Hotels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	4	2	0	0	0	0	0	0	0	0	0	0	4	2
Other-Residential	27	6	10	3	1	1	0	0	0	0	0	0	30	7	11
Single Family	6	1	2	0	0	0	0	0	0	0	0	0	6	1	2
Total Yakima	**33**	**39**	**31**	**3**	**4**	**4**	**0**	**0**	**1**	**0**	**0**	**0**	**36**	**43**	**36**

Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
Severity Level 2: Injuries will require hospitalization but are not considered life-threatening.
Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
Severity Level 4: Victims are killed by the earthquake

Number of Buildings Damaged by General Occupancy Class

	Number of Buildings					
	None	Slight	Moderate	Extensive	Complete	Total
Agriculture	724	101	51	5	0	881
Commercial	2,947	781	352	29	0	4,109
Education	112	21	10	1	0	144
Government	114	31	16	1	0	162
Industrial	766	203	112	13	0	1,094
Religion	283	56	25	2	0	366
Other Residential	17,629	4,411	2,599	244	4	24,887
Single Family	49,920	3,268	142	6	1	53,337

Structural damage states vary by building type. See HAZUS Technical Manual Vol. I. “Complete damage” indicates structural collapse or is in imminent danger of collapse.

Direct Economic Losses For Buildings

Capital Stock Losses				Income Losses					
Cost Structural Damage	Cost Non-structural Damage	Cost Contents Damage	Inventory Loss	Loss Ratio %	Relocation Loss	Capital Loss	Wages Losses	Rental Income Loss	Total Loss
$21,793,000	$88,073,000	$45,023,000	$1,741,000	0.81	$14,919,000	$7,852,000	$9,909,000	$7,566,000	$196,876,000

Hospital Functionality

		At Day 1		At day 3		At day 7		At day 30		At day 90	
	Total Number of Beds	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%	Number of Beds	%
Large	426	352	83	353	83	419	98	426	100	426	100
Medium	63	46	73	46	74	62	98	63	100	63	100
Small	38	21	56	22	57	36	95	38	100	38	100
Total	**527**	**419**	**—**	**421**	**—**	**517**	**—**	**527**	**—**	**527**	**—**

Large Hospital: > 150 beds
Medium Hospital: 50-150 beds
Small Hospital: < 50 beds

Highway Bridge Damage

Average Number for Damage State					
Total Number of Bridges	None	Slight	Moderate	Extensive	Complete
520 (519*)	504	5	5	5	0

* values in parentheses include rounding error.

Scenario: M 7.35 Saddle Mountain Fault
Yakima County

Fire Following Analysis Summary Report

Number of Ignitions	Population Exposed	Value Exposed
7	462	$29,183,000

Potable Water System Performance

	Number of Households Without Water									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
76,461	0	0	0	0	0	0	0	0	0	0

Electrical Power System Performance

	Number of Households Without Power									
Total Households	At day 1		At day 3		At day 7		At day 30		At day 90	
	Count	%	Count	%	Count	%	Count	%	Count	%
76,461	0	0	0	0	0	0	0	0	0	0

Debris Summary Report

Brick, Wood & Others (tons)	Concrete & Steel (tons)	Total (tons)	Number of Truckloads
18,000	30,000	48,000	1,920

Shelter Summary Report

Number of Displaced Households	Number of People Needing Short Term Shelter
85	78

Essential Facilities Functionality

	Count	Functionality (%)
		At Day 1
Emergency Operation Center	1	92
Fire Station Facilities	55	92
Police Station Facilities	18	93
School	114	93

HAZUS-MH: Earthquake Event Report

Region Name: SadleMtnM735redoOct09

Earthquake Scenario: Saddle Mtn redo Oct09

Print Date: March 10, 2010

Totals only reflect data for those census tracts/blocks included in the user's study region.

Table of Contents

General Description of the Region

HAZUS is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of HAZUS is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 12 county(ies) from the following state(s):

Washington

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 30,351.31 square miles and contains 146 census tracts. There are over 282 thousand households in the region and has a total population of 804,030 people (2005 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 324 thousand buildings in the region with a total building replacement value (excluding contents) of 50,352 (millions of dollars). Approximately 92.00 % of the buildings (and 73.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 48,261 and 8,791 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

HAZUS estimates that there are 324 thousand buildings in the region which have an aggregate total replacement value of 50,352 (millions of dollars) . Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 73% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

HAZUS breaks critical facilities into two (2) groups: essential facilities and high potential loss (HPL) facilities. Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 30 hospitals in the region with a total bed capacity of 2,158 beds. There are 462 schools, 304 fire stations, 70 police stations and 13 emergency operation facilities. With respect to HPL facilities, there are 213 dams identified within the region. Of these, 62 of the dams are classified as 'high hazard'. The inventory also includes 132 hazardous material sites, 0 military installations and 1 nuclear power plants.

Transportation and Utility Lifeline Inventory

Within HAZUS, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 57,052.00 (millions of dollars). This inventory includes over 5,059 kilometers of highways, 2,227 bridges, 160,914 kilometers of pipes.

Table 1: Transportation System Lifeline Inventory

System	Component	# locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	2,227	17,585.40
	Segments	753	25,897.10
	Tunnels	3	7.10
		Subtotal	**43,489.60**
Railways	Bridges	44	13.30
	Facilities	19	50.60
	Segments	1,098	2,213.40
	Tunnels	0	0.00
		Subtotal	**2,277.20**
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
		Subtotal	**0.00**
Bus	Facilities	12	14.40
		Subtotal	**14.40**
Ferry	Facilities	10	13.30
		Subtotal	**13.30**
Port	Facilities	20	39.90
		Subtotal	**39.90**
Airport	Facilities	39	415.40
	Runways	53	2,012.10
		Subtotal	**2,427.50**
		Total	**48,262.00**

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	1,609.10
	Facilities	7	256.40
	Pipelines	0	0.00
		Subtotal	**1,865.60**
Waste Water	Distribution Lines	NA	965.50
	Facilities	45	3,296.70
	Pipelines	0	0.00
		Subtotal	**4,262.20**
Natural Gas	Distribution Lines	NA	643.70
	Facilities	20	24.00
	Pipelines	0	0.00
		Subtotal	**667.60**
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	**0.00**
Electrical Power	Facilities	43	5,203.00
		Subtotal	**5,203.00**
Communication	Facilities	105	11.60
		Subtotal	**11.60**
		Total	**12,009.90**

Earthquake Scenario

HAZUS uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.

Scenario Name	Saddle Mtn redo Oct09
Type of Earthquake	User-defined
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	NA
Latitude of Epicenter	NA
Earthquake Magnitude	7.35
Depth (Km)	NA
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	NA

Building Damage

HAZUS estimates that about 14,583 buildings will be at least moderately damaged. This is over 4.00 % of the total number of buildings in the region. There are an estimated 832 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the HAZUS technical manual. Table 3 below summaries the expected damage by general occupancy for the buildings in the region. Table 4 summaries the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	2,825	0.99	322	1.29	219	1.95	67	2.67	23	2.81
Commercial	12,346	4.33	1,827	7.30	916	8.16	207	8.20	49	5.86
Education	484	0.17	55	0.22	31	0.27	9	0.34	2	0.30
Government	584	0.20	90	0.36	50	0.44	12	0.46	3	0.37
Industrial	3,472	1.22	504	2.01	282	2.51	63	2.51	16	1.93
Other Residential	82,204	28.81	13,203	52.71	8,133	72.42	2,011	79.80	725	87.08
Religion	1,080	0.38	125	0.50	61	0.54	12	0.47	2	0.26
Single Family	182,316	63.90	8,921	35.61	1,539	13.71	140	5.55	11	1.38
Total	**285,311**		**25,048**		**11,231**		**2,520**		**832**	

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	224,019	78.52	11669	46.59	2,079	18.51	168	6.65	10	1.15
Steel	5,836	2.05	1008	4.02	846	7.53	212	8.41	48	5.81
Concrete	6,562	2.30	929	3.71	437	3.89	105	4.17	25	3.06
Precast	3,849	1.35	576	2.30	434	3.86	111	4.41	28	3.41
RM	10,925	3.83	800	3.19	506	4.51	142	5.63	27	3.29
URM	2,230	0.78	535	2.14	202	1.80	50	1.98	24	2.89
MH	31,890	11.18	9531	38.05	6,727	59.90	1,733	68.75	669	80.40
Total	**285,311**		**25,048**		**11,231**		**2,520**		**832**	

*Note:
RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 2,158 hospital beds available for use. On the day of the earthquake, the model estimates that only 1,901 hospital beds (88.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 97.00% of the beds will be back in service. By 30 days, 100.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	30	1	0	29
Schools	462	7	0	446
EOCs	13	0	0	12
PoliceStations	70	1	0	67
FireStations	304	3	0	293

Transportation and Utility Lifeline Damage

Table 6 provides damage estimates for the transportation system.

Table 6: Expected Damage to the Transportation Systems

System	Component		Number of Locations			
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	753	0	0	753	753
	Bridges	2,227	17	6	2,213	2,217
	Tunnels	3	0	0	3	3
Railways	Segments	1,098	0	0	1,098	1,098
	Bridges	44	0	0	44	44
	Tunnels	0	0	0	0	0
	Facilities	19	0	0	19	19
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	12	0	0	12	12
Ferry	Facilities	10	0	0	10	10
Port	Facilities	20	0	0	20	20
Airport	Facilities	39	2	0	39	39
	Runways	53	0	0	53	53

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, HAZUS performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	7	1	0	6	7
Waste Water	45	1	0	40	45
Natural Gas	20	0	0	20	20
Oil Systems	0	0	0	0	0
Electrical Power	43	3	0	36	43
Communication	105	3	0	103	105

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	80,457	1882	521
Waste Water	48,274	1488	412
Natural Gas	32,183	1591	440
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	282,660	1,533	537	2	0	0
Electric Power		4,382	2,928	1,345	288	5

Induced Earthquake Damage

Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. HAZUS uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 22 ignitions that will burn about 1.04 sq. mi 0.00 % of the region's total area.) The model also estimates that the fires will displace about 1,271 people and burn about 70 (millions of dollars) of building value.

Debris Generation

HAZUS estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 0.270 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 38.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 10,760,000 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Social Impact

Shelter Requirement

HAZUS estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 405 households to be displaced due to the earthquake. Of these, 396 people (out of a total population of 804,030) will seek temporary shelter in public shelters.

Casualties

HAZUS estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	1	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	1	0	0	0
	Industrial	2	0	0	0
	Other-Residential	242	44	2	4
	Single Family	36	3	0	0
	Total	**282**	**48**	**3**	**5**
2 PM	Commercial	97	18	2	4
	Commuting	0	0	0	0
	Educational	56	13	2	4
	Hotels	0	0	0	0
	Industrial	11	2	0	0
	Other-Residential	50	9	1	1
	Single Family	8	1	0	0
	Total	**222**	**42**	**5**	**9**
5 PM	Commercial	91	18	2	5
	Commuting	3	4	6	1
	Educational	2	0	0	0
	Hotels	0	0	0	0
	Industrial	7	1	0	0
	Other-Residential	86	16	1	1
	Single Family	13	1	0	0
	Total	**203**	**40**	**9**	**8**

Economic Loss

The total economic loss estimated for the earthquake is 1,332.04 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 736.06 (millions of dollars); 20 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 47 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Loses							
	Wage	0.00	2.06	24.32	1.16	2.68	30.23
	Capital-Related	0.00	0.89	22.63	0.69	0.87	25.08
	Rental	2.11	8.50	16.12	0.46	1.23	28.42
	Relocation	7.34	19.82	22.88	2.47	9.33	61.84
	Subtotal	**9.45**	**31.27**	**85.95**	**4.79**	**14.11**	**145.57**
Capital Stock Loses							
	Structural	12.83	25.49	31.48	6.25	23.04	99.10
	Non_Structural	104.52	91.16	84.14	18.92	34.43	333.17
	Content	50.73	21.08	45.58	12.29	22.11	151.79
	Inventory	0.00	0.00	1.63	2.71	2.10	6.44
	Subtotal	**168.07**	**137.72**	**162.83**	**40.18**	**81.68**	**590.49**
	Total	**177.52**	**168.99**	**248.79**	**44.97**	**95.79**	**736.06**

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, HAZUS computes the direct repair cost for each component only. There are no losses computed by HAZUS for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

HAZUS estimates the long-term economic impacts to the region for 15 years after the earthquake. The model quantifies this information in terms of income and employment changes within the region. Table 14 presents the results of the region for the given earthquake.

Table 12: Transportation System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	25,897.07	$10.33	0.04
	Bridges	17,585.44	$113.81	0.65
	Tunnels	7.08	$0.00	0.00
	Subtotal	**43489.60**	**124.10**	
Railways	Segments	2,213.38	$0.35	0.02
	Bridges	13.27	$0.05	0.36
	Tunnels	0.00	$0.00	0.00
	Facilities	50.60	$3.76	7.43
	Subtotal	**2277.20**	**4.20**	
Light Rail	Segments	0.00	$0.00	0.00
	Bridges	0.00	$0.00	0.00
	Tunnels	0.00	$0.00	0.00
	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**0.00**	
Bus	Facilities	14.39	$1.09	7.57
	Subtotal	**14.40**	**1.10**	
Ferry	Facilities	13.31	$0.00	0.00
	Subtotal	**13.30**	**0.00**	
Port	Facilities	39.94	$2.40	6.01
	Subtotal	**39.90**	**2.40**	
Airport	Facilities	415.39	$25.29	6.09
	Runways	2,012.09	$0.65	0.03
	Subtotal	**2427.50**	**25.90**	
	Total	**48262.00**	**157.70**	

Table 13: Utility System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	$0.00	0.00
	Facilities	256.40	$11.38	4.44
	Distribution Lines	1,609.10	$8.97	0.56
	Subtotal	**1,865.55**	**$20.35**	
Waste Water	Pipelines	0.00	$0.00	0.00
	Facilities	3,296.70	$118.65	3.60
	Distribution Lines	965.50	$7.09	0.73
	Subtotal	**4,262.19**	**$125.74**	
Natural Gas	Pipelines	0.00	$0.00	0.00
	Facilities	24.00	$0.48	2.02
	Distribution Lines	643.70	$7.58	1.18
	Subtotal	**667.64**	**$8.07**	
Oil Systems	Pipelines	0.00	$0.00	0.00
	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**$0.00**	
Electrical Power	Facilities	5,203.00	$283.70	5.45
	Subtotal	**5,203.00**	**$283.70**	
Communication	Facilities	11.60	$0.39	3.37
	Subtotal	**11.55**	**$0.39**	
	Total	**12,009.93**	**$438.24**	

Table 14. Indirect Economic Impact with outside aid

(Employment as # of people and Income in millions of $)

LOSS		Total	%
First Year			
	Employment Impact	1,298	0.69
	Income Impact	(1)	-0.01
Second Year			
	Employment Impact	398	0.21
	Income Impact	(14)	-0.17
Third Year			
	Employment Impact	9	0.00
	Income Impact	(20)	-0.24
Fourth Year			
	Employment Impact	0	0.00
	Income Impact	(20)	-0.25
Fifth Year			
	Employment Impact	0	0.00
	Income Impact	(20)	-0.25
Years 6 to 15			
	Employment Impact	0	0.00
	Income Impact	(20)	-0.25

Appendix A: County Listing for the Region

Adams,WA

Benton,WA

Chelan,WA

Douglas,WA

Ferry,WA

Franklin,WA

Grant,WA

Kittitas,WA

Lincoln,WA

Okanogan,WA

Walla Walla,WA

Yakima,WA

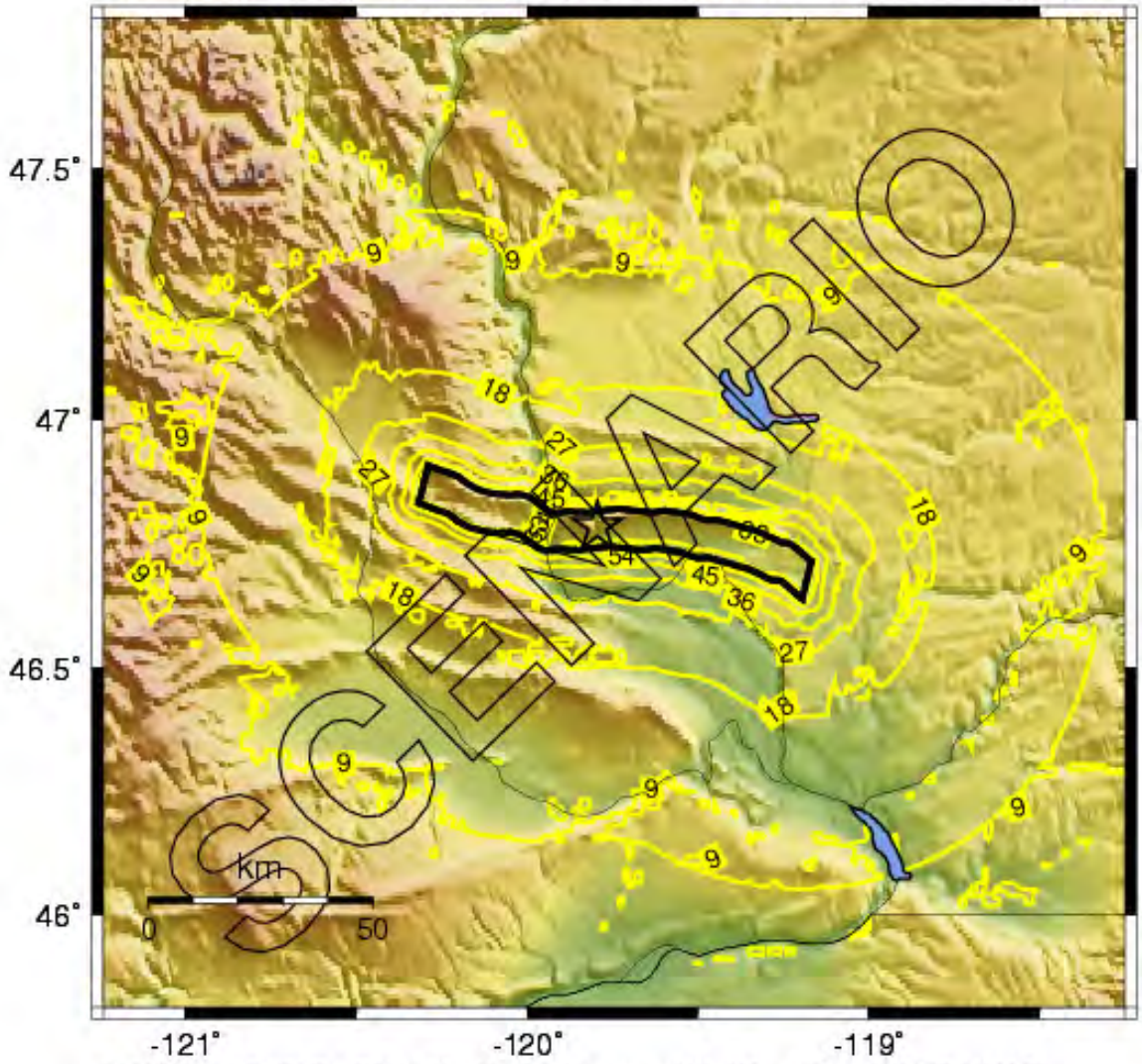
Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Washington					
	Adams	17,108	650	278	928
	Benton	158,354	7,846	2,589	10,436
	Chelan	68,646	3,915	1,524	5,439
	Douglas	35,219	1,522	385	1,907
	Ferry	7,347	381	140	522
	Franklin	60,267	2,061	856	2,917
	Grant	81,821	2,986	1,504	4,491
	Kittitas	37,701	2,087	539	2,627
	Lincoln	10,493	558	215	773
	Okanogan	39,942	2,041	631	2,672
	Walla Walla	57,508	2,978	1,020	3,998
	Yakima	229,624	9,899	3,738	13,637
Total State		**804,030**	**36,924**	**13,419**	**50,347**
Total Region		**804,030**	**36,924**	**13,419**	**50,347**

-- Earthquake Planning Scenario --

Peak Accel. Map (in %g) for SaddleMtn7.35 Scenario

Scenario Date: Mon Apr 27, 2009 12:00:00 GMT M 7.3 N46.79 W119.79 Depth: 0.0km

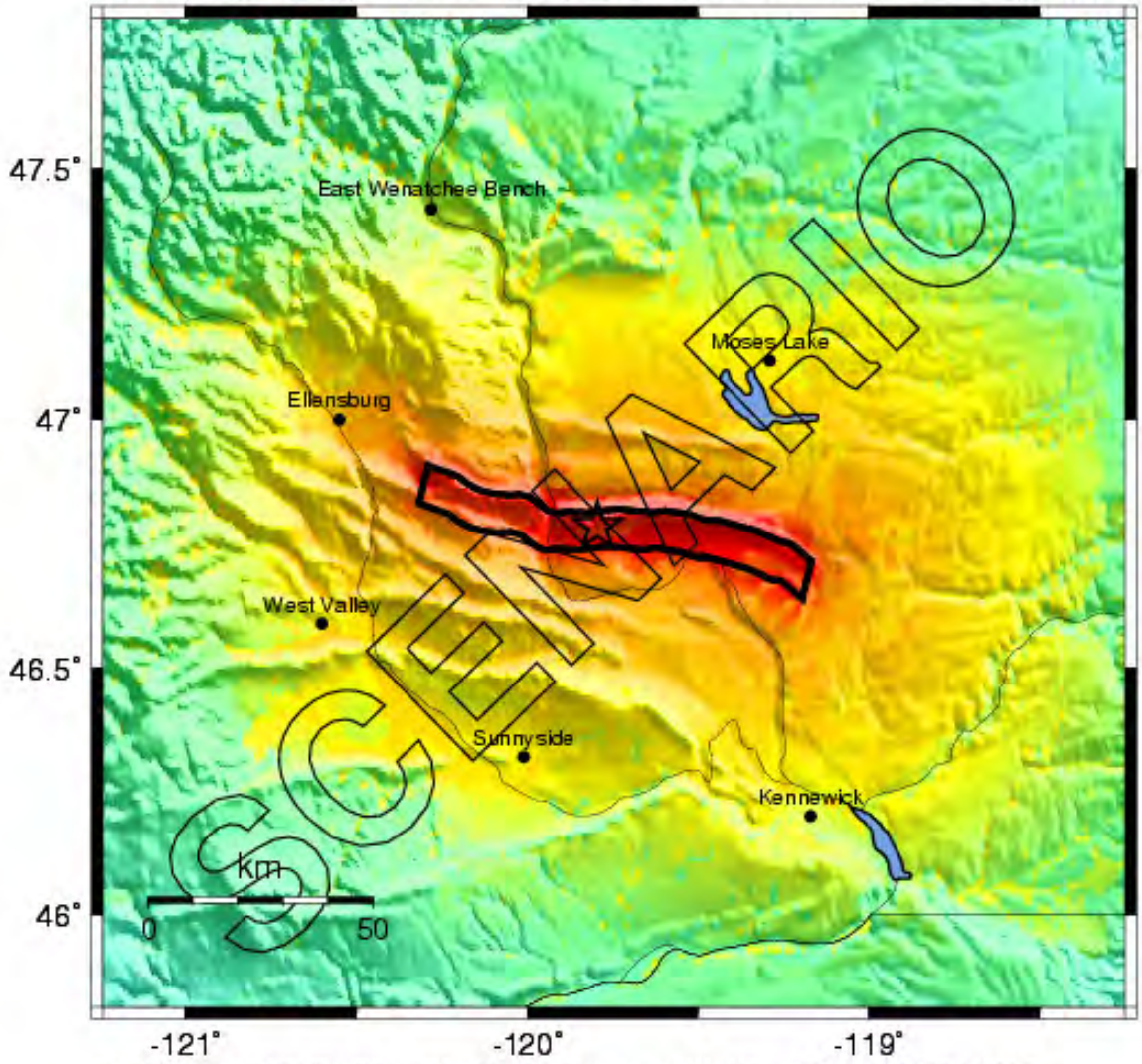


PLANNING SCENARIO ONLY -- Map Version 4 Processed Wed May 6, 2009 11:01:46 PM MDT

-- Earthquake Planning Scenario --

ShakeMap for SaddleMtn7.35 Scenario

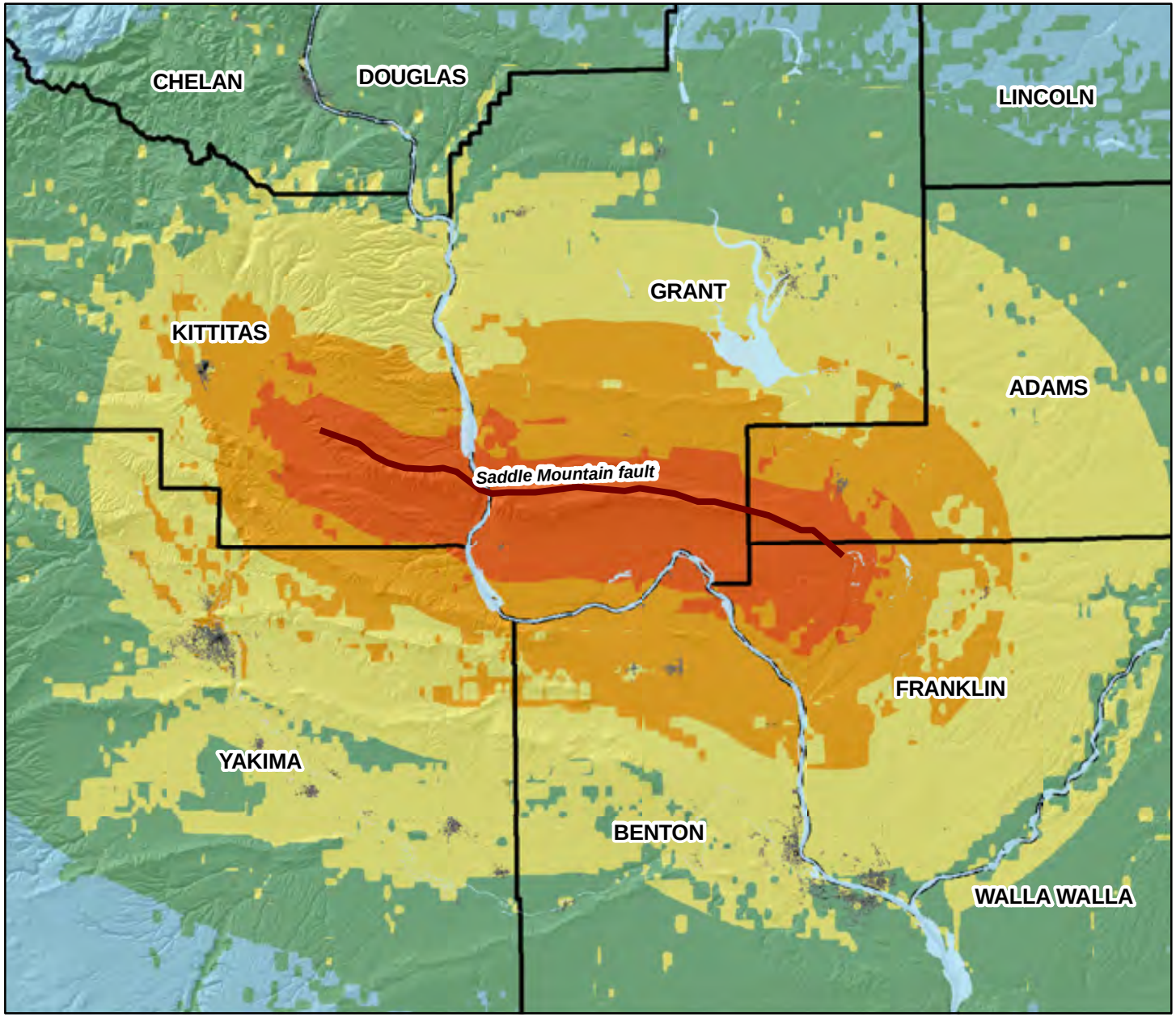
Scenario Date: Mon Apr 27, 2009 12:00:00 GMT M 7.3 N46.79 W119.79 Depth: 0.0km



PLANNING SCENARIO ONLY -- Map Version 4 Processed Wed May 6, 2009 11:01:46 PM MDT

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	*<.17*	*.17-1.4*	*1.4-3.9*	*3.9-9.2*	*9.2-18*	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	*8.1-16*	*16-31*	*31-60*	*60-116*	*>116*
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Population Density and Ground Shaking Intensities - Earthquake Scenario: Washington



M 7.35 Saddle Mtn.-Hanford

Population Density

People

- 0 - 4
- 4 - 20
- 20 - 40
- 40 - 50
- > 50

Counties

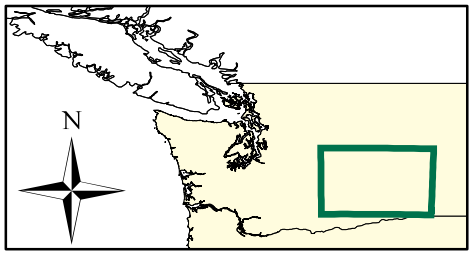
Fault source

MM Intensity

- IV Light
- V Moderate
- VI Strong
- VII Very Strong
- VIII Severe

0 2.5 5 10 15 20 25 30 Miles

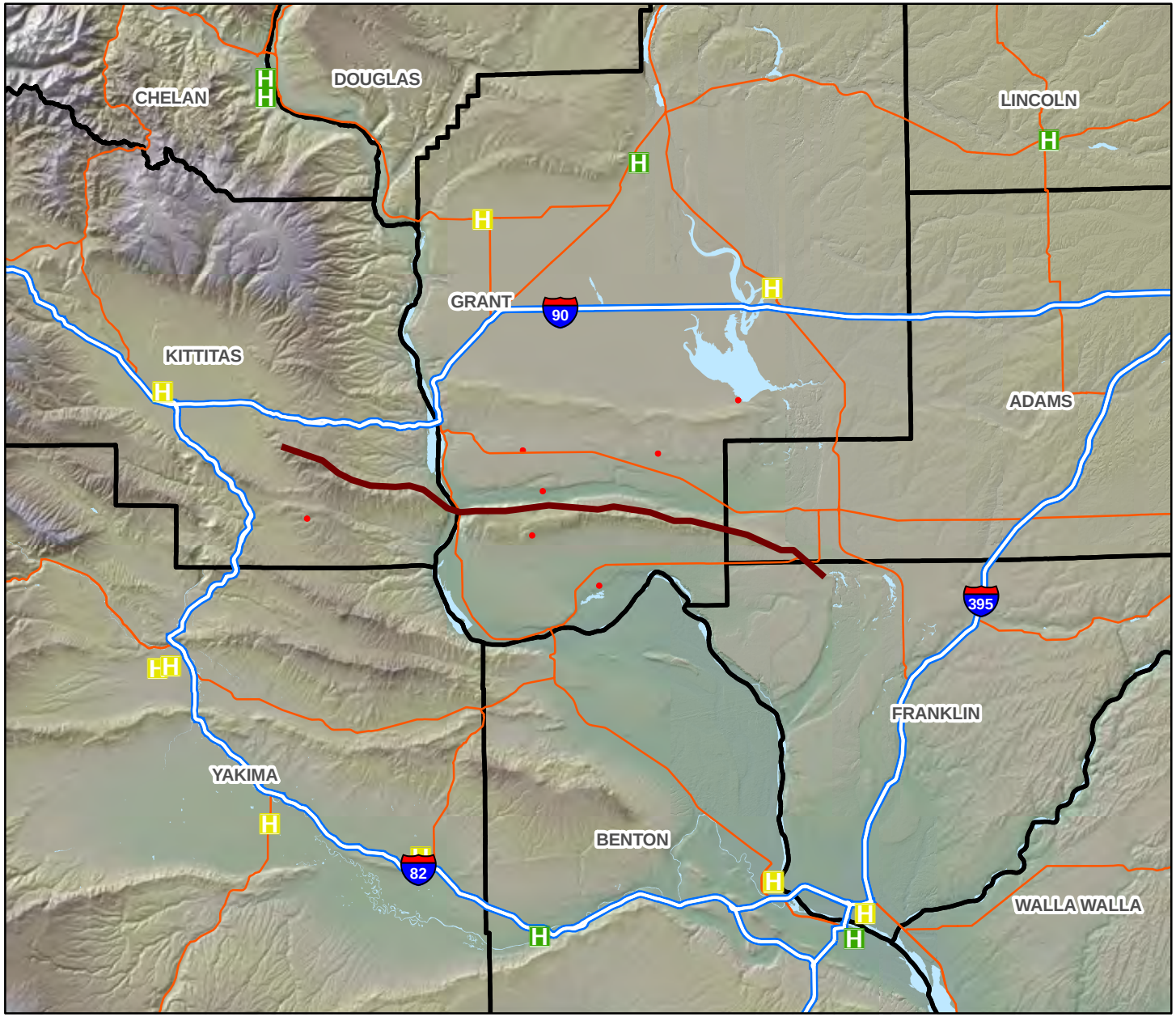
1-26-10 Fabia Terra, URS Corporation



Sources: 2009 HAZUS runs by URS Corporation, MMI Map USGS 2009
Projection: NAD83 Harn State Plane Washington 4602 (feet)

Figure 1

Injuries (2 pm) and Impaired Hospitals (Day 1) - Earthquake Scenario: Washington



M 7.35 Saddle Mtn.-Hanford

1 Dot = 1 Death
(Severity Level 4 delineated by census tract)

Roads
Interstate
Highway
Counties
Fault source

Impaired Hospitals at Day 1

Damage is expressed as the probability that a given hospital will be functional at Day 1.

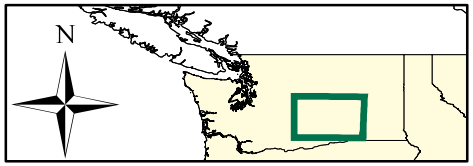
- < 50%
- 50 - 90%
- > 90%

County	Injuries Requiring Hospital Treatment (2 PM)*	Fatalities (2 PM)
Adams	17	0
Benton	23	0
Douglas	1	0
Franklin	13	0
Grant	144	8
Kittitas	28	1
Walla Walla	2	0
Yakima	47	0
Total	**275**	**9**

*Injuries are for Severity 1, 2, & 3

0 2.5 5 10 15 20 25 30
Miles

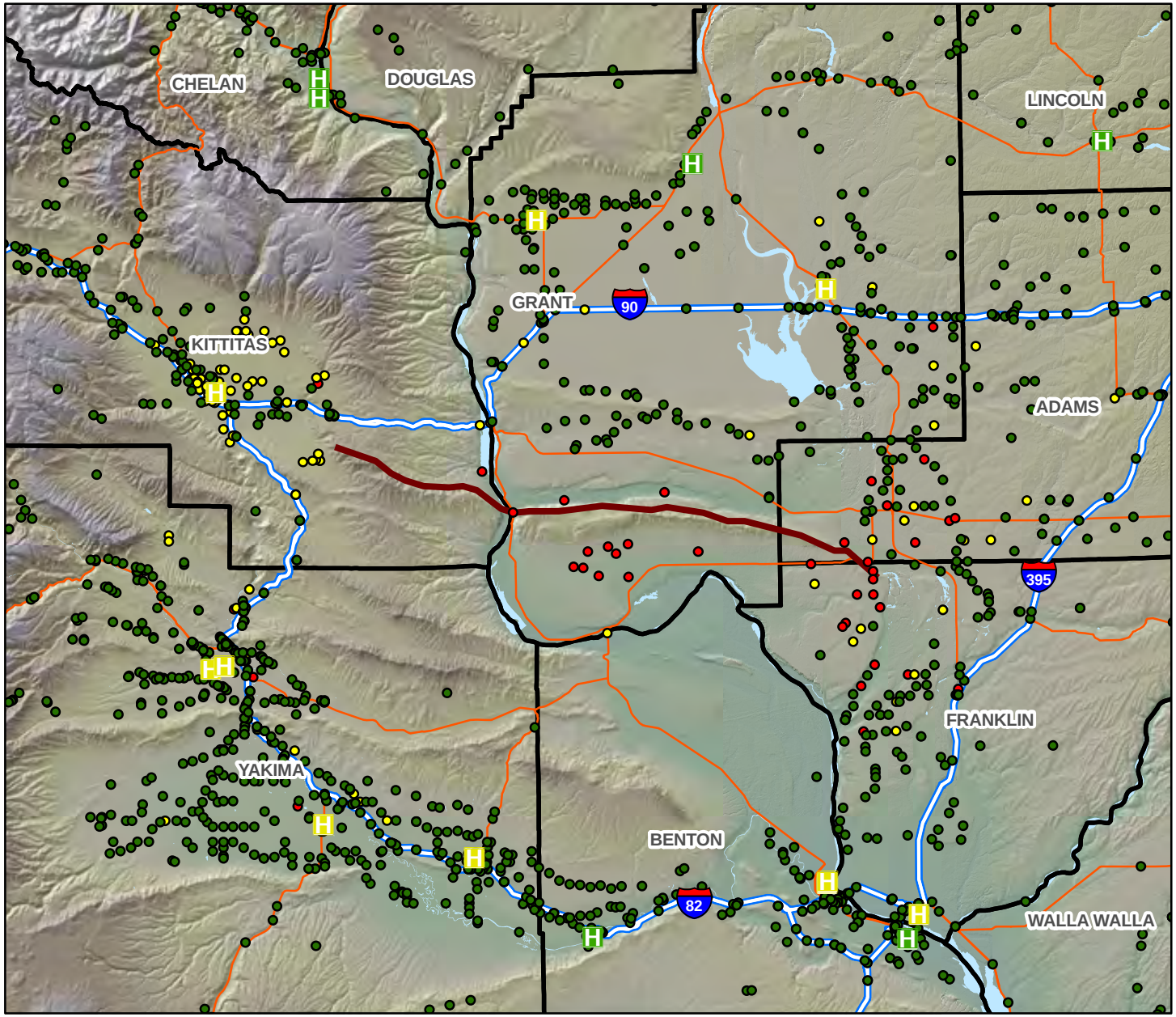
1-26-10 Fabia Terra, URS Corporation



Sources: 2009 HAZUS runs by URS Corporation, Highways HSIP Gold 2007
Projection: NAD83 Harn State Plane Washington 4602 (feet)

Figure 2

Impaired Hospitals (Day 1), Hospital Bed Availability, & Bridge Functionality - Earthquake Scenario: Washington



M 7.35 Saddle Mtn.-Hanford

Highway Bridge Impacts

Damage is expressd as the probability that a given bridge segment will realize at least moderate damage.

Bridge Seg.
- high
- moderate
- low

Counties
Fault source

Roads
- Interstate
- Highway

Impaired Hospitals at Day 1

Damage is expressed as the probability that a given hospital will be functional at Day 1.

- H < 50%
- H 50 - 90%
- H > 90%

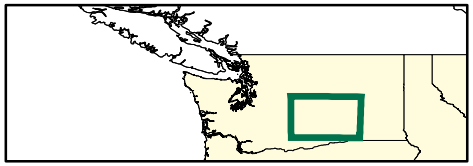
County	Total # Hospital Beds	Hospital Beds Available	Injuries Requiring Hospital Treatment 2pm
Adams	69	36	17
Benton	343	305	23
Chelan	284	282	1
Franklin	132	96	13
Grant	199	166	144
Kittitas	25	21	28
Walla Walla	303	284	2
Yakima	527	371	47
Total	**1,882**	**1,561**	**275**

N

0 2 4 8 12 16 20 24

Miles

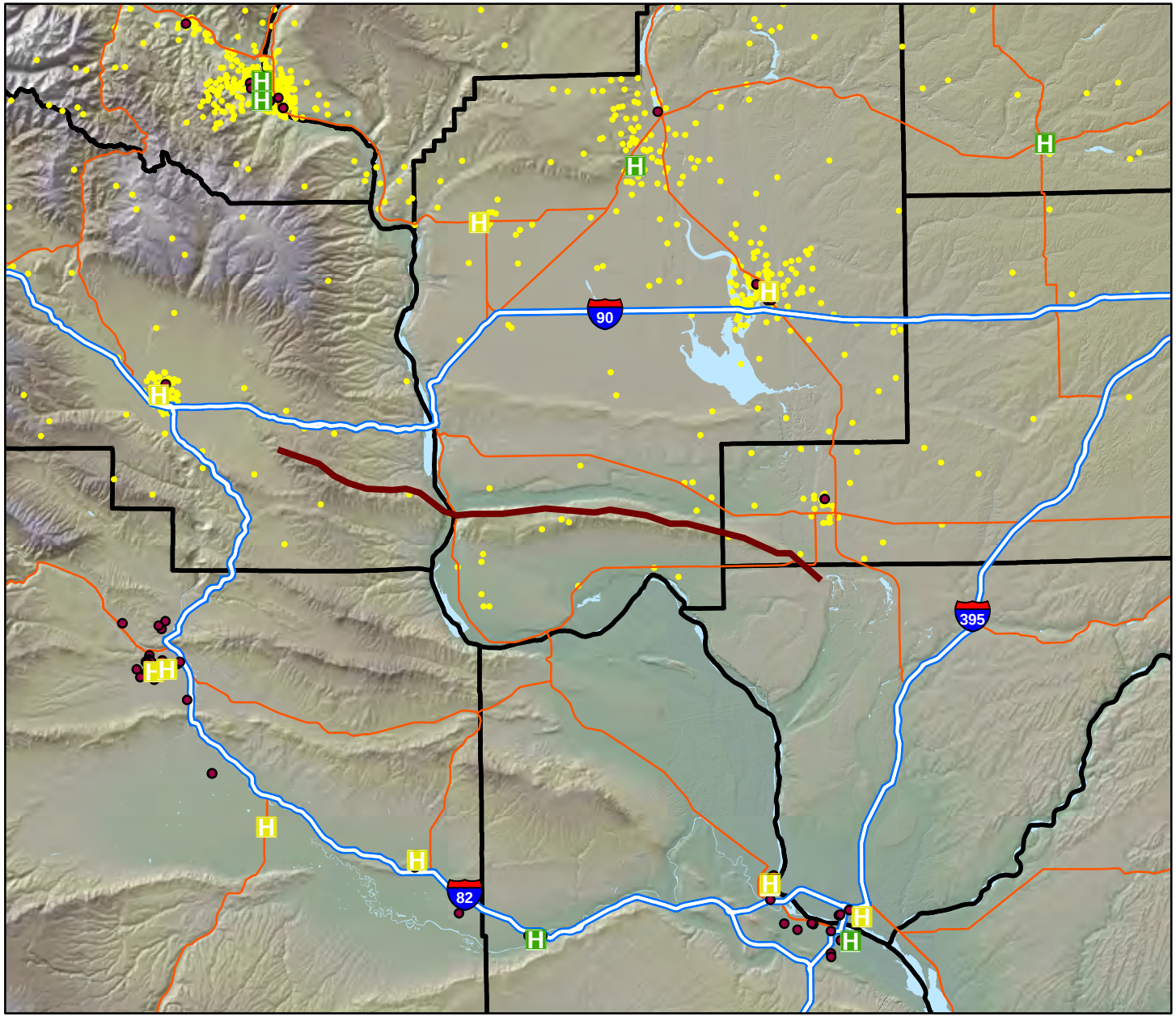
1-26-10 Fabia Terra, URS Corporation



Sources: 2009 HAZUS runs by URS Corporation, Highways HSIP Gold 2007
Projection: NAD83 Harn State Plane Washington 4602 (feet)

Figure 3

Distribution of Elderly, Impaired Hospitals (Day 1), & Hospital Bed Availability - Earthquake Scenario: Washington



M 7.35 Saddle Mtn.-Hanford

1 Dot = 30 People over 65

Nursing Home

Counties

Fault source

Roads

Interstate

Highway

Impaired Hospitals at Day 1

Damage is expressed as the probability that a given hospital will be functional at Day 1.

< 50%

50 - 90%

> 90%

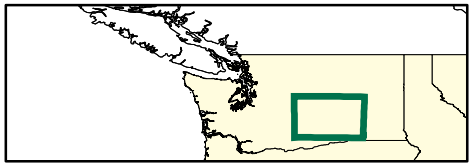
County	Total # Hospital Beds	Hospital Beds Available	Injuries Requiring Hospital Treatment 2pm
Adams	69	36	17
Benton	343	305	23
Chelan	284	282	1
Franklin	132	96	13
Grant	199	166	144
Kittitas	25	21	28
Walla Walla	303	284	2
Yakima	527	371	47
Total	**1,882**	**1,561**	**275**

N

0 2 4 8 12 16 20 24

Miles

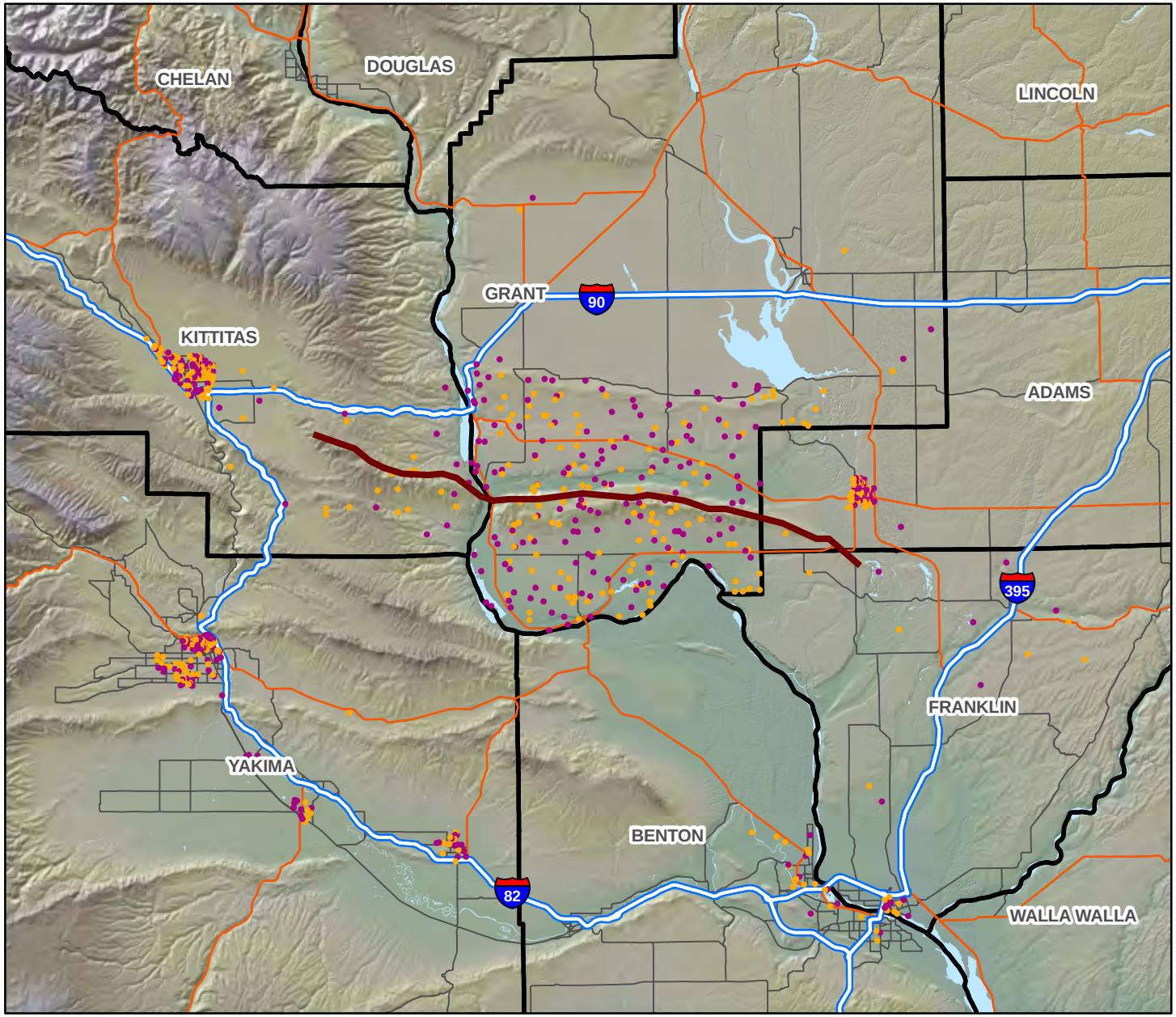
1-26-10 Fabia Terra, URS Corporation



Sources: 2009 HAZUS runs by URS Corporation, Highways and Nursing homes HSIP Gold 2007
Projection: NAD83 Harn State Plane Washington 4602 (feet)

Figure 4

Estimated Displaced Households & Short Term Public Shelter Needs - Earthquake Scenario: Washington



M 7.35 Saddle Mtn.-Hanford

	Total #
Public Shelter Needs (Individuals)	396
Displaced Households	405

1 Dot = 1 Displaced Households*

1 Dot = 1 Public Shelter Needs (Individuals)*

* delineated by census tract

Counties

Fault source

Roads

Interstate

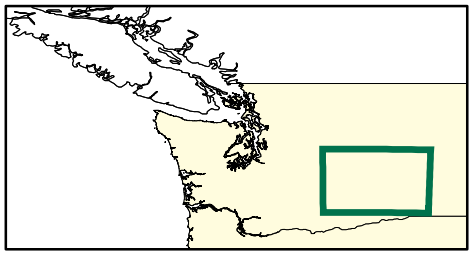
Highway

Major Road

N

0 4 8 12 16 20 24 Miles

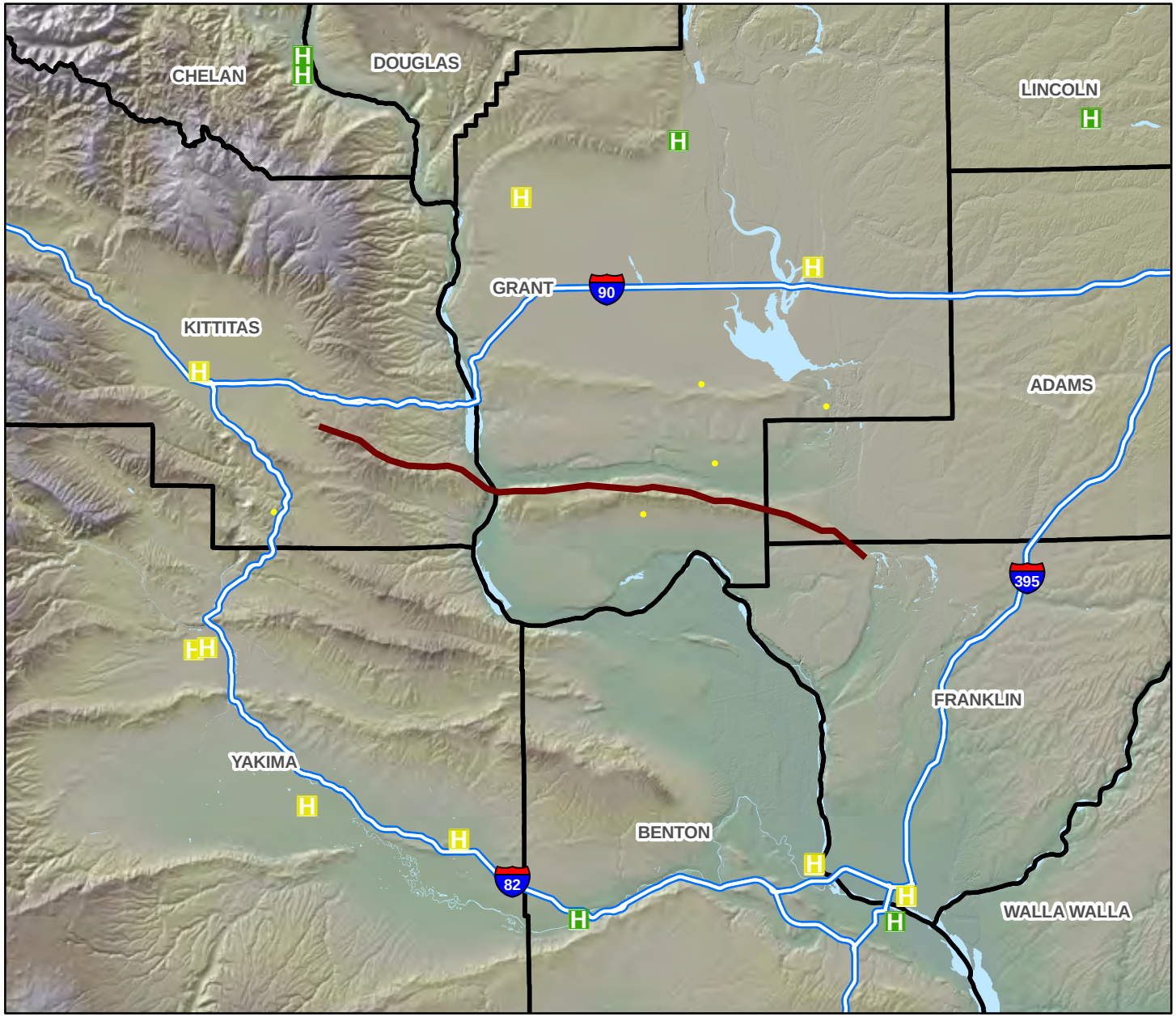
1-26-10 Fabia Terra, URS Corporation



Sources: 2009 HAZUS runs by URS Corporation, Highways HSIP Gold 2007
Projection: NAD83 Harn State Plane Washington 4602 (feet)

Figure 5

Injuries (2pm), Collapsed Structures, and Impaired Hospitals - Earthquake Scenario: Washington



M 7.35 Saddle Mtn.- Hanford

Impaired Hospitals (Day1)

H < 50%
H 50 - 90%
H > 90%

Damage is expressed as the probability that a given hospital will be functional on Day 1.

1 Dot = 1 Life Threatening Injury (Severtiy Level 3*)

*Severity Level 3 is defined as injuries that require hospitalization and can become life threatening if not promptly treated.

Requiring Hospital Treatment**	Immediate Life Threatening Injuries**
275	10

**Totals for counties in view extent.

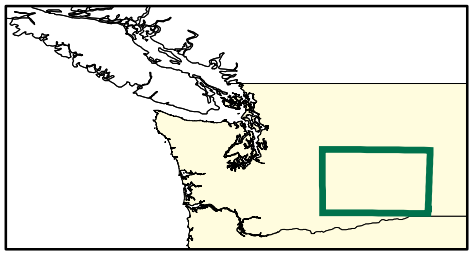
Structure Type	Red (Complete)	Collapse Rates for Complete Damage	Total Collapse
Wood	10	3%	0
Steel	48	6%	3
Concrete	25	10%	3
Precast	28	13%	4
Reinforced Masonry	27	10%	3
Unreinforced Masonry	24	15%	4
Manufactured Housing	669	3%	20
Total	831		36

Counties — Fault source

N

0 2 4 8 12 16 20 24 Miles

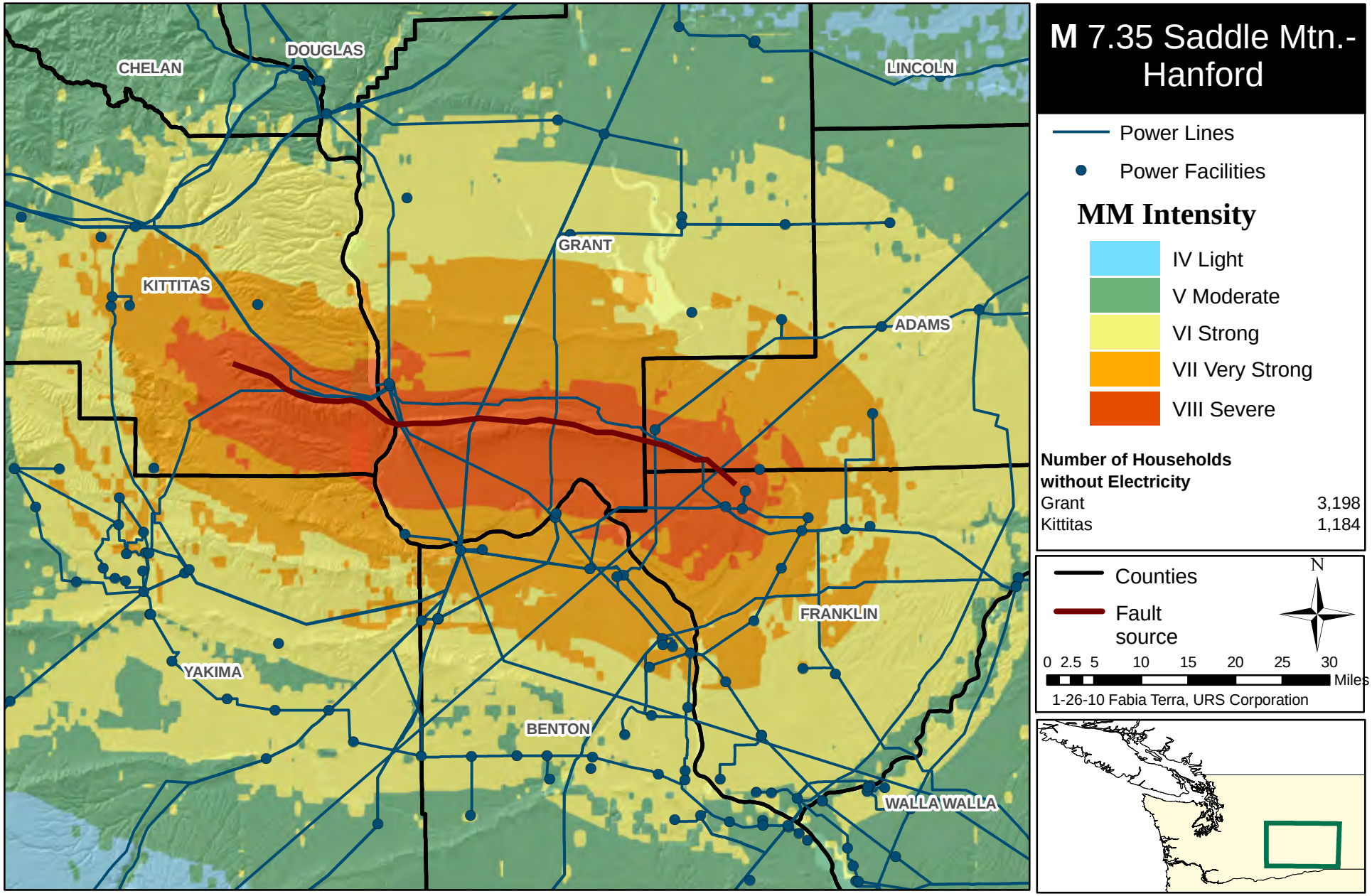
1-26-10 Fabia Terra, URS Corporation



Sources: 2009 HAZUS runs by URS Corporation, Highways HSIP Gold 2007
Projection: NAD83 Harn State Plane Washington 4602 (feet)

Figure 6

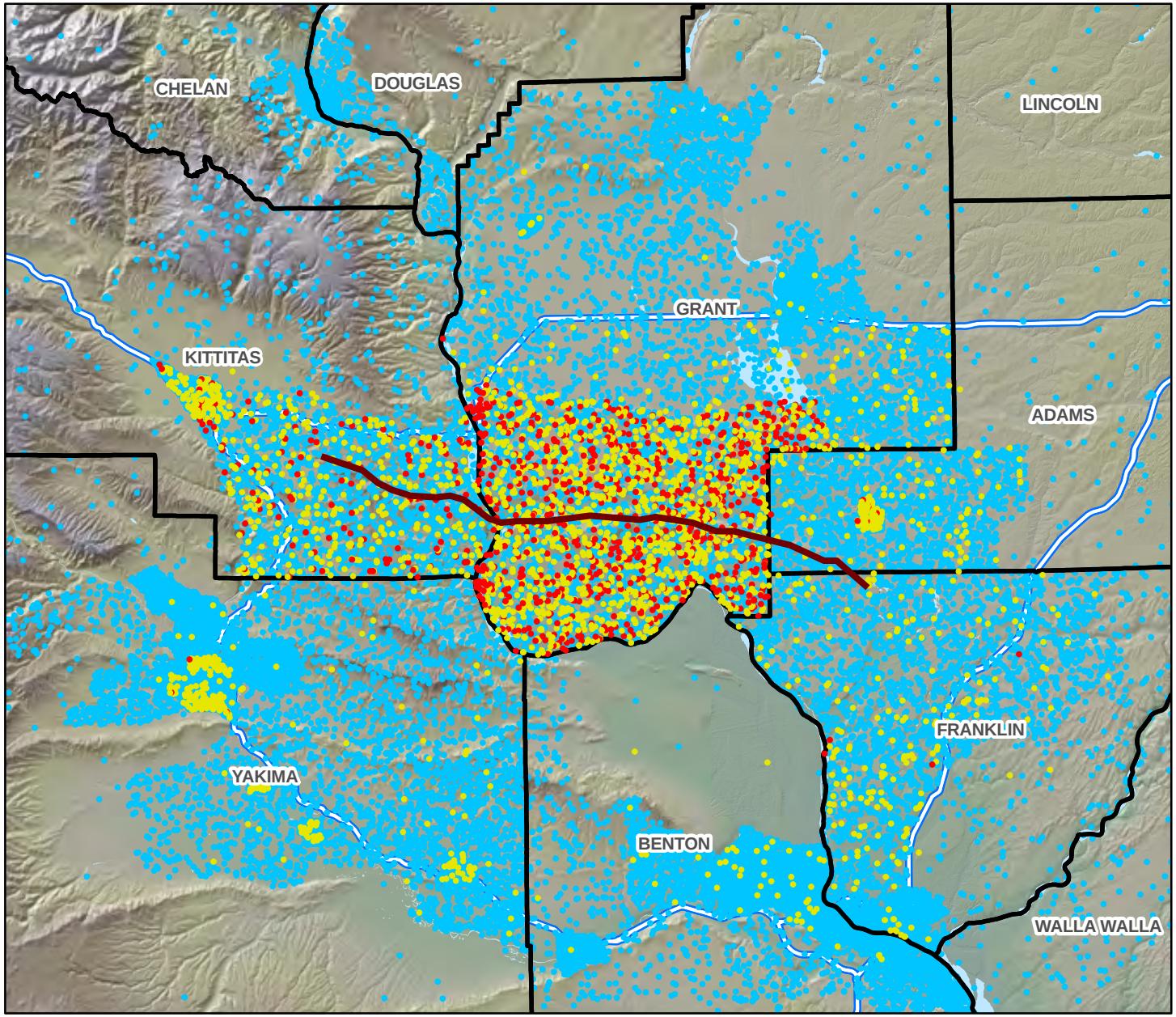
Power Lines and Facilities, Households Without Electricity, and Ground Shaking Intensities - Earthquake Scenario: Washington



Sources: 2009 HAZUS runs by URS Corporation, Power lines and facilities HSIP Gold 2007
Projection: NAD83 Harn State Plane Washington 4602 (feet)

Figure 7

Estimated Building Inspection Needs - Earthquake Scenario: Washington



M 7.35 Saddle Mtn.- Hanford

	Estimated # of Structures	Estimated # of Inspectors Needed
Red (Complete)	832	6
Yellow (Extensive)	2,520	34
Light Blue (Slight/ Moderate)	36,282	242
Total	39,634	281

*Estimated number of inspectors needed to complete inspections in 30 days.

1 Dot = 1 building (by census tract)

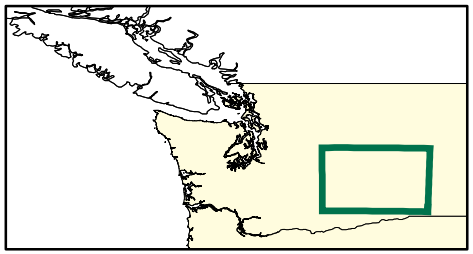
Red Tag (Complete Damage)
Yellow Tag (Extensive Damage)
Blue Tag (Slight/Moderate Damage)

N

Counties
Fault source

0 2 4 8 12 16 20 24 Miles

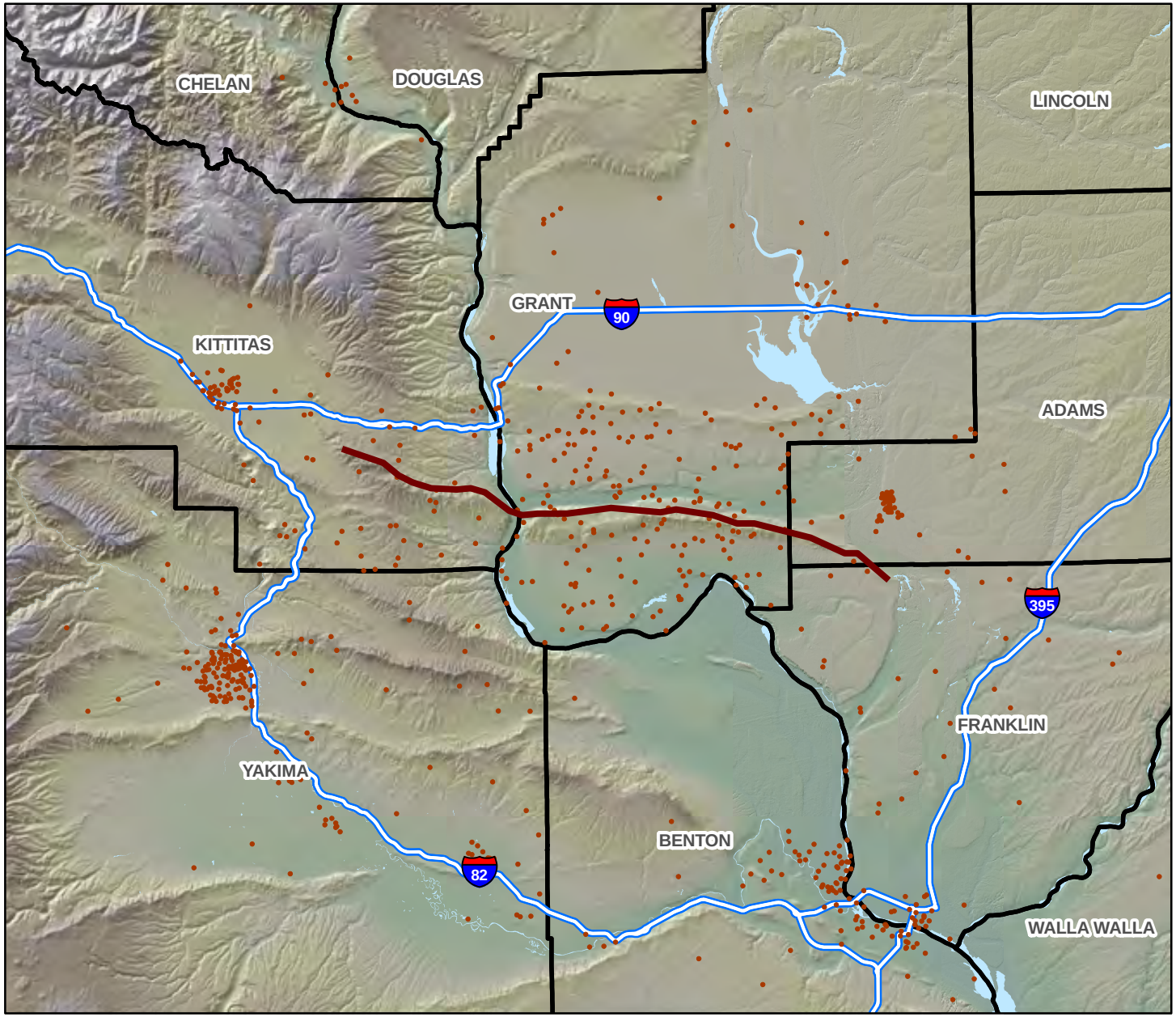
1-26-10 Fabia Terra, URS Corporation



Sources: 2009 HAZUS runs by URS Corporation, Highways HSIP Gold 2007
Projection: NAD83 Harn State Plane Washington 4602 (feet)

Figure 8

Direct Building Economic Loss - Earthquake Scenario: Washington



M 7.35 Saddle Mtn.-Hanford

1 Dot = $1,000,000 worth of vulnerable building stock (by census tract)

County	Cost Strucutral Damage	Cost Non-Structural Damage	Total Loss (Including Contents)
Clallam	$8 M	$21 M	$38 M
Island	$8 M	$44 M	$74 M
Jefferson	$0 M	$3 M	$6 M
King	$0 M	$3 M	$5 M
Kitsap	$7 M	$21 M	$38 M
Mason	$41 M	$102 M	$182 M
Pierce	$12 M	$44 M	$74 M
San Juan	$1 M	$7 M	$12 M
Skagit	$22 M	$88 M	$155 M
Total	**$99 M**	**$333 M**	**$584 M**

* All values are millions of dollars

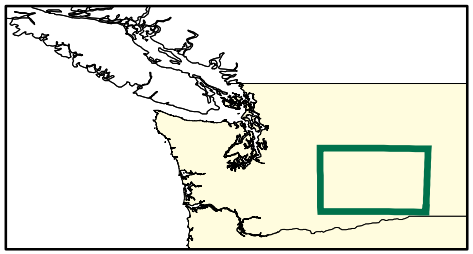
Counties

Fault source

N

0 5 10 15 20 25 30 Miles

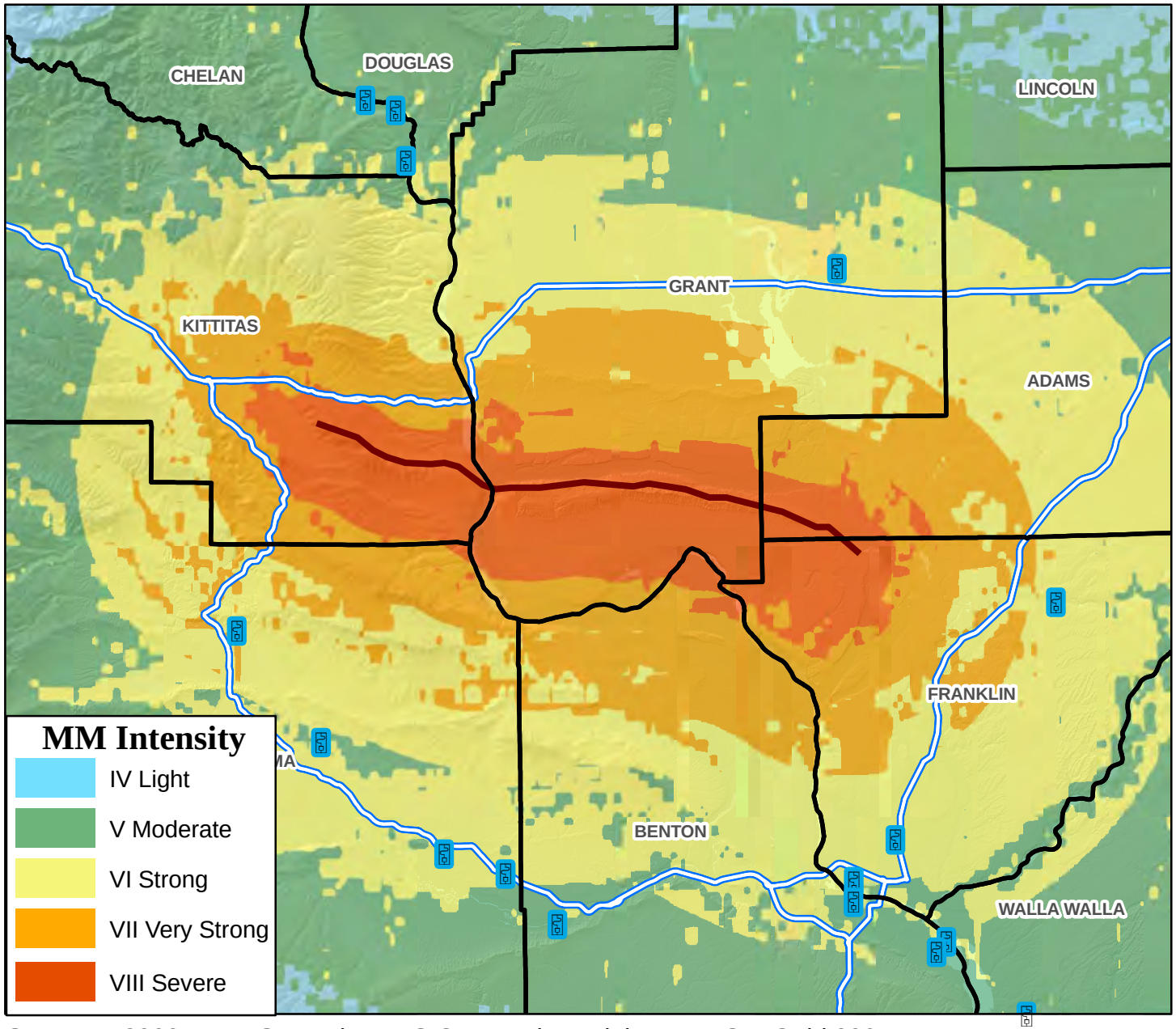
1-26-10 Fabia Terra, URS Corporation



Sources: 2009 HAZUS runs by URS Corporation, Highways HSIP Gold 2007
Projection: NAD83 Harn State Plane Washington 4602 (feet)

Figure 9

Natural Gas, and Oil Facility Damage - Earthquake Scenario: Washington



M 7.35 Saddle Mtn.-Hanford

Utility Damage (at least moderate)

Damage is expressed as the percentage chance that a given Utility System will realize at least moderate damage.

Natural Gas Facility

- < 20%
- 20% - 60%
- > 60%

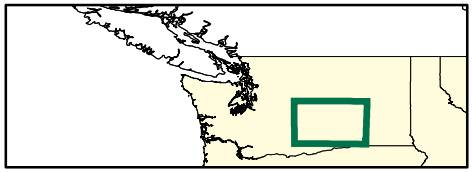
- Counties
- Fault source

N

0 5 10 15 20 25 30

Miles

1-26-10 Fabia Terra, URS Corporation

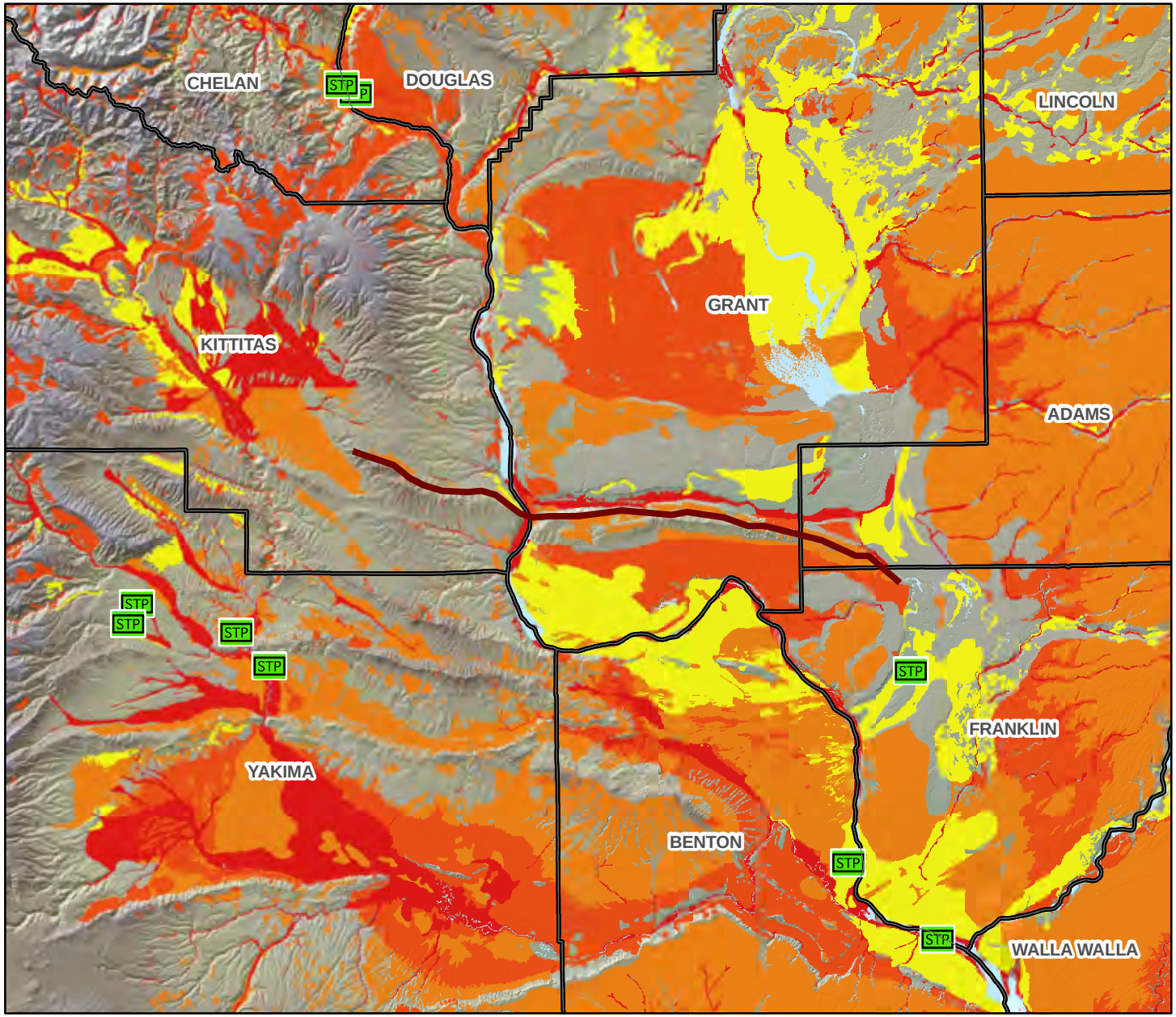


Sources: 2009 HAZUS runs by URS Corporation, Highways HSIP Gold 2007

Projection: NAD83 Harn State Plane Washington 4602 (feet)

Figure 10

Sewage Treatment Facility Distribution, Households Without Potable Water, and Liquefaction Susceptibility - Earthquake Scenario: Washington



M 7.35 Saddle Mtn.-Hanford

Liquefaction Susceptibility

- Low
- Moderate
- Low-Moderate
- High
- Sewage Treatment Facilities (STP)
- Counties
- Fault source

County	# Households without Potable Water (at Day 1)	Daily Potable Water Needs Per Person (Gallons/day)*	Number of Truckloads needed Daily
Grant	837	2,511	1
Kittitas	696	2,088	1

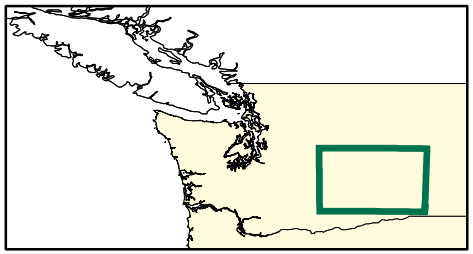
* Based on U.S. Army Corp Mission Guidebook
(Daily water is based on an esimated 3 people per household.
One truck can transport an esimated 5000 gallons of water.)

Note: Counties not listed had no potable water losses.

N

0 4 8 12 16 20 24 Miles

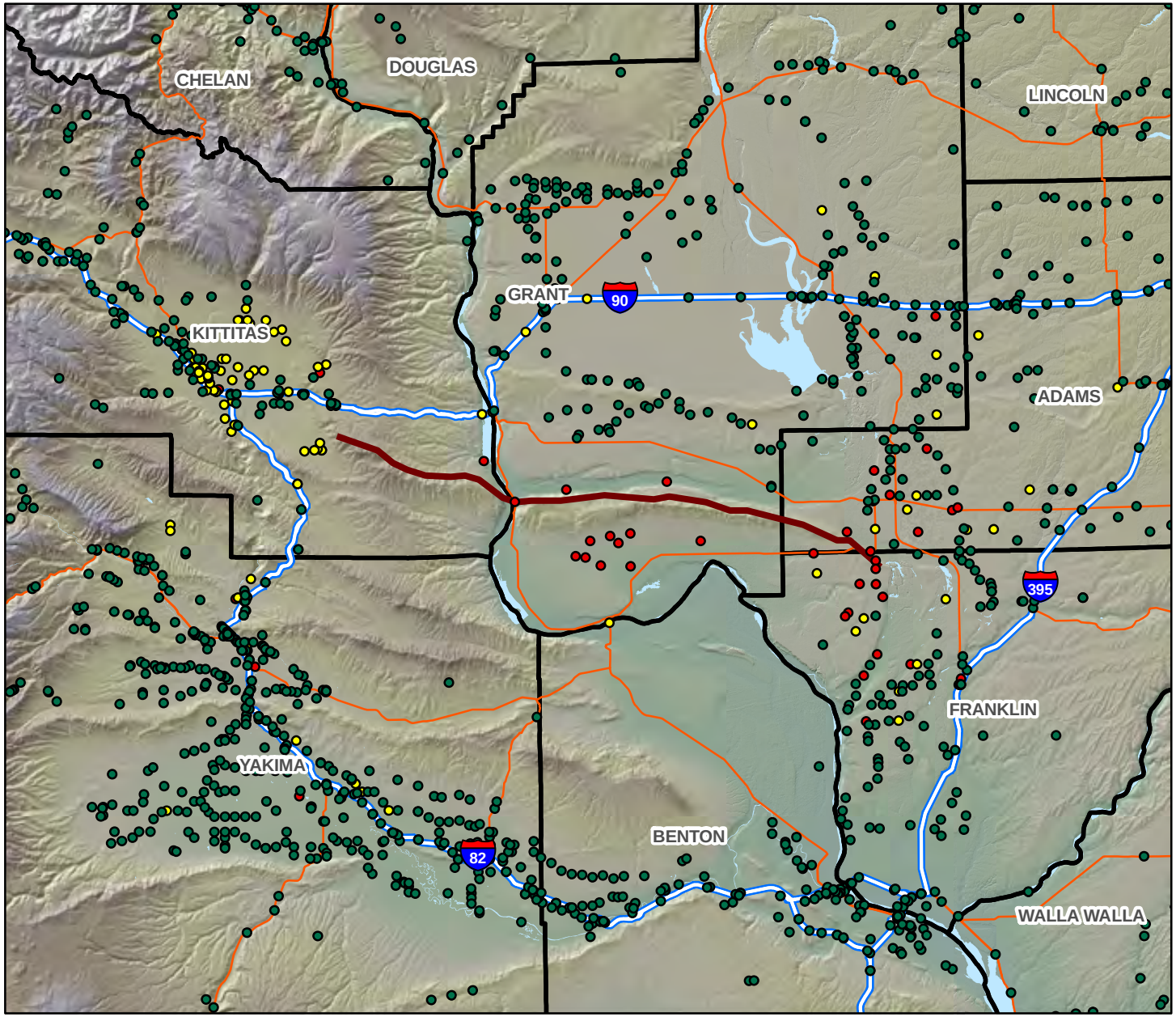
1-26-10 Fabia Terra, URS Corporation



Sources: 2009 HAZUS runs by URS Corporation, Sewage Treatment Faciiltes HSIP Gold 2007, Liquefaction The Wash State Geological Survey
Projection: NAD83 Harn State Plane Washington 4602 (feet)

Figure 11

Estimated Highway Bridge Damage - Earthquake Scenario: Washington



M 7.35 Saddle Mtn.-Hanford

Highway Bridge Impacts

Damage is expressed as the probability that a given Bridge will realize at least moderate damage.

Counties
Fault source

Roads
Interstate
Highway

Major Roadway Bridge
low
moderate
high

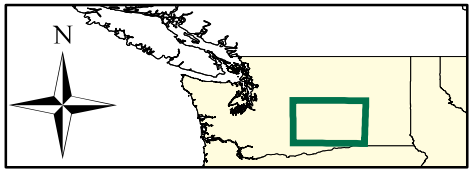
County	# of Bridges Needing Inspection	# of Bridge Engineers Needed*
Adams	202	27
Benton	155	21
Chelan	107	14
Douglas	49	7
Franklin	137	18
Grant	272	36
Kittitas	257	34
Walla Walla	77	10
Yakima	520	69
Total	**1,776**	**237**

* 2 engineers can inspect 5 bridges a day for 3 days

0 5 10 15 20 25 30

Miles

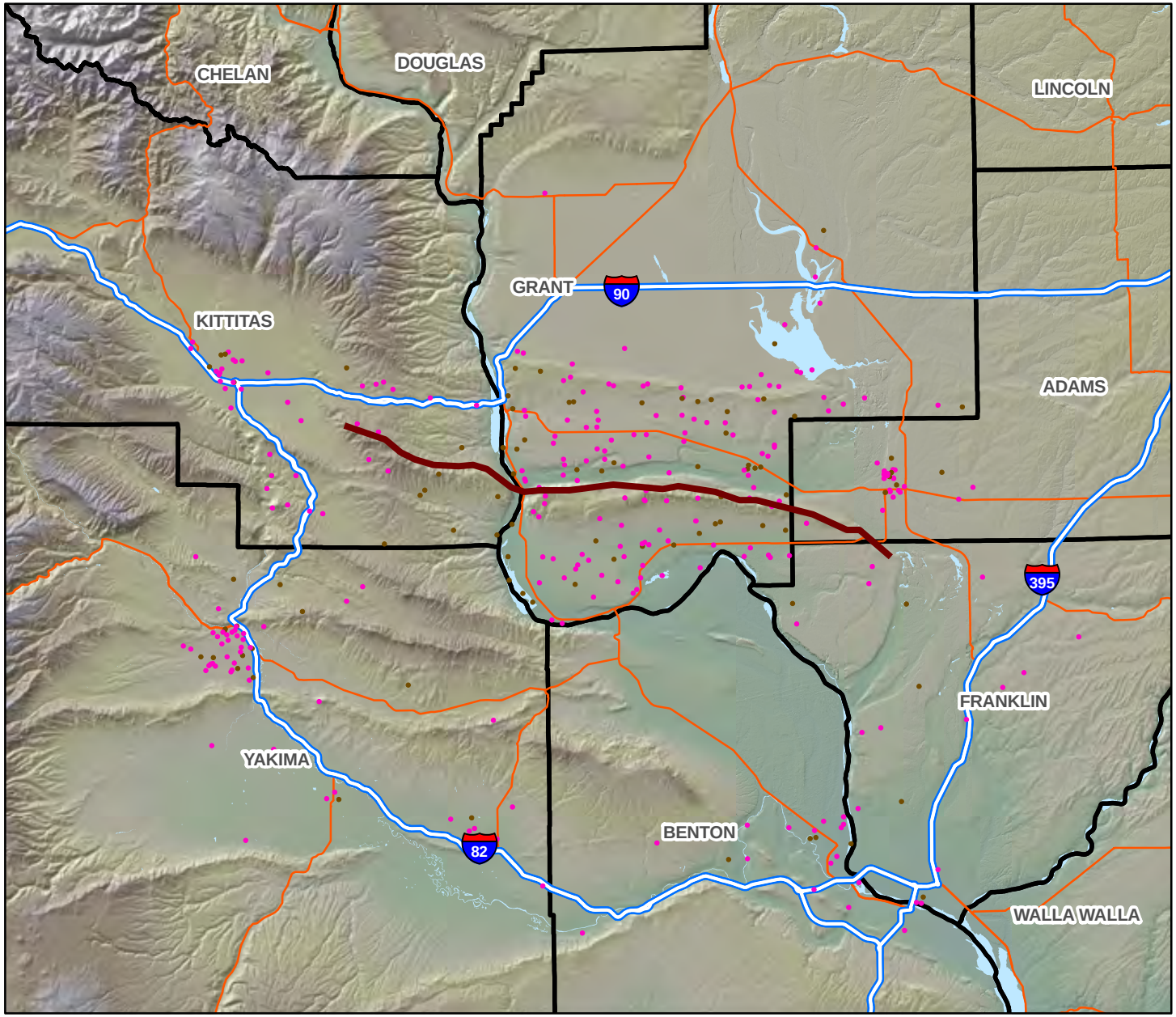
1-26-10 Fabia Terra, URS Corporation



Sources: 2009 HAZUS runs by URS Corporation, Highways HSIP Gold 2007
Projection: NAD83 Harn State Plane Washington 4602 (feet)

Figure 12

Estimated Brick, Concrete, Steel, and Wood Debris - Earthquake Scenario: Washington



M 7.35 Saddle Mtn.-Hanford

1 Dot = 1 thousand tons of Concrete and Steel Debris*
1 Dot = 1 thousand tons of Brick and Wood Debris*
*by census tract

Counties
Fault source

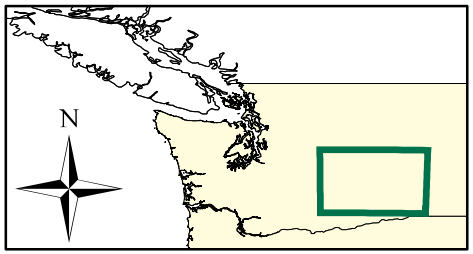
Roads
Interstate
Highway

County	Brick and Wood (tons)	Concrete and Steel (tons)	Estimated Truck Loads*
Adams	6,000	14,000	800
Benton	7,000	10,000	680
Franklin	6,000	9,000	600
Grant	48,000	80,000	5,120
Kitttitas	14,000	21,000	1,400
Walla Walla	1,000	1,000	80
Yakima	18,000	30,000	1,920
Total	**100,000**	**165,000**	**10,600**

* Truck loads estimated at 25 tons per truck

0 5 10 15 20 25 30 Miles

1-26-10 Fabia Terra, URS Corporation



Sources: 2009 HAZUS runs by URS Corporation, Highways HSIP Gold 2007
Projection: NAD83 Harn State Plane Washington 4602 (feet)

Figure 13